

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION**

PROGME CORPORATION
211 Cedar Bend Drive
Lake Orion, MI 48362,

Plaintiff

v.

Civil Action No. 2:18-cv-11728

District Judge Denise Page Hood
Magistrate Judge Mona K. Majzoub

JURY TRIAL DEMANDED

GOOGLE LLC
1600 Ampitheatre Parkway
Mountain View, CA 94043,

Defendants

SECOND AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Progme Corporation (hereinafter termed “Progme”), pursuant to Fed. R. Civ. Proc. 15(a)(1)(B), files this **SECOND AMENDED COMPLAINT FOR PATENT INFRINGEMENT** against Defendant Google LLC (hereinafter termed “Google”) for infringement of U.S. Patent No. RE47,735 (“735 Patent”). *See* Fed. R. Civ. Proc. 15(a)(1)(B). A copy of the ‘735 Patent is attached as **EXHIBIT A**.

THE PARTIES

1. Progme is a corporation existing under the laws of Michigan with its principal place of business at 211 Cedar Bend Drive, Lake Orion, MI 48362.
2. On information and belief, Defendant Google, a wholly owned subsidiary of Alphabet Inc., is a Limited Liability Company organized under the laws of the state of Delaware with its principal place of business at 1600 Ampitheatre Parkway, Mountain View, CA 94043.

JURISDICTION AND VENUE

3. This action arises under the patent laws of the United States, 35 U.S.C. § 1, et seq. including 35 U.S.C. § 271. This Court has exclusive subject matter jurisdiction over this case for patent infringement under 28 U.S.C. §§ 1331 and 1338(a).
4. This Court has personal jurisdiction over Defendant Google for at least the following reasons: 1) Defendant Google has committed acts of patent infringement in Michigan and specifically in this Judicial District and 2) Defendant Google has purposefully established systematic and continuous contacts in this Judicial District and should reasonably expect to be haled into Court here.
5. Venue is proper in this Judicial District under 28 U.S.C. §§ 1391(b) and (c), and 1400(b) because Defendant Google regularly does or solicits business, engages in other persistent courses of conduct and/or derives substantial revenue from goods and services provided to individuals and/or businesses in Michigan and specifically in this Judicial District.
6. Venue is further proper in this Judicial District under 28 U.S.C. §§ 1391(b) and (c), and 1400(b) because, on information and belief, Defendant Google maintains offices and employees throughout the Detroit metropolitan area including a major office employing approximately 450 employees in Ann Arbor, Michigan and another major office employing approximately 100 employees in Birmingham, Michigan.
7. Venue is further proper in this Judicial District under 28 U.S.C. §§ 1391(b) and (c), and 1400(b) because, on information and belief, Defendant Google maintains at least one system server and/or adb server in this Judicial District over which at least one system server and/or adb server Defendant Google exerts exclusive control, thereby providing a

further basis of venue in this Judicial District. Seven Networks LLC v. Google LLC, 315 F. Supp 3rd 933, 947-66 (E.D. Tex. July 19, 2018), mandamus denied, In re Google LLC, 2018 WL 5536478, Case No. 2018-152, slip op at 3-6 (Fed. Cir. Oct. 29, 2018).

U.S. PATENT RE47,735

8. On November 19, 2019, the U.S. Patent and Trademark Office duly and legally issued U.S. Patent No. RE47,735 (“735 Patent”), entitled “AUDIO/VIDEO PROGRAM-RELATED HYPERLINK PRINTER”, to Progme as assignee after a full and fair Reexamination and Reissue proceeding.
9. As indicated in the appended **EXHIBIT B**, Progme became the owner of all rights, title and interest in and to the ‘735 Patent after being the Assignee of U.S. Patent No. 8,713,425 by recorded assignment and continuing as said Assignee as well as the Applicant in the Reissue Proceeding at the USPTO in which the reissue of U.S. Patent No. 8,713,425 into the ‘735 Patent was allowed and further Progme possesses all rights of recovery under the ‘735 Patent including the right to sue and recover damages for all infringements. Since the date of issue of the ‘735 Patent on 11/19/19, Progme has been and remains the sole owner of said rights, title and interest in and to the ‘735 Patent.
10. Progme operates the website PrintHD.TV listing for license for a fee various sets of one or more print() or println() statements of the PrintWriter method covered by the ‘735 Patent.
11. The ‘735 Patent discloses and claims, in part, a method deploying timer means for generating an hyperlink address string structured as a PrintWriter method and an apparatus deploying timer means for receiving and processing an hyperlink address string structured as a PrintWriter method, said hyperlink address string structured as a

PrintWriter method having an out, writer, pw or ps parameter, for hyperlinking to a resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed printing predetermined printable output of said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed wherein said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed is defined within at least one print() or println() statement of a PrintWriter method. *See* '735 Patent at 16:12-27 and claims 1, 2, 4, 5-8, 14 and 24.

12. The '735 Patent discloses and claims, in part, said hyperlink address string structured as a PrintWriter method comprising a first attribute indicating a predetermined hyperlink address comprising a resource identifier identifying a resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed and a second attribute indicating one or a plurality of predetermined parameters defining predetermined printable output of said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed comprising at least one predetermined parameter instructing a PrintWriter to print said predetermined printable output of said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed. *See* '735 Patent at 3:22-33 and claims 1, 2 and 14.

13. The '735 Patent discloses and claims, in part, said one or a plurality of predetermined parameters defining predetermined printable output of said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed indicated in said second attribute of said hyperlink address string comprises a predetermined parameter defining a predetermined value of a predetermined copy control attribute of said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed. *See* '735 Patent at 3:65-67-4:1-3 and claims 2 and 11.
14. The '735 Patent discloses and claims, in part, "the first attribute indicating a predetermined hyperlink address to predetermined hyperlinked content may be a resource identifier to identify a resource related to a Java Virtual Machine (JVM) and an application executed in the JVM ... wherein ... said resource identifier comprises a unique identifier related to an application that is to be executed ... and ... an identifier of an application to which a resource consumer related to a resource belongs" *See* '735 Patent at 21:37-67-22:1-29 and claims 1, 2 and 14.
15. The '735 Patent discloses and claims, in part, a resource identifier identifying a resource in the initial array position of a list in which resource identifiers uniquely identifying resources are arrayed wherein "said resource [is] identified by a resource management system comprising: a resource consumer management unit which generates a resource consumer for each of threads wherein the resource consumer uses a resource and a resource allocation policy manager which defines a resource identifier enabling an

arbitrary resource to be uniquely identified” See ‘735 Patent at 21:41-67-22:1-32 and claims 1, 2 and 14.

16. In a Java Runtime subsystem, such as the Android Java Runtime subsystem accused herein, a resource may comprise a file descriptor identified by a file descriptor number or handle wherein a “Resource Manager” manages resource usage and “binds resource consumer threads in the application domain ... [using] [r]esource requests to allocate file descriptors” See

docs.oracle.com/javase/9/docs/api/jdk/management/resource/package-summary.html.

17. The ‘735 Patent discloses and claims, in part, said predetermined hyperlink address string comprises a character string and said resource identifier identifying a resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed comprises an URI or URL. See ‘735 Patent at 5:50-67-6:1-19 and 9:20-23, **FIG. 2, 6A, FIG. 3, 6B** and claims 2 and 3.

18. The ‘735 Patent discloses and claims, in part, said predetermined hyperlink address indicates http hyperlink means comprising an Http Post or an Http Get value wherein said predetermined hyperlink address may comprise a local storage address or an Internet web address. See ‘735 Patent at 2:48-50, 5:50-67-6:1-19, 9:19-20, **FIG. 2, 6A, FIG. 3, 6B** and claims 14, 19 and 20.

19. The ‘735 Patent discloses and claims, in part, said method deploying timer means further for encoding said hyperlink address string structured as a PrintWriter method for transmission in conjunction with program signals representative of said predetermined program material to a receiver for receiving said hyperlink address string structured as a

PrintWriter method in conjunction with said program signals representative of said predetermined program material. *See* ‘735 Patent at 7:66-67-8:1-28, **FIG. 1, 13 & 14** and claims 2, 13, 14, 15, 16 and 17.

20. The ‘735 Patent discloses and claims, in part, sending and thus, implicitly, sending to a receiver receiving, said hyperlink address string structured as a PrintWriter method in a class containing at least one print() or println() statement of a PrintWriter method. *See* ‘735 Patent at 16:12-27 and claims 1, 2 and 14.
21. The ‘735 Patent discloses and claims, in part, transforming said PrintWriter method from a receiver receiving said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed to a printer printing predetermined printable output of said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed according to said second attribute of said hyperlink address string. *See* ‘735 Patent at claims 1, 2 and 14.
22. The ‘735 Patent discloses and claims, in part, said hyperlinking to said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed comprises hyperlinking to said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed defined within at least one print() or println() statement of a PrintWriter method. *See* ‘735 Patent at 15:51-16:2, 16:12-26, 16:29-67-18:12 and claims 2 and 4.
23. The ‘735 Patent discloses and claims, in part, said hyperlinking to said resource in the initial array position of a list in which resource identifiers uniquely identifying resources

corresponding to predetermined program material are arrayed comprises hyperlinking or traversing through a list of one or more print() or println() statements of a PrintWriter method wherein said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material is defined within at least one print() or println() statement of the PrintWriter method. *See* '735 Patent at 7:48-56, 15:51-16:2, 16:12-26, 16:29-67-18-12 and claims 2 and 4.

24. The '735 Patent discloses and claims, in part, said hyperlinking to said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed activates said printing said predetermined printable output of said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed. *See* '735 Patent at 1:42-48, 11:41-47 and claims 1, 2 and 14.

25. The '735 Patent discloses and claims, in part, said timer means for temporally defining predetermined printable output of said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed wherein said timer means determines one or a plurality of timing instructions for said hyperlinking to said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed timely printing said predetermined printable output of said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are

arrayed according to said one or a plurality of predetermined parameters defining predetermined printable output of said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed indicated in said second attribute of said hyperlink address string wherein said one or a plurality of timing instructions comprise one or a plurality of respective offset values. *See* '735 Patent at 2:59-67-3:1-14, 10:28-43 and claims 2 and 9.

26. The '735 Patent discloses and claims, in part, said receiver for receiving said hyperlink address string structured as a PrintWriter method in conjunction with said program signals representative of said predetermined program material comprises said timer means. *See* '735 Patent at 9:59-61, 10:28-43, **FIG. 1, 22 & 26** and claims 14 and 18.
27. The '735 Patent discloses and claims, in part, said hyperlinking to said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed comprises seeking behavior. *See* '735 Patent at 2:50-55, 16:12-26 and claims 2 and 10.
28. The '735 Patent further discloses and claims, in part, predetermined activation of said hyperlinking to said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed. *See* '735 Patent at 1:60-67-2:1-5, 6:20-26, 7:24-47, 9:24-47, **FIG. 1, 30, 31 and 34** and claims 2, 12, 14, 21 and 22.
29. The '735 Patent discloses and claims, in part, said hyperlinking to said resource in the initial array position of a list in which resource identifiers uniquely identifying resources corresponding to predetermined program material are arrayed prints predetermined printable output of said resource in the initial array position of a list in which resource

identifiers uniquely identifying resources corresponding to predetermined program material are arrayed to display on a screen. *See* ‘735 Patent at 1:42-48, 11:41-47 and claims 1, 2 and 14.

30. The ‘735 Patent is valid and enforceable.

DEDENDANT GOOGLE’S INFRINGING ANDROID SYSTEM

31. Defendant Google operates a mobile communications infrastructure called the Android Platform connecting to applications from application developers and devices from device manufacturers. The Android Platform includes a software development kit for developing Android applications and an operating system featuring the “Android Runtime” for applications to run.

32. The Android operating system software deploys a “stack” consisting of Java applications running on a java-based object oriented application framework and core libraries running on the Android Runtime that features ahead-of-time (AOT) compilation.

33. Defendant Google actively distributes said Android system and promotes its use in applications by third party developers and manufacturers of receiving devices using the Android Runtime.

34. Defendant Google deploys certain source (.java) code classes called “Service Classes” comprising an Android application component representing predetermined program material comprising either performance of a background (daemon) service or supplying a functionality for another application or other applications to use (hereinafter termed “Service Class predetermined program material”). *See* <https://developer.android.com/reference/android/app/Service>.

35. Said Service Class predetermined program material comprises one or more of the following Service Classes: ActivityManagerService, AudioService, AutofillManagerService, BatteryService, BatteryStatsService, BluetoothManagerService, CarInputHandlingService, CarService, ConnectivityService, ContentService, DiskStatsService, ICarImpl, InputManagerService, InputMethodManagerService, InstrumentClusterRenderingService, LocationManagerService, MediaRouterService, MediaSessionsService, MultiClientInputMethodManagerService, PackageManagerService, PrintManagerService, RadioAppService, SoundTriggerHelper, StatsCompanionService, StatusBarManagerService, StorageManagerService, TelephonyRegistry, TvInputHardwareManager, TvInputManagerService, VoiceInteractionManagerService, VoiceInteractionManagerServiceImpl, VoiceInteractionSessionService, VoiceInteractor and VrManagerService. *See* Service Classes with infringing dump() PrintWriter methods and respective sets of one or more print() or println() statements of the dump() PrintWriter method listed at printhd.tv and **Defendant Google's Infringing Code Service Class Examples** listed below.

36. Said Service Class predetermined program material comprises a certain dump() PrintWriter method comprising the hyperlink address string structured as a PrintWriter method described and claimed in the invention of the '735 Patent. *See* '735 Patent at 16:9-10, 16:17-27 and 17:30-18:1 and Claims 2, 4, 5-8, 14 and 24 and **Defendant Google's Infringing Code Service Class Examples** listed below.

37. Said certain dump() PrintWriter method has the following structure:

```
dump (FileDescriptor fd, final PrintWriter writer, Str
```

`ing [] args)` { at least one `print()` or `println()` statement of the `dump()` `PrintWriter` method } wherein the first argument in the `dump()` `PrintWriter` method points to a file to write to, the second argument in the `dump()` `PrintWriter` method points to a `PrintWriter` buffer such as “out”, “writer” or “pw” where data is stored and the third argument in the `dump()` `PrintWriter` method comprises a size indicator such as the number of bytes to write from the `PrintWriter` buffer. *See* ‘735 Patent at Claims 4, 5, 6 and 7, [en.wikipedia.org/wiki/write_\(system_call\)](https://en.wikipedia.org/wiki/write_(system_call)) and **Defendant Google’s Infringing Code Service Class Examples** listed below.

38. Defendant Google’s direct infringement of all elements of at least Claims 2, 4, 6, 7 and 9 of the ‘735 Patent by generating said hyperlink address string structured as said certain `dump()` `PrintWriter` method in each of the `TvInputHardwareManager` and `TvInputManagerService`, Service Classes for live transmission of the Governor’s Town Hall comprised the following elements:

- 1) timer means for generating said hyperlink address string structured as said certain `dump()` `PrintWriter` method in each of said Service Classes determining offset values as timing instructions for each of one or more file descriptors generated as the first argument in said certain `dump()` `PrintWriter` method for all application input and output performed through said one or more file descriptors at one or more respective local hyperlink addresses (file descriptor numbers) at `/proc/pid/fd`, wherein PID is the process identifier, at associated offsets within the Android operating system;

- 2) a generator for temporally defining predetermined printable output of a file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed by determining said offset values as timing instructions enabling hyperlinking to a file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed timely printing predetermined printable output of the file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed for generating said hyperlink address string structured as said dump() PrintWriter method for transmission in conjunction with program signals representative of Service Class predetermined program material;
- 3) the dump() PrintWriter method transformed from a receiver receiving a file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to said Service Class predetermined program material are arrayed to a printer printing said predetermined printable output of said file descriptor resource in the initial array position of a list

in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to said Service Class predetermined program material are arrayed according to a second attribute of said hyperlink address string comprising a predetermined parameter instructing a PrintWriter to print predetermined printable output of said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to said Service Class predetermined program material are arrayed and

- 4) automatic activation means for said hyperlinking to said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to said Service Class predetermined program material are arrayed automatically activates said printing said predetermined printable output of said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to said Service Class predetermined program material are arrayed.

See '735 Patent at 5:50-67-6:1-19, 7:48-56, 9:20-23, 15:51-16:2, 16:12-26, 16:29-67-18-

12, **FIG. 2, 6A, FIG. 3, 6B** and claims 2, 4, 6, 7 and 9

<https://developer.android.com/studio/command-line/dumpsys>,

<https://developer.android.com/reference/android/app/Service> and Android Internals::A

Confectioner's Cookbook Vol I at 203, J. Levin (6/2015),

<https://wikileaks.org/ciav7p1/cms/files/AIvI-M-RL1.pdf> and **Defendant Google's**

Infringing Code Service Class Examples listed below.

39. In **Defendant Google's Infringing Code** deploying an hyperlink address string structured as a dump() PrintWriter method, a file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed is defined within at least one print() or println() statement of said dump() PrintWriter method. *See* '735 Patent at 2:48-50, 5:50-67-6:1-19, 9:19-20, **FIG. 2, 6A, FIG. 3, 6B** and claims 2, 4, 14, 19 and 20.

Android TV Contract

40. Defendant Google negotiates a "contract" for TV program content to be listed and transmitted as a live or pre-recorded event on Android TV wherein said contract is between the respective "TV Provider", e.g. local television station or broadcast or cable network, and a predetermined Android TV application for such listing and transmission on Android TV and said contract defines the basic database of TV content storing channel and program information from TV Inputs including metadata supplying respective local television station and broadcast or cable network TV Provider channel and program information to be stored in respective channels and programs tables in rows and columns representing information about the TV channel, typically channel number and name in the channels table and data describing the TV program including program title and start time and the TV Provider publishes and manages associated permissions so

that TV Inputs “can see only their own records”, e.g. the supplied TV channels and programs. See <https://developer.android.com/reference/android/media/tv/TvContract>.

41. Defendant Google negotiates such contract with each local television station and broadcast or cable network TV Provider for said listing and transmission of predetermined program material on Android TV.
42. Said database listings for each local Detroit television station and broadcast or cable network TV Provider include the following database fields populated by TV Inputs: 1) display: containing information that applications want to make visible to the user such as channel number and name and program title; 2) metadata: 3 subfields for identifying content: the channel’s transport stream, original network ID and Service ID; 3) internal data: for arbitrary information about the channel or program to be stored and 4) flag: to indicate whether the channel is to be restricted from search, browsing or viewing. See <https://source.android.com/devices/tv>.

dumpsys

43. During the Governor’s Town Hall live stream, **Defendant Google’s Infringing Code** specifically made available to participating local Detroit television stations a dumpsys tool for each pertinent Service Class to “ [p]rint the Service’s state into the given stream ... invoked if you run ‘adb shell dumpsys activity service <yourservicename>’ (note that for this command to work, the service must be running, and you must specify a fully-qualified service name)” using said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed to print to “FileDescriptor fd” as “[t]he raw file descriptor that the dump is being sent to”

wherein at least one predetermined parameter, e.g. “out”, “writer” or “pw”, comprises “[t]he PrintWriter to which you should dump your state ... [which] will be closed for you after you return”, and said “String[] args” for including any “additional arguments to the dump request”. See ‘735 Patent at 3:22-33 and claims 1, 2 and 14, <https://developer.android.com/reference/android/app/Service> and **Defendant Google’s Infringing Code Service Class Examples** listed below.

44. Prior to the Governor’s Town Hall, on information and belief, Defendant Google encouraged, promoted and instructed (at least through the Android web postings below) step-by-step participating local Detroit television station Android application developers on use of said dumpsys tool that runs on an Android device to provide information, predetermined printable output of said dump() PrintWriter method in the pertinent Service Class, about system services by calling dumpsys from the command line using adb to get diagnostic output for all system services running on a connected device:

“[t]his output is typically more verbose than you may want, so use the command line options described below to get output for only the system services you’re interested in. This page also describes how to use dumpsys to accomplish common tasks such as inspecting input, RAM, battery, or network diagnostics.. The general syntax for using dumpsys is as follows:

```
adb shell dumpsys [-t timeout] [--help | -l | --skip services | service
[arguments] | -c | -h]
```

To get a diagnostic output for all system services for your connected device, simply run `adb shell dumpsys`. However, this outputs far more information than you would typically want. For more manageable output, specify the service you want to examine by including it in the command. For example, the command below provides system data for input components, such as touchscreens or built-in keyboards:

```
adb shell dumpsys input[.]”
```

See developer.android.com/studio/command-line/dumpsys.

45. Prior to the Governor's Town Hall live stream, on information and belief, Defendant Google provided specific instructions (at least on the web) to local Detroit television station Android application developers on how to produce dumpsys predetermined printable output, using the steps and means described and claimed in the invention of the '735 Patent, to display user-input information: "[s]pecify the input service, as shown below, dumps the state of the system's input devices, such as keyboards and touchscreens, and the processing of input devices. Adb shell dumpsys input[...] ... The following is a sample of what you might see when inspecting the **Event Hub State** of the input diagnostics: INPUT MANAGER (dumpsys input) Event Hub State:" This is the identical output produced by the two println() statements of the dump() PrintWriter method listed for InputManagerService Service Class, as described and claimed in the invention of the '735 Patent, at printhd.tv. See developer.android.com/studio/command-line/dumpsys and <http://printhd.tv/55-input-service/19-inputmanagerservice>.

46. On information and belief, Defendant Google caused third party application developers from participating local Detroit television stations during the Governor's Town Hall live stream to output at least one of the following print() or println() statements containing the word "input" in the InputMethodManagerService:

Statements^{1, 2, 3, 7, 12, 19, 25, 27, 28, 30, 31, 33, 35 & 36} of InputMethodManagerService to output respectively "Current Input Method Manager state:"¹,
 " Input Methods :
 mMapUpdateCount=" + mMapUpdateCount,"²,
 " InputMethod #" + i + ":"³, "
 inputContext=" + ci.inputContext⁷, "

```
mCurFocusedWindow=" + mCurFocusedWindow + "  
  
softInputMode=" +InputMethodDebug.softInputModeToStr  
ing(mCurFocusedWindowSoftInputMode) + "  
  
client=" + mCurFocusedWindowClient12,  
  
mInputShown=" + mInputShown19, "  
  
mStartInputHistory:"25, "Failed to dump input method  
client: " + e27, "No input method client."28, "Warning:  
Current input method client doesn't match the last  
focused. " + "window."30, "Dumping input method  
client in the last focused window just in  
case."31, "Failed to dump input method client in  
focused window: " + e33, "Failed to dump input method  
service: " + e35 and "No input method service."36. See  
https://android.googlesource.com/platform/docs/source.android.com/+590a9d61cfdbbe6cfb209c5ef3769e8ab76a6bf2/src/tech/input/dumpsys.md, Claims 14 and 24 of the '735  
Patent.
```

47. On information and belief, Defendant Google also provided prior to the Governor's Town Hall live stream specific instructions (at least on the web) to participating local Detroit television station Android application developers on how to produce predetermined printable output, using the steps and means described and claimed in the invention of the '735 Patent, to display battery diagnostic information: "[s]pecify the batterystats service generates interesting statistical data about battery usage on a device,

organized by unique user ID (UID) The command for batterystats is as follows: adb shell dumpsys batterystats options[.]”*See* developer.android.com/studio/command-line/dumpsys. During the Governor’s Town Hall live stream, on information and belief, participating local Detroit television station Android application developers invoked this command for batterystats to then link to the BatteryStatsService Service Class and jump to the dump() PrintWriter method listed at said BatteryStatsService Service Class to then process the 11 println() statements of the dump() PrintWriter method to produce predetermined printable output for display on a dumpsys terminal. *See* Patent at Claims 2, 4 and 7, developer.android.com/studio/command-line/dumpsys.

48. **Defendant Google’s Infringing Code** encodes said hyperlink address string structured as a PrintWriter method for transmission in conjunction with program signals representative of said Service Class predetermined program material to a receiver for receiving said hyperlink address string structured as a PrintWriter method in conjunction with program signals representative of said Service Class predetermined program material in Android application developer implementation of the Android dumpsys tool. *See* ‘735 Patent at 7:66-67-8:1-28, **FIG. 1, 13 & 14** and claims 2, 13, 14, 15, 16 and 17 and <https://developer.android.com/studio/command-line/dumpsys>, and **Defendant Google’s Infringing Code Service Class Examples** listed below.

49. **Defendant Google’s Infringing Code** deploys timer means for temporally defining predetermined printable output of said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed wherein said timer means determines one or a plurality of timing instructions for said

hyperlinking to said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed timely printing predetermined printable output of said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed according to Statement Parameters comprising said one or a plurality of predetermined parameters defining predetermined printable output of said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed indicated in said second attribute of said hyperlink address string structured as a PrintWriter method wherein said one or a plurality of timing instructions comprise one or a plurality of respective offset values in Android application developer implementation of the Android dumpsys tool. *See* ‘735 Patent at 2:59-67-3:1-14, 10:28-43 and claims 2 and 9, <https://developer.android.com/studio/command-line/dumpsys> and **Defendant Google’s Infringing Code Service Class Examples** listed below.

50. **Defendant Google’s Infringing Code** deploys a receiver comprising timer means for setting said one or a plurality of respective offset values for processing said hyperlink address string structured as a PrintWriter method in conjunction with program signals representative of Service Class predetermined program material in Android application developer implementation of the Android dumpsys tool. *See* ‘735 Patent at 9:59-61, 10:28-43, **FIG. 1, 22 & 26** and claims 14 and 18,

<https://developer.android.com/studio/command-line/dumpsys> and **Defendant Google's Infringing Code Service Class Examples** listed below.

51. **Defendant Google's Infringing Code** hyperlinking to said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed comprises seeking to associated offset values in Android application. *See* '735 Patent at 2:50-55, 16:12-26 and claims 2 and 10,

<https://developer.android.com/studio/command-line/dumpsys> and **Defendant Google's Infringing Code Service Class Examples** listed below.

52. **Defendant Google's Infringing Code** deploys said hyperlinking to said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed for an application developer printing predetermined printable output of said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed to display on a screen using the Android dumpsys tool. *See* '735 Patent at 1:42-48, 11:41-47 and claims 1, 2 and 14, <https://developer.android.com/studio/command-line/dumpsys> and **Defendant Google's Infringing Code Service Class Examples** listed below.

53. **Defendant Google's Infringing Code** hyperlinks to said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed defined within at least one print() or println() Statement of a

PrintWriter method by Android application developer implementation of the Android dumphsys tool. *See* '735 Patent at 15:51-16:2, 16:12-26, 16:29-67-18:12 and claims 2 and 4, <https://developer.android.com/studio/command-line/dumphsys> and **Defendant Google's Infringing Code Service Class Examples** listed below.

54. **Defendant Google's Infringing Code** hyperlinks to said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed by hyperlinking or traversing through a list of one or more print() or println() statements of a PrintWriter method wherein said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material is defined within at least one print() or println() statement of the PrintWriter method by Android application developer implementation of the Android dumphsys tool. *See* '735 Patent at 7:48-56, 15:51-16:2, 16:12-26, 16:29-67-18-12 and claims 2 and 4, <https://developer.android.com/studio/command-line/dumphsys> and **Defendant Google's Infringing Code Service Class Examples** listed below.

55. **Defendant Google's Infringing Code** hyperlinking to said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed activates printing predetermined printable output of said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed in Android application developer

implementation of the Android dumsys tool. *See* ‘735 Patent at 1:42-48, 11:41-47 and claims 1, 2 and 14, <https://developer.android.com/studio/command-line/dumpsys> and **Defendant Google’s Infringing Code Service Class Examples** listed below.

56. **Defendant Google’s Infringing Code** transforms said PrintWriter method from a receiver receiving said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed to a printer printing predetermined printable output of said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed according to a second attribute of said hyperlink address string structured as a PrintWriter method by Android application developer implementation of the Android Dumpsys tool. *See* ‘735 Patent at claims 1, 2 and 14, <https://developer.android.com/studio/command-line/dumpsys> and **Defendant Google’s Infringing Code Service Class Examples** listed below.

57. **Defendant Google’s Infringing Code** deploys predetermined activation of hyperlinking to said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed in Android application developer implementation of the Android dumsys tool. *See* ‘735 Patent at 1:60-67-2:1-5, 6:20-26, 7:24-47, 9:24-47, **FIG. 1, 30 & 31** and claims 2, 12, 14 and 21, <https://developer.android.com/studio/command-line/dumpsys> and **Defendant Google’s Infringing Code Service Class Examples** listed below.

58. **Defendant Google's Infringing Code** deploys a tool device comprising a browser operably coupled to a processor and a hyperlink address string structured as a PrintWriter method comprising a first attribute indicating a predetermined hyperlink address comprising a file descriptor resource identifier identifying file descriptor resource in the initial array position of a list in which file descriptor resources corresponding to Service Class predetermined program material are arrayed, a second attribute comprising Statement Parameters and a third attribute indicating said browser is automatically activated wherein said apparatus further comprises:

means for automatically activating said browser to automatically hyperlink to said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed responsive to said third attribute.

See '735 Patent at 1:60-67-2:1-5, 6:20-26, 7:24-47, 9:24-47, **FIG. 1, 34** and claims 14 and 22, <https://developer.android.com/studio/command-line/dumpsys> and **Defendant Google's Infringing Code Service Class Examples** listed below.

59. Said tool device deployed by **Defendant Google's Infringing Code** comprises a dumpsys tool device and/or an Android Debug Bridge (adb) tool. *See* <https://developer.android.com/studio/command-line/adb>.

TV Input Element in Android TV Contract

60. A key element in negotiating such Android TV contract between TV Provider and Application is the input, provided as "TV Input" or other input, to constitute the predetermined program material to be listed and transmitted via Android TV.

61. In negotiating such Android TV contract on behalf of the Android TV system, Defendant Google is aware of the key importance of said TV Input element or willfully blind of such key importance to a TV Provider in negotiating such Android TV contract.

TvInputHardwareManager and TvInputManagerService

62. TV Provider dumsys access during the streaming of TV Provider predetermined program material provides critical information on said key TV Input element in the TvInputHardwareManager Service Class comprising 13 print() or println() statements of the dump PrintWriter method wherein said dumsys access by a TV Provider directly infringes all elements of at least one of Claims 2, 4, 6, 7, 14, 22 and 24 of the '735 Patent while providing predetermined printable output of each of the 13 print() or println() statements of the dump PrintWriter method represented in the chart below.

<u>Println() Statement# of the dump() PrintWriter Method</u>	<u>Predetermined Printable Output</u>
Println() Statement ¹	<code>"TvInputHardwareManager Info:"</code>
Println() Statement ²	<code>"mConnections: deviceId -> Connection"</code>
Println() Statement ³	<code>deviceId + ": " + mConnection</code>
Println() Statement ⁴	<code>"mHardwareList:"</code>
Println() Statement ⁵	<code>tvInputHardwareInfo</code>
Println() Statement ⁶	<code>"mHdmiDeviceList:"</code>
Println() Statement ⁷	<code>hdmiDeviceInfo</code>
Println() Statement ⁸	<code>"mHardwareInputIdMap: deviceId -> inputId"</code>
Println() Statement ⁹	<code>deviceId + ": " + inputId</code>
Println() Statement ¹⁰	<code>"mHdmiInputIdMap: id -> inputId"</code>

```

println() Statement11           id + ": " + inputId
println() Statement12       "mInputMap: inputId -> inputInfo"
println() Statement13  entry.getKey() + ": " + entry.getValue();
    
```

See TvInputHardware example in **Defendant Google’s Infringing Code Service Class Examples** listed below and ‘735 Patent at Claims 2, 4, 6, 7, 14, 22 and 24.

63. TV Provider dumpsys access during the streaming of TV Provider predetermined program material provides critical information on said key TV Input element in the TvInputManagerService Service Class comprising 35 print() or println() statements of the dump PrintWriter method wherein said dumpsys access by a TV Provider directly infringes all elements of at least one of Claims 2, 4, 6, 7, 14, 22 and 24 of the ‘735 Patent while providing predetermined printable output of each of the 35 print() or println() statements of the dump PrintWriter method represented in the chart below.

<u>println() Statement# of the dump() PrintWriter Method</u>	<u>Predetermined Printable Output</u>
println() Statement ¹	"User Ids (Current user: " + mCurrentUserId + "):"
println() Statement ²	Integer.valueOf(userId)
println() Statement ³	"UserState (" + userId + "):"
println() Statement ⁴	"inputMap: inputId -> TvInputState"
println() Statement ⁵	entry.getKey() + ": " + entry.getValue()
println() Statement ⁶	"packageSet:"
println() Statement ⁷	packageName

```

Println() Statement8      "clientStateMap: ITvInputClient ->
                           ClientState"

Println() Statement9      entry.getKey() + ": " + client

Println() Statement10     "sessionTokens:"

Println() Statement11     " " + token

Println() Statement12     "clientTokens: " + client.clientToken

Println() Statement13     "userId: " + client.userId

Println() Statement14     "serviceStateMap: ComponentName ->
                           ServiceState"

Println() Statement15     entry.getKey() + ": " + service

Println() Statement16     "sessionTokens:"

Println() Statement17     " " + token

Println() Statement18     "service: " + service.service

Println() Statement19     "callback: " + service.callback

Println() Statement20     "bound: " + service.bound

Println() Statement21     "reconnecting: " + service.reconnecting

Println() Statement22     "sessionStateMap: ITvInputSession ->
                           SessionState"

Println() Statement23     entry.getKey() + ": " + session

Println() Statement24     "inputId: " + session.inputId

Println() Statement25     "client: " + session.client

```

```

Println() Statement26           "seq: " + session.seq
Println() Statement27       "callingUid: " + session.callingUid
Println() Statement28       "userId: " + session.userId
Println() Statement29 "sessionToken: " + session.sessionToken
Println() Statement30       "session: " + session.session
Println() Statement31       "logUri: " + session.logUri
Println() Statement32       "hardwareSessionToken:
                               " + session.hardwareSessionToken
Println() Statement33       "mCallbacks: "
Println() Statement34 "userState.mCallbacks.getRegisteredCallback
                               Item(j).toString()
Println() Statement35       "mainSessionToken:
                               " + userState.mainSessionToken
    
```

See TvInputManagerService example in **Defendant Google’s Infringing Code Service Class Examples** listed below and ‘735 Patent at Claims 2, 4, 6, 7, 14, 22 and 24.

The Governor’s Town Hall

64. On or about 4/2/20 Defendant Google directly infringed of all elements of at least Claims 2, 4, 6, 7 and 9 of the ‘735 Patent by generating said certain dump() PrintWriter method in each of the TvInputHardwareManager and TvInputManagerService Service Classes for live transmission of the virtual “Governor’s Town Hall” between 7:00 and 8:00 pm on 4/2/20 via Android TV in conjunction with program signals representative of the Governor’s Town Hall and committed indirect infringement thereof by encouraging,

promoting and instructing on infringing dumpsys access to valuable information concerning the live transmission, by several Detroit local television stations jointly executing the Android TV application and streaming the Governor's Town Hall via their respective local television signals on Android TV and, on information and belief, access (hyperlink to and print) valuable dumpsys information during the live stream. See Detroit Television Stations Partner on Virtual 'Governor's Town Hall' @ <https://tvnewscheck.com/article/247009/247009/>, the "'735 Patent at Claims 2, 4, 6, 7 and 9 and **Defendant Google's Infringing Code Service Class Examples** listed below.

65. On information and belief, said Governor's Town Hall was listed and transmitted as a live event on Android TV pursuant to "a standard API for manufacturers to create input modules for controlling Android TV, and enables live TV search and recommendations via metadata published by the TV Input." See <https://source.android.com/devices/tv>.
66. On information and belief, said Governor's Town Hall was negotiated in a "contract" to be listed and transmitted as a live event on Android TV in advance of any listing or transmission on Android TV, said contract between the respective "TV Provider", e.g. local Detroit television station or broadcast or cable network, and a predetermined Android TV application for such listing and transmission on Android TV wherein said contract defines the basic database of TV content storing channel and program information from TV Inputs including metadata supplying respective local Detroit television station channel and program information for the Governor's Town Hall to be stored in respective channels and programs tables in rows and columns representing information about the TV channel typically channel number and name in the channels table and data describing the TV program, e.g. the Governor's Town Hall live event,

including program title and start time and the TV Provider publishes and manages associated permissions so that TV Inputs “can see only their own records”, e.g. the supplied TV channels and programs. *See*

<https://developer.android.com/reference/android/media/tv/TvContract>.

67. On information and belief, Defendant Google negotiated such contract with each local Detroit television station participating in the Governor’s Town Hall live event in advance of the live event or other predetermined program material for said listing and transmission of the live event on Android TV.

68. On information and belief, said database listing for each participating local Detroit television station included the following database fields populated by TV Inputs: 1) display: containing information that applications want to make visible to the user such as channel number and name and program title; 2) metadata: 3 subfields for identifying content: the channel’s transport stream, original network ID and Service ID; 3) internal data: for arbitrary information about the channel or program to be stored and 4)flag: to indicate whether the channel is to be restricted from search, browsing or viewing. *See* <https://source.android.com/devices/tv>.

69. On information and belief, in negotiating said contract for the Governor’s Town Hall to be listed and transmitted as a live event on Android TV by each of the participating Detroit television stations, Defendant Google was aware of or willfully blind to the fact that such contract would require each the participating local Detroit television stations to execute said certain dump() PrintWriter methods specified below in the Android TV Service Classes TvInputHardwareManager and TvInputManagerService. *See* **Defendant Google’s Infringing Code Service Class Examples** listed below.

70. On information and belief, said contract for the Governor's Town Hall to be listed and transmitted as a live event on Android TV induced third party application developers at local Detroit television stations to execute, respectively, the `TvInputHardwareManager Service Class` comprising 13 `println()` statements of the `dump PrintWriter` method and the `TvInputManagerService Service Class` comprising 35 `println()` statements of the `dump PrintWriter` method during the Governor's Town Hall live event on Android TV between 7-8 pm on 4/2/20 to directly infringe all elements of at least one of Claims 2, 4, 6, 7, 14, 22 and 24 of the '735 Patent to output said predetermined printable output of each of the respective 13 `println()` statements and 35 `println()` statements of the `dump PrintWriter` methods in the `TvInputHardwareManager` and `TvInputManagerService Service Classes`.
71. On information and belief, Defendant Google was aware or was willfully blind to the fact that its agreeing to list and transmit as a live event on Android TV via the respective local Detroit television stations would induce third party application developers at the local Detroit television stations to execute, respectively, the `TvInputHardwareManager Service Class` comprising 13 `println()` statements of the `dump PrintWriter` method and the `TvInputManagerService Service Class` comprising 35 `println()` statements of the `dump PrintWriter` method during the Governor's Town Hall live event on Android TV between 7-8 pm on 4/2/20 to directly infringe all elements of at least one of Claims 2, 4, 6, 7, 14, 22 and 24 of the '735 Patent to output said predetermined printable output of each of the respective 13 `println()` statements and 35 `println()` statements of the `dump PrintWriter` methods in the `TvInputHardwareManager` and `TvInputManagerService Service Classes`.
72. One information and belief, Defendant Google is aware or willfully blind to the fact that said `dump()` `PrintWriter` method including one or more `print()` or `println()` statements of

the dump() PrintWriter method listed in **Defendant Google's Infringing Code** is or are specifically designed for use in infringement of the '735 Patent. Due to the specific design of said dump() PrintWriter method including one or more print() or println() statements as the claimed hyperlink address string structured as a PrintWriter method, said dump() PrintWriter method including one or more print() or println() statements of the dump() PrintWriter method listed in **Defendant Google's Infringing Code** do not have any substantial non-infringing use.

73. On information and belief, Defendant Google's active inducement of infringement has occurred with the specific intent of encouraging local Detroit television stations participating in the Governor's Town Hall live stream and/or Android application developers on behalf of the local Detroit television stations to directly infringe or willful blindness to the fact that such Android TV contract would induce such direct infringement of the '735 Patent by, *inter alia*, providing specifications and instructions for the installation and operation the Android TV dumpsys tool. *See* '735 Patent at Claims 2-13, 14, 22 and 24.
74. By actively promoting and encouraging said third party developers to invoke the Android dumpsys tool on currently active services, Defendant Google promotes and encourages said third party application developers to directly infringe all the elements of at least one of Claims 2, 4, 6 and 7 of the '735 Patent. *See* '735 Patent at Claims 2, 4, 6 and 7.
75. On information and belief, said Android TV contract for the Governor's Town Hall live stream to be listed and transmitted as a live event on Android TV induced third party application developers at local Detroit television stations to execute, respectively, the TvInputHardwareManager Service Class comprising 13 println() statements of the dump

PrintWriter method and the TvInputManagerService Service Class comprising 35 println() statements of the dump PrintWriter method during the Governor's Town Hall live event on Android TV between 7-8 pm on 4/2/20 to directly infringe all elements of at least one of Claims 2, 4, 6, 7, 14, 22 and 24 of the '735 Patent to output said predetermined printable output of each of the respective 13 println() statements and 35 println() statements of the dump PrintWriter methods in the TvInputHardwareManager and TvInputManagerService Service Classes.

Defendant Google's Infringing Code Service Class Examples

76. **Defendant Google's Infringing Code** hyperlink address string structured as a PrintWriter method infringes the '735 Patent in every Service Class in the Android system and/or dumpsys tool containing such a hyperlink address string structured as a PrintWriter method including the TvInputHardwareManager Service Class wherein the file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to TvInputHardwareManager Service Class predetermined program material is defined within at least one of print() or println() statements¹⁻¹³ of the PrintWriter method having a pw parameter.

```
public void dump (FileDescriptor fd, final PrintWriter writer, String[] args) {
    1pw.println("TvInputHardwareManager Info:");
    2pw.println("mConnections: deviceId ->
                Connection");
    3pw.println(deviceId + ": " + mConnection);
    4pw.println("mHardwareList:");
```

```

5pw.println(tvInputHardwareInfo);

6pw.println("mHdmiDeviceList:");

7pw.println(hdmiDeviceInfo);

8pw.println("mHardwareInputIdMap: deviceId -
    > inputId");

9pw.println(deviceId + ": " + inputId);

10pw.println("mHdmiInputIdMap: id ->
    inputId");

11pw.println(id + ": " + inputId);

12pw.println("mInputMap: inputId ->
    inputInfo");

13pw.println(entry.getKey() + ":
" + entry.getValue());

    }

```

See <http://printhd.tv/67-tv-input-service/31-tvinputhardwaremanager> citing <https://android.googlesource.com/platform/frameworks/base/+master/services/core/java/com/android/server/tv/TvInputHardwareManager.java> at lines 552-609.

77. **Defendant Google's Infringing Code** hyperlink address string structured as a PrintWriter method infringes the '735 Patent in every Service Class in the Android system and/or dumpsys tool containing such a hyperlink address string structured as a PrintWriter method including the TvInputManagerService Service Class wherein the file descriptor resource in the initial array position of a list in which file descriptor resource

identifiers uniquely identifying file descriptor resources corresponding to TvInputManagerService Service Class predetermined program material is defined within at least one of print() or println() statements¹⁻³⁵ of the PrintWriter method having a pw parameter.

```
protected void dump(FileDescriptor fd, final PrintWriter
                    writer, String[] args) {

    1pw.println("User Ids (Current user:
                " + mCurrentUserId + "):");

    2pw.println(Integer.valueOf(userId));

    3pw.println("UserState (" + userId + "):");

    4pw.println("inputMap: inputId -> TvInputState");

    5pw.println(entry.getKey() + ": " + entry.getValue());

    6pw.println("packageSet:");

    7pw.println(packageName);

    8pw.println("clientStateMap: ITvInputClient ->
                ClientState");

    9pw.println(entry.getKey() + ": " + client);

    10pw.println("sessionTokens:");

    11pw.println("" + token);

    12pw.println("clientTokens: " + client.clientToken);

    13println("userId: " + client.userId);
```

```
14 pw.println("serviceStateMap: ComponentName ->  
    ServiceState");  
  
15 pw.println(entry.getKey() + ": " + service);  
  
16 pw.println("sessionTokens:");  
  
17 pw.println(" " + token);  
  
18 pw.println("service: " + service.service);  
  
19 pw.println("callback: " + service.callback);  
  
20 pw.println("bound: " + service.bound);  
  
21 pw.println("reconnecting: " + service.reconnecting);  
  
22 pw.println("sessionStateMap: ITvInputSession ->  
    SessionState");  
  
23 pw.println(entry.getKey() + ": " + session);  
  
24 pw.println("inputId: " + session.inputId);  
  
25 pw.println("client: " + session.client);  
  
26 pw.println("seq: " + session.seq);  
  
27 pw.println("callingUid: " + session.callingUid);  
  
28 pw.println("userId: " + session.userId);  
  
29 pw.println("sessionToken: " + session.sessionToken);  
  
30 pw.println("session: " + session.session);  
  
31 pw.println("logUri: " + session.logUri);
```

```
32 pw.println("hardwareSessionToken:
    " + session.hardwareSessionToken);

33 pw.println("mCallbacks:");

34 pw.println(userState.mCallbacks.getRe
    gisteredCallbackItem(j).toString());

35 pw.println("mainSessionToken:
    " + userState.mainSessionToken);

    }
```

See <http://printhd.tv/67-tv-input-service/32-tvinputmanagerservice> citing <https://android.googlesource.com/platform/frameworks/base/+master/services/core/java/com/android/server/tv/TvInputManagerService.java> at lines 2007-2123.

**COUNT I: DEFENDANT GOOGLE INFRINGEMENT
OF U.S. PATENT RE47,735**

78. Progme re-alleges paragraphs 1-77 as if fully set forth herein.
79. At least since Defendant Google received service of this Complaint, the service of the original Complaint for Patent Infringement against Defendant Google on 6/1/18 and/or the service of the First Amended Complaint for Patent Infringement on 4/13/20, Defendant Google has had knowledge of the ‘735 Patent-in-suit or has been willfully blind to the existence of the ‘735 Patent-in-suit.
80. On information and belief, Defendant Google continues to infringe the ‘735 Patent after being made aware of the existence and Defendant Google’s infringement of the ‘735 Patent at least from actual notice from service of this Complaint, the service of the original Complaint for Patent Infringement against Defendant Google on 6/1/18 and/or service of the First Amended Complaint for Patent Infringement on 4/13/20.

81. Defendant Google has been and is now directly infringing and/or indirectly infringing the ‘735 Patent by way of inducement and/or contributory infringement, literally and/or under the doctrine of equivalents, in this District, and elsewhere, in violation of 35 U.S.C. § 271, including by making, using, selling and/or offering for sale in the United States or importing into the United States, one or more Android SDKs and/or Android applications generating and/or encoding one or more portions of **Defendant Google’s Infringing Code** documented above including during the Governor’s Town Hall live stream on 4/2/20. Defendant Google contributes to and induces the direct infringement of the ‘735 Patent by local Detroit television stations and/or Android application developers acting on behalf of the local Detroit television stations including during the Governors Town Hall live stream on 4/2/20 using the Android dumpsys tool. Defendant Google contributes to and induces the direct infringement of the ‘735 Patent by Android application developers including during the Governor’s Town Hall live stream on 4/2/20 and specifically including incorporating Android operating systems and Android applications in Android devices generating and/or encoding one or more portions of **Defendant Google’s Infringing Code** documented above.

82. Defendant Google directly infringed and, on information and belief, continues to directly infringe, at least Claims 2, 4, 6, 7 and 9 of the ‘735 Patent by generating said hyperlink address string structured as said certain dump() PrintWriter method in each Service Class of said Service Class predetermined program material for transmission in conjunction with said program signals representative of said Service Class predetermined program material including during the Governor’s Town Hall live stream on 4/2/20.

83. Defendant Google in its Android system and/or dumpsys tool, by generating and/or encoding one or more portions of **Defendant Google's Infringing Code** documented above, has been including during the Governor's Town Hall live stream on 4/2/20 and is now infringing the '735 Patent, directly and indirectly by way of inducement and/or contributory infringement.
84. Defendant Google actively and knowingly has infringed including during the Governor's Town Hall live stream on 4/2/20 and infringes the '735 Patent with knowledge of Progme's patent rights and without reasonable basis for believing that Defendant Google's conduct is lawful. Defendant Google has also induced and contributed including during the Governor's Town Hall live stream on 4/2/20 and continues to induce and contribute to the infringement of the '735 Patent by third party developers developing applications using one or more portions of **Defendant Google's Infringing Code** documented above. Defendant Google's acts of infringement have been and continue to be willful, deliberate and in reckless disregard of, or alternatively willfully blind to, Progme's patent rights. Defendant Google is thus liable to Progme for infringement of the '735 Patent pursuant to 35 USC § 271.
85. On or about 4/2/20 Defendant Google directly infringed of all elements of at least Claims 2, 4, 6, 7 and 9 of the '735 Patent by generating said certain dump() PrintWriter method in each of the TvInputHardwareManager and TvInputManagerService Service Classes for live transmission of the virtual "Governor's Town Hall" between 7:00 and 8:00 pm on 4/2/20 via Android TV in conjunction with program signals representative of the Governor's Town Hall.

86. Also on or about 4/2/20 Defendant Google committed indirect infringement of at least Claims 2, 4, 6, 7 and 9 of the '735 Patent by encouraging, promoting and instructing on the direct infringement of at least Claims 2, 4, 6, 7 and 9 of the '735 Patent by several Detroit local television stations jointly executing the Android TV application and streaming the Governor's Town Hall live event via their respective local television signals on Android TV.
87. Defendant Google, in negotiating said Android TV contract for the Governor's Town Hall live stream to be listed and transmitted as a live event on Android TV by each of the participating Detroit television stations, was aware of or willfully blind to the fact that such contract would induce each the participating local Detroit television stations to execute said certain dump() PrintWriter methods specified above in the Android TV Service Classes TvInputHardwareManager and TvInputManagerService and thereby directly infringe at least one of Claims 2, 4, 6, 7, 9, 14, 22 and 24 of the '735 Patent.
88. Defendant Google, in negotiating said Android TV contract for the Governor's Town Hall live stream to be listed and transmitted as a live event on Android TV by each of the participating Detroit television stations, was aware of or willfully blind to the fact that such contract did, on information and belief, induce each the participating local Detroit television stations to execute said certain dump() PrintWriter methods specified above in the Android TV Service Classes TvInputHardwareManager and TvInputManagerService and thereby directly infringed at least one of Claims 2, 4, 6, 7, 9, 14, 22 and 24 of the '735 Patent.
89. On information and belief, at least one of the local Detroit televisions participating in the Governor's Town Hall live stream on its own or through an Android application

developer acting on its behalf directly infringed at least one of Claims 2, 4, 6, 7, 9, 14, 22 and 24 of the '735 Patent by invoking said certain dump() PrintWriter methods specified above in at least one of the Android TV Service Classes TvInputHardwareManager and TvInputManagerService.

90. On information and belief, said Android TV contract for the Governor's Town Hall to be listed and transmitted as a live event on Android TV induced third party application developers at local Detroit television stations to invoke via the Android TV dumpsys tool, respectively, the TvInputHardwareManager Service Class comprising 13 println() statements of the dump PrintWriter method and the TvInputManagerService Service Class comprising 35 println() statements of the dump PrintWriter method during the Governor's Town Hall live event on Android TV between 7-8 pm on 4/2/20 to output said predetermined printable output of each of the respective 13 println() statements and 35 println() statements of the dump PrintWriter methods in the TvInputHardwareManager and TvInputManagerService Service Classes and thereby directly infringe all elements of at least one of Claims 2, 4, 6, 7, 14, 22 and 24 of the '735 Patent.

91. On information and belief, Defendant Google was aware of or was willfully blind to the fact that its agreeing to list and transmit as a live event on Android TV via the respective local Detroit television stations, especially combined with Defendant Google providing specifications and instructions for the installation and operation the Android TV dumpsys tool on the Android web page, would induce third party application developers at the local Detroit television stations to invoke, respectively, the TvInputHardwareManager Service Class comprising 13 println() statements of the dump PrintWriter method and the

TvInputManagerService Service Class comprising 35 println() statements of the dump PrintWriter method during the Governor's Town Hall live event on Android TV between 7-8 pm on 4/2/20 to output said predetermined printable output of each of the respective 13 println() statements and 35 println() statements of the dump PrintWriter methods in the TvInputHardwareManager and TvInputManagerService Service Classes and thereby directly infringe all elements of at least one of Claims 2, 4, 6, 7, 14, 22 and 24 of the '735 Patent.

92. One information and belief, Defendant Google is aware or willfully blind to the fact that said dump() PrintWriter method including one or more print() or println() statements of the dump() PrintWriter method listed in **Defendant Google's Infringing Code** is or are specifically designed for use in infringement of the '735 Patent. Due to the specific design of said dump() PrintWriter method including one or more print() or println() statements as the claimed hyperlink address string structured as a PrintWriter method, said dump() PrintWriter method including one or more print() or println() statements of the dump() PrintWriter method listed in **Defendant Google's Infringing Code** do not have any substantial non-infringing use.
93. Based on the reasonable foreseeability of a participating local Detroit television station TV Provider in the Android TV contract invoking the dumpsys tool to access TV Input information providing key information about the TV Provider's predetermined program material listed and transmitted via Android TV, Defendant Google's active inducement of infringement has occurred with the specific intent of encouraging local Detroit television stations participating in the Governor's Town Hall live stream on their own or through

Android application developers to directly infringe or willful blindness to the fact that such Android TV contract would induce such direct infringement of the '735 Patent.

94. At least since obtaining knowledge of the '735 Patent, Defendant Google has indirectly infringed including during the Governor's Town Hall live stream on 4/2/20 and continues to indirectly infringe the '735 Patent by actively inducing infringement of one or more method claims 2-13 of the '735 Patent by third party developers in violation of 35 USC § 271(b) and contributorily infringing one or more of method claims 2-13 of the '735 Patent based on third party developers' direct infringement including during the Governor's Town Hall live stream on 4/2/20 in violation of 35 USC § 271(c).

95. One information and belief, Defendant Google is aware or willfully blind to the fact that said dump() PrintWriter method including one or more print() or println() statements of the dump() PrintWriter method listed in **Defendant Google's Infringing Code** documented above is or are specifically designed for use in infringement of the '735 Patent. Due to the specific design of said dump() PrintWriter method including one or more statements as the claimed hyperlink address string structured as a PrintWriter method, said dump() PrintWriter method including one or more print() or println() statements of the dump() PrintWriter method listed in **Defendant Google's Infringing Code** documented above do not have any substantial non-infringing use.

**COUNT II: DEFENDANT GOOGLE INFRINGEMENT
OF U.S. PATENT RE47,735**

96. Progme re-alleges paragraphs 1-96 as if fully set forth herein.

97. At least since Defendant Google received service of this complaint, the service of the original Complaint for Patent Infringement against Defendant Google on 6/1/18 and/or

the service of the First Amended Complaint for Patent Infringement on 4/13/20, Defendant Google has had knowledge of the '735 Patent-in-suit or has been willfully blind to the existence of the '735 Patent-in-suit.

98. Defendant Google continued to infringe the '735 Patent after being made aware of the existence of the '735 Patent from actual notice from said service of this complaint, the service of the original Complaint for Patent Infringement against Defendant Google on 6/1/18 and/or the service of the First Amended Complaint for Patent Infringement on 4/13/20.

99. On information and belief, Defendant Google has directly infringed one or more of claims 14-25 of the '735 Patent by making, using (including using for testing, debugging and diagnosis purposes), importing, offering for sale and/or selling within the United States the Accused Instrumentalities specified below in violation of 35 U.S.C. § 271(a).

100. On information and belief, said Accused Instrumentalities comprise an apparatus as disclosed and claimed in the '735 Patent for receiving an hyperlink address string structured as a PrintWriter method in conjunction with Service Class predetermined program material and processing A) a predetermined hyperlink address comprising a file descriptor resource identifier to hyperlink to said file descriptor resource in the initial array position of said list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to predetermined program material are arrayed and B) Statement Parameters comprising one or a plurality of predetermined parameters defining predetermined printable output of said file descriptor resource in the initial array position of said list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to predetermined program material are arrayed

comprising at least one predetermined parameter instructing a PrintWriter to print predetermined printable output of said file descriptor resource in the initial array position of a list in which file descriptor resource identifiers uniquely identifying file descriptor resources corresponding to Service Class predetermined program material are arrayed indicated in a second attribute of said hyperlink address string. *See* the '735 Patent at claim 14.

101. Said Accused Instrumentalities sold, leased or otherwise used in direct infringement of the '735 Patent by Defendant Google comprise dumsys tool devices, adb tool devices, Android TV devices such as Defendant Google's ADT-3 Android TV described at <https://9to5google.com/2020/01/30/buy-android-10-tv-adt-3/> and <https://sites.google.com/view/droid-tv/streaming-gaming/google-adt-3> and Android SmartPhone devices such as Google Pixel 4 and Pixel 4 XL described at https://store.google.com/product/pixel_4_specs, fi.google.com/about/phone/pixel-4/, androidcentral.com/google/pixel-4/, and android.com/phone-tablets/ and Android 10 described at android.com/android-10/ and <https://android-developers.googleblog.com/2019/12/android-10-on-android-tv.html>.

102. Said Accused Instrumentalities deploy a virtual machine enabling said Android Runtime to perform the receiving and processing functions claimed in the '735 Patent.

103. Said Accused Instrumentalities include the receiver apparatus disclosed and claimed in the '735 Patent comprising virtual machine functionality designed to receive and process Service Class predetermined program material as claimed therein and dump() PrintWriter method including at least one print() or println() statement of the dump() PrintWriter method received in the Service Class predetermined program material.

RELIEF WARRANTED FOR INFRINGEMENT OF U.S. PATENT RE47,735

104. Defendant Google's infringing activity alleged above comprises the compelling reason Defendant Google's Android system and/or dumpsys tool used by third party application developers and acquired in the marketplace.
105. Defendant Google's infringing activity alleged above creates a performance advantage in Defendant Google's Android system and/or dumpsys tool that drives demand for Defendant Google's Android system and/or dumpsys tool.
106. Progme has no adequate remedy at law against Defendant Google's acts of infringement and, unless Defendant Google is enjoined from continuing to infringe the '735 Patent, Progme will suffer irreparable harm. Indeed, the hardships that would be imposed upon Defendant Google by an injunction are relatively less than those faced by Plaintiff Progme should an injunction not issue. Finally, the public interest would be served by issuance of an injunction.
107. Defendant Google's has had prior constructive notice by marking of the '735 Patent as indicated in **Exhibit C**, the patent number "**Patent No. 8,713,425**" (Original)/ "**Patent No. RE47,735**" (Reissue) marked on the PrintHD.TV home page (located at www.printhd.tv) web page, labelling at the bottom of the page on 5/27/14, to provide constructive notice thereof pursuant to 35 U.S.C. § 287. *See* 35 U.S.C. § 252.
108. Progme has at all times complied with 35 U.S.C. § 287, providing Defendant Google with prior constructive notice, which constituted consistent and continuous notice of the '735 Patent being infringed to Defendant Google. *See* 35 U.S.C. § 252.
109. The method of generating and encoding the hyperlink address string structured as a PrintWriter method claimed in the '735 Patent and alleged infringed herein is capable

of being produced in a physical device, a web page, and has been and is noticed in said web page for constructive notice by marking pursuant to 35 U.S.C. § 287.

110. Defendant Google received actual notice of the '735 Patent and Defendant Google's infringement thereof from service of this Complaint, the service of the original Complaint for Patent Infringement against Defendant Google on 6/1/18 and the service of the First Amended Complaint for Patent Infringement on 4/13/20.

111. As a result of Defendant Google's acts of infringement, Progme has suffered and will continue to suffer damages in an amount to be proved at trial. Pursuant to 35 U.S.C § 284, Progme is entitled to adequate damages to compensate for infringement including a reasonable royalty from the date of Defendant Google's notice of the '735 Patent. Progme has no means of ascertaining the full extent of Defendant Googles's infringement of the '735 Patent and the amount of Progme's damages resulting from said infringement except through the production of evidence thereof in Defendant Google's sole possession and control.

PRAYER FOR RELIEF

112. WHEREFORE, Progme prays for the following relief:

113. A judgment in favor of Progme that

- a. Defendant Google has infringed, directly, literally and/or under the doctrine of equivalents, and indirectly at least one claim of the '735 Patent;
- b. a permanent injunction enjoining Defendant Google and its officers, directors, agents, servants, employees, affiliates, divisions, branches, subsidiaries, parents, and all others acting in concert or privity with any of them from continuing to infringe the '735 Patent including from continuing to make, use,

sell and/or offer for sale in the United States or import into the United States the Android SDK, Android applications, Android dumsys tool and Android devices and specifically from generating and/or encoding one or more portions of **Defendant Google's Infringing Code** documented above;

- c. award to Progme the damages to which it is entitled by law and under 35 U.S.C. § 284 for Defendant Google's past infringement and any continuing or future infringement up until the date Defendant Google is finally and permanently enjoined from further infringement, including both compensatory damages and treble damages for willful infringement;
- d. a finding that this is an "exceptional action" and a judgment and order requiring Defendant Google to pay the costs of this action (including all disbursements) as well as attorneys' fees as provided by 35 U.S.C. § 285;
- e. award to Progme pre-judgment and post-judgment interest on its damages and
- f. such other further relief in law or equity to which Progme may be justly entitled.

DEMAND FOR JURY TRIAL

114. Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Progre hereby demands a trial by jury as to all issues so triable.

Dated: June 8, 2020

Respectfully submitted,

/s/ Michael T. Raggio
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CERTIFICATE OF SERVICE

I hereby certify that on this 8th day of June, 2020, I electronically filed the foregoing paper with the Clerk of Court using the ECF system which will send notification of such filing to all counsel of record.

Signed,

/s/ Michael T. Raggio
Michael T. Raggio