IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

LISLE CORPORATION,
an Iowa corporation,
Plaintiff,

v.

A.J. MANUFACTURING COMPANY, INC.,
an Illinois corporation,
Defendant.

02C 7024

Civil Action No.

JUDGE COAR

Judge

MAGISTRATE JUDGE MASON

Magistrate Judge

JURY DEMAND

PLAINTIFF LISLE CORPORATION'S COMPLAINT

The Plaintiff, Lisle Corporation (hereinafter "Lisle"), for its Complaint against the Defendant, A.J. Manufacturing Company, Inc. (hereinafter "A.J. Manufacturing") alleges as follows:

I. THE PARTIES

1. Plaintiff Lisle Corporation is an Iowa corporation having its principle place of business at 807 East Main Street, P.O. Box 89, Clarinda, Iowa 51632. Lisle is in the business of making and selling tools, automotive tools, and specialty tools throughout the United States.

2. Upon information and belief, A.J. Manufacturing is an Illinois corporation with an address of 449 Wrightwood Avenue, Elmhurst, Illinois 60126. Upon information and belief, A.J. Manufacturing is in the business of making and selling automotive tools including the BLUE POINT inner tie rod tool.

II. JURISDICTION AND VENUE

3. This is an action for patent infringement arising under the patent laws of the United States, Title 35 U.S.C. § 1 et seq., and particularly 35 U.S.C. §§ 271 and 281. The Court accordingly has subject matter jurisdiction under the laws of the United States concerning jurisdiction of actions relating to Letters Patent, Title 28 U.S.C. § 1331 and 1338(a).

4. Venue is proper in this district in accordance with 28 U.S.C. §§ 1391 and 1400(b).

III. CAUSE OF ACTION

5. On February 22, 1994, United States Letters Patent No. 5,287,776 (the '776 patent) to Williams et al. entitled "Inner Tie Rod Tool" was duly and legally issued. Lisle is the owner, by virtue of assignment of all rights, title and interest in and to the '776 patent. The '776 patent is attached hereto as Exhibit A.

6. The '776 patent is valid and enforceable.

7. At all times since issuance of the '776 patent, Plaintiff has been engaged in the business of making, selling, and distributing inner tie rod tools protected by the patent.

8. In accordance with 35 U.S.C. §287, Plaintiff has at all time appropriately marked its patented products.

9. Defendant is currently making, advertising, distributing, selling and/or offering for sale inner tie rod tools which infringe the '776 patent. These tools are sold and distributed as Model No. YA3000A under the trademark BLUE POINT. The BLUE POINT inner tie rod tool infringes one or more claims of the '776 patent. A copy of defendant's brochure is attached as Exhibit B.

10. Defendant's acts of infringement have been without express or implied license by Plaintiff and are in violation of Plaintiff's rights.

11. Plaintiff has been damaged by the Defendant's acts of infringement.

12. Upon information and belief, Defendant will continue to infringe the '776 patent unless enjoined by this Court.

13. Upon information and belief, Defendant's infringement has been wilfull and deliberate.

IV. JURY DEMAND

14. Plaintiff demands a jury trial on all issues so triable.

V. PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully prays that:

A. Pursuant to 35 U.S.C. §271, this Court enter judgment that the Defendant has been and is currently infringing the '776 patent;

B. Defendant and each of its officers, agents, servants, employees, assigns and successors in interest, those persons in active concert of participation with them who receive notice of the injunction, and others acting on their behalf, be permanently enjoined from infringing the '776 patent;

C. Defendant be directed to provide an accounting to determine the damages suffered by Plaintiff as a result of the Defendant's infringing conduct, such damages including, but not limited to, Plaintiff's lost profits on sales of the Defendant's BLUE POINT inner tie rod tool;

D. Defendant be directed to pay Plaintiff the amount of damages which Plaintiff has sustained as a result of Defendant's acts of patent infringement, and that such damages be trebled under 35 U.S.C. §284;

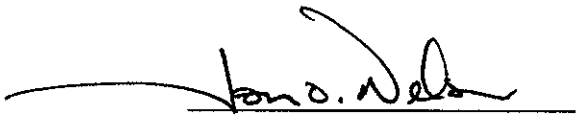
E. This be declared an exceptional case under 35 U.S.C. §285, and Plaintiff be awarded its attorney's fees;

F. Defendant be directed to pay Plaintiff an award of pre-judgment interest, post-judgment interest, and costs of the suit to Plaintiff; and

G. Plaintiff be granted such other further relief as the Court may deem proper and just.

Dated: October 1, 2002

Respectfully submitted,



Jon O. Nelson
Janice V. Mitrius
BANNER & WITCOFF, LTD.
10 South Wacker Dr. Suite 3000
Chicago, Illinois 60606
Telephone: (312) 715-1000
Facsimile: (312) 715-1234

Attorneys for Plaintiff
LISLE CORPORATION

US005287776A

United States Patent [19]

Williams et al.

[11] Patent Number: 5,287,776

[45] Date of Patent: Feb. 22, 1994

[54] INNER TIE ROD TOOL

[75] Inventors: Danny L. Williams, Clarinda, Iowa; Gerald A. McKim, LaFayette, Ind.

[73] Assignee: Lisle Corporation, Clarinda, Iowa

[21] Appl. No.: 904,852

[22] Filed: Jun. 26, 1992

[51] Int. Cl.[5] B25B 13/06

[52] U.S. Cl. 81/124.2; 81/124.4; 81/176.1; 81/177.2; 81/177.85; 81/180.1

[58] Field of Search 81/124.6, 124.2, 124.4, 81/124.5, 176.1, 177.1, 177.2, 177.85, 180.1, 185.1, 185.2, 119, 121.1

[56] References Cited

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FOREIGN PATENT DOCUMENTS

417339	11/1910	France	81/124.4
955548	1/1950	France	81/124.4

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AD Part No. 8703, "Dual Inner Tie Rod Tool", Feb. 1992.

AD Part No. 8704, "Inner Tie Rod Wrench Adapter", Feb. 1992.

American Tool Co., Part No. 2100, "Tie Rodd Removal Tool", 1990.

American Tool Co., Part No. 2300, "3-1 Inner Tie Rod Removal Tool-Ford-GM-Chrysler", 1990.

Lisle Corporation, Part No. 61000, "1 3/16 inch Inner Tie Rod Wrench", Jan. 1990.

Lisle Corporation, Part No. 61100, "1 5/16 inch Inner Tie Rod Wrench", Jan. 1990.

Primary Examiner—D. S. Meislin

Attorney, Agent, or Firm—Allegretti & Witcoff

[57] ABSTRACT

An inner tie rod tool includes a hollow tube which fits over the rod and includes a socket at one end for cooperation with a socket tool. The opposite end includes a retainer which is cooperative with C-shaped wrench discs of various size and configuration that cooperate with the nut associated with the inner end of the inner tie rod.

6 Claims, 4 Drawing Sheets

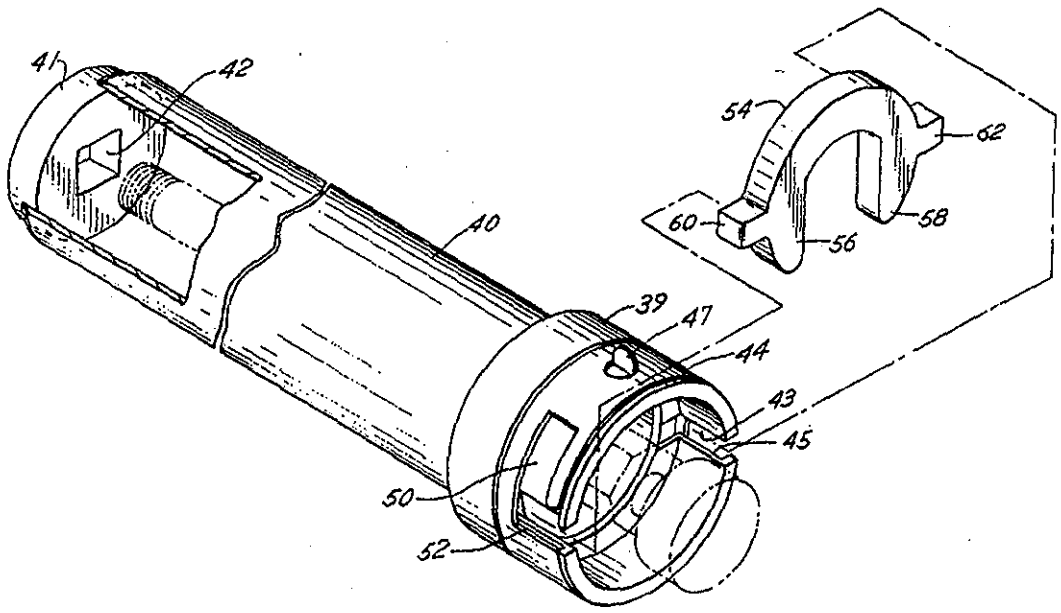


FIG. 1

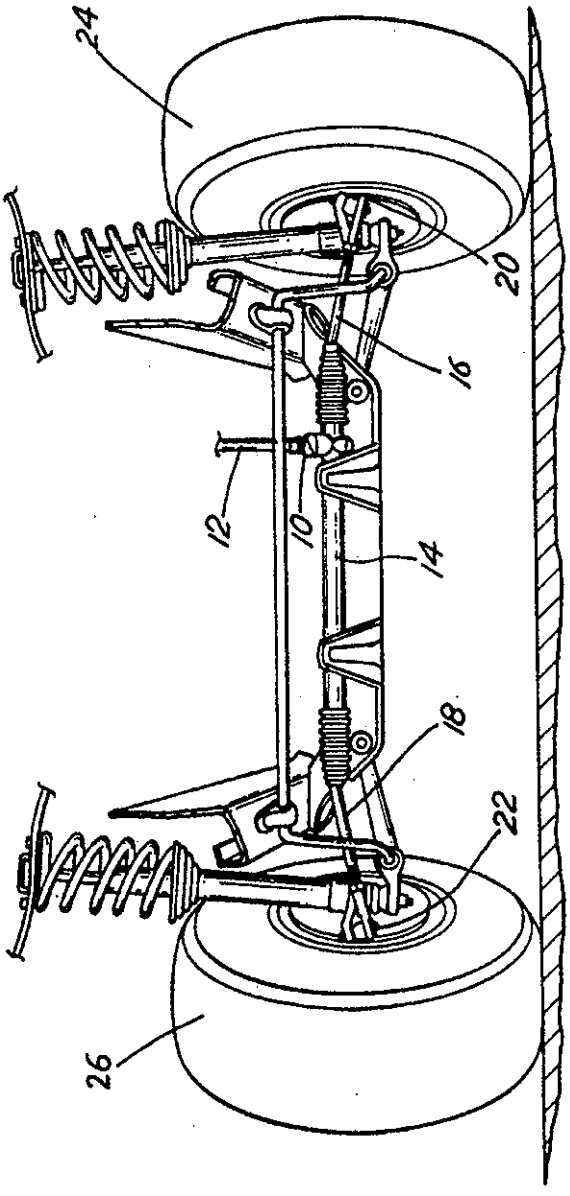


FIG. 6

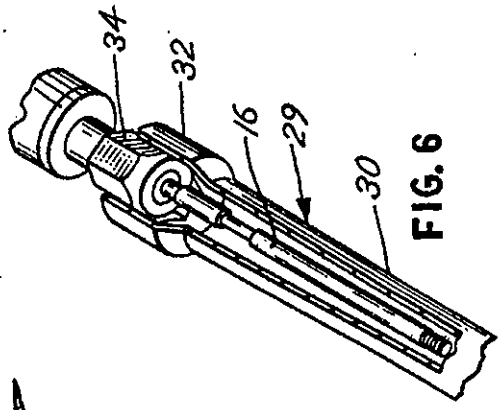


FIG. 5

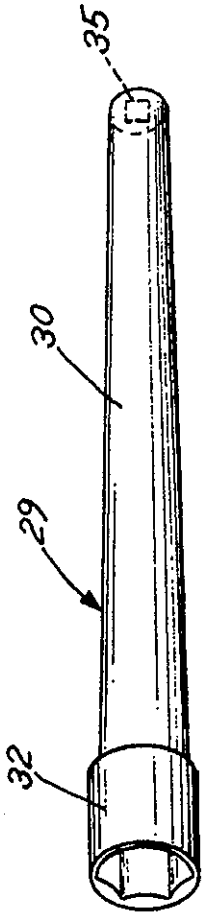


FIG. 4

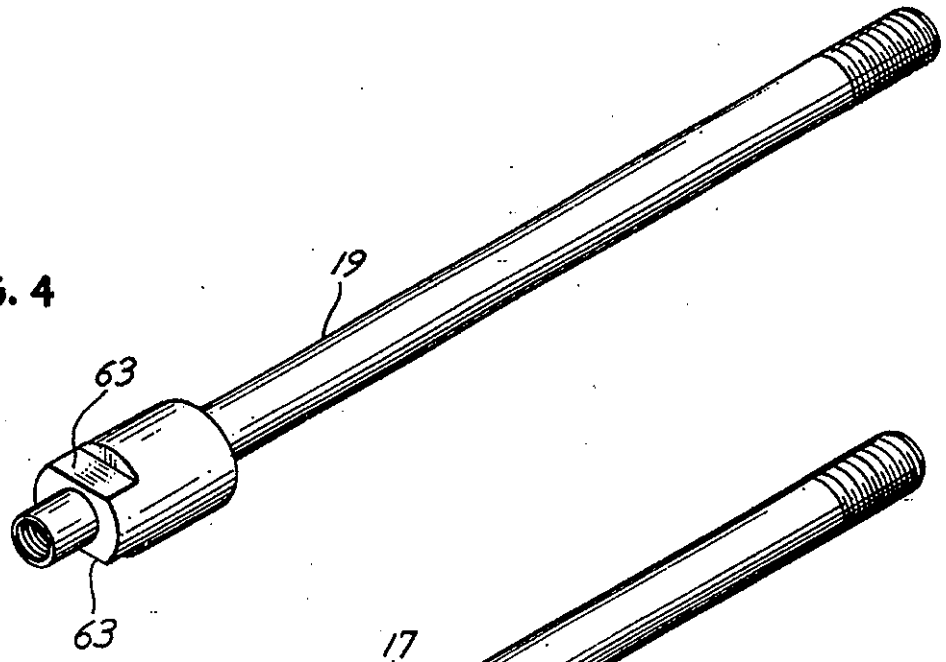


FIG. 3

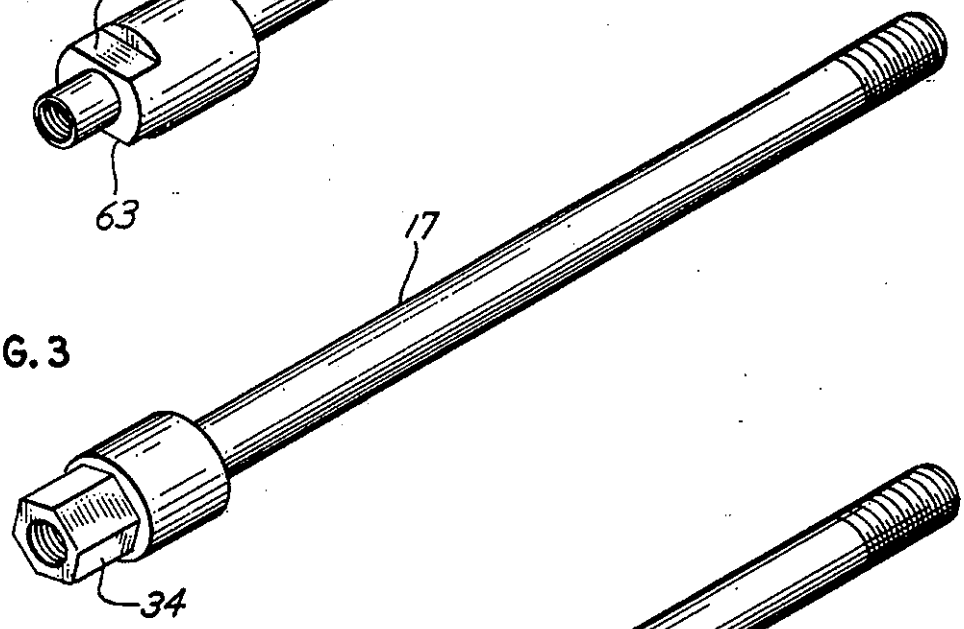
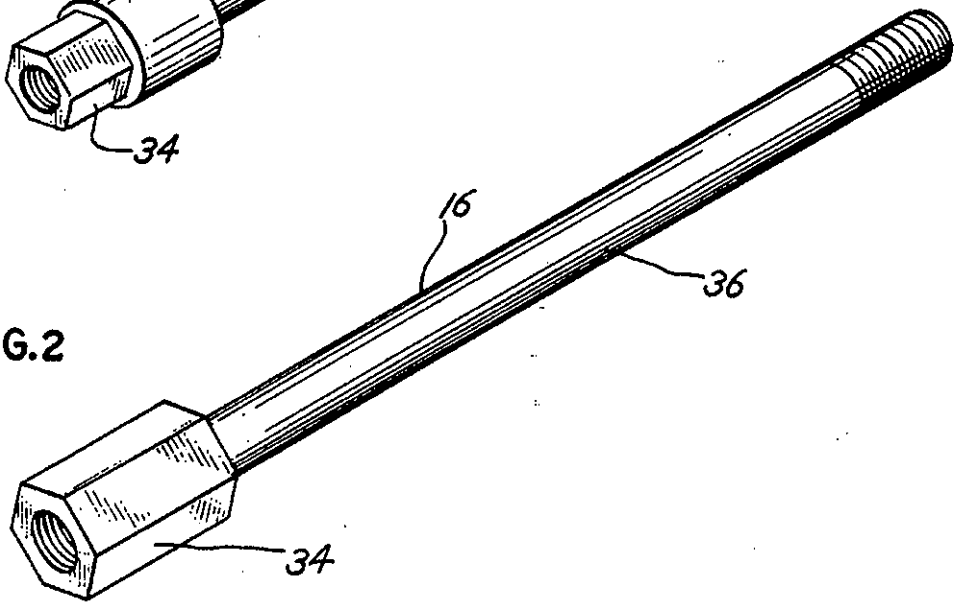


FIG. 2



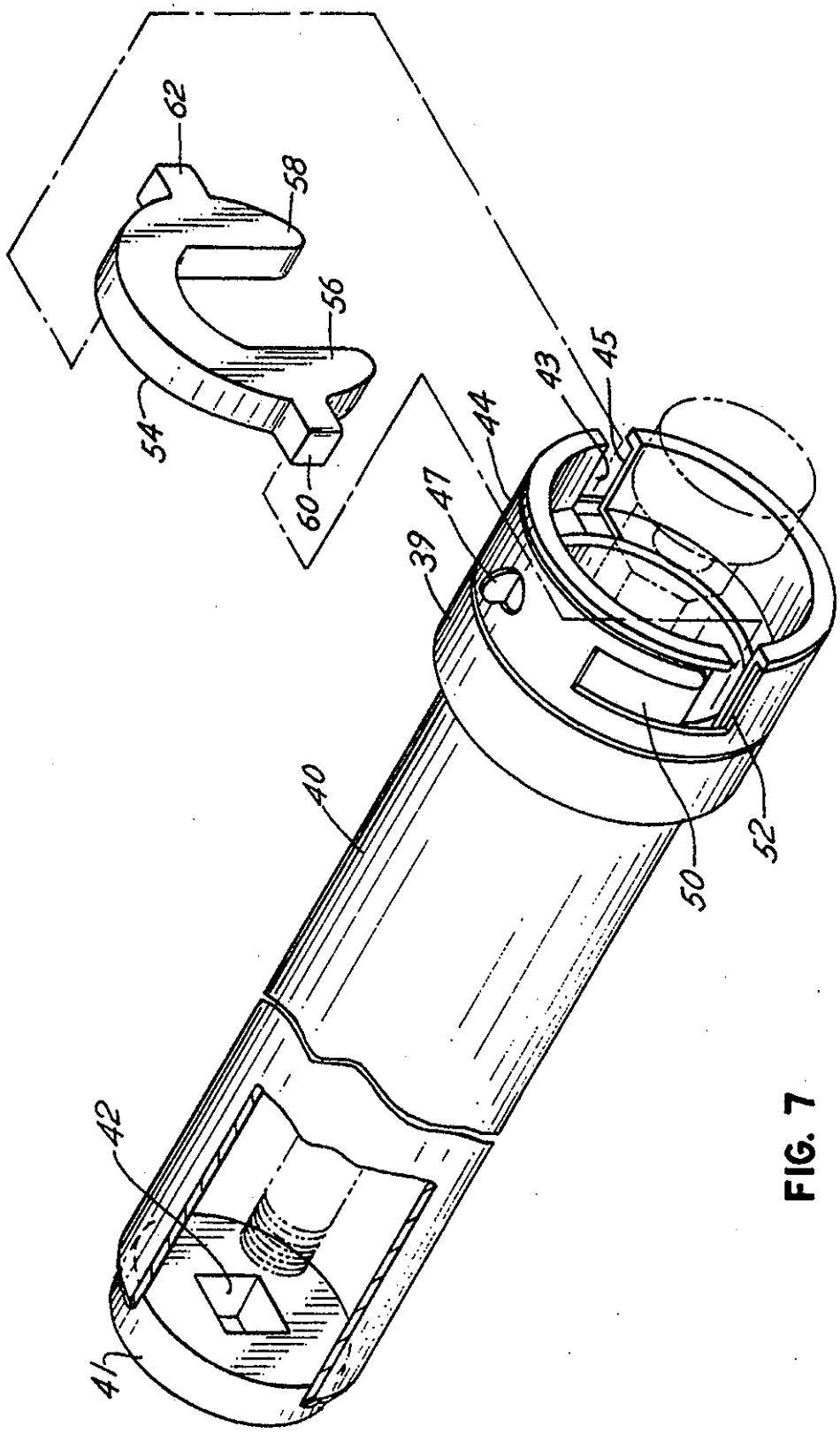


FIG. 7

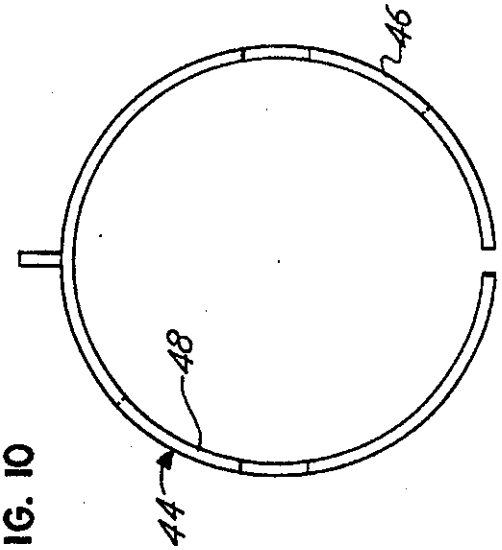


FIG. 10

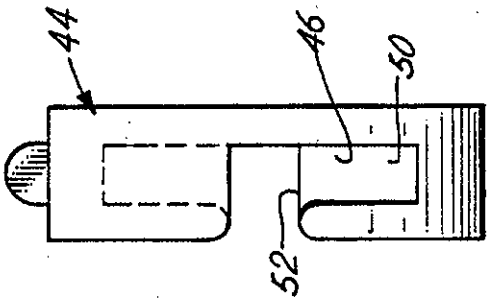


FIG. 9

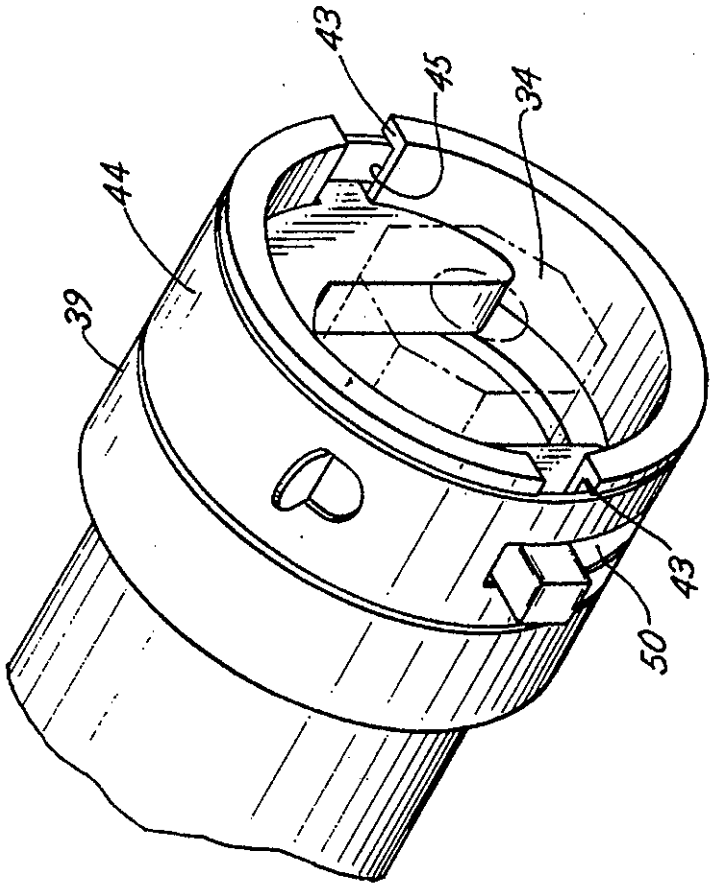


FIG.8

INNER TIE ROD TOOL

BACKGROUND OF THE INVENTION

This invention relates to an improved inner tie rod tool and, more particularly, to an inner tie rod tool which is useful in the removal and replacement of various types of automobile inner tie rods.

American and foreign automobiles are often equipped with a rack and pinion steering control system. Such a rack and pinion system indudes a rack which is connected by means of tie rods to the front wheels of the vehicle. Rotation of the steering wheel rotates the pinion to drive the rack and simultaneously move the tie rods to effect steering by the front wheels.

Servicing and repair of such a rack and pinion steering control system often requires removal and replacement of the tie rods (including the inner tie rods) which connect the rack to the front wheels. The inner tie rods of a rack and pinion system may typically be comprised of a rod with a hexagonal nut located at the inner end and with threads at the outer end. The hexagonal nut is provided for cooperation with a wrench so that the rod can be rotated for attachment to rack assembly. The outer threaded end cooperates with a linkage attached to the front wheel of the automobile.

Alternatively, the inner tie rods may have a different construction. For example, the hexagonal nut at the inner end may be eliminated or altered in construction. This has resulted in increased difficulty in servicing the steering system, in many instances, resulting in the need to remove the entire rack and pinion system in order to effect appropriate repair and replacement of inner tie rods. The present invention is directed to a mechanism which permits the removal of inner tie rods without requiring the disassembly of the entire rack and pinion steering control assembly, and which is useful with multiple types of inner tie rods.

SUMMARY OF THE INVENTION

Briefly, the present invention comprises a hollow tube which fits over the inner tie rod. The tube has a socket at one end for cooperation with a driving wrench. At the opposite end, a special retainer collar is affixed to the tube. A nut engaging, C-shaped wrench fits over multiple nut configurations of the inner tie rod is cooperative with the retainer collar. The C-shaped wrench and the hollow tube are thus separable. The C-shaped wrench may thus be placed on the nut configuration of the tie rod, and the hollow tube may then be coupled to the wrench for rotation and removal or replacement of the tie rod.

Thus, it is an object of the invention to provide an inner tie rod tool which is useful for servicing all types of inner tie rod constructions, including those which do not necessarily have a hexagonal nut at the inner end thereof.

It is a further object of the invention to provide an improved, mechanically rugged, inexpensive, and easy to operate inner tie rod tool.

It is yet another object of the invention to provide an inner tie rod tool comprised of two separable parts including a removable wrench which cooperates with the nut on the inner end of an inner tie rod and a tube which cooperates with the wrench.

These and other objects, advantages, and features of the invention will be set forth in the detailed description which follows.

BRIEF DESCRIPTION OF THE DRAWING

In the detailed description which follows reference will be made to the drawing comprised of the following figures:

FIG. 1 is an elevation of a typical rack and pinion steering control system depicting the environment of the invention;

FIG. 2 is a perspective view of a typical inner tie rod;

FIG. 3 is a prospective view of another configuration of an inner tie rod;

FIG. 4 is a perspective view of a third embodiment of an inner tie rod;

FIG. 5 is a depiction of a prior art inner tie rod removal tool;

FIG. 6 is a depiction of the method of operation of the prior art inner tie rod removal tool of FIG. 5;

FIG. 7 is a perspective view of the improved inner tie rod tool of the present invention as it is utilized to remove an inner tie rod of the type shown in FIG. 3;

FIG. 8 is an enlarged perspective view of the nut engaging and of the improved inner tie rod tool of the invention as utilized to remove an inner tie rod;

FIG. 9 is an elevation of the retaining sleeve of the improved tie rod tool of the invention; and

FIG. 10 is a side elevation of the sleeve of FIG. 9.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 illustrates a typical rack and pinion steering control system associated with the front wheels of a vehicle. A pinion steering gear 10 is driven by operation of a shaft or rod 12 associated with the vehicle steering wheel (not shown). A rack 14 moves in response to rotation of shaft 12 to move inner tie rods 16 and 18 which cooperatively engage outer yokes 20 and 22 respectively. Movement of yokes 20, 22 effects movement or steering of the wheels 24 and 26.

When servicing the rack and pinion steering system depicted in FIG. 1, it is often necessary to remove the tie rods 16, and 18. Heretofore, in order to effect such removal, it was often necessary to remove the entire rack and pinion steering control assembly, including the rack 14. However, various tools have developed for removal of the inner tie rods 16, 18 without total disassemly of the assembly. A typical prior art tool 29 is shown in FIGS. 5 and 6. Tool 29 is comprised a hollow tube 30 having a socket 32 at one end which is cooperative with a hexagonal nut 34 in FIG. 2 of inner tie rod 16. The tube 30 thus fits over the tie rod 16 so that socket 32 maybe engaged with nut 34. The opposite end of tool 29 includes a wrench socket 35 for receipt of a driver which can rotate the tool 29 and inner tie rod 16. In this manner, as shown in FIG. 6, the inner tie rod 16 may be removed and replaced.

FIGS. 3 and 4 illustrate two configurations of inner tie rods 17, 19 which became available in the marketplace subsequent to the inner tie rod 16 of FIG. 2. The present invention relates to a tool which is useful with all types of inner tie rods 16, 17, 19 such as shown in FIGS. 2, 3 and 4.

Specifically referring to FIGS. 7 through 10, the improved inner tie rod tool includes a hollow tube 40 having a fitting 41 with a socket 42 at one end for cooperation with a ratchet wrench. The opposite end of

hollow tube 40 includes a large diameter cylindrical section 39, with a retainer ring 44 affixed over the section 39. The cylindrical section 39 includes two slits 43 which extend axially from the end of Section 41 along the axis of hollow tube 40. Retainer ring 44 is rotatably mounted on the outside surface of circulor ring or section 39 and is retained in a groove 45. The retainer ring 44 includes two L-shaped slots 46 and 48 and an outwardly projecting tab 47. Each L-shaped slot 46 and 48 and an outwardly projectly tab 47. Each L-shaped slot 46 and 48 includes a circumferential run 50 and a axial run 52. Axial run 52 is generally aligned with slits 43. (See FIG. 7).

A separate part of the tool comprises a generally C-shaped flat disc 54 having spaced arms 56 and 58. Radically outwardly projecting tabs 60 and 62 are defined on the outer periphery of the disc 54. The arms 56 and 58 define opposite sides of a wrench that is cooperative with a nut 34 or flats 63 as depicted in FIGS. 2, 3, 4, 7 and 8. Differently sized discs 54 may be utilized for different sized nuts 34 or flats 63.

The radial tabs 60 and 62 cooperatively engage and cooperate with the slits 43 and slots 46 and 48. Thus, the tabs 60 and 62 are separated from each other so they may be inserted into the spaced slits 43 and locked into position by appropriate rotation of the retainer ring or sleeve 44. The entire tool may then be rotated to thus rotate an inner tie rod 16, 17, 19. Note two slits 43 spaced about 180° are preferred. However, additionally slits and alternative spacings are possible for cooperation with compatible wrench construction.

With the tool of the present invention therefore it is possible to utilize the single tube 40 in cooperation with any one of a number of wrench discs 54 depending upon the configuration and size of the inner end of the inner tie rod. The inner tie rod tool of the invention is thus more universal in its operation than prior art constructions.

Note, the wrench discs 54 have a limited axial dimension or thickness. This enables placement of a disc 54 on the flats 63 or over almost any configuration of nut 34 prior to attachment of tube 40 to disc 54 via section 39 and ring 44. Also, ring 44 includes a tab 47 which projects outward to facilitate rotation of ring 44 in the gloove 45. Consequently, in operation, the wrench disc 54 is initially placed on the nut of the inner tie rod. Next, the tube 40 is placed over the tie rod, engaged with wrench disc 54, attached thereto by ring 44 and driven via socket 42. The sequence is revised to remove the tool from the inner tie rod.

It is possible to vary the configuration and shape of the disc 54, for example, as well as the retainer 44. The number of slots and the number of tabs, for example, may be altered. Thus, while there has been set forth a preferred embodiment of the invention, it is to be understood that the invention is to be limited only by the following claims and their equivalents.

We claim:

1. A tool for removal of inner tie rods comprising in combination:

(a) a nut engaging, C-shaped wrench disc having spaced arms for engaging a nut, and outwardly projecting tabs for cooperation with a retainer; and

(b) a hollow tube for placement over a tie rod, said tube having a retainer at one end and at least two slots for cooperatively engaging the tabs of the wrench disc and means for cooperation with tube rotation means at the opposite end, said retainer being detachably cooperative with the tabs to rotate the disc and a tie rod engaged therewith.

2. The tool of claim 1 wherein the means for cooperation with tube rotation means comprise a socket.

3. The tool of claim 1 wherein the disc includes first and second tabs radially projecting outwardly in opposite directions from the center of the disc.

4. The tool of claim 1 wherein the retainer includes slots therein for receipt of the tabs.

5. The tool of claim 1 including a plurality of discs each cooperative with the retainer, each disc being separately cooperative with a different size nut.

6. The tool of claim 1 wherein the retainer includes a rotatably sleeve, the slots of the retainer being disposed on said rotatable sleeve and being L-shaped for rotation of the sleeve for locking receipt of a tab.

* * * * *

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS

Civil Cover Sheet

This automated JS-44 conforms generally to the manual JS-44 approved by the Judicial Conference of the United States in September 1974. The data is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. The information contained herein neither replaces nor supplements the filing and service of pleadings or other papers as required by law. This form is authorized for use only in the Northern District of Illinois.

Plaintiff(s): **LISLE CORPORATION**

County of Residence:

Plaintiff's Atty: Jon O. Nelson; Janice V. Mitrius
Banner & Witcoff, Ltd.
Ten South Wacker Drive, Suite 3000, Chicago, IL 60606
312.715.1000

Defendant(s):**A.J. MANUFACTURING COMPANY, INC.**

County of Residence:

Defendant's Atty: James J. Conlon
James J. Conlon & Associates
205 W. Randolph, Suite 2010, Chicago, IL 60606
312.726.0545

II. Basis of Jurisdiction: **3. Federal Question (U.S. not a party)**

III. Citizenship of Principal Parties **(Diversity Cases Only)**
Plaintiff:- **N/A**
Defendant:- **N/A**

02C 7024

JUDGE COAR

MAGISTRATE JUDGE MASON

IV. Origin : **1. Original Proceeding**

V. Nature of Suit: **830 Patent**

VI.Cause of Action: **United States, Title 35 U.S.C. § 1 et seq., and particularly 35 U.S.C. §§ 271 and 281**

VII. Requested in Complaint
Class Action: **No**
Dollar Demand:
Jury Demand: **Yes**

VIII. This case **IS NOT** a refiling of a previously dismissed case.

Signature: Jon O. Nelson

Date: October 1, 2002

If any of this information is incorrect, please go back to the Civil Cover Sheet Input form using the *Back* button in your browser and change it.

Once correct, print this form, sign and date it and submit it with your new civil action. **Note: You may need to adjust the font size in your browser display to make the form print properly.** **Revised: 06/28/00**

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
Eastern Division

In the Matter of

LISLE CORPORATION,
an Iowa corporation,
Plaintiff,
v.
A.J. MANUFACTURING COMPANY, INC.,
an Illinois corporation,
Defendant.

Case Number: 02C 7024

JUDGE COAR
MAGISTRATE JUDGE MASON

APPEARANCES ARE HEREBY FILED BY THE UNDERSIGNED AS ATTORNEY(S) FOR:

Plaintiff Lisle Corporation

(A)	(B)
SIGNATURE Jon O. Nelson	SIGNATURE Janice V. Mitrius
NAME Jon O. Nelson	NAME Janice V. Mitrius
FIRM Banner & Witcoff, Ltd.	FIRM Banner & Witcoff, Ltd.
STREET ADDRESS Ten South Wacker Drive, Suite 3000	STREET ADDRESS Ten South Wacker Drive, Suite 3000
CITY/STATE/ZIP Chicago, Illinois 60606	CITY/STATE/ZIP Chicago, Illinois 60606
TELEPHONE NUMBER (312) 715-1000	TELEPHONE NUMBER (312) 715-1000
IDENTIFICATION NUMBER (SEE ITEM 4 ON REVERSE) 02031728	IDENTIFICATION NUMBER (SEE ITEM 4 ON REVERSE) 06243513
MEMBER OF TRIAL BAR? YES ✔ NO	MEMBER OF TRIAL BAR? YES NO ✔
TRIAL ATTORNEY? YES ✔ NO	TRIAL ATTORNEY? YES ✔ NO
	DESIGNATED AS LOCAL COUNSEL? YES ✔ NO

(C)	(D)
SIGNATURE	SIGNATURE
NAME	NAME
FIRM	FIRM
STREET ADDRESS	STREET ADDRESS
CITY/STATE/ZIP	CITY/STATE/ZIP
TELEPHONE NUMBER	TELEPHONE NUMBER
IDENTIFICATION NUMBER (SEE ITEM 4 ON REVERSE)	IDENTIFICATION NUMBER (SEE ITEM 4 ON REVERSE)
MEMBER OF TRIAL BAR? YES NO	MEMBER OF TRIAL BAR? YES NO
TRIAL ATTORNEY? YES NO	TRIAL ATTORNEY? YES NO
DESIGNATED AS LOCAL COUNSEL? YES NO	DESIGNATED AS LOCAL COUNSEL? YES NO

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