

**No. 714,922.**

**Patented Dec. 2, 1902.**

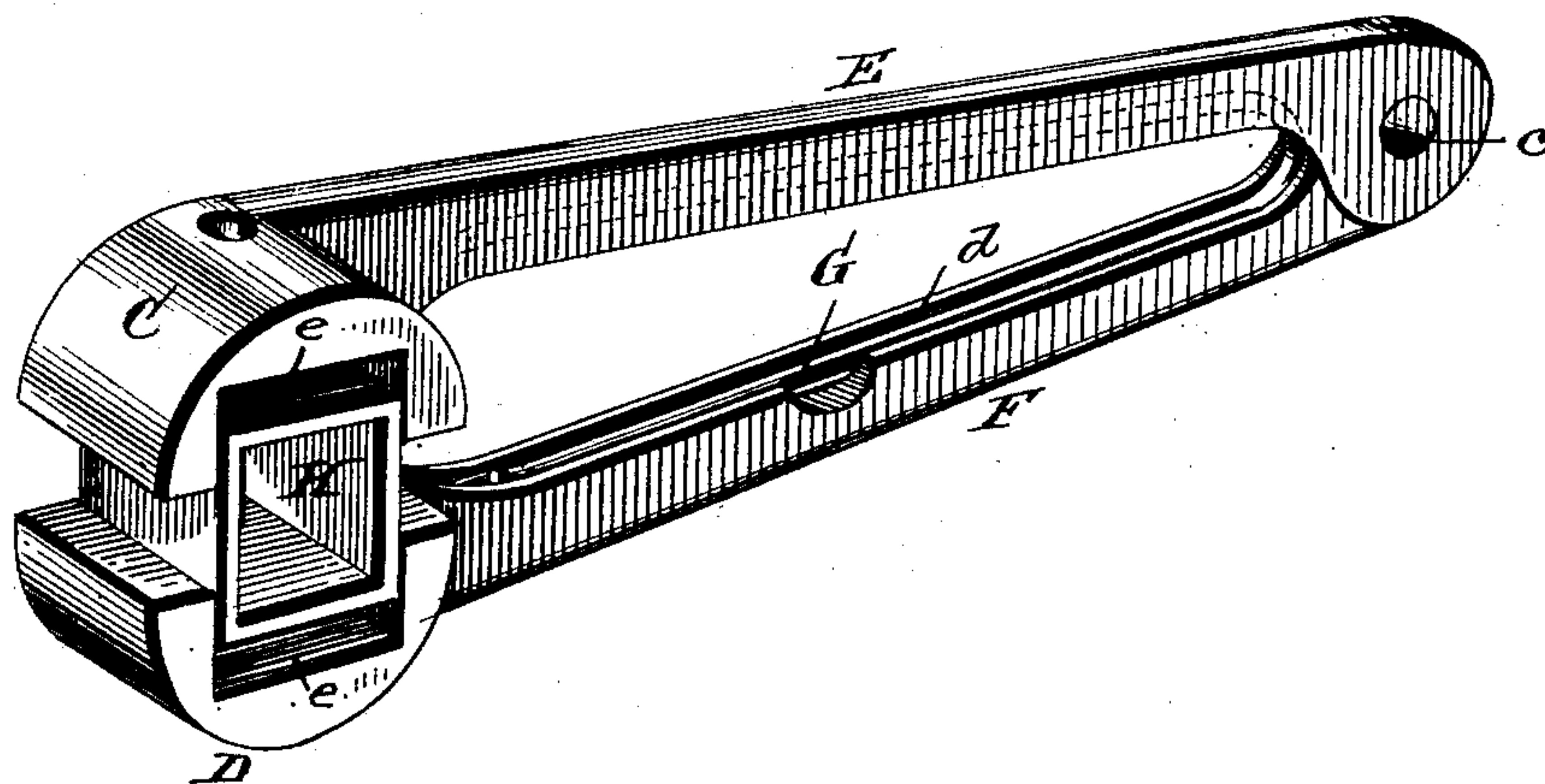
**W. LEE.**

**VEHICLE WRENCH.**

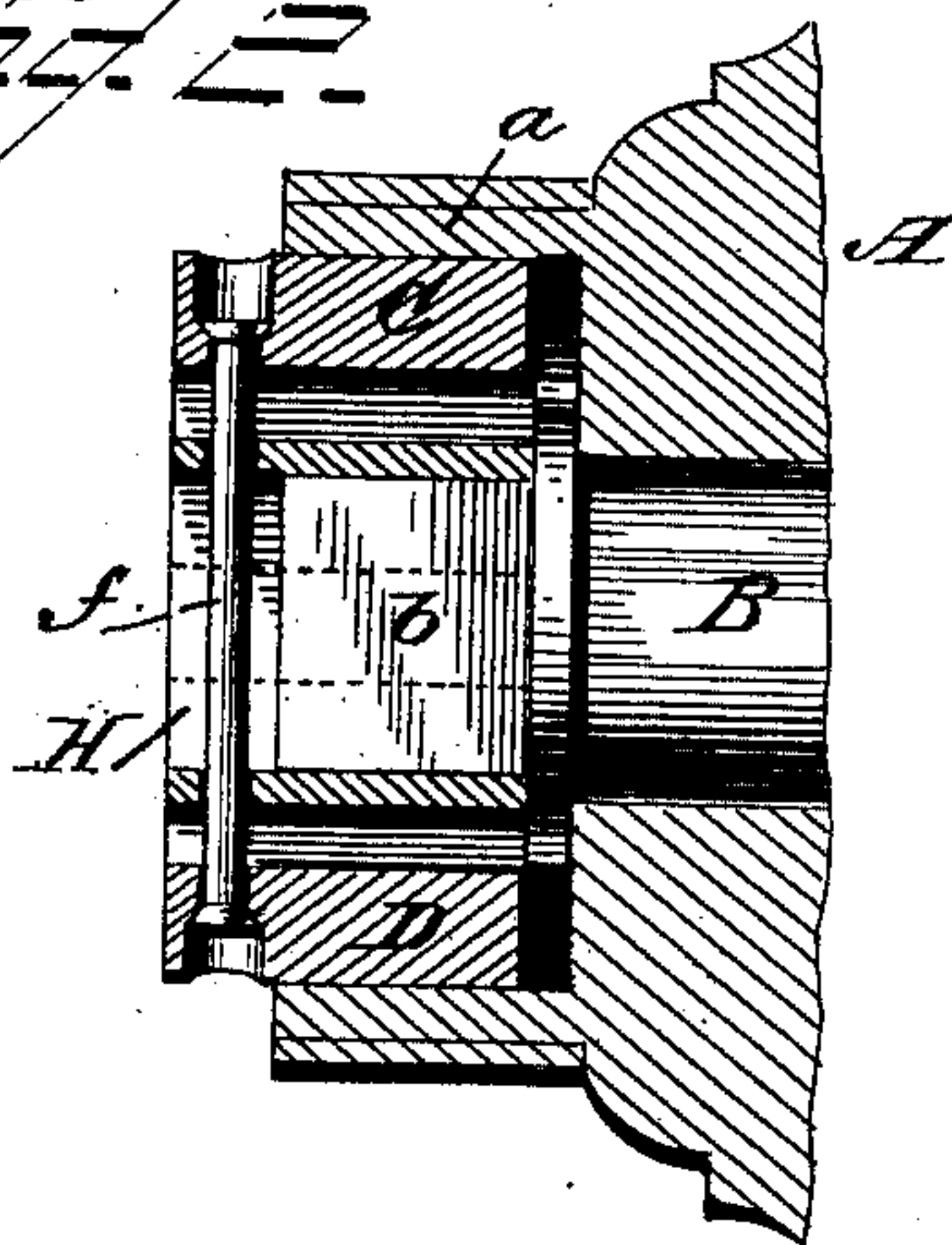
(Application filed Sept. 18, 1902.)

(No Model.)

FILE



~~File 2~~



Witnesses

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# UNITED STATES PATENT OFFICE.

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## VEHICLE-WRENCH.

SPECIFICATION forming part of Letters Patent No. 714,922, dated December 2, 1902.

Application filed September 18, 1902. Serial No. 123,943. (No model.)

*To all whom it may concern:*

Be it known that I, WILLARD LEE, a citizen of the United States, residing at Los Gatos, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Vehicle-Wrenches; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

The present invention has relation to that class of wrenches especially designed for removing and replacing the nut on the axle of vehicles for the purpose of removing the wheel to lubricate the axle; and it consists in a wrench constructed substantially as shown in the drawings and hereinafter described and claimed.

Figure 1 of the drawings is a perspective view of a vehicle-wrench constructed in accordance with my invention; Fig. 2, a sectional view showing a portion of the vehicle-hub and the axle and nut, the expansible jaws being shown as engaging the interior of the hub-band and the socket-head engaging the nut.

In the accompanying drawings, A represents a portion of a vehicle-hub, and *a* the band thereof, and the nut *b* upon the end of the axle B, all of which are of the usual construction and simply shown to illustrate the application of the wrench thereto.

C D represent two expansible jaws upon the outer ends of the levers E F, which levers are pivoted together at *c* and serve as handles to the wrench, the levers being grooved upon their inner sides, as shown at *d*, in which are located the arms G of a suitable spring, whereby said levers are rendered spring-actuated, so that the jaws will automatically expand when pressure is removed from the levers. The jaws C D are convex upon their outer side to bear against the interior surface of the hub-band *a* when the jaws are expanded and have flat-sided recesses *e* upon their inner sides to fit over the socket-head H when the two jaws are compressed and to allow the two jaws to come together when inserting the jaws in the band of the wheel. The socket-head H is connected to the two jaws C D by means of a rod *f*, which extends across the

jaws and secured thereto in any suitable manner, the socket-head being loosely supported upon the rod, so that it may slide thereon and adapt itself to the nut with which it engages.

In the operation the levers E F are compressed to bring the jaws C D together, after which the jaws are inserted in the band of the hub and the socket-head H engaged with the nut, the compression of the jaws admitting them to readily fit in the band of the hub around the nut. The jaws and socket-head being thus engaged with the band and nut, respectively, pressure upon the levers is removed, which will allow the jaws to expand and bear with frictional contact against the band of the hub, and thus hold the wrench in place. By turning the wrench back the nut will be loosened on the axle and start the wheel in the same direction, and by moving it around in the same direction it will cause the nut to come off the axle with the wheel, the wrench remaining fast in the band of the hub and holding the nut and washers in place within the band while the axle is being lubricated, after which the wheel is replaced on the axle and by turning in opposite direction the nut will engage the axle and be carried back to its proper place. The socket-head and rod to which it is connected prevent the opening of jaws to that extent that would tend to injure the band of the hub by too great a pressure thereon. Without the socket-head and the manner of connecting it to the jaws the nut when tight and coming to a stop would wedge between the jaws and force them outward, causing great strain on the band of the hub, which would tend to break or otherwise injure the same, requiring a new hub or band or the repairing of the old one. It will be seen, therefore, that the employment of the socket-head is of material importance in guarding against injury to the band and hub, while the wrench is both simple and effective and practical in its operation and will avoid the handling of the nut in removing and replacing the same.

It should be understood that the rod which connects the jaws together extends loosely through the jaws, so that the jaws will move freely in expanding and contracting them, the rod forming a guide to the jaws in their movement besides providing means for hold-



ing the socket-head between the jaws and the recess in inner side of each jaw allowing said jaws to come together over the socket-head. The socket-head may be loosely connected to the rod, as hereinbefore described, or it may be made fast to the rod, as found most desirable, and any means may be employed for rendering the levers spring-actuated, and any such changes or modifications as would come within ordinary mechanical skill may be resorted to without in any manner departing from the principle of the invention, such as supporting the socket-head between the expansible jaws, which may be accomplished in any preferred manner.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A vehicle-wrench comprising expansible jaws to engage the band of the hub, said jaws

having recesses upon their inner sides, and a socket-head located between the jaws and on line with the recesses therein, substantially as and for the purpose specified.

2. A vehicle-wrench comprising spring-actuated levers, jaws upon the ends of the levers, said jaws having recesses upon their inner sides, a socket-head located between the jaws, a rod connected to the socket-head and having the ends thereof extending through the jaws to form guides therefor, substantially as and for the purpose described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLARD LEE.

Witnesses:

R. R. BELL,

F. W. THACKERAY.