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2,709,939

SPANNER WRENCH

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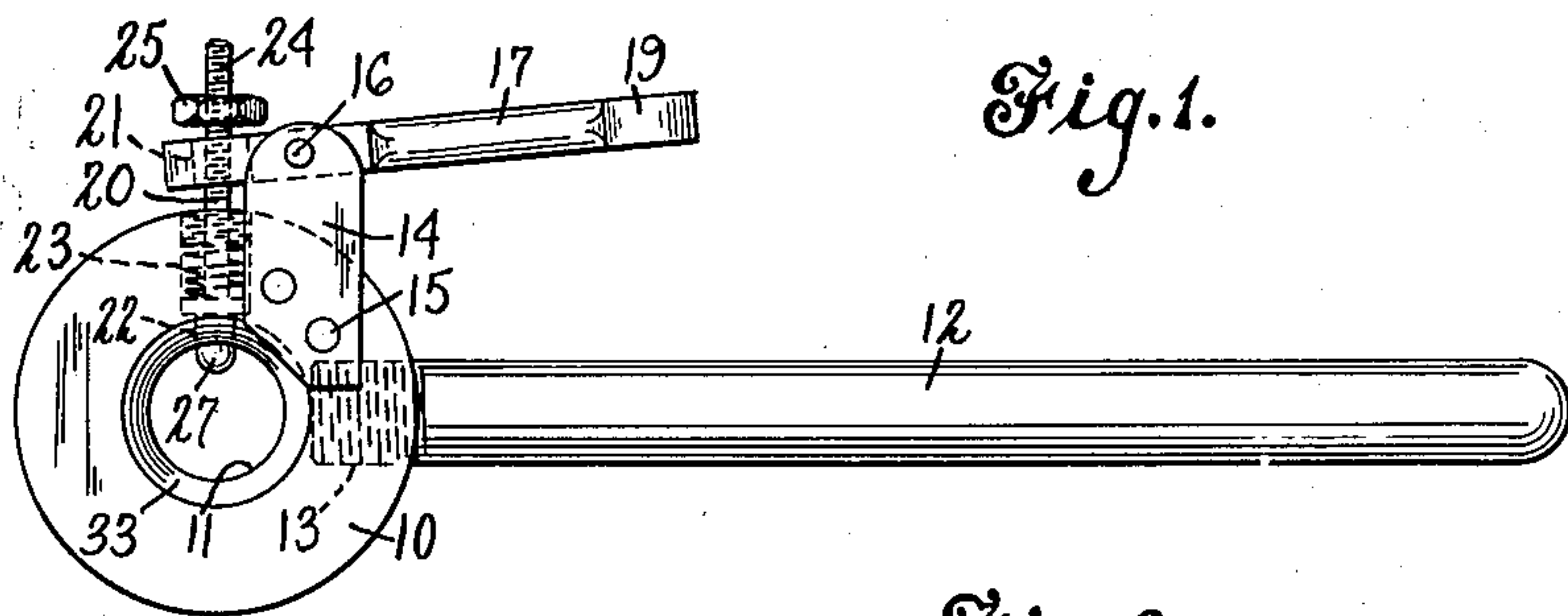


Fig. 1.

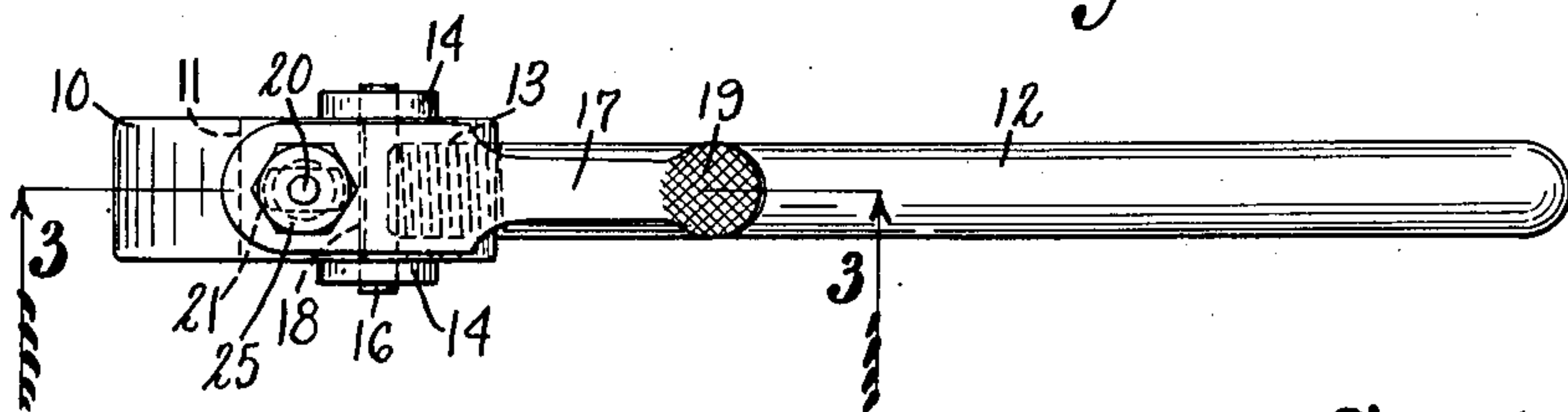


Fig. 2.

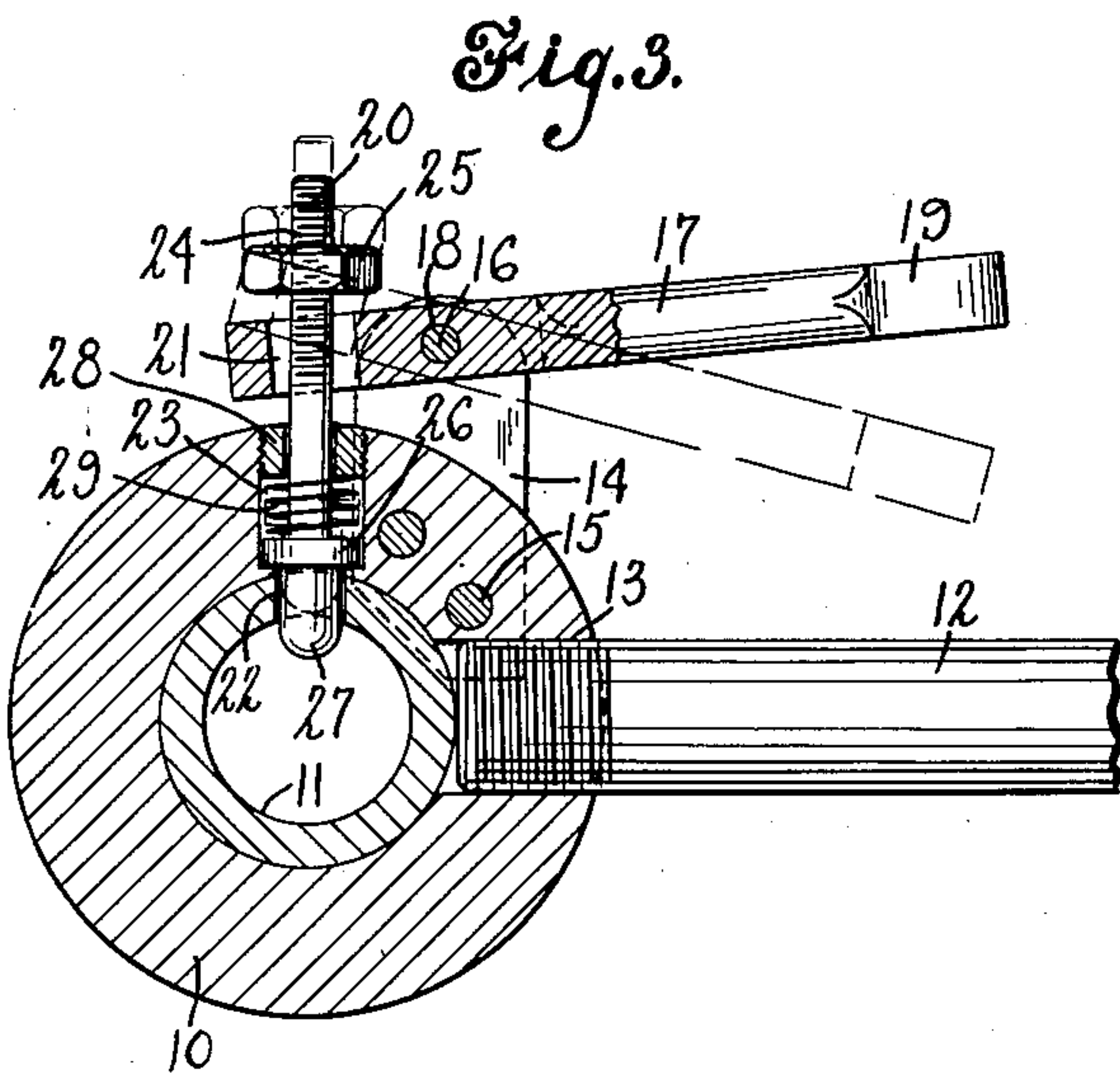


Fig. 3.

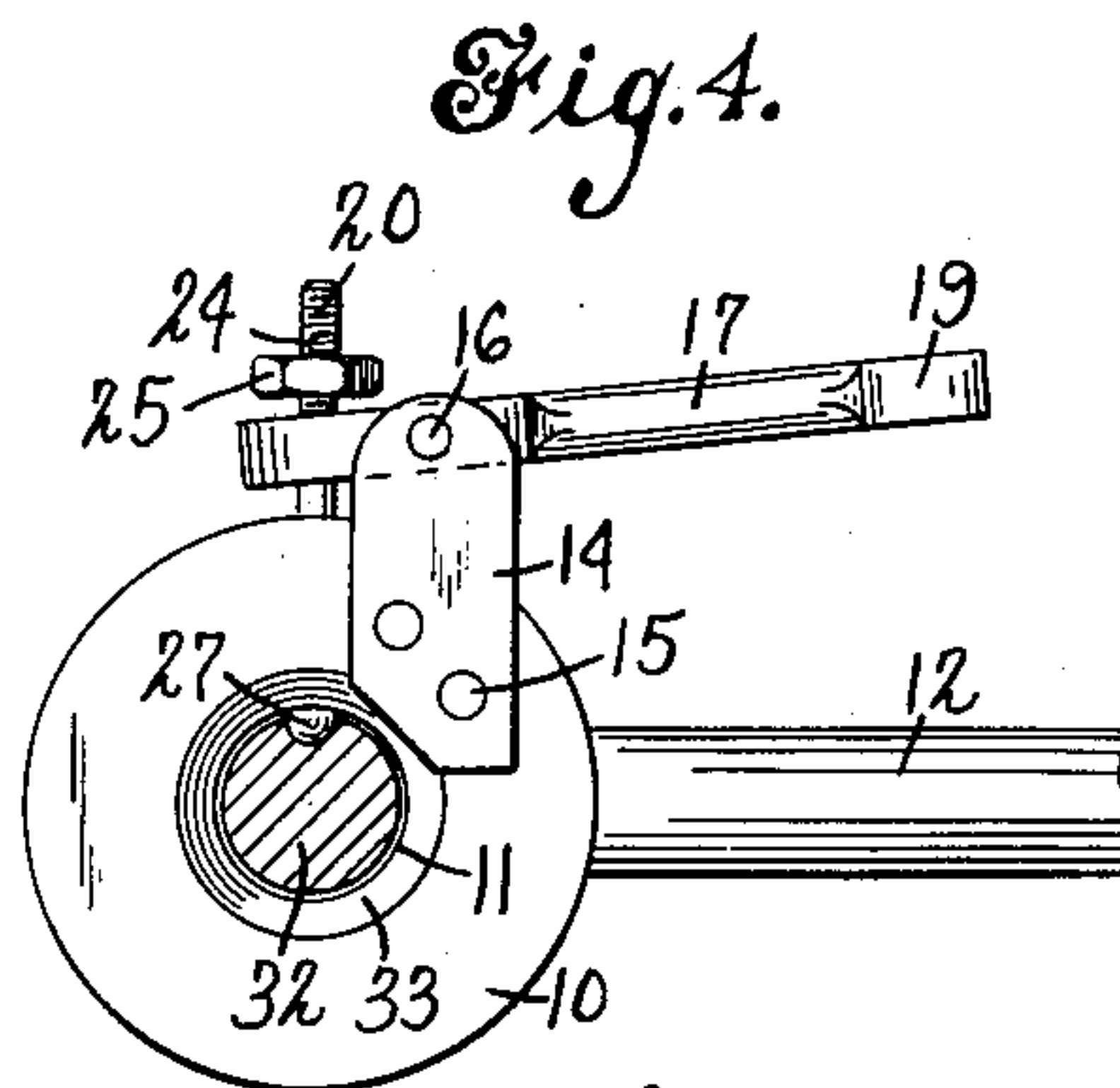


Fig. 4.

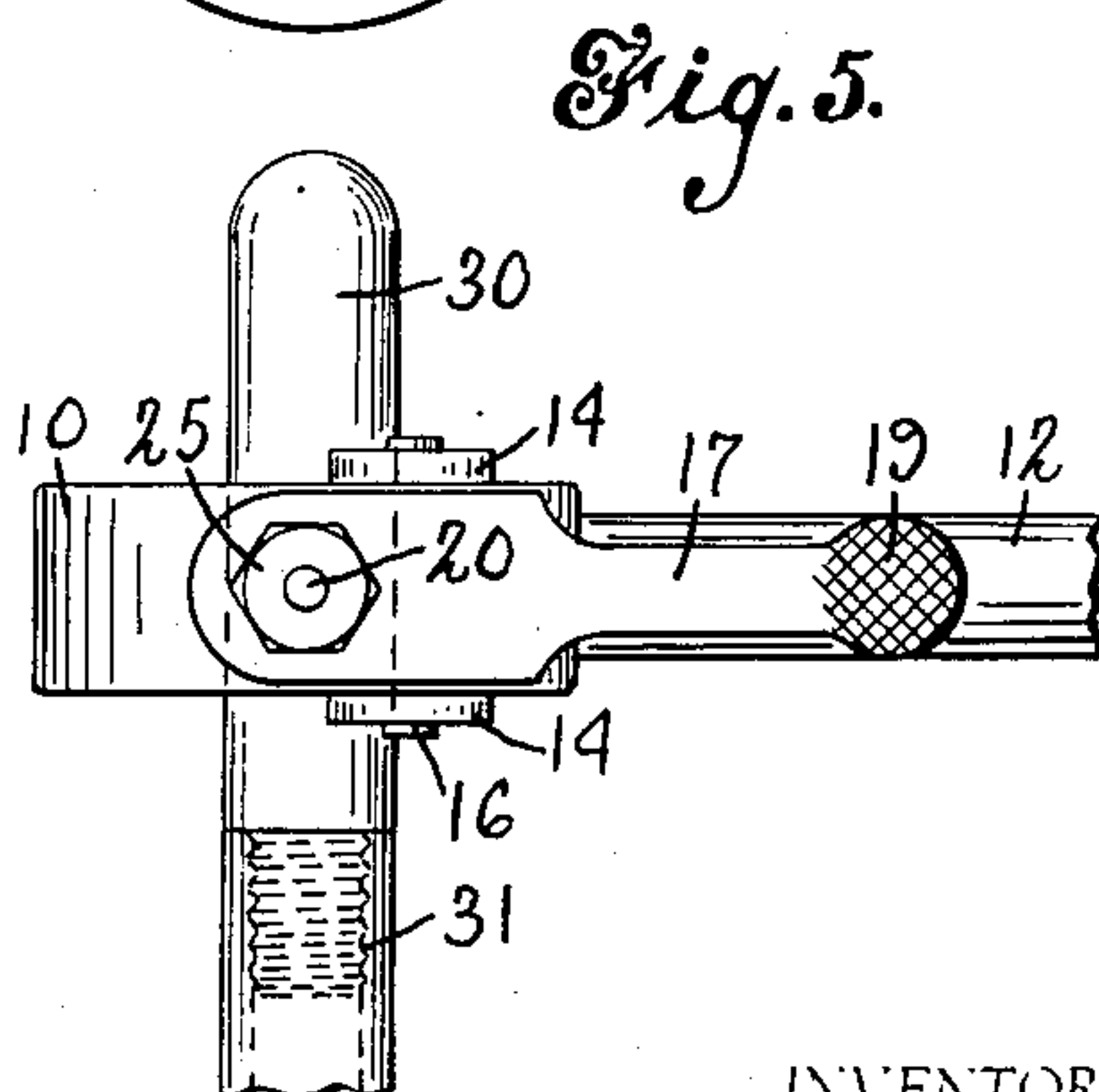


Fig. 5.

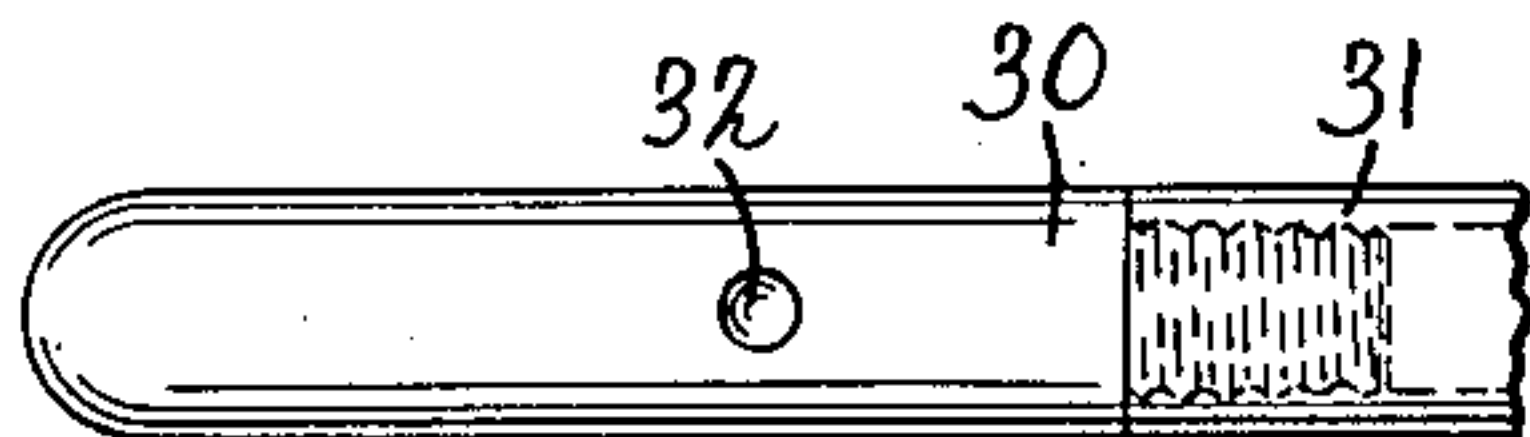


Fig. 6.

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2,709,939

SPANNER WRENCH

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6 Claims. (Cl. 81—90)

This invention relates to pin wrenches and relates more particularly to wrenches of the type having a projecting pin to enter a recess formed in the periphery of a cylinder, for example, to provide a hold on the cylinder whereby the latter may be twisted on the axis thereof. Heretofore, difficulty has been encountered in inserting and retaining the aforementioned pin in a recess formed in a cylinder, for example. The invention contemplates the provision of a pin wrench having means facilitating the insertion and retention of the projecting pin in the part to be twisted and comprising a self-locking, spring-compressed, projecting pin.

Accordingly, one object of the invention is to provide an improved pin wrench.

Another object of the invention is to provide a pin wrench having self-locking pin means.

Still another object of the invention is to provide a pin wrench, as described above, which is simple and economical to manufacture and which is comprised of few and rugged parts.

In the accompanying drawing:

Fig. 1 is an elevational view of a pin wrench embodying the invention;

Fig. 2 is a top plan view of the wrench illustrated in Fig. 1;

Fig. 3 is an enlarged sectional view taken on line 3—3 of Fig. 2;

Fig. 4 is a fragmentary elevational view of the wrench illustrated in Fig. 1 and illustrating the use of the pin wrench;

Fig. 5 is a fragmentary top plan view of the wrench illustrating the use thereof; and

Fig. 6 is a top plan view of the cylindrical member to be twisted by the wrench illustrated in Figs. 4 and 5.

In the embodiment of the invention illustrated in the drawing, the numeral 10 indicates the head of a pin wrench. The head 10 of the wrench may be of cylindrical form as indicated in the drawing and is provided with a concentric aperture 11 which is preferably round. The head 10 may be provided with a shaft 12, the latter providing a suitable handle extending radially of the head 10 and secured thereto, as in a socket formed therein, as indicated at 13 in Fig. 3 of the drawing. Ears 14 are provided on the head 10, one at each side thereof and secured thereto as by pins 15. The ears 14 support a pivot pin 16 extending between the ears 14 and having the ends thereof suitably secured in the respective ears, the pin 16 pivotally mounting an operating lever 17, the latter having a cross bore 18 formed therein intermediate the ends of the lever 17 and receiving the pivot pin 16. The operating lever 17 is provided with a manually operable portion 19 at one end thereof and is provided with a plunger pin 20 extending loosely through a vertical aperture 21 formed in the other end thereof as illustrated in Figs. 2 and 3 of the drawing for example. The last-mentioned end of the operating lever 17 may be enlarged as indicated in the drawing.

The plunger pin 20 is loosely received in a radial bore

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22 formed in the head 10 communicating with the concentric aperture 11 and extending to the periphery of the head 10. The bore 22 may be formed in the head 10 at substantially right angles to the shaft 12 and may be enlarged as by an upwardly directed counter-bore 23. The plunger pin 20 may have a threaded portion 24 at the upper end thereof carrying an adjusting nut 25 for a purpose to be described hereinafter, and may have an enlargement 26 adjacent the lower end thereof, co-acting with the bottom of the counter-bore 23 to limit movement of the pin 20 toward the axis of the head 10. The end of the plunger pin 20 below the enlargement 26 may be rounded as indicated at 27 in Fig. 3 of the drawing, for example, and a threaded bushing 28 may be threaded into the counter-bore 23 and spaced a distance from the bottom thereof, the bushing 28 embracing the pin 20 and serving to prevent lateral movement of the latter. A coil spring 29, also shown particularly in Fig. 3 of the drawing, is disposed in embracing relation to the pin 20 and compressed between the bushing 28 and the enlargement 26 of the pin 20 urging the enlargement against the bottom of the counter-bore 23 providing a lower stop for the pin 20, the arrangement being such that the pin 20 normally assumes a position similar to that shown in full lines in Fig. 3 of the drawing with the lower end 27 of the pin 20 extending into the concentric opening 11 formed in the head. From the foregoing, it will be apparent that the body of the spring 29 and the bushing 28 provide an upper stop for the enlargement 26 of the pin 20, limiting upward movement of the latter.

In accordance with the invention, the plunger pin 20 may be retracted from the concentric aperture 11 formed in the head 10 by downward movement of the pivoted operating lever 17 at the manually operable end portion 19 thereof, as indicated in broken lines in Fig. 3 of the drawing, the downward movement of the end portion 19 retracting the pin 20 through engagement of the remote end of the operating lever 17 with the overlying adjusting nut 25 threaded on the pin 20. It will be understood that the pressure of the spring 29 urging the pin 20 toward the axis of the head 10 may be overcome by the exertion of downward manual pressure on the end portion 19 of the operating lever. If desired, the normal position of the pin 20 in the bore 22 may be adjusted longitudinally of the latter as by turning down the adjusting nut 25 so that the adjacent end of the operating lever is engaged by the periphery of the head 10 and so that the pin 20 is moved upwardly in the bore 22 formed in the head. A nut (not shown) similar to the adjusting nut 25 may be employed on the threaded portion 24 of the pin 20 above the adjusting nut 25 to lock the latter in adjusted position.

The head of the pin wrench embodying the invention may be thrust over the free end of a member to be twisted by the wrench such as the left end of the cylindrical member 30, illustrated in Fig. 6 of the drawing, the cylindrical member 30 having a threaded connection to a fixed end member 31 and the cylindrical member 30 being provided with a recess 32 formed in the periphery thereof corresponding to the shape of the lower end of the pin 20 and adapted to receive the latter as illustrated in Fig. 4 of the drawing. One side face of the wrench head may have a beveled edge 33 adjacent and surrounding the concentric aperture 11 formed in the head to facilitate entrance of the free end of the cylindrical member 30 in the last-mentioned aperture. From the foregoing, it will be understood that the rounded lower end of the plunger pin 20 may be engaged with the free end of the cylindrical member 30 in such a manner that the plunger pin will be retracted and will slide over the periphery of the cylindrical member 30. In the last-men-

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tioned connection, it will be apparent that longitudinal adjustment of the plunger pin 20 may be necessary to permit retraction of the pin by engagement of the latter with the member to be twisted by the wrench, depending upon the shape and diameter of the free end of the last-mentioned member. It will also be understood that the spring-pressed plunger pin is self-locking and will assume the position and relation to the cylindrical member 30, indicated in Fig. 4 of the drawing, when the pin is located over the recess 32 formed in the cylindrical member 30 by relative longitudinal and angular movements of the latter with respect to the wrench head. When the pin wrench and the cylindrical member to be twisted by the wrench are rigidly locked together, as illustrated in Fig. 4 of the drawing, the cylindrical member may be twisted by leverage exerted on the wrench head through angular pressure applied to the wrench handle. The pin wrench may be separated from the cylindrical member by depressing the manually operable portion of the operating lever so as to retract the plunger pin from the recess formed in the cylindrical member and then withdrawing the wrench over the free end of the cylindrical member.

One advantage of a pin wrench embodying the invention is the ease with which the wrench may be locked to a member to be twisted by the wrench. Another advantage of the wrench is that it may be securely locked to a member to be twisted by the wrench. Another feature of the wrench is that inadvertent unlocking of the same is effectively inhibited, while intentional unlocking of the wrench is facilitated. Still another advantage of the wrench is that it is comprised of few and rugged parts and it is economical to manufacture.

It will be understood that the invention may take forms other than that illustrated in the drawing without departure from the principles of the invention and the scope of the claims.

What we claim is:

1. In a pin wrench, a head member having an opening formed therein, said head member having a bore formed therein communicating with said opening and extending to the periphery of the head member, said bore being enlarged by an outwardly directed counter-bore, a handle member extending outwardly from the periphery of the head member, pin means comprising a pin longitudinally slidable in said bore and extending outwardly from the periphery of the head member, said pin being extensible into said opening and having an enlargement thereon, a bushing member in said counter-bore embracing said pin and spaced from the bottom of said counter-bore, and a coil spring on said pin compressed between said bushing and said enlargement urging said pin toward said opening, said enlargement coacting with the bottom of said counter-bore to limit movement of said pin in the direction of said opening.

2. In a pin wrench, a head member having an opening formed therein and having a bore formed therein communicating with said opening and extending to the periphery of the head member, said bore being enlarged by an outwardly directed counter-bore, a handle member extending outwardly from the periphery of the head member, pin means comprising a manually operable lever pivoted to one of said members intermediate the ends of the lever, said lever having a pin at one end thereof slidable in said bore and extensible into said opening, said pin having an enlargement thereon, a bushing member in said counter-bore embracing said pin and spaced from the bottom of said counter-bore, and a coil spring on said pin compressed between said bushing and said enlargement urging the pin toward said opening, said enlargement of the pin coacting with the bottom of said counter-bore to limit movement of said pin in the direction of said opening.

3. In a pin wrench, a head member having an opening formed therein and having a bore formed therein

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communicating with said opening and extending to the periphery of the head member, a handle member extending outwardly from said head member, a manually operable lever pivoted to one of said members intermediate the ends of said lever, a pin slidable in said bore and extensible into said opening, said pin extending through one end of said lever and being slidable relatively thereto, spring means in said bore and including a coil spring embracing and engaging said pin urging the latter toward said opening, and an adjusting member having a threaded connection with the pin, said end of the lever being disposed intermediate said adjusting member and said head member, said end of the lever being engageable with the head member and being engageable with the adjusting member whereby said pin may be adjusted longitudinally in said bore.

4. In a pin wrench, a head member having an opening formed therein and having a bore formed therein communicating with said opening and extending to the periphery of the head member, said bore being enlarged by an outwardly directed counter-bore, a handle member extending outwardly from the head member, a manually operable lever pivoted to one of said members intermediate the ends of the lever, a pin member carried by one end of said lever and slidable in said bore, said pin member being extensible into said opening and having an enlargement thereon, a bushing member in said counter-bore embracing said pin and spaced from the bottom of said counter-bore, and a coil spring on said pin member compressed between said bushing and said enlargement urging the pin member toward said opening, said enlargement of the pin member coacting with the bottom of said counter-bore to limit movement of the pin member in the direction of said opening.

5. In a pin wrench, a head member having an opening formed therein and having a bore formed therein communicating with said opening and extending to the periphery of the head member, said bore being enlarged by an outwardly directed counter-bore, a handle member extending outwardly from the head member, a manually operable lever pivoted to one of said members intermediate the ends of the lever, a pin slidable in said bore and extensible into said opening, said pin extending through one end of said lever and being slidable relatively thereto, and said pin having an enlargement thereon, a bushing member in said counter-bore embracing said pin and spaced from the bottom of said counter-bore, a coil spring on said pin compressed between said bushing and said enlargement urging said pin toward said opening, said enlargement of the pin coacting with the bottom of said counter-bore to limit movement of said pin in the direction of said opening, and an adjusting member having a threaded connection with the pin, said end of the lever being disposed intermediate said adjusting member and said head member, said end of the lever being engageable with the head member and being engageable with the adjusting member whereby said pin may be adjusted longitudinally in said bore.

6. In a pin wrench, a cylindrical head member having a round concentric aperture formed therein and provided with a pair of ears, said head member having a radial bore formed therein communicating with said aperture and extending to the periphery of the head member, said bore being enlarged by an outwardly directed counter-bore, a handle member extending outwardly from the head member, a manually operable lever pivoted to said ears intermediate the ends of the lever, a pin slidable in said bore and extensible into said aperture, said pin extending through one end of said lever and being slidable relatively thereto, said pin having an enlargement thereon, a bushing member in said counter-bore embracing said pin and spaced from the bottom of said counter-bore, a coil spring on said pin compressed between said bushing and said enlargement urging said pin toward said opening, said enlargement of the pin coacting with the

bottom of the counterbore to limit movement of said pin in the direction of said aperture, and an adjusting member having a threaded connection with the pin, said end of the lever being disposed intermediate said adjusting member and said head member, said end of the lever being engageable with the head member and being engageable with the adjusting member whereby said pin may be adjusted longitudinally in said bore.

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