

I. H. FLORY.  
WRENCH.  
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955,781.

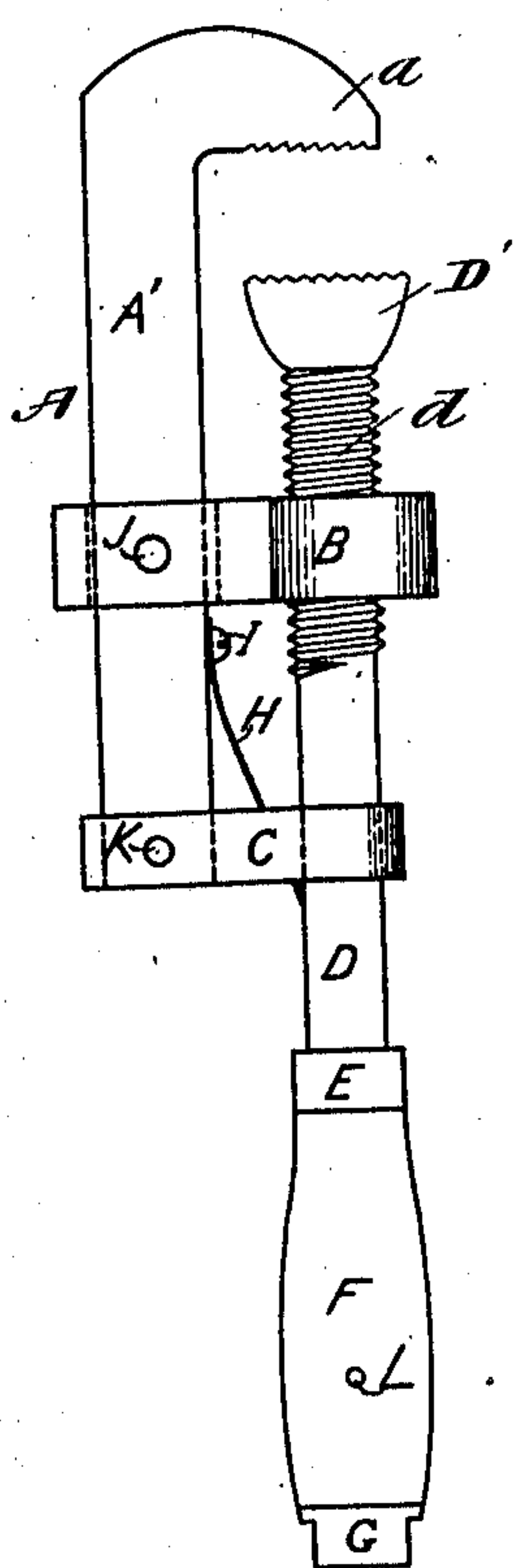


Fig. 1.

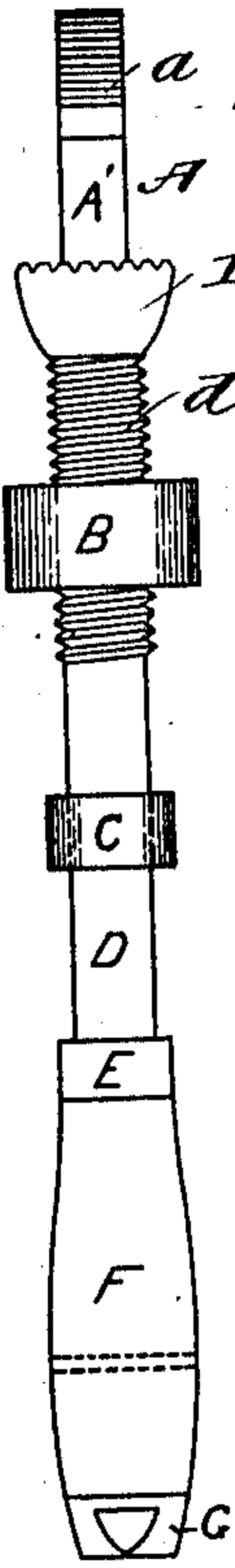


Fig. 2.

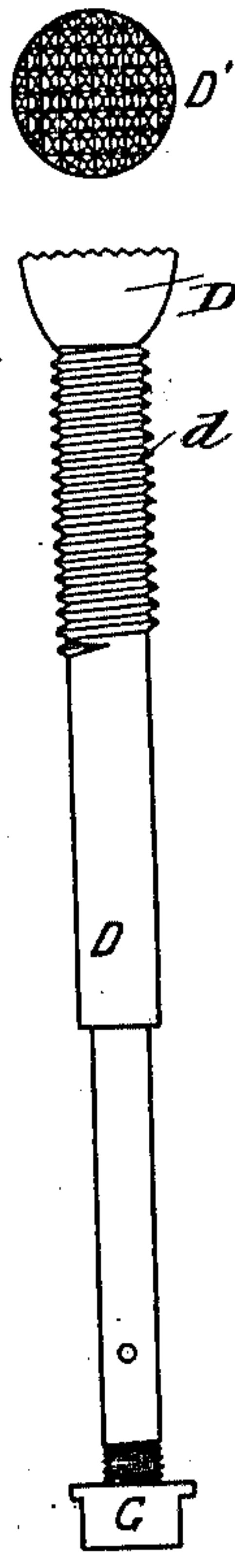


Fig. 3.

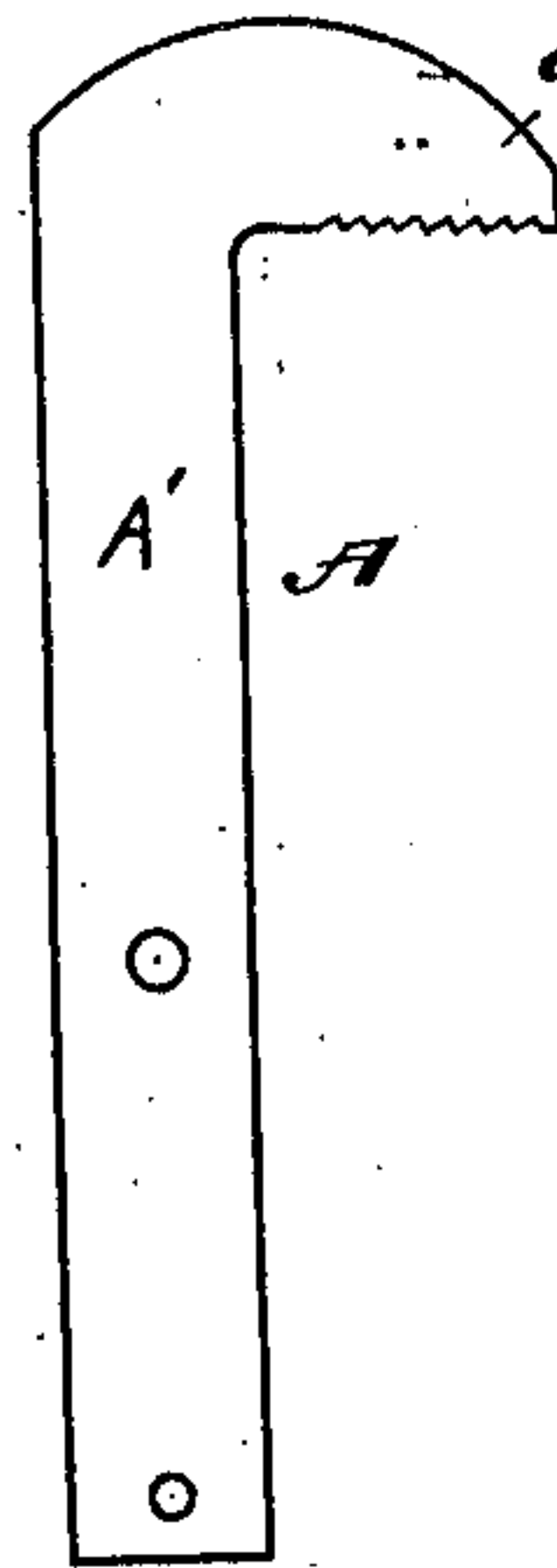


Fig. 5.

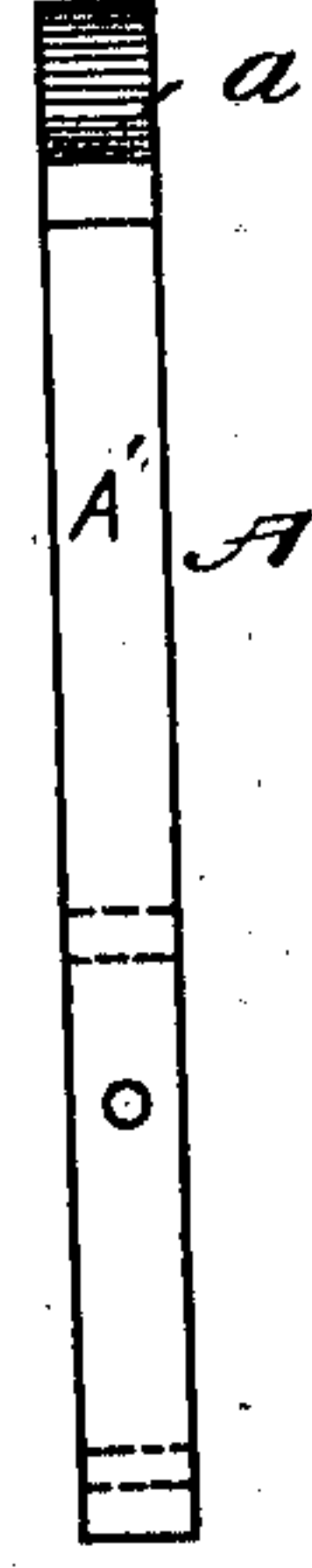


Fig. 6.

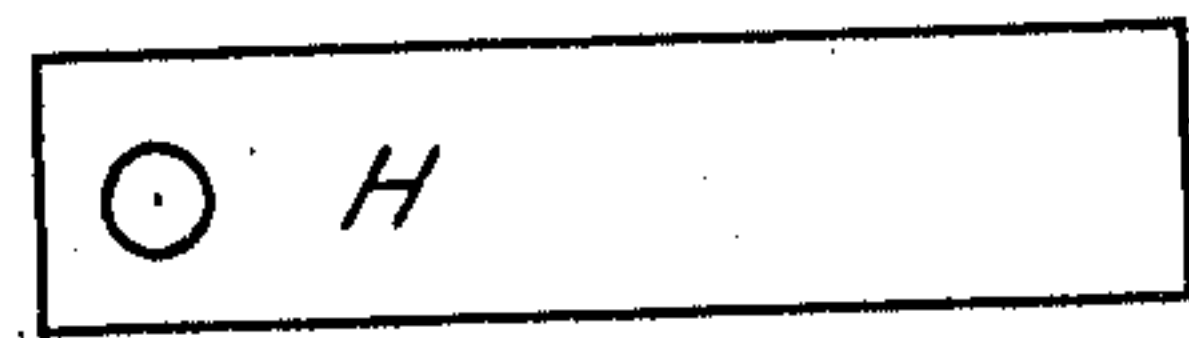


Fig. 7.

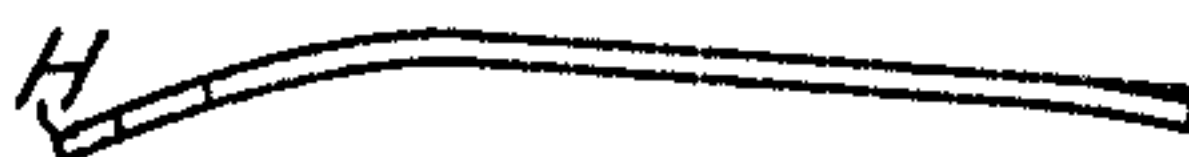


Fig. 8.

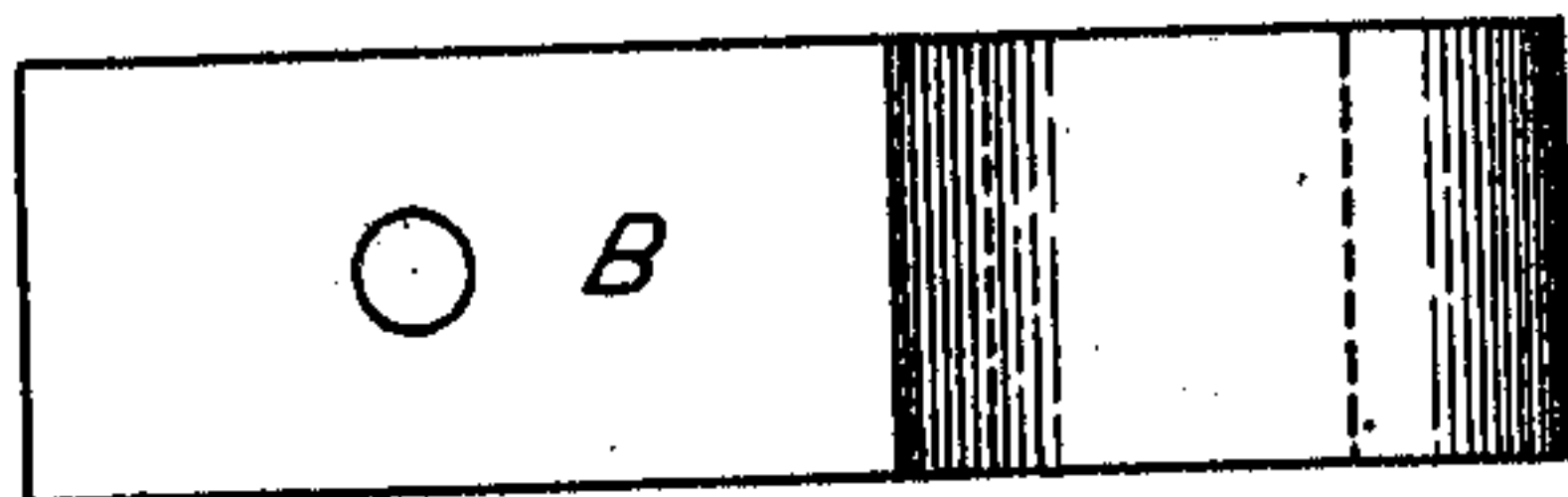


Fig. 9.

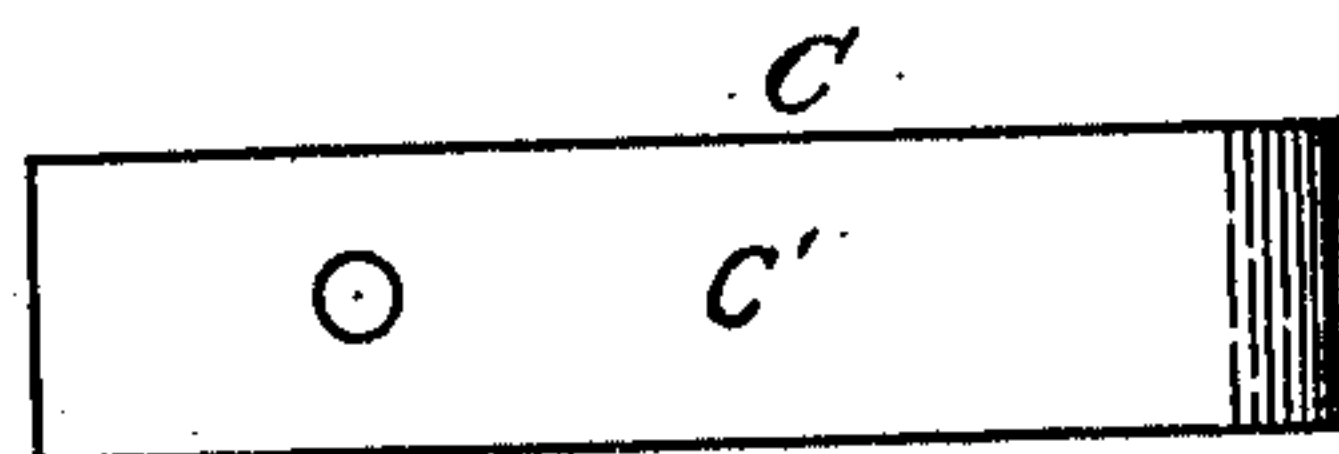


Fig. 11.

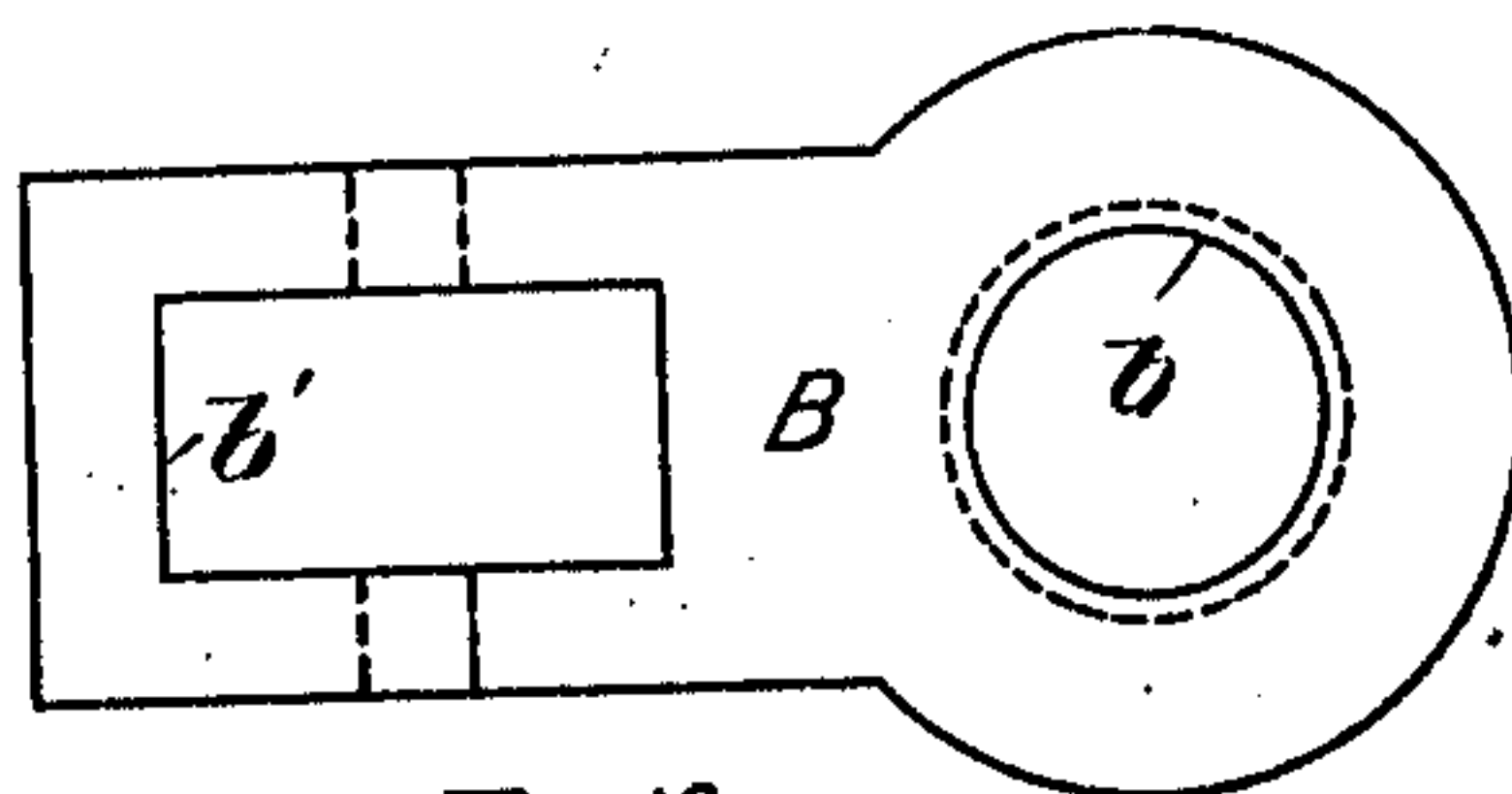


Fig. 10.

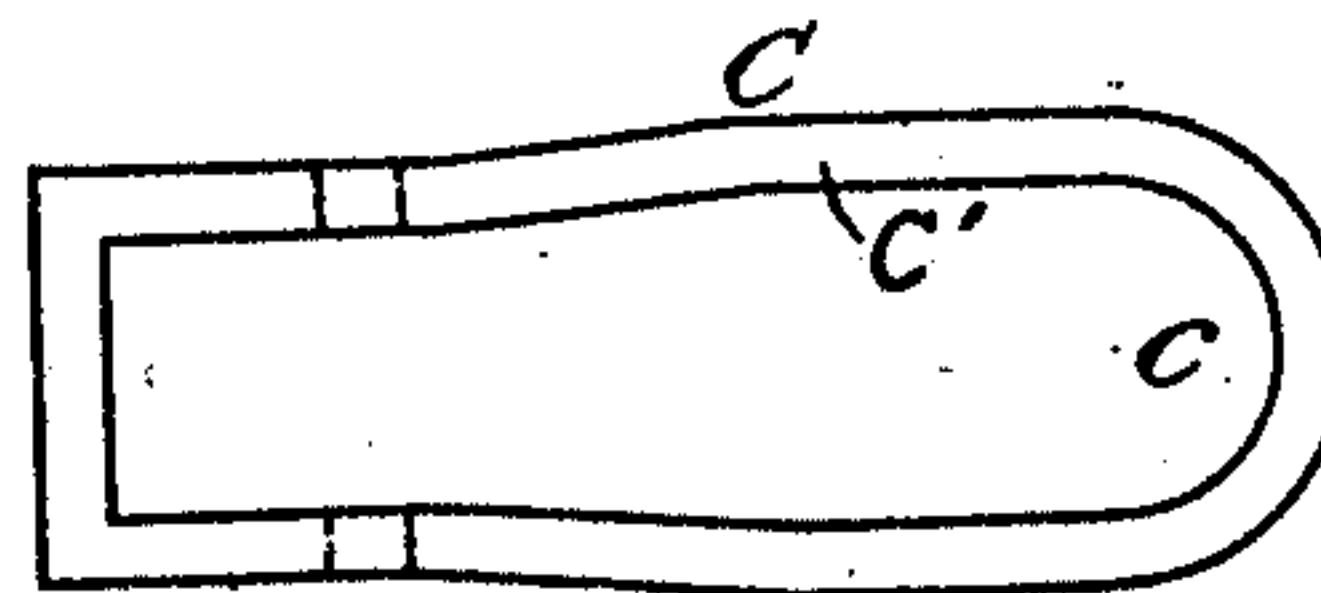


Fig. 12.

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Witnesses

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# UNITED STATES PATENT OFFICE.

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## WRENCH.

955,781.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed February 10, 1910. Serial No. 543,106.

*To all whom it may concern:*

Be it known that I, IRA H. FLORY, a citizen of the United States, residing at Arcanum, in the county of Darke and State of Ohio, have invented certain new and useful Improvements in and Relating to Wrenches, of which the following is a specification.

The invention relates to wrenches particularly adapted for screwing up or unscrewing pipes.

The objects of the invention are—First: to provide a wrench having a rotatable shank whereby it may be supported and its jaws adjusted while the wrench is supported and in use. Second: to provide a wrench the jaws of which may be adjusted in a comparatively small space. Third: to provide a wrench having a pair of jaws, one of which is mounted to swing relative to the other jaw to facilitate the positioning of the wrench.

Other objects of the invention will be apparent from the following description and claims.

Referring to the drawings, Figure 1 is a side elevation of a wrench embodying my invention. Fig. 2 is a front view of the same. Fig. 3 is a top view of one of the jaws. Fig. 4 is an elevation of the shank for the wrench with the handle removed. Figs. 5 and 6 are side and front views, respectively, of the jaw member. Figs. 7 and 8 are plan and side views, respectively, of the spring which holds the shank and jaw member in normal position. Figs. 9 to 12 are detail views of the connecting devices for the shank and jaw member.

In the drawings, D indicates a rotatable shank. This shank is preferably reduced in size near its lower end and adapted to receive a grip or handle F. The free end of the shank may be provided with screw threads to take a nut G, whereby the handle is held in place thereon.

L indicates a pin or rivet extending transversely through the handle F and shank D in order to securely unite these parts and to prevent any movement, relatively to each other, in rotating the shank D to adjust the jaws of the wrench, as will be later described. The main or body portion of the shank is also provided with screw threads, as shown at *d*, for a purpose to be hereinafter described.

D' indicates the rear jaw of the wrench mounted upon the upper end of the shank

D. The jaw D' is preferably enlarged relative to the shank D to provide a large engaging jaw face. This jaw face may be roughened or corrugated, as shown in Figs. 3 and 4.

A indicates the front or opposing jaw member comprising a bar A' and a laterally projecting front jaw *a* cooperating with the jaw D'. The face of the jaw *a* is preferably cross grooved.

B indicates a connector or bolster for connecting together the shank D and bar A.

*b* indicates an opening formed in the bolster B near one end thereof and provided with screw threads. This opening receives the screw threaded portion of the shank D.

*b'* indicates an opening formed in the bolster B near its opposite end.

J indicates a pivot pin extending through the bar A' and having its opposite ends supported in the walls of the opening *b'*. This opening is elongated, as shown in Fig. 10, in order that the bar A' may rotate on the pin J to permit slight movements of the jaw *a* relative to the jaw D'. The opposite end walls of the opening *b'* operate as stops to limit the movement of the bar A'.

C indicates a link or bolster fixed to the bar A' at or near its lower end. The link C is formed with an elongated opening *c*, through which the shank D extends. The opening *c* permits the lower end of the bar A' to swing toward the shank D to open the jaws D' and *a*, but prevents it from swinging in the opposite direction. The link C preferably comprises a continuous bar or ring C' of substantially rectangular shape. When the link C is formed or cast in this shape, the bar A' is arranged near one end of the opening *c* and rigidly secured thereto by a pin K.

H indicates a spring secured at one end to the bar A', as by a screw I, and having its opposite or free end engaging the shank D.

The spring H operates to maintain the shank D and bar A' in parallel relationship, but permits the swinging of the bar A' on its pivots to spread the jaws D' and *a*. As the faces of the jaws D' and *a* lie in planes at right angles to the axes of the shank D and bar A', it will be understood that when the latter are parallel to each other, the jaws D' and *a* are also parallel to each other.

In operating the wrench, it may be pressed over the pipe or other article by applying pressure at the free end of the front jaw,



thus slightly opening or spreading the two jaws. When once slipped over the pipe, the spring H presses the jaws toward each other and tightly upon the pipe. This operation of the jaws D' and a prevents any slipping whatever and greatly increases the gripping force when pressure is first applied at the handle. When the jaws D' and a are in engagement with the pipe or other article to be turned and force is applied to the handle, it will be understood that the connector B and link C connect and hold the jaws in their adjusted position and effect the operation thereof as a unitary structure.

It will also be understood that by rotating the shank D, the jaw D' is adjusted toward or from the jaw a according to the direction the shank is turned, and as the handle F, by which the wrench is manipulated, is fixed to the shank D, the wrench may be inserted into a very small space and the wrench jaws adjusted by the same hand that grips and supports the wrench and without releasing the hand from the handle F.

What I claim is:

1. In a wrench, the combination of a rotatable shank carrying a jaw and provided with screw threads, a jaw member comprising a bar and an opposing jaw, a connector formed with two openings, one of said openings being provided with screw threads and arranged to receive the screw threaded portion of the said shank, and the other of said openings being elongated and adapted to receive the bar of the jaw member, means for pivoting the bar in said elongated opening, and a link fixed to the free end of the said bar and formed with an elongated opening through which the shank extends, the said elongated opening in the link permitting the jaw member to swing in one direction, but operating to hold the shank and jaw member in fixed relationship when force is applied to the shank to turn an article gripped by the jaws of the wrench.

2. In a wrench, the combination of a rotatable shank carrying a jaw and provided with a screw threaded portion, a jaw member comprising a bar and an opposing jaw, a connector formed with two openings for adjustably connecting the shank and jaw member together, one of said openings being provided with screw threads and arranged to receive the screw threaded portion of the said shank, whereby the latter may be rotated to adjust it and the jaw carried thereby relative to the opposing jaw, and the other of said openings being elongated and adapted to receive the bar of the jaw mem-

ber, means for pivoting the bar in said elongated opening, a link carried by the free end of the bar and formed with an elongated opening through which the said shank extends, the said elongated opening in the link permitting the jaw member to swing in one direction, but operating to hold the shank and jaw member in fixed relationship when force is applied to the shank to turn an article gripped between the two jaws, and a handle carried by the shank, whereby the wrench may be supported and the jaws adjusted simultaneously.

3. A wrench comprising a shank carrying a jaw, a bar carrying a jaw arranged to cooperate with the jaw carried by the said shank, and a pair of connecting devices for holding the said shank and bar in separated position, one of said connecting devices having at one end screw threaded engagement with the shank to permit sliding movement thereof relative to the bar and having at its opposite end pivotal connection with the bar to permit swinging movement thereof relative to the shank, and the other connecting device being fixed at one end to the said bar and formed with an elongated opening through which the shank extends, the said connecting devices operating to hold the bar and shank in fixed relation when force is applied in the operation of the wrench.

4. In a pipe wrench, the combination of a shank provided with a screw threaded portion and carrying a jaw at one end, a jaw member comprising a bar and a jaw arranged to cooperate with the jaw carried by the said shank, a bolster for connecting the said shank and jaw member together, the said connector being formed with openings near its opposite ends arranged to receive the said shank and bar of the jaw member and the opening through which the shank extends being provided with screw threads to take the screw threaded portion of the said shank whereby the latter may be adjusted, means for pivotally connecting the bar of the jaw member in the other opening of the bolster, and means for connecting the shank and jaw member together below the said bolster to permit pivotal movements of the jaw member in one direction but to hold the shank and jaw member in fixed relationship when force is applied in the operation of the wrench.

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