

(No Model.)

A. A. LOW.
PLIERS.

No. 419,270.

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Fig. 1.

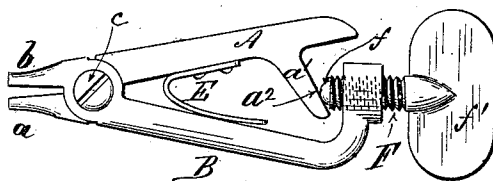


Fig. 2.

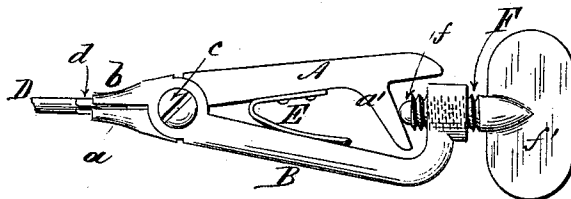
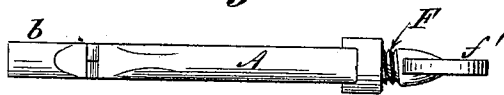


Fig. 3.



Witnesses:
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Application filed February 27, 1889. Serial No. 301,397. (No model.)

To all whom it may concern:

Be it known that I, ABBOT AUGUSTUS LOW, a citizen of the United States, residing in the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Implements for Imparting Rotary Motion, of which the following is a specification sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

My invention relates to implements for grasping and rotating clock-spindles and similar articles requiring winding or tightening, and is designed to afford a simple, compact, and effective device adapted to compensate for variations in the size of the spindles or other objects operated upon.

The leading feature of my invention consists in so arranging the parts of the device that the strain thereon in use tends constantly to tighten the gripping-jaws upon anything introduced between them—that is to say, the mere act of rotating the device secures it upon the article to be operated upon in such manner that the greater the force employed to rotate the device the more rigid and effective will be its connection therewith.

The invention consists in two levers pivotally connected, the short arms of which are formed into gripping-jaws, while the long arms are formed the one with an inclined plane extending diagonally across the longitudinal axis of the implement, and the other lever with an actuating-screw the axis of which coincides with or is substantially parallel to the said longitudinal axis of the implement in such manner that the rotation of the screw forward tends constantly to close the jaws. The head or handle of the actuating-screw may thus be used practically as the handle of the implement during its rotation, insuring a continuous firm hold upon the article operated upon, which increases in effectiveness in proportion to the requirements or necessity—in other words, in proportion to the amount of resistance encountered and the consequent increase of power applied.

An important advantage arising from my special construction and arrangement of parts consists in the ease and rapidity with which the implement may be applied to or disengaged from an object, the pitch of the inclined

bearing-surface against which the actuating-screw rests rendering a partial turn of the latter sufficient to tighten or loosen the jaws to the requisite degree.

In the accompanying drawings I show an implement embodying my improvements in practical form, although I do not wish to confine myself strictly to the identical construction of parts shown, since it is obvious that various modifications may be resorted to without deviating materially from the essential features of my invention.

Figure 1 is a side elevation of my improved rotating implement, showing the actuating-screw partially retracted and the gripping-jaws opened to a corresponding degree. Fig. 2 is a similar view showing the screw advanced and the gripping-jaws closed upon the end of a spindle. Fig. 3 is an edge or top view of the device.

The levers A and B cross each other at the pivot or fulcrum C, so that the gripping-jaws *a* and *b* approach or recede from each other simultaneously with the drawing together or separation of the levers A and B.

Of course it is obvious that my improvements in construction may be applied to any ordinary form of pliers, nippers, or clamping device having flat, round, or other special form of jaws, although I have designed them more especially for the production of a substitute device for the ordinary clock-key, and for rotating or tightening articles that are square in cross-section; and I have consequently indicated the jaws *a b* as formed to conform to the angular head *d* of the spindle D, as shown in Fig. 2, although I do not claim or limit myself to such shape of gripping-surfaces.

A spring E, attached to the inner side of one lever and bearing against the inner side of the opposite lever, tends constantly to separate the levers A and B, and consequently the gripping-jaws *a* and *b* in like proportion. The action of the spring E is limited and controlled by the bearing of the inner end *f* of the actuating-screw F against the inclined surface *a'* of the diagonally-projecting spur or abutment *a'*, forming part of the lever A, from the inner side of which it projects diagonally across the longitudinal axis of the said actuating-screw F, as shown in Figs. 1 and 2

of the drawings. The forcible impingement of the end f of the screw F against the bearing-surface a^2 of the abutment a' causes the levers A and B and the jaws a and b to close more or less rapidly, according to the pitch or inclination given to the said inclined bearing-surface a^2 . In like manner the power of the device may be increased or diminished by varying the angle of lateral projection of the inclined plane a^2 with relation to the path or longitudinal axis of the actuating-screw F . In fact it will be seen that I combine all the advantages of the inclined plane and screw in my arrangement and at the same time render the device almost instantaneous in action, so that no loss of time or inconvenience is experienced in the use of the implement, while it adapts itself readily and automatically to any variations in the size of the several articles to which it may be applied.

The cross-head f' of the actuating-screw F is made sufficiently broad and large to afford a convenient hold for the fingers, and is designed to be used, as before indicated, as the handle of the implement during operation, the application of the power to effect the ro-

tary movement through the screw itself insuring a close fit of the jaws a and b and a tenacious hold upon the article operated upon.

The end of the lever B is preferably turned up to form a bearing b' , which is tapped with a female screw-thread for the reception and engagement of the screw F , which latter may be either of the right-hand or left-hand variety, according to the circumstances of use for which a particular implement may be designed.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination, in an implement substantially such as described, of the pivotally-connected levers A and B , having the gripping-jaws a and b , the laterally-projecting rigid spur a' , having the inclined plane a^2 , and the actuating-screw F , arranged to impinge against the said inclined plane, substantially in the manner and for the purpose described.

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Witnesses:

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