

(No Model.)

J. ADDISON.

TOOL FOR CUTTING HOLES AND WASHERS.

No. 453,767.

Patented June 9, 1891.

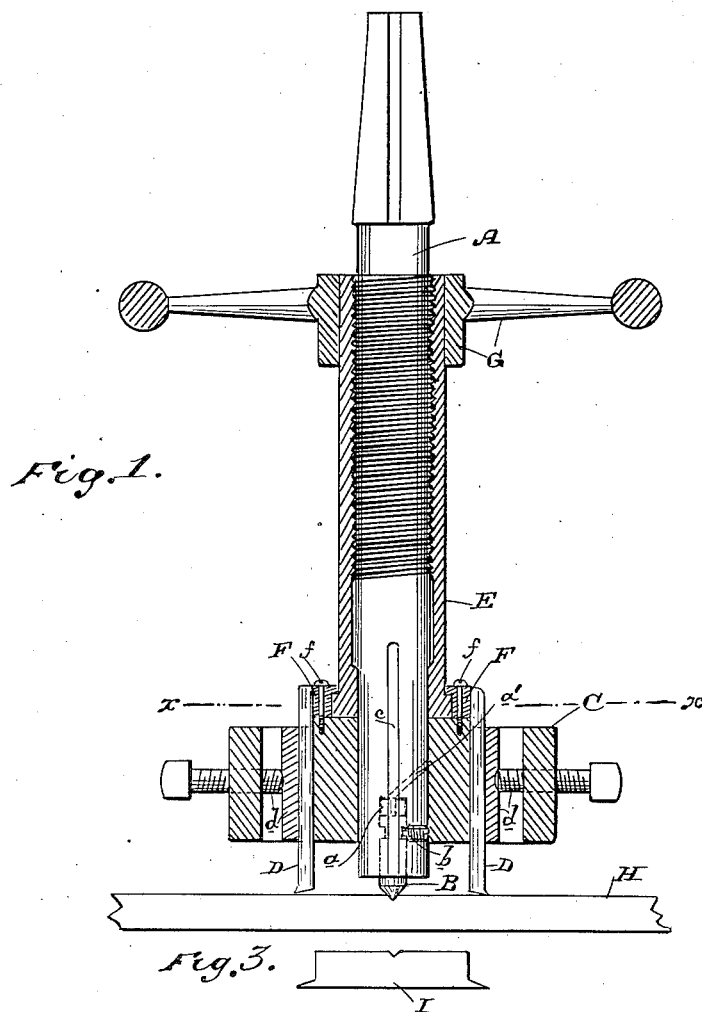
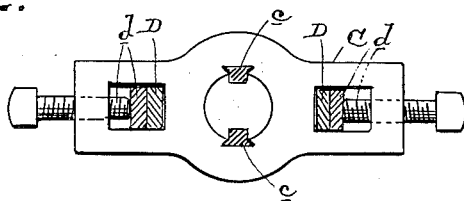


Fig. 2.



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TOOL FOR CUTTING HOLES AND WASHERS.

SPECIFICATION forming part of Letters Patent No. 453,767, dated June 9, 1891.

Application filed January 28, 1891. Serial No. 379,431. (No model.)

To all whom it may concern:

Be it known that I, JAMES ADDISON, a citizen of Great Britain, residing in the city and county of San Francisco, State of California, have invented an Improvement in Tools for Cutting Holes and Washers; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the general class of machine-tools designed for the cutting of holes in metal plates, boiler-heads, tube-holes, ship's plates, and general purposes, and for the making of washers.

My invention consists in the novel construction, arrangement, and combination of parts hereinafter fully described, and specifically pointed out in the claims.

The object of my invention is to provide a simple and effective tool for these purposes, capable of rapid and steady work, by reason of avoiding the necessity of first providing a hole for the tool center to act as a guide, and of taking all the strain and spring of the plate upon said center, thereby removing it from the cutters, as will hereinafter fully appear.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a vertical section of my machine-tool. Fig. 2 is a horizontal section on the line *x x* of Fig. 1. Fig. 3 is a detail of the washer I.

A is a bar provided with external threads and carrying in its lower portion the center B. This center is a removable one, being fitted in a socket in the bar and held therein by a set-screw *b*. In the top of this socket and bearing against the center is a steel thrust-button *a* with oil-hole *a'*.

Fitted about the lower portion of the bar A and adapted to slide up and down thereon is a cross-head C, which is fitted to the bar by means of the splines or feathers *c*, which cause it to rotate with the bar and yet provide for its movement up and down thereon. This cross-head carries the cutters D, which are fitted in sockets in the ends of the cross-head and are held therein by set-screws and presser-blocks *d*, as shown.

E is a feed-nut seated upon the bar A, and having its lower end pressing upon the top of the cross-head C. It is also secured to

said cross-head, so that it may raise it by means of the washer F, flanged about its lower end and secured to the cross-head by the screws *f*.

G is a hand-wheel of the feed-nut.

H in Fig. 1 represents the plate in which the hole is to be cut, or from which the washer is to be cut, and I represents the washer which is cut out.

The operation of the tool is as follows: It is set upon the plate, as shown in Fig. 1. The upper end of the bar A is put in a drill-press and said bar is rotated. This rotation is imparted to all the parts of the tool with the exception of the center B; but by seizing the hand-wheel and momentarily arresting it the feed-nut will be moved downwardly, thereby pressing downwardly the cross-head and feeding the cutters into the plate. The bar A and its center B remain in the same place, however, continuing their rotation, but not feeding downwardly, as the feed-nut simply presses down the cross-head which slides on the bar. The cutters, therefore, cut through the plate, while the center does not. Now to withdraw the cutters the reverse of the operation takes place and the nut draws up (by means of the washer) the cross-head and cutters. In ordinary tools for cutting holes or cutting out washers it is customary to first make a hole completely through the plate. This hole is necessary to receive the center of the tool, which serves as a guide for the cutters, and as said center feeds downwardly through the plate it must have a clear passage to move with the cutters. This necessity of making the hole first is avoided entirely by the use of my machine. Another disadvantage of the common tool is that all the strain is taken by the cutters, as the center merely serves as a guide in the hole. Consequently all the spring of the plate is received by the cutters, which causes them to jump, and thereby to lose time and to jar the machine. In my machine the strain and the spring of the plate are taken entirely upon the center, thereby relieving the cutters, which have no more than their legitimate functions to perform—namely, of cutting through the plate. Much more rapid and effective work can thereby be performed by my machine,

which at the same time is simple in construction and readily operated.

It is not intended that the center B shall turn with the bar A. It is fitted freely in the bar, and the latter turns on it, while the center is stationary. The set-screw *b* simply keeps the center from dropping out. Thus there is no tendency to make a hole in the plate. The oil-hole enables me to keep the bearing of the center in the bar well lubricated, so that it will not turn. The steel thrust-button takes all the strain and prevents the center from wearing into the body of the bar. It is obvious, though, that as far as the main portion of the tool is concerned the center B can be any center connected or formed with the bar.

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

1. The combination of the rotating threaded bar having a center, the vertically-sliding cross-head mounted upon and rotated by said bar, the cutters of said cross-head, and the feed-screw seated on the threaded bar and bearing on the cross-head, substantially as herein described.

2. The combination of the rotating bar externally threaded and carrying in its lower end a center, the vertically-sliding cross-head mounted upon the lower end of the bar and rotated thereby, the cutters carried by said cross-head, the feed-nut seated upon the threaded bar and bearing on the cross-head,

and the hand-wheel of said nut, substantially as herein described.

3. The combination of the threaded rotating bar having a center in its lower end, the sliding cross-head upon the lower end of the bar, the cutters carried by the cross-head, the feed-nut seated on the bar and having the hand-wheel, and the washer connecting the lower end of the feed-nut with the cross-head, substantially as herein described.

4. The combination of the threaded rotating bar, the separate center B, mounted in the lower end of the bar and upon which the bar turns, the sliding cross-head on the bar, the cutters carried by the cross-head, and the feed-nut, with hand-wheel mounted on the bar and bearing on the cross-head, substantially as herein described.

5. The combination of the threaded rotating bar having a socket in its lower end, the thrust-button in the base of the socket with oil-hole, the separate non-rotary center B in the socket and bearing on the thrust-button, the sliding cross-head on the bar, the cutters carried by the cross-head, and the feed-nut, with hand-wheel mounted on the bar and bearing on the cross-head, substantially as herein described.

In witness whereof I have hereunto set my hand.

JAMES ADDISON.

Witnesses:

S. H. NOURSE,
J. A. BAYLESS.