C. & A. B. JENKINS.

PUNCHES FOR LEATHER, &c.

No. 190,683. Patented May 15, 1877.

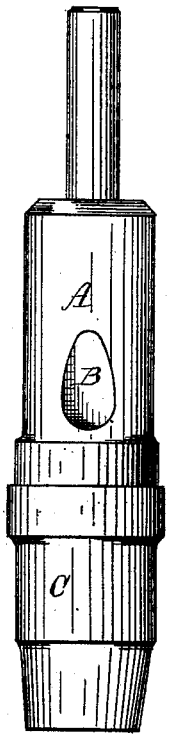

Fig. 1

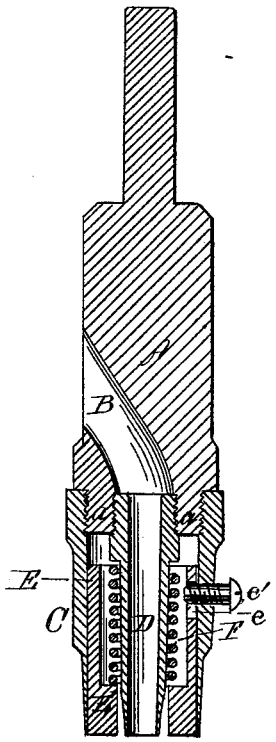

Fig. 2.

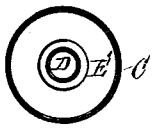

Fig. 3.

WITNESSES

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CHARLES JENKINS AND ALFRED B. JENKINS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN PUNCHES FOR LEATHER, &c.

Specification forming part of Letters Patent No. **190,683**, dated May 15, 1877; application filed March 6, 1877.

To all whom it may concern:

Be it known that we, CHARLES JENKINS and ALFRED B. JENKINS, both of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Punches for Punching Leather, Rubber, Paper, and like materials, into rings or washers, of which the following is a specification:

This invention relates to a particular punch, especially adapted to cut washers or rings from a sheet or plate of the material worked upon, and is especially adapted for cutting out rings or washers of packing from the prepared sheet.

It consists in a circular punch of the size of the ring or washer to be made, inclosing an inner diaphragm kept flush with the edge of the punch by a spring-pressure and an inner hollow circular punch having a diameter of the diameter of the hole in the ring or washer to be cut, and provided with an opening from the top of the hollow central punch through the side of the stock, for the purpose of freeing the central punch of waste, all of which will hereinafter be explained.

Reference is made to the accompanying drawings, forming a part of this specification, in explaining the nature of our invention, in which—

Figure 1 is an elevation of our invention. Fig. 2 is a vertical section through its center, and Fig. 3 is a view of the bottom of the punch.

The stock A is provided at its lower end with the projection *a*, which has screw-threads formed upon its outer and inner sides, and is further provided with the hole B, which communicates from the side of the stock downward to the center of projection *a*.

Screwed upon the outer circumference of the projection *a* is the outer punch C, and to the inner side, the hollow central punch D. The edges of these punches are thin and sharp, and their butt ends are provided with shoulders, that contact with corresponding shoulders on the stock A, so that the shock of the blow may be partly taken from the screw-thread.

Arranged between the two punches, to inclose the central one, is the cylinder E, which terminates in a diaphragm, E′. A spring, F, bearing upon the end of the projection *a*, and upon the diaphram E′, constantly acts to keep the diaphragm flush with the ends of the two punches. The play of the diaphragm is limited by the length of the slot *e* in the side of the cylinder, into which the set-screw *e′* enters to act as a stop.

By making the punches and diaphragm detachable from the stock, a number of sizes of rings or washers may be cut out, and the central holes varied in diameter by simply changing the punches without changing the stock.

The punches are preferably made of steel, and the stock A is provided with a projection for fastening in a chuck.

Of course the punch may be provided with any necessary motion; but we prefer that it should be provided with a rotary and a vertical movement, as the punches cut with a shear if revolved, and make a smooth and more even edge to the work.

In operating the punch the work is fed under the same, and it is caused to descend, cutting from the material a ring or washer of the required size. The waste cut by the center punch in forming the central hole is forced upward into the hollow punch and out at hole B by the successive operations of the punch. The ring or washer is forced from between the dies by the diaphragm E′ and spring as the punch lifts from the work.

It will be observed that the punch is self-freeing, the waste being forced through the central hole by each successive ring or washer cut out, and that the ring or washer is forced from between the inner and outer punches by the diaphragm, which, while it acts in freeing the dies of the ring or washer, also serves to steadily hold the work down while the punches are operating.

It will also be observed that, by making the punches and diaphragm removable, the size of the ring and washer, and the size of the hole in the ring or washer, may be varied at will.

We claim, and desire to secure by Letters Patent of the United States—

1. In a punch for punching rings and washers, the combination of a detachable outer punch, a hollow removable central punch, and an automatic diaphragm surrounding the cen-

tral punch, all arranged and operating as described.

2. In combination with a stock, A, provided with the hole B and projection *a*, the removable punches C and D, cylinder E, provided with diaphragm E′ and spring F, substantially as shown and described.

3. In combination with a hollow circular punch, D, opening into the outlet B in the stock, with a yielding diaphragm, E′, surrounding the same, substantially as described.

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Witnesses:
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