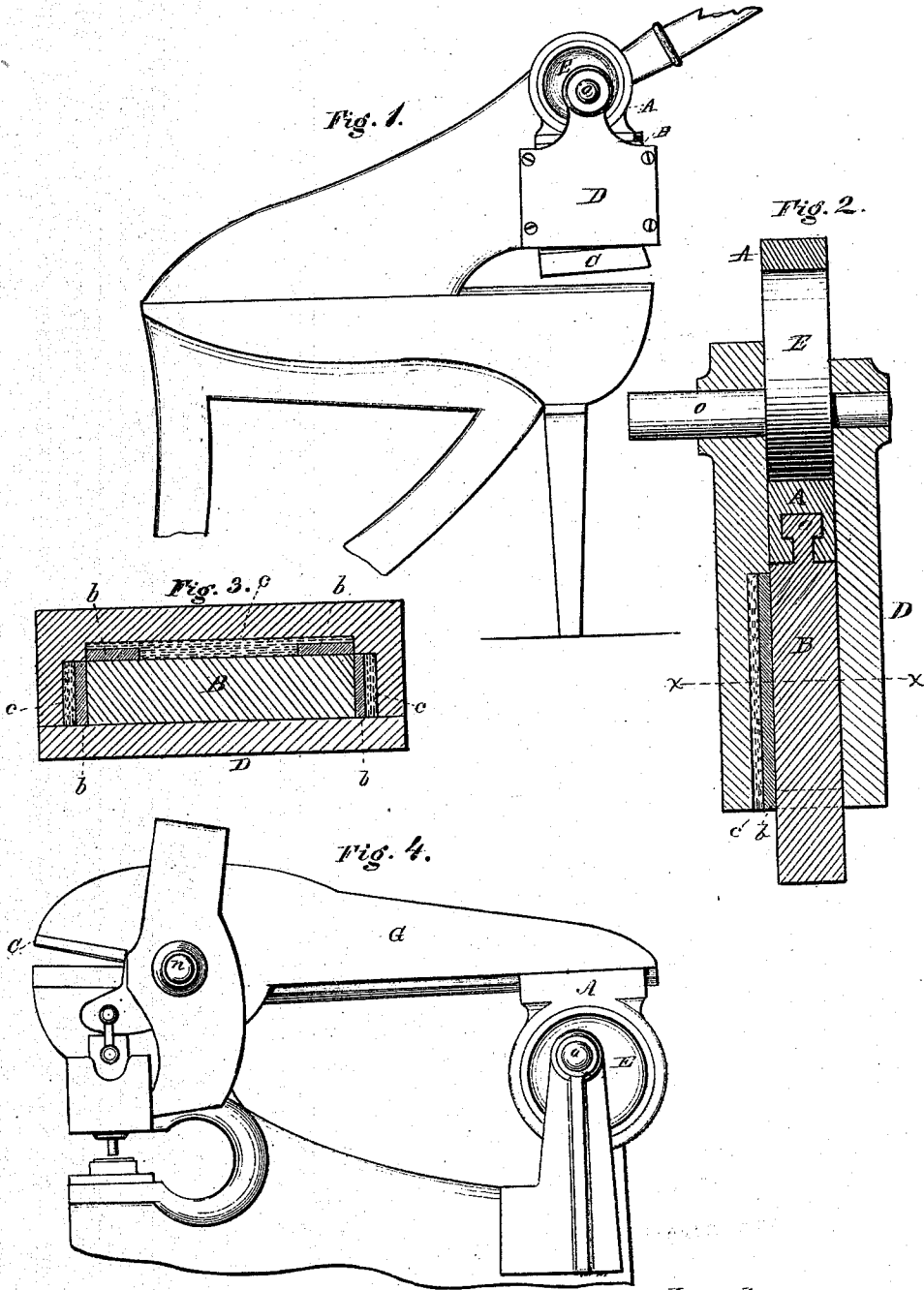


*E. Doty,*

*Shearing Metals.*

*No. 102,924.*

*Patented May 10, 1870.*



Witnesses,  
*Phil' S Dodge,*  
*W. W. Dodge.*

Inventor,  
*Ellis Doty,*  
*by Dodge Munn*  
*his atty.*

# United States Patent Office.

ELLIS DOTY, OF JANESVILLE, WISCONSIN.

Letters Patent No. 102,924, dated May 10, 1870.

## IMPROVEMENT IN MACHINES FOR PUNCHING METAL.

The Schedule referred to in these Letters Patent and making part of the same.

### To all whom it may concern:

Be it known that I, ELLIS DOTY, of Janesville, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Shearing and Punching-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it.

My invention relates to machines for shearing or punching metals; and

The invention consists—

First, in a novel device for operating the machine by means of an eccentric; and,

Second, in novel manner of securing the bearings or bushing for the sliding part, as hereinafter explained.

Figure 1 is a side elevation of a shearing-machine with my improvement applied.

Figure 4 is a similar view of a combined shearing and punching-machine, showing the operating device applied in a different manner.

Figures 2 and 3 are sectional views of the portion containing the slide exhibiting the manner of inserting the bearings therefor.

In order to operate the movable blade of a shearing-machine, or the punch of a punching-machine, I make use of an eccentric secured to a shaft or arbor, which eccentric has a yoke passing around it, and has a T-shaped groove in its end, where it bears upon the moving part of the blade or punch, as represented in the drawings.

In fig. 1, I have represented this device applied to a shearing-machine, of that class which has its upper or movable blade C attached to a block, B, which slides up and down in a strong box or bearing made on the front part of the frame.

In making such machines, the bearing or box for the reception of the slide B is formed by casting the frame with a rectangular recess in its side of proper size to receive the slide B, and then bolting a plate, D, on the front side of the same.

In applying my invention to such a machine, I form the top of the slide B with a T-shaped projection or tongue, as shown at *a*, fig. 2, and fit the same into a corresponding groove in the lower straight face of a yoke, A, which yoke I then mount upon an eccentric, E, which latter is secured rigidly upon a shaft, O, as represented in figs. 1 and 2.

It will be seen that by thus connecting the slide or block B and the yoke A, the latter will be free to move transversely to the former, and that, therefore,

as the shaft O revolves, carrying with it the eccentric E, the yoke, while moving transversely, will cause the block B to move vertically. By this plan I obtain a very compact and powerful machine, and as the yoke A has a bearing on the block across its entire end, it follows that there is much less wear and tear than where the eccentric is connected to the slide by links and pins, as is usually done.

It is obvious that this device or arrangement may be used with equal facility and advantage in those machines, whether punching or shearing, in which a vibrating arm or lever is used to cut or punch with, as illustrated in fig. 4.

In this case, the movable blade C is attached to a lever, G, which is pivoted at *n*, after the style of ordinary hand-shears.

In such a machine, the eccentric and yoke are secured upon the shaft O at the rear end of the machine, the yoke A being inverted, and connected with the rear end of the lever G in the same manner that it was to the block B in the former case.

The shaft O may be operated by a lever, as represented in fig. 1, for hand-machines, or it may have a gear-wheel or pulley secured upon it, and be driven by any suitable power.

In constructing machines in which the slide B is used, as represented in fig. 1, it has been customary to make the recess for the slide somewhat larger than the slide itself, and then fill it up by pouring Babbitt metal in around the slide, to furnish a bearing surface for the latter.

In shearing-machines, where there is always a strong side pressure, and a corresponding tendency of the moving blade to slide off to one side, this Babbitt metal is worn away with great rapidity, thus soon allowing the slide to become too loose, in which case the machine will not operate well.

As this recess or bearing is cast in the solid frame of the machine, and as these frames are of such a size and shape that they cannot be readily placed or secured on a planer to plane out the sides of the recess, so as to give the slide a bearing directly on the iron of the frame, and, as previously stated, the Babbitt metal proves not to be durable, I remedy these difficulties in the following manner:

I make the recess, as before, larger than the slide B. I then provide a series of flat strips of steel, or other suitable metal, dressed off on one face perfectly true and smooth. I then place the slide in its box, fit the strips or plates *b* of steel next to and close against the faces of the slide B, as represented in fig. 3, and then fill the space with Babbitt metal, as represented by *c* in figs. 2 and 3.

In this way I secure the steel strips or plates firmly and truly in place, and provide a durable bearing sur-

face for the slide B in a very simple and expeditious manner.

As represented in fig. 3, the Babbitt metal will fill the space between the edge of the steel strips on the broad face of the slide, and thus combine the advantages of an anti-friction and a steel or hard bearing-surface.

This plan of securing hardened bearing-surfaces may be applied in all cases, where such are desired, with ease and facility, and when worn the bearings can be reset with very little trouble or expense.

Having thus described my invention,  
What I claim is—

The combination of the eccentric E and the sliding yoke A, constructed and arranged to operate substantially as described.

ELLIS DOTY.

Witnesses:

P. J. FRYER,

H. A. DOTY.