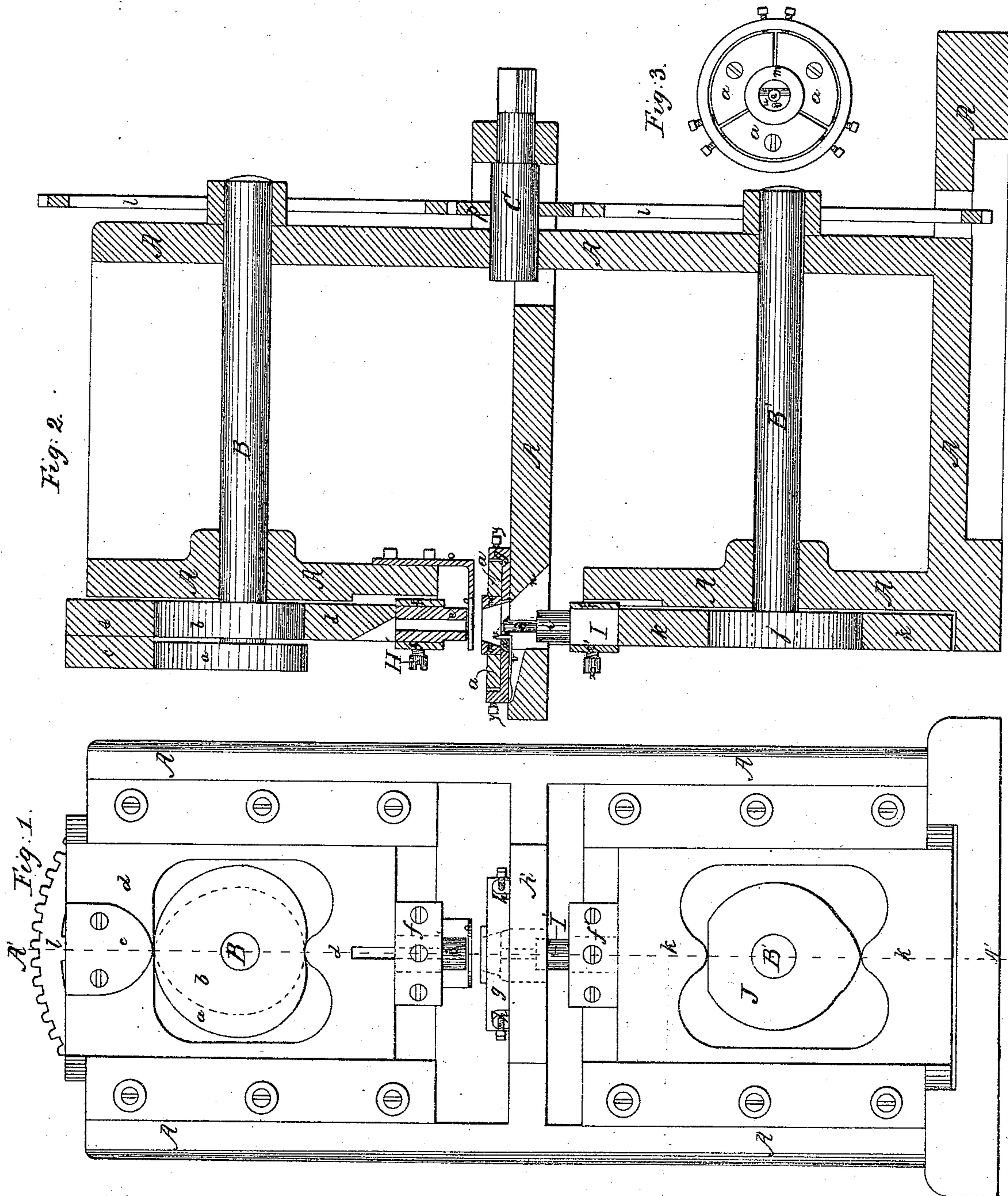


R. H. Cole.

Making Washers.

N<sup>o</sup> 20,043.

Patented Apr. 27, 1858.





# UNITED STATES PATENT OFFICE.

R. H. COLE, OF ST. LOUIS, MISSOURI.

## MACHINE FOR MAKING WASHERS.

Specification of Letters Patent No. 20,043, dated April 27, 1858.

*To all whom it may concern:*

Be it known that I, RICHARD H. COLE, of the city and county of St. Louis and State of Missouri, have invented a new and useful Improvement in Washer-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a front elevation and Fig. 2 a vertical section through A', A'.

My invention consists in an improved construction of the die or die box, whereby the washer, after being made is discharged through the bottom of the die or die box.

To enable others skilled in the arts to make and use my invention, I will proceed to describe its construction and operation.

Similar letters of reference represent corresponding parts of the different figures.

A A is the frame of the machine.

C is the driving shaft, and B, B', are two horizontal shafts, on which the cams *a b* and *j* are fixed. The cams *a* and *b* operate the slide *d* and the cam *j* operates the slide K. The said slides advance and recede to and from each other by the operation of the said cams. In the bottom end of the slide *d*, the hollow mandrel *e* is fixed by means of the two clamps *f f* and the set screw H, and in the top end of the slide K the punch *i* is fixed, also by means of two clamps, shown at *f' f'*.

*g* is the die box, which is secured to a horizontal rib of the frame by means of set screws, as shown at *h h*. In this die box the die *m* is placed, which is adjusted to the desired place, and secured there, by means of the adjusting screws *y y*, and the plates *a a a*. This die has a loose bottom in it, shown at *u*, which has a hole in the center for the punch *i* to pass through and a semi-circular hole by the side of the round hole, through which the washer is to escape after being formed. This opening is shown at *t*, Fig. 3, which is a plan of the die box and die. The loose bottom *u* is held in its place by means of a spring, shown at *v v*. This spring is fixed against the bottom of the die box, and one end of it is made round and is bent to a right angle with the plane of the bottom of the die box, and this round end which is thus bent up passes through the loose bottom *w*, through a small hole made for that purpose, and shown at *v*, Fig. 3.

P is a pinion fixed on the shaft C, which meshes in a pair of corresponding wheels *l l*, whereby the machine is put in motion by the application of power to the shaft C. The cam *a* throws the slide *d* back and the cam *b*, presses it forward. Now suppose the machine to be in motion and in the position shown on the drawing. A sheet of metal is introduced under the hollow mandrel *e*, and on the die *m*. The mandrel then commences to advance and cut out the washer the size of the die, and as soon as the washer is thus cut out the punch *i* commences to advance and punch the center of the washer out by passing through it and up in the hollow mandrel. The washer being thus made, the punch *i* commences to recede, but the mandrel *e* continues to advance until the washer is brought down to the bottom *w*, and against the end of the spring *v*, which it will be seen projects a short distance above the surface of the bottom. Now as soon as the punch *i* has withdrawn out of the washer and the mandrel *e* commences to recede then the spring *v* in returning to its position against the bottom of the die box (from whence it was pressed by the action of the mandrel) tilts the washer up on its edge and causes it to fall through the opening *t*, which completes the operation.

O O is a fender to displace the iron from the mandrel *e* in case it should stick thereto after cutting the washer out.

The object of using a loose bottom in the die is to enable me to make washers from iron of different thicknesses without altering the mandrel *e*, and also to prevent the machine from being broken in case a washer should get jammed in the die. It will thus be seen that by the use of the loose bottom *u* and the spring *v* I am enabled to discharge the washer through the bottom of the die, which is the essence of this invention.

What I claim, therefore, and desire to secure by Letters Patent, is—

The loose bottom *u* and the spring *v* in connection with the die *m*, the said bottom and spring to be arranged and constructed substantially in the manner set forth, for the purpose specified.

R. H. COLE.

Witnesses:

CHAS. M. O'HARA,  
AMOS BROADNAX.