

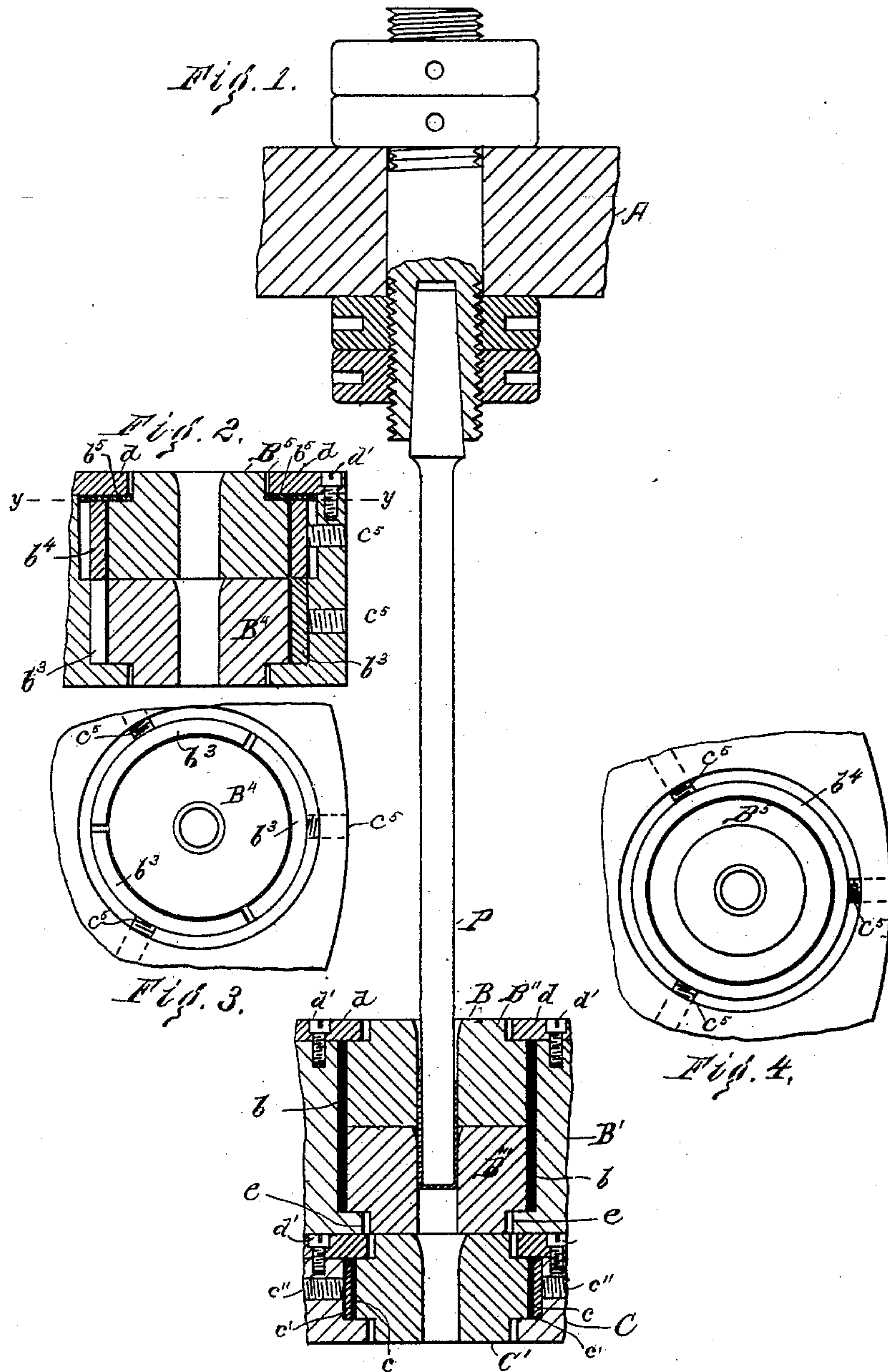
(No Model.)

R. WHITE.

DEVICE FOR DRAWING METAL.

No. 353,188.

Patented Nov. 23, 1886.



Witnesses—

Wirkley Hyde,
Edward W. Thompson

Inventor—

Rollin White
By His Attorneys
Moore and White

UNITED STATES PATENT OFFICE.

ROLLIN WHITE, OF LOWELL, MASSACHUSETTS.

DEVICE FOR DRAWING METAL.

SPECIFICATION forming part of Letters Patent No. 353,188, dated November 23, 1886.

Application filed November 2, 1885. Serial No. 181,629. (No model.)

To all whom it may concern:

Be it known that I, ROLLIN WHITE, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Dies for Drawing Metal, of which the following is a specification.

My invention relates to an improvement in dies for drawing cartridges and other blanks drawn from metal.

In drawing cartridge shells and similar metallic blanks in automatic machines where the partially-drawn blanks are carried from die to die by automatically-moving carriers much difficulty is experienced in so securing the dies in the die-holders that the axis of the die contained in one carrier shall be in exactly the required line with the axes of the dies contained in the other die-holders between which the carrier moves. In the improved device hereinafter described this difficulty is overcome by making the die-chamber in the die-holder somewhat larger than the die and interposing an elastic packing or strip between the die and the walls of the die-chamber, whereby the die is retained in its position when at rest, but is allowed a slight lateral motion when pressed upon by the blank in the operation of drawing, so that it will adjust itself to the blank and bring its axis into the required line with the axis of the die next to it above or below.

In the accompanying drawings, Figure 1 is an elevation of a drawing-punch of the usual construction, the punch-socket, nuts by which and a part of the head in which it is secured, the die and a part of the die-carrier, and the die-holder containing a die, the die and holder being in central section and the lower part of the punch-socket and lower nuts being broken away; Fig. 2, a sectional elevation of a die composed of two superimposed plates contained in one die-holder, showing the flexible packing and the metallic rings interposed between the die and the walls of the die-chamber; Fig. 3, a plan of part of the die-holder and lower die, the upper die-plate being removed; Fig. 4, a top view of the die in the die-holder, with the plate *d* of the holder removed.

In the accompanying drawings, A refers to

the head of a machine, caused in practice to have a reciprocating motion, the punch P being secured therein by nuts and check-nuts in the usual manner.

The die B, composed of two superimposed plates, B'' B''', is secured in the die-holder B' in any convenient and well-known manner. In the drawings it is shown as being provided with a shoulder near each end, the lower shoulder resting on a rib or flange, *e*, within the die-chamber, and a plate, *d*, secured to the holder by screws *d'* *d'* resting on the upper shoulder, thereby retaining it in the holder.

The die-chamber in the die-holder B' is made somewhat larger than the die B, and in the space thus left between the die and the walls of the die-chamber is a band of felt, a metallic spring, or similar elastic material, *b*. The die B is composed of two superimposed plates, B'' B'''. Below the die-holder B' is a die, C', secured in a die-chamber in a carrier, C, in a manner similar to that already described. This die-chamber is also somewhat larger than the die, and the die is surrounded with an elastic band of flexible material, *c*. About the band *c* is a metallic ring, *c'*, against which thrust three or more screws, *c'' c''*, turning in screw-threaded holes in the die-carrier radially to the axis of the die. By means of these screws the die-opening of the die C' may be brought nearly in the line of the opening of the next die.

The die-carrier C is moved to and fro under the stationary die-holder B' by any well-known means. Such mechanism being no part of this invention, need not be described here, being fully set forth and described in another application filed by me January 2, 1885, Serial No. 151,718.

The operation of the dies is as follows: A partially-drawn blank or "cup" is placed over the die-opening of the die B either by hand or by any well-known feeding device, and is carried by the descent of the punch through the plates B'' B''' and into or through the die C'. Should the axis of the die-opening in the plate B'' not stand exactly in line with the axis of the plate B''', the flaring mouth of the die-opening in the plate B''', will allow the blank to enter, and the yielding packing will allow a slight lateral movement, so as to bring the die-openings

of the two plates exactly in line one with the other. As the blank descends through the die B it will enter the die C', and the die-opening being shaped as already described, and being adjusted nearly to the required line by means of the screws $c'' c''$, it will automatically adjust itself to any line required by a slight variation in the movement of the carrier. When the carrier is in position, as shown in the drawings, it will be seen that practically one die is formed, composed of three superimposed plates contained in two die-holders, each of which plates is free to automatically adjust itself to the work.

In Figs. 2, 3, and 4 are shown modifications of the dies shown in Fig. 1. The lower plate, B^4 , Figs. 2 and 3, is surrounded with a band of flexible material, as already described. Surrounding this flexible band is a segmental ring, b^3 , against each segment of which thrust screws $c^5 c^5$, by means of which the position of the die may be adjusted. By using the segmental ring the screws may be screwed up so hard against the flexible packing as to limit the motion of the die, or they may be used merely to set the die as nearly as possible in the required line. The upper plate, B^5 , is similarly constructed, except that the ring b^4 is solid and intended to be of such strength as to allow the adjustment of the position of the die without impairing the elasticity of the flexible material, the resistance to any lateral movement being adjusted by inserting between the shoulder of the die and the plate d a strip of elastic material, b^5 , so that as the screws $d' d'$ are turned down to increase the pressure of the plate upon the flexible material a greater pressure of the blank will be necessary to move the die laterally. This means of adjusting the pressure necessary to move the dies laterally will be especially useful in cases where the cups or partially-drawn blanks fed to the machine are unevenly drawn, for they can be so fed as to have the pressure the greatest on the side of the cup or blank which is the thickest, and so

even it in passing through the superimposed plates of the dies.

It will be seen that where a series of dies are used all the die-holders, except the first and last of the series, will be between two carriers, and each carrier will move between two holders, so that the superimposed dies would be contained in three separate die holders or carriers.

I claim as my invention—

1. The combination of a die composed of two or more superimposed plates contained in one or more die-holders, one or more of said die-holders having a die-chamber larger than the plate of said die contained in said die-chamber, and an elastic packing interposed between said die and the said die-chamber, substantially as shown and described.

2. The combination of a die composed of two or more superimposed plates contained in one or more die-holders, one or more of said die-holders having a die-chamber larger than the plate of said die contained in said die-chamber, and an elastic packing interposed between said die and the sides of said chamber, as and for the purpose specified.

3. The combination of a die, a die-holder having a die-chamber larger than said die, an elastic packing surrounding said die, a metallic ring surrounding said packing, and two or more screws thrusting against said ring, as and for the purpose specified.

4. A die composed of two or more superimposed plates in two or more die-holders, all of said die-holders being provided with die-chambers somewhat larger than the plates contained in said die-holders, so that all the plates composing the die may have a slight lateral motion, for the purpose of adjusting themselves to the work, substantially as shown and described.

ROLLIN WHITE.

Witnesses:

ALBERT M. MOORE,
HERBERT R. WHITE.