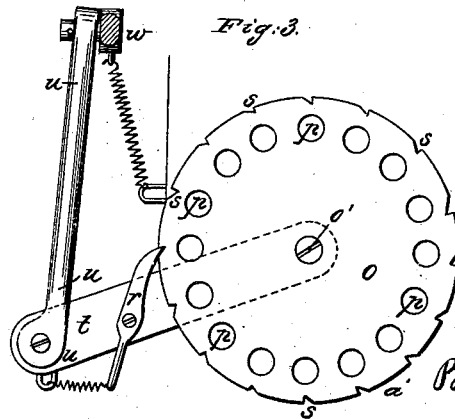
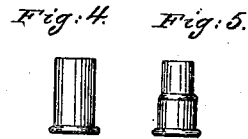
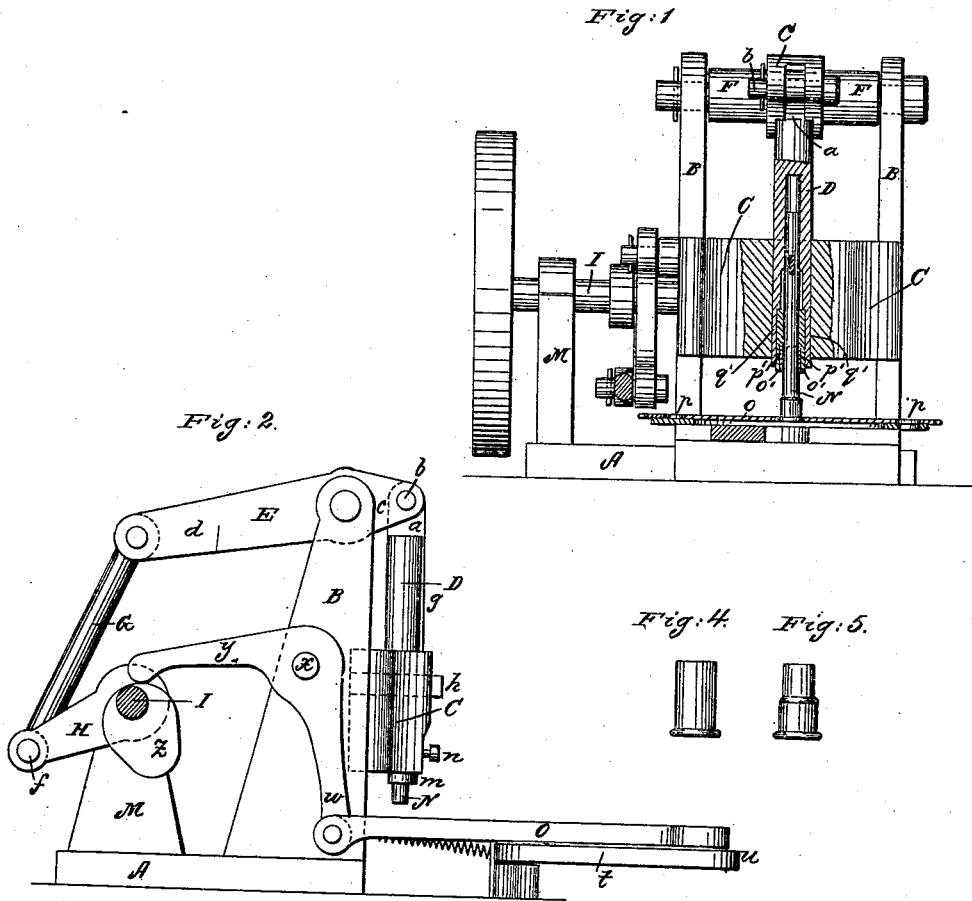


B. PAYNE.

Machine for Necking Cartridge Shells.

No. 50,489.

Patented Oct. 17, 1865.



Witnesses:
W. J. Brown.
F. W. Tuck.

Inventor:
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UNITED STATES PATENT OFFICE.

BRIGHAM PAYNE, OF SOUTH COVENTRY, CONNECTICUT.

IMPROVEMENT IN MACHINES FOR NECKING CARTRIDGE-CASES.

Specification forming part of Letters Patent No. **50,489**, dated October 17, 1865.

To all whom it may concern:

Be it known that I, BRIGHAM PAYNE, of South Coventry, in the county of Tolland and State of Connecticut, have invented a new and Improved Machine for Necking and Swaging Cartridge Cases or Shells; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

It is quite desirable in the use of "metallic cartridges," so called, that their capacity for containing the charge of powder shall be of the greatest possible amount consistent with the bore of the fire-arm in which they are to be used; and with this object in view the extreme rear portion of the breech has been slightly enlarged, so as to admit a cartridge of some larger diameter than the bore, the front portion of the case, or that embracing the bullet, however, being of the same diameter as and closely fitting the bore. This operation upon the shell or case, in order to impart the necessary form thereto, is called "necking" or "swaging," and the present invention relates to a machine for this purpose, it consisting in a novel arrangement of a swaging or necking die, to the movement of which and at the proper times the cases or shells are submitted in a manner and by means of devices to be hereinafter described, reference being had to the accompanying plate of drawings, in which—

Figure 1 is a view of one end. Fig. 2, a side view; Fig. 3, a detail view, and Figs. 4 and 5, respectively, showing a metallic cartridge case or shell previous to and after being operated by my improved machine.

A A in the drawings represent the bed-plate of the machine, having two parallel uprights or standards, B B, in and between the upper ends of which by trunnions F F is hung a horizontal lever, E, connected by its longer arm *d*, through a pitman-rod, G, with the outer end, *f*, of a crank-arm, H, of the driving-shaft I, to the shorter arm *c* of which is hung by a pivot, *b*, a vertical hollow arbor, D, moving in a fixed cross-bar, C, of the standards B B.

N is a concentric shaft placed within the interior of the hollow arbor and fixed or held in position by means of a key-pin, *h*, the said

shaft being of such a size as to allow the arbor to freely play up and down upon it, the key-pin serving as a guide to its movement through the vertical slot *g* of the same. In the lower end of the hollow arbor the swaging or necking die *m*, made of a form to be hereinafter explained, is placed and secured at the proper position by means of a set-screw, *n*, of the arbor.

O is a feed-plate made of a circular shape, and placed in a horizontal position below the swaging-die, and turning upon a center-pin, *o'*, when actuated by an arrangement of device to be presently described. This plate, *o*, has a series of apertures, *p p p p*, formed around it and in one and the same circle at equal distances apart, corresponding in shape to the cap or fulminating end of the cartridge cases or shells, and in which they are placed and fed along to the swaging-die, as before referred to, the said apertures being brought in turn and regular succession at the proper times in the same vertical plane as that of the die, and there held during its downward movement by means of a spring-pawl, *r*, engaging with its teeth *s s*, and hung upon a swinging arm, *t*, of the center pin, *o*, of the feed-plate, which arm at its outer end, *u*, is connected by a rod, *v*, with one arm, *w*, of an angular lever placed in a vertical position, and turning upon a fulcrum-pin, *x*, of the standard B, the other arm, *y*, bearing and resting upon a fixed cam-wheel, *z*, of the driving-shaft I and revolving with it. By revolving the driving-shaft in the proper direction the vertical hollow arbor D has imparted to it, through the devices hereinbefore described as connecting it with the said shaft, an up-and-down movement in a vertical plane, while at the same time the feed-plate is intermittently revolved in a horizontal plane through its devices connecting it with the same shaft, the periphery of the cam by which the actuating devices of the feed-plate receive their motion being of the proper form to impart to the feed-plate at the time when the swaging-die is in its upward movement the necessary length of rotation to feed the case or shell, occupying its next aperture to the swaging-die and there holding until its downward movement has taken place, and so on, as long as may be deemed desirable, the

cases still passing around to the point a' of the bed-plate, where they finally drop from the machine.

The swaging-die m is made of the shape upon its interior represented in section in Fig. 1, and is of a little greater diameter at its lower portion, o' , than at its upper, p' , but connected together by a gradual incline, q' , the lower, o' , coinciding with the full size of the shell, while the latter is of such a size as to impart to the shell the necessary diameter to nicely fit the bore of the fire-arm in which the cartridge is to be used as it is brought down upon the case fed to it, as described, and as is obvious without further explanation.

In case the shell or case after having been swaged or necked, as described, should hang upon the die in its upward movement, it will be instantly disconnected therefrom by abutting against the lower end of the fixed shaft N , and thus thrown back upon the feed-plate, to be moved thereby as it revolves, the said

shaft being arranged or fixed in such a position with regard to the feed-plate as to freely allow the cases to pass under it into position for the swaging-die.

In lieu of swaging or necking the cases or shells in the form shown in Fig. 5, the die may be made of such a shape as to impart a gradual taper to the shell for a portion of its length, which would, it is obvious, answer nearly if not as well as the form shown, for the purpose specified.

I claim as new and desire to secure by Letters Patent—

The combination of the fixed or stationary shaft with the hollow arbor or swaging-die, operating together, substantially in the manner described, and for the purpose specified.

BRIGHAM PAYNE.

Witnesses:

CHARLES B. THAYER,
ROBT. J. WHITE.