Sheet 1-2 Sheets.

R. M. Bouton,

Can Machine,

No. 6,196, Patented Mar. 20, 1849.

Fig. 4.

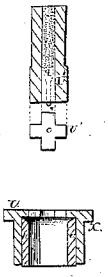

Fig. 1

Sheet 2 - 2 Sheets.

R. M. Bouton,

Cap Machine,

No. 6,196. Patented Mar. 20, 1849.

Fig. 2.

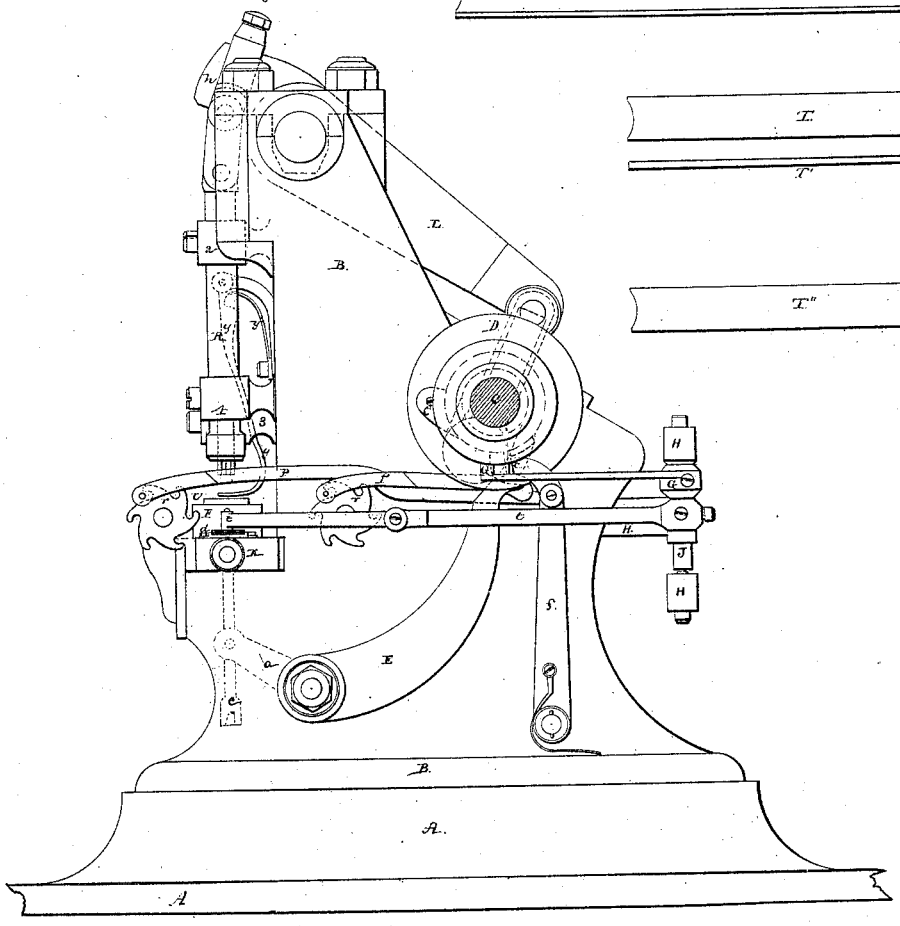

Fig. 3.

UNITED STATES PATENT OFFICE.

RICHARD M. BOUTON, OF WEST TROY, NEW YORK.

MACHINE FOR MAKING PERCUSSION-CAPS.

Specification forming part of Letters Patent No. **6,196,** dated March 20, 1849.

To all whom it may concern:

Be it known that I, RICHARD M. BOUTON, of West Troy, in the county of Albany and State of New York, have invented a new and useful Machine for Forming or Making the Capsules of Percussion-Caps or Primers for Muskets and other Fire-Arms; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a front elevation. Fig. 2 is a right-hand profile elevation; Fig. 3, four views of the "transfer apparatus," full size. Fig. 4 is the "star-punch," with its picker, lower die, and thimble all in section, full size. Fig. 5 is the "forming-punch" and its die in section, full size.

This machine consists, essentially, of two vertical punches, of which one cuts the star or blank of which the capsule is formed, and the other forms the capsule by compression. These punches are at their upper ends attached each to its respective arm on the same end of a double-headed lever, and consequently both move at the same time, and their operations are combined, in effect, by mechanism which transfers the star or blank from its punch to the forming-punch.

To enable other practical mechanics to make and use my invention, I will proceed to describe its construction and operation.

A A, &c., is the "bed-plate," on which are fixed the "frame" of the machine and a pedestal (not shown) which supports the right-hand end of the "crank-arbor" C C, to which the power is applied.

B B, &c., represent the frame of the machine, to which most of the working parts are attached.

L L represent the "main lever" or double-headed lever, by which the punches are worked. Its long arm is, by a connecting-rod and crank-pin, connected with the crank of the crank-arbor.

h h are the short arms or double head, to which are attached the two runners R R′, which carry the punches.

1 2 3 4 are the "guides" through which the runners work. These runners may be operated by cams on an arbor passing over their upper ends, or through openings or offsets in the middle of their lengths. In this case the main lever and crank-arbor can be dispensed with and power be applied to the cam-arbor direct.

K K K represent a "bench" or shelf projecting from the frame, on which are the "die-beds" F and F′. The right-hand half of this bench is elevated higher than the left-hand half of its length, in order that the "star-die" on this part shall be higher than the forming-die on the left-hand half, and that the groove or "way" of the "director" *d d*, &c., which rests on this part, may be on a level with the face of the form-ing-die V.

F is the die-bed of the star-punch. This is square above the bench, and has a round shank passing down into the bench, to which it is fixed by a screw from below. The star-die U has a round hollow shank passing down into this bed, and is supported by a flange *x*, Fig. 4, at its upper end, resting on the top of the die-bed. Within this shank of the star-die is a conical steel tube or "thimble" *v v*, Fig. 4, the lower end of which rests on the director and transfer-slide, it reaching up to the cutting part of the star-die. Its internal diameter is exactly equal to the diameter of the star or blank, which, falling from the star-punch through it, is conducted to its proper position on the transfer. The star-punch, with its "picker," "die," and "thimble," is seen in section, full size, in Fig. 4. (The picker and thimble are omitted in the model.)

F′ is the die-bed of the forming-punch. This is round and has a shank passing down through the bench, to which it is fixed by a screw-nut on it below. Through the axis of this shank and of the forming-die operates the elevator *e*. In a socket in this bed stands the forming-die V. Its upper surface is on a level with the way of the director *d* T‴. This die is seen in section, full size, in Fig. 5 V, as is also Z Z′ the forming-punch, which is compound, having an outer shell *z*, which planishes the flange of the capsule and an internal or center punch *z′*, which forms the inside. This center punch has a shank passing up through the axis of the shell *z*, and is secured

by a cross-key near the bottom or by a countersunk nut at the upper end. This arrangement by equalizing the thickness of the several parts allows a better temper, and consequently insures a more perfect operation and more durability.

T T′ T″ are three views of the "transfer," full size; T, the slide with lower face upward; *b*, the boss, in which the pin *i* of the "connecting-link" *l* works. T′ shows the plate and link in profile, and T″ shows it in working position with the connecting-link *l* attached. It slides in the way (groove) of the director *d* T‴. The transfer is operated by the lever or arm *t t*, applied to the pintle *i*. It will be seen in Figs. 1 and 2 that the director *d* T‴, &c., with its transfer, passes through the bed F of the star-die. It passes immediately below the star-die and its thimble, in order that the star may fall from its punch through the thimble upon the transfer-slide.

U′, Fig. 1, is the star-punch. This punch, with its picker, and the star-die, with its included thimble, are shown full size in vertical section in Fig. 4, where *q* is the picker, with its spiral spring above it, and *v v* the thimble. The office of the picker is to prevent the adhesion of the stars to the face of the punch.

C C represent the crank-arbor, to which the power is applied. On this is the collar and flange D D, on which is the "feed-cam" *c*, which operates the feed-lever *f*, and through the double "hands" P P works the "ratchets" *r r* of the "feed-rollers." On the opposite face of this collar is the cam *c′* of the "elevator-lever" E E, which, through the "racking arbor" E′ and arm *a*, raises the "elevator" *e*, lifting the capsule out of the forming-die. It is returned by the spiral spring *s s s*, Fig. 1.

N is the "anvil," on which the elevator rests while a capsule is being pressed. It has an adjusting screw and nut.

G G, &c., represent the "cam-lever" of the transfer apparatus. It is fast on its axis J J, which works in the bracket H H, &c., and is operated by the "cylinder-cam" I on the crank-arbor and returned by a spiral spring on the axis J J. The lever *t t* is free on the axis J J, but is constrained to move in concert with G by means of a spring, which allows it, together with the transfer, to yield to extraordinary resistance, while the cam and fast lever pursue their way, thus preventing injury to the machine.

u is the "gage," A cap of steel over the head of the forming-die, with semicircular notch in its edge, against which the star is driven by the transfer and held concentric with the forming-die until seized by the forming-punch.

y y represent the "driver," a slender lever suspended by its upper end and thrown forward by a spring *y′*. Its lower end is bent forward over the face of the forming-die, somewhat in the form of a human foot and leg, Fig. 2. It is operated by a pin in the runner R′ pressing against a tumbler and holding it behind the punch while a capsule is being formed and releasing it instantly when the capsule is raised by the elevator above the gage *u*.

n n represent the feed-rollers. There is a similar pair behind the punch to continue the progress of the ribbon after it has passed the front rollers. *m* is a lever to open and close the feed-rollers. All these parts are attached to a movable plate K, covering the front of the bench K, &c.

Operation: The material is cut in "ribbons" of such width as will admit of two rows of blanks or stars being cut from each lengthwise; but the machine may be so constructed without departing from its principles as to work from ribbons of any width. One end of a ribbon being inserted between the feed-rollers *n n* is by them drawn in, while a row of stars is successively cut near one edge throughout its length. When not enough surface remains for another star, a trigger (not shown) which has ridden upon its surface drops off at the end and by mechanical connections stops the machine. Each star as soon as cut is projected by the picker *q* down through the thimble *v v*, Fig. 4, upon the face of the transfer, which at this instant is holding a previous star against the gage *u* under the forming-punch *z′*. On its return its operating end passes beyond the thimble, which consequently sweeps the star deposited in it off of the transfer into the way of the director, and the next stroke of the transfer drives it to the forming-die, while another star is being dropped from the star-punch, so that only one star is in the thimble at the same time. While the forming-punch rises out of its die the elevator *e* raises the capsule after it above the gage, whence the driver *y* kicks it into the mouth of a receiving-tube, (not shown,) which conveys it to the reservoir. The elevator now sinks, the driver retires behind the punch, and all is clear for another star.

The machine is a self-operator, and delivers the capsules with a high finish and in a state proper to receive the priming.

I do not claim as my invention punches and dies for making percussion-caps, as these have been so employed in various ways; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The combination and arrangement of the mechanism above described for producing the combined operations herein fully set forth of feeding the metallic ribbon to the star-die U′, punching the blank from the ribbon, transferring the blank to the forming-die V by the transferring apparatus T T′ T″ T‴, punching the blank into the forming-

die V and forming it into a cap, and discharging the same from the die by the elevator *e* and kicking the cap in a finished state from the die-bed by the driver *y*, all of said operations being performed successively at every revolution of the crank and cam arbor C, to which the propelling-power is applied, substantially as above described.

2. The transferring apparatus constructed substantially as described, in combination with the punches.

R. M. BOUTON.

Witnesses:
JOHN HASTINGS,
JONATHAN HART.