

(Model.)

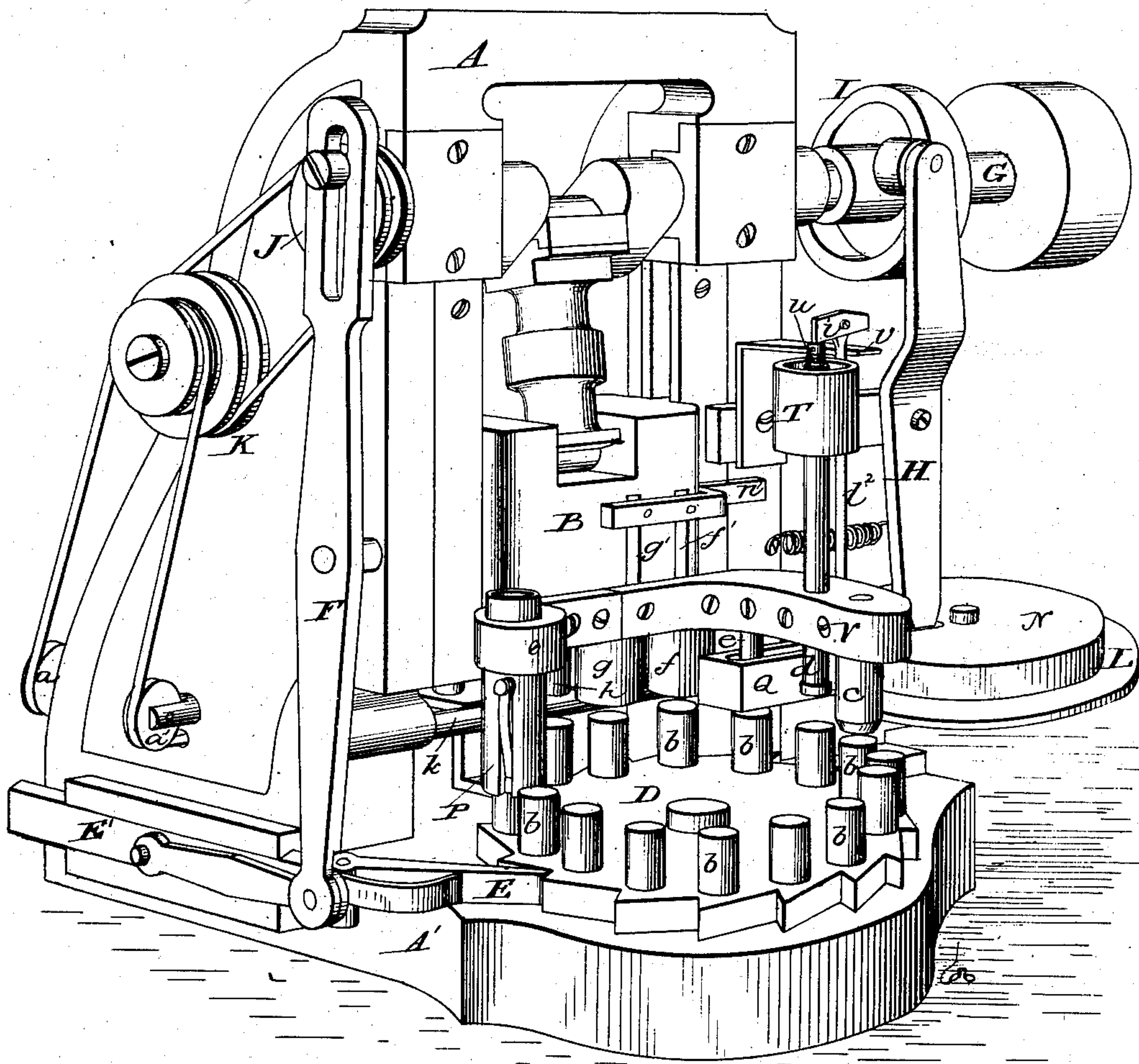
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G. P. SALISBURY.
Cartridge Assembling Machine.

No. 232,907.

Patented Oct. 5, 1880.

Fig 1.



Attest:

Sidney P. Hollingsworth,
William W. Dodge.

Inventor:
Geo. P. Salisbury,
by Dodgeson,
Atty.

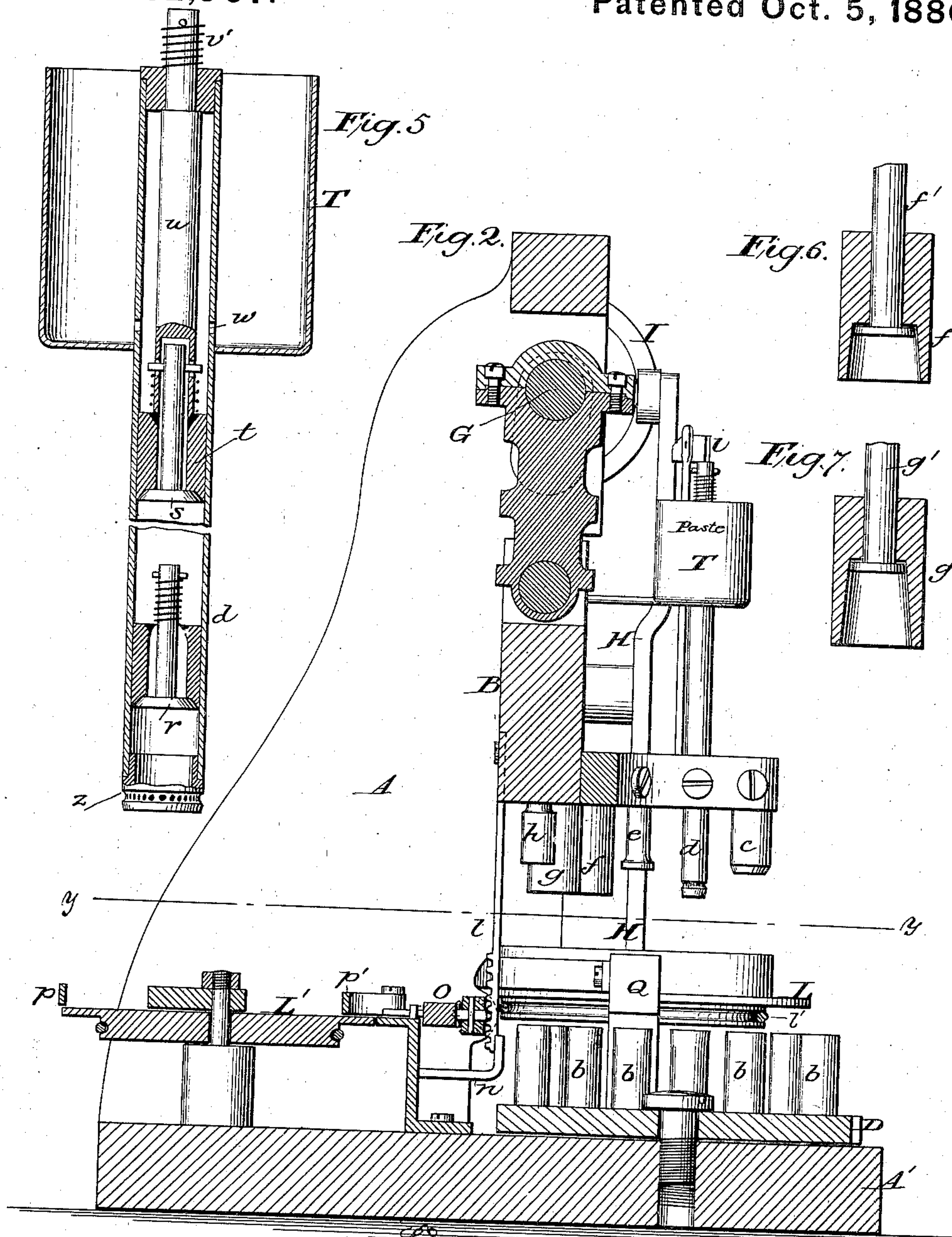
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Attest:

Sidney P. Hollingsworth,
William W. Dodge.

Inventor
Geo. P. Salisbury,
by Dodger & Son,
Atty.

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Fig. 3.

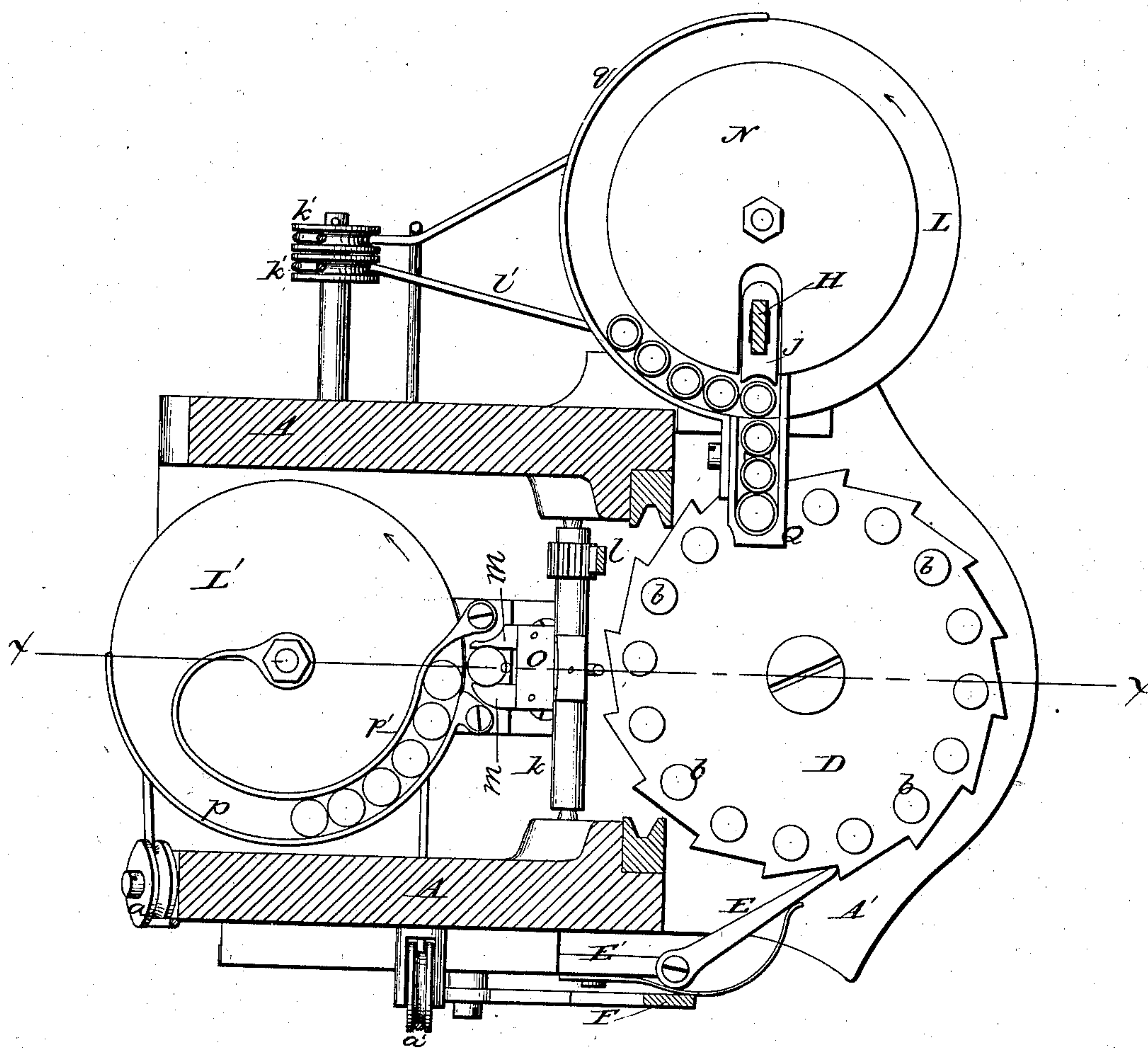
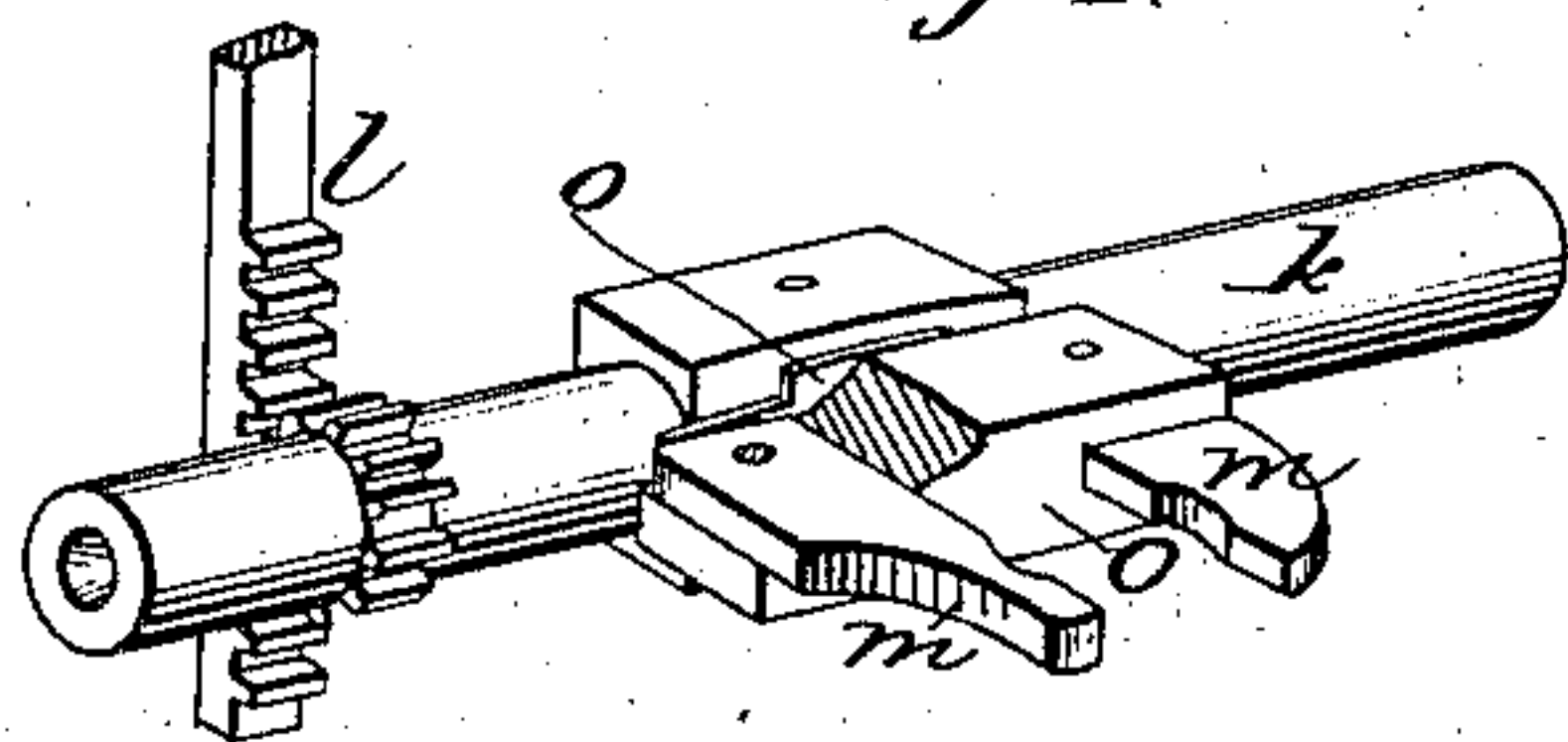


Fig. 4.



Attest:

Sidney P. Hollingsworth
William W. Dodge.

Inventor:

Geo. P. Salisbury,
by Dodge & Son,
Attys

UNITED STATES PATENT OFFICE.

GEORGE P. SALISBURY, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE
WINCHESTER REPEATING ARMS COMPANY, OF SAME PLACE.

CARTRIDGE-ASSEMBLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 232,907, dated October 5, 1880.

Application filed July 23, 1880. (Model.)

To all whom it may concern:

Be it known that I, GEORGE P. SALISBURY, of New Haven, in the county of New Haven and State of Connecticut, have invented certain Improvements in Machines for Assembling Cartridge-Shells, of which the following is a specification.

My invention relates to the manufacture of that class of cartridge-shells which are made of paper with metal heads and designed for use in shot-guns; and the invention consists in the construction or organization of a machine by which the various parts composing the cartridge-shell are assembled or put together, and paste applied to the body of the shell at the proper time during the operation, all as hereinafter more fully described.

Figure 1 is a perspective view of a machine embodying my invention. Fig. 2 is a central vertical section on the line xx of Fig. 3. Fig. 3 is a horizontal transverse section on the line yy of Fig. 2; and Figs. 4, 5, 6, and 7 are views of portions shown detached and in detail.

Paper cartridge-shells such as are ordinarily used in shot-guns are composed usually of four parts—viz., an open-ended tube, which constitutes the body of the shell; second, a short tube, called a “re-enforce;” third, a wad to close the end; and, fourth, a metallic cap or head. Heretofore these parts have been put together, or, as it is technically termed, “assembled,” by hand, which is necessarily a slow and tedious process.

The object of my present invention is to produce a machine by which this work may be done automatically by simply supplying it with the parts before mentioned. The machine may be made of various forms or styles; but the style shown in the accompanying drawings is one of the simplest and most convenient known to me.

In the drawings, A represents the upright frame, and A' the bed, of a press such as is ordinarily used for drawing and heading metallic cartridge-shells, B indicating the reciprocating cross-head or gate, operated by a crank-shaft, G, mounted in the upper part of the frame; and D represents a rotating dial provided with pins, on which the shells are placed, and which is operated by a spring-pawl, E,

connected to a slide, E', to which motion is imparted by a pivoted lever, F, the upper end of which is slotted and connected to a crank-pin on the end of the main shaft G, as represented in Fig. 1.

At the right-hand side of the dial, and on a plane a little above the top of the pins thereon, I locate a friction feed-dial, L, to which motion is imparted by a cord, V , which passes around a pulley on its lower face, thence back around two guide-pulleys, k' , as shown in Fig. 3, from whence it passes around a pulley on the main shaft G alongside of the cam I. This dial has a stationary rim or guide, q , and a stationary disk, N, arranged as shown in Fig. 3, which together form a curved channel, along which the articles are fed by the rotation of the dial until they arrive at the end of the channel, where they enter a lateral channel formed in a piece, Q, the end of which projects over the top of the pins on the dial D, there being a hole at the extremity of this lateral channel, through which the articles can be forced vertically by a plunger, e , as shown in Fig. 1. In order to shove the articles out into this lateral channel, a slide or block, j , is fitted in a notch in the side of the stationary disk N, as shown in Fig. 3, and which is operated by a lever, H, and a cam, I, on the shaft G, as shown in Fig. 1, these parts, of course, being so proportioned and arranged as to operate in unison with the movements of the dial D.

On the rear part of the bed A', as represented in Figs. 2 and 3, is arranged another friction-dial, L', provided with stationary guides $p p'$, which form a channel, along which the blank metal heads are fed, as shown in Fig. 3, and motion is imparted to this dial by a cord, in the same manner as the other, by passing around guide-pulleys $a a'$, and thence around a pulley on the opposite end of the crank-shaft G, as shown in Figs. 1 and 3. Between this latter dial, L', and the pins on the main dial D, I arrange a device for picking up and transferring the metal heads to the shells on the pins of the dial D. This device, which is shown detached in Fig. 4, consists of a pair of pivoted jaws, $m m$, slightly concave on their inner edges, and which are provided with a spring, o , arranged to press the parts or jaws

m m toward each other to a limited extent, but so as to allow them to be easily pressed apart or opened. These spring-jaws are attached to a shaft, *k*, which is mounted transversely between the dial *L'* and the pins on dial *D*, as shown in Fig. 3, and is operated by a rack-bar, *l*, attached to the cross-head *B*, which engages in a pinion on the shaft, as shown in Fig. 2, the size of the pinion being so adjusted in relation to the movement of the cross-head *B* as to impart to the shaft *k* and the spring-jaws a half-revolution at each stroke of the machine, thereby causing the jaws *m m* to transfer the head which has been forced in between them from the dial *L'* to the shell *b* on the pins of dial *D*, the heads being turned over in the operation. Instead of the rack and pinion, friction may be used to operate this device, as but little power is required; or any other mechanical arrangement may be substituted that will impart to it the necessary motions at the proper times.

A stop, *n*, is arranged in proper position for the shank of the jaws *m* to rest upon when turned over to hold the metal head in proper position to be forced onto the shell *b*, (see Fig. 2,) though this is not essential.

The tools or devices which operate in connection with the dials and transferring device are all connected to and move with the cross-head or gate *B* of the press or machine. These tools or devices are seven in number, including the pick-off *P*, and are as follows: The first one, *c*, is simply a plain punch, having its lower end beveled so as to enter the mouths or open ends of the tubes *b* as they successively pass under it and slightly enlarge them. Next to this is a paste-pump, *d*, the lower end of which is made of the proper size to enter the ends of the tube the required distance, and as it is withdrawn leave deposited on the inner surface of the tubes a film of paste, for the purpose of securely uniting the re-enforce to the body of the shell. The construction of this paste-pump is clearly shown in Fig. 5 as consisting of the tube *d*, the lower end of which is closed, there being a series of small holes opening laterally into a groove, *z*. Within the tube *d* is located a check-valve, *r*, and a plunger, *t*, which also has a valve, *s*, arranged to open on the upstroke of the plunger, with a spring to hold it closed, except when forced open by the atmospheric pressure and the paste above it. The stem *u* of this plunger is tubular, so that the stem of the valve *s* can work therein, and there are holes at the upper edge of the plunger, through which the paste can enter and pass down alongside of the valve-stem when the valve is open.

Around the upper portion of the tubular body *d* is secured a reservoir, *T*, for holding the supply of paste, which enters the body *d* through holes *w* near the bottom of the reservoir.

The stem or rod *u* of the plunger extends above the reservoir *T*, and has a spring, *v'*, applied to it in such a manner as to hold the

plunger up except when forced down, and to operate this plunger, and thereby the valves *s* and *r*, there is a lever, *i*, pivoted to a rod, *l'*, Figs. 1 and 2, said rod being connected rigidly to the arm *V* that supports the pump, so as to rise and fall with the cross-head *B*, and as it descends cause the outer end of the lever *i* to strike on a stop, *v*, secured to the frame, as shown in Fig. 1, thereby causing the inner end of said lever to impinge upon the upper end of the plunger-rod *u*, thus shoving it down a sufficient distance to force out the requisite quantity of paste.

The tool next after the pump is a simple plunger or punch, *e*, which is arranged directly over the hole in the end of the lateral channel in the piece or arm *Q*, and where it serves to force a combined re-enforce and wad through said hole into the ends of the tubes *b* as they are brought under it. Next to this is a hollow or tubular plunger, *f*, the inner walls of which are considerably beveled, and which is arranged to embrace the extreme upper ends of the tubes *b*, so as to break down and draw inward somewhat the outer edges of the tubes, so that they will readily enter the next or crimping tool *g*, which is similar in construction, but deeper and less beveled, this latter tool serving to compress the ends of the tubes *b* upon the re-enforces and wads within and impart to the exterior of the tubes the proper diameter to receive the metal heads. These crimping-tools are shown in section in Figs. 6 and 7. Next to this is a simple punch or plunger, *h*, arranged to push the metal head from between the spring-jaws *m m* down onto the ends of the tubes or shells *b*, thus completing the assembling of the parts which constitute the shell. Next after these is the pick-off *P*, which, as usual, consists of a tube of sufficient size to pass down over the shell, and has two beveled-ended spring-hooks, arranged to engage with the shell so as to lift it off of the pin as it rises, each succeeding shell, as it enters, pushing the previous one up into a tube connected to the top of the pick-off, but not shown in the drawings, it being a well-known arrangement in cartridge-machines of the present day. This receiving-tube is sometimes curved, so as to deliver the shells into a box or other receptacle, and at other times it is made long and straight, so that when filled it can be detached and transferred to the heading-machine, where it serves to feed the shells to the latter, it, of course, being replaced by an empty tube to receive the shells from the pick-off.

The foregoing constitute all the essential features of my invention; but it is obvious that the devices for presenting or feeding the several parts of the shell and the mechanical arrangement for operating these devices may be varied in many ways without at all changing the principle or mode of operation of the machine.

The operation of the machine is as follows: The tubes *b*, which constitute the bodies of the

shells, are placed upon the pins of the dial D by hand as it rotates. The re-enforces, which are simply short tubes of the proper diameter to fit within the tubes *b*, with the wads previously inserted within the re-enforces, so that the two can be handled and treated as a single piece, are placed on the dial L, and the metal cups, which form the heads of the shells, are placed with their mouths upward on the dial L'. The parts being thus supplied and the machine set in motion, the tubes *b* on the pins of dial D are first brought under the punch *c*, the beveled end of which enters the ends of the tubes just far enough to slightly open the same, so that the end of the pump and the re-enforce and wad will readily enter the same thereafter. At the next movement of the dial D the tube *b* is brought under the paste-pump *d*, which deposits upon the interior of the tube a film of paste, and at the next movement the punch *e* shoves a re-enforce and wad into the open end of the tube. At the succeeding movement the crimper *f* compresses or draws inward the extreme end of the tube, after which, at the next stroke, the crimper *g* compresses it to the proper size for receiving the metal cup or head, which at the next movement is brought over the tube *b* by the transfer-jaws *m m*, when the punch *h* descends and presses it upon the end of the tube, thus completing the assembling of the parts, after which it is removed by the pick-off.

After the parts composing the shell have been thus assembled the shell is transferred to a heading-machine, in which it is headed, but which, constituting no part of this invention, need not be described.

Having thus described my invention, what I claim is—

1. The combination, in a cartridge-assembling machine, of a shell-carrying dial, D, and a reciprocating pump, *d*, arranged to deliver paste to the inner surface of the shell, substantially as described.

2. The combination of the dial L and lateral guide Q, perforated at its extremity, with the follower *j* and reciprocating punch *e*, arranged to operate substantially as and for the purpose set forth.

3. The crimping-tools *f* and *g*, arranged to operate consecutively on the shell or tube *b*, to prepare it for the reception of the metal head, in combination with mechanism, substantially such as described, for delivering and forcing the metal head upon the shell, as set forth.

4. The combination of a shell-carrying dial, D, a friction feed-dial, L, with the spring transfer-jaws *m* and reciprocating punch *h*, for feeding, placing, and forcing the metal head on the shell, substantially as described.

5. The combination, in an assembling-machine, of a dial for carrying the shells or tubes, a device for automatically applying paste to said shell or tube, with mechanism, substantially such as shown, for delivering and inserting the wad within the shell, and mechanism, substantially such as described, for delivering and applying the metal head to the shell, the combination being substantially such as shown and described.

GEORGE P. SALISBURY.

Witnesses:

DANIEL H. VEADER,
W. C. DODGE.