2 Sheets—Sheet 1.

J. H. GILL.

Machine for Gaging Cartridges.

No. 208,903. **Patented Oct. 15, 1878.**

Fig. 1.

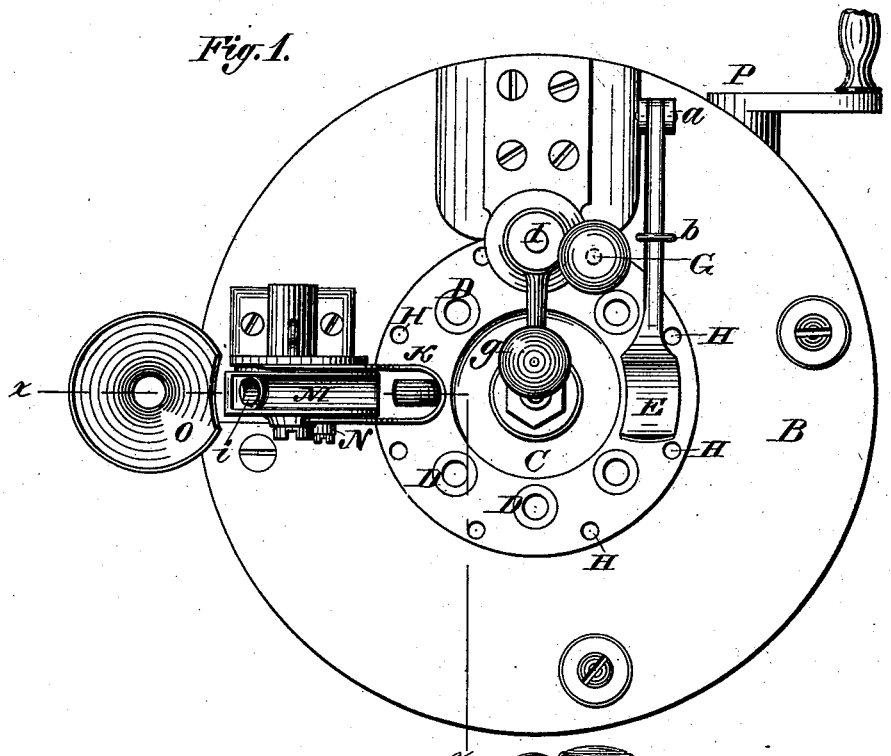

Fig. 2.

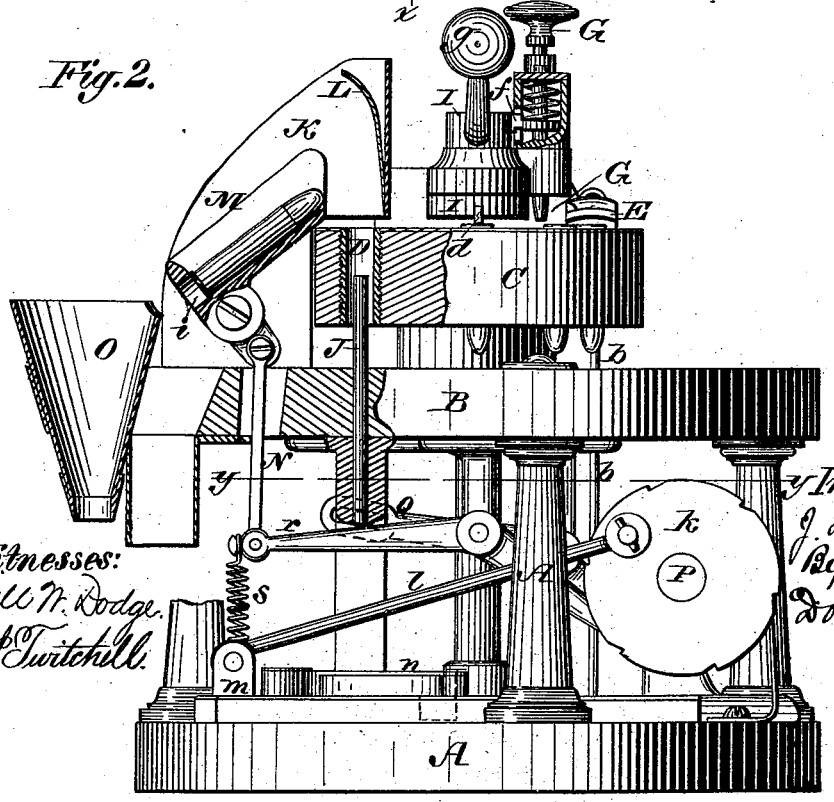

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Fig. 3.

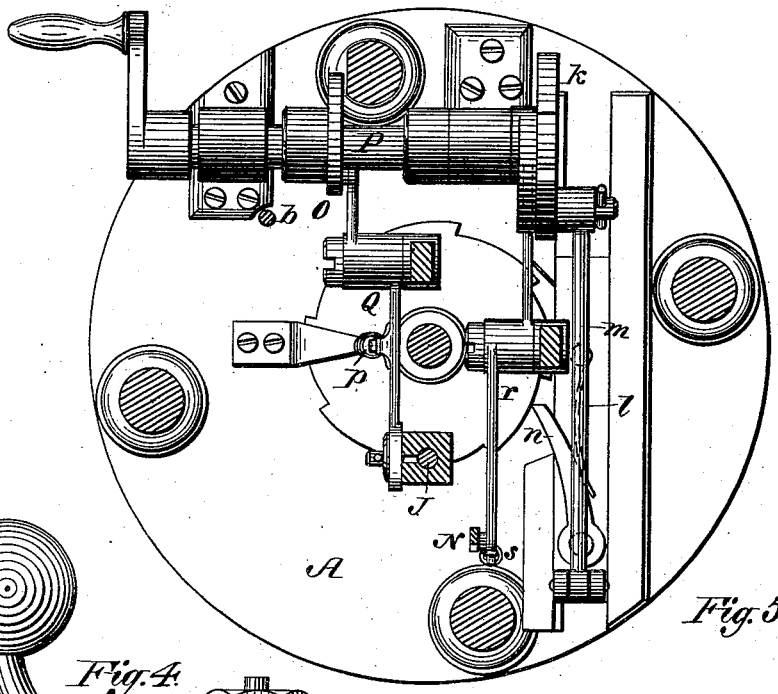


Fig. 5.

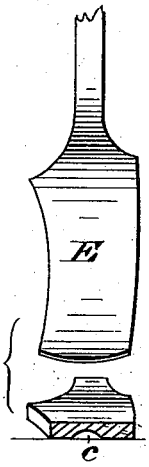
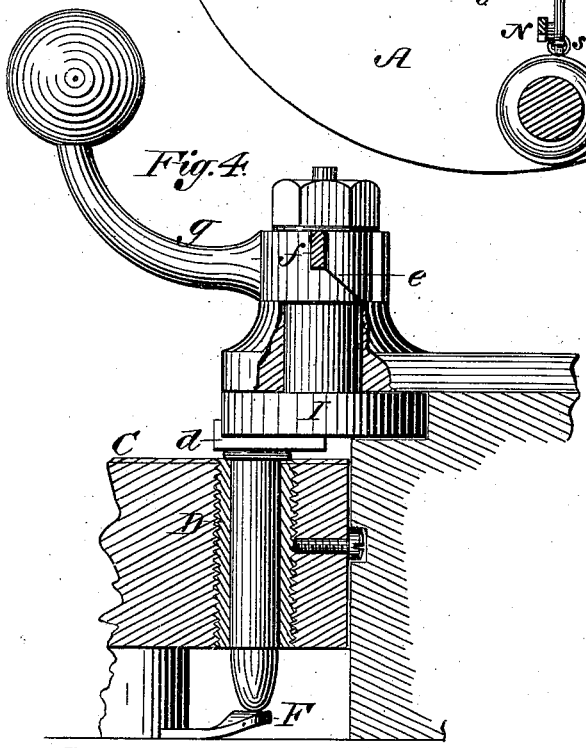


Fig. 4.



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JABEZ H. GILL, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR GAGING CARTRIDGES.

Specification forming part of Letters Patent No. **208,903**, dated October 15, 1878; application filed August 23, 1878.

To all whom it may concern:

Be it known that I, JABEZ H. GILL, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Machines for Gaging Cartridges, of which the following is a specification:

The object of this invention is to provide a machine which will automatically gage cartridges as to their length, the diameter of the body, and the diameter and thickness of the head; and to this end it consists in various devices and combinations of devices, hereinafter described.

Figure 1 represents a top-plan view of the machine; Fig. 2, a side elevation of the same, with a portion shown in section on the line *x x*; Fig. 3, a horizontal section of the machine on the line *y y*, Fig. 2; Fig. 4, a vertical section on the line *z z;* Fig. 5, a plan view and a cross-section of the presser-foot.

A represents a frame or base, upon which is mounted a rigid horizontal bed or table, B, as shown. Above the table B there is mounted on a central shaft a horizontal intermittently-rotating table or carrier, C, containing a number of vertical dies, D, each adapted to receive the body of a standard cartridge, the flange of which will rest upon the top of the die.

Upon the face of the rotary table or carrier there rests a presser-foot, E, the purpose of which is to force the previously-inserted cartridges down within the dies as they pass beneath it. The foot has its under surface rounded in order that it may pass smoothly and evenly over the heads of the cartridges; and in order to prevent it from coming in contact with the primers, and thereby endangering an explosion, it is channeled or recessed at the center, as represented in Fig. 5. The foot is pivoted at its rear end to a rigid standard, *a*, and is urged downward by a central rod, *b*, to which a weight or spring is applied.

Upon the fixed table B, beyond the presser-foot and beneath the rotary carrier, there is an inclined track or rail, F, over which the points of the standard cartridges pass without touching, but which serves to force those cartridges which exceed the proper length upward, so as to raise their heads above the dies and table, in order that they may act upon the stopping mechanism, hereinafter described.

As a means of locking the machine and preventing its further action when a defective cartridge is detected by the devices employed for that purpose, I employ a vertical spring-bolt, G, mounted in a fixed support, and arranged to engage in holes H made in the table for the purpose, as shown in Fig. 1. For the purpose of holding the stop G out of action and of causing those cartridges which are too large in the body or too thick in the head to throw it into action, I employ by the side of the stop a vertical rotary spindle, I, having at its lower end, on one side of the center, a rib or shoulder, *d*, between the under face of which and the top of the carrier there is just sufficient space to permit the free passage of cartridge-heads of the standard thickness when the bodies are forced home within the dies. If a cartridge has a body of such size as to prevent it from being forced down by the presser into the die, or if the head is of an excessive thickness, the head will, as the cartridge is advanced by the carrier, bear against the side of the shoulder *d* and cause the partial rotation of the spindle I. On one side the spindle I is provided with an inclined shoulder, *e*, terminating at the top in a horizontal or slightly-depressed portion, as shown in Fig. 4, and on the side of the stop-bolt there is an arm, *f*, which, during the operation of the machine, bears upon and is sustained by the top of the shoulder, as shown, so as to hold the bolt up out of action. The turning of the spindle I by a defective cartridge, as described, carries the shoulder *e* from beneath the arm of the bolt, whereupon the latter descends and locks the carrier fast, preventing further action until the defective cartridge is removed and the locking-bolt elevated, the last action being secured by turning the spindle by means of a handle, *g*, applied thereto for that purpose, as shown.

Beneath the rotary carrier, at a point beyond the spindle I, there is mounted a verti-

cally-reciprocating ejector-rod, J, which serves to force the cartridges upward out of the carrier. Above the table, directly over the ejector-rod J, there is mounted a fixed shield, K, containing an inclined spring, L, which, acting against the heads of the cartridges, serves to tip them over as they are ejected from the carrier, in order that they may fall with their heads downward. Within the shield K there is arranged an inclined pivoted trough-like receiver, M, into which the cartridges fall one at a time with their heads downward, as in Fig. 2, this receiver having at its lower end a hole, *i*, of such diameter that cartridges having heads of less than the standard diameter will escape through it. To the lower end of the receiver there is connected an intermittently-acting rod, N, by which, at proper intervals, the receiver is tipped outward and caused to discharge the cartridge, point downward, into an adjoining hopper or funnel, O, the bottom of which is provided with an opening, which permits the passage of the standard cartridge, but retains those having heads of excessive diameter.

The manner in which motion is imparted to the various parts above described will be readily understood by reference to Figs. 2, 3, and 4. A main driving-shaft, P, extends across the frame of the machine, and is provided on one end with a crank-wheel, *k*, to which there is connected a pitman, *l*, pivoted in turn to a slide, *m*, which carries a pawl, *n*, arranged to act upon a ratchet-wheel on the vertical shaft which sustains the carrier C. By this arrangement of parts the pawl is caused to impart an intermittent rotary motion to the carrier C. The movement of the ejector-rod is caused by means of a centrally-pivoted lever, Q, one end of which is pivoted to the rod, while the other rests beneath the eccentric *o* on the main shaft, a spring, *p*, being also attached to the lever to draw the ejector down as the cam recedes. The pivoted receiver is connected by a link, N, to a lever, *r*, which is moved in one direction by a cam on the main shaft, and in the other by a spring, *s*, as shown.

The continuous action of the machine is as follows: The stop-bolt being fastened up and the machine set in motion, the cartridges are inserted in the dies of the carrier in advance of the presser, and, by the rotation of the carrier, are passed, one after another, beneath the presser, by which those of proper size in the body are pressed down until their heads rest upon the top of the dies. If the cartridge is of the standard length it will, after entering the die, pass over the inclined rail without being affected thereby; but if too long it will be raised by the incline and its head lifted above the die. If the cartridge is of the standard dimensions its head will be carried freely beneath the spindle I without affecting the same; but if the head is too thick, the body too large, or the cartridge too long, the head projecting above the others will strike the shoulder of the spindle I and cause it to throw the stopping-bolt or dog into action. The cartridges which may pass the spindle are discharged into the receiver, from which they escape into the conductor if too small in the head; while, if not too small, they are delivered, by the canting of the receiver, into the hopper, which retains such as may have heads of too great a diameter, while those of the standard size are discharged through the bottom.

While it is preferred to use the mechanism shown for giving motion to the various parts, it is manifest that other means may be substituted. Instead of the bolt other stopping devices may be used in connection with the rotary spindle; that, in place of the spindle, other movable devices to actuate the stopping mechanism may be employed in such manner as to be actuated by the elevated heads, and that a reciprocating carrier may be substituted in place of the rotary one, although not with as good results. It is also manifest that, instead of having the spindle or equivalent movable device I actuate stopping devices, it may actuate a bell or other alarm.

Having thus descibed my invention, what I claim is—

1. In a cartridge-gaging machine, the combination of a carrier containing standard dies or openings and a yielding presser arranged to act upon the heads of the cartridges for the purpose of forcing those of the standard diameter into the dies.

2. In a cartridge-gaging machine, the combination of a carrier having dies or openings to receive the cartridges and a movable device, substantially as described, connected with stopping or alarm mechanism, and arranged above the carrier, so as to be acted upon by the heads of those cartridges which extend for any reason above those of the standard size.

3. In a cartridge-gaging machine, the combination of a carrier having holes or dies to receive the cartridges, an inclined plane or track to act upon the points of and elevate those cartridges which exceed the proper length, and a gaging device connected with stopping or alarm mechanism, and located at such distance above the carrier as to be acted upon by the heads of the elevated cartridges, and not by others.

4. In combination with the cartridge-carrier, the rotary spindle connected with stopping or alarm mechanism, and provided with a shoulder at its lower end, substantially as described and shown.

5. In combination with the carrier or table, the spindle I and the bolt or dog G, substantially as described and shown.

6. In a cartridge-gaging machine, the combination of a carrier containing holes or dies, an ejector, and an inclined receiver having

its lower end provided with an outlet for cartridges having heads of less than the required diameter.

7. In a cartridge-gaging machine, the combination of a carrier, an ejector, and a receiver with the inclined spring or bearing, to invert the cartridge during its delivery from the carrier into the receiver.

8. In a cartridge-gaging machine, the combination of the tipping receiver and the hopper, having its lower end provided with an opening of such size as to retain those cartridges having heads of excessive diameter.

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