W. A. McINTIRE.

Filling Caps.

No. 52,435, Patented Feb. 6, 1866.

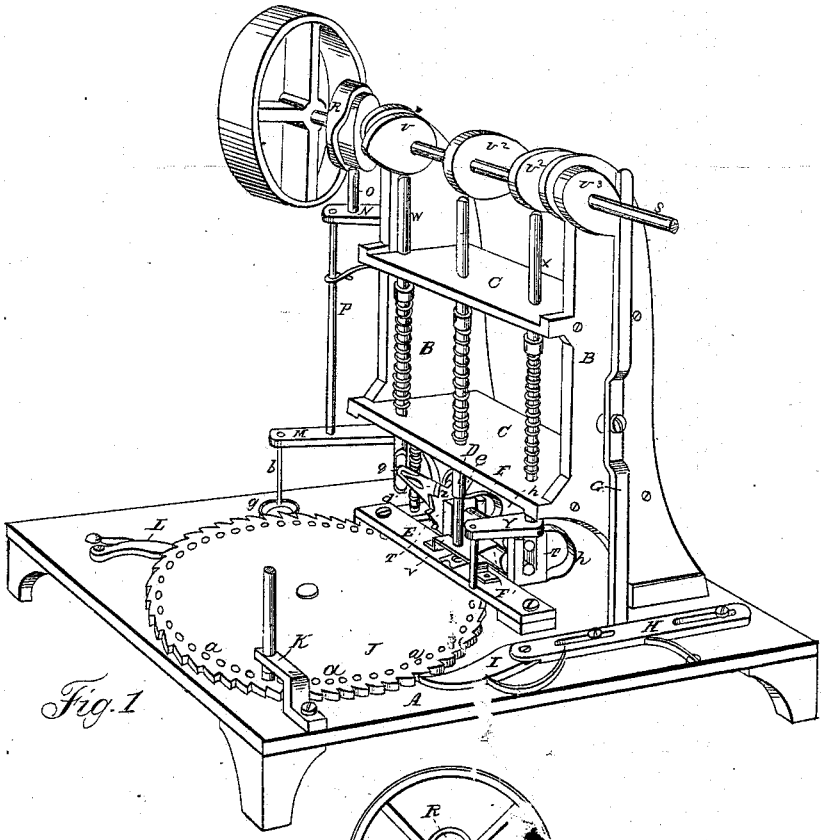

Fig. 1

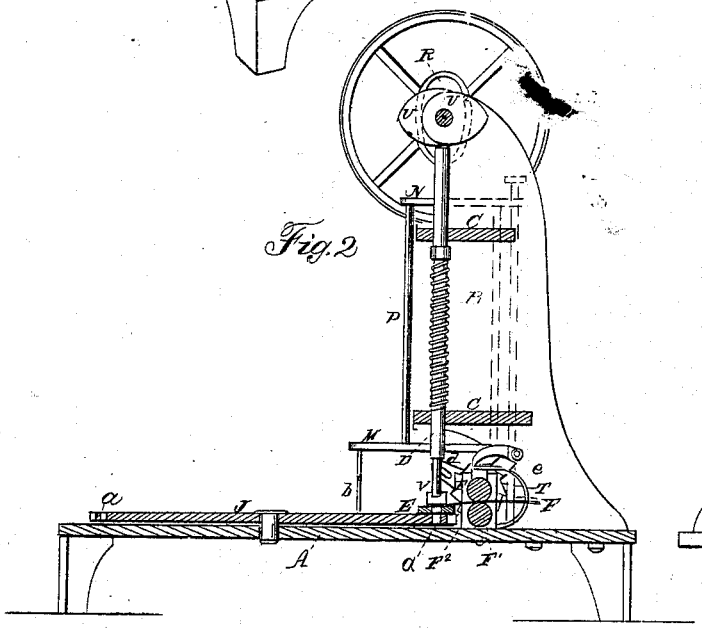

Fig. 2

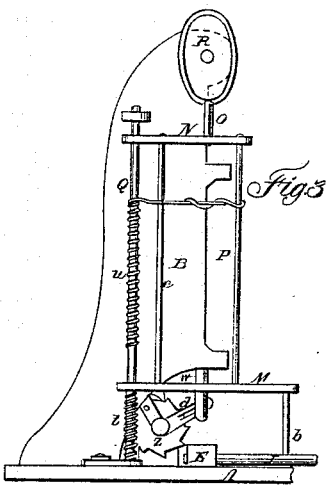

Fig 3

WITNESSES

J. J. Savage

J. L. Barney

SIGNED Wm. A. McIntire

UNITED STATES PATENT OFFICE.

WILLIAM A. McINTIRE, OF TROY, NEW YORK.

IMPROVEMENT IN MACHINES FOR VARNISHING AND LINING PERCUSSION-CAPS.

Specification forming part of Letters Patent No. **52,435**, dated February 6, 1866.

To all whom it may concern:

Be it known that I, WILLIAM A. McINTIRE, of Troy, in the county of Rensselaer and State of New York, have invented a new and Improved Machine for Varnishing and Lining Percussion-Caps with Tin-Foil or its Equivalent Material; and I do hereby declare that the following is a full and exact description of the construction and operation of the same, reference being had to the annexed drawings, and to the letters of reference marked thereon, forming part of this specification, in which—

Figure 1 is a perspective view of the machine. Fig. 2 is a longitudinal vertical sectional view of Fig. 1, and Fig. 3 is a detached view of the opposite side of the standard and the devices connected therewith, which is not fully shown in Fig. 1.

The same letters have reference to like parts in each of the figures.

The nature of my invention consists in the arrangement of certain mechanical elements or devices in such relation to each other as to constitute machinery, which, when employed and operating in combination with any suitable feeding or carrying device for conveying percussion-caps to said machinery, will present the tin-foil, cut the lining from the same, and affix it within the said caps, all being arranged in combination and operating in manner substantially as hereinafter fully shown.

It also consists in the employment of a varnishing apparatus for varnishing the interior faces of percussion-caps, in combination with a machine for lining the same with tin-foil or its substitute, combined and operating in connection with each other in manner substantially as hereinafter fully shown.

By the combination of a varnishing apparatus with a machine for lining percussion-caps, in manner as above indicated, a machine is produced which performs the respective and consecutive processes of varnishing and of lining the said caps automatically and rapidly in one and the same machine, whereas the said processes heretofore have been performed by two distinct and separately-operating devices or apparatuses, which required much manipulation and care from the operators using them, and likewise being operated and supplied with the caps by hand. Consequently the processes of varnishing and of lining the same were often defectively and irregularly performed, thereby producing an inferior article of percussion-caps.

These defects in the old devices or machines I have by my improvements endeavored to remedy.

To enable others skilled in the art of constructing machines to construct and use my invention, I now proceed to fully describe its construction and operation.

A is the bed-plate of the machine, and bolted to this plate are two standards, B B, connected by the transverse plates C C, thereby forming a frame for holding and supporting the operating machinery, which consists of the devices as follows:

D is a punch, arranged to operate in a vertical position in bearings in the transverse plates C C, and is actuated by the means hereinafter described.

E is a cutter-plate bolted to the bed-plate A, and provided with a cutting-hole, *i*, which has its edge of steel, and is made so as to cut the tin-foil. This cutting-hole is arranged precisely under the punch-point.

V is a stripper or wiper plate placed upon the cutter-plate, and has a hole in its center precisely under the punch-point, which when in operation passes through it, and on its up motion, if lifting the strip of tin-foil with it, the wiper-plate strips it off, so that it may be fed forward by the feed-rollers and be in readiness to supply the next cap-lining.

T T are standards affixed to the bed-plate A, and F F′ are feed-rollers arranged to operate in said standards. The upper roller, F, has the necessary feeding-pressure given to it to pass or feed tin-foil between it and the lower roller by means of the springs *h h*, one end of each being attached to the standards and the other ends to the journal-caps of the upper roller. The devices for operating said feed-rollers are as follows: One journal of the rollers is made long enough to receive a ratchet-wheel, Z, and a bell-crank with arms *d* and *e*, the crank working loose or free on said journal, while the ratchet-wheel is keyed fast to it. W is a rod arranged in a vertical position in the transverse plates C C. Its lower end is connected to the arm *d* of the bell-crank by

means of a pin working in a slot in the said crank-arm. Attached to the other arm, *e*, is a pawl, as seen in Fig. 2, which operates the ratchet-wheel Z. These rollers feed under the punch a strip of lining tin-foil by drawing the same over the cutting-hole *i* of the cutter-plate E and under the punch D, said strip of tin-foil being about one-fourth of an inch wide; or a strip of copper-foil of the same width, or a strip of other material to use in the place of tin-foil, may be drawn by said rollers over the cutter-plate and under the lining-punch, for the purpose of furnishing linings to be placed over the charge of fulminating-powder within percussion-caps, the lining material being drawn in manner substantially as shown in Figs. 1 and 2.

J is a feed or carrying plate arranged upon the bed-plate A, and secured to the same by a center pin or journal, about which it rotates. Near its periphery is provided and arranged a series of pockets or receptacles, *a a*, for receiving and conveying percussion-caps to the varnishing and lining devices, and the periphery of the plate is cut in the form of ratchet-teeth, as seen in Fig. 1.

These elementary parts, as described above, are for the purpose of lining percussion-caps with tin-foil, and they are actuated as follows, by substantially these devices: Upon the driving-shaft S, arranged and duly adjusted, is the cam U, which, acting upon the rod W, the head of the rod being always kept against the face of the cam by means of the spring *x*, gives motion to the said bell-crank, thereby causing the pawl affixed to the arm *e* to operate upon the ratchet-wheel Z, and thus give a regularly intermitting feed-motion to the said rollers.

The punch D is operated by means of the cam U′, which is so adjusted upon the shaft S as to have its toe in opposite position to that of cam U. The head of the punch is kept up to the cam by a spring, as shown in Fig. 1. The feed-plate J is operated by the cam U^3, affixed to said shaft S, and operating on a lever, G, which works a sliding plate, H, to which is attached the pawl I, thereby giving a regularly intermitting progressive feed-motion to the feed-plate J, all arranged as shown in Fig. 1.

The respective cams U, U′, and U^3 must be so adjusted upon the driving-shaft S and relatively to each other, in a manner well known to skillful machinists, as to have their operating points or toes act respectively upon the said feed-plate, the said feed-rollers, and the said punch in such manner and at such due times that the caps shall be successively carried forward to the proper position under the punch, while the feed-rollers present the tin-foil and the punch, cut the linings, and affix them within the caps.

These elementary devices, as above specified, being duly arranged and acting successively and regularly at their proper times, constitute an automatically-operating lining machine.

The cam U^2 operates a rod, X, arranged in vertical position in bearings in the cross-plates C C, and it has an arm, Y, projecting out from it, carrying a puncher, and operates for the purpose of releasing any caps which may stick in the pockets *a a* when said pockets arrive over the aperture in the bed-plate A, through which the caps are discharged, the discharge-punch being placed precisely over said aperture, and operating at conjoint times with the lining-punch D.

To one of the standards B of the frame is attached a fulcrum-rod, Q, in manner as shown in Fig. 3. Working upon and projecting from this rod are the radius-bars N and M. These two bars are connected together and held in proper position by the rods P and *c*. The lower bar carries the varnishing-pin *b*. To the lower end of said fulcrum-rod is affixed a coil-spring, *t*, for the purpose of always keeping the head of the stud O close up against the vertical-acting face of the cam R. Upon the central part of said fulcrum-rod is another coil-spring, *w*, which is for the purpose of keeping said stud O always up to the lateral-acting face of said cam R. These devices, as arranged in manner substantially as shown in Fig. 3, constitute an automatically-operating varnishing apparatus for varnishing the interior face of the percussion-cap previous to lining the same, and it is operated conjointly with said lining-machine by the means and in manner as follows: Upon the driving-shaft S of said machine is affixed the double-faced cam R, constructed in manner as shown in Fig. 1, and having one driving-face at right angles to said shaft. As the cam rotates its respective faces act upon the stud O, thereby actuating the varnishing-frame and the rod *b*, which is dipped into the pan *g* of varnish and charged with the same, and then lifted, swung over one of the pockets *a* of the feed-plate J, and dipped into the cap in it, and thus varnishing the same. It is then lifted and swung back in readiness to repeat the same operation in regular and continuous succession, the movements of said varnishing apparatus being so arranged and adjusted as to operate in a conjoint and regular manner with those of the lining machinery, in order that the same feed device J, or any equivalent feed device for carrying the caps, may automatically and regularly serve both the varnishing and the lining machines.

Having fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. The employment of the punch D, cutter-plate E, and feed-rollers F F′, all arranged and actuated by the means and in the manner substantially as herein described, in combination with a feeding device, J, as herein shown, or any other equivalent device for that pur-

pose, and operating in connection with the same, for the purpose of lining percussion-caps with tin-foil or its substitute, in manner as herein set forth.

2. In combination with a machine for lining percussion-caps with tin-foil or its substitute, the employment of a varnishing apparatus, the said apparatus being constructed and operating, together with said lining-machine, so as to automatically and consecutively varnish and line the said caps, in manner substantially as herein described.

WM. A. McINTIRE.

Witnesses:

J. J. SAVAGE,

J. S. BARNEY.