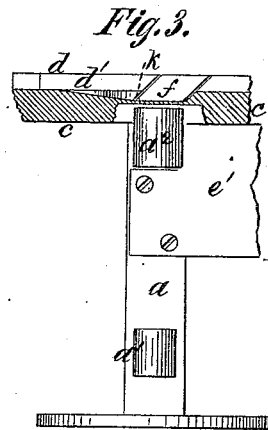
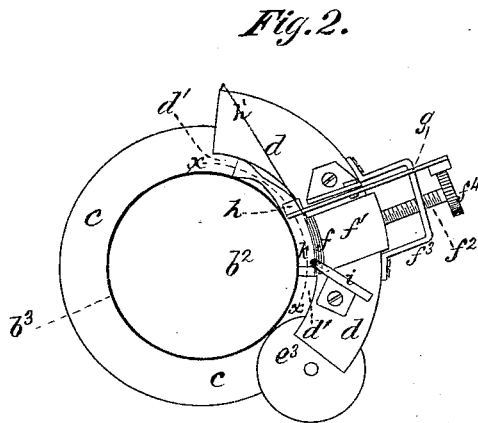
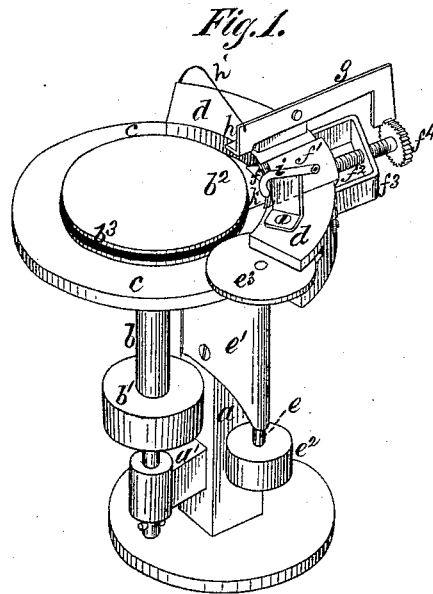


H. BORCHARDT.
 Bullet-Patching Machines.

No. 159,748.

Patented Feb. 16, 1875.



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UNITED STATES PATENT OFFICE.

HUGO BORCHARDT, OF NEW HAVEN, CONNECTICUT.

IMPROVEMENT IN BULLET-PATCHING MACHINES.

Specification forming part of Letters Patent No. 159,748, dated February 16, 1875; application filed July 14, 1874.

To all whom it may concern:

Be it known that I, HUGO BORCHARDT, of New Haven, Connecticut, have invented certain Improvements in Bullet-Patching Machines, of which the following is a specification:

My invention relates to machines for applying patches to cylindrical bullets; and consists in a certain combination of devices, by the operation of which bullets, which are previously covered with an adhesive substance, are automatically seized and rolled across a package of papers or slips cut into appropriate shape and slightly moistened, so that the exterior slip is picked up by the periphery of each bullet as it comes along successively and wrapped around it. A portion of the paper projecting beyond the base of the bullet is folded inward by means of a stationary guide or die, and thus the operation of patching the bullet is completed automatically.

The feeding forward of the papers or slips which form the patches is effected by the passage of the bullets through the machine, so that when the package in the magazine is once adjusted the slips which it contains are presented successively in proper position until the supply is exhausted and it becomes necessary to refill the magazine.

The slips are dampened by a jet of low steam directed upon the exterior of the package from a nozzle conveniently placed, or by a wet sponge deposited upon the package, or in any other convenient way, the extent to which moistening is required being dependent somewhat upon the state of the atmosphere as to dampness. The jet of steam may be so directed as to prevent the curling of the slips.

The drawings embrace, Figure 1, a perspective view of a machine embodying my improvements; Fig. 2, a top view; and Fig. 3, a view, partly in vertical section, through curved lines *xx*, Fig. 2.

The frame of the machine *A* consists of an upright standard, *a*, having laterally-projecting arms *a*¹ and *a*² supporting the vertical shaft *b*, which is driven by a belt on the pulley *b*¹. This shaft terminates in a circular horizontal disk or die, *b*², which has an elastic periphery, *b*³, and is placed immediately above the table *c*, which latter is supported by the

standard *a*. About one-third of the table has a rim, *d*, of the same vertical thickness as the disk *b*². This rim is placed a short distance from the edge of the disk, so as to leave a groove, *d'*, wide enough to admit a bullet between the inner side of the rim and the elastic periphery of the disk, the rim constituting a stationary guide or rail over which the bullet is rolled by the action of the rolling disk *b*². Another vertical shaft, *e*, supported by the lateral projection *e*¹ from the standard *a*, and rotated by a belt on the pulley *e*², carries the horizontal feeding-disk *e*³, upon which the bullets are placed by an attendant, and by which they are carried into the groove *d'* and delivered in suitable position for the conjunctive action of the rolling disk and the stationary rail. The guide or rail *d* is grooved transversely, forming a magazine for holding the package of slips *f*. The slips are cut in the form of parallelograms, and the package of slips is pushed toward the disk *b*² by a follower, *f*¹, the motion of which is governed by the screw *f*² passing through the bridge *f*³, and provided with a ratchet-wheel, *f*⁴, which is operated by the rocking pawl *g*. The inner end, *h*, of the rocking pawl is lifted by the passage of a bullet through the groove, and the outer end thereupon engages and turns the ratchet-wheel and screw *f*² sufficiently to move up the follower and press forward the package of slips, so that the outer slip will be brought in line with the inner edge of the rim *d*, in position to be taken off by the next bullet that passes along, and so on. The inner end of the pawl, after the passage of each bullet, drops down by its own gravity, or is forced down by the spring *h'*, so as to bring it into position to be lifted by the next bullet, and so on. A nozzle, *i*, to be connected with a steam-supply pipe, is supported upon the rim *d*, and is bent so that a jet of steam may be directed upon the slips for the purpose of dampening them and keeping them flat preparatory to their being taken up by adhesion to the peripheries of the bullets. If only a small quantity of slips is placed in the magazine the package may be dampened beforehand, and in some circumstances it may be found preferable to dampen the slips by laying a wet sponge upon the package while in po-

sition in the magazine. Immediately opposite the magazine the table *c* has a tapering groove or cavity, *k*, the bottom of which is on a level with the bottom of the magazine. This cavity is gradually narrowed for the purpose of catching the lower edge of the strip and guiding or folding it in upon the base of the bullet as the bullet rolls along. The slips composing the package are held together by a light wash of shellac applied to their edges.

The operation of my machine is as follows: The bullets are dipped in a thin solution of gum-arabic or other adhesive substance, and when dry are placed on end upon the edge of the feeding-disk *e*², which carries them around into the groove *d'*, where they are caught by the elastic periphery of the disk *b*² and rolled around the concave guide formed by the inner edge of the rim *d*. As each bullet rolls across the mouth of the magazine the outer slip of the package therein adheres to its periphery and is wrapped around it. The farther movement of the bullet raises the rocking pawl, and, as before described, causes the pushing forward of the package a distance equal to the thickness of one slip.

It will be observed that the follower has a concave face, thus leaving room for the middle of the package to yield backward as the bullet rolls across it, and that the jet of steam is directed against the outer slip, thus tending to hold it flat until the bullet takes it up.

I claim as my invention—

1. The combination, in a bullet-patching machine, of the stationary rail *d*, the patch-

magazine *f*, and the rolling disk *b*² with a feeding device for presenting a series of bullets successively in prescribed position, substantially as set forth.

2. In combination with a magazine for holding slips of paper or patches, substantially in the manner and relation described, a rolling disk having an elastic periphery or face for the purpose of administering an elastic pressure to a bullet while causing it to roll across the exterior of the package of slips, substantially as set forth.

3. In combination with a rolling disk and a stationary rail, substantially such as described, a stationary guide between the rolling disk and the stationary rail, for the purpose of guiding or folding the edge of a patch inward upon the base of a bullet, substantially as set forth.

4. The combination of a magazine for holding bullet-patches, substantially in the manner and relation described, with a device for moistening and flattening the package of slips contained in the magazine, substantially as set forth.

5. In combination with a magazine for holding bullet-patches, substantially in the manner and relation described, an automatic follower for regulating the position of the package of slips contained in the magazine, substantially as set forth.

HUGO BORCHARDT.

Witnesses:

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