(No Model.)

3 Sheets—Sheet 1.

C. H. HALL.

LOZENGE MACHINE.

No. 264,528. Patented Sept. 19, 1882.

Fig. 1.

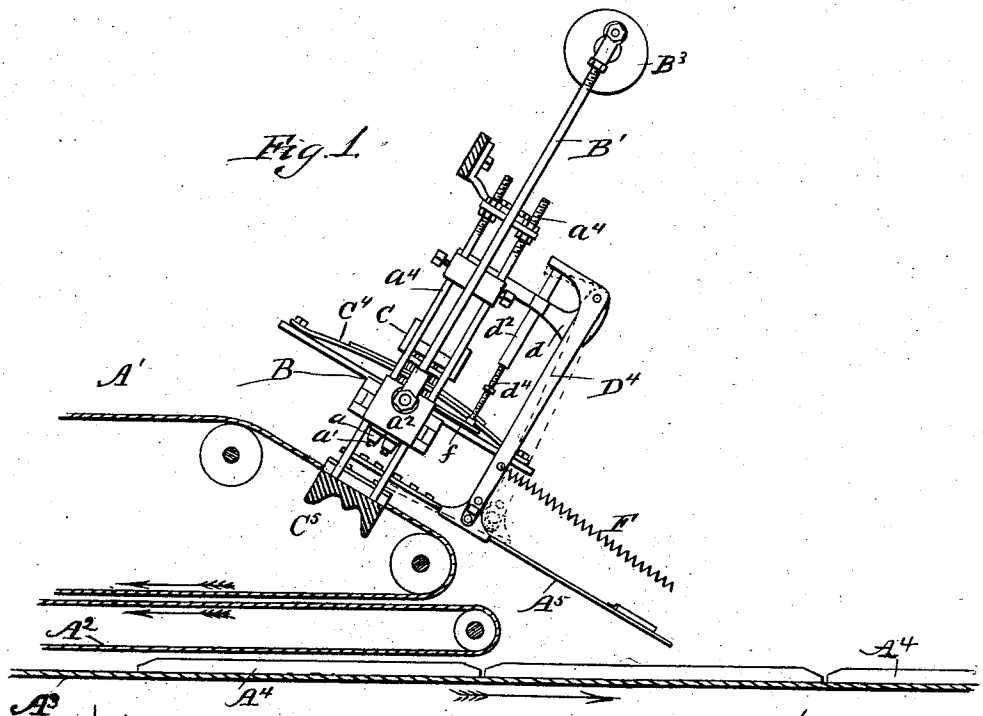
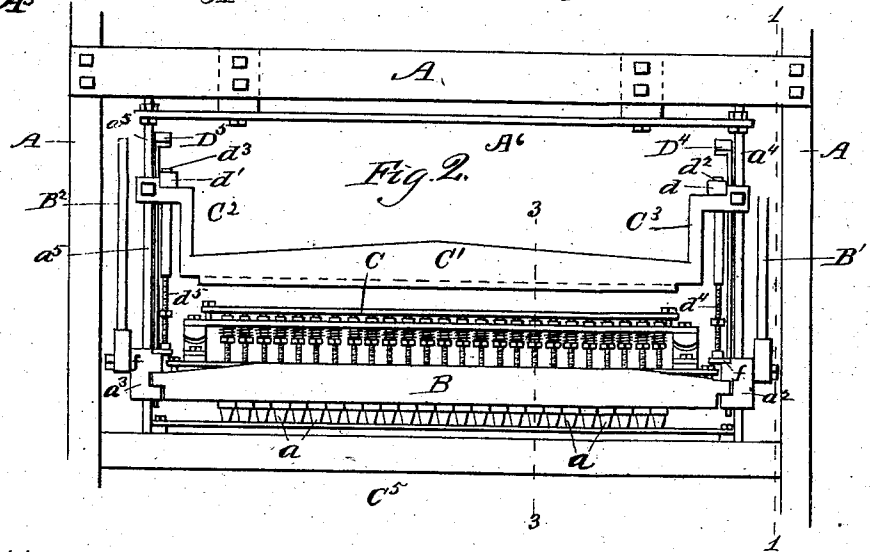


Fig. 2.



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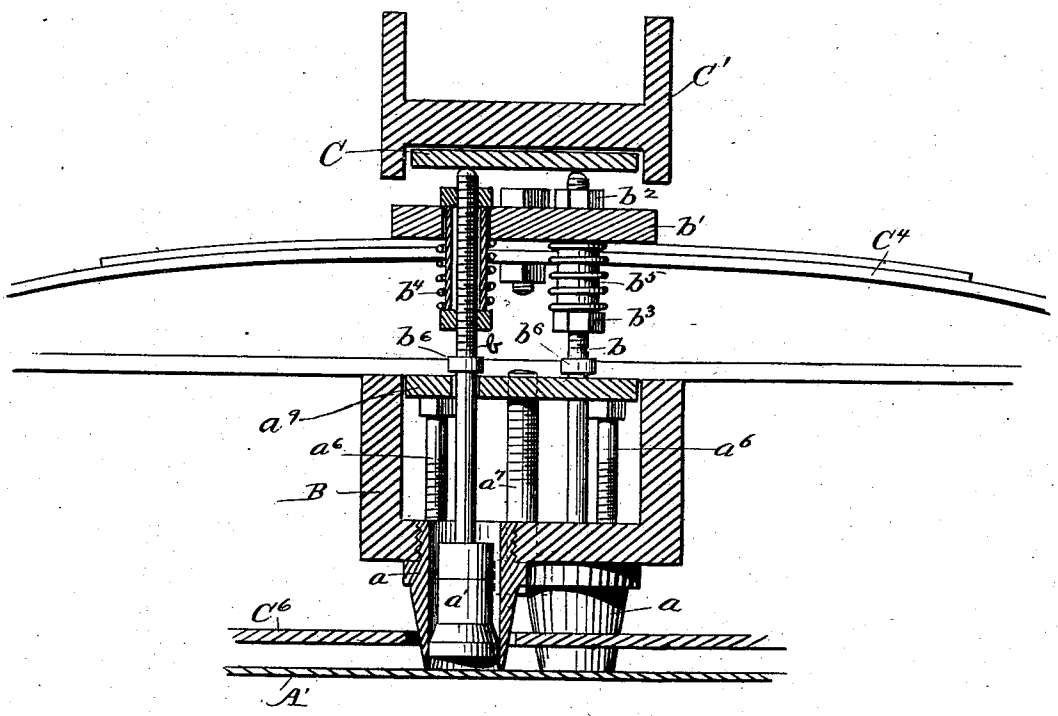
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Fig. 3.



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LOZENGE MACHINE.

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Fig 4.

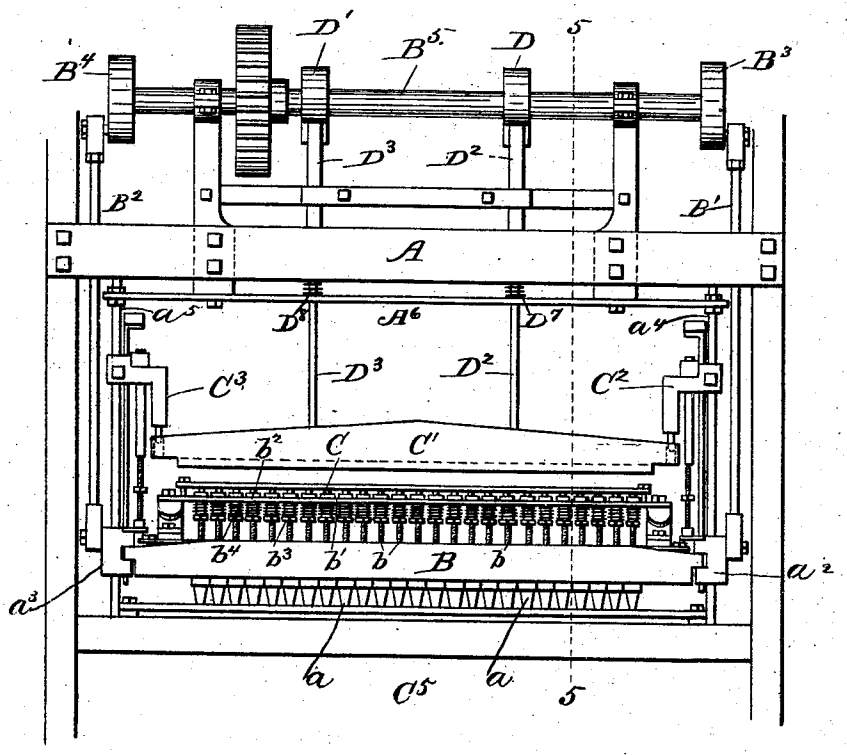
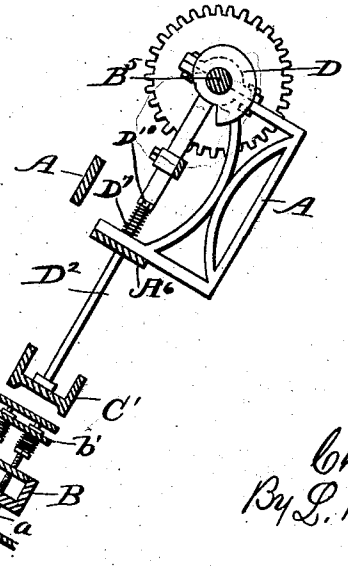


Fig 5.



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UNITED STATES PATENT OFFICE.

CHARLES H. HALL, OF CHICAGO, ILLINOIS.

LOZENGE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 264,528, dated September 19, 1882.

Application filed March 30, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. HALL, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lozenge-Machines, of which the following is a description, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, forming a part of this specification.

This invention relates to improvements in that class of lozenge-machines employing a series of cutters having pistons moving on the interior of the same for the purpose of expelling the lozenges therefrom, the faces of said pistons being of an ornamental or word character, whereby the confection is embossed or lettered before being forced out of the cutters; and it consists of certain novel features in the construction, arrangement, and operation of the several parts, as will be hereinafter more fully set forth in detail.

Figure 1 is an end elevation of the cutting mechanism proper, with the outside supporting frame-work broken away in the plane 1 1, Fig. 2. Fig. 2 is a rear elevation; Fig. 3, a vertical transverse section in the plane 3 3, Fig. 2. Fig. 4 is a front elevation of the cutting apparatus, showing the mechanism for transmitting motion and power; Fig. 5, a vertical transverse section in the plane 5 5, Fig. 4.

The illustration and description are confined to the cutting mechanism proper and immediate parts, the parts broken away being of the usual construction and operation common to this class of machines.

Referring to the drawings, A represents the supporting frame-work; A′, the endless apron which delivers the dough or paste to the series of cutters *a;* A^2, the apron which receives and carries away the waste or scrap; A^3, the board apron which moves the trays A^4 into position to receive the goods as they are dropped from the delivery-tray A^5.

A^6 is a cross-bar bolted to frame A, and securing the top ends of guides a^4 a^5.

The cross-head B is adapted to carry the series of cutters *a*, having the pistons *a′* moving on the interior thereof, as shown in Fig. 3 of the drawings. The ends of the cross-head are adapted to slide into the jaws a^2 a^3, and as the cutting mechanism is set on an incline the weight of the cross-head serves to retain itself in place, thereby enabling the same to be conveniently removed for repairs or other purposes. The jaws a^2 a^3 have a vertical movement on the guide-rods a^4 a^5, and are attached to the lower ends of the connecting-rods B′ B^2, the upper ends of which are connected to the cranks B^3 B^4, placed upon the ends of the driving-shaft B^5, through the medium of which motion and power are transmitted to the cutting mechanism.

The series of pistons *a′*, moving on the inside of the cutters, are provided with the rods or stems *b*, the upper ends of which are threaded and pass through and project above the perforated plate *b′*, where they receive the nuts b^2, which adjustably secures them in relation thereto. The nuts b^3 are placed at intermediate points between the plate *b′* and the cross-head B, and serve to regulate the tension on the springs b^4, which are placed upon that portion of the piston-stems between the nuts b^3 and the under side of the plate *b′*. The sleeves b^5 are placed upon the piston-stems to prevent the springs from catching on the threaded parts, and also to allow a free action of the same. These springs serve to give the pistons an independent adjustment with reference to each other, and adapt these parts to accommodate themselves to any uneven thickness in the sheet of dough. The piston-stems are provided with the shoulders b^6, which, in connection with the plate a^9, serves to gage the thickness of the lozenge. The plate a^9 is raised or lowered by means of the bolts a^6, placed at each end of the cross-head, and is prevented from having a lateral movement by means of the bolts a^7, placed at each end, as shown in Fig. 3 of the drawings.

The plate C is secured so as to rest upon the upper ends of the piston-stems, and which, when brought in contact with the bridge C′, has the effect of forcing all the pistons down at the same time and expelling the goods which have been picked up by the cutters. The bridge C′ is susceptible of a vertical movement, the ends being connected to the lower ends of the arms C^2 C^3. The upper ends of these arms are adjustably secured to the guide-rods a^4 a^5,

by which arrangement the bridge C′ may be brought to the required position.

By means of the elliptic springs C^4, placed between the cross-head B and the plate b' and at each end of the same, all the series of cutters are simultaneously raised from the cutting-bed C^5.

C^6 represents the clearing-plate.

Placed upon the driving-shaft B^5 are the cams D D′, which have frictional contact with the upper ends of the rods D^2 D^3, the lower ends being attached to the bridge C′, as shown in Figs. 4 and 5 of the drawings.

D^7 D^8 are spiral springs encircling rods D^2 D^3 and resting on the cross-bar A^6, then imparting to said rods an upward tendency by reason of their tops bearing under a shoulder, D^{10}. By this means the rods D^2 D^3 are held in contact with the under side of the cams. This arrangement is for the purpose of forcing down the pistons beyond the cutting-edge of the cutters the second time in each revolution, the first downward movement of the pistons being caused by the plate C coming in contact with the bridge C′. This dual movement of the pistons in each revolution insures a more certain clearance of all the goods from the cutting mechanism.

The receiving-tray A^5 is adapted to have an automatic reciprocating movement, the tray being brought underneath the cutters when they are on the upward stroke at the proper time to receive the goods when they are expelled by the descending pistons. This movement is accomplished by means of the swinging arms D^4 D^5, which are placed at each end of the cutting mechanism. The upper ends of the swinging arms are pivoted to the brackets d d', which project outward from the framework, as shown in Fig. 1 of the drawings. The lower ends of the swinging arms are rigidly secured to the sides of the tray, the extreme upper ends being bent over at right angles and having frictional contact with the upper ends of the tumbler-rods d^2 d^3, which have a vertical bearing in the brackets d d', as shown in Fig. 1 of the drawings. The lower tubular ends of these tumbler-rods have a threaded interior for the reception of the upper ends of the threaded extensions d^4 d^5, the lower ends having a step-bearing on the projections f f'. (Shown in Figs. 1 and 2 of the drawings.) By means of these threaded extensions the tumbler-rods are shortened or lengthened, as may be required, in gaging the throw or travel of the receiving-tray. The inner ends of the projections f are attached to the jaws a^2 a^3 of the cross-head and travel with the same, and on the upstroke cause the upper ends of the tumbler-rods to strike the under side of the upper bent-over ends of the arms D^4 D^5, forcing the same upward in the arc of a circle, and thereby imparting a corresponding movement of the lower ends attached to the receiving-tray A^5, and moving the same underneath the cutters to receive the manufactured goods and discharge them into the trays A^4. One end of the springs F, of which there are two, is attached to the arms D^4 D^5, the opposite ends being attached to a part of the stationary frame not shown and assisting the force of gravity in returning the receiving-tray to a normal position.

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

1. In a lozenge-machine, the combination of the jaws a^2 a^3, cross-head B, rods B′ B^2, cranks B^3 B^4, and shaft B^5, the jaws a^2 a^3 sliding on guides a^4 a^5, all of said parts being inclined out of the perpendicular, so that the cross-head carrying the cutters rests in the jaws and is secured therein by its own weight, substantially as and for the purposes set forth.

2. In a lozenge-machine, the jaws a^2 a^3, cross-head B, rods B′ B^2, cranks B^3 B^4, shaft B^5, the cross-head B having cutters a, and pistons a', provided with stems b, in combination with the adjustable plates C and b', all of said parts being set on the incline and arranged in the manner and for the purposes set forth.

3. In a lozenge-machine, the combination, with the cross-head B, of the plate a^9, the bolts a^6, and the piston-rods b, provided with the shoulders b^6, substantially as described.

4. The combination of the shaft B^5, cams D D′, rods D^2 D^3, having shoulders D^{10}, spring D^7, bar A^6, cross-head C′, arms C^2 C^3, and guides a^4 a^5, substantially as set forth, and for the purposes specified.

5. In a lozenge-machine, the cross-head cutter and piston and stem, the stem having an upper thread and being provided with collar b^6, nuts b^2 b^3, sleeve b^5, and spiral spring b^4, in combination with the plate b', secured to spring C^4, and the adjustable plate a^9, substantially as described, and for the purposes set forth.

6. In a lozenge-machine, the combination, with the reciprocating receiving-tray A^5, of the swinging arms D^4 D^5, the brackets d d', the tumbler-rods d^2 d^3, the threaded extension d^4 d^5, and the projections f f', substantially as described.

7. The shaft B^5, cranks B^3 B^4, and rods B′ B^2, carrying jaws a^2 a^3, the jaws supporting the cross-head B, which is provided with the cutters a, carrying the pistons and stems, in combination with the bridge C′ and its operating mechanism, whereby the pistons are forced out the bottom ends of the cutters twice in each revolution of the driving-shaft, substantially as set forth, and for the purposes specified.

CHARLES H. HALL.

Witnesses:
L. M. FREEMAN,
L. P. COUPLAND.