(No Model.) 4 Sheets—Sheet 1.

C. H. HALL.

LOZENGE MACHINE.

No. 273,518. Patented Mar. 6, 1883.

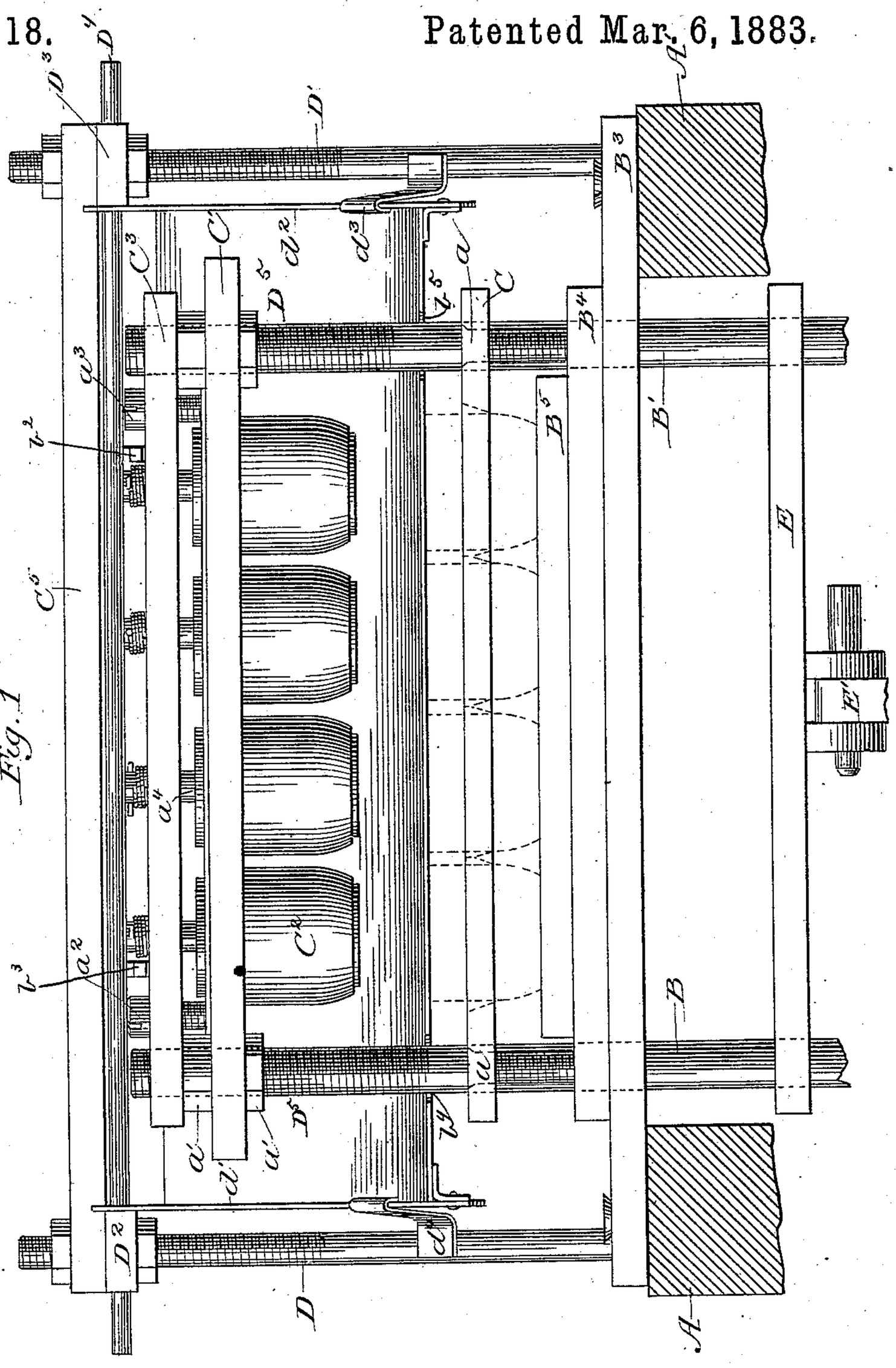

Fig. 1

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(No Model.) 4 Sheets—Sheet 2.

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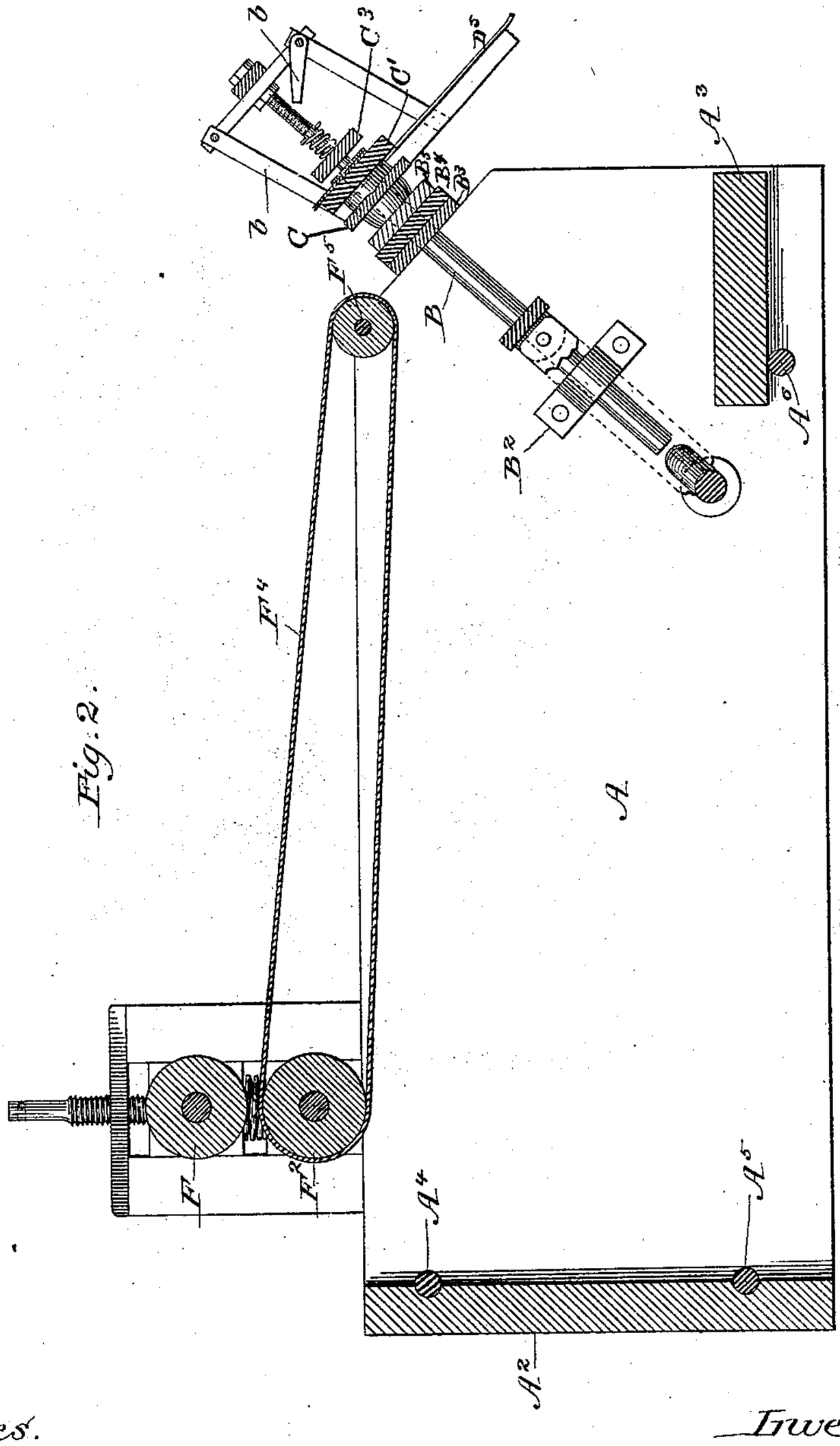

Fig. 2.

Witnesses.

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4 Sheets—Sheet 3.

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LOZENGE MACHINE.

No. 273,518. Patented Mar. 6, 1883.

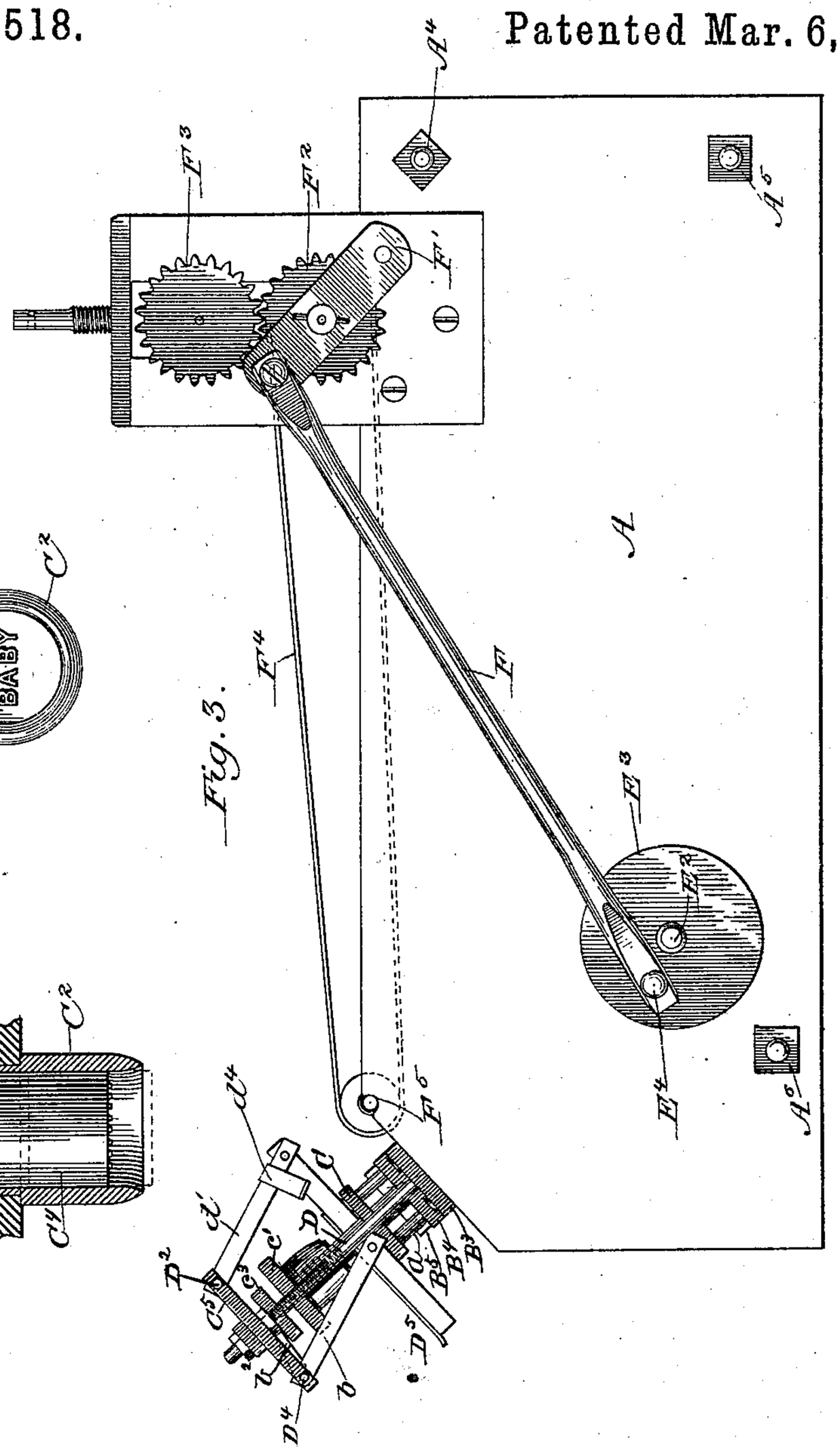

Fig. 3.

Fig. 5.

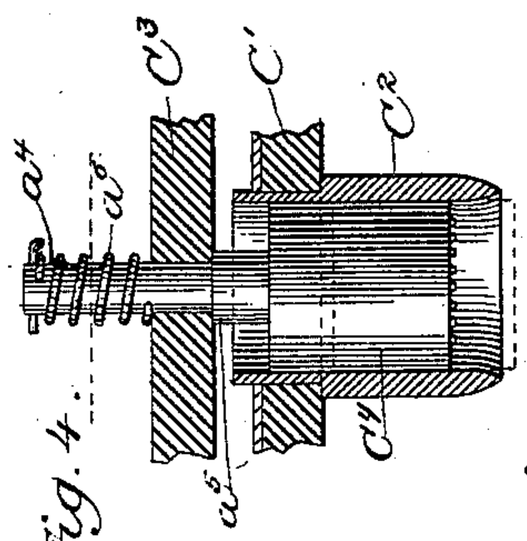

Fig. 4.

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(No Model.) 4 Sheets—Sheet 4.

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LOZENGE MACHINE.

No. 273,518. Patented Mar. 6, 1883.

Fig. 6.

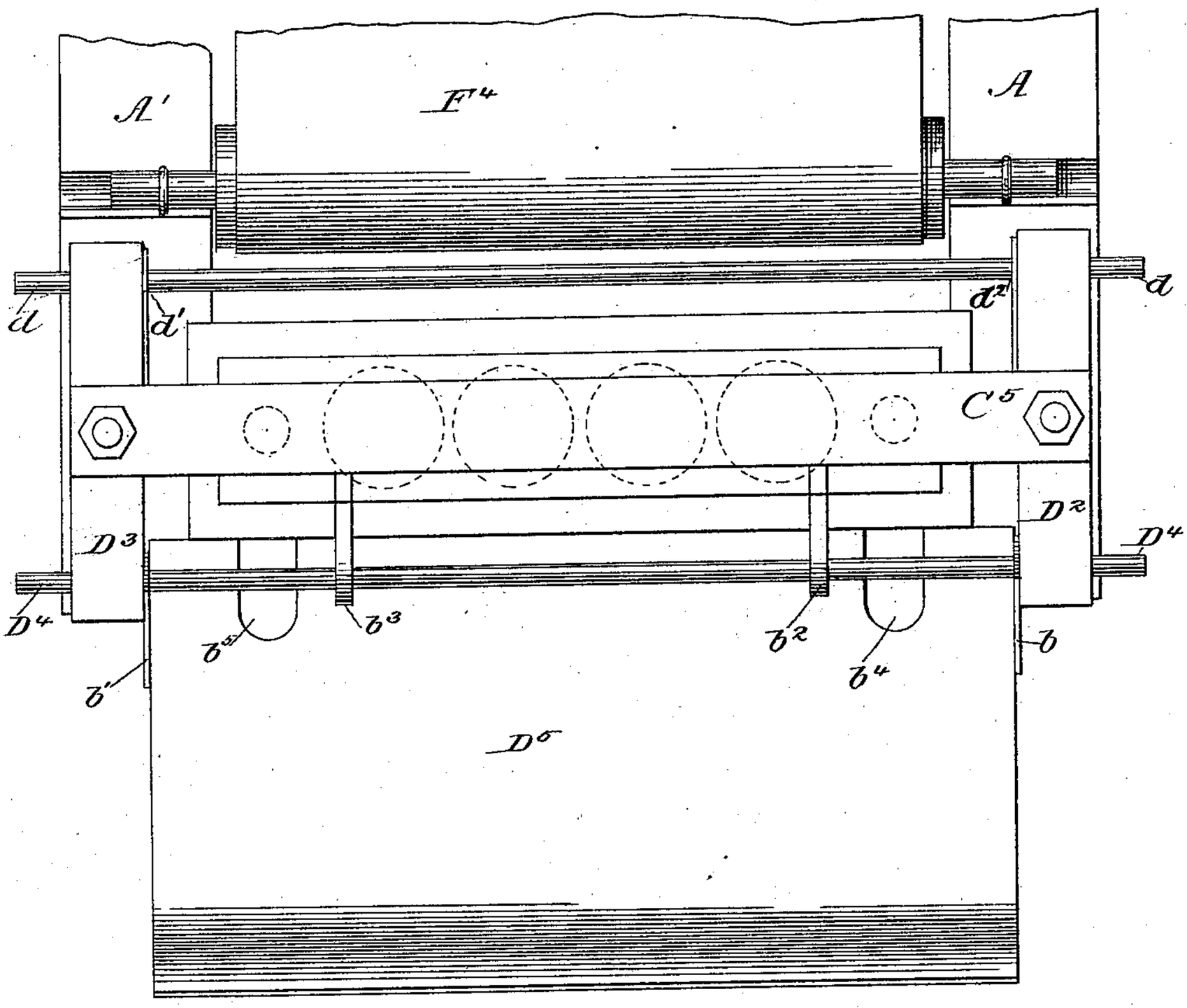
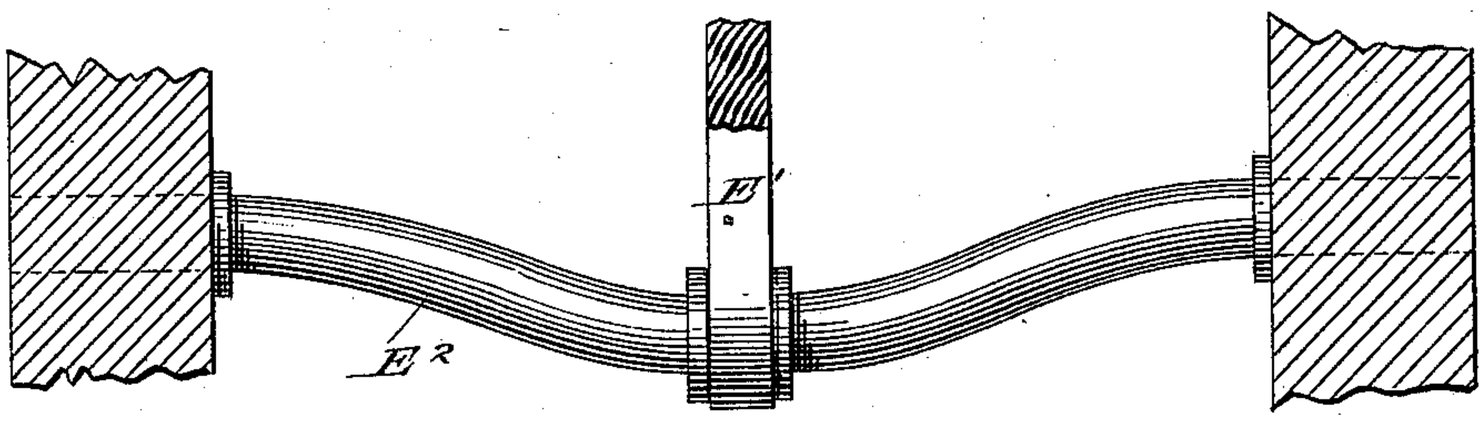


Fig. 7.



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UNITED STATES PATENT OFFICE.

CHARLES H. HALL, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO RUFUS P. PATTISON, OF SAME PLACE.

LOZENGE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 273,518, dated March 6, 1883.

Application filed October 13, 1881. (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; and I do hereby declare the following to be a full, clear, and exact description thereof, that will enable others to construct and operate 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 lozenge-machines; and it consists in the parts which will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view of the cutting mechanism proper, looking outward. Fig. 2 is a vertical longitudinal section. Fig. 3 is a side elevation. Fig. 4 is a vertical section of one of the cutters and inclosed pistons, showing the relation of these parts. Fig. 5 is a face view of the lower end of the piston and cutter; Fig. 6, a top view of the cutting apparatus. Fig. 7 is a detached view of the bowed or bent crank-shaft, imparting a reciprocating motion to the cutter-frame.

Referring to the drawings, A A′ represent the side pieces, A^2 the back end piece, and A^3 the front cross-piece, composing the framework supporting the operating mechanism, and A^4 A^5 A^6 are tie-rods securing the framework together. The upper front end of the supporting-frame is cut away at an oblique angle, so as to permit of the cutting mechanism being set on a vertical incline, as shown in Figs. 2 and 3 of the drawings.

The traveling guide-rods B B′ are placed on the inside of the frame-pieces A A′, and are secured in place by the bearing box or boxes B^2, as shown in Fig. 2, the companion guide-rod on the opposite inside being secured in the same manner, but not shown in the drawings, as it is a mere duplication. These guide-rods pass up through and have bearings in the cutting bed-pieces B^3 B^4, the ends of the lower piece being rigidly secured to the top of the frame, as shown in Fig. 1 of the drawings; while the upper or third piece, B^5, is composed of wood and forms the cutting-surface proper. The guide-rods also pass through the ends of the perforated clearing-plate C, which is secured in a stationary position to the cross-piece B^4 by means of the screws *a*, of which there are four, in line with and on the front and rear sides of the guide-rods. The clearing-plate C is perforated, so as to admit the series of cutters C^2. Said perforations are of greater diameter at the top than at their bottom or under side, so as to present a sharp scraping-edge. (Shown in dotted line, Fig. 1.) By this means any material that might adhere to the cutters would be removed on the upward stroke—*i. e.*, the clearing-plate operates as a scraper for the sides of the cutters. On and near the upper ends of the guide-rods is placed the cutter-bar C′, carrying the series of cutters C^2. This cutter-bar is vertically adjustable on the guide-rods by means of the screw-nuts *a′ a′ a′ a′*, engaging with the threaded ends of the guide-rods. The series of cutters illustrated are cylindrical in form, but may be of any desired shape that taste or practical working should require, the form of the pistons corresponding thereto, thus enabling the same machine to produce lozenges of any desired form by removing one series of cutters and substituting others of a different shape. The lower interior cutting-surface of the cutters shown is of the greatest diameter at the extreme end, gradually narrowing inward to a short distance from the edge, while the exterior lower end is of a less diameter than the immediate upper part of the exterior surface of the cutter, thus forming a wedge-shaped cutting-edge, which readily frees itself from the sheet of paste or dough, and produces a lozenge with a regular slope or bevel from the base to the crown.

The cross-bar C^3 is located on the guide-rods above the cutter-bar, and is adjustably secured in relation thereto by means of the tap-bolts a^2 a^3. This cross-bar C^3 is perforated for the passage of the series of stems or spindles a^4, to the lower ends of which are attached the piston-heads C^4, traveling on the inside of the cutters. This cross-bar C^3 serves the purpose of gaging the thickness of the lozenge or confection—that is, by moving the bar up a thicker cut is produced, and down a thinner one, this

adjustment changing the distance of the piston from the lower edge of the cutter. The piston stem or stems are enlarged at a point immediately above the upper ends of the pistons, forming the annular shoulder a^5, as shown in Fig. 4, which comes in contact with and has a bearing against the under side of the cross-bar C^3, serving as a stop to gage the travel of the pistons, and, in connection with the cross-bar C^3, these parts are so arranged as to conveniently produce a lozenge of the desired thickness. On the upper ends of the piston-stems, and above the cross-bar C^3, are placed the spiral springs a^6, which serve to return the pistons to their normal position after they have served the function of expelling the lozenges from the cutters. Fig. 1 shows the cutting apparatus at the upper end of the stroke, the ends of the piston-stems coming in contact with the under side of the stop-bar C^5, forcing the pistons downward and expelling the lozenges from the cutters, the dotted lines representing the cutters at the lower end of the stroke in contact with the cutting-bed. The stop-bar C^5 is adjustably secured to the bolts or studs D D′, which project upward from the frame. This stop-bar not only causes the pistons to descend in the cutters, but also gages the distance they are to travel on the downstroke so as to come flush with the cutting-edge, or made to project a little below, as shown in Fig. 1 of the drawings.

The short bars D^2 D^3 are supported on the bolts D D′, and are placed underneath at right angles to the stop-bar C^5. The outer ends of the bars D^2 D^3 are perforated for the reception of and provide bearings for the ends of the rock-shaft D^4, to which are rigidly secured the upper ends of the connecting-arms b b'. The lower ends of these arms are pivoted to the sides of the receiving-tray D^5. The outer ends of the cam-arms b^2 b^3 are rigidly attached to the rock-shaft D^4, the opposite ends being loose, projecting inward and downward at about the angle shown in Fig. 2 of the drawings. As the cutting mechanism moves upward, the top side of the cross-bar C^3 comes in contact with the loose ends of the cam-arms b^2 b^3, forcing the same in an upward direction, causing the rock-shaft D^4 to rotate, and, through the medium of the connecting-arms b b', moves inward and upward the tray D^5 at the proper time to receive the goods forced from the cutters by the pistons, and as the cutters start on the downstroke the receiving-tray gravitates to its normal position, this receiving-tray having an intermittent reciprocating movement. The inner edge of the receiving-tray is provided with the elongated slots b^4 b^5 for the purpose of clearing the guide-rods B B′. The inner ends of the bars D^2 D^3 support the ends of the stationary rod d, which provides a bearing for the upper ends of the connecting-arms d' d^2, the lower ends being pivoted to the receiving-tray D^5 and support the inner end of the same. One end of the stops d^3 d^4 are secured to the lower part of the arms d' d^2, while the opposite ends are turned at right angles to form a bearing for contact with the bolts D D′, which serve the purpose of preventing the receiving-tray from gravitating beyond a certain point as it returns to a normal position.

A reciprocating movement is imparted to the cutting mechanism through the medium of the cross-head E, having connection with the guide-rods B B′, the rod E′, and the bent or bowed crank-shaft E^2, as shown in Figs. 1 and 7 of the drawings. The crank-shaft is journaled in the side pieces of the main frame-work, and an outer projecting end carries the crank-wheel E^3, which is provided with the pin E^4, to which is attached one end of the connecting-rod F, the upper end connecting with the rocker-arm F′, attached to the roller F^2, by which motion is transmitted to the crank E^3.

The graduating-rollers F^2 F^3 are common to this class of machines. A general description will therefore be omitted in this case.

The endless apron F^4 carries the sheet of paste or dough to the cutters, traveling over the rollers F^2 F^5.

The face of the pistons bearing on the lozenges may be perfectly plain or be provided with letters, words, or characters of ornamental design, these configurations being raised above the immediate surface of the pistons or indented, imparting a corresponding impression to the goods.

This machine is adapted to be employed in the manufacture of crackers and the various styles of confections.

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

1. The cutters C^2, pistons C^4, stems a^4, having shoulder-bearings a^5, springs a^6, cutter-bar C′, and adjustable stop-bar C^5, in combination with the cross-bar C^3, vertically adjustable on rods B B′ by bolts a^2 a^3, whereby a lozenge of the desired thickness is produced, substantially as described, and for the purposes set forth.

2. The combination, with the receiving-tray D^5, of the arms b b', the rock-shaft D^4, the cam-arms b^2 b^3, and the cross-bar C^3, whereby the tray D^5 is moved under the cutters to receive the goods, substantially as described.

3. The combination, with the receiving-tray D^5, of the arms d' d^2, the stops d^3 d^4, and the bolts D D′, which serve to prevent the tray moving beyond a certain line on the inclined plane, substantially as described.

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Witnesses:
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L. B. COUPLAND.