# T. ROBERTSON.

## LOZENGE-MACHINE.

No. 185,698. Patented Dec. 26, 1876.

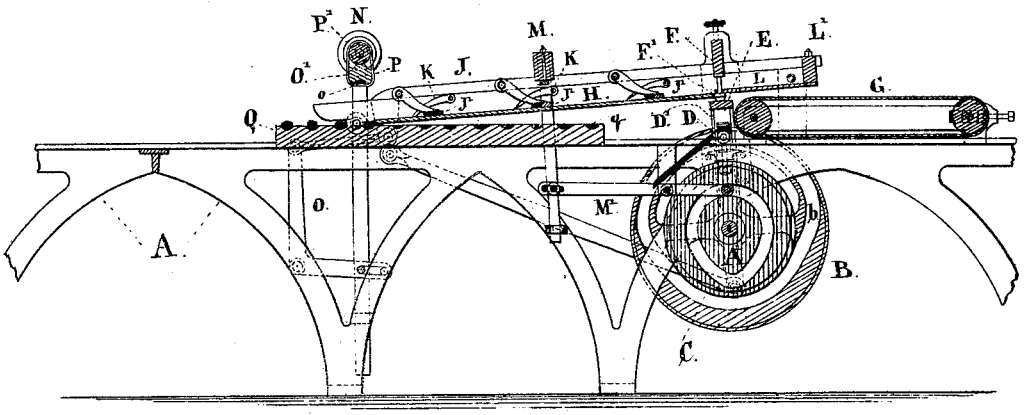


*Fig. 1.*

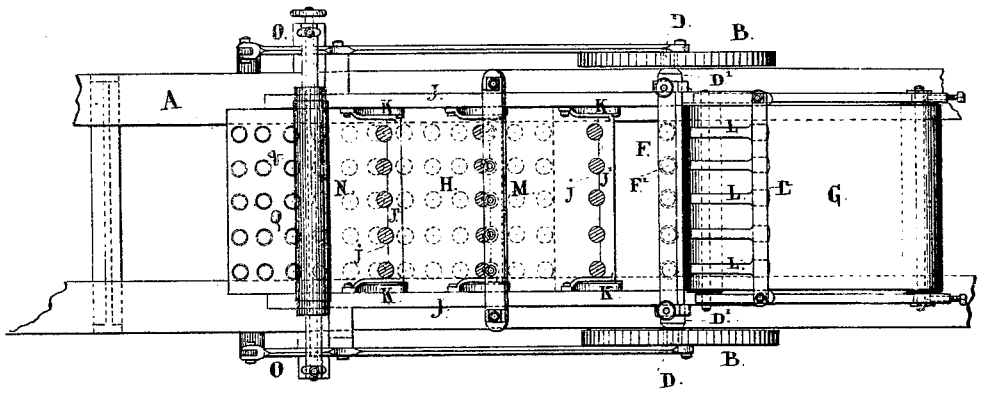


*Fig. 2.*

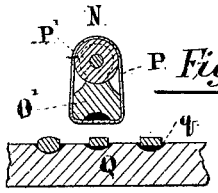


*Fig. 3.*


*Fig. 4.*

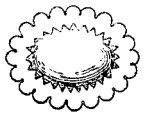

*Fig. 5.*

WITNESSES

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN LOZENGE-MACHINES.

Specification forming part of Letters Patent No. **185,698**, dated December 26, 1876; application filed July 27, 1876.

*To all whom it may concern:*

Be it known that I, THOMAS ROBERTSON, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements on Lozenge-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, and to the letters of reference marked thereon, and forming a part of this specification.

My invention has relation to that class of machines in which the cutting-head is stationary, and in which hollow cutters are used.

My improvements consist, first, of an independent cutting-table, upon which the sheet of paste is fed automatically and progressively from a traveling band, and applied at regular intervals to the under side of the cutters by suitable mechanism.

My invention consists, secondly, of a lozenge-receiving plane, placed at one end on a level with the top of the cutter, the other end being placed sufficiently high to allow the empty portable lozenge-boards to be shoved under the plane. In connection with the said receiving plane and cutters, one or more delivering or carrying bars, operated by suitable mechanism, are used for the purpose of transferring the lozenges from the cutters and receiving-plane to the lozenge-boards.

My invention consists, further, of a printing and embossing head, arranged to act in connection with the receiving-plane and the carrier-bars; and my invention consists, lastly, of a molding-head, having suitable recesses sunk in its working-face, corresponding in position to similar recesses sunk in the face of a lozenge-board, upon which board the lozenges are fed and the board moved forward in unison with the stroke of the molding-head. Over the face of the molding-head a sheet of rubber, or other elastic material, is stretched for the purpose of forcing the lozenges from the recesses after the pressure is removed.

In the accompanying drawings, Figure 1 is a longitudinal section, and Fig. 2 a plan, of a machine embodying my improvement. Fig. 3 is a detail of the molding head and board. Fig. 4 is a detail of the printing or embossing head, and Fig. 5 is a representation of a lozenge manufactured by the machine.

A is the frame of the machine, A′ being the driving-shaft on which the channeled wheels B and C are fastened. Within the inflected channel *b* of the wheels B a roller, D, is placed. These rollers are connected to frames D′, which slide up and in suitable ways on each side of the machine, with an extent of stroke corresponding to the throw of the inflected channels *b*. To these two side frames is connected the cutting-table E. F is the stationary head on which the hollow cutters F′ are attached.

These cutters are similar in construction to cutters patented by me January 4, 1876. The head F could, if desired, be dispensed with by attaching the cutters either solidly or in a detachable manner to the end of the receiving-plane, which would then become the stationary head. I prefer to use an independent head, as such an addition is of great advantage in working the machine, and permits the head and cutters to be rapidly removed and replaced when "gummed up," or when a change of shape in the lozenge is required. G is a traveling band, on which the paste is received from the rollers and fed forward to the cutting-table, over which it spreads itself in the interval between each stroke. H is an inclined plane fixed in such a position on the frame that the empty lozenge-boards may be passed under it. The end of the plane next the stationary head is placed on a level with the top of the cutters, while the other end is placed as low as possible to allow the lozenge-board to pass out freely from underneath. The sides of the plane are flanged upwardly, a frame, J, working thereon with a reciprocating back and forward motion, which motion is communicated from the wheels B by crank-pin and rod-connection, or in any other suitable manner. To the inside of the frame J a series of delivering-bars, J′, are pivoted in such manner that they scrape along the face of the plane, each drawing a row of lozenges forward to the end of their stroke.

In order that a progressive movement may be given to the lozenges a series of cams, K, corresponding to the position and stroke of the delivery-bars, are pivoted to the flanged

sides of the plane, over which cams the delivery-bars are forced to rise, clearing the lozenges which have been deposited on the previous stroke, and dropping to the plane at their rear, ready for another progressive movement. On the forward stroke of the delivering-bars the cams K are simply lifted up, dropping into place again when the bar passes. The end of the frame J, projecting beyond the cutters, is fitted with delivering-bars, which necessarily differ from the others, but which perform exactly the same service. The delivering-bars, in this instance, consist of a number of parallel pieces, L, fastened to a head-piece, L′. The size and number of pieces L agree with the position and number of cutters, each piece serving as a cutter and pushing the lozenges as they rise above the edge of the cutters out upon the inclined receiving-plane far enough to be taken by the next delivering-bar, and so on until the lozenges are deposited on the lozenge-board.

Instead of the stationary receiving-plane H, with the reciprocating delivering-bars J′, an endless traveling-band, operated in unison with the movements of the cutting-table, might be substituted as a medium for delivering the lozenges to the boards, the boards passing when empty, as before, under the band, and being fed forward as the lozenges are delivered. The objection to this would be that at the point of final delivery the lozenges would have to fall a considerable distance to the lozenge-board.

M is a printing or embossing head, operated by the lever $M^1$ from the channeled wheel C. The time of the stroke of this head is arranged so as to press the lozenges while they are stationary on the inclined receiving-plane H. When used for embossing, each die is provided with a sliding block, $M^2$, which retires into a recess when the pressure is applied, but the weight of which relieves the die of the lozenge immediately the pressure is removed. When the head is used in printing, suitable stereotyped plates are attached, and either inked by hand or by any of the usual automatic inking mechanisms.

In order that the position of the lozenges may be true with dies and type, notches *j* are cut in the edge of the delivering-bars, which retain the lozenge in place during movement.

I do not confine myself to any particular position for the head M, or to any particular mode of operating it, as such points are capable of alteration without departing from the spirit of my invention.

N is the molding-head, operated by a system of levers, O, from the reciprocating frame J. The molding apparatus consists of a head, O′, provided on its lower face with a number of recesses, *o*, agreeing in position with the distance apart of the cutters. Over this face a rubber band, P, is stretched. This band passes over a roller, P′, under a starch-box at the top of the head, for convenience of turning the rubber to present a freshly-starched surface to the lozenges at each stroke. The receiving-boards Q, where the lozenges are to be molded on both sides, are provided with recesses *q*, similar to those in the head O′, into which recesses the lozenges are deposited from the plane H. The board is then fed forward until the lozenges are immediately under the molding-head, which is timed to deliver its stroke at this moment.

When the pressure is on, the rubber, which, in the quiescent state of the head, extends in a plane across the recesses, is forced in, but its elasticity, immediately the pressure is removed, causes it to straighten out, removing the lozenges from the recesses. This construction is of special value, as lozenge-paste is of a nature very sticky, and therefore difficult to mold.

I claim as my invention—

1. The reciprocating cutting-table E, in combination with the stationary cutters F′, and delivering-head L′, arranged and operating substantially as shown and described.

2. The reciprocating delivering-bars L and J′, in combination with the receiving-plane H, as and for the purpose specified.

3. The pivoted delivering-bars J′, attached to the reciprocating-frame J, in combination with the pivoted cams K, substantially as shown and described.

4. The stationary lozenge-receiving plane H, in combination with suitable devices for imparting a progressive motion to the lozenge when delivered from the cutters, the said plane being arranged to allow the lozenge-boards to be shoved underneath when empty, and fed forward to receive the lozenges in unison with their delivery, substantially as shown and described.

5. The combination and arrangement of the cutter-head F, with cutters F′, delivering-head L′, and embossing or printing head M, arranged and operating substantially in the manner and for the purpose specified.

6. The intermittently-moving lozenge-tray or receiving-board Q, provided with depressions *q*, in combination with the delivering-bars J′, and alternately-moving molding-head N, substantially as and for the purpose set forth.

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Witnesses:
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