

(No Model.)

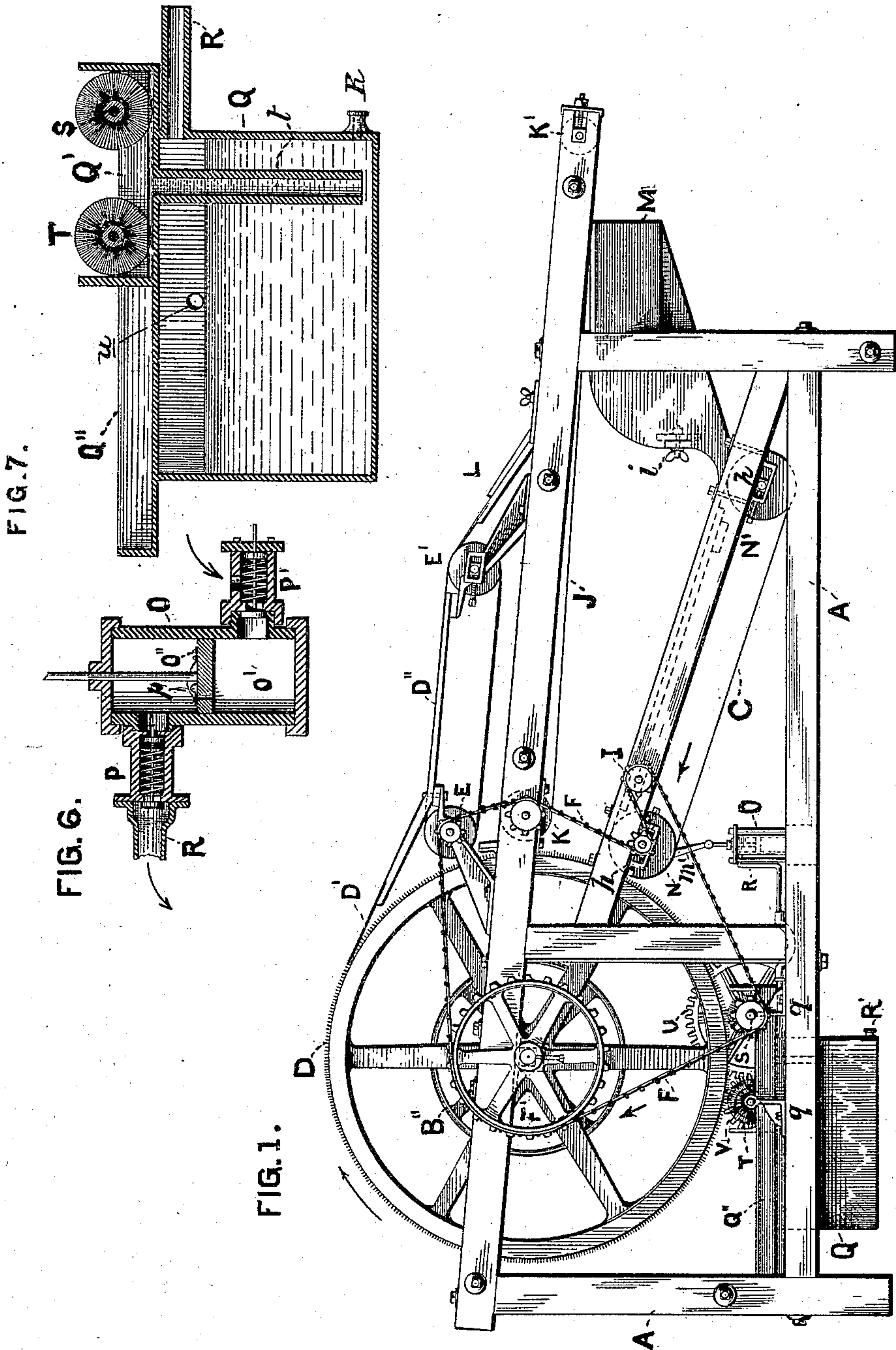
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J. H. MITCHELL.

ICING MACHINE FOR CONFECTIONERY.

No. 271,897.

Patented Feb. 6, 1883.



WITNESSES:

J. Walter Douglas
L. H. Poole

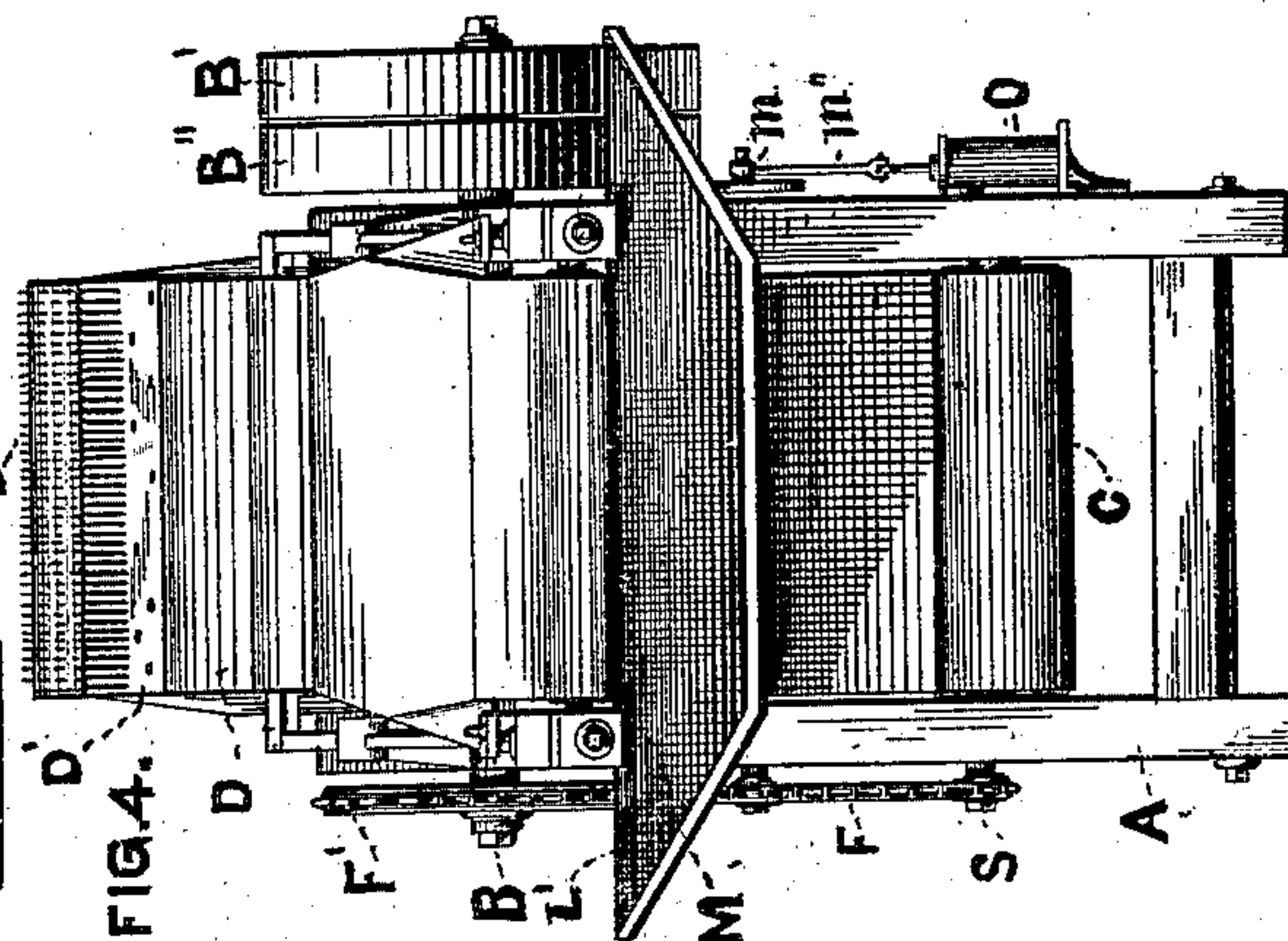
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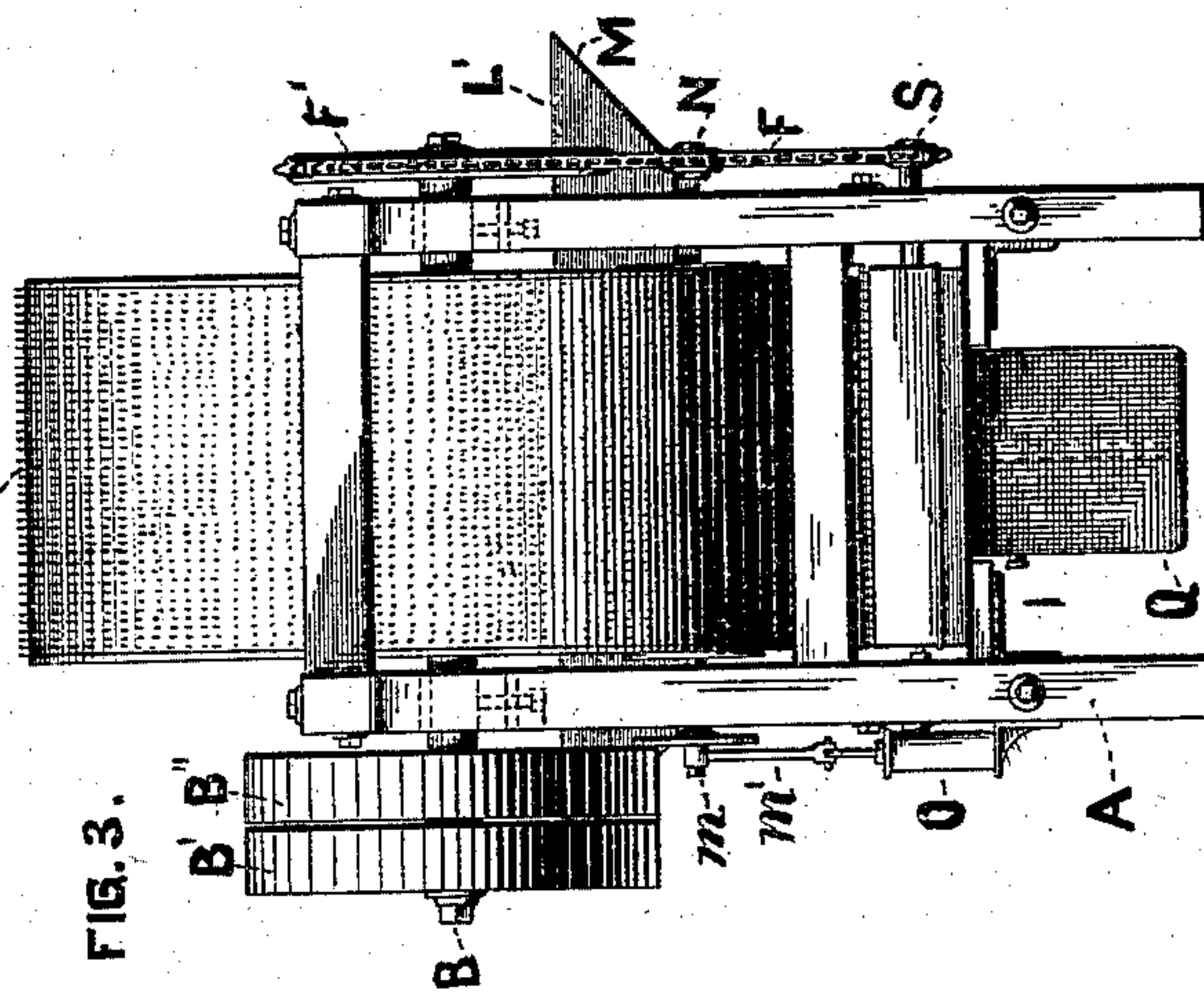
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UNITED STATES PATENT OFFICE.

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ICING-MACHINE FOR CONFECTIONERY.

SPECIFICATION forming part of Letters Patent No. 271,897, dated February 6, 1883.

Application filed December 21, 1882. (No model.)

To all whom it may concern:

Be it known that I, J. HENRY MITCHELL, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Icing-Machines for Confectionery, of which improvements the following is a specification.

The object of my invention is to effect the icing or coating of cakes, confectionery, &c., by machinery; and the improvements embody the following main features of construction: a revolving drum of large diameter provided with radiating pin-points upon its periphery for holding the cakes, feeding devices whereby the cakes, &c., are supplied to said drum, brushes for applying the icing to the cakes upon the drum, a stripper-plate adapted to enter beneath the cakes and remove them from the pin-points, and devices for supplying the icing to the brushes by atmospheric pressure.

In the accompanying drawings, Figure 1 represents a side elevation of the machine; Fig. 2, a plan view. Figs. 3 and 4 are opposite elevations. Fig. 5 is a view of the adjustable bearing. Fig. 6 is a vertical section through the air-pump; and Fig. 7 is a vertical section through the icing receptacle and brushes, the scale of the last three figures being enlarged.

A represents the frame of the machine, made of wood or other suitable material, and so constructed as to carry all bearings.

B represents the main driving-shaft, having on one end fast and loose pulleys B' B'', respectively. On the other end of the shaft B is a chain-wheel, F', which drives, by means of a chain, F, the chain-pinions of the several rollers E K N, Fig. 1, and of the rotating brush-shaft S. Other rollers, E' K' N', and a tightening-pinion, I, are mounted, as shown, upon the frame A. The bearings of the driving-shaft B, rollers E' K' N N', and pinion I are rendered adjustable by devices, one of which is shown in Fig. 5, consisting in a guide-piece, a, in which the bearing-block b slides freely, and a set-screw, c, by which it may be secured in a given position.

To the main shaft B is keyed or fastened a large drum, D, the periphery of which is covered with radiating pin-points arranged in parallel rows, which are equidistant from one

another and perpendicular to the axis of rotation.

Resting upon the drum D is a stripper-plate, D', provided with a series of slots corresponding in number and position with the radiating rows of pin-points upon the drum D; thus allowing the stripper-plate D' to rest upon the surface of the drum D between the pin-points, which project through the slots. The other end of the inclined stripper-plate D' is in contact with the upper surface of a carrying-belt, D'', stretched upon the rollers E E', and held up to the stripper-plate D' by a belt-support, k, resting on cross-pieces e e', mounted upon the projecting arms d d'. The carrying-belt D'' is worked forward in direction of arrow by rotation of the roller E, and any slack in the belt can be taken up by means of the adjustable roller E'.

Resting upon the belt D'', at a point where it is on the roller E', is a second inclined stripping-plate, L, whose lower end terminates a short distance above the surface of the carrying-belt J, stretched upon the rollers K K', by the former of which it is actuated in the direction of the arrow, and by the latter of which it may be tightened by adjustment of the bearings, as before described. The second stripper-plate, L, is held in position by the two sliding clamps f, provided with slots and wing-bolts g, by means of which it may be adjusted toward or from the roller E'.

The carrying-belt D'' is elevated above the belt J a sufficient distance to permit the cake pans or trays to be inserted upon the upper surface of the latter, and the vertical distance between the lower end of the stripping-plate L and the surface of the belt J is just sufficient to clear the rim of such pan or tray.

A hopper or chute, M, is mounted at the end of frame A, its flaring sides extending outward on each side of the machine, and its bottom being inclined toward an endless carrying-belt, C. The belt C is stretched between the rollers N N', by the former of which it is actuated in the direction of the arrow, and both of which are adjustable by means of the sliding bearings h. A stop-piece, L', extends across the entire width of the hopper M, and is adjustable toward or from the inclined bottom by means of slots and wing-bolts i.

Upon the shaft of the roller N is keyed a crank, *m*, slotted in the ordinary manner for the adjustment of the crank-pin to produce a long or short stroke. A connecting-rod, *m'*, leads from the crank *m* to the piston of an air-pump, O, mounted on the frame A. The construction of the air-pump O is shown in Fig. 6. It consists of a chamber, O', provided with an air-tight piston, O'', which has a spring-valve, *p*, opening upward. The chamber O' is provided with spring-valves P P'—the former at the top opening outward, the latter at the bottom opening inward. As the piston O'' is lifted the outside air enters into the chamber O by the opening of the valve P', and upon the return of the piston O'' in the other direction the valve P' will close by the tension of its spring, and the valve *p* will open upward and allow the air to enter into the top part of the chamber O', from which it will be expelled through the upper valve, P, into the exit-pipe R upon the return or upward motion of the piston O''. The pipe R leads to the top part of the material-box Q, a sectional view of which is shown in Fig. 7. It consists of an air-tight chamber, Q, upon the top of which is a trough, Q', holding two rotary brushes, S T, and communicating with the chamber by a pipe, *t*, which extends nearly to the bottom, as shown. The chamber Q has two outlets, *u* R', which are tightly closed by screw-caps, the outlet *u* being situated just below the level of the air-blast pipe R. A drip-trough, Q'', is also mounted upon the chamber Q, adjacent to the trough Q', and extends under the drum D.

In the trough Q' are located two revolving brushes, S T, having their shafts working in bearings *q*, fastened to the frame of the machine A. The periphery of the two brushes touches the bottom of the chamber Q', and they extend entirely across it. The brush S takes its motion directly from the endless chain F by the chain-pinion *s*, which is keyed to the shaft of the brush S, and also upon the same shaft is fastened a large gear-wheel, U, which engages with a pinion, V, keyed or fastened to the shaft of the other brush, T. By this construction the two brushes S and T revolve in opposite directions from each other, the former rotating in the direction of rotation of the drum D, and the difference in the speed of the two brushes is such that the motion of each relative to the adjacent moving surface of the drum D is the same.

To operate the machine, icing is poured into the chamber Q through the pipe *t*, the aperture *u* being left open in order that the liquid may not rise high enough to flow into the air-pipe R and clog the valves, and when the chamber Q is properly filled the opening *u* is tightly closed. Cakes are placed in the hopper M and slide down upon the belt I. Power being then applied to the driving-pulley B, the belt I carries the cakes up to the drum D, and as the belt turns over the roller N they are impaled upon the pin-points with which the drum is covered. The rotation of the drum D

brings the cakes to the icing-brushes, which are rotating in the trough Q', kept supplied with icing by means of the air-blast from the pump O. The brushes spread the icing upon the cakes in opposite directions, thus insuring the thoroughness and uniformity of the coating, and by reason of the gearing before described they brush the moving cake at the same rate of speed. The iced cakes then are carried upward by the drum, any surplus icing dropping into the drip-trough Q', and when they reach the stripper-plate D' the rows of pins pass into the slots of the latter, and thus withdraw from the cakes, which slide down the incline onto the belt D''. Upon this belt they travel to the second stripper-plate, L, by which they are removed from the belt D'' and directed downward toward the belt J. The belt J is continuously supplied with pans by the operators, who insert them thereon underneath the belt D'', and as the pans travel beneath the end of the inclined plate L the cakes drop into them. When the pans reach the end of the machine they are removed and placed aside for the icing to dry properly.

The roller N may be adjusted toward the drum D to suit cakes of various thicknesses, and all the belts can be kept tight by the adjusting devices before referred to. So, also, the drum D may be vertically adjusted toward the brushes as the latter wear away in use, or in case the differences in the cakes require it. By coating the cakes while they are on the under side of the drum I avoid the smearing or dripping of the icing upon the surface of the drum, and the method of feeding the icing by air-pressure obviates the clogging of the feed-pump.

I claim—

1. In a machine for coating cakes, &c., a carrying-drum provided with projecting pins upon its surface, adapted to receive and hold the cakes, &c., during the application of the coating.

2. The combination of a drum, having projecting pins upon its periphery, with stripper-fingers which enter between said pins, substantially in the manner and for the purposes specified.

3. The combination of a drum, having projecting pins upon its periphery, with a roller adjacent thereto, a carrying-belt which passes around said roller, and actuating devices, operating substantially in the manner specified, whereby cakes deposited upon said belt may be impaled upon the projecting pins of the drum.

4. In combination with the drum and the carrying-belt, a belt-roller adjacent to said drum and adjustable toward and from the same, substantially as set forth.

5. The combination, with a revolving drum having holding devices upon its periphery, of an icing device, whereby cakes, &c., supported upon said drum may be coated, substantially as set forth.

6. The combination, with a carrying-drum

revolving on a horizontal axis, of an icing device operating upon the under side of said drum, substantially as and for the purposes set forth.

5 7. The combination of the revolving drum with the icing-brushes rotating in opposite directions from one another, substantially as set forth.

8. The combination, with the icing device,

of a receptacle communicating therewith, and means, substantially as set forth, for feeding the contents of said receptacle to the icing device by atmospheric pressure.

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Witnesses:

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