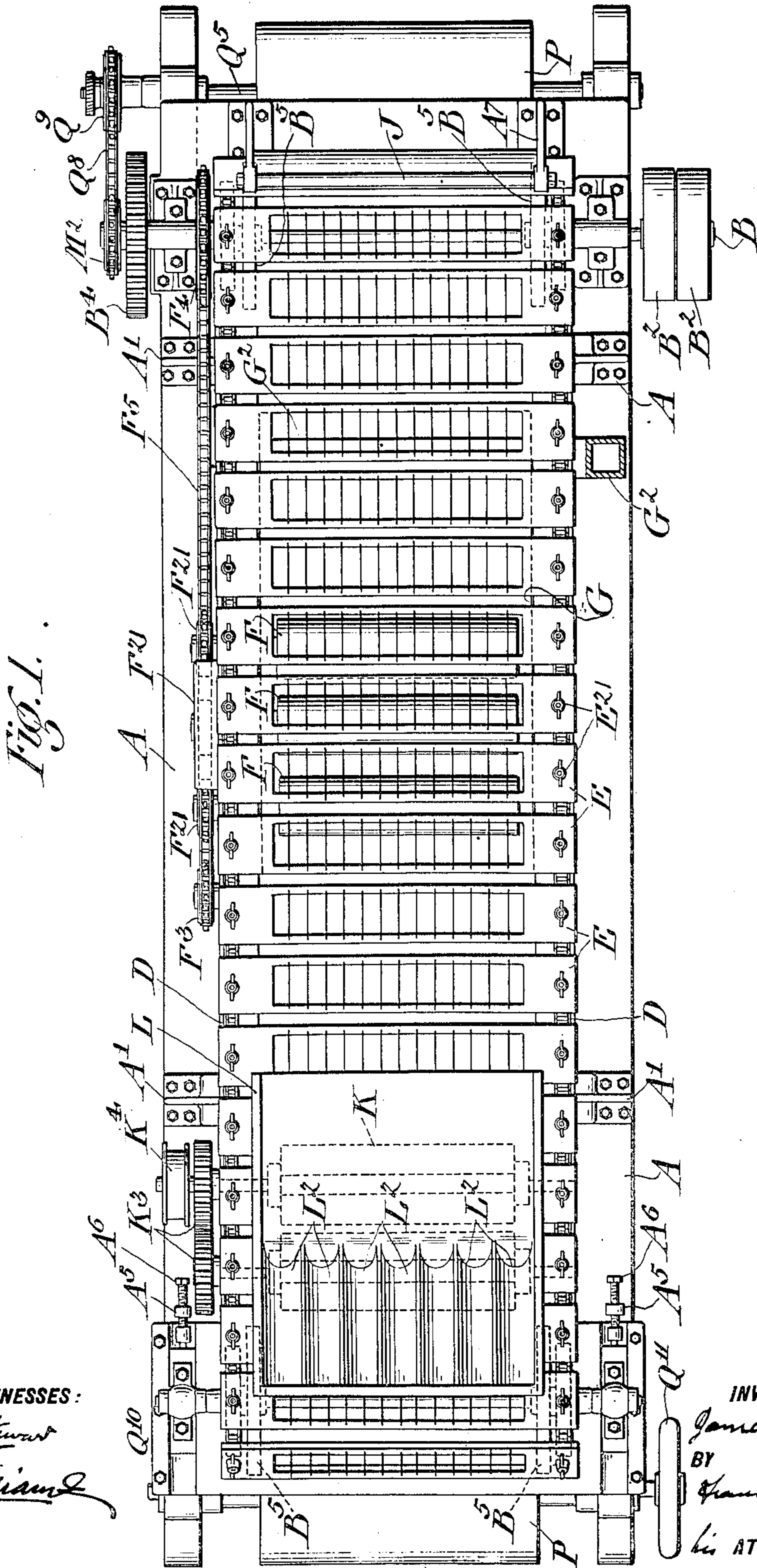


916,753.

J. H. MITCHELL.  
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APPLICATION FILED JULY 3, 1908.

Patented Mar. 30, 1909.  
3 SHEETS—SHEET 1.



WITNESSES:  
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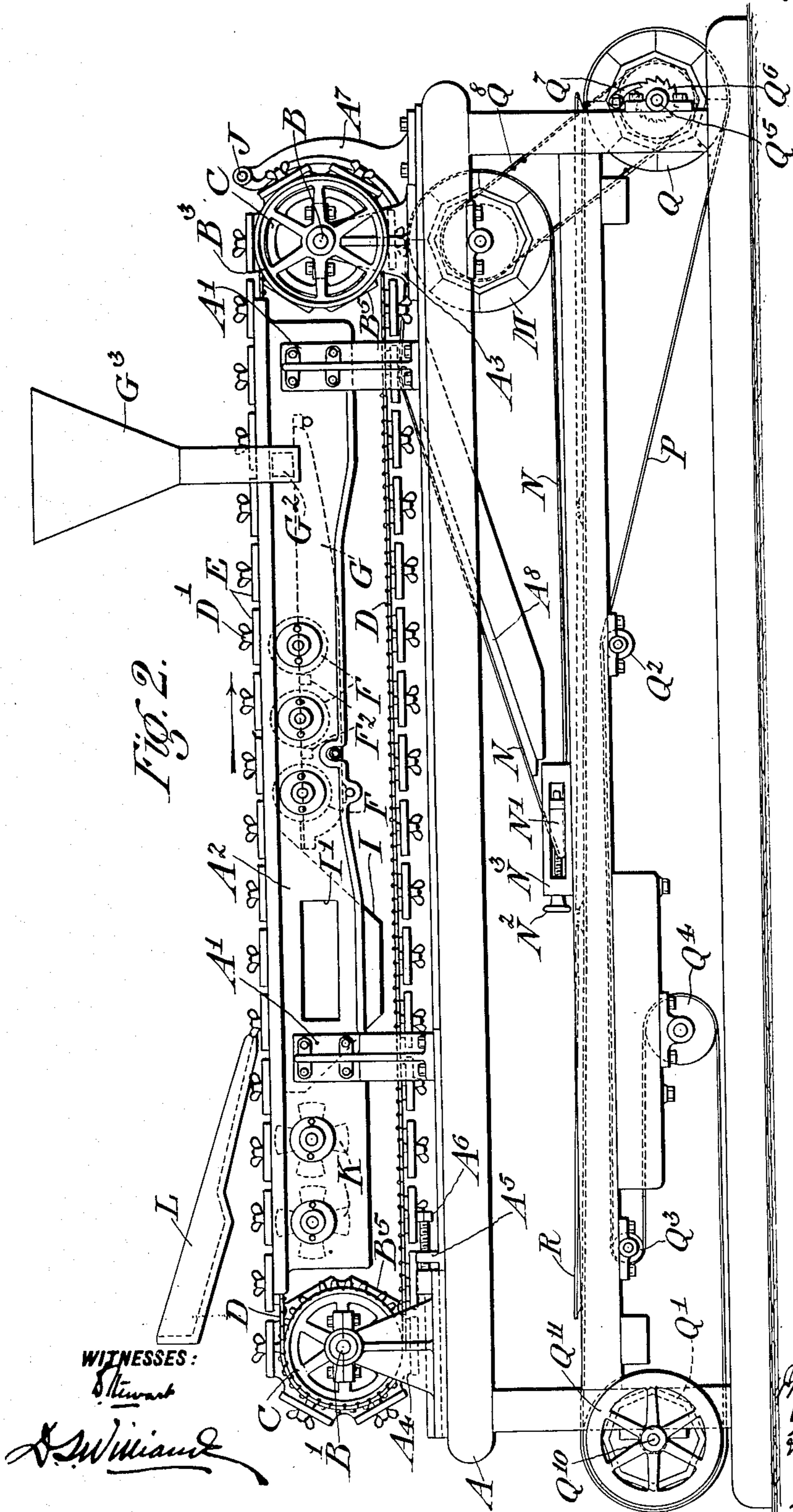
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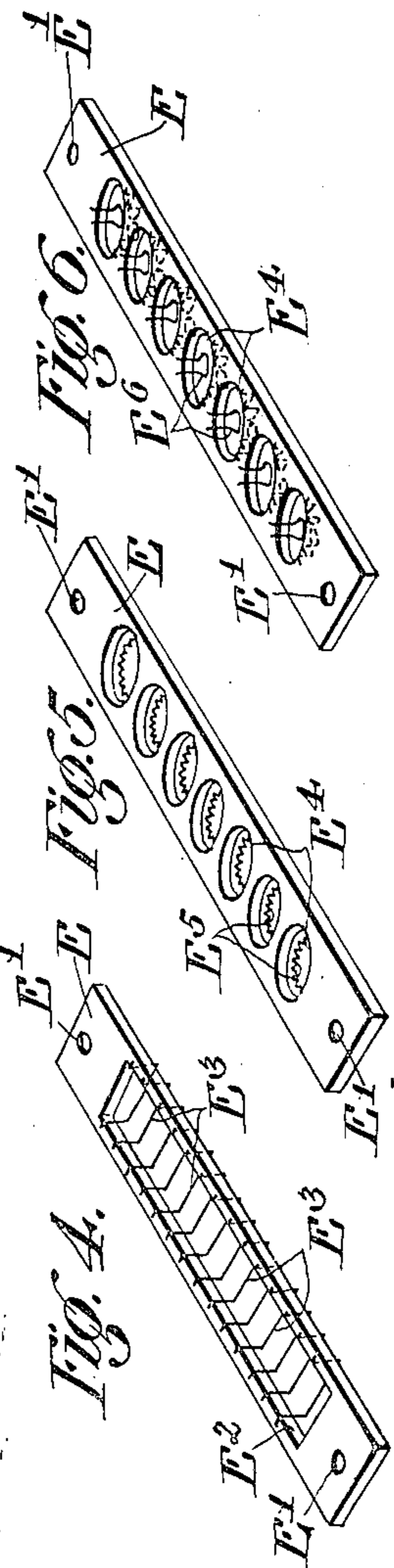
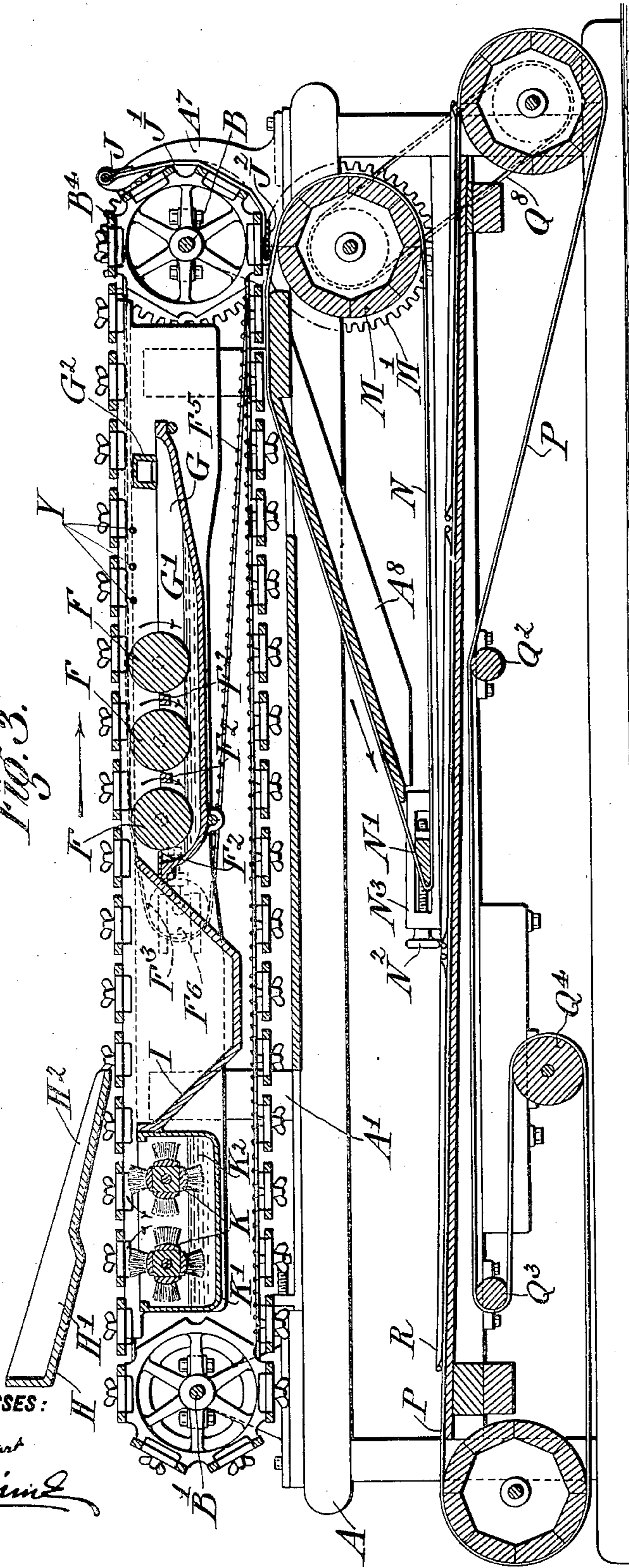
Patented Mar. 30, 1909.

3 SHEETS—SHEET 3.

Fig. 3.

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# UNITED STATES PATENT OFFICE.

JAMES H. MITCHELL, OF PHILADELPHIA, PENNSYLVANIA.

## CAKE-ICING MACHINE.

No. 916,753.

Specification of Letters Patent.

Patented March 30, 1909.

Application filed July 3, 1908. Serial No. 441,728.

*To all whom it may concern:*

Be it known that I, JAMES H. MITCHELL, a citizen of the United States of America, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Cake-Icing Machines, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

The present invention relates to machines for applying a thick semi-fluid material such as icing to cakes or the like pastry and it is particularly adapted for use in icing relatively thin flat cakes each on one side or a portion of one side only.

One object of the invention is to provide mechanism relatively simple in construction and operation by which the icing can be applied to the cakes quickly and uniformly, and in which the icing operation is so carried on that breakage and consequent wastage of the cakes iced is reduced to a minimum.

A further object of the invention is the provision of a machine which can be used without any modification or with but simple and easily made modifications to operate on cakes of different size and shape.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, however, and the advantages possessed by it, reference may be had to the accompanying drawings and descriptive matter in which I have illustrated and described forms in which the invention may be utilized.

Of the drawings, Figure 1 is a plan view of the assembled machine. Fig. 2 is an elevation of the machine. Fig. 3 is a sectional elevation of the machine. Fig. 4 is a perspective view of one of the conveyer carrying members which I may use. Fig. 5 is a perspective view similar to Fig. 4, showing a modified construction, and Fig. 6 is another view similar to Figs. 4 and 5, showing a third form of the carrier member which I may use.

In the drawings, A represents the frame work of the machine as a whole. On the frame work and at opposite ends are secured pairs of brackets  $A^3$  and  $A^4$ . As shown, the two brackets  $A^4$  may be adjusted toward and

away from the brackets  $A^3$  by means of frame work lugs  $A^5$  and adjusting screws  $A^6$ . The brackets  $A^3$  and  $A^4$  have journaled in them shafts B and  $B^1$ , respectively, each of which has secured to it a pair of gear wheels C, over which runs an endless conveyer formed by the two sprocket chains D and the carrier members E, which extend parallel to the shafts B and  $B^1$ , and which are removably fastened at regular intervals to the chains D by small bolts secured to the chain and passing through openings  $E^1$  formed in the ends of the members E, and thumb screws  $E^{21}$  for clamping the members D in place. The shafts B and  $B^1$  have secured to them adjacent each end a hexagonal hub  $B^5$  against which the corresponding ends of the carrier members E bear when passing the shafts B and  $B^1$ . The ends of the carrier members E, while traveling between the upper sides of the hubs  $B^5$ , rest upon and are supported by guides formed by the upper edges of auxiliary frame members  $A^2$  which are supported from the main frame work by brackets  $A^1$ .

The members E in the form shown in Figs. 1, 2, 3 and 4 are each in the form of a plate having a slot or pocket  $E^2$  formed in it and extending lengthwise of the plate. The walls of this slot form the upper side of a cake receiving recess or pocket which is provided with a skeleton or cage like bottom formed by yoke shaped members  $E^3$  formed of small diameter wire. The ends of the legs of these members  $E^3$  are secured to the members E with the body portions extending parallel to the direction of travel of the conveyer belt.

One or more icing rolls F are journaled in the side members  $A^2$ . In the form shown, there are three of these rolls which are similar to each other and are similarly placed. The supporting shafts for the rolls F are each provided at one side of the machine with a sprocket gear  $F^{21}$ . The gears  $F^{21}$  are driven by a sprocket chain  $F^5$ , which runs over a driving sprocket gear  $F^4$  carried by the shaft B, and over an idler sprocket gear  $F^3$  mounted in a bearing  $F^6$ , adjustably mounted in the adjacent side frame member  $A^2$ . The rolls F turn in a bath  $G^1$  of the semi-fluid icing material contained in a trough G, supported between side frames  $A^2$  and re-

ceiving icing material as necessary through a conduit  $G^2$  which, preferably, is provided with distributed openings at its lower end and extends across the machine and is connected at one end with the hopper  $G^3$ .

The shaft B is provided at one end with the fast and loose driving pulleys  $B^2$  and  $B^3$  and forms the main driving shaft of the machine. It will be observed that the direction of rotation of the rolls F is such that the upper sides of the rolls travel in the same direction as the adjacent conveyer members E, and the parts are timed so that the adjacent surfaces of the rolls F and the members E have substantially the same linear velocity. Scrapers  $F^2$ , which are preferably adjustable, are provided adjacent the rolls F and serve to regulate the thickness of the icing layers carried into proximity to the members E by the rolls F. In order to insure uniformity of the thickness of the icing layer imparted to the under side of the cakes in the members E, one or more scraping devices, which are preferably in the form of taut wires  $Y$ , of small diameter, are located beneath the upper run of the conveyer. This serves to smooth off the surface of the icing layer and to remove any excess of icing material. The material scraped off by the taut wires does not adhere to the wires on account of their small diameter, but drops into the receptacle G.

Any suitable provision may be made for conveying the cakes to be iced into the members E. In practice, I prefer to have the cakes fed in manually, since the fragile nature of the material handled and the great diversity in size and shape of the cakes which it is usually desired to ice with any one machine, make it inadvisable to provide mechanism for automatically feeding the cakes into the members E.

In the apparatus shown, a feed table L is provided, which is located above and inclined toward the upper surface of the conveyer. As shown, the table L is formed with trough like portions  $L^2$  at its upper end, in which stacked up piles of cakes may be deposited, as desired, and the attendant feeds these cakes from the stacked up piles down the inclined portion of the table into each member E, as the latter pass beneath the lower edge of the table. As ordinarily used, the travel of the conveyer is not rapid enough to make it difficult for an operator to manually feed the cakes into the machine. A receptacle I is supported between the side members  $A^2$ , adjacent the lower end of the table L, into which crumbs and broken fragments of the cakes collect. These crumbs and fragments may be removed through an opening  $I^1$  formed in one of the side frame members  $A^2$ .

At the right hand end of the machine, as

shown in Figs. 1, 2 and 3, frame brackets  $A^7$  are provided, which support at their upper ends a cross rod J, to which the upper end of an apron  $J^1$ , of flexible material, is secured. The lower end of the apron  $J^1$  is secured to a cross bar  $J^2$ , located beneath the shaft B. The apron  $J^1$  prevents the cakes from falling out of the open tops of the pockets formed in the members E, as the latter are rotated about the shaft B. As each member B passes beyond the member  $J^2$ , the cakes within it drop onto a conveyer belt or endless apron N, which runs over a roll M driven through gear wheel  $M^1$  secured to it and the meshing gear wheel  $B^4$  secured to the shaft B. The upper side of the apron N runs on a table  $A^8$  having an upper horizontal portion and a lower inclined portion. Adjacent the lower end of the inclined portion of the member  $A^8$  the apron N runs over a knife edge or guide  $N^1$ , which is adjustable to take up the tension of the belt by means of adjustable screws  $N^2$  and frame work brackets  $N^3$ .

It will be observed that the upper side of the apron N travels in the same general direction and with substantially the same velocity as the members E, while the latter will travel through the lower portion of their path. By this arrangement the cakes are discharged easily and without injury from the members E onto the apron N, resting on the latter with their iced sides up.

As each row of iced cakes discharged from one member E onto the apron N is carried to the lower edge of the knife edge guide  $N^1$ , the row of cakes slide onto a suitable receiver, which, in the form shown, is one of a set of trays or pans R, which are carried beneath the knife edge guide E by means of a flexible conveyer belt or apron P. The belt P runs over guide rolls Q and  $Q^1$  at the end of the machine, over intermediate idler rolls  $Q^2$  and  $Q^3$  and over an adjustable belt tightener roll  $Q^4$ . Belt N is driven normally by means of a sprocket chain  $Q^5$  connecting sprocket wheel  $M^2$  on a shaft of the roll M and a sprocket gear  $Q^6$  on the shaft  $Q^5$  of the roll Q. The roll Q is not fastened on the shaft  $Q^5$ , but is normally turned with the shaft through a gear wheel  $Q^8$  secured to the shaft  $Q^5$  and a pawl  $Q^7$  secured to the roll Q. This, while insuring that the roll Q will turn with the shaft  $Q^5$ , permits the roll Q to be turned independent of the shaft Q to advance the apron P when desirable. This advancing movement of the apron P may be had by rotating a hand wheel  $Q^{11}$  secured to the shaft  $Q^{10}$  to which the roll  $Q^1$  is secured. The purpose of this arrangement is to permit the attendant to advance the apron P and adjust each tray R deposited on it at the right hand end of the machine, so that the initial row of cakes will be properly

placed on each tray and will not be deposited on the adjacent edges or between the adjacent pair of trays. As the speed of travel of the conveyer P should be such that the rows of cakes deposited on each tray will be close together, provision should be made for adjusting the speed of the conveyer P to correspond to the size of the cakes iced. This may conveniently be done by providing a series of interchangeable gears  $Q^9$  having different numbers of teeth. As each filled tray on which the iced cakes will be deposited in regular rows and columns, approaches the left hand side of the machine, it is removed.

To insure that the skeleton or cage like bottom of the pockets in the members E are cleaned and free from icing material from previous icing operations a cleaning mechanism is provided. In the form shown, the cleaning mechanism comprises a pair of brush rolls K, which are located between the side frame members  $A^2$  and dip in a water bath  $K^2$ , contained in a tank or receptacle  $K^1$ . The shafts of the brush rolls K carry gears  $K^3$  which mesh together so that the rolls K turn in opposite directions. The shaft supporting one of the rolls A is provided with a pulley  $K^4$ , which may conveniently be driven from an overhead countershaft. These brushes insure that the skeleton frame work forming the bottom of the pockets in the members E is thoroughly cleaned before passing into the position to receive cakes from the table.

The construction illustrated is simple in operation and is effective for the purpose for which it is designed. With it a large number of cakes may be iced uniformly and with a minimum of wastage and breakage in a comparatively short time. The construction shown in Figs. 1 to 4 inclusive is particularly adapted for operation without change on cakes of different size and shape, though it will of course be understood that the table L may be removed and replaced by another having the grooves  $L^2$  of different shape when it is desired to ice cakes differing greatly in size and shape.

Instead of using a main conveyer, in which each member E is provided with a single longitudinal pocket  $E^2$ , the members E may be formed as shown in Figs. 5 and 6, with a plurality of pockets  $E^4$ , each of which is intended to hold but a single cake at one time. Instead of forming the skeleton or cage like bottom for the conveyer pockets as shown in Fig. 4, I may form each pocket bottom as shown in Fig. 5, of a piece  $E^5$ , of sheet metal or the like, having an opening in it through which the icing is applied to the cake. This form of pocket bottom is particularly useful where it is desired to stencil an icing design on one side of the cake. In Fig. 6 I have

shown the pocket bottom as formed of small diameter wire  $E^6$  bent into a loop.

It will, of course, be understood by those skilled in the art that other changes than those indicated may be made in the form of the invention disclosed without departing from the spirit of the invention and I do not wish the claims, hereinafter made, to be limited to the particular embodiment disclosed more than is necessary by the state of the art.

While with the wire pocket bottoms of the members E, as shown in Figs. 4 and 6, the cakes when discharged from the pockets have the marks of the wires formed in them. These marks, which are not large on account of the smallness of the wires, disappear on account of the fluidity of the still undried icing material.

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

1. A cake icing machine comprising in combination a conveyer formed with cake receiving pockets having skeleton bottoms, and a rotating supplying roll or rolls located adjacent the path of said skeleton bottoms, in position to apply icing to the cakes supported by said bottoms.

2. A cake icing machine comprising in combination one or more rotating icing supplying rolls, and a cake conveyer provided with skeleton supports for cakes, said conveyer running over said rolls and in such proximity thereto as to move the bottoms of the cakes into contact with the icing on said roll or rolls.

3. A cake icing machine comprising in combination one or more rotating icing supplying rolls, means for applying an icing layer of regulated thickness to each of said rolls, and a cake conveyer provided with skeleton supports for cakes, said conveyer running over said rolls and in such proximity thereto as to move the bottoms of the cakes into contact with the icing on said rolls.

4. A cake icing machine comprising in combination an endless conveyer comprising members hinged together and formed with cake receiving pockets open at the top and provided with skeleton bottoms, one or more icing rolls located within said endless conveyer and adjacent the path of said skeleton bottoms.

5. A cake icing machine comprising in combination an endless conveyer comprising members hinged together and formed with cake receiving pockets open at the top and provided with skeleton bottoms, an icing roll located adjacent the path of said skeleton bottoms, and means for applying an icing layer of regulated thickness to said roll.

6. A cake icing machine comprising in combination an endless conveyer formed of a pair of spaced apart sprocket chains and

plate like members the ends of which are secured at regular intervals to said chains, said members being formed with cake receiving pockets at the outer ends and provided at their inner ends with skeleton bottoms, rotating guides about which said conveyer turns an icing containing trough located below the portion of said conveyer running between the upper sides of said guides and one or more rotating rolls dipping into said trough and arranged to carry the adhering icing material into the line of travel of the skeleton bottoms of the conveyer pockets.

7. A cake icing machine comprising in combination an endless conveyer formed of a pair of spaced apart sprocket chains and plate like members the ends of which are secured at regular intervals to said chains, said members being formed with cake receiving pockets at the outer ends and provided at their inner ends with skeleton bottoms, rotating guides about which said conveyer turns an icing containing trough located below the portion of said conveyer running between the upper sides of said guides, one or more rotating rolls dipping into said trough and arranged to carry the adhering icing material into the line of travel of the skeleton bottoms of the conveyer pockets, and means for regulating the thickness of the icing layer on each roll.

8. A cake icing machine comprising in combination an endless conveyer formed of a pair of spaced apart sprocket chains and plate like members, the ends of which are secured at regular intervals to said chains, said members being formed with cake receiving pockets at the outer ends and provided at their inner ends with skeleton bottoms, rotating guides about which said conveyer turns an icing containing trough located below the portion of said conveyer running between the upper sides of said guides, one or more rotating rolls dipping into said trough and arranged to carry the adhering icing material into the line of travel of the skeleton bottoms of the conveyer pockets, a trough for a cleaning liquid supported beneath said conveyer portion, and a rotating cleansing

brush the lower edge of which dips into said trough and the upper edge of which extends into the path of travel of said skeleton bottoms.

9. A cake icing machine comprising in combination an endless conveyer provided with skeleton supports for the cakes to be iced, a roller guide about which said conveyer turns; one or more rotating icing rolls arranged to apply icing to the under side of the cakes supported by said skeleton supports, a second endless conveyer arranged beneath the first conveyer adjacent said guide and having a horizontal portion in close proximity to a horizontal portion of the under side of said first conveyer, and a second portion inclined away from said first conveyer and a guide for holding the iced cakes in contact with said first conveyer until the cakes are above said horizontal portion of said second conveyer.

10. In a cake icing machine an endless conveyer provided with skeleton cake supports, one or more icing supplying rolls adapted to apply icing to the under side of cakes resting on said cake supports, and mechanism for cleaning said cake supports after each icing operation.

11. In a cake icing machine an endless conveyer provided with skeleton cake supports, icing rolls adapted to apply icing to the under side of cakes resting on said cake supports, and mechanism for cleaning said cake supports after each icing operation, said mechanism comprising a pair of brushes arranged in the line of travel of said skeleton supports and means for rotating said brushes in opposite directions.

12. In a cake icing machine an endless conveyer provided with skeleton cake supports, means for applying icing to the under sides of the cakes supported on said supports, and means for smoothing the icing and regulating its thickness comprising one or more taut wires of small diameter stretched below the line of travel of said supports.

JAMES H. MITCHELL.

Witnesses:

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S. STEWART.