M. PARIDON.

MACHINE FOR FILLING BOXES.

APPLICATION FILED AUG. 30, 1916. RENEWED SEPT. 11, 1918.

1,300,763.

Patented Apr. 15, 1919.

3 SHEETS—SHEET 1.

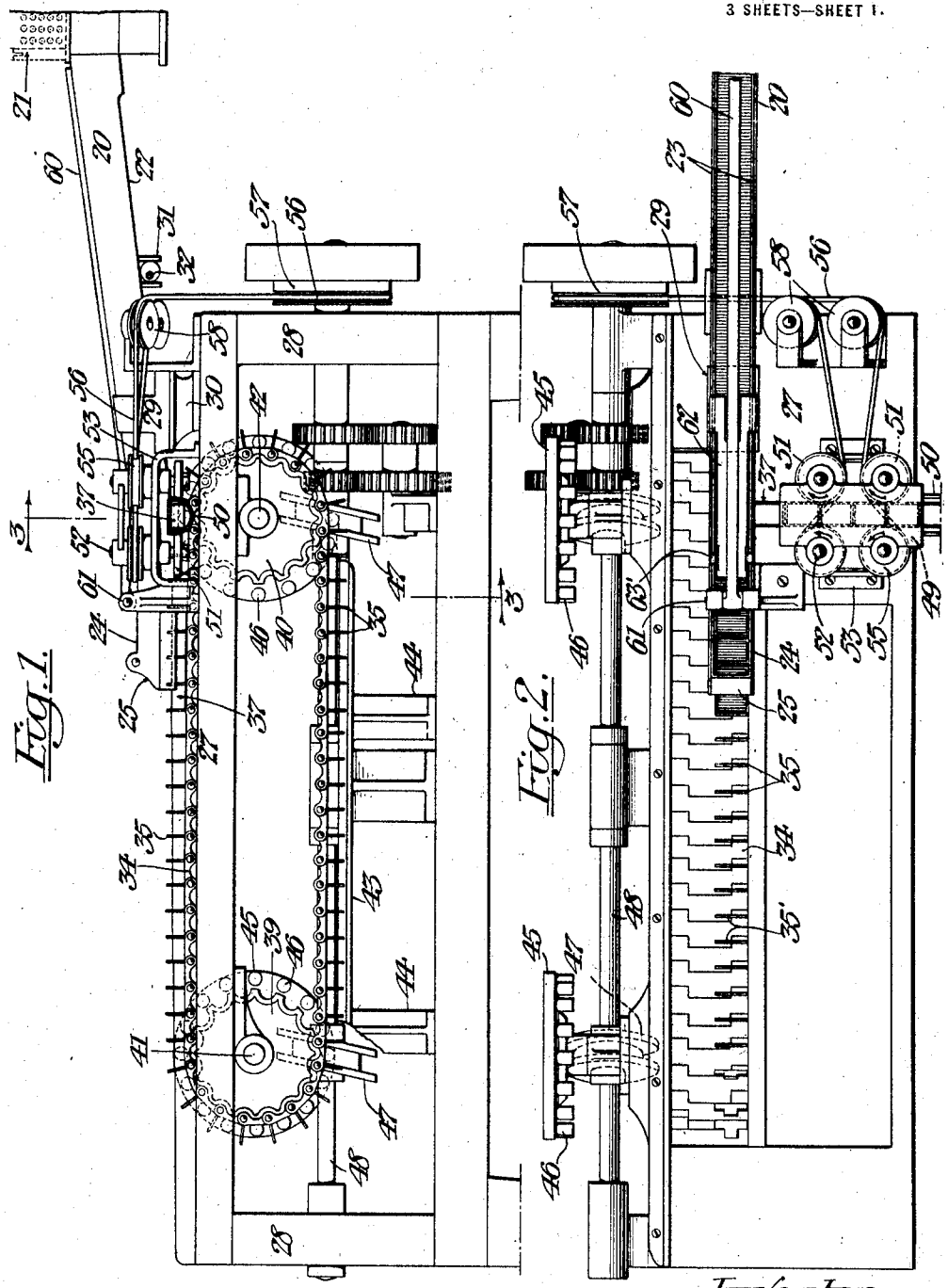


Fig. 1.

Fig. 2.

Inventor:
Michael Paridon.
by his Attorney.
John T. Nolan

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

M. PARIDON.

MACHINE FOR FILLING BOXES.

APPLICATION FILED AUG. 30, 1916. RENEWED SEPT. 11, 1918.

1,300,763. Patented Apr. 15, 1919.

3 SHEETS—SHEET 2.

Fig. 3.

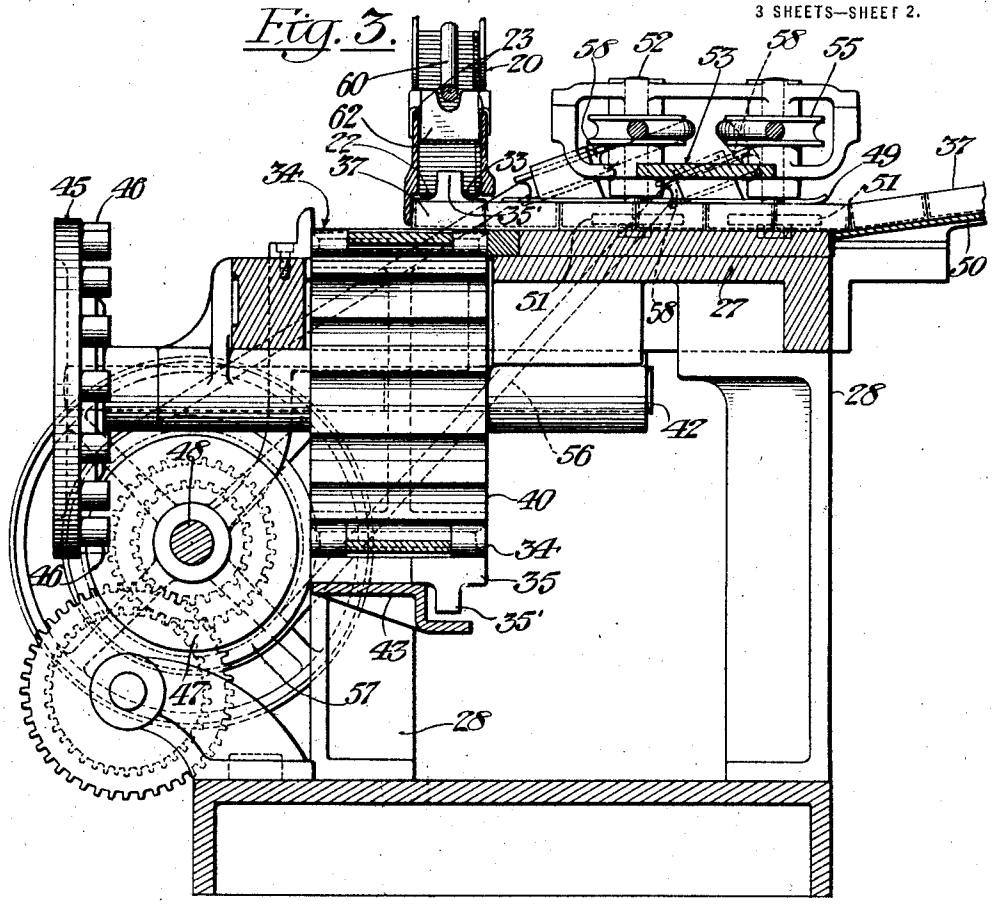
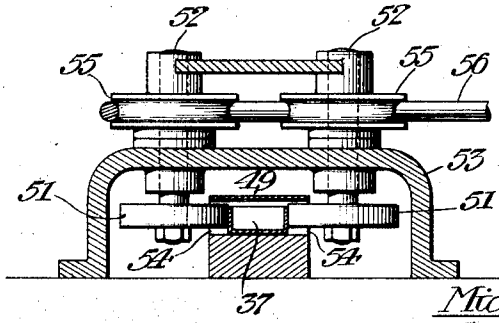


Fig. 4.



Inventor:
Michael Paridon
by his Attorney.
John F. Nolan

M. PARIDON.

MACHINE FOR FILLING BOXES.

APPLICATION FILED AUG. 30, 1916. RENEWED SEPT. 11, 1918.

1,300,763.

Patented Apr. 15, 1919.

3 SHEETS—SHEET 3.

Fig. 5.

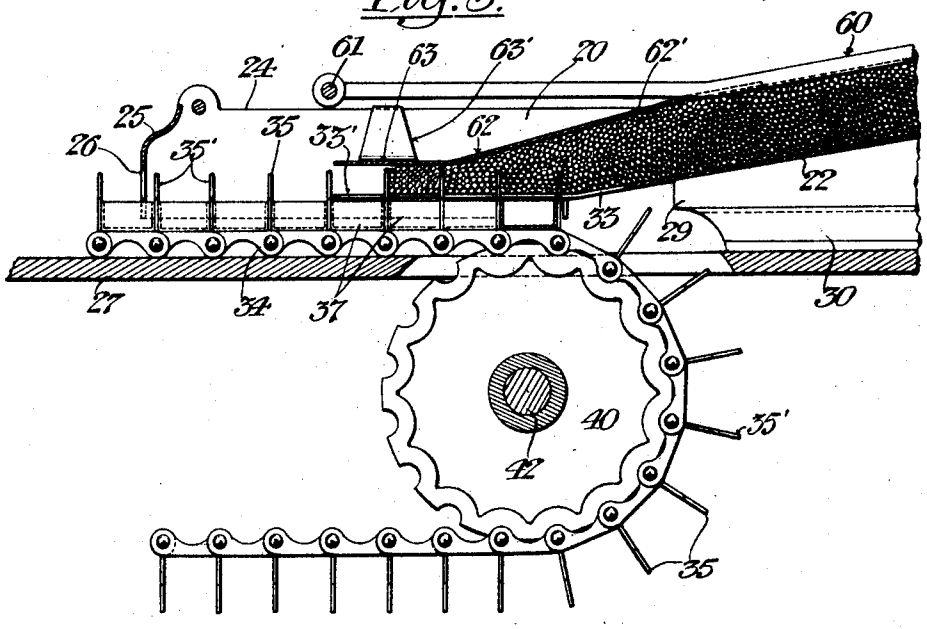
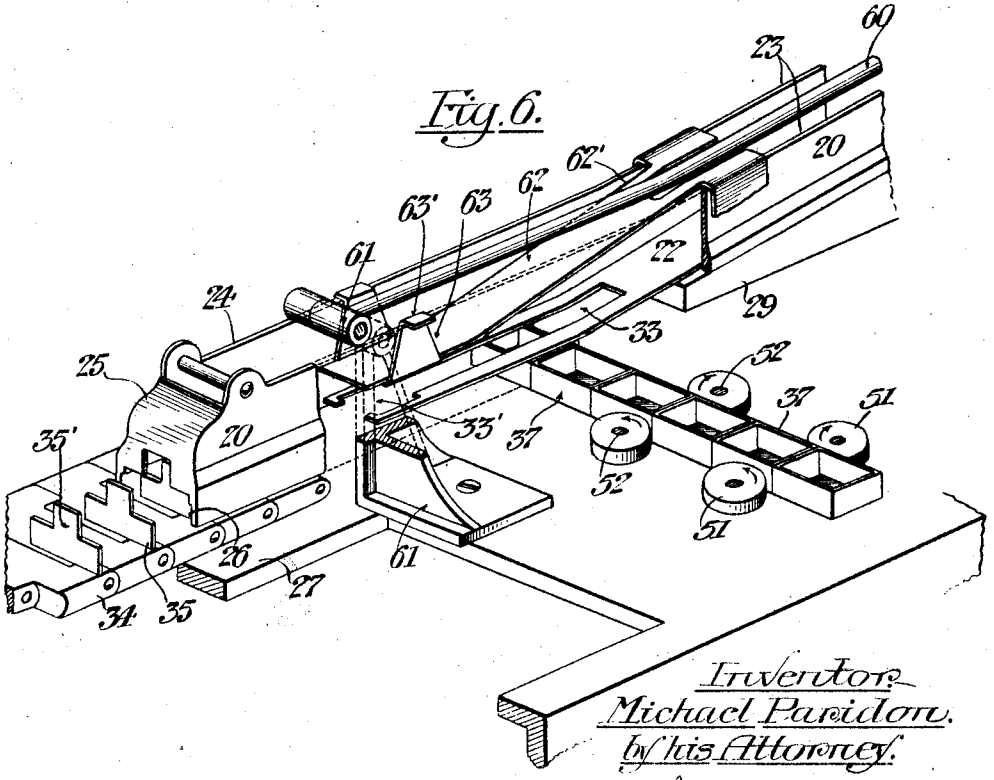


Fig. 6.



Inventor:
Michael Paridon.
By his Attorney.
John R. Nolan

THE ADAMS PRESS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MICHAEL PARIDON, OF BARBERTON, OHIO, ASSIGNOR TO THE DIAMOND MATCH COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MACHINE FOR FILLING BOXES.

1,300,763. Specification of Letters Patent. Patented Apr. 15, 1919.

Original application filed June 22, 1915, Serial No. 35,541. Divided and this application filed August 30, 1916, Serial No. 117,589. Renewed September 11, 1918. Serial No. 253,659.

To all whom it may concern:

Be it known that I, MICHAEL PARIDON, a citizen of the United States, and resident of Barberton, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Machines for Filling Boxes, of which the following is a specification.

This is a division of an application for patent filed by me June 22, 1915, under Serial No. 35,541 for certain improvements in and relating to machines for filling boxes, more especially match boxes of the tray-and-shuck type.

The invention particularly though not exclusively concerns certain improvements in the match box filling machine illustrated in Letters Patent of the United States No. 1,064,452, dated June 10, 1913, wherein the trays or boxes are deposited in succession upon an endless chain conveyer and thereby impelled consecutively to and past the delivery end of the match machine, the boxes thus being supplied with matches, and the filled trays being thence positioned in operative relation to mechanism whereby shucks or covers are applied to the trays, all of which will more fully appear by reference to said Letters Patent.

The object of my present invention is to provide simple and efficient means whereby the box trays are delivered successively to the conveyer, and means whereby a uniform and rapid feeding and delivery of the matches to the succession of trays is attained.

Accordingly the invention comprises various features of construction and combinations of parts which will be hereinafter described and claimed.

In the drawings—

Figure 1 is a side elevation of a part of a match box filling machine embodying a preferred form of my invention, a fragment of the match carrier of the match machine being indicated by dotted lines at the receiving end of the match feeding hopper.

Fig. 2 is a plan of the mechanism shown in Fig. 1, showing several filled trays on the tray conveyer.

Fig. 3 is a transverse vertical section through the machine on a plane intersecting the delivery end of the match-feeding hopper, as on the line 3—3 of Fig. 1.

Fig. 4 is a transverse vertical section through the tray-feeding guide and adjuncts, showing the frictional feeding device for the trays.

Fig. 5 is a longitudinal vertical section through the delivery end of the match feeding hopper as supplied with matches, showing in side elevation a part of the tray conveyer as supplied with trays, and the selecting action upon the matches of the upward extensions of the tray holding members of the conveyer. In this view the gage or throat piece at the delivery end of the hopper and also the adjacent portion of the guard rod are shown.

Fig. 6 is a perspective view of the delivery end of the hopper; the throat piece therefor, and adjuncts.

Referring to the drawings, 20 designates an elongated hopper to one end of which matches are delivered from a suitable source of supply, as, for example, the endless match carrier of a continuous match machine; a part of which carrier is indicated by dotted lines at 21 in Fig. 1. The form of hopper illustrated comprises an inclined bottom 22 having two parallel sides 23 providing between them a space slightly greater in width than the length of a match. The lower ends of the sides are horizontally extended, as at 24, and their outer extremities are connected by a transverse end plate 25 which is appropriately recessed on its lower edge, as at 26, for the free passage of traveling blade devices which will be hereinafter described. The side extensions and the adjacent part of the bottom overhang a horizontal bed or table 27 which is supported by the standards of a suitable supporting frame 28. The bottom is provided with a suitably-disposed slide 29 which is mounted on a guide piece 30 on the table, so as to permit longitudinal vibration of the hopper. The bottom is also provided with depending lugs 31 which embrace an eccentric carried by a shaft 32 which is driven in any suitable manner, so as to effect the rapid bodily vibration of the hopper and thus insure the feeding of the matches therealong from its upper to its lower or discharging end. (See Fig. 1).

The lower end of the hopper bottom is provided with a longitudinal opening or slot for the free passage into and from the hopper of the traveling blade devices above referred to. The inner portion 33 of this opening is of less width than the length of a match, and hence, while the matches in the adjacent part of the hopper are supported at their ends, access can be had to the matches through the opening.

34 designates a continuously driven tray conveyer comprising in the form illustrated metal links jointed together to constitute an endless chain. On this chain is a longitudinally extending row of outwardly projecting blade-like members 35 the spaces between which are adapted to receive and hold the match trays (37). The conveyer chain passes about sprocket wheels 39, 40 mounted on transverse shafts 41, 42, having their bearings in brackets beneath the table near its respective ends, the upper horizontal run of the chain traveling upon the top of the table and the lower run upon a longitudinal guide rail 43 supported by posts 44 on the main frame. Each of the shafts 41, 42 bears at one end a pin wheel 45 with the successive pins 46 of which engages a worm wheel 47 on a power-driven main shaft 48 extending longitudinally of and having its bearing in boxes in the main frame. The location of the conveyer relatively to the hopper is such that in the travel of the conveyer about the wheel 40 to a horizontal position, the reduced upper extensions 35′ of the blades 35 successively enter the slotted portion 33 of the hopper bottom and separate and select an approximately measured quantity of the opposing mass of matches; thence as the conveyer progresses the blades stand upright and advance the thus gathered matches along the narrow slotted portion of the bottom. See Fig. 5.

The box trays are delivered to the spaces between succeeding blades 35 of the conveyer 34 at a point directly beneath the slotted portion of the bottom where the blades are in upright position, or substantially so, the matches thus being supported above and in close relation to the inserted tray. (See Figs. 5 and 6.) The portion 33′ of the slot in rear of the tray is sufficiently wide to permit the matches to fall from the bottom of the hopper, and hence as each tray and the superposed matches pass to and beyond the slotted portion 33′ of the hopper the matches, being unsupported, are progressively deposited in the underlying tray, their uniform descent being contributed to by the short rapid vibration of the hopper. The width of the space between the side extensions 24 of the hopper is a trifle less than the length of a tray, and the width of each space between adjacent blades 35 of the conveyer is a little greater than that of a tray. Hence the trays imposed on and carried by the conveyer are slightly pinched between the side extensions, and the latter thus effect vibration of the trays in contact therewith and insure the settling of the matches within the trays.

The trays are fed through a horizontal guide structure 49 on the table to the spaces between the blades 35 of the conveyer, which guide structure includes spaced top and bottom members arranged to provide a guide way at right angles to the upper horizontal run of the conveyer. The trays are fed end to end through the guide way from a suitable feed trough 50 (Figs. 1 and 2) leading thereto from any convenient source of tray supply, and they are moved thence toward the conveyer by frictional feeding means, such for example, as spaced rotating rollers 51 the peripheries of which contact with the respective sides of the opposing trays. These rollers are fast on the lower ends of vertical shafts 52 having their bearings in a bracket 53 which straddles the guide structure 49, the sides of the latter being open, as at 54, for the passage of the peripheries of the rollers to the opposing sides of the trays. (See Fig. 4.) The upper portions of the shafts 52 bear grooved pulleys 55 about which passes an endless belt 56 from a grooved drive wheel 57 on the main shaft 48. The belt 56 on its way from the drive wheel to the pulleys 55 is guided by suitably-disposed idlers 58. The belt turns the pulleys 55 in the directions indicated by the small arrows thereon in Figs. 2 and 6, thus correspondingly turning the feed rollers 51 and, perforce, advancing or tending to advance the proximate trays through the guide structure 49. As the space between adjacent blades 35 reaches a position in line vertically with the axis of the chain wheel 40, the leading tray is pushed into such space by the frictional action of the rotating feed rollers on the adjacent trays, the rearward blade 35 immediately moving laterally of the inserted tray and acting as an end stop for the next succeeding exterior tray until another tray-receiving space of the conveyer is in alinement with the latter tray, and so on.

It is to be noted that the friction rollers 51 are driven at a high surface speed compared with the speed of the conveyer 34, so as to project the leading tray fully upon the conveyer while the latter is moving a substantially inappreciable distance; such tray when positioned upon the conveyer impinging against the opposite side extension 24 of the match hopper.

60 designates a rod extending longitudinally of the hopper so as to overhang and bear yieldingly upon the mass of matches during their descent and thus prevent their

overflowing the hopper. The lower end of this rod is conveniently pivoted to a bracket 61 on the table adjacent the lower end of the hopper. 62 designates a guard member arranged to lie within the lower portion of the hopper and overhang the adjacent upstanding blades of the tray conveyer. This member comprises an inclined portion 62′ which is conveniently secured at its upper end to the sides of the hopper, and a lower horizontal portion 63 which extends parallel with and near to the horizontal path of the blade extensions 35′. The portion 63 is provided near its free end with flanged side pieces 63′ which overhang and rest upon the upper edges of the side extensions of the hopper and thus permit limited yielding vertical movement of the guard member. This guard member thus provides for the lower portion of the hopper a yielding throat structure which effectually gages and limits the level of the matches flowing to and between the blade extensions above the trays while such extensions are entering into and passing through the lower portion of the hopper.

The filled match trays progress beyond the hopper, and are thereafter entered into their complementary shucks or covers by suitable mechanism, such, for example, as described in the parent case Serial No. 35,541 aforesaid.

My invention is not limited to the particular details of construction shown and described, as the mechanisms may be modified without departing from the spirit of the invention as defined in the appended claims.

I claim—

1. In a box-filling machine, the combination with a match-feeding hopper, of a tray-conveyer mounted to travel under the delivery portion of the hopper and having spaced tray-holding members provided with upstanding portions adapted to enter the interior of the hopper and transfer matches therefrom to the trays on the conveyer.

2. In a box-filling machine, the combination with an elongated match-feeding hopper having a bottom and sides, said bottom having at its delivery end an opening of less width than the length of a match, of a tray-conveyer mounted to travel under the delivery end of the hopper and having tray-holding members provided with upstanding projections which extend through the said opening and are adapted to engage the matches supported across the opening and transfer them from the hopper to the proximate trays on the conveyer.

3. In a box filling machine, the combination with a match feeding hopper, of a tray-conveyer mounted to travel under the delivery portion of the hopper, said conveyer having spaced members which project above the tops of the successive trays on the conveyer during their travel adjacent the hopper and provide measuring chambers for the matches before their delivery to the trays, and a yielding element at such delivery portion of the hopper overhanging the path of said members and affording a top or cover for the traveling chambers.

4. In a box-filling machine, the combination with an elongated match-feeding hopper, of a tray-conveyer mounted to travel under the delivery portion of the hopper in a path longitudinally of the hopper, said conveyer having spaced members which project above the tops of the successive trays on the conveyer during their travel adjacent the hopper, and a yielding throat piece at such delivery end overhanging the conveyer in proximity to the path of said member.

5. In a box-filling machine, the combination with an elongated match-feeding hopper, of a tray-conveyer mounted to travel under the delivery end of the hopper and having spaced tray-holding members, of a yielding throat piece at such delivery end, comprising a plate having a horizontal portion extending longitudinally of and overhanging the conveyer and an upwardly inclined portion at the forward end of such horizontal portion.

6. In a box-filling machine, the combination with an elongated match feeding hopper, of a tray-conveyer mounted to travel under the delivery portion of the hopper, said conveyer having spaced members which project above the tops of the successive trays on the conveyer during their travel adjacent the hopper, a yielding throat piece at the delivery portion of the hopper arranged to overhang the conveyer in proximity to the path of said members, and a rod extending longitudinally of the hopper and overhanging the throat member, the end of said rod adjacent the throat member being pivotally supported.

7. In a box-filling machine, the combination of a conveyer having spaced tray-holding members extending transversely thereof, means for continuously moving said conveyer, frictional means for feeding trays toward the ends of and into the spaces between successive members of the said conveyer, and means for supplying matches to the trays on the conveyer.

8. In a box-filling machine, the combination of a conveyer having spaced tray-holding members thereon, means for continuously moving said conveyer, a guide for box trays leading to the path of the conveyer, friction rollers mounted to turn in contact with the trays in the guide and feed the trays into the spaces between successive members of the conveyer, means for rotating said rollers, and means for supplying matches to the trays on the conveyer.

9. In a box-filling machine, the combination of a conveyer having tray-holding portions, means for impelling the conveyer, a hopper for supplying matches to the trays on the conveyer, said hopper having side extensions which frictionally contact with the outer ends of the trays on the conveyer, and means for longitudinally vibrating said hopper.

Signed at Barberton, in the county of Summit and State of Ohio, this 25th day of August, A. D. 1916.

MICHAEL PARIDON.