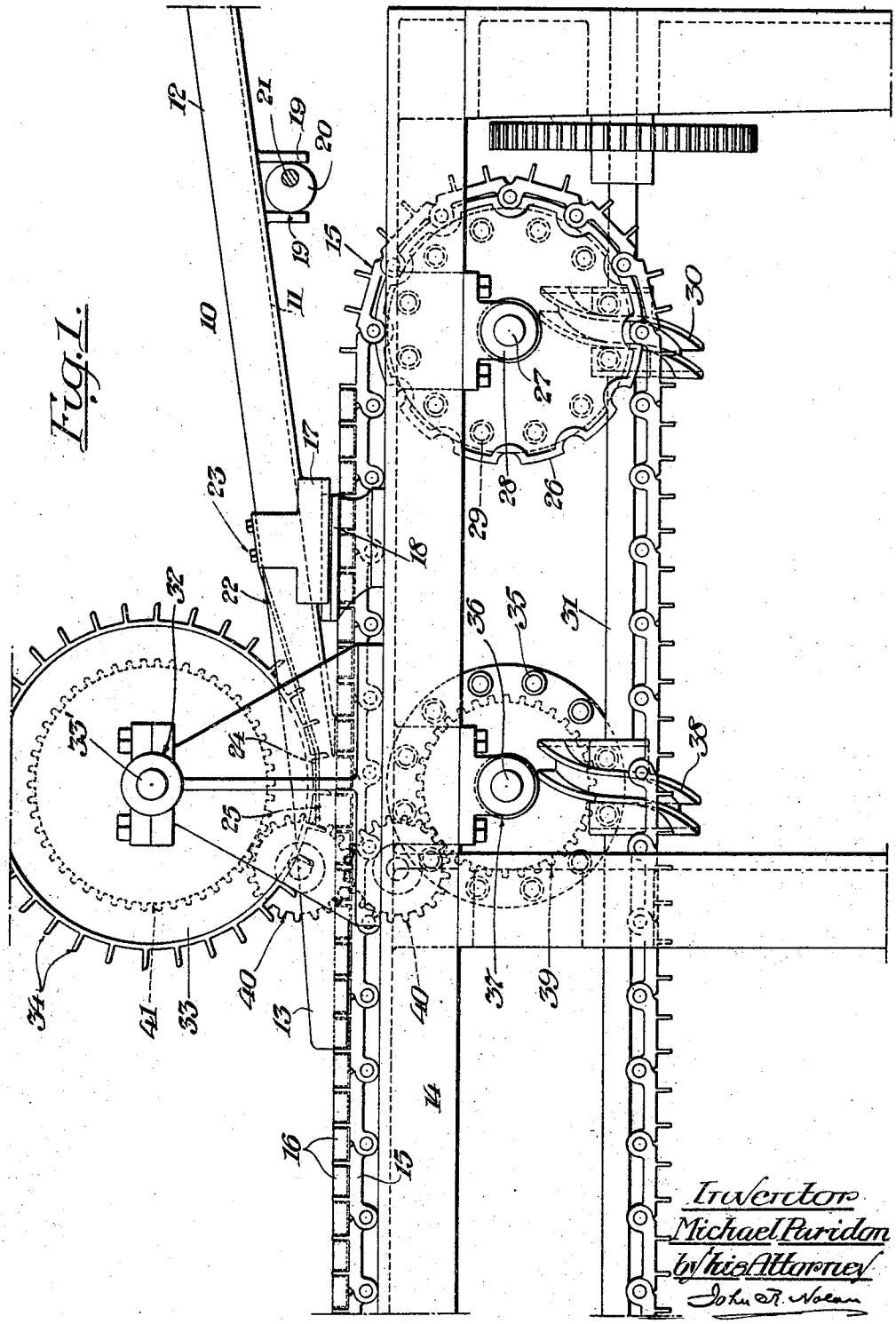
Dec. 26, 1922. 1,439,835

M. PARIDON,
BOX FILLING MACHINE.
FILED FEB. 27, 1922.

2 SHEETS-SHEET 1

Fig. 1.



Inventor
Michael Paridon
by his Attorney
John R. Nolan

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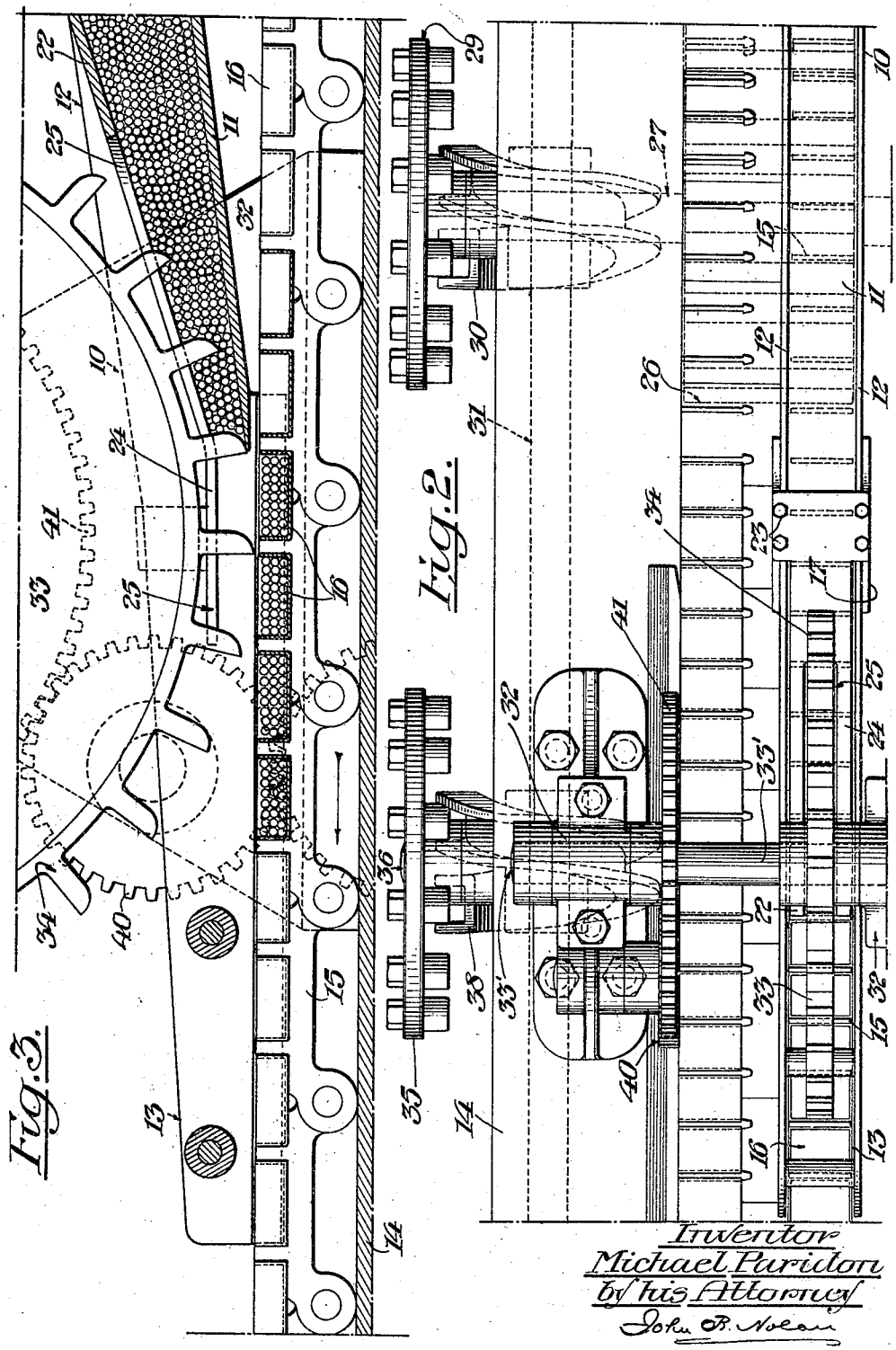


Fig. 3.

Fig. 2.

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Patented Dec. 26, 1922. 1,439,835

UNITED STATES PATENT OFFICE.

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

BOX-FILLING MACHINE.

Application filed February 27, 1922. Serial No. 539,559.

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 Box-Filling Machines, of which the following is a specification.

This invention relates to box-filling machines, having reference, more particularly, to machines employing a trough-like hopper for supplying matches, or other splint-form articles, to progressing trays on the upper run of a tray-and-shuck conveyer, such, for example, as disclosed in Letters Patent of the United States No. 1,300,762, dated April 15, 1919, and No. 1,360,438, dated November 30, 1920.

In the machine of the first-named patent the box trays are singly supplied with matches, and in the machine of the later patent plural trays are simultaneously supplied with measured quantities of matches from the hopper.

The present invention concerns simple and efficient means for accurately and rapidly transferring the matches in measured quantities from the hopper to the box trays, such means being especially, though not exclusively, designed for use in connection with a machine of the plural tray supply type above referred to.

According to my invention, in its preferred form, I provide a feed wheel mounted to rotate on an axis above the delivery portion of the hopper, said wheel having radially-projecting teeth which are constructed and arranged to enter the hopper and its contents and transfer measured quantities of matches successively to underlying box trays which are moved in synchronism with the feed wheel.

The invention also comprises various novel 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 portion of a box filling machine embodying the preferred form of my invention.

Fig. 2 is a plan of the mechanism shown in Fig. 1.

Fig. 3 is a longitudinal vertical section through the delivery portion of the hopper, and adjuncts, including a portion of the rotary feed wheel and the tray carrier.

Referring to the drawings, 10 designates an elongated trough-like hopper into which the matches are delivered from a suitable source of supply, such, for example, as a match-making machine, so as to lie in approximate parallelism within and transversely of the hopper. This hopper, in the form illustrated, comprises an inclined bottom 11 having parallel sides 12 which are spaced apart a distance slightly greater than the length of a match. The sides of the hopper are horizontally extended at its lower end, as at 13, and these extensions, together with the adjacent part of the bottom of the hopper, overhang a horizontal bed or table 14 upon which the upper run of the endless conveyer 15 containing a succession of box trays 16 is supported and guided. The hopper is provided with a suitably-disposed slide 17 which is mounted on a guide standard 18 on the table to permit longitudinal vibration of the hopper in order to settle the matches therein and assist them in their descent to the lower delivery end of the hopper. The hopper is also provided with suitably-disposed depending lugs 19 which embrace an eccentric 20 carried by a shaft 21 driven in any suitable manner to effect the rapid bodily vibration of the hopper.

A resilient strip 22 is arranged within the lower portion of the hopper so as to overhang the latter and provide therein a tapering or contracted throat into and through which pass the match contents of the hopper. The strip is secured at its upper end to the sides of the hopper, as at 23, and inclines downwardly toward the delivery end of the hopper. The lower portion of the strip is spaced above such delivery end a distance approximately equal to the depth of a box tray, and is extended thence horizontally, as at 24, preferably a distance sufficient to overhang two underlying box trays supported in the conveyer 15. The lower portion of the overhanging strip and its horizontal extension are longitudinally slotted, as at 25.

The conveyer is intermittently actuated to position successive pairs of box trays directly under the extension 24 of the strip 22. In the present instance a conveyer of the character illustrated in Patent No.

1,360,438 aforesaid, is employed, said conveyer being constructed to support box trays and shucks in such endwise relation to each other that the filled trays can be inserted into their complementary shucks and covers during the progress of the conveyer. The conveyer passes about sprocket wheels arranged at or adjacent the respective ends of the table, one of which wheels is shown at 26, Fig. 1. The wheel is mounted on a transverse shaft 27 having its bearings in brackets 28 beneath the table. This shaft bears a pin wheel 29 with the successive pins of which engages a worm cam 30 on a driven shaft 31 extending longitudinally of the machine. The contour of the worm cam 30 is such that in each rotation thereof the pin wheel is actuated to effect the intermittent advancement of the conveyer and position a pair of box trays beneath the horizontal extension of the guard structure 22.

As a simple and efficient means to transfer measured quantities of matches directly from the hopper into the successive pairs of trays as the latter advance to and beyond the delivery end of the hopper bottom, I mount in suitable bearings 32 above the latter, the shaft 33′ of a rotary feed wheel 33 having radially projecting teeth 34 which, in a part of their travel, progress through the slot of the guard structure 24 and into and along the delivery portion of the hopper in the direction of movement of the conveyer and at the same relative speed as the latter. The teeth 34 are regularly spaced apart around the rim of the wheel, each interdentil space being equal to the width of a box tray, or substantially so, and the depth of the teeth being such that their outer ends (which are rounded as indicated) progress toward and in proximity to the bottom of the hopper. Hence the teeth pass successively through the slotted guard structure into the delivery portion of the hopper, and therein divide the opposing mass of matches into measured quantities and impel them positively toward and above the mouths of the underlying box trays as the latter advance beyond such delivery portion. As the teeth escape the bottom of the hopper the extension, overhanging the matches between adjacent teeth, prevent upward displacement of such matches and insure their regular disposition for entry into each succeeding box tray in its advancement beyond the end of the hopper bottom.

The feed wheel is intermittently rotated in such operative relation to the carrier that at the end of each combined impulse of the wheel and carrier, one of the teeth of the wheel is located at the extremity of the hopper and directly above the adjacent wall of the proximate box tray, or substantially so, such tooth thus serving as an efficient gate or barrier to prevent the discharge of the matches from the hopper while the carrier is at rest. Since the hopper is being continuously vibrated longitudinally the matches are fed down to and well settled within the throat at the delivery portion of the hopper preparatory to each succeeding impulse of the wheel and carrier.

The means herein illustrated for actuating the feed wheel includes a pin wheel 35 mounted on a transverse shaft 36 having its bearings in brackets 37 beneath the table, the successive teeth of the wheel being engaged by a worm cam 38 on the shaft 31 which carries the worm cam 30. Fast on the shaft 36 is a spur wheel 39 which is geared through a pair of idlers 40 with a spur wheel 41 on the shaft 33′ of the feed wheel. The contour of the worm cam 38 and the ratio of the gearing are such that in each rotation of the cam the pin wheel 35 is periodically actuated to effect the intermittent motion of the feed wheel concurrently with that of the carrier, as hereinbefore described.

It is to be understood that I do not limit my invention to the details of construction herein disclosed, as the mechanism may be modified within the principle of my invention and the scope of the appended claims.

I claim—

1. In a box filling machine, an elongated hopper having at its delivery end a throat portion comprising an overhanging slotted member, means whereby articles are fed along the hopper and into the said throat portion, a feed wheel mounted to rotate on an axis above the delivery end of the hopper and having radially projecting teeth which progress through the said slotted member into the hopper, means for feeding a succession of box trays to and beyond the delivery end of the hopper and in a plane below the latter, and means for rotating the wheel concurrently with the travel of the box trays.

2. In a box filling machine, an elongated hopper having at its delivery end a throat portion comprising an overhanging longitudinally slotted member which extends horizontally beyond the end of the hopper bottom, means whereby articles are fed along the hopper and into the said throat portion, a feed wheel mounted to rotate on an axis above the delivery end of the hopper and having radially projecting teeth which progress through the slotted member into the hopper, means for feeding a succession of box trays to and beyond the delivery end of the hopper and in a plane below the latter, and means for rotating the wheel concurrently with the travel of the box trays.

3. In a box filling machine, an elongated hopper having a delivery opening at one end of its bottom portion, means whereby articles are fed along the hopper to the delivery opening, a feed wheel mounted to

rotate on an axis above the delivery opening and having radially-projecting teeth which successively enter and progress through the hopper, means for intermittently advancing a succession of box trays to and beyond the delivery opening in a plane below the latter, and means for intermittently rotating the wheel concurrently with the travel of the trays, the said teeth being equally spaced and being so located that in each dwell of the wheel and trays one of the teeth closes the delivery opening of the hopper.

4. In a box filling machine, an elongated inclined hopper having in its lower portion a tapering delivery throat comprising an overhanging longitudinally slotted member which extends horizontally beyond the end of the hopper bottom, means whereby the hopper is longitudinally vibrated, a feed wheel mounted to rotate on an axis above the delivery end of the hopper and having radially projecting teeth which progress through the slotted member into the hopper, means for intermittently advancing a succession of box trays to and beyond the delivery end of the hopper and in a plane below the latter and the extension of the slotted member, and means for intermittently rotating the wheel concurrently with the travel of the trays.

5. In a box filling machine, an elongated hopper having a delivery throat portion comprising an overhanging longitudinally slotted member which extends horizontally beyond the end of the hopper bottom, means whereby articles are fed along the hopper and into the said throat portion, a traveling feed element having regularly-spaced apart projecting teeth which successively pass through the slotted member into the throat portion and therein divide the opposing articles into measured quantities and impel them toward the delivery end of the hopper bottom, a carrier for advancing a succession of box trays to and beyond the delivery end of the hopper and in a plane below the latter and the extension of the slotted member, and means for operating the said wheel and carrier in synchronism.

Signed at Barberton in the county of Summit and State of Ohio this 20th day of February A. D. 1922.

MICHAEL PARIDON.