Sept. 1, 1925. 1,551,614

M. PARIDON

MECHANISM FOR FEEDING BOX MEMBERS

Filed May 23, 1923 3 Sheets-Sheet 1

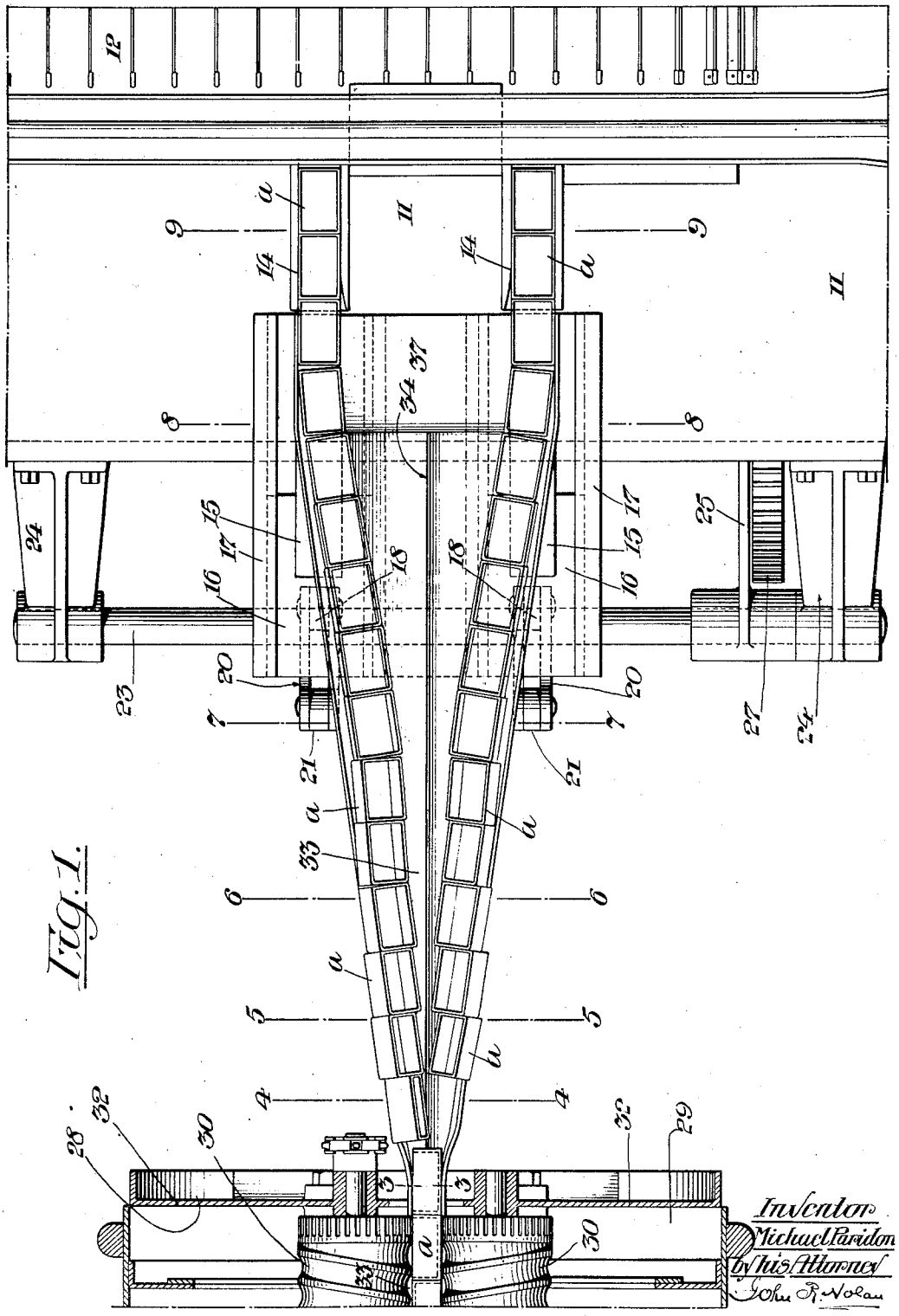

Fig. 1.

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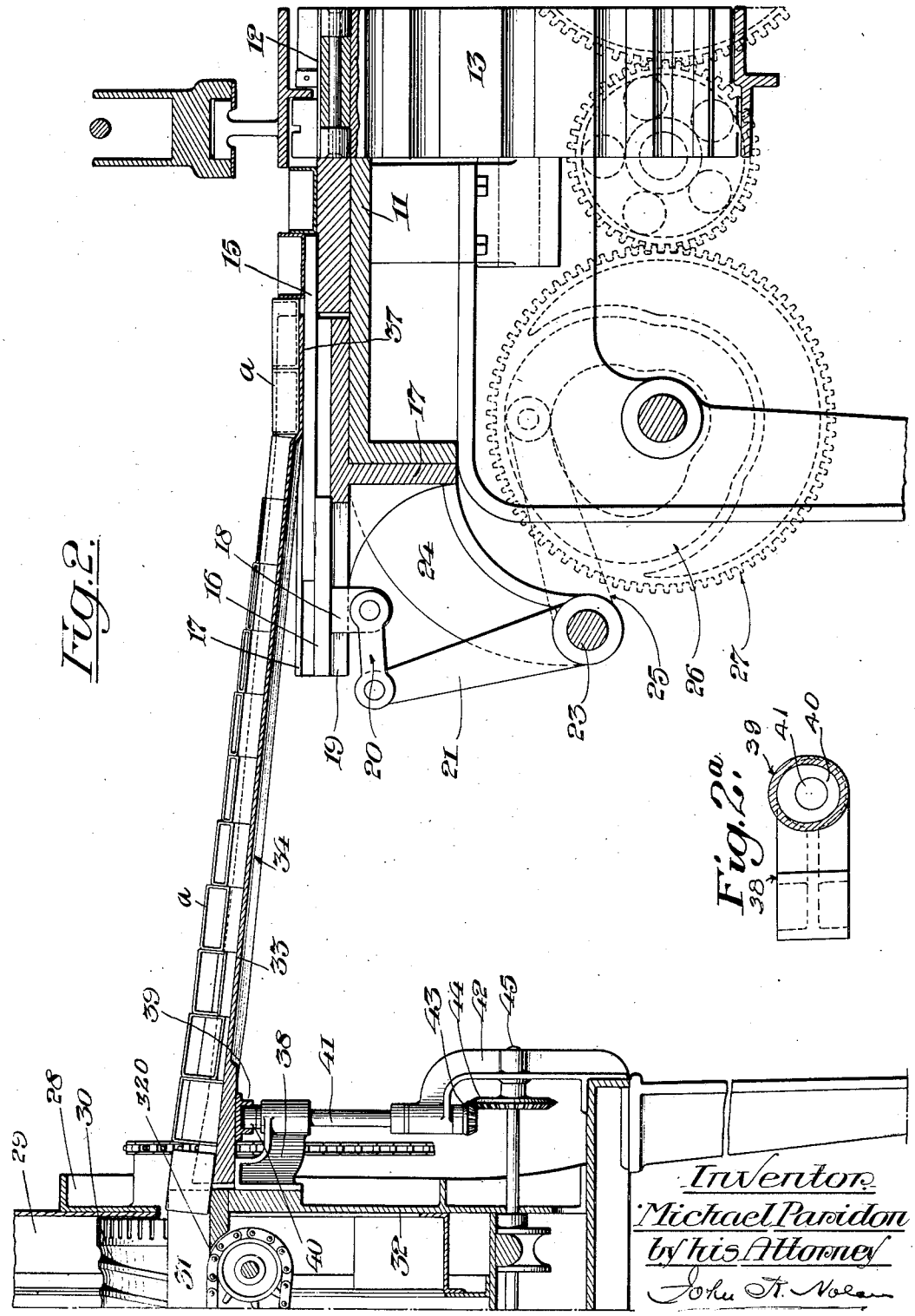

Fig. 2.

Fig. 2a.

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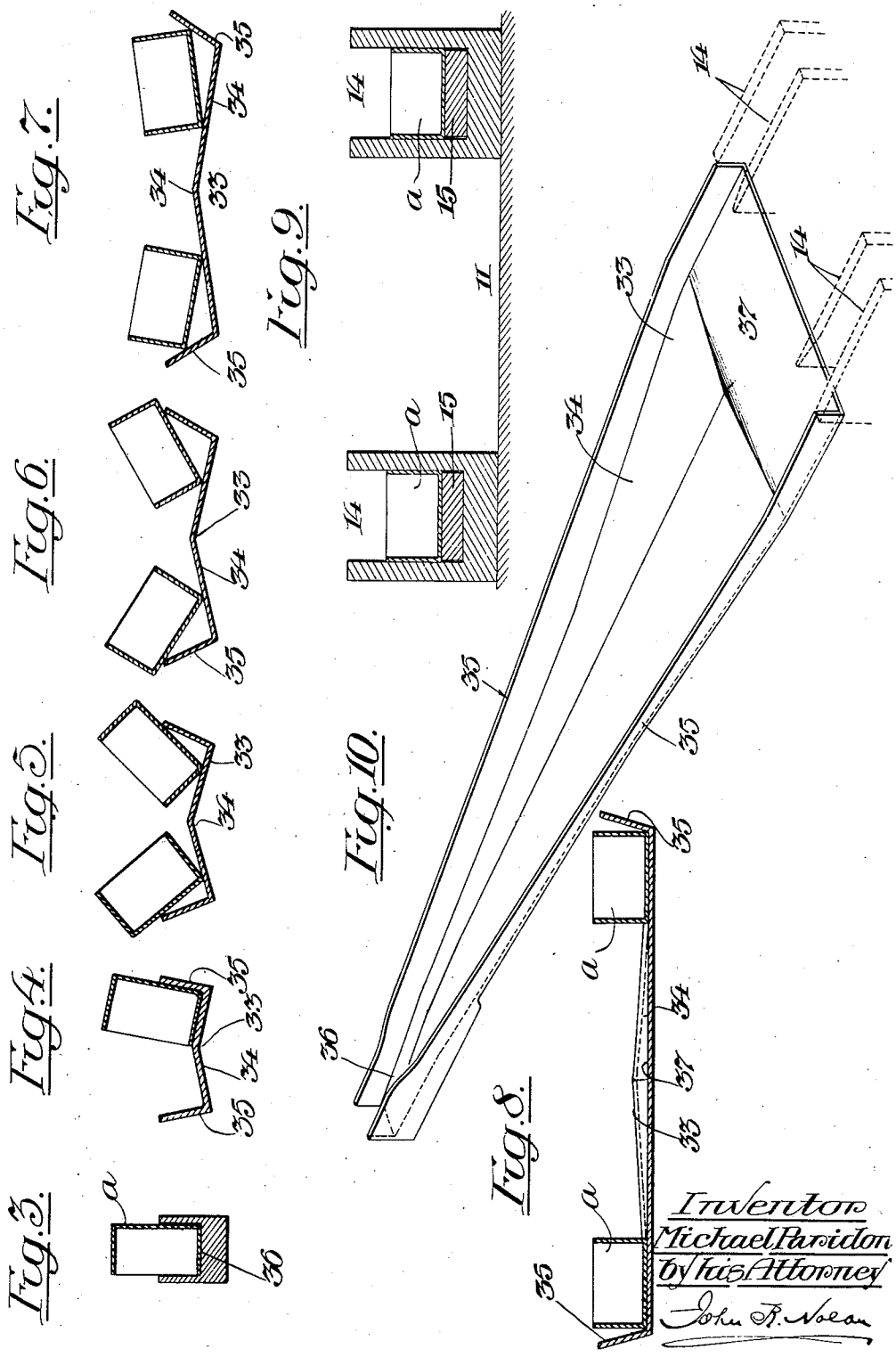

Patented Sept. 1, 1925. 1,551,614

UNITED STATES PATENT OFFICE.

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

MECHANISM FOR FEEDING BOX MEMBERS.

Application filed May 23, 1923. Serial No. 640,824.

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 Mechanism for Feeding Box Members, of which the following is a specification.

This invention relates to mechanism for feeding box members (either trays or covers) in an orderly manner to suitable receiving devices therefor, having reference more particularly to mechanism whereby two rows of trays and two rows of covers are directed toward the conveyor of a box filling machine, from opposite sides of the latter, and whereby the leading trays and covers of the respective rows are introduced into spaced-apart receiving portions of the conveyer, such, for example, as described in Letters Patent of the United States, Paridon No. 1,360,438, dated November 30, 1920.

The principal object of my invention is to provide mechanism of simple and efficient construction whereby box members emerging in a row from a suitable supply hopper, and resting upon their long narrow sides, are automatically divided into two rows and the members of each of the latter advanced to the vicinity of the conveyer of the filling machine and in proper position for introduction successively into spaced-apart receiving portions of the said conveyer.

The embodiment of my invention herein illustrated comprises a trough structure having two guide paths which diverge from the supply hopper to the conveyer and are of such construction that a row of box members is delivered from the hopper into the proximate end of the trough and thereby diverted into and advanced along the respective paths, which advancing box members are progressively deflected to proper position for delivery to the conveyer.

The invention also comprises novel features of construction and combinations of parts which will be hereinafter described and claimed.

In the drawings—

Figure 1 is a plan of a portion of a box-filling machine equipped with delivery mechanism embodying my invention, a portion of the supply hopper being shown in section.

Fig. 2 is a longitudinal vertical section through the machine, as on the line 2—2 of Fig. 1.

Fig. 2ª is a sectional detail illustrating the eccentric for actuating the guide trough.

Figs. 3 to 8, inclusive, are transverse sections of the guide trough, on the respective lines 3—3, 4—4, &c., of Fig. 1, showing box trays in various succeeding positions during their progress along the trough.

Fig. 9 is a transverse section of the spaced-apart guides at the delivery end of the trough.

Fig. 10 is a perspective view of the trough.

Referring to the drawings, 11 designates the table of a box filling machine; 12 the upper run of the tray-and-shuck conveyer, and 13 one of the intermittently actuated sprocket wheels for the conveyer. Arranged on the table, adjacent and at right angles to one side of the conveyer, are two spaced-apart guide channels 14 each of which is adapted to receive box members, (as *a*) in endwise relation to each other. Mounted to reciprocate in and longitudinally of the channels are two plungers 15 which are carried by slides 16 reciprocable in parallel guides in a bracket member 17 that is bolted to the table. Each of the slides is provided with lugs 18 which depend through suitable slots 19 in the guide bracket and are connected by means of links 20 with arms 21 rising from a rock-shaft 23 which has its bearings in brackets 24 extending from the side of the table. The outer end of the rock-shaft is provided with an arm 25 having a roll in engagement with an appropriate cam groove 26 formed in a suitably-disposed driven gear wheel 27, whereby during the rotation of the latter the rock-shaft is actuated and the plungers are simultaneously reciprocated toward and from the conveyer, in such a manner that the leading box members contained in the guide-channels 14 are pushed into the adjacent receiving spaces of the conveyer; all as fully set out in Patent No. 1,360,438 aforesaid.

28 designates the delivery end of a supply hopper from which the box members, resting upon their long narrow sides, are discharged in a row, which hopper is preferably of the general construction illustrated in patent Paridon and Weaver No. 1,086,210, dated February 3, 1914. This hopper includes a rotary drum 29 into which the box members are placed in mass and therein agitated,

and a pair of oppositely-rotating helically-formed rollers 30 arranged within the drum and operative to receive the said box members, dispose them in endwise relation to each other, and resting upon their long narrow sides within a trough 31 which extends through a stationary end head 32 of the hopper. A travelling feed-chain 320 extending along the bottom of the trough 31, advances the boxes to and through the delivery end of the trough.

The supply hopper is spaced a suitable distance from the guide-channels 14, and a shallow trough 33 embodying my invention is interposed between the hopper trough 31 and the respective channels. This trough 33, in its preferred construction, comprises a bottom 34 having side walls 35 extending throughout its length. The side walls are flared outwardly and diverge from a plane adjacent the narrow receiving end to a plane adjacent the wider discharging end of the trough, such walls being substantially parallel at the respective ends. The upper surface of the bottom is inclined downwardly and outwardly from its longitudinal median line to the respective side walls, throughout the length of the flaring divergent portions of the walls, as seen in Figs. 4 to 8, inclusive, and 10, such oppositely inclined surface terminating in flat portions 36, 37 at the receiving and discharging ends, respectively, of the trough, as seen in Figs. 8 and 9.

The trough 33 preferably declines from the discharge end of the hopper trough to the guide-channels 14 adjacent the conveyer; the narrow receiving end of the trough 33 being in close proximity to and being substantially the same width interiorly as the hopper trough, and the discharging end of the trough 33 being of such width that the wider ends of the side walls 35 are in close proximity to and in longitudinal alinement with the outer walls of the respective guide channels.

The trough 33 has capacity for its longitudinal vibration, and accordingly the receiving end of the trough rests on a bracket 38 extending from the stationary end head 32 of the hopper, and the discharging end of the trough rests on the plunger guide bracket 17 adjacent the conveyer. Any suitable means for vibrating the trough may be employed. In the present instance, the bottom of the receiving end of the trough is provided with a socket piece 39 which receives an eccentric 40 on the upper end of a vertical shaft 41 having its bearings in the bracket 38 and in a lower bracket 42. The foot of the shaft bears a bevel pinion 43 in mesh with a bevel wheel 44 on a driven shaft 45 mounted below the hopper, and hence during the rotation of the latter shaft motion is transmitted therefrom to the vertical shaft and its eccentric in a manner to impart a rapid longitudinal vibration to the trough.

By the foregoing described construction it will be seen that the box-members, resting upon their long narrow sides and placed end to end, pass from the feed trough of the hopper into the narrow receiving end of the vibrating trough and are caused to descend the latter. In the case of trays the bottoms of some of them will be at one side of the vibrating trough, (as in Fig. 3), while the bottoms of others will be at the opposite side of the trough, and hence as the trays progress upon the central crest of the vibrating trough they will be tilted by their heavier bottoms toward the side or sides of the trough adjacent such bottoms, and as the tilted trays continue their descent they will finally gravitate, bottoms downward, upon the proximate inclined floor surfaces and hug the respective side walls of the trough until such trays pass to and upon the flat floor portion 37 at the discharging end of the trough. At this stage the leading trays of each row will be up-right, and while in such position they will enter the guide-channels above the adjacent plunger 15, and passing thence to the reciprocative path of the plunger as seen in Fig. 2, they will be successively pushed into the receiving spaces of the conveyer.

In the case of the delivery of covers or "shucks" from the hopper into the receiving end of the vibrating trough one or the other of the long narrow sides of each cover will rest upon the floor of the trough, and as the covers descend upon the inclined surfaces of the trough some of the covers will be tilted toward one side and others toward the opposite side of the trough in such a manner as to gravitate toward the respective side walls and assume a flat lying position upon the bottom of the trough preparatory to their entry into the guide-channels 14 and their final transference into the receiving spaces of the conveyer.

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

I claim—

1. The combination with mechanism whereby box members, each resting upon one of its long narrow sides, are delivered in a row, of an elongated trough into one end of which the said members are delivered, said trough having side walls diverging from its receiving portion, and having a bottom inclined downwardly and outwardly from its longitudinal median line to the respective side walls.

2. The combination with mechanism whereby box members, each resting upon

one of its long narrow sides, are delivered in a row, of an elongated trough into one end of which the said members are delivered, said trough having side walls diverging from its receiving portion, and having a bottom inclined downwardly and outwardly from its longitudinal median line to the respective side walls, and means for vibrating said trough.

3. The combination with mechanism whereby box members, each resting upon one of its long narrow sides, are delivered in a row, and a conveyer spaced from said mechanism and having box receiving portions, of an elongated trough interposed between said mechanism and conveyer, and having a narrow receiving portion adjacent said mechanism and a wider discharging portion adjacent said conveyer, said trough having side walls diverging from the said receiving portion and having a bottom inclined downwardly and outwardly from its longitudinal median line to the respective side walls.

4. The combination with mechanism whereby box members, each resting upon one of its long narrow sides, are delivered in a row, and a conveyer having a succession of box receiving portions, of a trough having a narrow receiving portion adjacent said mechanism, and a wider discharge portion adjacent the conveyer, said trough having side walls diverging from the receiving portion to the discharge portion, and having a bottom inclined downwardly and outwardly from its longitudinal median line to the respective side walls, and means for vibrating said trough.

Signed at Barberton, in the county of Summit and State of Ohio this 21st day of May A. D. 1923.

MICHAEL PARIDON.