May 27, 1924. 1,495,610

M. PARIDON

ARTICLE ASSEMBLING APPARATUS

Filed March 22, 1923 2 Sheets-Sheet 1

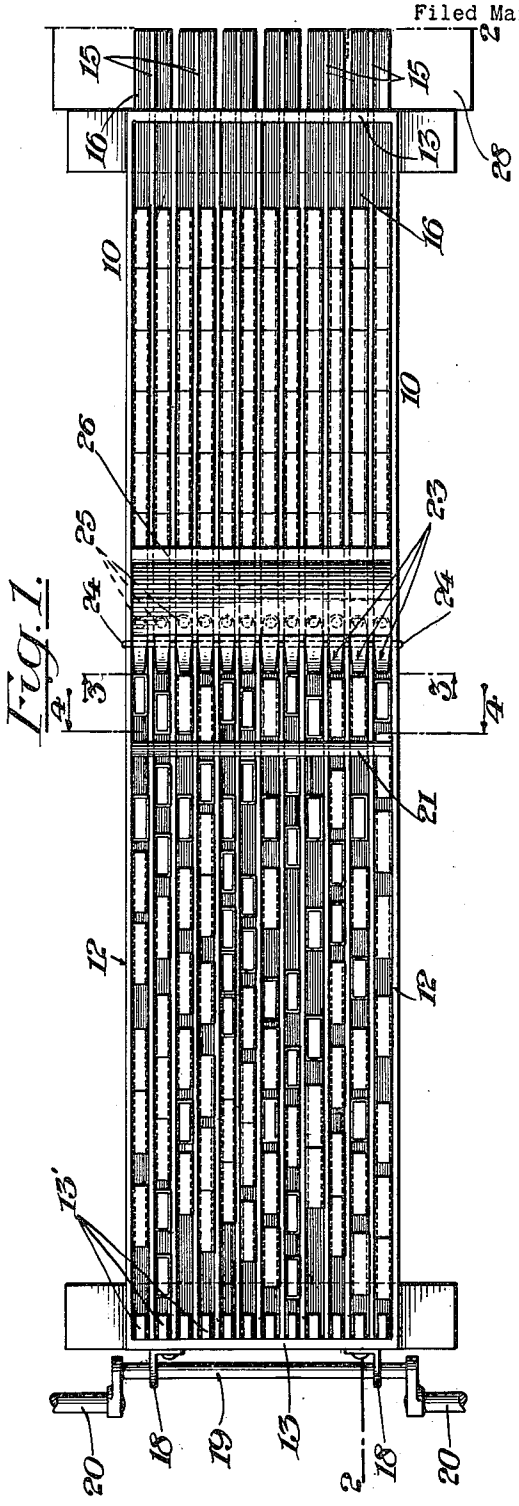


Fig. 1.

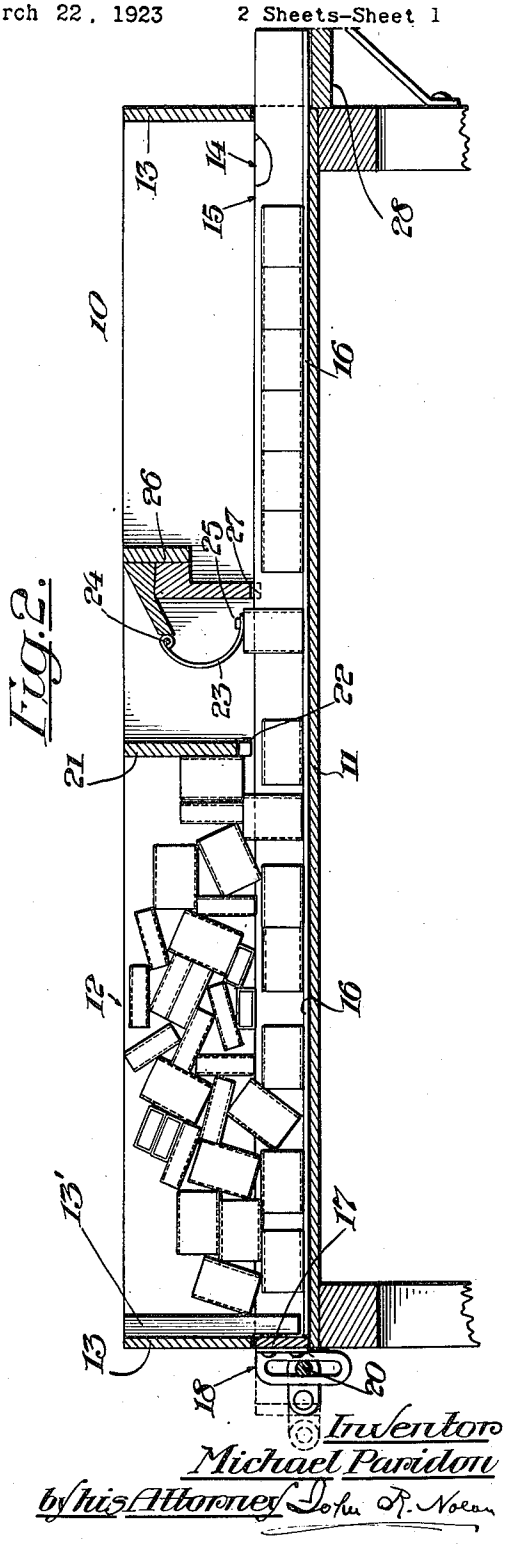


Fig. 2.

Inventor
Michael Paridon
by his Attorney John R. Nolan

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M. PARIDON

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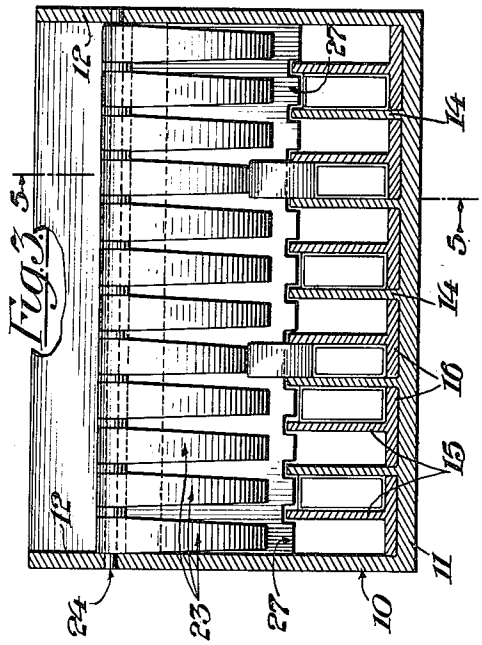



Fig. 3.

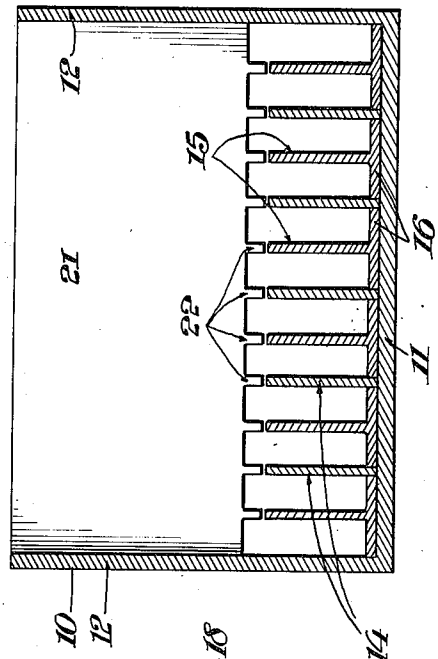



Fig. 4.

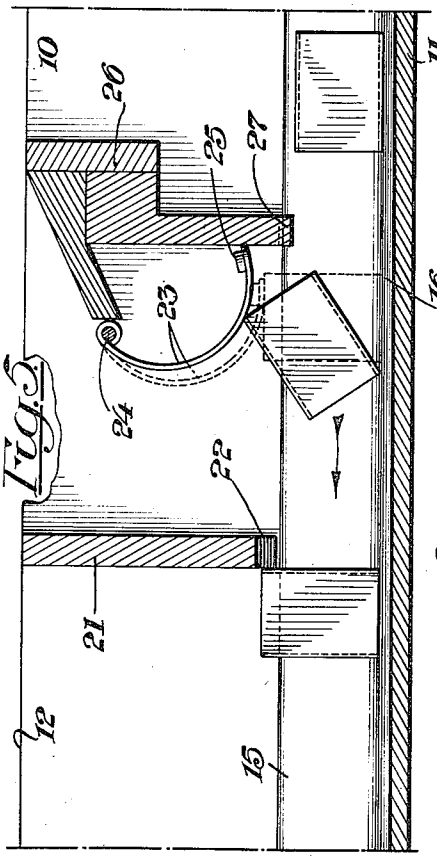



Fig. 5.

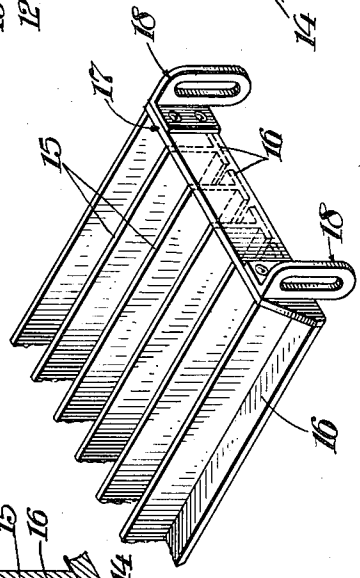



Fig. 7.

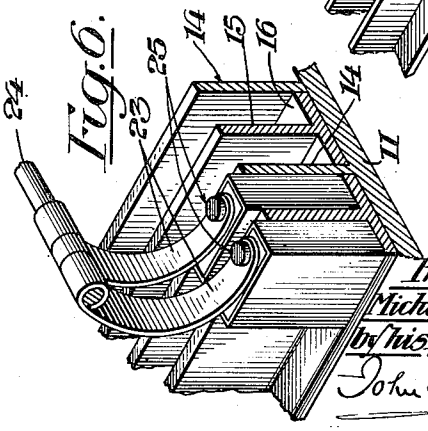



Fig. 6.

Inventor:
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John T. Nolan

Patented May 27, 1924. 1,495,610

# UNITED STATES PATENT OFFICE.

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

## ARTICLE-ASSEMBLING APPARATUS.

Application filed March 22, 1923. Serial No. 626,863.

*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 Article-Assembling Apparatus, of which the following is a specification.

This invention relates to means for assembling articles of generally rectangular form, such, for example, as boxes of matches, preparatory to wrapping them in packages of predetermined size and form.

The object of the invention is to provide an apparatus whereby the articles to be packaged are rapidly separated from a promiscuous pile and arranged in succeeding rows in proper position for manual removal and wrapping by an attendant, or for delivery to the feeding mechanism of an automatic packaging machine.

The preferred embodiment of the invention herein illustrated, comprises an elongated trough structure having at one end thereof a receiving chamber or hopper into which boxes are promiscuously deposited, and having also parallel guide channels which underlie the said chamber and extend longitudinally of and beyond the same and are of sufficient width to permit the entry into the channels of the boxes with their wide faces only parallel to the walls of the channels, which walls are constructed of relatively movable and fixed partitions whereby the lowermost boxes of the pile are progressively separated therefrom and fed thence longitudinally of the channels and beyond the hopper. Overhanging the respective channels, exteriorly of the chamber, are a series of pendulous arms which intercept the upper ends of any upstanding boxes progressing in the channels and cause the boxes to turn and seat themselves upon their long narrow faces within the channels in such a manner that the succeeding boxes of each row pass end to end beneath the arms and are thus discharged from the respective channels in an orderly manner.

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

In the drawings—

Figure 1 is a plan of a box assembling apparatus embodying my invention, showing boxes within the receiving chamber or hopper and the associated positioning and guiding elements.

Fig. 2 is a longitudinally vertical section of the apparatus, as on the line 2—2 of Fig. 1.

Figs. 3 and 4 are transverse vertical sections, as on the lines 3—3 and 4—4, respectively, of Fig. 1.

Fig. 5 is a view of a portion of Fig. 2, enlarged, showing the action of a pendulous arm on an upstanding box.

Fig. 6 is a perspective view of a portion of the guide-structure and adjacent arms, showing the latter as in contact with the tops of upstanding boxes.

Fig. 7 is a perspective view of one end of the reciprocative box-positioning frame.

Referring to the drawings, 10 designates a rectangular trough-like structure comprising a bottom 11, sides 12 and ends 13. Extending longitudinally of the structure, from end to end thereof, are a series of partitions 14 which are secured to the bottom in spaced parallel relation to each other. Alternating with the partitions 14 are a series of longitudinally reciprocative partitions 15 having base bars 16 which are slidably supported on the bottom of the structure and are extended through openings in the respective ends of the latter. The two series of juxtaposed partitions constitute longitudinal box receiving and guiding channels, whereof each is of a width slightly greater than the narrow dimension of a match box, and of a depth slightly greater than the distance between the long narrow sides of the box. Hence boxes superposed on the partitions are permitted to enter the channels with the wide faces only of the boxes parallel to the partitions. The bars 16 are connected at one end by a cross-bar 17 so as to constitute a unitary box positioning frame having capacity for longitudinal reciprocation in the bottom of the trough structure.

In the present instance the bar 17 is provided with a pair of vertically-slotted guide brackets 18 through which freely extends a crank 19 on a suitably-disposed shaft 20 which is rotated from any suitable source of power in a manner to effect, through the crank and bracket connections, the longitudinal reciprocation of the posi-

tioning frame. Any other suitable mechanism for reciprocating the frame may be employed.

The trough structure is provided, intermediate its ends, with a transverse wall 21 having preferably in its lower edge spaced-apart teeth or projections 22 that depend adjacent the tops of the respective partitions. The portion of the structure between the wall 21 and the left hand or receiving end of the structure, constitutes a capacious hopper for the reception of a pile of match boxes which are superposed on and are bodily agitated by the reciprocative action of the partitions. The lowermost boxes of the pile are thus shaken to and fro until they are properly positioned to settle down into the underlying channels, with the wide faces only of the boxes parallel to the partitions; certain of the boxes being seated on their long narrow sides upon the base bars of the movable partitions and other boxes resting on their ends on the bars, as shown. As the boxes settle into the channels from the pile they are advanced along the latter toward, beneath and beyond the hopper wall 21 by the reciprocative action of the frame; the space between the bottom of the channels and the lower edge of the wall being such as to permit the free passage of the upstanding boxes.

That end wall 13 of the trough structure adjacent the bar 17 of the box-positioning frame is provided with a series of spaced depending pieces 13′ that enter the respective channels and serve as stops to prevent the endwise withdrawal of boxes from the channels during the forward strokes of the frame.

As a simple and efficient means whereby the upstanding boxes progressing along the channels are efficiently turned and seated on their long narrow sides, after the boxes pass from the hopper, (so as to ensure the end to end relation of the boxes of the row,) I provide a series of pendulous gravity arms 23 which are adapted to intercept the tops of the boxes. These arms preferably comprise curved strips of metal individually pivoted at their upper ends upon a cross-rod 24 that is suitably supported in the side walls of the trough structure, the lower ends of the strips being weighted, as at 25, to maintain them normally depending by gravity above the respective channels and in the path of the upstanding boxes. During the progress of each row of boxes toward the delivery end of its channel, by the rearward strokes of the positioning frame, the longitudinally-disposed boxes in the channel pass freely below the overhanging arm, but the upper end of any upstanding box in the row impinges against the opposing underside of the arm and is thus temporarily retarded in such a manner that in the succeeding return or forward stroke of the frame the lower end of the box is carried therewith while the upper end of the box swings the opposing arm rearward, until the box escapes the arm, whereupon such box dropping, is imposed with its long narrow side upon the base of the channel, the return movement of the arm in conjunction with the vibration of the frame, contributing to the descent of the tilted box.

The trough structure is provided with a transverse wall 26 located rearwardly of and adjacent to the arms 23 so as to present an abutment which limits the backward throw of the lower ends of the arms when they are engaged by the boxes, as seen in Fig. 5. This wall extends to the top of the partitions, and is preferably provided with comb-like projections 27 which enter the respective channels sufficiently to obstruct the passage of any boxes that are not correctly seated in and disposed longitudinally of said channels. Since these arms are independently operable upon the upstanding boxes of the respective rows, a uniform arrangement of the boxes, end to end, in each row is ensured. Consequently when the leading boxes of the respective rows are propelled to and through the discharging end of the structure they are located side by side upon a suitable table 28 and in convenient position for removal.

In the present instance the structure 10 is represented as provided with twelve juxtaposed box receiving and guiding channels, and hence in each advancing stroke of the positioning frame twelve boxes are discharged upon the table, which boxes may be manually removed by an attendant and wrapped, or, if desired, they may be delivered to an automatic packaging machine.

The trough structure is shown herein in horizontal position, but it can be downwardly inclined from its receiving to its discharging end, if desired. Moreover, while the apparatus has been designed for assembling match boxes, it can be efficiently used for assembling other objects of generally rectangular form.

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

I claim—

1. In an article assembling apparatus, the combination of a trough structure having a series of longitudinally-extending article receiving and guiding channels in the bottom thereof, means for feeding articles along said channels, and a series of independent pendulous members overhanging the respective channels in a plane between the ends of the

structure so as to be engaged by the tops of upstanding progressing articles in the channels.

2. In an article assembling apparatus, the combination of a trough structure having a series of longitudinally-extending article receiving and guiding channels underlying the hopper portion and extending beyond the same, means for feeding articles along said channels from and beyond the hopper portion, and independent pendulous members overhanging the respective channels beyond the hopper so as to be engaged by upstanding progressing articles in the channels.

3. In an article assembling apparatus, the combination of a trough structure having a hopper portion at one end thereof, and a series of longitudinally-extending article receiving and guiding channels underlying said hopper portion and extending beyond the same, means for feeding the articles along said channels from and beyond the hopper, and curved gravity arms pivoted to overhang the respective channels beyond the hopper and in the path of upstanding progressing articles in the channels.

4. In an article assembling apparatus, the combination of a trough structure having a series of longitudinally-extending partitions constituting article receiving and guiding channels, the alternate partitions being longitudinally reciprocable to advance the articles along the channels, and a series of independent pendulous arms overhanging the respective channels so as to be engaged by the tops of upstanding progressing articles in the channels.

5. In an article assembling apparatus, the combination of a trough structure having a hopper portion at one end thereof, and having also a series of longitudinally extending partitions constituting article receiving and guiding channels, the alternate partitions being longitudinally reciprocable to advance the articles along said channels from and beyond the hopper portion, and a series of independent pendulous arms overhanging the respective channels so as to be engaged by the tops of upstanding progressing articles in the channels.

Signed at Barberton, in the county of Summit and State of Ohio, this 20th day of March, A. D. 1923.

MICHAEL PARIDON.