R. S. CLARKE.

CARTON FEEDING MACHINE.

APPLICATION FILED JULY 15, 1912.

1,068,323.

Patented July 22, 1913.

2 SHEETS—SHEET 1.

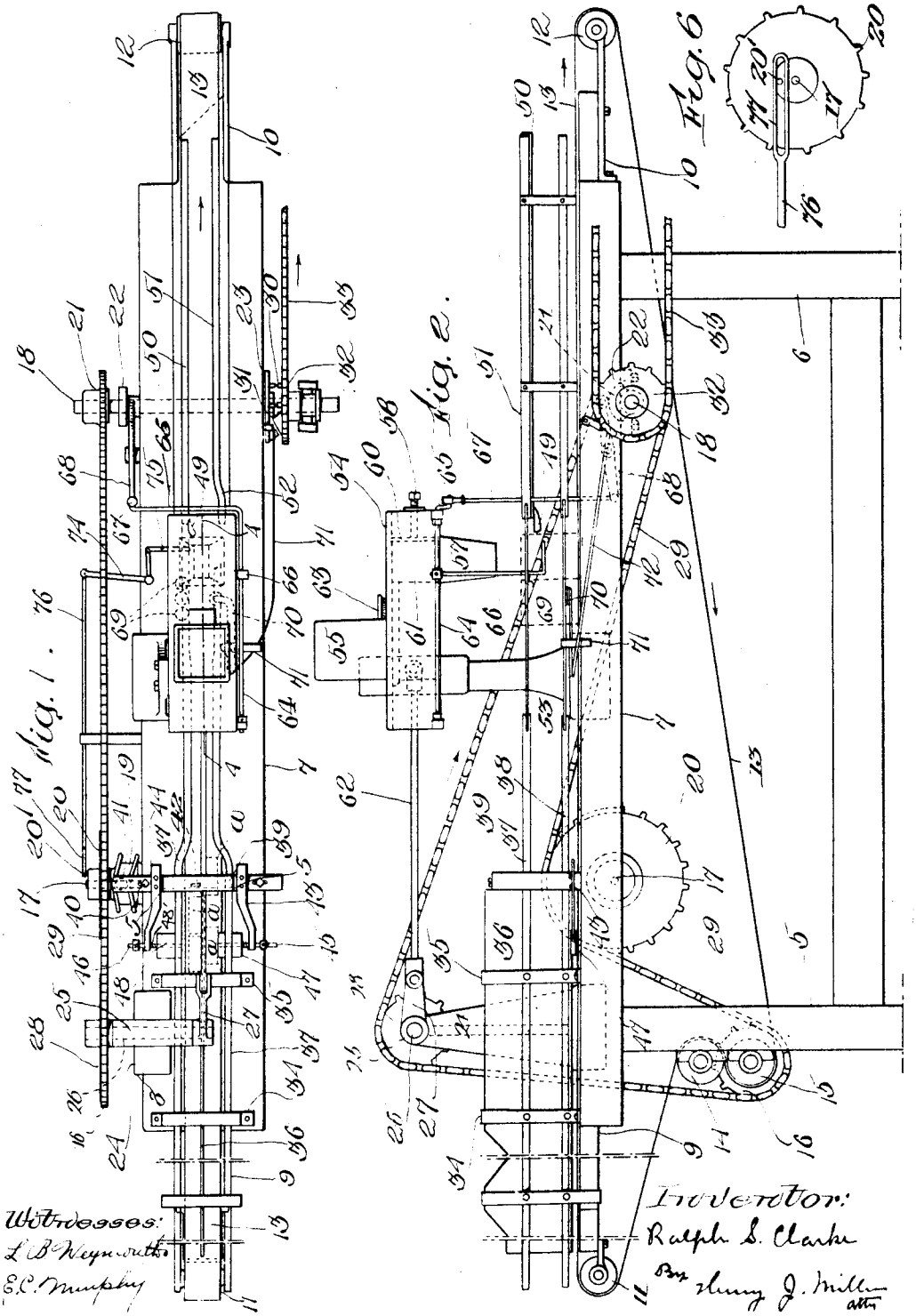


Fig. 1.

Fig. 2.

Fig. 6.

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2 SHEETS—SHEET 2.

Fig. 3.

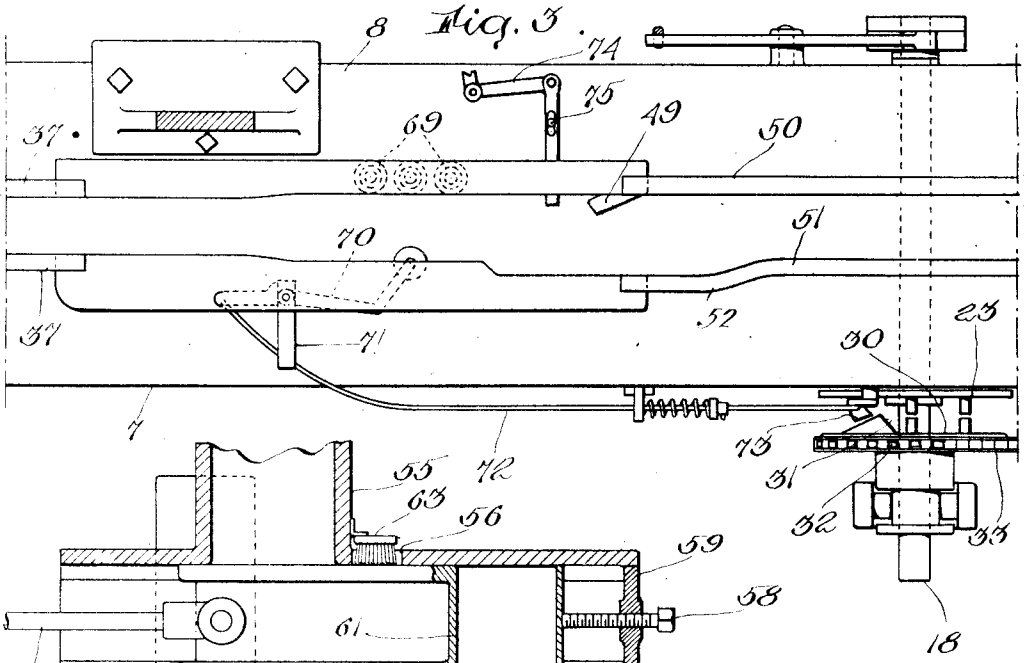


Fig. 4.

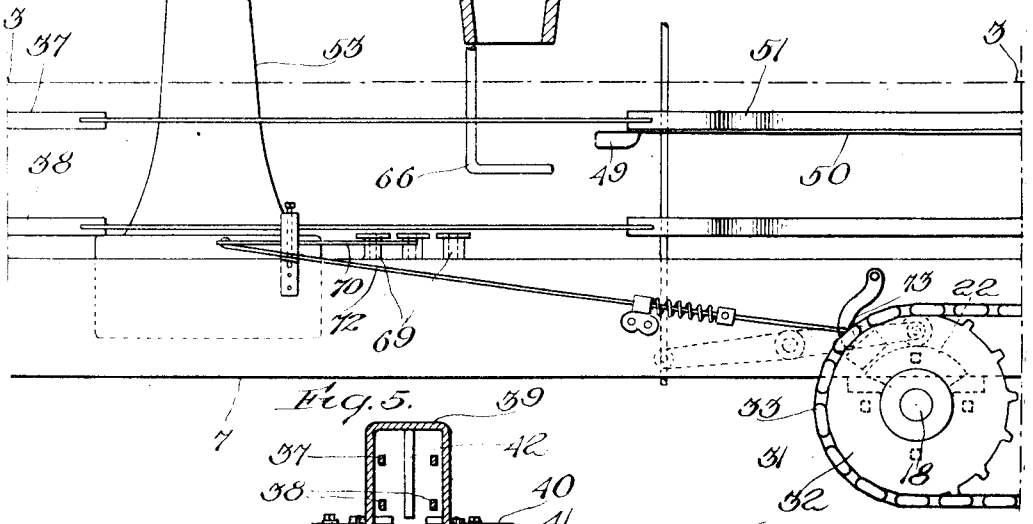


Fig. 5.

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UNITED STATES PATENT OFFICE.

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CARTON-FEEDING MACHINE.

1,068,323. Specification of Letters Patent. Patented July 22, 1913.

Application filed July 15, 1912. Serial No. 709,448.

To all whom it may concern:

Be it known that I, RALPH S. CLARKE, of East Walpole, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Carton-Feeding Machines, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

This invention has reference to improvements in machines for feeding forward cartons or boxes.

One object of the invention is to so construct a carton feeding machine adapted to feed forward two rows of cartons that cartons may, at a certain point in such movement be fed forward in a single row.

Another object of the invention is to so construct a carton feeding machine adapted to feed forward cartons in two rows that at a certain point in their movement cartons in one row may alternately be detained while the other row of cartons moves forward the space of a single carton.

Another object of the invention is to provide a novel stop motion adapted to be held out of operation by the presence of a carton at the filling position.

Other objects of the invention will appear from the following description.

The invention consists in the novel construction of the carton switching mechanism.

The invention also consists in such other novel features of construction and combination of parts as shall hereinafter be more fully described and pointed out in the claims.

Figure 1 represents a plan view of the improved carton feeding and filling machine. Fig. 2 represents a side elevation of the same. Fig. 3 represents an enlarged sectional plan view of the stop motion device and one of the carton switching mechanisms as taken on line 3—3, Fig. 4. Fig. 4 represents an enlarged side view of portions of the machine partially in vertical section as taken on line 4—4, Fig. 1. Fig. 5 represents a cross sectional view of parts of the machine as taken on line 5—5, Fig. 1, to more clearly show the carton feeding and switching bridge. Fig. 6, represents a side view of parts of the mechanism to show details of construction.

Similar reference characters designate corresponding parts throughout.

As shown in the drawings in its preferred form 5 and 6 indicate the standards for the main frame having the top members 7 and 8 and the end brackets 9 and 10 in which are mounted shafts for the belt rolls 11 and 12 carrying the carton feed belt 13 which extends between said members 7 and 8 and over said rolls 11 and 12 and thence between the drive rolls 14 and 15 mounted on shafts carried by brackets attached to the standard 5, the roll 15 having the sprocket 16.

Journaled in bearings carried by the frame members 7 and 8 are the shafts 17 and 18 of which shaft 17 has the cam 19 and the sprocket 20 while shaft 18 has the sprocket 21, the cam 22 and the clutch member 23.

Mounted on the member 8 is the standard 24 having at its upper end the bearing sleeve 25 in which is journaled the shaft 26 having at one end the crank arm 27 and at the other end the sprocket 28. All of the sprockets 16, 20, 21 and 28 are engaged by the chain 29 whereby when the shaft 18 is driven all of said sprockets and their connected mechanism will be operated. Loosely mounted on shaft 18 is the clutch member 30 having the cam 31 and the sprocket 32 which is driven by chain 33 whereby when clutch members 23 and 30 are in engagement shaft 18 is operated.

Mounted on the members 7 and 8 are the fixed bridges 34 and 35 carrying the depending plate or partition 36 which, with the side guides or bars 37 and 38 secured to said bridges, forms two channels in which two rows of cartons may be carried forward by the single belt 13. At a point in the length of the frame members 7 and 8 adjacent the location of shaft 17 the guides 37 and 38 curve inward to contract the width of the carton delivery channel formed therebetween and therefore before the cartons reach this point it is necessary to switch the cartons from the double row of cartons to a single row, this is accomplished by means of the switching bridge 39 which is

mounted to slide transversely of the members 7 and 8 and having the extension or arm 40 furnished with the pin 41, indicated in Fig. 5, which is engaged with cam 19 of shaft 17 whereby said bridge 39 is moved back and forth at each rotation of said shaft 17. This bridge 39 has the depending stop arm 42 which moves with the bridge 39 and is alternately brought into position to intercept the first cartons of the respective rows as said cartons approach this point.

Mounted on the bridge 39 are the arms 43 and 44 which carry the rods 45 and 46 which extend inward beneath the guide rails 38, 38 and are provided with the carton presser blocks 47 and 48 positioned to act against the second cartons *a*, *a* of the respective rows and to press said cartons alternately against the partition 36 to resist the advance movement of the cartons. The presser-blocks are yieldingly-mounted, being backed by springs 48′ on the rods 45 and 46 between said blocks and the arms 43 and 44. By the use of this carton switching mechanism it will be seen that as the two rows of cartons are carried forward by belt 13, the first carton of one row or line will be intercepted by the stop arm 42 while the second carton of the other row will be acted on by the presser block 47 or 48, as the case may be, while the first carton of this second row is free to advance with belt 13 into the narrower channel between guides 37 and 38, and that, subsequently, in the movement of bridge 39 the stop arm 42 thereof will be brought to a position to intercept said second carton of the second row as such carton is released by its related presser block 47 or 48. At the same time the movement of stop arm 42 laterally opens the way for the forward movement of the first carton of the first row while the presser block 47 or 48 related to the first row of cartons is operated to press the second carton of said first row against the partition 36. The cartons now advance in a single row or line to a position beneath the filling chute at which point the first carton is intercepted by the stop 49 of the guide rail 50 which with the guide rail 51 having the outwardly bent end 52 forms the upper portion of final guideway of this portion of the machine.

Mounted on the frame member 8 is the standard 53 having at its upper portion the box guide 54 furnished with the inlet chute 55, the opening 56, the tapering outlet chute 57, and the stop screw 58 adjustably mounted in the cross member 59 of said box guide 54.

In order to take material entering through the inlet chute 55 and deliver said material to the outlet chute 57 the box guide 54 is furnished with the slidable carrier 60 having the receptacle 61 open at its top and bottom which carrier is operated by the connecting rod 62 which is suitably connected with the pin of crank 27 of shaft 25.

In order to prevent the clogging of material between the top of carrier 60 and the box guide 54 I provide the brush 63 which is secured to the inlet chute 55 and extends through the opening 56 in the top of box guide 54 and sweeps the top of the carrier 60.

Provision is made to position the cartons laterally to insure their accurate positioning relative to the delivery chute 57. This mechanism comprises the shaft 64 journaled in bearings at the side of box guide 54 and having the crank 65 and the depending presser arm 66 the lower end of which is adapted to press against the side of a carton as said carton approaches the filling position. Crank 65 is connected by rod 67 with the lever 68 which is pivotally mounted on the side of frame member 8 and is actuated by the rise of cam 22 on shaft 18.

Provision is made to detect the absence of a second carton adjacent the filling position and to stop the machine in such event, this mechanism may be considered to include the series of vertical rolls 69 mounted at one side of the carton path and the feeler 70 pivotally mounted on the bracket 71 at the other side of the carton path and connected by the spring actuated rod 72 with the pivoted pawl 73 mounted adjacent clutch member 23. When said feeler 70 is permitted, by the absence of a carton, to swing inward unduly the rod 72 is moved by its spring toward the shaft 18 and pawl 73 connected with said rod 72 is actuated whereby the free bevel end of said pawl is swung to a position to intercept the cam 31 of clutch member 30 whereby, in the rotation of said clutch member its cam 31 will ride over the end of pawl 73 and thereby be pushed away from clutch member 23 resulting in the sparation of clutch member 30 from clutch member 23 whereupon sprocket 32 and its clutch member will be released from driving connection with shaft 18.

Pivotally mounted on the frame member 8 adjacent the filling position is the bent lever 74, having connected at one end the carton kick off rod 75, adapted, when moved inward, to kick the filled carton out of engagement with the stop 49 and the other end of lever 74 being operated by the rod 76 having the slotted member 77 engaged by pin 20′ on the hub of sprocket 20 to effect the intermittent reciprocating movement of said rod 76, see Fig. 6.

When the first of the line of cartons is intercepted by the stop 49 the presser 66 acts thereon to hold the carton against the guide rail forming the connection between

rail 50 and one of the rails 37 and said carton is in position to receive material from the chute 57. In the forward movement of a series of cartons toward the filling position, the first of said series of cartons is arrested from movement by the stop 49. At or about this time the presser 66 is swung by its operating mechanism and acts to hold the first carton of said series against a portion of the guide rail with the mouth of the carton beneath the chute 57. The kick-off rod 75 is now actuated to move the carton laterally from its engagement with the stop 49 whereupon said carton is carried forward by belt 13 between the guide rails 50 and 51, the bend 52 of rail 51 affording clearance for the carton. Such lateral movement of the carton is permitted by the release movement of the presser 66 as the crank 65 is swung by its operating mechanism. If a second carton is present behind said first carton the detector or feeler 70 is held outward thereby and pawl 73 is held out of engagement with the cam 31 of clutch member 30 but if no second carton is present at such point the feeler 70 is free to swing inward for the purpose of stopping the machine as above described.

Having thus described my invention I claim as new and desire to secure by Letters Patent.

1. A carton feeding machine comprising a single feeding element for advancing two rows or lines of cartons, means for operating said feeding element, and a switching mechanism for changing said double row of cartons, said switching mechanism including means for retarding the forward movement alternately of cartons in both of said double rows.

2. A carton feeding machine comprising a single feeding element for advancing two rows or lines of cartons simultaneously, and means for switching cartons from both of said rows or lines to a single row while said cartons remain on said advancing element.

3. A carton feeding machine comprising a feed belt, a pair of side guides, a central guide, and movable means for intercepting cartons at both sides of said central guide, said feed belt extending beyond said intercepting means.

4. A carton feeding machine comprising a feed belt, a pair of side guides, a central guide, and means acting to press certain of the cartons, carried forward by said belt, against said central guide.

5. A carton feeding machine comprising a feed belt, a central guide above said feed belt, a pair of side guides bent inward beyond the end of said central guide, means operating alternately to intercept cartons between said central guide and the respective side guides, and means for resisting the forward movement of cartons before they reach said intercepting means.

6. A carton feeding machine comprising a feed belt, a central guide, a pair of side guides, a laterally movable carton intercepting means, and means connected to operate with said carton intercepting means for pressing cartons advancing at the sides of said central guide against said central guide to resist the movement of said cartons.

7. A carton feeding machine comprising a feed belt, a central guide, a pair of side guides, a bridge mounted to move transversely of said belt, and having a member adapted to intercept cartons alternately at the respective sides of said central guide, means for operating said bridge and means carried by said bridge for pressing cartons against said central guide.

8. A carton feeding machine comprising a feed belt, a central guide, a pair of side guides, a bridge mounted to move transversely of said belt and having a depending stop arm, means for operating said bridge, and a pair of arms mounted on said bridge and having yielding pressers extending beneath said side guides.

9. A carton feeding machine comprising a feed belt, a cam shaft extending transversely of said belt, a cam on said shaft, a bridge mounted to move transversely of said belt and having a follower pin engaged with said cam and a depending carton intercepting member, a pair of arms mounted on said bridge and having inwardly extending yielding pressers, a central guide positioned above said belt, and a pair of side guides parallel with said central guide and curved inwardly to form a single contracted way beyond said bridge.

10. A carton feeding machine comprising a single feed belt, operating means therefor including a clutch, means for guiding cartons in two rows as they are advanced by said belt, means for switching cartons from said two rows to a single row, means for intercepting a carton in said single row at the filling position, means for moving a carton laterally of said intercepting means, means for detecting the absence of a carton back of the filling position, and means actuated by said detecting means for releasing said clutch of the operating means.

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