R. H. BROWN.

CARTON FEEDING MACHINE.

APPLICATION FILED SEPT. 18, 1913.

1,133,532.

Patented Mar. 30, 1915.

2 SHEETS—SHEET 1.

Fig. 1

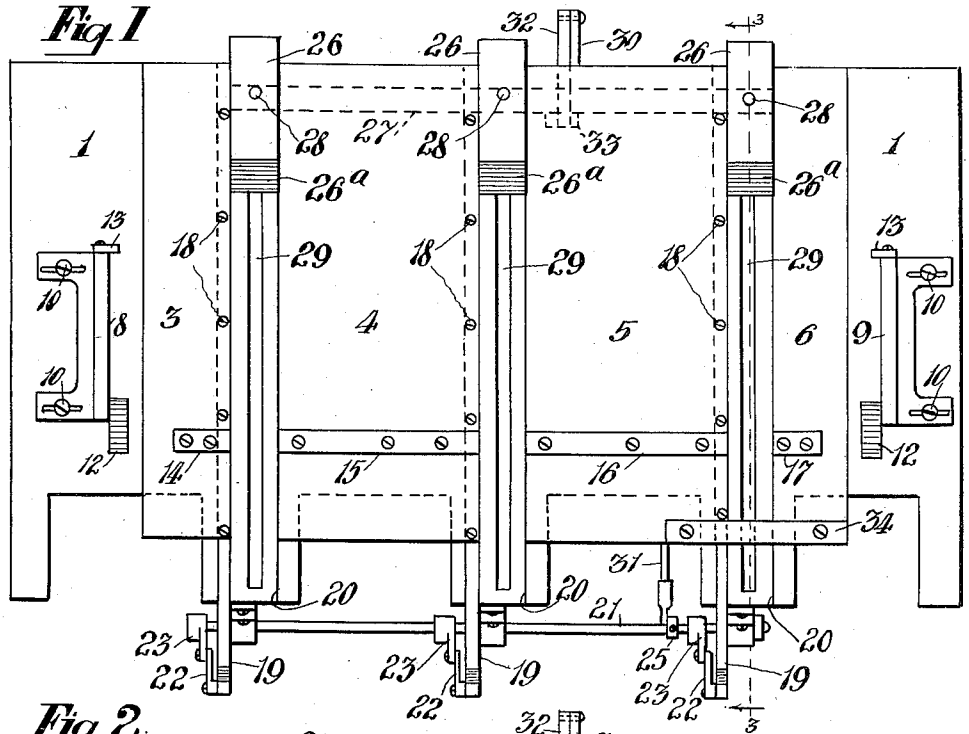
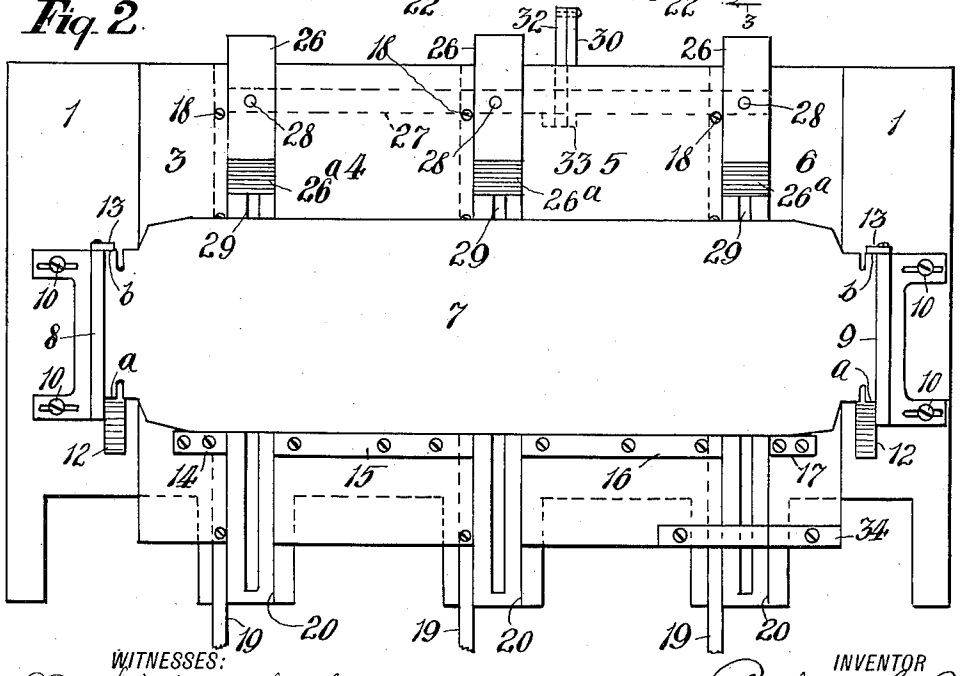


Fig. 2



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Fig. 3

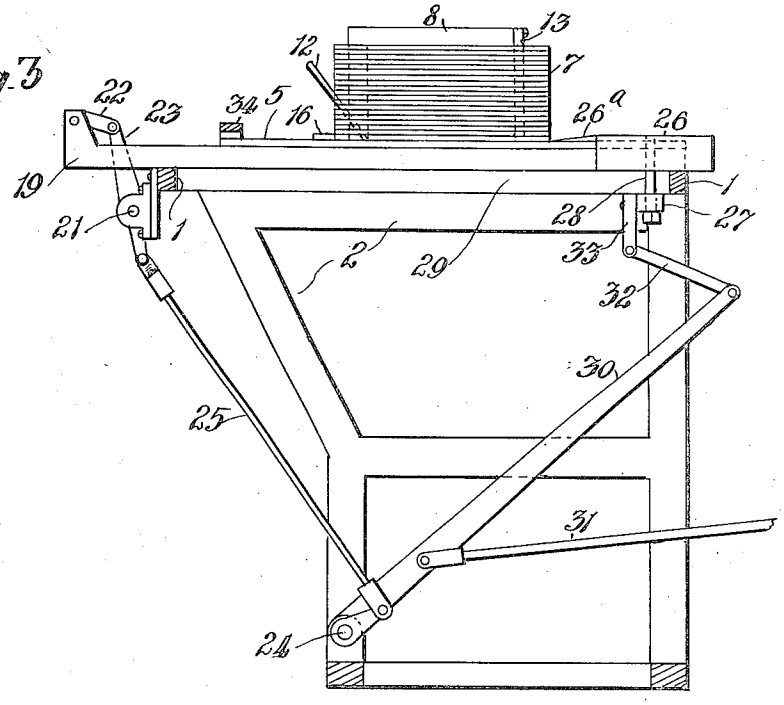
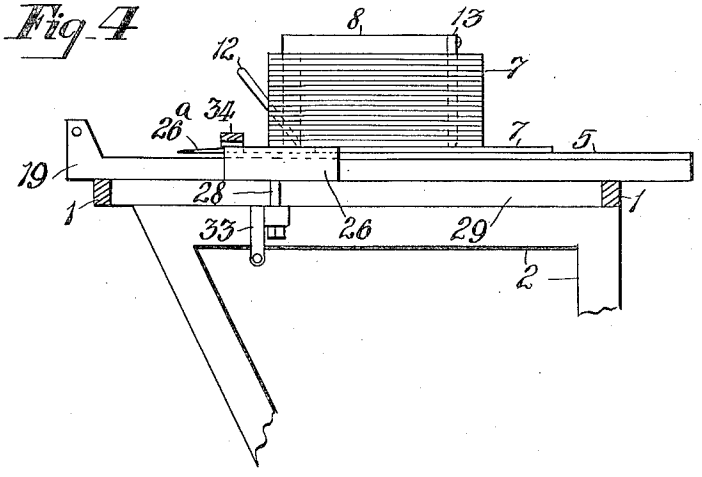


Fig. 4



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REUBEN H. BROWN, OF NEW HAVEN, CONNECTICUT.

CARTON-FEEDING MACHINE.

1,133,532. Specification of Letters Patent. Patented Mar. 30, 1915.

Application filed September 18, 1913. Serial No. 790,409.

To all whom it may concern:

Be it known that I, REUBEN H. BROWN, citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Carton-Feeding Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to mechanism for automatically feeding cartons, and particularly to feeding the lower carton from a pile of cartons.

Referring to the drawings wherein the same figures and letters of reference indicate like parts throughout the several views: Figure 1 represents an upper plan view of the machine; Fig. 2 represents an upper plan view of the machine, showing a pile of cartons thereon, and broken view of the pusher bars; Fig. 3 is a vertical sectional view of the machine bed, the table and the bridge spanning two of the carrier plates through line 3, 3 of Fig. 1, also a broken view of one of the operating levers; and Fig. 4 is a broken side elevation of the machine partly in section, showing the bottom carton partially removed from the pile of cartons.

The table 1 of the machine frame 2 supports the longitudinally movable carton carrier plates 3, 4, 5 and 6, on which plates rest the pile of cartons 7. The ends of which abut against the guides 8 and 9. These guides are adjustably mounted on the table by the screws 10 to accommodate for the different lengths of cartons.

12 are incline guides attached to the guides 8 and 9 to assist in depositing and locating the cartons on to the carrier plates in connection with the stops 13 on the opposite ends of the guides 8 and 9. In depositing the cartons, the edge *a* of the necks of said cartons, contact with the incline guides 12 in their descent, and when on the carrier plates the edges *b* of said necks will be brought against the stops 13, all except the lowest carton of the pile which is allowed to pass under the lower ends of said stops when ejected from the pile of cartons in the manner presently to be described.

14, 15, 16 and 17 are thin metal strips, preferably thinner than a carton, secured to the said carton carrier plates 3, 4, etc., to serve as initial ejectors or carton starters for the lower carton of the pile. One edge of these plates are secured by screws 18 to the pusher bars 19, located at one side of the grooves or channels 20 in the table. The ends of these bars are connected with the small upper rock shaft 21 (Fig. 3) through the medium of the links 22 and levers 23 secured to said shaft. This shaft is actuated from the larger and lower rock shaft 24 through the medium of the lever 25.

26 are the final carton ejectors that engage with the lower carton that has been partially ejected from under the pile to push it into rolls, folding mechanism or other mechanism not shown. These final ejectors are operatively located in the channels 20 and are connected together so as to move in unison by means of the bar 27. Each ejector is connected to this bar by bolts 28, projecting through the long open slots 29 at the bottom of the channels 20.

The rock shaft 24 is actuated through the medium of the lever 30 secured thereto, and said lever is actuated by the rod 31, which rod is connected with a proper source of power—not shown.

The upper end of the lever 30 is pivotally connected to one end of the link 32, and the opposite end of said link is pivoted to the arm 33 secured to the bar 27. The inner inclined ends 26^a of the final ejectors 26 permit said ejectors to slip under the pile of cartons on their backward stroke so as not to displace them or disturb the carton that has been partially pushed from under the pile of cartons.

The normal position of the preliminary pushers or carton starters and the final carton-ejectors is shown at Fig. 1, the former being close to the edge of the cartons as shown in Fig. 2. Both starters and ejectors move at the same instant and in opposite directions, but at a different rate of speed, so that, when the carton carrier plates have advanced the bottom carton a distance equal to their forward travel—Fig. 4—the ejectors 26 will have reached their extreme backward position, viz.: in front or outside of the cartons. As soon as this happens, the backward movement of the carton carrier plates and the forward movement of the ejectors will occur simultaneously; the latter pushing the partially ejected carton from off the table and the former returning to their normal position. The distance traveled by the final ejectors and the rate of speed at which they

must necessarily move to cover this distance and achieve economical results by pushing a carton into folding mechanism—not shown—as fast as a folded carton is ejected therefrom, would preclude their use without the coöperation of the preliminary starters for the reason that as the cartons are made of heavy cardboard and cover a large area, the contact of the swift moving ejectors with the underlying carton would be in the nature of a violent blow that would break the edges of the carton before its inertia could be overcome. To counteract this unavoidable result due to the exclusive use of the final ejectors, the carton carrier plates with their starters are moved very slowly to partially remove the underlying carton from beneath the pile. The only friction to be overcome is that between the upper surface of the lower carton and the weight of the overlying pile of cartons, as there can be no friction between the movable carrier plates and the cartons. The carrier plates, as previously mentioned, will have advanced the lower carton a distance sufficient to practically eliminate any friction when the final ejectors are brought in contact with such advanced carton. In other words, the resistance offered by this advanced carton will be so slight that it will be easily removed without being damaged when engaged by the swift moving ejectors.

All of the carton carrier plates except 6 are attached to the pusher bars 19, and this plate, in order to move in unison with the other plates, is connected with the plate 5 by the bridge 34, spanning the channel way 20. The travel of the carton carrier plates may be increased or decreased by simply changing the length of the links 22 or by any other well known means.

Having thus described my invention what I claim is:—

1. In a machine of the character described, carton carrier plates adapted to support a pile of cartons, means on said plates adapted to engage one edge of the underlying carton, carton ejectors, means for simultaneously reciprocating said plates and ejectors in opposite directions and at different speeds, the former to partially advance the underlying carton from beneath the pile, and the latter adapted to travel at a higher rate of speed to remove said carton from the pile.

2. In a machine of the character described, carrier plates adapted to support a pile of cartons, means on said plates for engaging one edge of the underlying carton, pusher bars attached to the carrier plates, carton ejectors, means for simultaneously actuating said plates and ejectors in opposite directions and at different rates of speed, the former to partially remove an underlying carton from the pile and the latter to complete its removal.

In testimony whereof I affix my signature in presence of two witnesses.

REUBEN H. BROWN.

Witnesses:
GEO. E. SIVERS,
RAYMOND J. KEEFE.