Nov. 24, 1925. 1,562,582

G. D. PARKER

AUTOMATIC LOADING DEVICE FOR ELEVATORS

Filed April 2, 1923 2 Sheets-Sheet 1

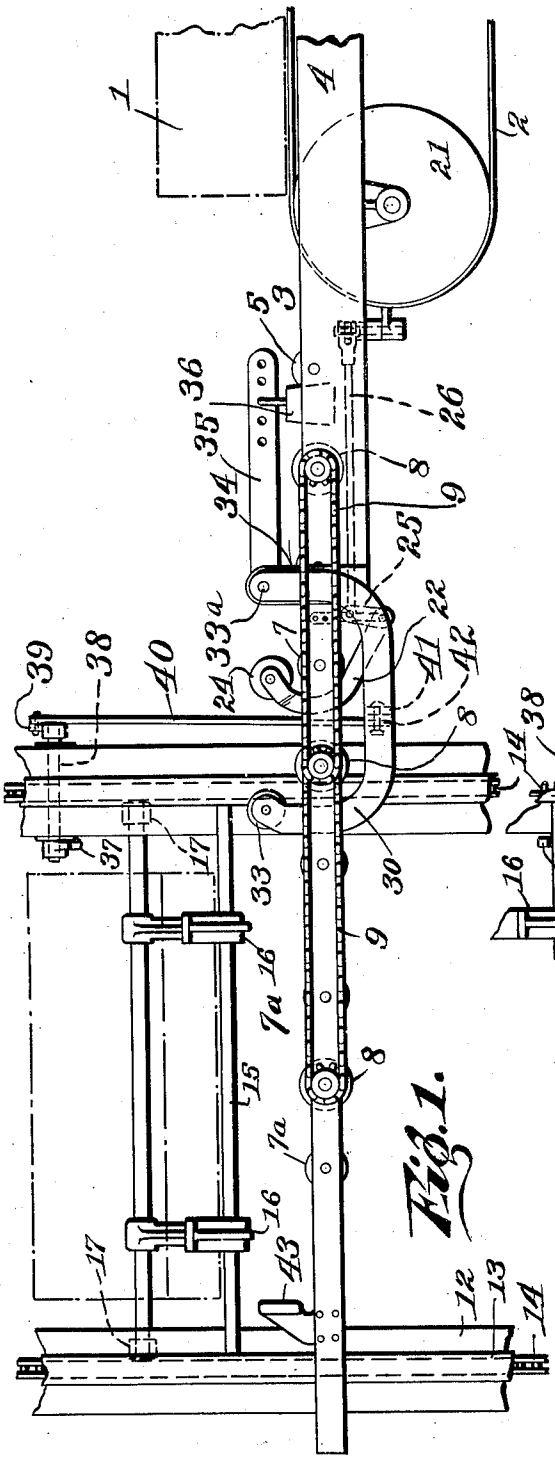


Fig. 1.

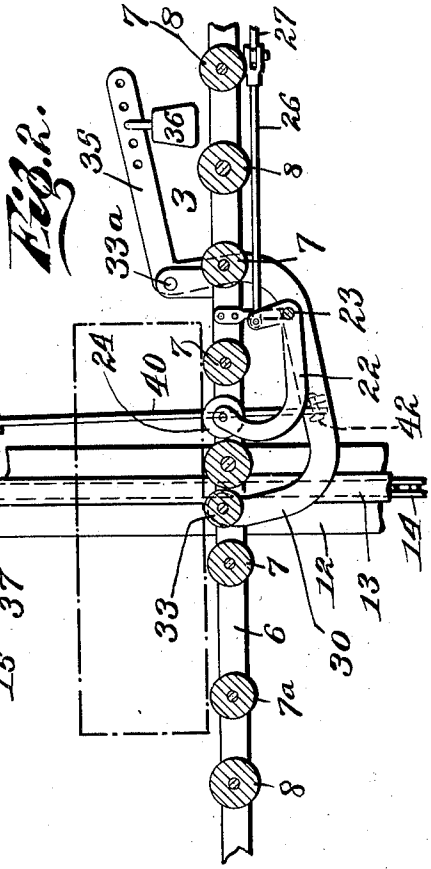


Fig. 2.

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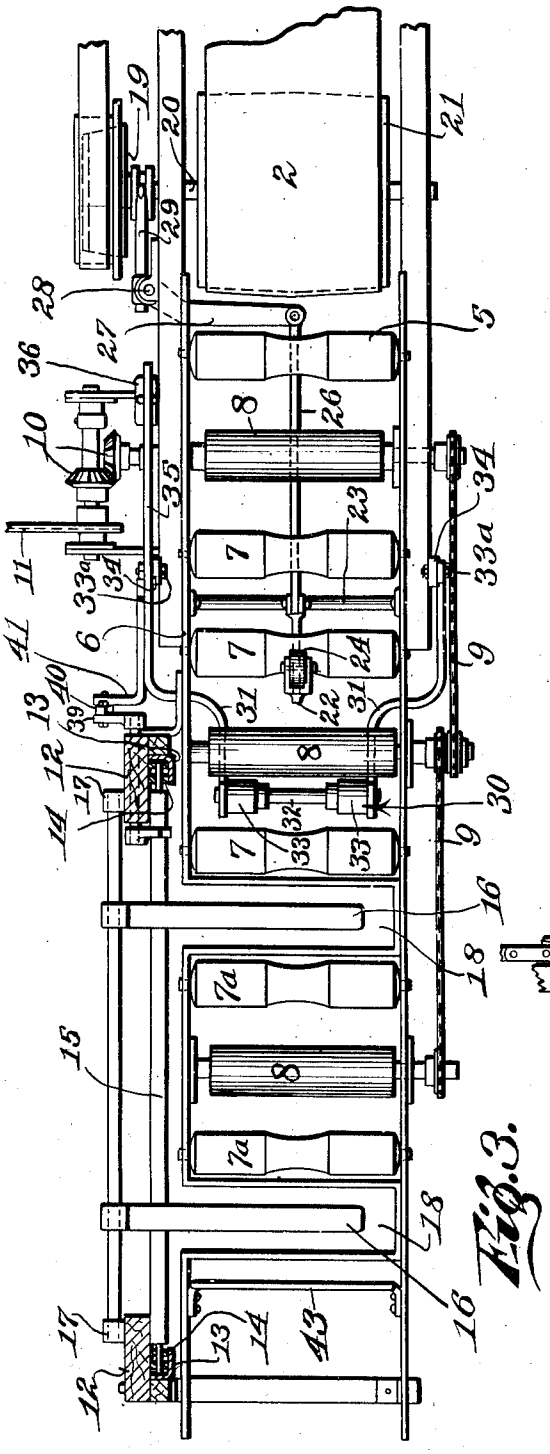


Fig. 3.

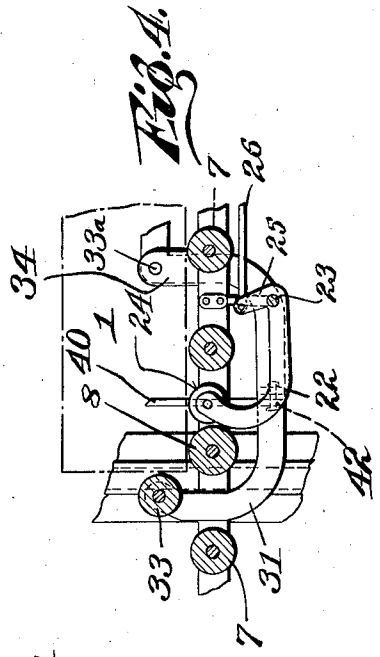


Fig. 4.

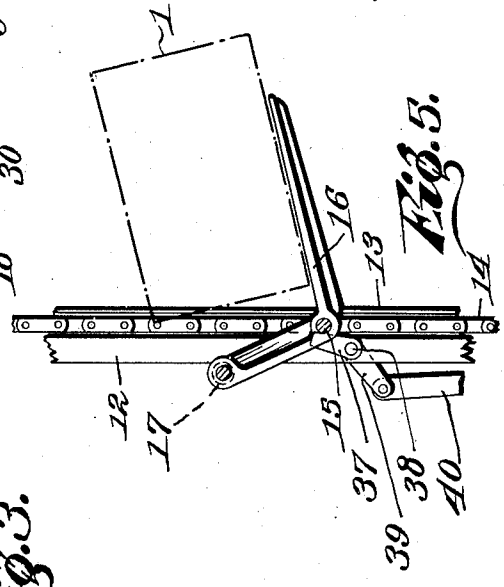


Fig. 5.

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Patented Nov. 24, 1925. 1,562,582

UNITED STATES PATENT OFFICE.

GEORGE D. PARKER, OF RIVERSIDE, CALIFORNIA, ASSIGNOR TO STEBLER PARKER CO., OF RIVERSIDE, CALIFORNIA, A CORPORATION OF CALIFORNIA.

AUTOMATIC LOADING DEVICE FOR ELEVATORS.

Application filed April 2, 1923. Serial No. 629,229.

To all whom it may concern:

Be it known that I, GEORGE D. PARKER, a citizen of the United States, residing at Riverside, in the county of Riverside and State of California, have invented a new and useful Automatic Loading Device for Elevators, of which the following is a specification.

This invention relates to mechanism for feeding forward articles, for example, boxes, one at a time, and may be employed for loading boxes or other articles onto an elevator. The general object of the invention is to provide simple mechanism for advancing the boxes one by one into a position adjacent the elevator or other point of delivery, and then at the proper time to effect the advance of the box into the desired position, for example into the path of the carriages or cars of the elevator; also to provide a mechanism of this kind in which the advance of the box from its waiting position near the elevator will occur without delay. The invention enables boxes to be taken one by one from a conveyer carrying the boxes end to end without being regularly spaced, and provides means for rapidly advancing the foremost box at a predetermined instant. For this reason the invention will cooperate very effectively with another mechanism operating in a timed relation, such as a continuously driven elevator.

Further objects of the invention will appear hereinafter.

The invention consists in the novel parts and combination of parts to be described hereinafter, all of which contribute to produce an efficient automatic loading device.

A preferred embodiment of the invention is described in the following specification while the broad scope of the invention is pointed out in the appended claims.

In the drawing:

Figure 1 is a side elevation of a loading apparatus embodying my invention, certain parts being broken away.

Fig. 2 is a vertical section through the feeding track of the device and illustrating the parts in the relation which they assume when the box is being advanced into alinement with the elevator cars or carriages.

Fig. 3 is a plan of the mechanism with the elevator mechanism shown in horizontal cross section.

Fig. 4 is a view similar to Figure 2, but showing the relation of the parts when a box is held in its waiting position in readiness to be moved automatically into the path of the elevator carriages, and

Fig. 5 is a vertical section taken through the elevator at one of the cars or carriages, and illustrating how the box is held by the same.

The boxes or other articles indicated by the numeral 1 are advanced on a conveyer, such as a belt 2, so that the boxes are delivered in succession onto a feeding track 3, and in order to facilitate the delivery the stringers 4 which support the conveyer 2 may also support an idle roller 5 over which the box passes onto the feeding track.

The feeding track consists of a frame 6 carrying a plurality of idle rollers 7, 7^a, and feeding mechanism for advancing the boxes, and this feeding mechanism is preferably continuously driven and comprises a plurality of horizontal rollers 8. In the present instance there are three of these rollers and their shafts are connected in series by chains 9, and the shaft of one of the rollers is driven continuously through bevel gears 10 actuated by a continuously driven sprocket chain 11. The feeding mechanism is constructed so that it will operate without delay to feed the boxes into position to be taken by the elevator. For this reason this mechanism is continuously driven and I provide automatic means for preventing the boxes from passing into the path of the elevator cars until the proper moment arrives. When this moment arrives the stop means which is holding back the box is withdrawn and the feeding mechanism then immediately advances the box. This mode of operation enables the boxes to be fed onto the elevator carriages very rapidly as there is no delay necessary to the starting and stopping of the feeding mechanism. The elevator may be of any suitable construction and may comprise two upright guide stringers 12 having channels 13 in which endless chains 14 run, the said chains being connected by cross bars 15 which carry angle form brackets 16 which constitute carriages or cars for the elevator, the substantially vertical arms of these brackets 16 having a bar carrying rollers 17 to run along the face of the stringers 12. The frame 6 is extended over into the path of the elevator carriages and at this point is formed with gaps

18 through which the brackets 16 pass upwardly.

In the path of the box as it passes onto or along the feeding mechanism, I provide a movable member which is actuated by the passing box, and I provide means whereby this movable member arrests the driving of the conveyer 2. For this purpose I provide a clutch 19, see Figure 3, for the shaft 20 of the belt pulley 21 that carries the belt conveyer 2, and the movable stop referred to may be in the form of an arm 22 which projects up through the feeding track and is mounted to rock on a rock shaft 23 extending across under the track. The upper end of this arm carries a roller 24 which is engaged by the forward end of the box as it progresses along the feeding track. This depresses the roller and the arm 22 into the position shown in Figure 4 and when this movement occurs an arm 25 carried by the rock shaft 23 exerts a pull upon a link 26 and actuates a lever 27 pivoted at 28 and having an arm 29 which opens the clutch 19. The opening of this clutch, of course, arrests the further movement of the conveyer belt 2 and prevents another box from being fed onto the feeding track.

After the box depresses the movable arm 22 it is advanced further by the feeding mechanism of the feeding track until it comes up against a movable stop 30 which comprises two lever arms 31, the ends of which are bent inwardly and connected by a shaft 32 carrying a roller or rollers 33. These rollers engage the forward end of the box, see Figure 4, and stop it in a waiting position near the elevator and ready to be advanced onto the elevator. The arms 31 are pivotally supported on pins 33[a] carried on standards 34 at the sides of the track and one of the arms is extended beyond its standard so as to form a counter-weight arm 35 carrying a movable counter-weight 36. While the box is in this position it should be understood that the feeding mechanism is continuously driven so that it will feed the box forward immediately if the movable stop 30 is withdrawn. The counter-weight 36 normally holds the stop 30 in its elevated position, that is to say, in its normal position.

I provide a tripping device actuated by the elevator mechanism and so timed in its operation that it will effect the withdrawal of the movable stop 30 at the proper time to enable the box to be advanced into the path of the elevator carriages, that is, into position over the gaps 18 through which the brackets 16 pass upwardly. In order to accomplish this I provide a trip lever 37, the free end of which projects into the path of the parts 15 of the elevator carriages, and this lever is rigidly attached to a rock shaft 38, the other end of which carries an arm 39 connected by a link 40 with a bracket 41 rigidly secured to one of the aforesaid arms 31; that is to say the link 40 extends down to the side of the track and is attached by a loose connection 42 to the bracket 41. This loose connection enables the arm 37 to exert a downward trust through the link 40, on the movable stop 30, thereby depressing the stop and withdrawing it from the path of the box which is then immediately advanced by the feeding mechanism. This will advance the box into position over the gaps 18 where it is supported on the left hand continuously driven roller 8 and two adjacent idle rollers 7[a], which are similar to the rollers 7 already described. The box then comes up against a fixed stop 43 which holds it in the path of the carriages of the elevator. The next to move up takes the box from the feeding mechanism and supports it, see Figure 5. The clutch 19 includes a spring not illustrated, which normally holds the clutch closed, and the movable member 22 in its elevated position.

The loading apparatus embodying this invention will operate efficiently and without delay to deliver the boxes onto the elevator carriages in succession and the automatic control of the conveyer 2 prevents any possibility of more than one box going through at a time to the elevator.

The speed of the feeding mechanism is increased, that is to say, it is greater than that of the conveyer. This insures that the foremost box will be advanced sufficiently rapidly to create a gap between it and the next box; this gap permits the stop 30 to move back into the path of the boxes.

It is understood that the embodiment of the invention described herein is only one of the many embodiments this invention may take and I do not wish to be limited in the practice of my invention nor in my claims to the particular embodiment set forth.

What I claim is:—

1. In an automatic elevator loading apparatus, the combination of a conveyer for advancing the boxes, an elevator including carriages and a guide-way for the carriages, a feeding track between the conveyer and the elevator for receiving the boxes from the conveyer, a movable member in the path of the box as it passes along the feeding track from the conveyer, means actuated thereby and connected to the conveyer for arresting the movement of the conveyer, and automatic means for advancing the box and stopping the same in the path of the carriages of the elevator.

2. In an automatic elevator loading apparatus, the combination of a power-driven conveyer for advancing the boxes, an elevator including carriages and a guide-way for the carriages, a feeding track between

the conveyer and the elevator for receiving the boxes from the conveyer, a movable member in the path of the box as it passes along the feeding track from the conveyer, means actuated thereby for arresting the movement of the conveyer, feeding mechanism in the track, a movable stop for holding the box out of the path of the elevator carriages, and means controlled by the elevator mechanism to withdraw the stop and permit the box to advance into the path of the carriages.

3. In an automatic elevator loading apparatus, the combination of a conveyer for advancing the boxes, an elevator including carriages and a guide-way for the carriages, a feeding track between the conveyer and the elevator for receiving the boxes from the conveyer, a movable member in the path of the box as it passes along the feeding track from the conveyer, means actuated thereby for arresting the operation of the conveyer, continuously driven feeding mechanism located in the feeding track for supporting the box, a movable stop in the path of the box and preventing the feeding mechanism from feeding the same forward, a trip-device actuated by the elevator mechanism for withdrawing the movable stop to permit the feeding mechanism to advance the box into the path of the elevator carriages, and a fixed stop in the path of the box to stop the same in alinement with the carriages.

4. In an automatic elevator loading apparatus, the combination of a conveyer for advancing the boxes, an elevator including carriages and a guide-way for the carriages, a feeding track between the conveyer and the elevator for receiving the boxes from the conveyer, a movable member in the path of the box as it passes along the feeding track from the conveyer, means actuated thereby for arresting the operation of the conveyer, continuously driven feeding mechanism located in the feeding track for supporting a box and for advancing the same to the elevator, a movable stop in the path of the box for holding the same on the feeding mechanism and preventing the feeding mechanism from advancing the box, a trip-device actuated by the elevator mechanism for withdrawing the movable stop and thereby permit the feeding mechanism to advance the box into the path of the elevator carriage, and means for returning the movable stop to its normal position after the box has passed it.

5. In an automatic elevator loading apparatus, the combination of a conveyer for advancing the boxes, an elevator including carriages and a guide-way for the carriages, a feeding track between the conveyer and the elevator for receiving the boxes from the conveyer, a movable arm in the path of the box as it passes along the feeding track from the conveyer, projecting up through the track and having a roller in position to be engaged by the box to depress the arm, a movable stop beyond the movable arm for holding the box out of the path of the elevator carriages, means actuated by the movable arm for arresting the operation of the conveyer, a trip device actuated by the elevator mechanism for operating the movable stop to withdraw the same, and feeding mechanism located in the feeding track under the box for advancing the same into the path of the elevator carriages.

6. In an automatic apparatus for loading boxes onto an elevator, the combination of elevator mechanism including carriages and a guide way for the carriages, a feeding track for feeding the boxes into the path of the elevator carriages, feeding mechanism including a continuously driven roller located adjacent the elevator for engaging the under side of the box, a movable stop in the path of the box controlled automatically by the elevator mechanism to release the box and permit the feeding mechanism to advance the box into the path of the elevator, a fixed stop beyond the elevator, said feeding mechanism including a continuously driven roller located under the box when in position to be taken by the elevator and operating to engage the under side of the box and advance and hold the same against the fixed stop.

7. In an automatic loading apparatus, the combination of elevator mechanism including carriages, a feeding track for feeding boxes into the path of the elevator carriages, a conveyer for carrying the boxes end to end to deliver them to the feeding track, feeding mechanism in the feeding track operating to advance the foremost box when received from the conveyer, at a greater speed than the conveyer, a stop projecting into the path of the foremost box to prevent the same from passing into the path of the carriages, and means controlled by the elevator for withdrawing the stop to permit the foremost box to pass it and into the path of the carriages, the greater speed of said feeding mechanism operating to create a gap between the boxes to permit the stop to move back into the space between the foremost box and the next box coming from the conveyer.

8. In an automatic loading apparatus, the combination of elevator mechanism including carriages, a feeding track for feeding boxes into the path of the elevator carriages, a conveyer for carrying the boxes end to end to deliver them to the feeding track, feeding mechanism in the feeding track operating to advance the foremost box when received from the conveyer, at a greater speed

than the conveyer, a stop projecting into the path of the foremost box to prevent the same from passing into the path of the carriages, means controlled by the elevator for withdrawing the stop to permit the foremost box to pass it and into the path of the carriages, the greater speed of said feeding mechanism operating to create a gap between the boxes to permit the stop to move back into the space between the foremost box and the next box coming from the conveyer, and means actuated by the foremost box for effecting the arrest of the conveyer.

9. In a loading apparatus, the combination of a feeding track including feeding mechanism, a conveyer for carrying the boxes end to end to deliver them to the feeding track, said feeding mechanism operating to receive the foremost box and advance the same when received from the conveyer, at a greater speed than the conveyer, a stop projecting into the path of the foremost box to hold the same back until the moment arrives for it to feed forward, means for withdrawing the stop to permit the foremost box to pass on, the said greater speed of said feeding mechanism operating to create a gap between the foremost box and the next box to permit the stop to move back into the path of the boxes.

10. In a loading apparatus, the combination of a feeding track including feeding mechanism, a conveyer for carrying the boxes end to end to deliver them to the feeding track, said feeding mechanism operating to receive the foremost box and advance the same when received from the conveyer, at a greater speed than the conveyer, a stop projecting into the path of the foremost box to hold the same back until the moment arrives for it to feed forward, means for withdrawing the stop to permit the foremost box to pass on, the said greater speed of said feeding mechanism operating to create a gap between the foremost box and the next box to permit the stop to move back into the path of the boxes, and means actuated by the foremost box for effecting the arrest of the conveyer.

11. In a feeding apparatus, the combination of a conveyer for advancing the articles, feeding mechanism for receiving the articles from the conveyer, stop means projecting into the path of the foremost article to hold the same against movement, means for withdrawing the stop, and means for driving the feeding mechanism at a greater speed than the conveyer to create a gap between the foremost box and the next box to permit the stop to move back into the path of the articles.

Signed at Riverside, Calif., this 26th day of March 1923.

GEORGE D. PARKER.