

Aug. 19, 1958

L. BROOK
WRAPPING MACHINES

2,847,807

Filed Nov. 21, 1956

5 Sheets-Sheet 1

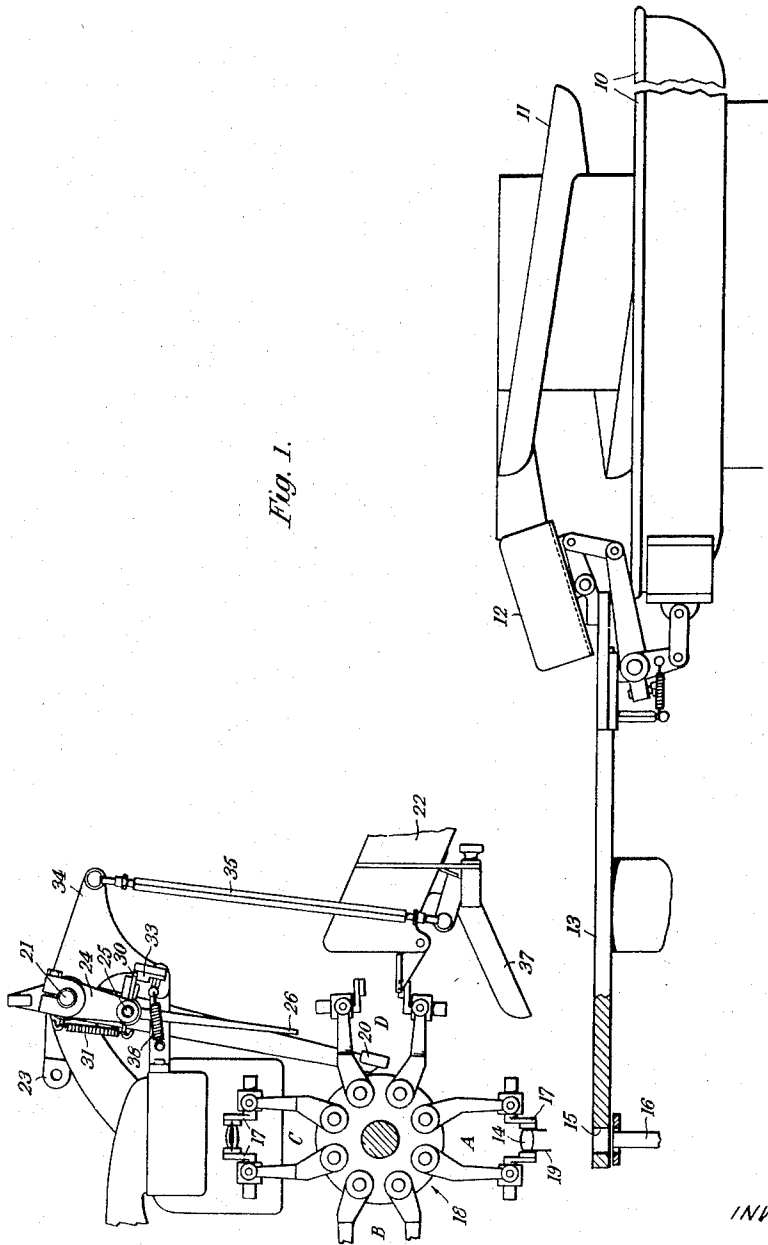


Fig. 1.

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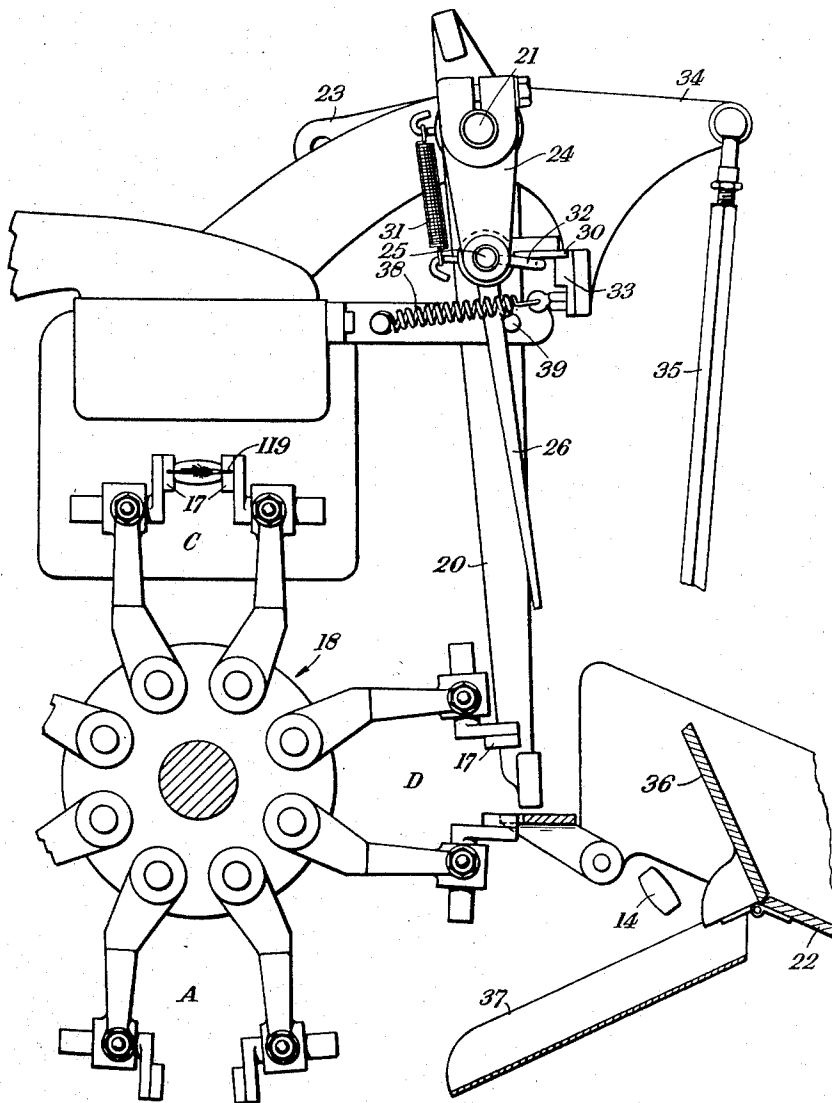


Fig. 5.

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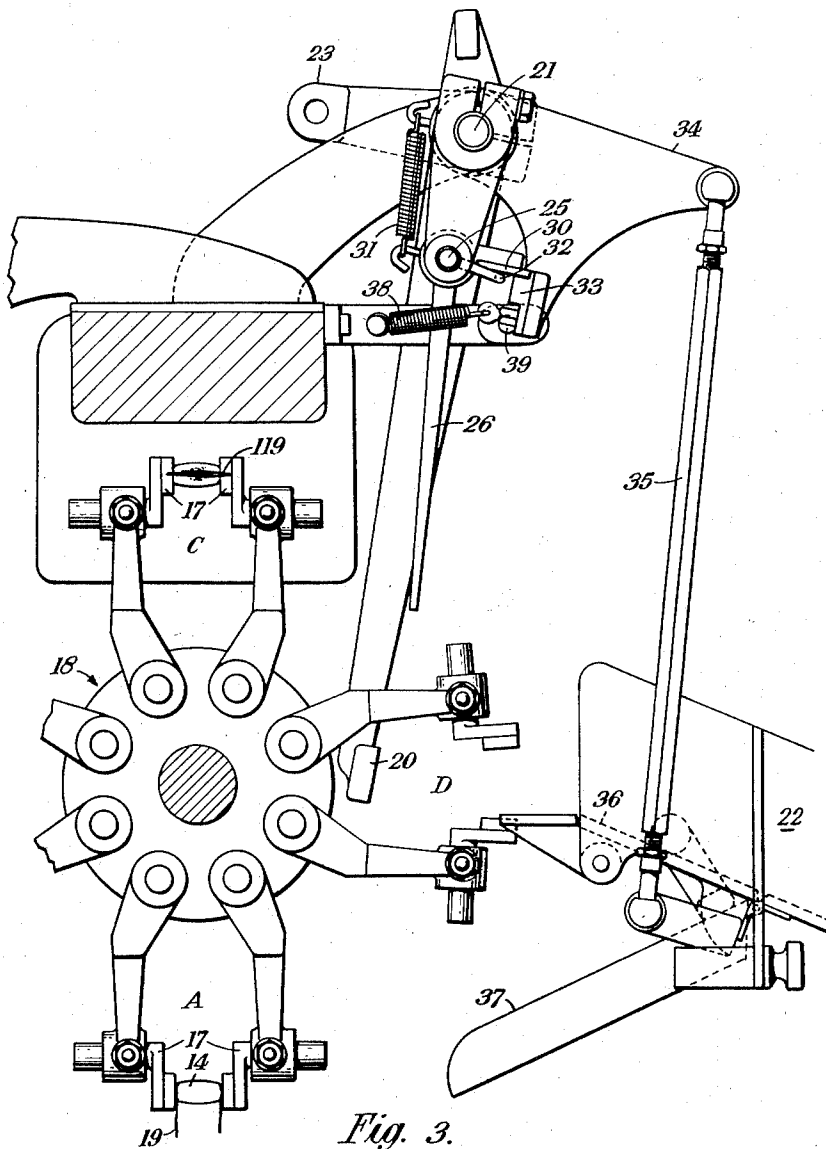


Fig. 3.

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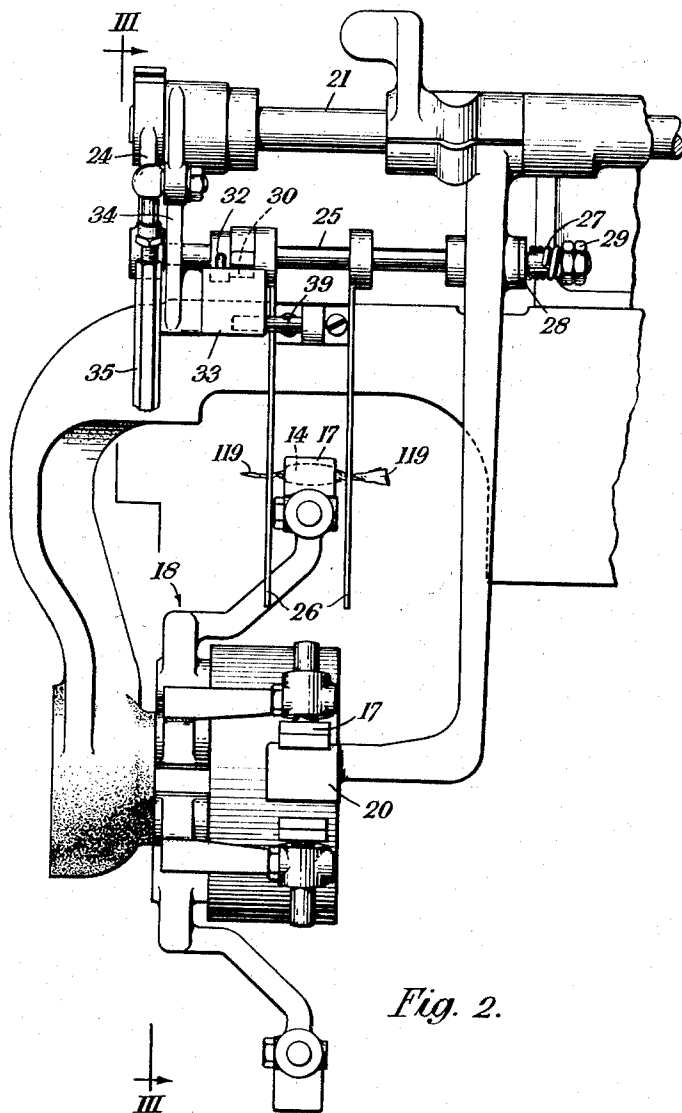


Fig. 2.

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2,847,807

WRAPPING MACHINES

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a British company

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Claims priority, application Great Britain
November 22, 1955

6 Claims. (Cl. 53—53)

With the increased use of automatic feeding devices to wrapping machines, it is becoming increasingly common to have a battery of machines running with little or no supervision. This degree of automation is being extended so that the wrapped produce from each machine is discharged onto a conveyor band and taken away to a further automatic process, usually packing into tins, bags or the like, possibly through automatic weighing machines, again with little or no supervision.

This presents a problem in that, should an unwrapped article be delivered from any of the wrapping machines as the result of misbehaviour of its wrapper feed mechanism, that unwrapped article is liable to pass right along the automatic line and eventually be packed together with the correctly wrapped articles in the final transparent bag, tin or other container.

With a view to avoiding this disadvantage, the invention provides a wrapping machine, comprising a carrier head for traversing articles through wrapping stations to a discharge station, an ejector at the discharge station for discharging the wrapped articles in succession from the carrier head to a discharge chute, a feeler mechanism associated with the ejector for detecting the presence of a wrapper on each article arriving at the discharge station, and mechanism operative in the event of the feeler mechanism failing to detect a wrapper to divert the unwrapped article from the discharge chute.

Thus the discharge chute may have a normally closed trap door which is opened by the diverting mechanism, when the presence of an unwrapped article at the discharge station is detected, to allow said article to fall from the discharge chute. The rejected articles may, if desired, be delivered through the trap door to a secondary chute for returning them to a feed disc from which unwrapped articles are lifted in succession into the carrier head.

The invention is especially applicable to twist wrapping machines and in one preferred embodiment the feeler mechanism comprises a pair of fingers arranged to be displaced by the twisted ends of the wrapper, as a wrapped article is fed to the discharge station, and thereby to render ineffective a coupling between the ejector and the diverting mechanism. When, however, an unwrapped article is moved to the discharge station the fingers will not be displaced and the coupling will remain effective so that the unwrapped article will be diverted from the discharge chute.

The diverting mechanism can be arranged to actuate a warning device, e. g. by operating a switch to light a warning lamp, each time an unwrapped article is diverted, so that the attention of the attendant is drawn to any wrapping machine in a group which is repeatedly passing unwrapped articles. Alternatively, or in addition, the diverting mechanism can be arranged to stop the machine when it operates, e. g. by actuating a switch to stop an electric motor driving the machine.

One specific embodiment of the invention, as applied to a twist wrapping machine of the kind set forth in

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United States patent specification No. 1,955,493, will now be described in detail, by way of example, with reference to the accompanying drawings in which:

Fig. 1 is a diagrammatic side elevation of part of the machine,

Fig. 2 is an end elevation, on a larger scale and with the discharge chutes omitted, looking from the right hand side of Fig. 1,

Fig. 3 is a section on the line III—III in Fig. 2, showing the wrapping wheel about to move a wrapped article to the discharge position,

Fig. 4 is a view similar to Fig. 3 but showing the wrapped article approaching the discharge station, and,

Fig. 5 is a view similar to Fig. 4 but showing the ejection of an unwrapped article.

Like reference numerals indicate like parts throughout the figures.

Confectionery tablets are raised from a hopper 10 by a spiral elevator 11 and delivered as described in United States application No. 402,089/54 down a discharge chute 12 to an intermittently rotated pocketed feed disc 13 shown diagrammatically in Fig. 1. The tablets 14 are lifted in succession by an elevator 16 from the pockets 15 in the feed disc 13 into the gripper jaws 17 of a wrapping wheel 18 which rotates intermittently on a horizontal axis. A wrapper 19 is fed by conventional feed mechanism into the path of each tablet as it is lifted into the jaws of the wrapping wheel.

As described in United States patent specification No. 1,955,493, the gripper jaws 17 travel in succession to four stations spaced 90° apart. At the bottom station A a tablet 14 is lifted into the gripper jaws with a wrapper 19 folded about it in inverted U formation as shown in Fig. 1. Folding of the wrapper about the tablet in the form of an open ended tube is completed in conventional fashion by the time the tablet reaches the next station B. Here the projecting ends of the wrapper are twisted by twist grippers (not shown). The tablets then pass on to an idle top station C and finally to a discharge station D.

At the discharge station D a downwardly extending ejector arm 20, attached to a shaft 21 extending parallel to the axis of the wrapping wheel, is swung as indicated in Fig. 5 through the gripper jaws 17, which are at the same time opened, by conventional means, not shown, so ejecting the tablet into a discharge chute 22. Rocking movement is imparted to the shaft 21 by an arm 23 fixed to the shaft and actuated by a cam-operated lever (not shown).

Also fixed to the shaft 21 is an arm 24. A shaft 25 extending parallel to the shaft 21 is rotatably mounted at one end in the ejector arm 20 and at the other in the arm 24. Fixed to the shaft 25 are two downwardly depending fingers 26 arranged to coact, as shown in Figs. 2 and 4, with the twisted ends 119 of the wrapper on a tablet 14 approaching the discharge station D. When the tablet is properly wrapped, the fingers 26 are swung aside by the twisted ends of the wrapper as shown in Fig. 4, thus rocking the shaft 25 to a position in which it is frictionally retained by a spring 27 (Fig. 2) mounted in compression between a friction washer 28 on the ejector arm and nuts 29 on the end of the shaft.

Loosely mounted on the shaft 25 is a trip piece 30 urged by a spring 31 into contact with a peg 32 fixed to the shaft 25. When the fingers 26 are displaced by the twisted ends of a wrapper the trip piece 30 is rocked clear (see Fig. 4) of a coacting member 33 attached to a lever 34 pivoted on the shaft 21 and coupled by a link 35 to a normally closed trap door 36 in the discharge chute 22. Consequently, when the ejector arm 20 moves forward, carrying the shaft 25 with it, no movement will be imparted to the trap door 36. When, however, the

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fingers 26 fail to detect a wrapper, as shown in Fig. 5, the trip piece 30 remains in its initial position and serves to actuate the lever 34 to cause the forward movement of the ejector arm 20 to open the trap door 36 and allow the unwrapped tablet to fall through the door and down another chute 37 back to the feed disc 15. The trap door 36 is returned by a spring 38 to its closed position on the return stroke of the ejector arm 20. As the ejector arm nears the limit of its forward stroke, the fingers 26 strike a fixed stop 39 and are returned to their initial position in relation to the ejector arm ready for detection of the wrapper on the next tablet.

The lever 34 may be utilized to actuate switch mechanism for lighting a warning light and/or stopping the machine when the lever moves to open the trap door 36.

What I claim as my invention and desire to secure by Letters Patent is:

1. A wrapping machine comprising a carrier head movable to traverse articles in succession through wrapping stations to a discharge station, a discharge chute adjacent the discharge station for receiving wrapped articles from the carrier head, an ejector for ejecting in succession from the carrier head to the discharge chute articles arriving at said discharge station, a feeler mounted adjacent to the path of the articles approaching the discharge station, said feeler being moved periodically by contact with the wrapper on each wrapped article from a normal position to a displaced position but remaining in its normal position when an unwrapped article passes it, means for diverting from said discharge chute unwrapped articles ejected from the carrier head by the ejector, and ejector-operated means, controlled by the position of said finger, for actuating said diverting means whenever said feeler is in its normal position during operation of said ejector.

2. A wrapping machine comprising a carrier head movable to traverse articles in succession through wrapping stations to a discharge station, a discharge chute adjacent the discharge station for receiving wrapped articles from the carrier head, a normally closed trap door in said discharge chute, an ejector for ejecting in succession from the carrier head to the discharge chute articles arriving at said discharge station, a feeler mounted adjacent to the path of the articles approaching the discharge station, said feeler being moved periodically by contact with the wrapper on each wrapped article from a normal position to a displaced position but remaining in its normal position when an unwrapped article passes it, and means controlled by the position of said finger for opening said trap door whenever said feeler is in its normal position during operation of said ejector.

3. A wrapping machine according to claim 2, comprising a feed disc for supplying unwrapped articles to said carrier head, an elevator for lifting articles in succession from said feed disc into said carrier head, and a further chute for returning to said feed disc unwrapped articles delivered through said trap door.

4. A twist wrapping machine comprising a carrier head for traversing articles in succession to a discharge station through wrapping stations at which a wrapper is folded around each article to form a wrap with twisted

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ends projecting from said article, a discharge chute adjacent the discharge station for receiving wrapped articles from the carrier head, an ejector for ejecting in succession from the carrier head to said discharge chute articles arriving at said discharge station, mechanism for diverting from said discharge chute unwrapped articles ejected from the carrier head by said ejector, a movable finger arranged to be contacted by the twisted end of the wrapper on each article approaching the discharge station and to be displaced thereby from a normal position to a displaced position, and coupling means controlled by the position of said finger for connecting said diverting mechanism to said ejector for actuation thereby to divert articles from the discharge chute whenever the ejector ejects an article from the carrier head, said coupling means being effective when said finger is in its normal position and being ineffective when said finger is in its displaced position.

5. A twist wrapping machine comprising a carrier head which is rotatable intermittently about an axis to traverse articles in succession to a discharge station through wrapping stations at which a wrapper is folded around each article to form a wrap with twisted ends projecting from said article, a discharge chute adjacent the discharge station for receiving wrapped articles from the carrier head, an ejector pivoted for movement on an axis parallel to said axis of the wrapping wheel, means for periodically moving said ejector and thereby causing it to eject in succession from the carrier head to said discharge chute articles arriving at said discharge station, mechanism for diverting from said discharge chute unwrapped articles ejected from the carrier head by said ejector, a finger pivoted to said ejector and arranged to be contacted by the twisted end of the wrapper on each article approaching the discharge station and to be displaced thereby from a normal position to a displaced position, a trip piece also pivoted to said ejector and arranged to move with said finger from a normal to a displaced position and a coacting member associated with said diverting mechanism, said trip piece serving, as the ejector moves to eject an article, to actuate said coacting member and thereby to actuate the diverting mechanism to divert articles from said discharge chute whenever said finger is in its normal position and said trip member being moved clear of said coacting member whenever said finger is in its displaced position.

6. A twist wrapping machine according to claim 5, wherein said diverting mechanism comprises a trap door in said discharge tube, a lever pivoted on the same axis as the ejector and carrying said coacting member, a link connecting said lever to said trap door and a spring connected to said lever and normally maintaining the trap door closed.

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