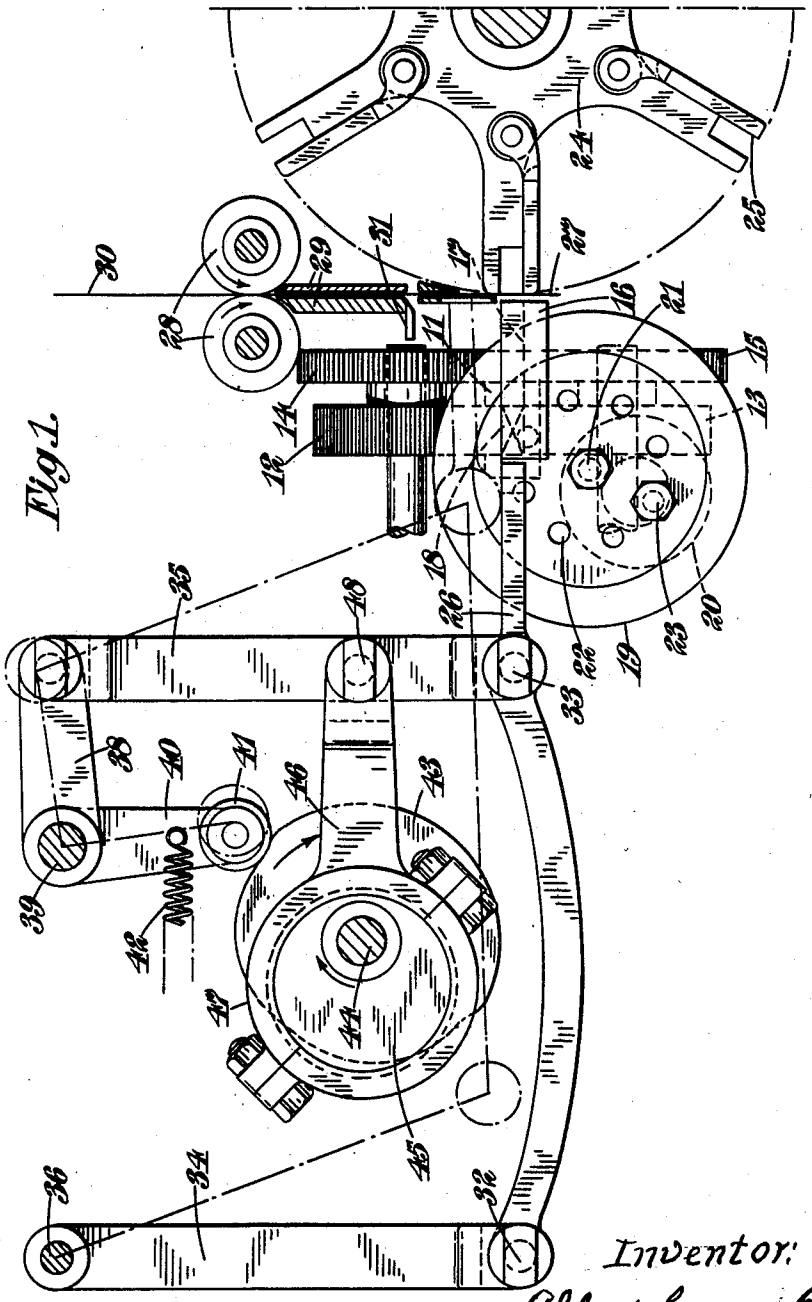
June 7, 1932. A. G. ROSE 1,861,510

WRAPPING MACHINE OR THE LIKE

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Fig. 1.



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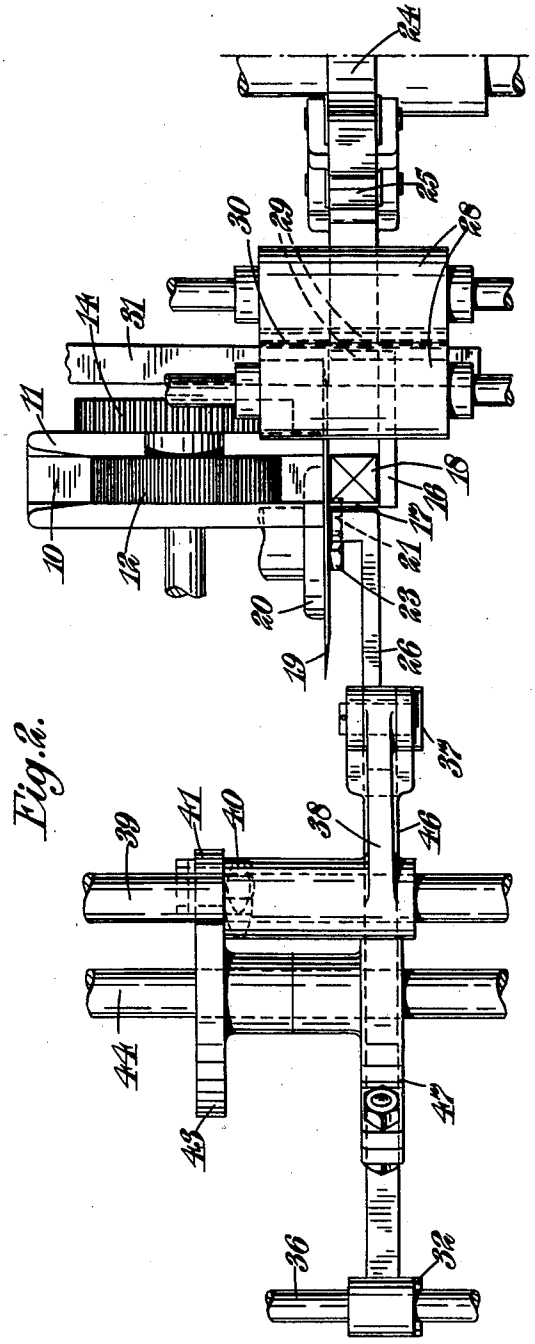


Fig. 2.



Fig. 5.

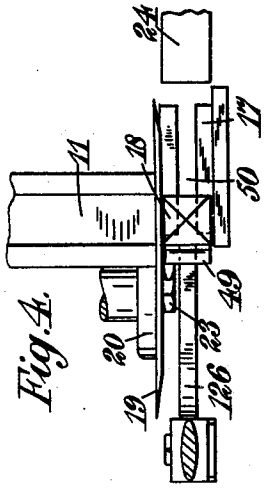


Fig. 4.

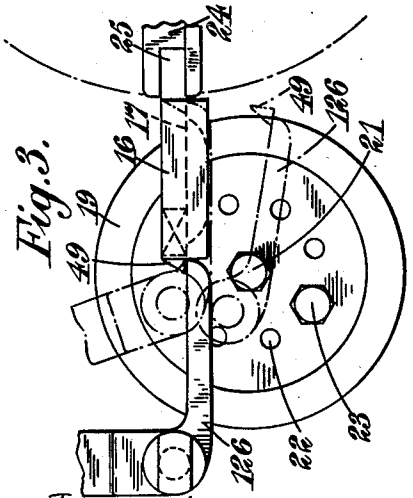


Fig. 3.

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UNITED STATES PATENT OFFICE

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WRAPPING MACHINE OR THE LIKE

Application filed July 23, 1931, Serial No. 552,787, and in Great Britain August 1, 1930.

This invention is for improvements in or relating to wrapping machines or the like in which articles are fed successively by a charging plunger, and is chiefly concerned with the provision of simple and efficient feeding apparatus whereby a succession of caramels, blocks of confectionery or other articles may be fed at high speed to folding apparatus.

This invention provides feeding apparatus comprising in combination a support platform, feeding mechanism for feeding pieces one after another on to said platform, a charging plunger, and means to advance said plunger across the platform to remove a piece therefrom, to move the plunger transversely to clear the platform and then to retire it, which feeding mechanism is timed in step with the plunger to feed a piece on to the support platform each time the plunger is moved transversely to clear it.

It has already been proposed, in cigarette feeding apparatus of the type in which the cigarettes gravitate from a hopper down a series of channels to a feed-table and are pushed out one or more rows at a time by means of a reciprocating pusher, to move the pusher horizontally to discharge a batch of cigarettes from the magazine and to lower it while in the horizontal position to lower the cigarettes above the batch on to the feed-table. No claim is made herein to this proposed construction.

The present invention is particularly, although not exclusively, concerned with wrapping machines of the type in which a bar of stock is fed to a support platform at a feeding station, and pieces (for example, caramels) repeatedly cut from the end (or in which caramels or other pieces are fed in succession down a feed-channel on to the support platform), wrappers are fed between the support platform and a mould-box, and the pieces are pushed in succession by a reciprocating charging plunger from the support platform into the wrappers and the mould-box so that as each caramel or other piece is pushed into the mould-box it is partially wrapped in a wrapper.

This invention also provides in a wrapping machine of the type above specified the combination with the reciprocating charging plunger, of means to guide the plunger along one path during the charging stroke to force a piece from the platform into the mould-box but to guide said plunger during the return stroke along another path which is spaced away from the charging path in order to permit a fresh piece to be fed on to the platform before the plunger has retired to its initial position. Hitherto, in machines of the type specified the plunger has been reciprocated backwards and forwards along the same path, and it has been necessary to wait until the plunger has completed or nearly completed its return stroke before a fresh piece could be placed on the support platform. It will be seen that this has hitherto placed a limit upon the speed of operation.

This invention also provides in a wrapping machine the combination of means for periodically feeding a bar of stock longitudinally on to a support platform, an automatic cutting-off knife for severing a piece on the platform from the stock, means for feeding wrappers past one side of the platform, a charging plunger for pushing the piece from the platform into a wrapper, and actuating means for the charging plunger such as to move it transversely clear of the charging platform during its return stroke, the means for feeding stock being timed in step with the plunger to feed a piece on to the platform each time the plunger is moved transversely to clear it.

Preferably, the cutting-off knife is timed to cut off the pieces from the bar of stock while the plunger is moved transversely to clear the platform.

Conveniently, the bar of stock or piece is fed to the platform in a plane at right angles to a plane in which the two paths of movement of the plunger lie. In a convenient construction the charging plunger is pivoted to two swinging links, one of which links is pivoted for movement about a fixed axis, and the other is pivoted on the end of a lever, e. g. a bell-crank lever, which is itself rocked to raise and lower the plunger.

One construction according to the present invention will now be described in detail by

way of example with reference to the accompanying drawings, in which:—

Figure 1 is a side elevation of apparatus according to this invention;

Figure 2 is a plan of the apparatus shown in Figure 1;

Figure 3 is a side elevation of certain mechanism alternative to that shown in Figure 1;

Figure 4 is a plan of the apparatus shown in Figure 3, and

Figure 5 is an isometric view of the end of the plunger shown in Figures 3 and 4.

Throughout this description like reference numerals indicate like parts.

A bar of stock 10 is fed along a guide-channel 11 between upper and lower feed-roller 12, 13 (which are geared together by gears 14, 15) until its end lies against a vertical wall 16 on a support platform 17. Individual caramels 18 are severed from the bar of stock by a knife 19. This knife consists of a disc formed with a cutting edge completely around its periphery and bolted to a rotatable carrier 20 by a set-screw 21 which extends through a hole at the geometric centre of the disc and which screws into the carrier 20 at a point offset from the centre of rotation of the latter. The knife-disc is also provided with eight holes 22 equally spaced on a pitch circle struck from the centre of the disc. A second set-screw 23 extends through one of these holes 22 and is screwed into the carrier 20 at a point diametrically opposite the first set-screw 21. By slacking off the set-screw 21 and removing the set-screw 23 the disc 19 may be turned on the carrier to bring a fresh portion of its cutting edge into operation when one portion has become dulled.

Adjacent to the end of the support platform 17 is an intermittently rotatable pocket-wheel 24 having six peripheral pockets or mould-boxes 25. The pocket-wheel is rotated intermittently by any convenient mechanism not shown to present each of the pockets in turn at a feeding station opposite the end of the support platform in a position to receive a caramel 18. As each pocket comes into position at the feeding station the caramel which has already been severed from the end of the bar of stock 10 is forced off the platform 17 into the pocket by a charging plunger 26. During its transfer into the pocket the caramel carries with it a wrapper 27 which has previously been fed by rolls 28 through guides 29 into a position between the end of the support platform 17 and the pocket. The wrapper 27 is severed from a web 30 by a knife 31. As a caramel 18 is pushed into a pocket the wrapper 27 is folded into U-shaped formation about the top, bottom and one end of the caramel. The wrapping is completed during the subsequent intermittent movements of the pocket-wheel 24.

The charging plunger 26 is pivoted at 32 and 33 to two swinging links 34 and 35. The link 34 is pivoted at 36 for movement about a fixed axis, while the link 35 is pivoted at 37 to the end of one arm 38 of a bell-crank lever. This bell-crank lever is pivoted on a spindle 39 supported from the frame of the machine. The other arm 40 of the bell-crank lever terminates in a roller 41 which is held by a tension-spring 42 in contact with the periphery of a cam 43. Mounted on the same shaft 44 as the cam 43 is an eccentric 45. This eccentric 45 runs within an eccentric rod 46 and eccentric strap 47. The eccentric rod 46 is coupled by a pivot-pin 48 to the swinging link 35. Starting from the position shown in Figure 1, the eccentric 45 (which rotates in a clockwise direction) rocks the two swinging levers 34, 35 and thus pushes the charging plunger 26 forward to remove a caramel 18 from the support platform 17 and to force it together with a wrapper 27 into that pocket 25 which is presented at the feeding station. At the termination of the charging stroke the cam 43 rocks the bell-crank lever 38, 40 to lift the swinging lever 35, and thus the plunger 26 is lifted above the platform 17. The end of the plunger is shown in chain-dotted lines in Figure 1 in its raised position. This lifting of the plunger permits the bar of stock to be fed beneath it until its end again makes contact with the vertical wall 16 of the support platform, when a fresh caramel is severed by the knife 19. During the forward feed of the stock, and during the subsequent cutting operation, the plunger is retracted (along a path above the path of its movement during the charging stroke) by the eccentric 14 and at the end of the return stroke the bell-crank lever 38, 40 is again moved to drop the plunger to its initial position.

It will be observed that the bar of stock is fed to the knife in a plane at right angles to that plane in which the two paths of movement of the plunger lie.

In certain constructions it may be desirable to drop the plunger to permit of the feed of the stock, instead of raising it as in Figures 1 and 2.

Figures 3 to 5 show such an arrangement. The plunger numbered 126, is provided with a raised head 49 (shown in isometric projection in Figure 5) and the support platform 17 is provided with a central slot 50 which permits the passage of the shank of the plunger.

I claim:—

1. In a packing or wrapping machine, the combination of a support platform, a mould-box and means for presenting it at intervals opposite said platform, feeding mechanism for feeding the end of a bar of stock intermittently up to the platform, a knife for

severing pieces from the end of the bar, a charging plunger, and means for moving it along one path during the charging stroke to push a piece from the platform into the mould-box and for returning it along a path which is spaced away from the charging path.

2. The combination of means for periodically feeding a bar of stock longitudinally to a feeding station, an automatic cutting-off knife for severing a piece from the end of the stock at the feeding station, means for feeding wrappers past the feeding station, a charging plunger for pushing a piece from said station into a wrapper, and actuating means for the plunger to move it transversely of the feeding station during its return stroke, the means for feeding stock being timed in step with the plunger to feed the end of the stock to the station each time the plunger is moved transversely to clear it.

3. In a packing or wrapping machine the combination of a support platform, means for feeding the end of a bar of stock intermittently on to said platform, a knife for cutting off pieces from the end of the bar on the platform, means for feeding wrappers past one side of the platform, a reciprocatable charging plunger for pushing each piece after it has been severed from the platform into a wrapper, and actuating means for the plunger for moving it to effect the removal of the piece from the platform but to move it transversely clear of the platform during its return stroke.

4. In a packing or wrapping machine the combination of a support platform, means for feeding the end of a bar of stock intermittently on to said platform, a knife for cutting off pieces from the end of the bar on the platform, means for feeding wrappers past one side of the platform, a reciprocatable charging plunger for pushing each piece after it has been severed from the platform into a wrapper, an actuating means for the plunger for moving it to effect the removal of the piece from the platform but to move it transversely clear of the platform during its return stroke, said means for feeding stock being timed in step with the plunger to advance the end of the stock each time the plunger is moved transversely to clear the platform.

5. In a packing or wrapping machine the combination of a support platform, means for feeding the end of a bar of stock intermittently on to said platform, a knife for cutting off pieces from the end of the bar on the platform, means for feeding wrappers past one side of the platform, a reciprocatable charging plunger for pushing each piece after it has been severed from the platform into a wrapper, and actuating means for the plunger for moving it to effect the removal of the piece from the platform but to move it transversely clear of the platform during its return stroke, said knife being timed to sever a piece each time the plunger is moved transversely to clear the platform.

6. In a packing or wrapping machine the combination of a support platform, means for feeding the end of a bar of stock intermittently on to said platform, a knife for cutting off pieces from the end of the bar on the platform, means for feeding wrappers past one side of the platform, a reciprocatable charging plunger for pushing each piece after it has been severed from the platform into a wrapper, and actuating means for the plunger for moving it to effect the removal of the piece from the platform but to move it transversely clear of the platform during its return stroke, said means for feeding stock being timed in step with the plunger to advance the end of the stock each time the plunger is moved transversely to clear the platform, and said knife also being timed to sever a piece each time the plunger is moved transversely to clear the platform.

7. In a packing or wrapping machine the combination of a support platform, means for feeding the end of a bar of stock intermittently on to said platform, a knife for cutting off pieces from the end of the bar on the platform, means for feeding wrappers past one side of the platform, a reciprocatable charging plunger for pushing each piece after it has been severed from the platform into a wrapper, and actuating means for the plunger for moving it to effect the removal of the piece from the platform but to move it transversely clear of the platform during its return stroke, said feeding means and knife being timed to advance the stock and to sever a piece during the return of the plunger.

8. The combination of means for periodically feeding a bar of stock longitudinally to a feeding station, an automatic cutting-off knife for severing a piece from the end of the stock at the feeding station, means for feeding wrappers past the feeding station, a charging plunger for pushing a piece from said station into a wrapper, and actuating means for the plunger to move it transversely of the feeding station during its return stroke, the means for feeding stock being timed in step with the plunger to feed the end of the stock to the station each time the plunger is moved transversely to clear it, said knife also being timed to sever a piece each time the plunger is moved transversely.

9. The combination of a support platform, a mould-box and means for presenting it at intervals opposite said platform, means for feeding a bar of stock longitudinally and intermittently on to said platform, a knife for cutting pieces from the end of the bar, a charging plunger and means for advancing the plunger across the platform to remove a

piece therefrom, to move the plunger transversely to clear the platform and then to retire the plunger along a path offset from its charging path, said paths of movement of the plunger lying in a plane which is at right angles to the line of feed of the stock.

10. The combination of a support platform, a mould-box and means for presenting it at intervals opposite said platform, means for feeding a bar of stock longitudinally and intermittently on to said platform, a knife for cutting pieces from the end of the bar, a charging plunger and means for advancing the plunger across the platform to remove a piece therefrom, to move the plunger transversely to clear the platform and then to retire the plunger along a path offset from its charging path, said paths of movement of the plunger lying in a plane which is at right angles to the line of feed of the stock, and the stock-feeding means and the knife being timed to feed and cut respectively after the plunger has been moved clear of the platform.

11. The combination with apparatus according to claim 2 of two substantially parallel swinging links supporting the plunger, a rocking lever to which one of said links is pivoted, and means for rocking said lever to effect the transverse movement of the plunger.

12. In a packing or wrapping machine the combination of a support platform, a mould-box and means for presenting it at intervals opposite said platform, feeding mechanism for feeding the end of a bar of stock intermittently up to the platform, a knife for severing pieces from the end of the bar, a charging plunger, two substantially parallel swinging links pivoted to the plunger, a bell-crank lever on one arm of which one link is pivoted, a cam-follower on the other arm of said lever, an eccentric, an eccentric strap encircling said eccentric and coupled to one link whereby the plunger is advanced to push a piece from the platform and is then retracted, and a cam whereby the bell-crank lever is rocked to lift the plunger clear of the platform at the end of its charging stroke.

13. Feeding apparatus comprising the combination of a support platform, means for feeding a bar of stock intermittently on to the platform, a rotatable knife carrier, a disc knife for severing pieces from the end of the stock on the platform having a central hole and a number of other holes equally spaced in a pitch-circle struck from the centre, means for clamping the knife by its centre to the carrier at a point offset from the centre of rotation and means for clamping the knife by one of the holes in the circular series to the carrier at the centre of rotation, and a charging plunger, means for moving the plunger across the platform to remove a piece therefrom, to move the plunger transversely of the platform to clear it and then to retire said plunger, said stock-feeding means and the knife being timed to operate when the plunger has been moved clear of the platform.

In testimony whereof I affix my signature.

ALFRED GERMAN ROSE.