Sept. 9, 1930. A. G. ROSE 1,775,212

WRAPPING MACHINE

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Fig. 1.

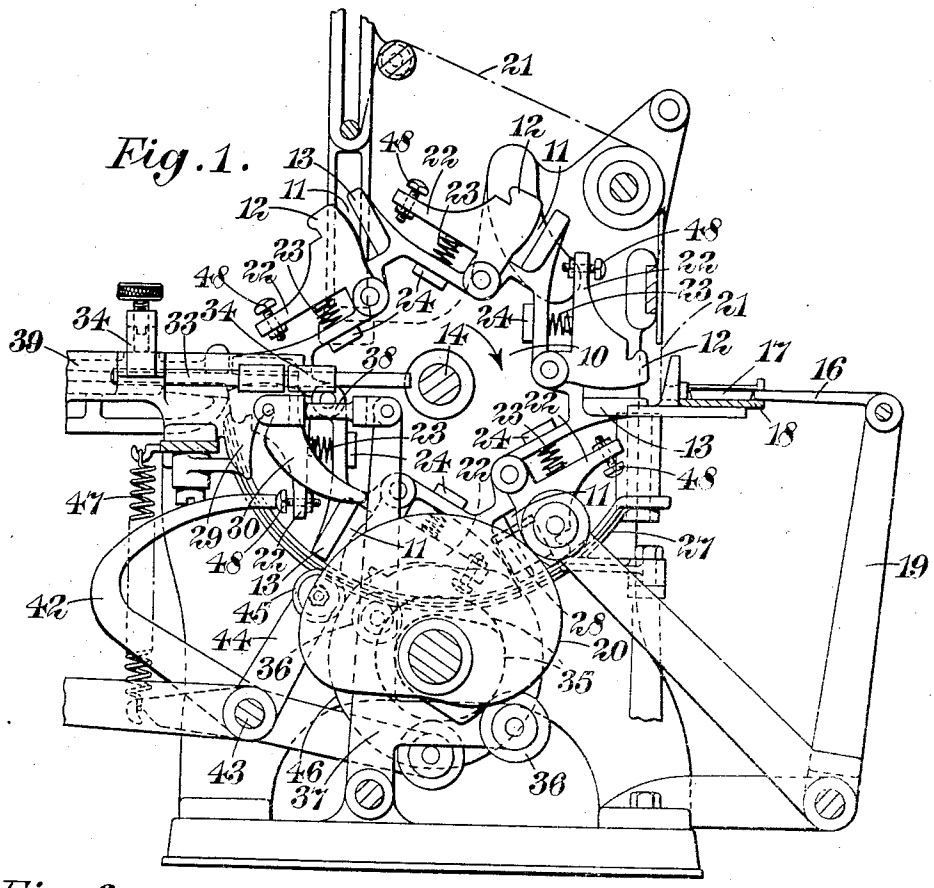


Fig. 3.

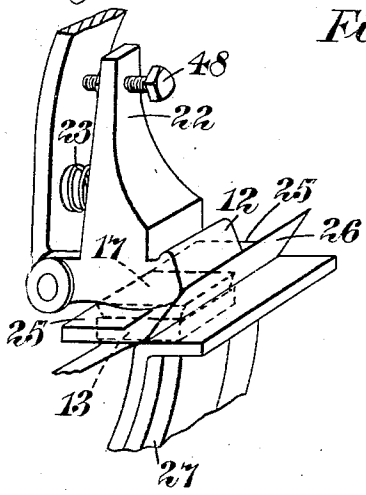


Fig. 4.

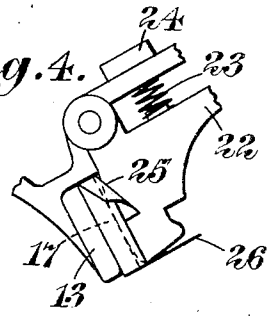


Fig. 5.

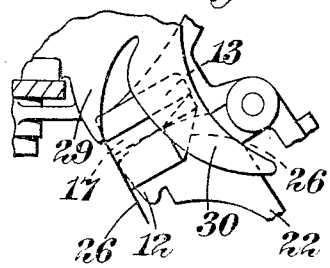
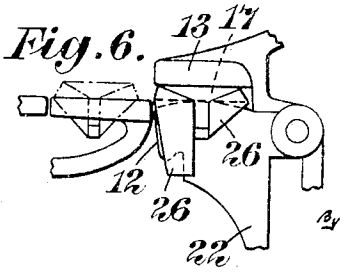


Fig. 6.



INVENTOR

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By Watson, Cole, Morse & Grindle

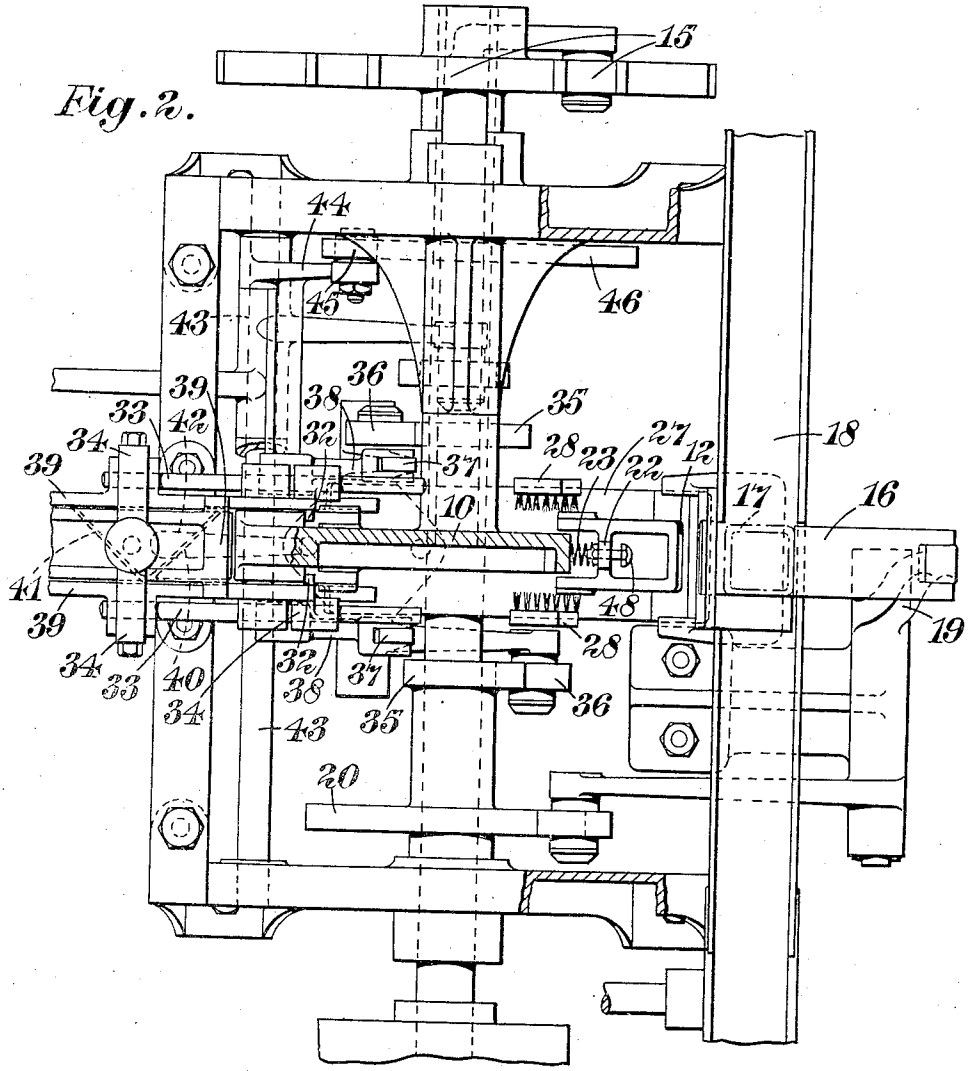
Attys

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Fig. 2.



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UNITED STATES PATENT OFFICE

ALFRED GERMAN ROSE, OF GAINSBOROUGH, ENGLAND, ASSIGNOR OF ONE-HALF TO ROSE BROTHERS (GAINSBOROUGH) LIMITED, OF GAINSBOROUGH, ENGLAND, A BRITISH COMPANY

WRAPPING MACHINE

Application filed December 1, 1928. Serial No. 323,160.

The invention relates to machines for enclosing tablets of confectionery or other articles in wrappers of paper, metal foil or like sheet material.

The invention is concerned with a wrapping machine of the rotatable carrier wheel type in which the articles to be wrapped and the wrapper blanks are fed into pockets at the periphery of the wheel, stationary folding devices co-operate with the rotational movement of the wheel to make certain folds in the wrapper, and an ejector device operates to eject the partially wrapped articles from the wheel, after which the folding of the wrapper is completed. The invention deals particularly with the provision in a machine of the above type of means to ensure that the wrappers (which may be of fragile material, such as metal foil) will not be ruffled or torn during the ejection of the partially wrapped articles from the wheel pockets.

The invention provides, in a wrapping machine of the type described above, the combination of a carrier wheel rotatable step-by-step about its axis, receiving pockets spaced apart at equal intervals round the periphery of said wheel and each constituted by two jaws one of which is movable relatively to the other, a charging device arranged to feed articles with their wrappers one at a time into successive pockets of the wheel, an ejector device spaced apart round the wheel from the charging device aforesaid and arranged to engage and remove one at a time partially wrapped articles from the wheel pockets, and mechanical means actuated automatically on the arrival of a wheel pocket opposite the ejector device and before that device operates, to move the movable jaw of the pocket in a direction away from the companion jaw.

The above and other features of the invention will be better understood from the following description with reference to drawings of one example of machine embodying the invention.

In the drawings:—

Figure 1 is a side elevation, partly in section, of the wrapping machine;

Figure 2 is a plan of the machine, and Figures 3–6 show the tablet and its wrapper in various consecutive stages of the folding of the wrapper.

Like reference numerals indicate like parts throughout the figures.

The machine comprises a carrier wheel 10 provided with six tablet-receiving pockets 11 spaced apart at equal intervals round the periphery of the wheel. Each receiving pocket comprises two jaws 12, 13 the former of which is pivotally mounted so that it may be moved (in a manner to be hereinafter described) towards and away from its companion jaw 13 which is fixed. The carrier wheel is mounted on a shaft 14 which is rotated step-by-step (by means of the usual Geneva-stop mechanism shown at 15 in Figure 2) so that the receiving pockets 11 are brought in turn to rest at the wheel charging station, that is opposite to a reciprocating pusher 16. The tablets 17 are fed along a channel 18 in a direction parallel with the axis of the carrier wheel and they are pushed one at a time out of the channel into successive wheel pockets. The pusher is carried on a cranked lever 19 which is reciprocated by a cam 20.

The wrappers for the tablets are formed from successive portions in the length of a continuous web 21 which is fed downwardly between the periphery of the carrier wheel and the supply channel 18. A knife (not shown) operates periodically to sever the leading portion of the web so forming an individual wrapper which, on the forward stroke of the pusher, is engaged by the advancing tablet and carried with it into the particular wheel pocket which is located at the charging station. The movable jaw 12 of each pocket is formed with a lever arm 22 with which co-operates a light spring 23 in compression between the arm and a fixed portion 24 of the wheel. The springs 23 ensure that each tablet and its wrapper, when forced into a wheel pocket, will be resiliently gripped between the fixed and movable jaws thereof.

Each wrapper is of such dimensions and is so positioned in relation to the pusher that

when forced into a wheel pocket it will be disposed as shown in Figure 3. In this position the wrapper covers the top and bottom of the tablet and that edge of it which faces towards the axis of the wheel, and has end portions 25 projecting beyond opposite ends of the tablet and a flap 26 which is a continuation of that portion of the wrapper which underlies the bottom of the tablet.

The carrier wheel is rotated in the direction indicated by the arrow in Figure 1. The underside of the wheel is encircled by a guide plate 27 and as a pocket, in which a tablet and its wrapper are received, is moved downwardly away from the charging station the extended flap 26 of the wrapper, is engaged by the guide 27 and folded over the adjacent marginal edge of the tablet. During this movement of partial rotation of the wheel the pocket under consideration is brought opposite to two stationary brush members 28 located on opposite sides respectively of the wheel in positions such that they will engage the projecting end portions 25 of the wrapper. As the pocket is traversed past the members 28 they operate by a brushing action to fold over the wrapper end portions 25 on to the ends of the tablet as shown in Figure 4. During further rotational movement of the wheel and while the pocket aforesaid is still on the underside thereof stationary folding blades 29, 30 (a pair on each side of the wheel) operate to engage and close in against the ends of the tablet the wings (shown in Figure 5), of the projecting wrapper portions 25 so that the wrapper now takes the form illustrated in Figure 5. Finally the wheel pocket arrives at a position, diametrically opposite the charging station, where an ejector operates to remove the partially wrapped tablet from the wheel.

The ejector comprises fingers 32 which are carried by slides 33 movable horizontally in bearings 34. The slides 33 are reciprocated by mechanism (which need not be described in detail) comprising cams 35, cam-followers 36 carried on pivoted levers 37, and coupling rods 38 connecting the levers 37 with the slides. The arrangement is such that the ejector fingers 32 make their forward movements while a wheel pocket is stationary at the ejector station, and their backward movements while the wheel is moving and after the last-mentioned pocket is out of the path of the fingers. The ejector fingers in advancing engage the inner end of the tablet and force the latter with its wrapper out of the wheel pocket into a delivery channel 39. During this operation the flap 26 of the wrapper is folded (by engagement with the bottom of the channel 39) on to the underside of the tablet.

Tablets in their wrappers are pushed in a row along the channel 39 by the action of the ejector which at every forward stroke forces another tablet into the channel thereby advancing those in front. As each tablet moves along the channel the tab portions 26 of the wrapper are folded on to the underside of the tablet and the wrapping is thus completely closed. The tab folding devices, constituted by inclined guide ways 40, 41 (see Figure 2), are situated one after the other in the channel 39 so that a neat closure can be made even though the tabs are of such length that one will overlie the other.

In order to release the normal gripping pressure of the jaws 12, 13 of each pocket as it arrives at the ejector station and prior to the operation of the ejector, the following arrangement is employed. A tappet 42 is pivotally mounted at 43 and formed with or coupled to an arm 44 carrying a cam-follower 45 which co-operates with a cam 46. A spring 47 is arranged to maintain the cam-follower 45 in contact with the periphery of the cam. At the end of the lever arm 22 on the movable jaw of each wheel pocket a screw 48 is mounted in a position such that when a pocket is at the ejector station the head of the screw will be opposite the free end of the tappet 42. The action of the tappet (which is reciprocated by the cam 46) is to engage the head of the screw 48 and by movement of the lever arm 22 (against the influence of the spring 23) open the hinged jaw 12 slightly so as to leave the tablet and its wrapper free to be withdrawn by the ejector. The provision of positive jaw opening mechanism of the above kind is of importance where the wrappers are of fragile material such as metal foil and would otherwise be liable to damage (by being ruffled or torn by the pressure of the pocket jaws) during the ejection of the partially wrapped tablets from the wheel.

I claim:

1. In a wrapping machine of the class specified the combination of a carrier wheel rotatable step-by-step about its axis, receiving pockets spaced apart at equal intervals round the periphery of said wheel and each constituted by two jaws one of which is movable relatively to the other, a charging device arranged to feed articles with their wrappers one at a time into successive pockets of the wheel, an ejector device spaced apart round the wheel from the charging device aforesaid and arranged to engage and remove one at a time partially wrapped articles from the wheel pockets, stationary folding members which are located, circumferentially of the wheel, between the charging and ejector devices and are in the form of brushes arranged to engage and fold over by a brushing action projecting end portions of each wrapper, and mechanical means actuated automatically on the arrival of a wheel pocket opposite to the ejector device and before that device operates, to move the movable jaw of the pocket in a direction away from the companion jaw.

2. In a wrapping machine of the class specified the combination of a carrier wheel rotatable step-by-step about its axis, receiving pockets spaced apart at equal intervals round the periphery of said wheel and each constituted by two jaws one of which is movable relatively to the other, a charging device arranged to feed articles with their wrappers one at a time into successive pockets of the wheel, an ejector device spaced apart round the wheel from the charging device aforesaid and arranged to engage and remove one at a time partially wrapped articles from the wheel pockets, a tappet arranged for operation, in synchronism with the arrival of the wheel pockets opposite the ejector device, to engage the movable jaw of the pocket at the ejector station and to move said jaw in a direction away from the companion jaw prior to the operation of the ejector, and stationary folding members which are located, circumferentially of the wheel, between the charging and ejector devices and are in the form of brushes arranged to engage and fold over by a brushing action projecting end portions of each wrapper.

3. In a wrapping machine of the class specified the combination of a carrier wheel rotatable step-by-step about its axis, receiving pockets spaced apart at equal intervals round the periphery of said wheel and each constituted by two jaws, one fixed and the other hinged for movement towards and away from the fixed jaw, a lever-arm on the hinged jaw of each pocket, a charging device arranged to feed articles with their wrappers one at a time into successive pockets of the wheel, an ejector device spaced apart round the wheel from the charging device aforesaid and arranged to engage and remove one at a time partially wrapped articles from the wheel pockets, a pivoted tappet cam-operated, in synchronism with the arrival of a wheel pocket opposite the ejector device, to engage the aforesaid lever-arm on the hinged jaw of that pocket and thereby to move the hinged jaw away from the companion fixed jaw prior to the operation of the ejector, and stationary folding members which are located, circumferentially of the wheel, between the charging and ejector devices and are in the form of brushes arranged to engage and fold over by a brushing action projecting end portions of each wrapper.

4. The combination claimed in claim 3, combined with a screw on the lever-arm of each hinged pocket-jaw, so situated as to be engaged by the tappet in the ejection position of the pocket, the screws aforesaid being adjustable to vary the position which they occupy at the ejector station in relation to the tappet.

5. The combination claimed in claim 1, plus means operable to complete the folding of the wrappers after the articles are removed from the carrier wheel pockets by the ejector device aforesaid and conveyed thereby to said means.

In testimony whereof I affix my signature.

ALFRED GERMAN ROSE.