Nov. 19, 1929. A. G. ROSE 1,735,978

MACHINE FOR WRAPPING CARAMELS AND THE LIKE

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Fig. 1.

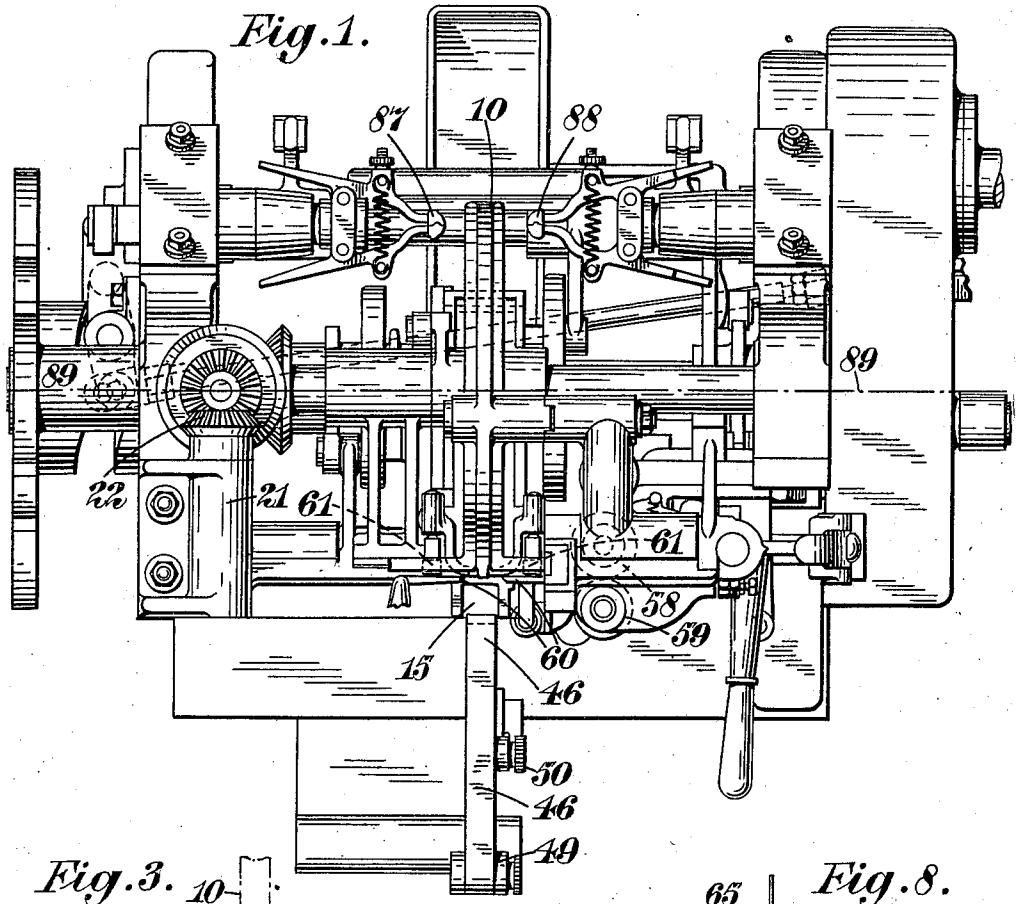


Fig. 3.

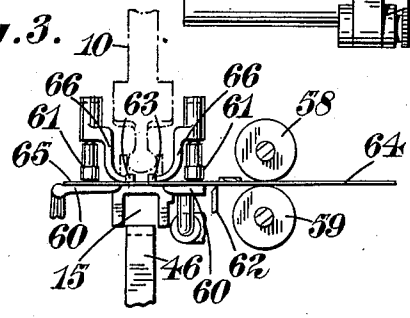


Fig. 8.

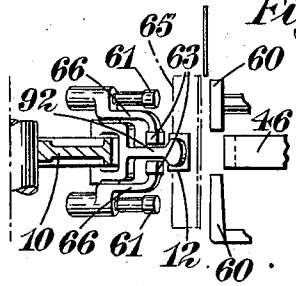
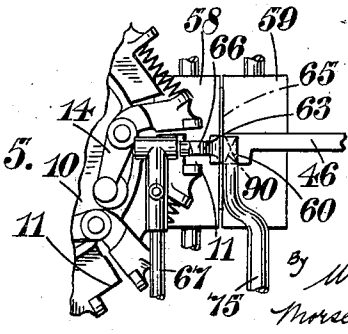


Fig. 5.



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Fig. 2.

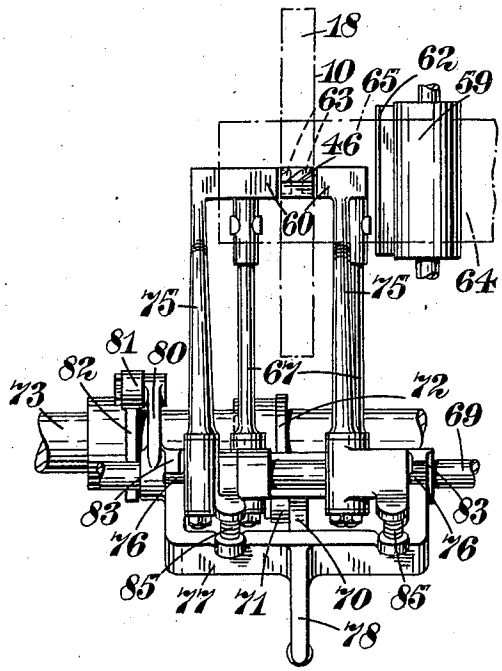


Fig. 6.

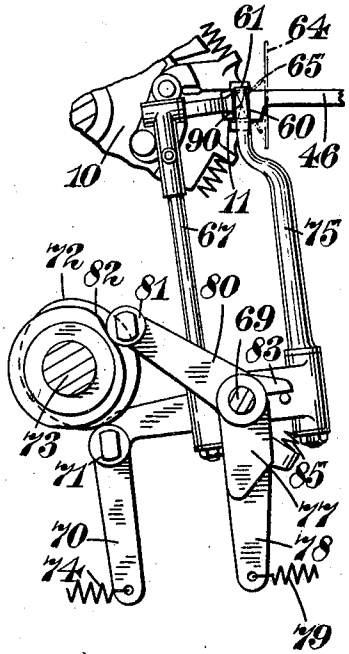


Fig. 4.

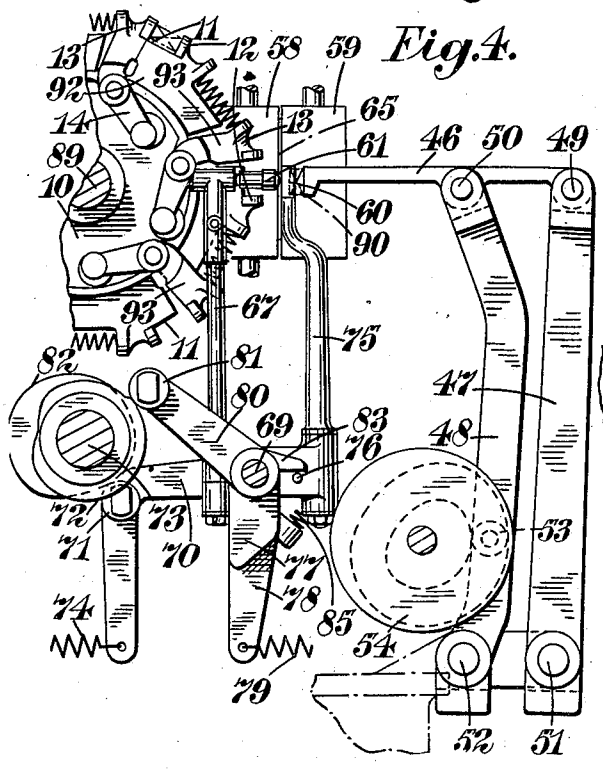
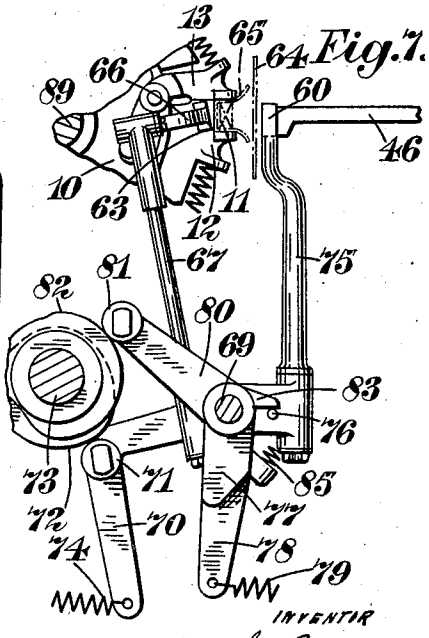


Fig. 7.



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UNITED STATES PATENT OFFICE

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MACHINE FOR WRAPPING CARAMELS AND THE LIKE

Application filed April 5, 1928, Serial No. 267,763, and in Great Britain April 19, 1927.

This invention is for improvements in or relating to wrapping machines for caramels or the like of the type (exemplified in British Patent No. 105,076) comprising a carrier wheel provided with peripheral receiving pockets and rotatable step-by-step to bring each pocket in turn into a position opposite to a reciprocating pusher which operates intermittently to feed caramels or the like one at a time into successive pockets of the wheel. In this type of machine a wrapper (cut from a continuous web fed intermittently across the path of the pusher) is located in front of the receiving pocket so that as the pusher advances the caramel, the wrapper is carried with it and partially folded about the caramel, the completion of the folding operation being effected during the continued step-by-step rotation of the carrier wheel.

According to the present invention a wrapping machine of the type described above has a movable abutment which is located behind the plane of the wrapper feed and is operable on each forward stroke of the pusher to engage the rear face of the wrapper behind the caramel and to travel with said caramel during its transfer into the carrier wheel. Preferably the abutment is operable during the advance of the caramel to grip the latter with its wrapper between the opposed faces of the pusher and the abutment.

This invention also includes a wrapping machine of the type described above which has a spring-controlled movable abutment or abutments operable to engage and exert yielding pressure on the rear face of the wrapper behind the caramel during the transfer of the caramel into the carrier wheel.

The aforesaid movable abutment serves to ensure close application of the wrapper to the caramel, and also serves to support the caramel between it and the pusher during the transfer of the caramel to the carrier wheel.

Conveniently the aforesaid abutment is located opposite to the pusher and is pivotally mounted for movement about an axis parallel with (or coincident with) that of the carrier wheel. The abutment may be actuated in a direction towards the axis of the carrier wheel and into the wheel pocket by the pusher, out of said pocket in the same direction by a cam, and in the reverse direction by a spring under the control of said cam. The abutment may be in two parts which are located on opposite sides respectively of the wheel and movable together as an unit through each wheel pocket.

This invention further includes a wrapping machine of the type described above, having two pairs of wrapper-gripping elements, located one pair on each side of the plane of a wrapper feed with one element of each pair on one side of the carrier wheel and the other element of that pair on the opposite side thereof, both pairs of gripping elements aforesaid being separate from the pusher, but operable in timed relationship therewith.

In one construction according to the invention a movable abutment as hereinbefore described and a pair of wrapper-gripping elements located behind the plane of wrapper feed, are movable together (e. g. on a single support) towards and away from the aforesaid plane of feed. By this arrangement the wrapper is located by the wrapper-gripping elements immediately in front of the abutment to move with the latter so that all risk of buckling the paper, even when a small caramel is presented, is removed.

Conveniently, that pair of wrapper-gripping elements which is located in front of the plane of paper feed is actuated from a spring-loaded lost motion mechanism to be positively moved away from and resiliently moved towards the other pair of elements.

A caramel wrapping machine embodying the present invention will now be described by way of example with reference to the accompanying drawings, in which:—

Figure 1 is a plan view showing the general arrangement of the machine;

Figure 2 shows diagrammatically in front elevation the wrapper feed, the wrapper-gripping elements and abutment and their actuating mechanisms, and the pusher and its actuating mechanism;

Figure 3 is a plan view of the parts shown in Figure 2;

Figures 4–7 show diagrammatically in side elevation the wrapper-gripping elements,

abutment and actuating mechanism for these parts in different positions; and

Figure 8 shows in plan the wrapper-gripping elements and abutment in the position shown in Figure 7.

Like reference numerals indicate like parts throughout all the figures of the drawings.

The machine in which this example of the invention is embodied is of the general type described in British Patent No. 105,076, and it is not proposed in the following description to refer, other than briefly, to those parts of the machine which are not substantially modified by the invention. Referring to Figure 1 the machine comprises a carrier wheel 10 of the known type provided with peripheral receiving pockets 11 and rotatable about a horizontal axis 89 by means which provide for a step-by-step rotational movement of the wheel. Each receiving pocket 11 is formed between two jaws 12 and 13, whereof the former is fixed and the latter is carried on a bell-crank lever 14 which is cam-operated to open and close the jaw when required (i. e. when the caramel is to be released and gripped respectively). The carrier wheel 10 has six pockets 11 equally spaced apart around its periphery and the wheel is so driven as to make one-sixth of a revolution at each stage of its movement.

At each step of the carrier wheel one of the pockets 11 is brought opposite to a wheel charging station 15 at which a reciprocating pusher 46 operates. The machine may be designed to operate on a continuous bar of confectionery stock from which successive portions are cut to form separate caramels which are fed in turn up to the charging station 15 and from thence into the wheel pockets. The mechanism for feeding the caramels to the charging station forms no part of this invention and is not therefore illustrated. The wrappers for the caramels are cut, by a knife 62 (Figure 2), from the leading end of a continuous paper strip 64 which is fed (by rollers 58, 59) across the path of the pusher 46 and in front of the carrier wheel.

Referring to Figure 4 the pusher 46 is mounted to reciprocate in the central plane of the carrier wheel 10 and along a substantially horizontal path. The pusher is supported by two lever arms 47, 48 which are spaced apart and pivotally connected at their upper ends 49, 50, to the pusher. The lower ends of the arms 47, 48 are pivotally mounted at 51 and 52 respectively on the machine frame. The arms 47 and 48 are so arranged as to form with the pusher a parallel motion linkage which will ensure that during the to and fro movement of the pusher the latter will move approximately parallel to itself. Reciprocation of the pusher is effected by means of a face cam 54 which engages a roller 53 on the lever arm 48.

For the purpose of gripping the wrapper 65 while the latter is being severed from the remainder of the strip 64, and during the transfer of the caramel with its wrapper into the carrier wheel, there is provided, according to the invention, two pairs 60, 61 of wrapper gripping elements located on opposite sides respectively of the plane in which the wrapper strip 64 is fed. The gripping elements 60 which are located on that side of the plane of feed adjacent to the pusher will hereinafter be referred to as the front grippers, and the elements 61 which are on the opposite side of the plane of feed will be referred to as the back grippers. The separate elements of each pair of grippers are disposed on opposite sides respectively of the plane of the carrier wheel, and the corresponding elements of front and back pairs which are located on the same side of the plane of the wheel co-operate with each other.

The front grippers 60 and the operating mechanism therefor will now be described. The grippers 60 are actuated by a two-part rocker mechanism, between the two parts of which there is a spring-controlled lost-motion device. One part of this rocker mechanism comprises arms 75 the upper ends of which carry the grippers 60 and the lower ends of which are mounted on a spindle 69 (which is parallel with the axis 89 of the carrier wheel) in such manner that the arms are free to rotate about the spindle. The second part of the rocker mechanism comprises a member 77 depending from the spindle 69 and rotatably mounted on it. The aforesaid two parts of the mechanism are interconnected by springs 85 in compression between the member 77 and the lower ends of the arms 75, and by lugs 83 on the member 77 arranged to engage with pins 76 on the arms 75. Relative movement between the arms 75 and the member 77 is permitted to an extent depending upon the distance to which the stops 76 can move away from the lugs 83 against the compression of the springs 85. The function of this lost-motion connection will hereinafter be described. Rocking movement of the member 77 (which imparts a to-and-fro movement to the grippers 60) is effected by means of a cam 82 mounted on a shaft 73 which is so driven as to make six revolutions for each revolution of the carrier wheel. A lever 80 attached to the member 77 carries a roller 81 which engages the surface of the cam 82. The roller 81 is maintained in contact with the cam surface by means of a spring 79 in tension between a fixed part of the machine frame and a downward extension 78 of the member 77.

The back grippers 61 and their associated parts and operating mechanism will now be described. The back grippers 61 are carried on the upper ends of downwardly extending arms 67, the lower ends of which are mounted in a rotatable manner on the aforesaid spin-

dle 69. A cranked lever 70 attached to the lower ends of the arms 67, carries a roller 71 which engages with the surface of a cam 72 mounted on the aforesaid cam shaft 73 which operates the front grippers. A spring 74 in tension between a fixed part of the machine frame and the free end of the lever 70 constrains the roller 71 towards the surface of the cam 72.

The abutment which is provided by the invention for engaging the rear face of the wrapper behind the caramel and for supporting the caramel during its transfer into the carrier wheel will now be described. The abutment aforesaid is in two parts 63 (Figures 3, 7 and 8) carried on horizontal arms 66 which lie between and are attached to the back grippers 61. The abutment parts 63 are thus movable to and fro with the back grippers 61. The operative faces of the abutment parts 63 are in the same plane as the operative faces of the back grippers 61. The abutment parts 63, when in the forward position shown in Figure 3, are arranged to extend from opposite sides of the central plane of the carrier wheel into a receiving pocket 11 of the wheel. The abutment parts 63 are spaced apart to provide a gap which is sufficient, in the retracted position of the abutments shown in Figure 8, to allow of the unimpeded rotation of the carrier wheel.

The operation of the machine as a whole is as follows.

When the leading end of the wrapper strip (which is to form the wrapper 65) is in position in front of the carrier wheel, the grippers 60, 61 are brought into engagement with the sheet on opposite sides thereof, and when so engaged the knife 62 operates to sever the wrapper 65 from the remainder of the strip 64. In this position of the parts, which is illustrated in Figure 4, the pusher 46 is advancing in engagement with the caramel 90 which has been brought to the charging station. The cams 72 and 82 are so shaped and the springs 74 and 85 are so selected, that in the position of the parts shown in Figure 4 the pressure applied by the back grippers 61 to the front grippers 60 is sufficient to move the pins 76 (carried on the lower ends of the front gripper arms 75) slightly out of contact with the co-operating lugs 83. Under these conditions the springs 85 are operative and ensure that a resilient gripping pressure is applied to the wrapper 64 by the cooperating grippers 60, 61.

On the continued advance of the pusher 46 the caramel 90 is brought into the position shown in Figure 5, in which the leading face of the caramel abuts on the wrapper 65. In this position, the abutment parts 63 bear on the rear face of the wrapper 65 at points immediately behind the caramel 90, and the latter is thus gripped between the pusher 46 and the abutments, the wrapper being interposed between the leading face of the caramel and the operative faces of the abutment parts. In this way close application of the wrapper to the leading face of the caramel is positively ensured.

The caramel and the wrapper continue to be gripped in the manner described above during their transfer into a wheel pocket 11 which at this stage is situated in the path of the pusher. During the continued advance of the pusher the following sequence of operations takes place. The pusher, by its thrust on the abutment 63 forces the arms 67 in a direction towards the axis of the carrier wheel, and during this movement the roller 71 is lifted clear of the cam 72. During the movement as aforesaid of the back grippers and abutment, the roller 81 following the cam surface 82 moves the front gripper arms 75 in a direction towards the axis of the carrier wheel, and the front grippers 60 continue their engagement with the wrapper until the caramel has been pushed home into the receiving pocket. During the movement of the grippers towards the carrier wheel the springs 85 continue to exert a yielding pressure at the grippers. When the caramel has been forced into the wheel pocket, as shown in Figure 6, the movable jaw 13 closes and the caramel with its wrapper is thus firmly gripped in the pocket. During the advance of the caramel into the pocket the wrapper 64 is folded about the top and bottom faces of the caramel.

The pusher 46 is now withdrawn (by the action of the cam 54) and at or about the same time the back-gripper actuating cam 72 comes into operation and by its engagement with the roller 71 forces the arms 67 still further towards the axis of the carrier wheel, thus releasing their grip on the wrapper and bringing them into the position shown in Figures 7 and 8. In this position the abutment parts 63 are behind the back of the receiving pocket and located on opposite sides of a narrow web portion 92 of the carrier wheel. The fixed jaws 12 of the receiving pockets are formed on this web portion 92, and the movable jaws 13 have correspondingly narrow stems 93, so that when the abutment 63 is in the position shown in Figures 7 and 8 the carrier wheel may be rotated to bring the next pocket of the wheel up to the charging station. At or about the same time as the cam 72 operates the arm 67 as aforesaid, the cam 82 engaging with the roller 81 swings the front gripper arms 75 in a direction away from the carrier wheel and into the position shown in Figures 7 and 8. The carrier wheel then rotates through one-sixth of a revolution (during which time the wrapper 65 is folded about the fourth side of the caramel) to bring the next receiving pocket into the path of the pusher, and at the same time the leading end

of the wrapper strip 64 is fed between the pusher and the carrier wheel and the complete sequence of operations above described is repeated. After a caramel and its wrapper have been transferred to the carrier wheel, they are carried around step-by-step through 180° into alignment with twister devices 87, 88 which operate on the ends of the now tubular wrapper in order to complete the closure of the wrapping. After a further partial rotation of the carrier wheel the movable jaw 13 of the receiving pocket is opened and the wrapped caramel released.

It will be seen that the abutment 63 not only ensures that the wrapper is closely applied to the adjacent face of the caramel, but also provides in conjunction with the pusher 46 a device to grip the caramel and support it during its transfer into the receiving pocket. Thus even though a caramel of abnormally small size be presented at the charging station, the mechanism cannot fail to effect its proper transfer to the carrier wheel. A further feature of the apparatus is that the wrapper grippers are arranged to locate the wrapper in the correct plane relatively to the caramel irrespective of the size of the latter, and any danger of the wrapper being crumpled during the transfer of the caramel is almost entirely eliminated.

It is to be understood that although the invention has been particularly described with reference to a caramel wrapping machine operating on a continuous bar of stock, the invention is not limited to this particular application but may be embodied in other wrapping machines of the carrier wheel type.

I claim:

1. In a caramel wrapping machine of the type described, the combination of an intermittently rotatable carrier wheel provided with peripheral receiving pockets, a reciprocating pusher for feeding caramels one at a time into successive pockets of the wheel, means for locating a wrapper between the carrier wheel and the pusher, and two pairs of wrapper-gripping elements located one pair on each side of the plane of wrapper feed with one element of each pair on one side of the carrier wheel and the other element of that pair on the opposite side thereof, both pairs of gripping elements being separate from the pusher but operable in timed relationship therewith.

2. The wrapping machine claimed in claim 1 combined with an abutment which is located behind the plane of the wrapper in a position opposite the pusher and is pivotally mounted for movement about an axis parallel with that of the carrier wheel, and means interconnecting the abutment aforesaid with that pair of wrapper gripping elements which is located behind the wrapper in such manner that the abutment and said elements are movable together towards and away from the aforesaid plane of the wrapper.

3. The wrapping machine claimed in claim 1 combined with a spring-controlled lost-motion device arranged to control the actuation of that pair of gripping elements which is located in front of the plane of the wrapper in such manner as to ensure the application of resilient pressure at the two pairs of gripping elements.

4. In a caramel wrapping machine of the type described, the combination of an intermittently rotatable carrier wheel provided with peripheral receiving pockets, a reciprocating pusher for feeding caramels one at a time into successive pockets of the wheel, means for locating a wrapper between the carrier wheel and the pusher, a movable abutment separate from the carrier wheel and located behind the plane of the wrapper in line with the path of the pusher, and means operable on each forward stroke of the pusher to bring the abutment into engagement with the rear face of the wrapper directly behind the caramel and to move said abutment with the caramel during its transfer into the carrier wheel.

5. In a caramel wrapping machine of the type described, the combination of an intermittently rotatable carrier wheel provided with peripheral receiving pockets, a reciprocating pusher for feeding caramels one at a time into successive pockets of the wheel, means for locating a wrapper between the carrier wheel and the pusher, a movable abutment separate from the carrier wheel and located behind the wrapper, and means for operating said abutment, during the advance of the caramel, to grip the latter, with its wrapper, between the opposed faces of the pusher and the abutment and to travel with the caramel during its transfer into the carrier wheel.

6. In a caramel wrapping machine of the type described, the combination of an intermittently rotatable carrier wheel provided with peripheral receiving pockets, a reciprocating pusher for feeding caramels one at a time into successive pockets of the wheel, means for locating a wrapper between the carrier wheel and the pusher, and a spring-controlled movable abutment separate from the carrier wheel and operable to engage and exert yielding pressure on the rear face of the wrapper directly behind the caramel during the transfer of the caramel into the carrier wheel.

7. In a caramel wrapping machine of the type described, the combination of an intermittently rotatable carrier wheel provided with peripheral receiving pockets, a reciprocating pusher for feeding caramels one at a time into successive pockets of the wheel, means for locating a wrapper between the carrier wheel and the pusher, an abutment

which is located behind the wrapper in a position directly in line with the pusher and is pivotally mounted for movement about an axis parallel with that of the carrier wheel, and means operable on each forward stroke of the pusher to bring the abutment aforesaid into spring-pressed engagement with that portion of the rear face of the wrapper which overlies the caramel.

8. In a caramel wrapping machine of the type described, the combination of an intermittently rotatable carrier wheel provided with peripheral receiving pockets, a reciprocating pusher for feeding caramels one at a time into successive pockets of the wheel, means for locating a wrapper between the carrier wheel and the pusher, a movable abutment which is located behind the wrapper in a position directly in line with the pusher and is pivotally mounted for movement about an axis parallel with that of the carrier wheel, spring means to constrain the abutment in a direction towards the plane of the wrapper, and a cam operable to move the abutment beyond the wheel pocket in a direction towards the axis of the carrier wheel.

9. In a caramel wrapping machine of the type described, the combination of an intermittently rotatable carrier wheel provided with peripheral receiving pockets, a reciprocating pusher for feeding caramels one at a time into successive pockets of the wheel, means for locating a wrapper between the carrier wheel and the pusher, a movable abutment which is located behind the plane of the wrapper in a direct line with the pusher and is formed in two parts positioned on opposite sides respectively of the carrier wheel, and means operable on each forward stroke of the pusher to bring the abutment aforesaid into spring-pressed engagement with that portion of the rear face of the wrapper which overlies the caramel, and to move the abutment with the caramel during the transfer of the latter into the carrier wheel.

In testimony whereof I affix my signature.

ALFRED GERMAN ROSE.