H. J. KEMPF.

WRAPPING MACHINE.

APPLICATION FILED JUNE 3, 1915.

1,226,622.

Patented May 15, 1917.

2 SHEETS—SHEET 1.

Fig 1

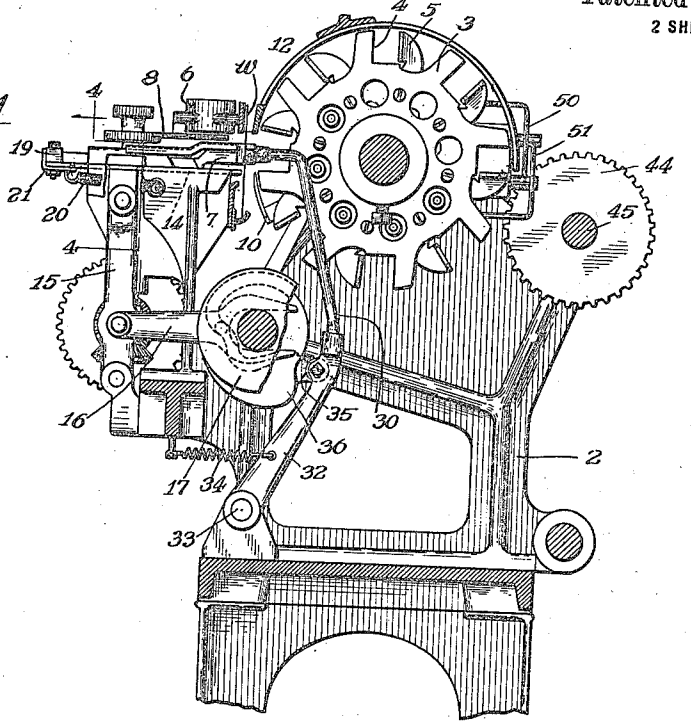


Fig 2

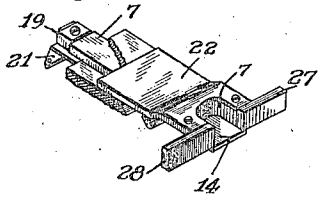


Fig 3

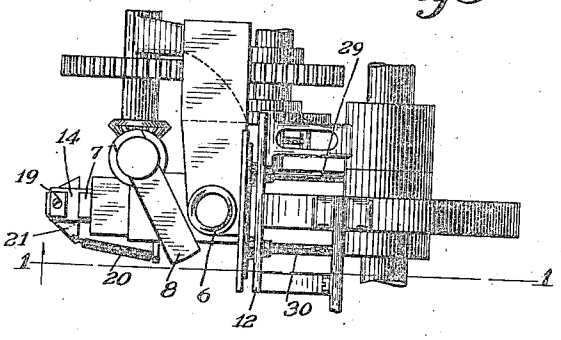
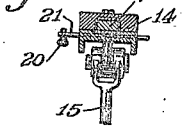


Fig 4



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2 SHEETS—SHEET 2.

Fig 5

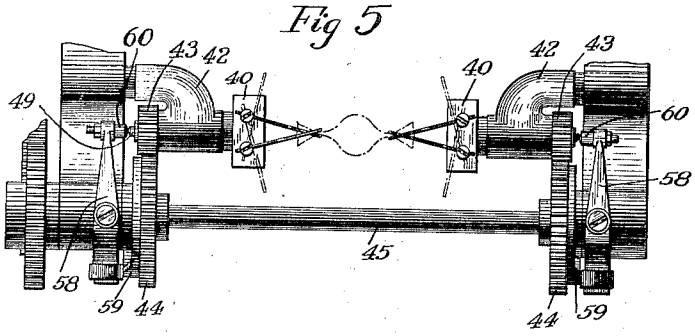
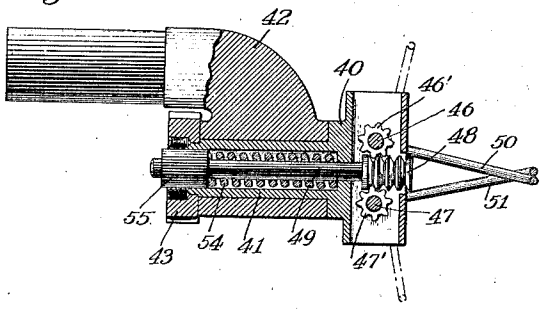


Fig 6



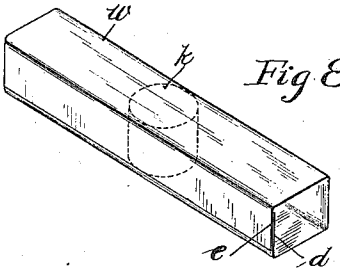


Fig 8

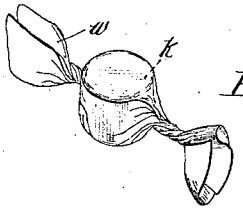


Fig 9

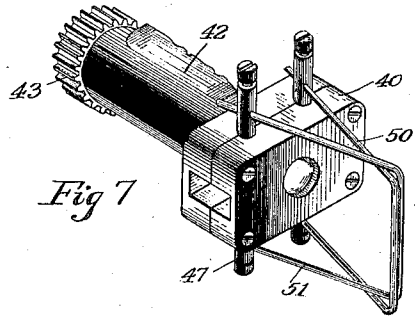


Fig 7

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UNITED STATES PATENT OFFICE.

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WRAPPING-MACHINE.

1,226,622. Specification of Letters Patent. Patented May 15, 1917.

Application filed June 3, 1915. Serial No. 31,890.

To all whom it may concern:

Be it known that I, HENRY J. KEMPF, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented certain Improvements in Wrapping-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to wrapping machines and is of particular utility in wrapping machines of the type disclosed in Patent No. 1,079,012, granted November 18, 1913, and assigned to the assignee of the present invention.

The machine shown in the patent just mentioned is designed to wrap articles of confection, particularly molasses "kisses," each kiss being inclosed in a wrapper folded into the form of a tube and the projecting ends of the tube then being twisted to complete the wrapping operation. This machine, because of its simplicity, reliability and high speed has now gone into very general use for wrapping confections of this character and the present invention has for its chief object to improve this machine in certain respects although some features of the invention are applicable to other wrapping machines. Specifically, the invention is directed to the improvement of the mechanism that feeds the articles to the wrapping mechanism, to the devices that hold and manipulate the paper during the formation of the initial folds about each article, and to the twister mechanism.

The invention will be readily understood from the following description, reference being made to the accompanying drawings, in which—

Figure 1 is a vertical, sectional view through a machine substantially like that shown in the patent above designated but modified in accordance with the present invention;

Fig. 2 is a perspective view showing a detail of the plunger mechanism that feeds the articles to the wrapping mechanism;

Fig. 3 is a plan view of certain parts shown in Fig. 1;

Fig. 4 is a cross-sectional view on the line 4—4, Fig. 1;

Fig. 5 is a plan view of the twister mechanism;

Fig. 6 is a horizontal, sectional view through one of the twister heads;

Fig. 7 is a perspective view of one of the twister heads with its pair of twisters; and

Figs. 8 and 9 are perspective views showing different steps in the process of wrapping an article in this machine.

Inasmuch as the features of this invention are shown as embodied in certain mechanisms of the machine shown in the patent above designated, it is unnecessary to show or describe a complete machine here. Accordingly, those parts only of the machine are shown in the accompanying drawings which are necessary for the purpose of enabling applicant to disclose his invention clearly.

The machine comprises in its general organization a supporting frame 2 in which is rotatably mounted a wrapping wheel 3 having a series of peripheral pockets each formed by a stationary jaw 4 and a movable jaw 5 which is yieldingly held toward the stationary jaw but is moved away from it at certain points in the operation of the machine by means of a cam. The wrapping wheel 3 is given a step by step motion through a Geneva drive. The candy is fed to the machine usually in a rope-like strip which is advanced by suitable feeding mechanism (not shown) through a short vertical guide 6 that directs the end of the strip in front of a reciprocating feeder or plunger 7. A rotatable knife 8 operates between the guide 6 and the plunger 7 to cut, at each revolution, a piece off the end of the strip as it is fed in front of the plunger, thus forming one of the kisses to be wrapped. The plunger then forces this kiss into one of the pockets in the wrapping wheel 3 and on its way into the pocket the kiss is pushed into a wrapper *w* which has been delivered in the position shown in Fig. 1 by a suitable wrapper feeding mechanism. The kiss *k* (see Fig. 8), when finally deposited in the pocket of the wheel, has the wrapper *w* folded about its top, bottom and forward side, thus leaving two flaps *d* and *e* projecting horizontally toward the article feeding mechanism. A tucker 10 next swings up in front of the pocket into which the kiss has just been deposited, folding the

lower flap *d* up into the position in which it is shown in Fig. 8 and the wheel 3 then starts forward, the tucker 10 moving with it for a short distance, thus carrying the upper flap *e* against a stationary tucker 12 which folds the flap *e* over the flap *d*, thus folding the wrapper into the form of an open ended tube, as shown in Fig. 8. A continuation of the tucker 12 extends circumferentially around the wrapping wheel 3 and holds the wrapper in its folded position until the wheel has moved far enough to deliver the package thus formed to the action of the twister mechanism which is located at a point substantially diametrically opposite the article feeding mechanism. The twisters then grasp the open ends of the wrapper tube and twist them into the form shown in Fig. 9, thus completing the wrapping operation. The jaw 5 is then moved to release the package from the pocket in which it has been held up to this point and if it does not drop it by gravity an ejector forces it out of the pocket. All this mechanism is substantially like that shown and described in the patent above designated, and reference should be made to this patent for a complete understanding of this general organization together with the details of the various mechanisms by which the operations above briefly described are performed.

The frame and adjacent parts under the guide 6 form a guideway over or through which the kiss is pushed by the plunger 7; and, as will be evident upon an inspection of Fig. 1, a considerable space is necessary between this guideway and the wrapping wheel through which to feed the wrapper *w*. If for any reason the cross section of the candy strip is small, due for instance to some fault with the manner in which the attendant feeds the machine, a very small kiss will be formed and this kiss may drop into the space between the guideway and the wheel. This action of course will interrupt the operation of the machine. One of the objects of the present invention, therefore, is to devise a mechanism which will prevent accidents of this character. To this end there is mounted under the plunger 7 a plate 14 which is arranged to slide back and forth under the plunger from a position back of the space into which the wrapper *w* is fed to a point such that it substantially bridges the space between the guideway and the wheel 3. The plunger 7 is reciprocated by a lever 15 which is operated by a cam follower 16 driven by a rotary cam 17. A block 19 is fastened to the upper face of the rear end of the plate 14 in position to be struck by the rearmost end of the plunger 7 as the plunger moves backward; and a spring 20, fastened at one end to a part of the machine frame and at its opposite end to a plate 21 secured to the bottom of the rear end of the plate 14, serves to hold the block 19 normally in contact with the rear end of the plunger. Accordingly, upon the forward movement of the plunger the spring 20 will cause the plate 14 to move forward across the space between the guideway and the wrapping wheel 3, thus supporting the kiss while the plunger 7 forces it through the wrapper *w* and into one of the pockets of the wheel 3. This forward movement, however, is limited by the engagement of the plate 21 with a part of the machine frame so that the forward end of the plate is prevented from moving far enough to interfere with the action of the tucker 10. When the plunger is moved backward again, its rear end will engage the block 19 and push the plate 14 back out of the path of the next wrapper *w* which will be advanced by the wrapper feeding mechanism. This plate, therefore, effectually prevents a small kiss from dropping into the space between the wrapping wheel and the feeding mechanism where it would interfere with the normal operation of the machine. The part 22 (see Fig. 2) is merely a cover plate for the plunger.

A further feature of this invention resides in the novel mechanism for holding the paper while the first folds are being made about the kiss and for facilitating this folding operation. As shown in Fig. 2, the forward end of the plunger 7 where it comes in contact with the kiss is provided with a U-shaped recess, open at the top, bottom and forward end and made of a depth from front to back substantially equal to the diameter of the kiss. In order to facilitate the formation of the first fold of the wrapper about the kiss the forward end of the plunger is provided with two laterally extending wings 27 and 28, as best shown in Fig. 2, and the forward faces of these wings lie substantially flush with the forward face of a kiss when it is in the recess of the plunger so that, as the plunger 7 forces the kiss into a pocket of the wheel 3, picking up the wrapper *w* on its way into the pocket, these wings will aid in folding the wrapper about the kiss in a U-shaped form, leaving top and bottom flaps extending horizontally toward the plunger and overlying the forward end of the plunger.

As a further means for facilitating this folding operation, two paper holding fingers 29 and 30 are provided. These fingers may each consist of a stout wire or rod bent into the form shown in Figs. 1 and 3, and both mounted on the upper end of an arm 32 pivoted on the machine frame at 33 and normally held forward or toward the article feeding mechanism by a spring 34. Preferably the paper engaging end of each finger is provided with a rubber tip enabling

it better to hold the paper. In order to hold the fingers 29 and 30 out of the path of the wrapper *w* at certain times, as for instance, while it is being fed into the position in which it is shown in Fig. 1, the finger supporting arm 32 is provided with a cam roll 35 which is arranged to be engaged at certain points in the operation of the machine by the edge of a cam 36 mounted to rotate with the cam 17 which operates the feeder 7.

Assuming now that the wrapper *w* has been fed into the position in which it appears in Fig. 1 where it stands vertically in the path of the article about to be fed into the wheel by the plunger 7, the cam 36 then allows the spring 34 to swing the arm 32 and the fingers 30 and 31 to the left as the parts are seen in Fig. 1. At the same time the cam 17 operates through its connections with the plunger 7 to move the plunger forward. These movements are so timed as to cause the wings 27 and 28 to strike the front face of the wrapper *w* at substantially the same instant that the tips of the fingers 29 and 30 strike the rear face of the wrapper. The wrapper thus will be gripped between the fingers and the wings, the fingers 29 operating to press the wrapper against the wing 27 and the finger 30 against the wing 28. As the plunger 7 continues its forward movement, these wrapper gripping parts will continue to hold the wrapper at opposite sides of the kiss, the fingers 29 and 30 yielding to permit the forward movement of the plunger.

The act of forcing the kiss and wrapper into a pocket of the wheel makes the initial fold and the parts 27, 28, 29 and 30 continue their engagement with the wrapper until after this fold has been made and the wheel 3 is about to start forward to fold the flaps *d* and *e* in the manner above described. At this point the cam 36 again engages the roll 35 and holds the fingers 29 and 30 away from the wrapper and the plunger 7 retires to its initial position. As soon as the wheel 3 has moved the package just deposited in the pocket out of the path of the fingers 29 and 30, the cam 36 allows them to advance again in readiness to repeat their operation on the next wrapper. This arrangement is of material advantage in preventing any twisting of the wrapper while the initial folds are being made and in facilitating this folding operation by providing parts, that is, the members 27 and 28, of substantial size and positioned at opposite sides of the kiss over which the wrapper is bent to produce these folds.

The end twisting operation is performed by two twister mechanisms which are duplicates and accordingly only one of these mechanisms will be described. Referring more particularly to Figs. 5, 6 and 7, it will be seen that each twister mechanism comprises a twister head 40 having a hollow, cylindrical shank 41 which is rotatably supported in a short bracket 42 and has a pinion 43 fixed to its end opposite the head 40. Motion is imparted to the pinion 43 by a gear 44 fast on a shaft 45 which is driven by gear connections with the main shaft of the machine. The twister head 40 has two short shafts 46 and 47 mounted rotatably therein and each shaft carries or has formed thereon small pinions 46′ and 47′, respectively. These shafts lie parallel with and close to each other and the pinions 46′ and 47′ both mesh with a peripherally grooved head 48 of a spindle 49 mounted to slide axially through the shank 41 of the twister head. Both the shafts 46 and 47 project at opposite sides of the twister head and they carry U-shaped wire twisters 50 and 51, respectively, which are crossed, as clearly shown in Figs. 5, 6 and 7. The legs of each twister extend through its shaft at right angles to the axis of the shaft and are adjustable secured in the shaft by screws threaded axially into the ends of the shaft.

A spring 54, mounted in the hollow shank 41 of the twister head, encircles the spindle 49 and acts on a collar 55 fast on the rear end of the spindle to slide the spindle through the shank 41 away from the head 40. This movement is transmitted through the pinions 46′ and 47′ to the twisters 50 and 51, separating or opening the twisters so that they will stand in the position in which they are shown in dotted lines in Figs. 5 and 6. In this position, of course, the twisters are inoperative. In order to close the twisters a short lever 58 is fulcrumed on the bearing for the shaft 45 and carries at one end a roll running on the face of a side cam 59 that rotates with the gear 44. At its opposite end the lever 58 carries a stud 60 which is adjustably mounted in the lever and extends substantially coaxial with the spindle 49. Accordingly, when the high portion of the cam 59 swings the lever 58 in a clockwise direction as the parts are seen in Fig. 5, the stud 60 will push the spindle 49 forward, thus rotating the pinions 46′ and 47′ in such a direction as to close the twisters 50 and 51. Inasmuch as centrifugal action tends to hold the twisters open it is preferable to close them positively as in the arrangement just described.

Assuming now that a package, partially wrapped as shown in Fig. 8, is moved by the wheel 3 into the range of the twisters, the spring 54 operating during the positioning of the package to hold the twisters open, the cam 59 will then close the two sets of twisters onto the ends of the wrapper *w* and they will twist both ends of the wrapper in the same direction, producing a package substantially like that shown in Fig. 9. As

soon as the twisting operation has been completed the cam 59 will permit the spring 54 to open the twisters again, thus releasing the package.

An important advantage of this twister mechanism is its simplicity, thus enabling it to be manufactured very cheaply, and the fact that it is so constructed that it is not subject to rapid wear and deterioration. The twisters of each pair preferably are set one slightly in advance of the other, thus leaving a very small space between the wrapper engaging portions of the twisters so that, as the wrapper shortens during the twisting operation, it can slide through the twisters without tearing. The adjustment of the twisters also is of advantage in enabling them to be moved to the points best suited to the requirements of different sizes of articles to be wrapped.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a machine of the character described a rotatable twister head, a spindle mounted to slide in said head and having a series of peripheral grooves, two shafts supported in said head on opposite sides of said spindle, and having teeth meshing with the grooves on said spindle, and a pair of U-shaped wire twisters crossing each other and supported, respectively, by said shafts, whereby the sliding movement of said spindle in one direction operates through said shafts to open the twisters and the movement of the spindle in the opposite direction closes the twisters.

2. In a machine of the character described, a rotatable twister head, a spindle mounted to slide in said head and having a series of peripheral grooves, two shafts supported in said head on opposite sides of said spindle, and having teeth meshing with the grooves on said spindle, a pair of U-shaped wire twisters crossing each other and supported, respectively, by said shafts, whereby the sliding movement of said spindle in one direction operates through said shafts to open the twisters and the movement of the spindle in the opposite direction closes the twisters, and intermittently acting means operating positively through said spindle to hold the twisters closed.

3. In a machine of the character described, a pair of oppositely disposed rotatable twister heads, each head carrying two shafts and a pair of U-shaped wire twisters supported, respectively, by said shafts and each twister being adjustable in its shaft whereby the two sets of twisters may be moved toward or from each other, means for opening said twisters, and means for positively closing said twisters.

4. In a machine of the character described a rotatable twister head, two shafts supported in said head and spaced from each other, two twisters supported respectively by said shafts for movement into open or closed relationship with reference to each other, a spindle mounted in said head for sliding movement, and connections between said spindle and shafts whereby the sliding movement of the spindle opens or closes said twisters.

5. In a wrapping machine, the combination with a wrapping wheel and a reciprocating plunger operative to push articles one at a time into the pockets of said wheel, of a plate mounted under said plunger to slide substantially to the periphery of said wheel and back again away from the wheel in a path parallel to the path of movement of said plunger, whereby the plate serves to support each article as the plunger forces it into the pockets in said wheel, a spring arranged to move said plate in one direction, and connections between said plate and said plunger serving to move the plate in the opposite direction.

6. In a wrapping machine, the combination with a wrapping wheel and a reciprocating plunger operative to push articles one at a time into the pockets of said wheel, of mechanism for reciprocating said plunger, a plate mounted under said plunger to slide toward and from said wheel, and means for operating said plate comprising a spring acting on said plate to move it forward with the plunger, said means being constructed and arranged, upon the forward movement of the plunger, to move said plate substantially to the periphery of said wheel to enable it to support an article as it is pushed into one of the pockets of said wheel by said plunger and to cause the plate to retire again with said plunger.

7. In a wrapping machine, the combination with a wrapping wheel and mechanism for feeding articles one at a time into the pockets of said wheel, of means for feeding a wrapper into the path of each article as it is moved into a pocket of said wheel, and means for gripping the wrapper at opposite sides of the pocket and moving with the article as it is forced into the pocket to facilitate the formation of the first fold of the wrapper about the article.

8. In a wrapping machine, the combination with wrapping mechanism and mechanism for feeding articles one at a time to said wrapping mechanism, of means for feeding a wrapper into the path of each article as it is moved into said wrapping mechanism, wrapper gripping devices comprising members operative to engage one face of the wrapper at opposite sides of the article, and additional parts yieldingly mounted and constructed and arranged to press the wrap-

per against said members while the initial fold is being made in the wrapper about the article.

9. In a wrapping machine, the combination with wrapping mechanism, of a plunger operative to push articles one at a time into said mechanism, means for feeding a wrapper into the path of each article as it is moved into said wrapping mechanism, a pair of wrapper holding devices arranged to bear on the rear face of the wrapper and parts operated by the plunger and arranged to bear on the front face of the wrapper opposite said devices and thereby to grip the wrapper while the plunger pushes an article against the wrapper.

10. In a wrapping machine, the combination with wrapping mechanism, of a plunger operative to push articles one at a time into said mechanism, means for feeding a wrapper into the path of each article as it is moved into said wrapping mechanism, a pair of wrapper holding fingers arranged to bear on the rear face of the wrapper at opposite sides of an article moved by the plunger, and wings on said plunger opposite to said fingers and coöperating with said fingers to grip the wrapper at opposite sides of each article while the plunger pushes the article against the wrapper.

11. In a wrapping machine, the combination with wrapping mechanism, of a reciprocating plunger operative to push articles one at a time into said mechanism, means for feeding a wrapper into the path of each article as it is moved into said wrapping mechanism, said plunger having wings extending forward on opposite sides of an article fed by it to a point substantially flush with the front face of said article, a pair of wrapper holding fingers operative to press the wrapper against said wings as the plunger pushes the article into engagement with the wrapper and into the wrapping mechanism, and means for holding said fingers out of the path of the wrapper while it is being fed into position to be engaged by an article.

12. In a wrapping machine of the character described, the combination with a wrapping wheel having one or more pockets for the reception of an article with a wrapper partly folded about it, and mechanism for feeding articles to be wrapped one at a time into said pockets, of means for feeding a wrapper into the path of each article as it is moved into a pocket of said wheel, and means supported independently of said wheel constructed and arranged to grip the wrapper at opposite sides of the article and move with the article as it is forced into the pocket to facilitate the formation of the first fold of the wrapper about the article.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY J. KEMPF.

Witnesses:
FRANCES E. BRYAN,
M. E. HEALEY.