

April 2, 1957

A. P. KRUEGER
BAG-TYING MACHINES

2,787,102

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2 Sheets-Sheet 1

Fig. 1.

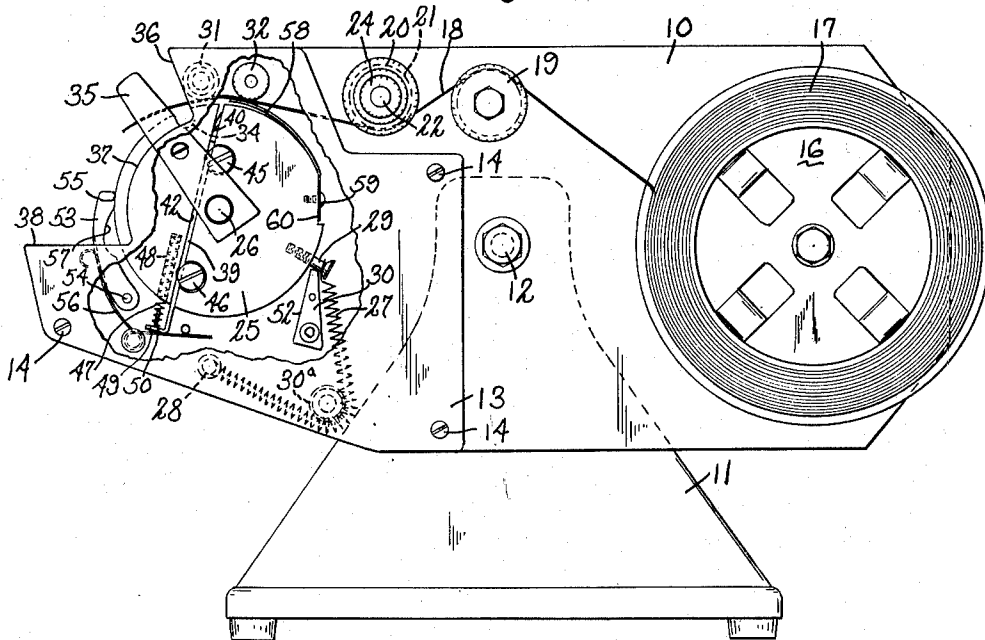
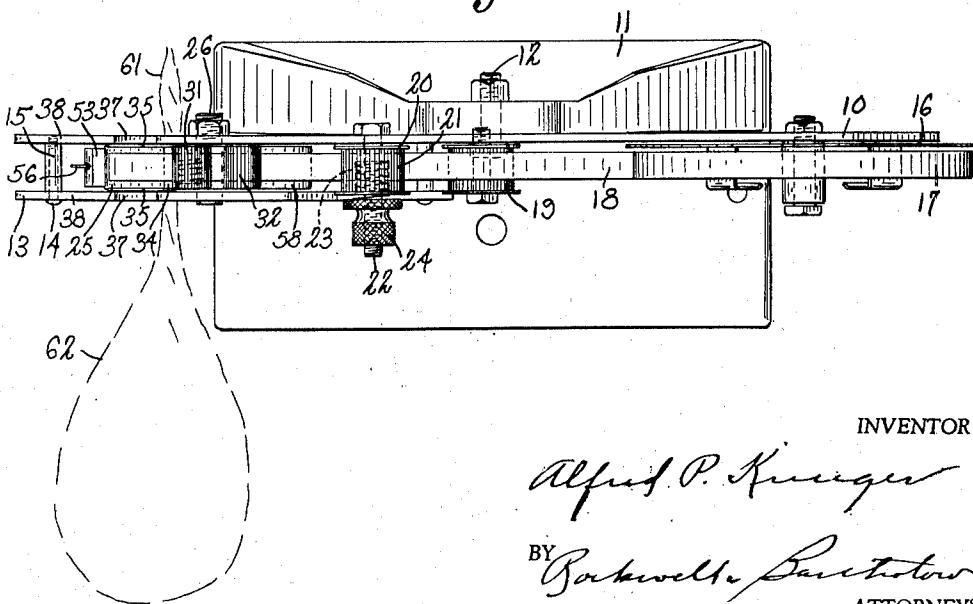


Fig. 2.



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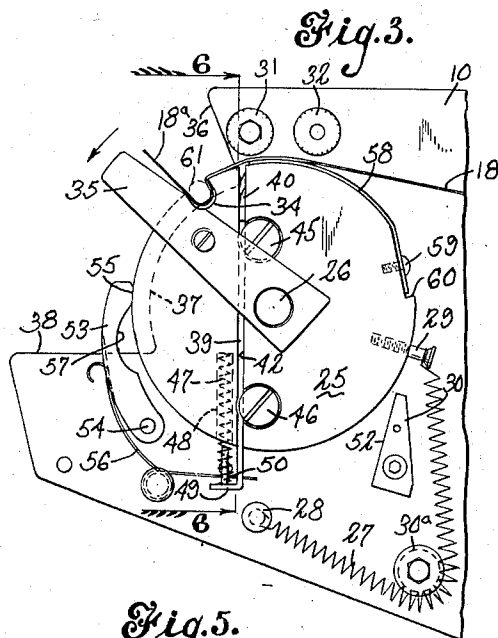
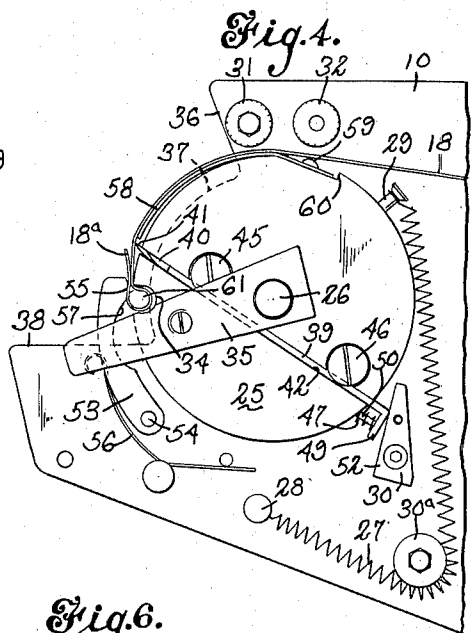
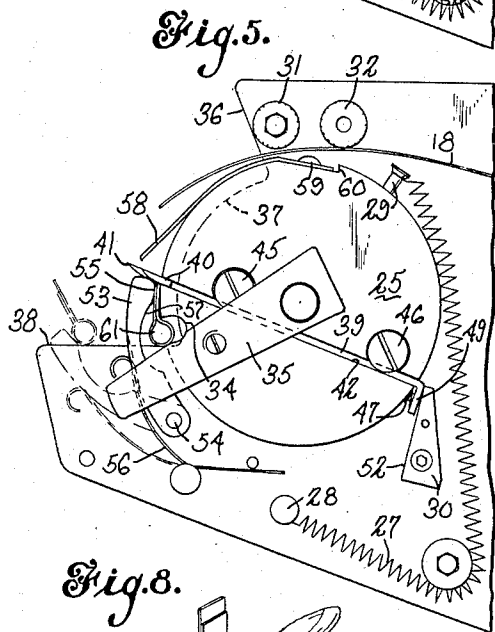
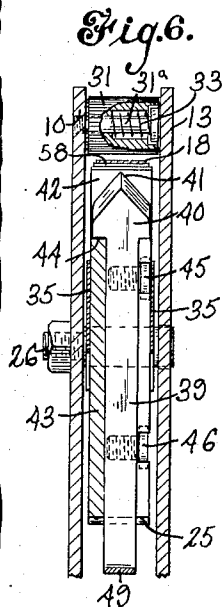
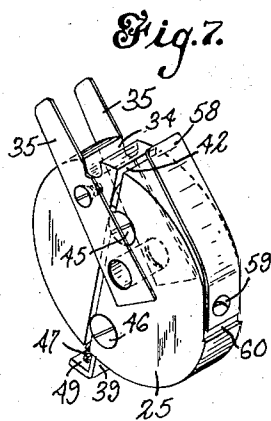
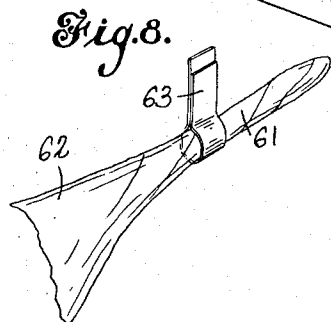
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2,787,102

BAG-TYING MACHINES

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15 Claims. (Cl. 53—198)

This invention relates to bag-tying machines, and more particularly to a machine for tying or sealing a bag with the use of a tape which is provided with a pressure-sensitive adhesive on one side.

In marketing various products, it is convenient to put them in a bag and seal or tie the bag in some manner. This may be done satisfactorily with pressure-sensitive adhesive tape if the neck of the bag is first twisted into a tight roll and the adhesive tape then applied to the twisted neck of the bag.

The present invention relates particularly to a machine for dispensing such a tape and wrapping it around the twisted neck of the bag, when the latter is drawn through the machine, in such a manner that the tape will adhere to the twisted neck of the bag and close the latter. As illustrated the device comprises a notched wheel rotatably mounted upon a frame in such a manner that the tape is dispensed over this wheel by movement of the bag in contact with the tacky side of the tape, and a presser arm or wiper is provided to fold the tape around the twisted neck of the bag and upon itself whereby one ply will adhere to the other. A knife is provided which is automatically actuated to sever the tape after the folding operation in such a manner that a "flag" is provided upon the bag.

One object of the present invention is to provide a bag-tying machine for dispensing a length of pressure-sensitive tape and applying it to the neck of a bag or the like.

Still another object of the invention is to provide a bag-tying machine of the character described having means for causing a length of pressure-sensitive tape to be wrapped about the twisted neck of the bag or the like and then severed from the tape of the supply roll by a knife or severing member automatically actuated to engage and sever the tape.

Still another object of the invention is to provide a device for dispensing a length of pressure-sensitive tape and wrapping it around the twisted neck of a bag or the like, the device being provided with a wiper or presser arm to urge the tape snugly against the neck of the bag and fold the tape upon itself so that one ply will adhere to the other.

Still another object of the invention is to provide a machine of the character described wherein a notched wheel is rotatably mounted in the machine over which wheel the tape is fed, and a severing knife is reciprocally mounted in the wheel and at the proper time is automatically projected from the wheel and against the tape to sever the same.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings:

Fig. 1 is a side elevational view of a bag-tying machine embodying my invention;

Fig. 2 is a top plan view thereof showing in dotted lines a bag which has been placed in the machine for sealing;

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Fig. 3 is a view similar to Fig. 1 with one of the frame plates removed to show the interior mechanism and the parts being shown in a slightly different position;

Fig. 4 is a view similar to Fig. 3 with the parts being shown at the beginning of the severing operation;

Fig. 5 is a view similar to Figs. 3 and 4, the parts being shown at the end of the tying or sealing operation;

Fig. 6 is a sectional view on line 6—6 of Fig. 3;

Fig. 7 is a perspective view of the notched wheel and associated parts; and

Fig. 8 is a perspective view of the "flag" after application of the tape to the bag.

To illustrate one embodiment of my invention, I have shown in the drawings a bag-tying machine comprising a frame plate 10 secured to a supporting base 11 by suitable means such as the bolt 12. Secured to the plate 10 in spaced relation thereto is a second plate 13, this plate being held in place by screws or the like 14, and spacing sleeves 15 hold the two plates in spaced relation.

A reel 16 is rotatably mounted upon the frame member 10, which reel is designed to hold a supply roll 17 of pressure-sensitive tape which as usual is rolled with its pressure-sensitive surface inwardly so that this becomes the upper surface of the tape as it passes through the machine as indicated at 18. The tape may be passed over suitable guide members such, for example, as a roller 19 rotatably mounted on the frame member 10 with which the nontacky side of the tape engages and the roller 20 also rotatably mounted on the frame with which the tacky side of the tape engages. This roller 20 may have a roughened or corrugated surface 21 (Fig. 2) and may be frictionally restrained from rotation on its axle 22 by means of the spring 23 mounted within the roller 20. The pressure of this spring upon the roller may be varied by the knurled nut 24 which is threaded upon the axle 22.

A guide wheel 25 may be rotatably mounted on the frame between the plates 10 and 13 upon the pivot 26. This wheel is normally urged to the position shown in Fig. 1 by a spring 27 secured at one end to a pin 28 on the frame and secured at its other end to a screw 29 secured to the periphery of the wheel 25. The intermediate part of the spring is passed about an idler pulley 30^a to change its direction. The screw 29 is, as shown in Fig. 1, adapted to contact with a combined cam and stop member 30 to limit the rest or "stop" position of the guide wheel under influence of the spring 27.

A pair of idler rollers 31 and 32 are also mounted between the plates 10 and 13 and, as shown in Fig. 1, the tape coming from the supply roll 17 passes between these rollers and the guide wheel 25. The surfaces of these rolls 31 and 32 contact the tacky side of the tape and may also be roughened to some extent so that there will be the desired adherence between them and the tape. These rollers hold the free end of the tape in close juxtaposition to the guide wheel 25 and also in cooperation with the roller 20 hold the tape in relatively taut condition and in such position so that the free end, as will be explained hereinafter, may be engaged by the twisted neck of a bag to be tied.

A compression spring 33 acting between the roller 37 and the head of the pin 31^a upon which the roller is mounted frictionally resists rotation of the roller to ordinarily prevent its reverse rotation.

The wheel 25 is provided with a notch or recess 34 to receive the neck of the bag. As shown in Fig. 1, when the parts of the machine are in their normal or rest position, the free end of the tape overlies this recess. A pair of guide arms 35 are secured one upon each side of the wheel 25, adjacent the notch 34 so that the bag may be held against the upper inclined surfaces of these arms, as shown in Fig. 1, and guided downwardly into the recess in the guide wheel. It may also be noted that the

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frame members 10 and 13 are cut away adjacent the forward edge of the frame so as to provide upon each of these frame plates a guide edge 36 adapted to cooperate with the guide arms 35 to guide the bag into the recess 34 and also to provide an arcuate edge 37 over which the neck of the bag rides when drawn through the machine. Each of the plates 10 and 13 is also provided at the lower end of the arcuate guide edge 36 with a stop edge or shoulder 38. This shoulder may be inclined downwardly from the wheel, if desired, so that it will not be necessary to withdraw the bag directly outwardly from the wheel so as to obviate a substantially right-angle turn in the direction of movement of the bag in order to withdraw it from the machine.

As shown in the drawings a severing member is slidably mounted in the guide wheel 25, this severing member comprising a flat blade having a body portion 39 and a triangular-shaped head 40 having a sharpened pointed edge 41. This member is disposed in a groove or slot 42 cut through one side face of the wheel leaving a web 43 at the other side. This web provides a shoulder 44 against which the base of the triangular head 40 of the knife abuts to limit movement thereof in one direction. The knife may be held in the groove 42 by the heads of the screws 45 and 46 threaded into the guide wheel 25.

The knife is normally urged to the position shown in Figs. 1 and 3, where its sharpened edge 41 lies within the periphery of the guide wheel, by a spring 47 which is mounted in a socket 48 in the wheel and acts against the laterally turned end 49 of the body portion 39 of the severing member. A guide pin 50 may be secured to the part 49 to hold the spring in place. As stated above, the knife is normally held in such a position that its sharpened edge is not exposed beyond the periphery of the guide wheel 25. However, when the wheel is rotated to the position shown in Fig. 4, for example, the protruding end of the body portion 39 of the severing member strikes against the adjacent face 52 of the combined stop and cam member 30, and the severing member is forced outwardly to project its edge beyond the periphery of the guide wheel so as to sever the tape. The extreme outward position of the severing member is shown in Fig. 5.

A presser or wiper arm 53 is pivoted at 54 between the plates 10 and 13, this arm being provided with an end surface 55 normally urged into contact with the periphery of the guide wheel 25 by the spring 56, the free edge of which bears against the back or outer surface of the arm 53. This arm is also recessed or cut away at its inner face, as shown at 57, so that at the end of the tying operation the arm will clear the neck of the bag and permit the surface 55 to press one ply of the folded end of the tape against the other ply to seal the two plies together.

A resilient lifting member 58 is secured at one end to the periphery of the guide wheel 25, as shown at 59, the guide wheel being notched as at 60 to receive the end of this member. The other end of this member is free and is tensioned to normally stand outwardly from the periphery of the guide wheel to some extent, as shown in Figs. 5 and 7 so as to lift the tape off the periphery of the wheel after the severing operation. This prevents the contact of the edge severing member with the tape during the initial return movement of the wheel and also causes the tacky side of the tape to engage the roller 31.

The normal position of the parts when the device is at rest is shown in Fig. 1 where it will be seen that the guide edges 36 and the members 35 provide between them a guide channel or mouth leading into the recess 34 in the guide wheel. It will also be seen that the free end of the tape extends over the recess 34 and between and slightly beyond the guide arms 35 with the tacky surface of the tape outwardly. As shown in dotted lines in Fig. 2, the twisted end 61 of a bag 62 to be sealed is placed between the members 35 and 36 and moved downwardly against the inner edges of the member 35 into the recess

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34, thus moving the tape into this recess as shown in Fig. 3 and causing the free end of the tape to project upwardly and outwardly, as shown at 18^a in this figure. The bag is now drawn downwardly and by contact with the edge of the recess 34 and with the arms 35, will effect rotation of the guide wheel 25 from the position shown in Fig. 1, through the position shown in Fig. 3, and to the position shown in Fig. 4.

In passing from the position shown in Fig. 3 to the position shown in Fig. 4, the twisted end of the bag rides behind the surface 55 of the presser or wiper arm 53, and this surface causes the end 18^a of the tape to be folded over the bag and against the tacky side of the tape on the periphery of the wheel above the recess 34, as shown in Fig. 4. When the parts reach the position shown in this figure, the end 49 of the severing member 39 engages the cam surface 52 of the stop member 30 and the knife is moved outwardly against the tape.

Upon continued movement of the bag downwardly from the position shown in Fig. 4 to the position shown in Fig. 5 the knife is projected outwardly through the tape to sever it, and the wiper arm 53 presses together the two plies of the tape above the bag so that the tacky side of the tape not only adheres to the bag, but the two plies are caused to adhere together to form the "flag" 63, shown in Fig. 8, thus completing the sealing operation.

The movement of the bag continues downwardly until it strikes the surface 38 of the frame after which it is drawn outwardly along this surface, as shown in dotted lines in Fig. 5, the presser arm 53 being permitted to swing outwardly about its pivot 54 against the pressure of the spring 56. So soon as the tape has been severed and the bag withdrawn from the recess 34, the spring 27 returns the guide wheel 25 to its normal position, shown in Fig. 1, and the spring 47 also retracts the severing member so that its edge is withdrawn into the outline of the guide wheel.

It will be seen from Fig. 4 that the severing operation takes place adjacent the free end of the resilient stripper member 58, and this member will hold the tape away from the wheel out of contact with the knife during initial return movement of the guide wheel 25. Moreover, this member will cause the tape to contact the surfaces of the rollers 31 and 32 so that the tape will not be carried rearwardly by the movement of the guide wheel but will be held in position, shown in Fig. 1, ready for a subsequent operation. Also when the bag 61 has been drawn from the machine, the spring 56 will return the wiper arm 53 from its dotted line position, shown in Fig. 5, to the position shown in Fig. 1 so that the parts will all have been returned to their normal positions.

While I have shown and described one embodiment of my invention, it will be understood that it is not to be limited to all of the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the claims.

What I claim is:

1. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel rotatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, and said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, a severing member movably carried by said wheel, means normally urging said member to a retracted inoperative position with respect to said wheel, and means controlled by movement of the wheel for moving said member outwardly to effect an operative stroke of said member to a position projecting beyond the periphery of the wheel.

2. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel ro-

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tatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, and said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, a guide member carried by said wheel adjacent said recess to guide the neck of a bag therein, means to limit movement of the wheel by the bag when the latter is within said recess, and means to return said wheel to its normal position.

3. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel rotatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, and said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, a guide member carried by said wheel adjacent said recess to guide the neck of a bag therein, means to limit movement of the wheel by the bag when the latter is within said recess, means to return said wheel to its normal position, and guide means on said frame upon the side of said recess opposite said guide member on the wheel to form a channel leading into said recess.

4. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel rotatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, and said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, guide arms on said wheel projecting beyond the periphery thereof to guide a bag into said recess, and a severing member movably carried by the wheel, and means to project said severing member from the wheel to engage and sever the tape.

5. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel rotatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, and said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, means limiting movement of said guide wheel by movement of the bag when the latter is in said recess, and means to return said wheel to a normal position of rest after the bag has been withdrawn from said recess.

6. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel rotatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, and said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, a severing member movably carried by said wheel, means normally urging said member to a retracted inoperative position with respect to said wheel, means controlled by movement of the wheel for moving said member outwardly to a tape-engaging position projecting beyond the periphery of the wheel, and means adapted to contact the back of the tape to fold it upon itself around the neck of a bag in said recess.

7. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel rotatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, a severing member movably carried by said wheel, means normally urging said member to a retracted inoperative position with respect to said wheel, means controlled by movement of the wheel for moving said member outwardly to a tape-engaging position projecting beyond the

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periphery of the wheel, and a stripper member to strip the tape from the severing member.

8. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel rotatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, a severing member movably carried by said wheel, means normally urging said member to a retracted inoperative position with respect to said wheel, means controlled by movement of the wheel for moving said member outwardly to a tape-engaging position projecting beyond the periphery of the wheel, and a stripper comprising a flat resilient member secured at one end on the periphery of the wheel, and the other end engaging the back of the tape adjacent the point of severance to strip the tape from the severing member.

9. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel rotatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, a severing member reciprocally carried by said wheel, means normally urging said member to masked inoperative position within the periphery of the wheel, and means on the frame for moving said member outwardly to a tape-engaging position in which it projects beyond the periphery of the wheel, said last-named means including a cam member adapted to be engaged by the severing member upon the rotation of said wheel to a predetermined position.

10. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel rotatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, a severing member movably carried by said wheel and normally standing in a masked position within the outline of the wheel, means engaging a part of the said severing member at a predetermined time during the rotation of the wheel to move the latter outwardly to a tape-engaging position projecting beyond the periphery of the wheel, means to return said wheel to a normal position of rest after it has been rotated by a bag positioned in said recess, and means to retract said severing member to its masked position during said return rotation.

11. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel rotatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, said wheel having a slot therein opening through its peripheral surface over which the tape is drawn, a severing member slidably mounted in said slot, spring means normally holding said member in a retracted position with the cutting edge thereof lying within the outline of the wheel, and means on the frame to actuate said severing member to a tape-engaging protracted position when said wheel is rotated.

12. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel rotatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, and said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, said wheel being provided with a slot opening through the periphery thereof at both ends, a severing member slidably

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mounted in said slot having its cutting edge normally in a masked position within the periphery of the wheel, and a rear end portion projecting from the periphery of the wheel, spring means normally urging said cutting member to its inoperative retracted position, and cam means on the frame to engage the normally projecting end of said severing member when the wheel is turned to project the blade of said member to a tape-engaging position beyond the periphery of the wheel.

13. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel rotatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, and said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, rolls on the frame adjacent the guide wheel to engage the tacky side of the tape and hold the free end thereof at said bridging position, guide means on the frame to guide the bag in an arcuate path when its neck is received in the recess and the bag and wheel are pulled forwardly, means for wrapping the free end of the tape about the neck of the bag during such movement, means for severing the tape, and means for returning the guide wheel to its normal position after the bag is withdrawn from the recess.

14. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel rotatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, rolls

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on the frame adjacent the guide wheel to engage the tacky side of the tape and hold the free end thereof at said bridging position, guide means on the frame to guide the bag in an arcuate path when its neck is received in the recess and the bag and wheel are pulled forwardly, means for wrapping the free end of the tape about the neck of the bag during such movement, means for severing the tape, a stripper member to strip the tape from the severing member and move it toward said rolls, and means for returning the guide wheel to its normal position after the bag is withdrawn from the recess.

15. A bag-tying machine comprising a frame member, means thereon for rotatably supporting a supply roll of tape having a pressure-sensitive face, a guide wheel rotatably mounted on the frame having a recess in its periphery to receive the neck of a bag to be tied, said wheel having a peripheral surface over which the tape is drawn to bridge said recess with its tacky side outwardly, rolls on the frame adjacent the guide wheel to engage the tacky side of the tape and hold the free end thereof at said bridging position, guide means on the frame to guide the bag in an arcuate path when its neck is received in the recess and the bag and wheel are pulled forwardly, means for wrapping the free end of the tape about the neck of the bag during such movement, means for severing the tape, said severing means comprising a severing member mounted for reciprocating movement on said wheel, and a resilient stripper member secured at one end to the wheel, and the free end of said member extending over the periphery thereof to a point adjacent the severing member.

No references cited.