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MEANS AND METHOD OF APPLYING HANDLES TO BAGS

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4 Sheets-Sheet 1

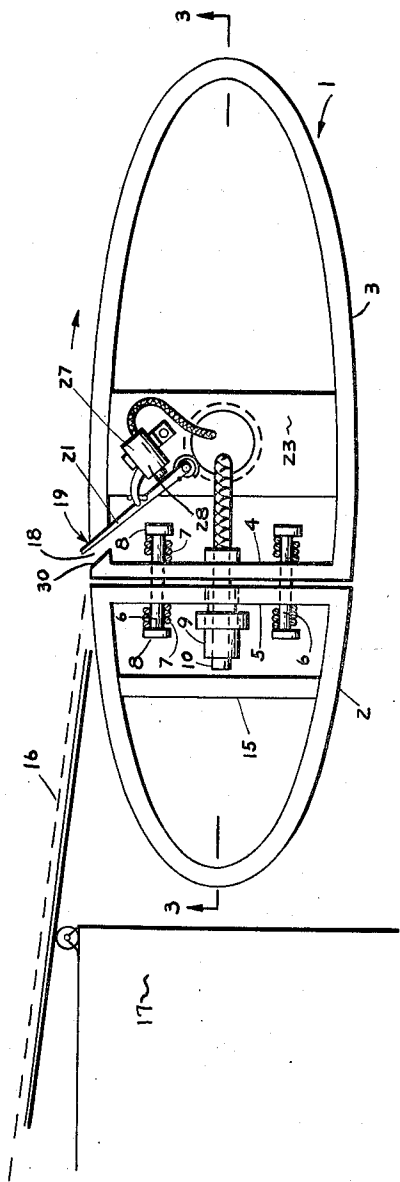


FIG. 1

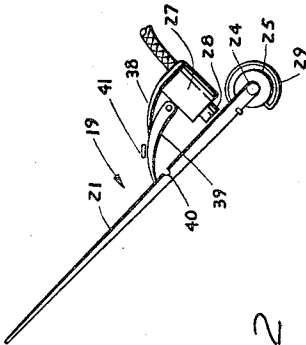


FIG. 2

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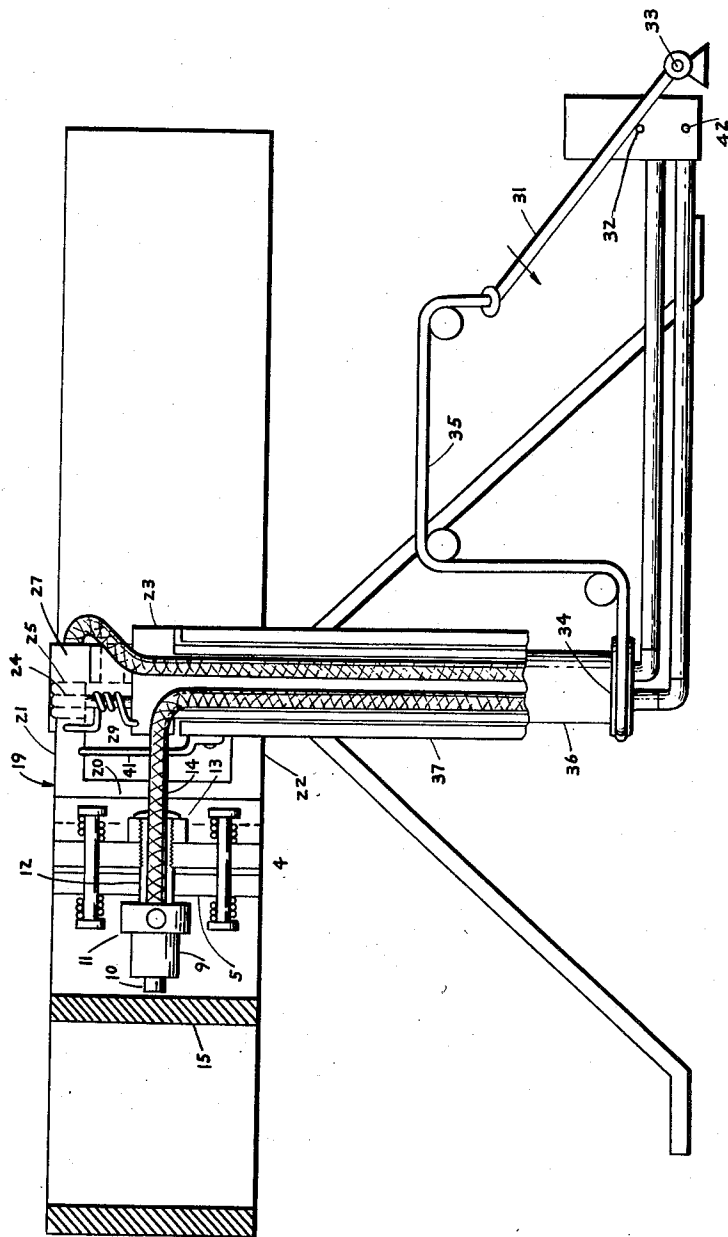


FIG. 3

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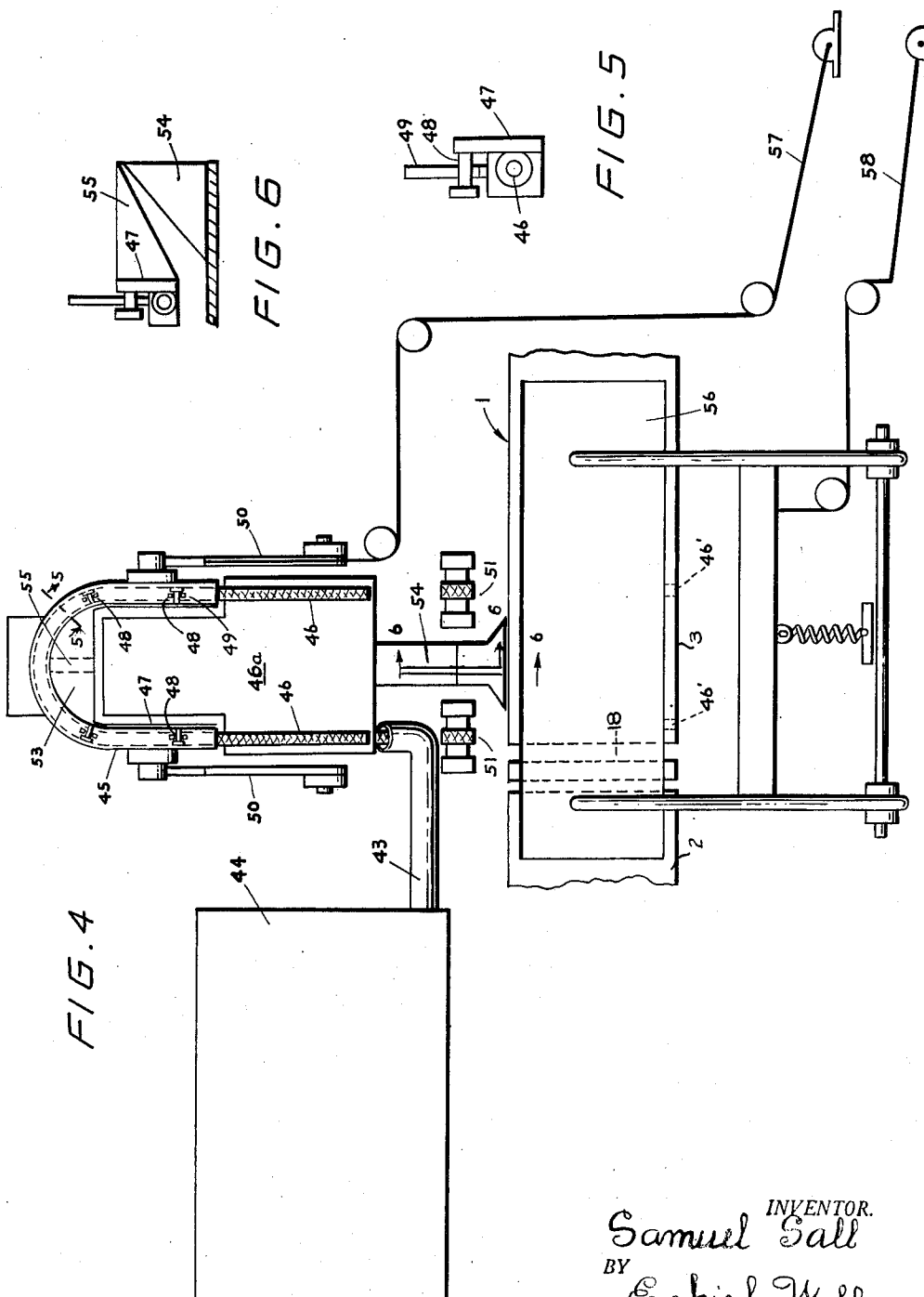
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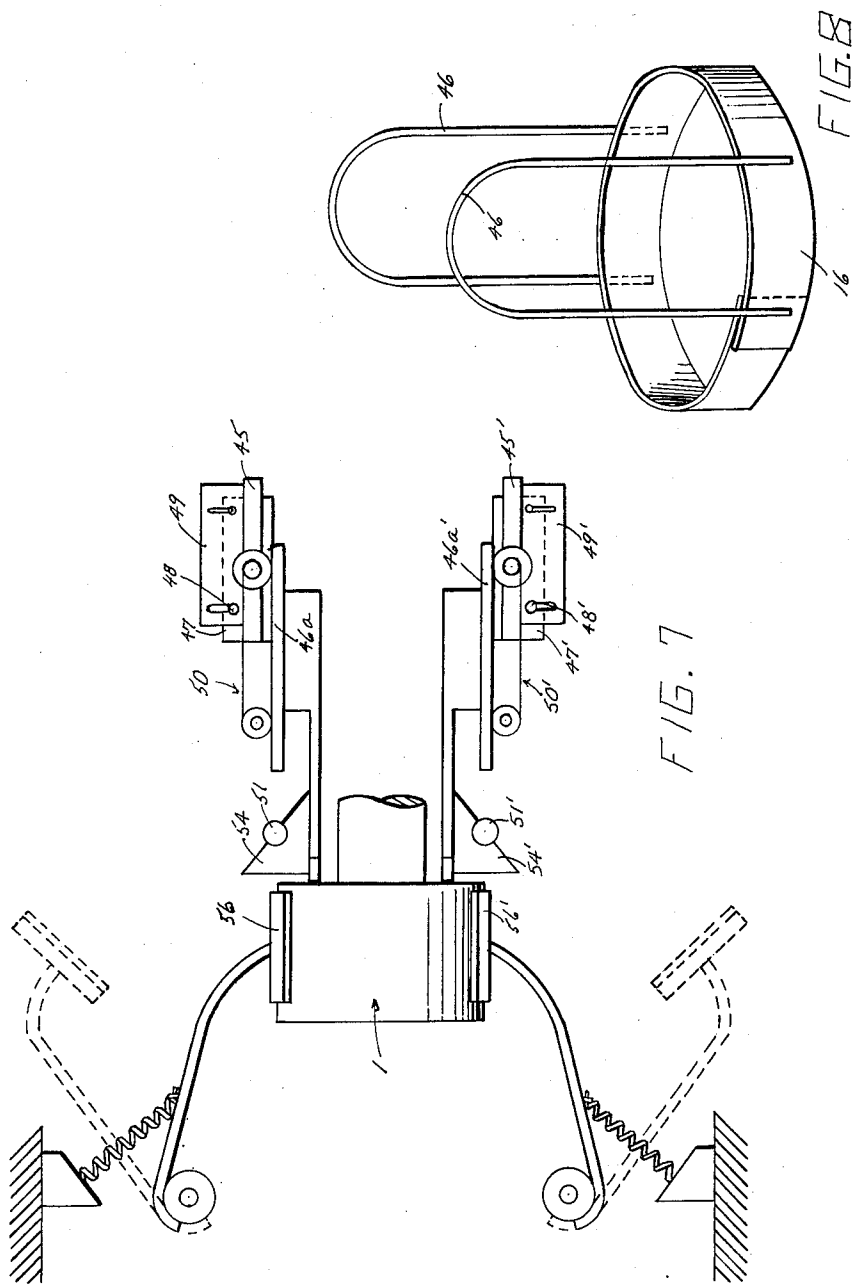
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4 Sheets-Sheet 4



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MEANS AND METHOD OF APPLYING HANDLES
TO BAGS

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9 Claims. (Cl. 93—8)

The present invention relates to a shopping bag and more particularly to the application of a handle or handles to a wide-mouthed bag used for instance by shoppers in super markets, department stores and the like where a number of smaller bags are put together in a large shopping bag when the purchases are finally checked out by the clerk.

The invention more particularly relates to the application of a pair of handles to an already formed wide-mouthed bag. It is common practice to apply the handles to a sheet in the formation of the bag as by applying the handles by adhesive to a paper web forming a part of the bag, but to do this, a large and expensive machine is necessary.

According to my invention, the open-mouthed bags may be used and a pair of handles may be applied to them by inexpensive apparatus wherever handled bags are desired. This decreases large overhead cost for the manufacture of handled bags since the bags may be purchased from a source which specializes in plain bags and the handles may be applied by the present methods and means comprising my present invention.

One of the difficulties in applying handles to bags already manufactured has been that the handles usually pull away from the bags quite easily, particularly when they are stapled into the bag or glued by a flap or simply by glue attached to the handles.

According to the present invention the handles are attached to the bag by first applying the handles to a strip to be applied around the inside top of the bag and then securing the strap to the inside top of the bag by glue or cement and pressure applied to the inside of the strip and outside of the bag opposite to the strip to press the bag handles and strip together in one secure assembly. The bag and handles may be made of paper or any other suitable materials.

In this method of the present invention, a strip of paper is wound around a head and the handles are applied on the outside of this strip which is then enlarged to lie against the inside of the bag at the same time that pressure is brought against the outside of the bag which has been slipped in place over the strip and head, previously mentioned. Cement or glue is applied to the outside of the strip and to the handles as they are put in place, as will be explained more fully in the specification below when taken in connection with the drawings in which:

Figure 1 shows a side view of the head for forming a band to go inside the bag.

Figure 2 shows an enlarged detail of Figure 1.

Figure 3 shows a section taken substantially on the line 3—3 of Figure 1.

Figure 4 is a plan view of the means for applying the handles to the side of the band of Figure 1.

Figure 5 shows a detail of an element in Figure 4.

Figure 6 shows a detail substantially on the line 6—6 when the horse-shoe end of the device of Figure 4 has progressed to a point near its inner position,

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Figure 7 is a right side view of the device shown in Figure 4 and

Figure 8 is a perspective view of the band and handles ready to be inserted into the mouth of a bag.

In the arrangement shown in the drawings, 1 indicates a head which consists of an elliptical collar formed of two sections 2 and 3 which abut along a transverse line cross-wise of the ellipse. Along this transverse line in abutting relation, are end elements 4 and 5 for the sections 3 and 2 respectively. These end elements which face each other have four spaced pins 6, two of which shown in Figure 1 in side view and two of which are shown in Figure 3 in the cross sectional view. These pins are axially free in the walls 4 and 5 and on the outer side of the walls are surrounded by springs 7, 7, which are restrained by caps 8, 8, so that the pins 6 are centrally located in the walls 4 and 5. The left hand section 2 of the elliptical head is movable away from the sections 3 by means of the air cylinder 9 and the piston 10 operating therein. The air cylinder 9 is supported in a supporting base 11 which is attached to a shaft 12 extending through a hole in the plate 5 and threaded through the plate 4 and secured on the other side of the plate 4 by a nut 13 or in any other suitable manner. An air hose 14 passes coaxially through the shaft 12 into the cylinder 9 and supplies the air pressure for moving the piston 10 against a plate 15 extending across the elliptical section 2 of the head 1. When air pressure is applied to the cylinder through the hose 14, the left end of the elliptical head is separated about an inch and a half from the right hand end and the band which has been wrapped around the head is extended to its full size as will presently be explained.

As illustrated diagrammatically in Figure 1, a paper strip 16 is fed by a conventional paper strip feeder 17. This strip may be of the desired length and may be coated with a proper slow drying glue or paste on its outer surface. The strip is fed to the mouth or jaw 18 in the side of the head 1 which is provided with a gripper plate or tongue 19 which is in the form of a U with a cross plate or element 20 and with side elements 21 and 22 which are pivoted in the head 1 in the cross support 23 by means of the pivot 24 extending through the hub 25 to which the side element 21 is attached. The side element 22 is similarly supported. An air cylinder 27 is also supported on the cross plate 23 and this cylinder has a piston 28 which acts against the side element 21 to close the gripper jaw when the paper strip has been inserted in the jaw 18. The side element 21 is moved against the action of a return spring 29 which normally holds the cross plate 20 away from the face 30, but when the cross plate is moved by the action of the piston 28, the gripper closes on the paper strip to grip it. The piston 28 is operated by the foot lever as it strikes the control pin 32. This is operated at the beginning of the rotation of the head 1 which is rotated in a clock-wise direction as seen in Figure 1. After the gripping plate grasps the end of the strip, the head is rotated as the foot lever 31 is turned counter clockwise (Figure 3) about its pivot 33. The lever 31 rotates the horizontal pulley 34 by action of the cable 35 to turn the shaft 36 which is supported by the plate 23 freely mounted to turn on the collar 37.

As the piston 28 is operated, a spring 38 forces a pivoted lever 39 to latch a V-shaped opening 40 in the side element 21 of the gripper, so that the paper is held taut while the head is rotated. At the end of the rotation of the head, the pin 41 on the fixed support 37 hits against the side arm 21, opening the gripper jaw and pushing the side arm 21 back to the position shown in Figure 2.

When the operating lever 31 has been pressed downwardly to rotate the head 360°, a control button 42 is operated to extend the left portion of the head outwards by the action of the piston 10 in the cylinder 9. The

handles may be applied to the band or strip before it is extended.

Referring to the side view of Figure 1, the reader will note that when the head makes one revolution clockwise, the free end of the band or strip will overlie the leading portion of the strip applied to the head. The glue on the outer surface of the strip will retain the free end of the strip in position on the head against the leading portion of the strip. However, because the glue is slow drying, when the head is expanded, the strip will creep clockwise on the elliptical surface and the free end of the strip will extend just over the jaw 18 when the head reaches its fully expanded position. This operation is referred to in the specification as enlarging the band.

A full length of the handle is fed through a guide pipe or channel 43, from the handle dispensing device 44 which may be of the usual construction used in the art. The handle is fed over a guide plate 46a and through a horse-shoe form 45 and severed to apply the desired correct handle length which may be in the neighborhood of fourteen inches. The horse-shoe form 45 may be in the form of a tubular U-shaped piece as shown in Figure 4 with the inner peripheral wall 47 of the U adapted to be raised. This may be accomplished by supporting the wall 47 by pins 48 which are positioned in slotted plates 49 which are mounted on top of the U-shaped tubular form. The plate or wall 47 extends all around the inside of the U and when this wall is raised perpendicular to the plane of the U, the horse-shoe shaped rope may be removed from the U.

In the operation of the machine as viewed in Figure 4, the horse-shoe form 45 is moved by the arms 50, forward, until the ends of the rope 46, 46, are swept over the glue applicator 51, 51, and over the head beneath the pressure plate 56, whose function will presently be explained. The end of the ropes will extend forward to the bottom of the head as indicated at the points 46', 46'. When the plate 53, Figure 4, which is attached to the wall 47, reaches the forward position, it is raised by the cam or inclined plane 54, Figure 6, which raises the wall 47 and the extension tongue 55 so that the handle 46 may be drawn out of the U-shaped tube. This occurs when the pressure plate 56 is brought down on the bag on its external side opposite the band on the head 1. Beneath the wall of the bag is the handle, and beneath the handle is the band which has been wrapped around the head 1.

The horse-shoe is moved forward in Figure 4 by operation of the foot lever 57, and the plate 56 is operated by the foot lever 58 to hold the bag, the band and the handles between the bag and band tightly together. The assembly illustrated in Figure 4 is duplicated beneath the head 1 so that a handle may be attached at each side of the bag. This is clearly shown in Figure 7. The handle forming and applying apparatus below the level of the head 1 is numbered identical to the top handle forming and applying apparatus but the numerals are identified by prime numbers. These assemblies may be operated together through a single set of levers 57 and 58.

In the operation of this method and apparatus of applying handles to completed bags, there is provided an end expandable head about which is wrapped a strip of gummed paper. The handles are next positioned on the strip after it is wrapped around the head and then the bag is placed about the head from the front. The strip is next enlarged to fill the open end of the bag by expanding the end of the head to bring the bag material and strip together. As the head 1 is expanded, pressure is applied on the outside of the bag by the pressure plate 56 to glue the strip and handles firmly in place on the bags. The bag is then completed and withdrawn from the head.

Having now described my invention, I claim:

1. A method of applying handles to the tops of wide mouthed open bags, which consists first in forming a band of paper-like material, placing a pair of handles on

the outer face of the band on either side thereof, placing the open end of a bag about the band, enlarging the band to engage the inner surface of the bag around the open end thereof, and then pressing the band against the bag.

2. A method of applying handles to the tops of wide mouthed open bags, which consists first in forming a band of paper material with an adhesive on the external face thereof, placing in position on the band a pair of handles to which adhesive has been applied, placing the open end of a bag about the band, enlarging the band to engage the inner surface of the bag around its open end, and then pressing the band and bag together by applying pressure on the outside of the bag and the inside of the band.

3. A method of applying handles to the tops of wide mouthed open bags, which consists first in forming a band of paper material on an elliptical transversely split head, applying an adhesive to the outer side of the band, placing a pair of handles on the outer face of the band on either side of the head, placing the open end of a bag about the band on the head, expanding the band to engage the inner surface of the bag around the open end thereof, and then pressing the band against the bag.

4. A method of applying handles to the tops of wide mouthed open bags, which consists first in forming an enlargeable band of paper material on an elliptical transversely split head, applying an adhesive to the outer side of the band, placing a pair of handles on the outer face of the band on either side of the head, placing the open end of a bag about the band on the head, separating the parts of the head along its split to enlarge the band to fit snugly against the inside of the wall of a bag about the head, and applying pressure on the outside of the wall of the bag and holding the same in pressed position until the handles have been cemented in place.

5. Apparatus for applying handles to a bag comprising a transversely split elliptical head adapted to fit into the mouth of a bag, means positioned in the periphery of the head for gripping the leading edge of a strip of paper, means for winding the strip about the head, means for applying the handles to the strip, and means for expanding the elliptical head for pressing the strip and bag about the head together to adhere the handles in place.

6. Apparatus for applying handles to a bag comprising an elliptical head made in two parts which separate and adapted to fit into the mouth of a bag, means positioned in the periphery of the head for gripping the leading edge of a strip of paper, means for rotating the head while the leading edge of the strip of paper is gripped to wind the strip about the head, means for applying the handles to the strip wound about the head, and means for separating the two parts of the head for pressing the strip and bag about the head together to adhere the handles in place.

7. Apparatus for applying handles to a bag comprising an elliptical head adapted to fit into the mouth of a bag, means positioned in the periphery of the head including a gripper arm having its end engaging in a slot in the side wall of the head for gripping the end of a strip of paper, means for winding the strip of paper about the head, means for applying the handles to the strip wound about the head, and means for pressing the strip and a bag about the head together to adhere the handles in place.

8. Apparatus for applying handles to a bag comprising an elliptical head having two parts which separate and adapted to fit into the open end of a bag, means for expanding the head transversely along the length of the ellipse by separating the parts, means for winding a band around the outside of the elliptical head, means for forming a handle, and means for placing the handle over the band wound on the head, whereby the bag and band are pressed together with the handle therebetween when the parts of the head are separated within the mouth of the bag.

9. Apparatus for applying handles to a bag com-

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prising a head adapted to fit in the open mouth of a bag, means for expanding the head, means for winding a band around the outside of the head, means for forming a handle, means for conveying the handle to the outside of the band, and means for pressing the band against the inner wall of the bag with the handle between the band and the bag. 5

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