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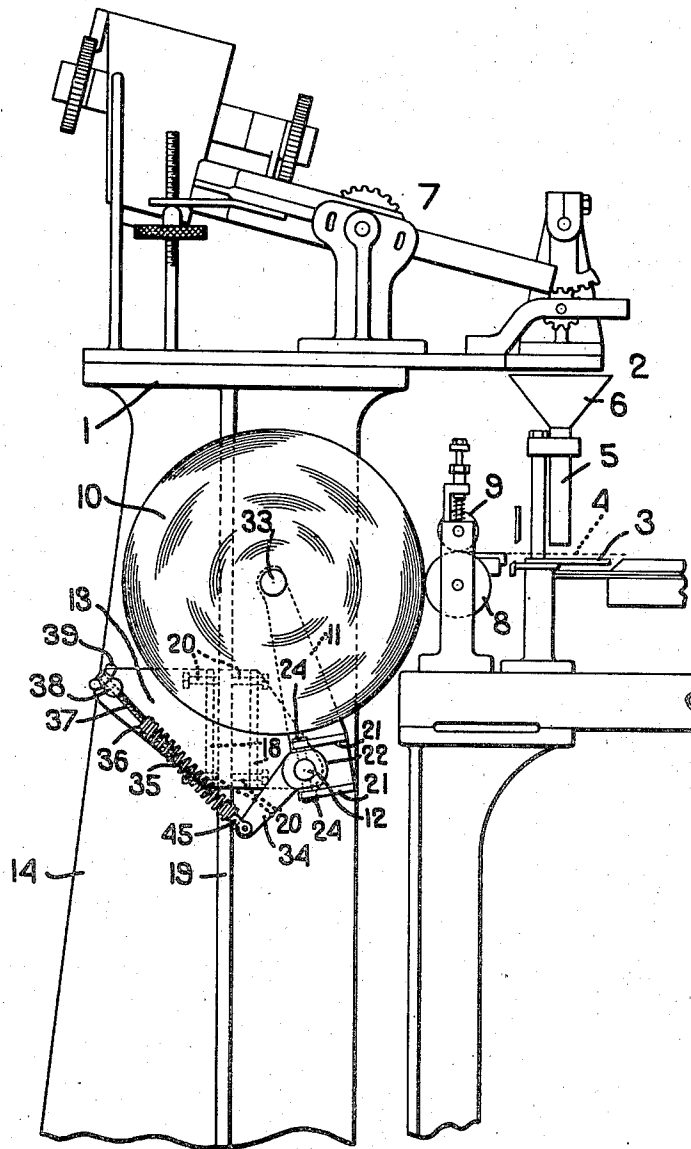
2,223,445

WEB FEEDING MECHANISM FOR PACKAGING MACHINES

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2 Sheets-Sheet 1

Fig.1.



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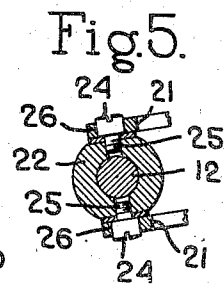
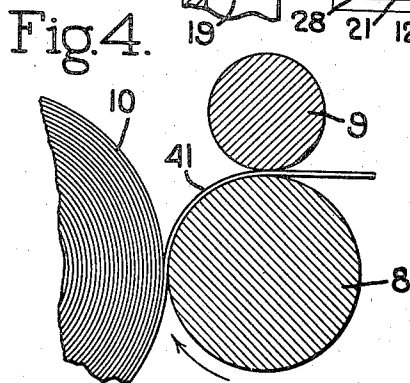
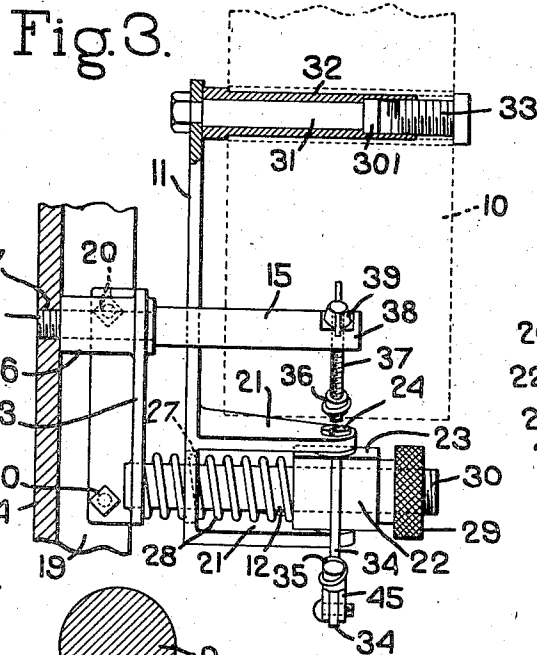
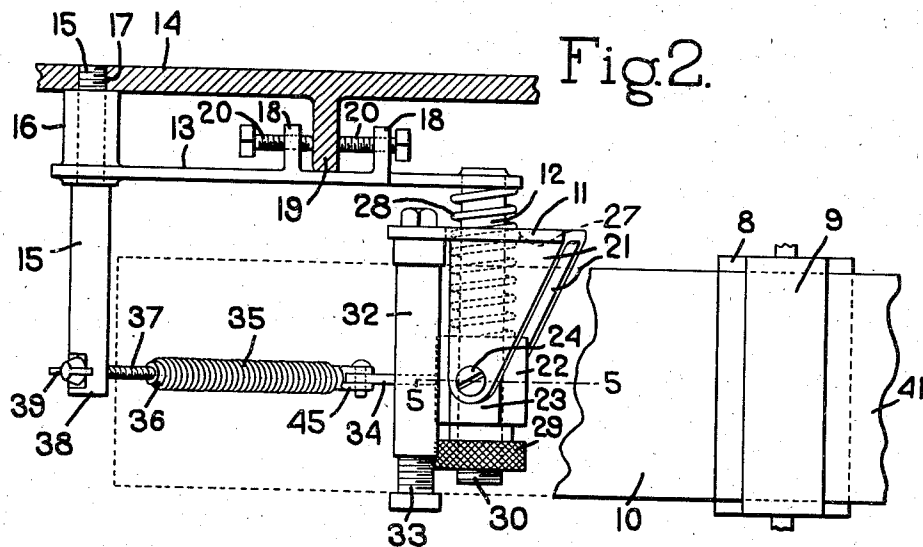
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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WEB FEEDING MECHANISM FOR PACKAGING MACHINES

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4 Claims. (Cl. 242-75)

This invention relates to packaging machines such as are used for making and filling tea bags, coffee bags and the like, and it relates particularly to the feeding mechanism for feeding the bag material in web or strip form to the bag-forming mechanism.

In order to give an understanding of the invention I have chosen to illustrate it as it might be applied to a packaging machine of the general type illustrated in my Patent 1,700,672, January 29, 1929, or in the Cleaves Patent 1,911,805, May 30, 1933. In the devices illustrated in said patents, the bag material in strip form is delivered from a supply roll to intermittently operating feed rolls, which, in turn, feed or deliver predetermined lengths of bag material to the supporting plate of the bag-forming mechanism, each length of bag material being severed from the web between the feed rolls and the supporting plate after it has been fed into position on to said plate.

In order that this bag material may be fed properly to the supporting plate, it is desirable that it should be delivered from the supply roll to the feed rolls under controlled tension, and also that the supply roll should be so positioned relative to the feed rolls that in the delivery of the material from the supply roll to the feed roll there will be no tendency for the web or strip of bag material to work sideways. In other words, the supply roll should be so mounted that it will always "track" properly with the feed roll.

One of the objects of my present invention is to provide a novel construction by which these desiderata may be accomplished.

In carrying out my invention, I provide a supporting means for the supply roll by which the said roll is rotatably supported in peripheral contact with the feed roll and is held yieldingly pressed against the feed roll so that the supply roll will be rotated by and at the same surface speed as the feed roll.

The mounting for the supply roll is also constructed so as to permit the supply roll to be adjusted axially to bring it into the desired tracking relation with the feed roll, and the mounting also has such construction as to permit any necessary turning motion of the supply roll about an axis perpendicular to its own axis in order to bring it into the proper axial relation with the feed roll.

Referring now to the drawings wherein I have illustrated one embodiment of my invention:

Fig. 1 is a side view of a portion of a packaging machine having my invention applied thereto;

Fig. 2 is a plan view of the supply roll support, said figure showing a part of the frame of the packaging machine in section;

Fig. 3 is a view of the supply roll support looking toward the right in Fig. 1, the spindle for supporting the supply roll being shown in section;

Fig. 4 is a more or less diagrammatic view illustrating the manner in which the web of bag material is delivered from the supply roll to the feed roll;

Fig. 5 is a section on the line 5-5, Fig. 2.

Since my present invention relates to the feeding of the bag material to the bag-forming mechanism, I have not thought it necessary to illustrate a complete packaging machine herein but have shown only such portions thereof as are necessary to illustrate my present invention.

In the drawings, 1 indicates generally the frame of the machine which is equipped with a bag-forming and bag-filling mechanism indicated generally at 2. The bag-forming mechanism has the construction shown in the above-mentioned patents and comprises a supporting plate 3 which is formed with a bag-filling opening (not shown) and on to which a length 4 (shown in dotted lines, Fig. 1) of bag material is delivered. Supported above the plate 3 is a vertically movable bag-forming and filling tube 5 having at its upper end a funnel 6 into which charges of material (coffee, tea and the like) are periodically delivered by a suitable weighing and dispensing mechanism 7.

After a length 4 of bag material has been disposed on the supporting plate 3, the bag-forming and filling tube 5 is moved downwardly through the bag-forming opening in the plate 3, thereby causing the bag material 4 to be folded up around the tube, and while the tube 5 is still in its lowered position, a charge of coffee, tea or the like is deposited into the funnel 6 and thence into the partially formed bag through the tube 5. The tube 5 is then withdrawn and the edges of the blank are gathered together and tied, thus completing the bag.

The machines shown in said patents also are equipped with a pair of feed rolls 8 and 9 which serve to deliver lengths of bag material in strip form from a supply roll to the supporting plate 3, one or both of these feed rolls being positively driven and being intermittently operated.

The parts thus far described are such as are commonly found in packaging machines of this type and constitute no part of my present invention, which relates to the manner of supporting the supply roll so that it will be rotated to deliver bag material to the feed roll by frictional

contact therewith, and can be readily maintained in tracking relation with said feed roll.

The supply roll of bag material in strip form is shown at 10, and in accordance with the present invention it is so supported that it will have yielding peripheral contact with the periphery of the positively but intermittently rotating feed roll 8, and the web or strip 41 of bag material is delivered from the supply roll at the point where it contacts with the feed roll 8 and then passes around the periphery of the feed roll 8 to the nip of the rolls 8 and 9 as shown in Fig. 4, from which it is delivered to the supporting plate 3.

The supply roll 10 is carried by a swinging arm 11 which is pivotally mounted on a stud 12 extending from a bracket member 13 that is attached to the standard 14 of the frame 1, and I have herein provided a bracket construction which can be readily applied and secured to the standard 14 of any packaging machine of this type now in use, so that packaging machines which are already in commercial use can be equipped with my improved web feeding mechanism.

The bracket 13 is secured to the standard 14 through the medium of a stud 15 which extends through a boss 16 with which the bracket is provided and screw-threaded into the standard 14, and it is possible to screw the stud 15 into a threaded aperture 17 with which many machines now in commercial use are provided.

The bracket 13 is also formed with two ribs or ears 18 which are properly spaced to receive between them a strengthening rib 19 with which the standards 14 of commercial machines are usually provided, and each of the ears 18 has clamping screws 20 screw-threaded therethrough, said clamping screws 20 serving to clamp the bracket to the rib.

The swinging arm 11 is provided at its lower end with two ears 21 between which is received a bushing or sleeve 22 that is mounted on the stud 12, said bushing or sleeve being capable of turning movement on the stud, and also movement axially thereof, said bushing being formed with flat faces 23 with which the ears 21 have engagement. The connection between the ears 21 and the bushing 22 is a pivotal connection to permit the arm 11 to swing slightly about an axis perpendicular to the axis of the stud 12. The bushing or sleeve 22 has two screws 25 screw-threaded therinto, each screw having a long cylindrical head 24 which occupies an opening 26 in one of the arms 21. The screws thus constitute pivoted bearings on which the arm 11 may have a turning movement. The arm 11 is provided with an opening 27 through which the stud 12 passes and which is of sufficient size to permit a slight swinging movement of the arm about the studs or trunnions 25 as an axis.

I have stated above that the sleeve 22 is adjustable axially of the stud 12 so as to place the supply roll into proper tracking relation with the feed rolls. The sleeve 22 is confined between a spring 28 which encircles the stud 12 and a thumb nut 29 which is screw-threaded to the screw-threaded outer end 30 of the stud. The spring maintains the sleeve in contact with the adjusting nut 29 and by turning the latter in one direction or the other, the position of the sleeve may be adjusted in the direction of its axis.

The arm 11 is provided at its outer end with a stud 31 on which is rotatably mounted a sleeve 32, the stud 31 having the head 301 which en-

gages an interior shoulder in the sleeve and thus retains the sleeve on the stud while permitting it to freely turn. The supply roll 10 is slipped onto the sleeve 32 and is retained thereon by the headed screw 33 which screws into the outer end of the sleeve 32 as clearly shown in Fig. 3. This provides for readily placing a supply roll on the sleeve and for removing the core of the supply roll when the latter is exhausted.

The sleeve 22 has rigid therewith an arm 34 to which is connected a pulling spring 35 that functions to hold the supply roll 10 yielding in peripheral contact with the feed roll 8. Means are provided for adjusting the tension of the spring 35 according to the requirements for use, and as herein shown, one end of the spring is connected to the arm 34 through the medium of a connection 45 and the other end of said spring is connected to a nut 36 which has screw-threaded engagement with a screw-threaded stem 37 that extends transversely through and is mounted for rotation in the outer end 38 of the stud 15. This stem 37 has a thumb piece 39 at its outer end by which it may be manually rotated. The rotation of the stem will cause the nut 36 to be screwed along the stem and by turning the stem in one direction or the other, the tension of the spring 39 can be increased or decreased.

In the operation of the device, whenever the feed roll 8 is rotated during its intermittent operation, the frictional engagement of said roll with the supply roll will cause the supply roll to be rotated and the web material 11 will be delivered from the supply roll to the feed rolls partly by the pull of the feed rolls on said web at the point where the web is nipped by the feed rolls and partly by the rotation of the supply roll due to its frictional engagement with the feed roll 8. The web material is thus always delivered to the feed rolls under a uniform tension, and the supply roll will be restrained from overrunning during its intermittent rotating movement.

The pivotal mounting of the arm 11 on the stud 12 and the action of the spring 35 maintains the supply roll always yielding in peripheral engagement with the feed roll, and the pivotal connection between the ears 21 and the sleeve 22 permits an automatic adjustment of the supply roll into a position with its axis parallel to that of the feed rolls. The adjustment of the sleeve 22 longitudinally of the stud 12 also provides for placing the supply roll in a proper position in the direction of its axis so that the web material will be properly delivered to the feed rolls and to the supporting plate.

I claim:

1. In a device of the class described, the combination with a supporting bracket, of means to clamp it to the frame of a packaging machine having a feed roll for delivering lengths of web material to a supporting plate, a stud extending from said bracket, a sleeve mounted on the stud for turning movement thereabout, an arm having two ears embracing the sleeve, means pivotally connecting the ears to the sleeve to provide for turning movement of the arm relative to the sleeve about an axis at right angles to that of the sleeve, turning movement of the sleeve on the stud giving the arm a swinging movement toward and from the feed roll, a supply roll carried by said arm and loaded with web material to be delivered to the feed roll, and means acting

on the arm and holding the supply roll yieldingly in peripheral contact with the feed roll.

2. In a device of the class described, the combination with a supporting bracket, of means to clamp it to the frame of a packaging machine having a feed roll for delivering lengths of web material to a supporting plate, a stud extending from said bracket, a sleeve mounted on the stud for turning movement thereabout, an arm having two ears embracing the sleeve and pivotally connected thereto on an axis extending at right angles to that of the sleeve, turning movement of the sleeve on the stud giving the arm a swinging movement toward and from the feed roll, a supply roll carried by said arm and loaded with web material to be delivered to the feed roll, means acting on the arm and holding the supply roll yieldingly in peripheral contact with the feed roll, and means to adjust the sleeve longitudinally of the stud.

3. In a machine of the class described, the combination with a supporting bracket, of means to secure it to the frame of a packaging machine having a feed roll for feeding lengths of web material to a supporting plate, a stud extending from the bracket, a sleeve mounted on the stud

for turning movement thereon, an arm pivotally connected to the sleeve for turning movement relative thereto about an axis at right angles to that of the sleeve, a supply roll carried by said arm and loaded with web material to be delivered to the feed roll, and means holding the supply roll yieldingly in peripheral contact with the feed roll.

4. In a packaging machine having a supporting plate and a feed roll for feeding lengths of web material to said plate, the combination with a stud, means to secure said stud to the frame of the packaging machine, a sleeve mounted on the stud for turning movement thereon and for movement longitudinally thereof, an arm mounted on the sleeve, a supply roll carried by the arm, a spring connecting to said arm and holding the supply roll yieldingly in contact with the feed roll, a second spring encircling the stud and tending to move the sleeve longitudinally thereof in one direction, and a nut screw threaded to the stud and by which the sleeve can be adjusted longitudinally of the stud against the action of said second spring.

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