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2,925,640

APPARATUS FOR SPREADING A MOVING WEB

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FIG. 1.

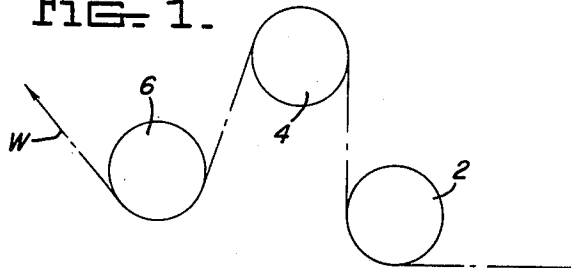


FIG. 2.

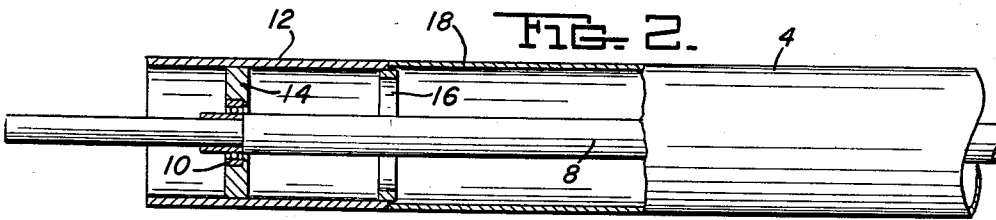


FIG. 3.

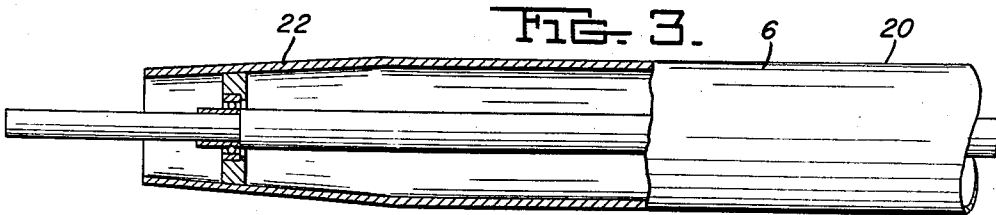


FIG. 4.

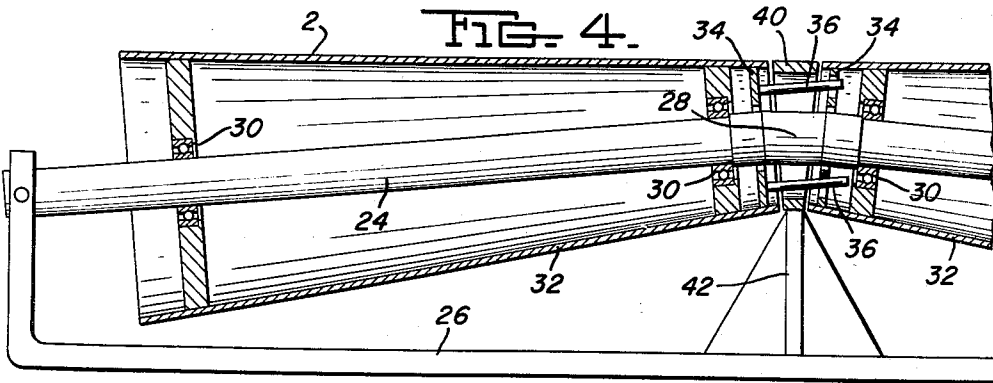
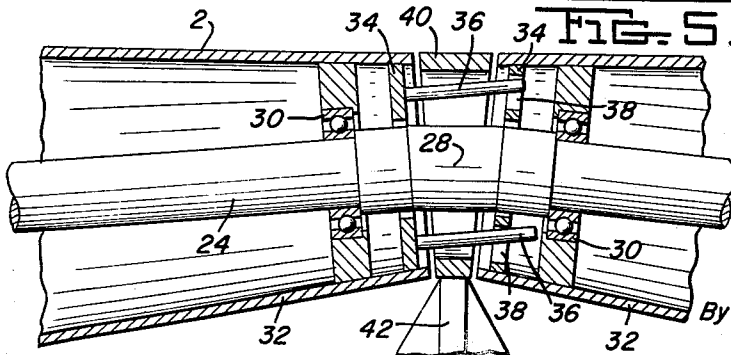


FIG. 5.



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1

2,925,640

APPARATUS FOR SPREADING A MOVING WEB

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2 Claims. (Cl. 26—63)

This invention relates to apparatus for spreading a moving web and more particularly to such apparatus for handling webs or strip made of textiles, plastic, paper or similar material. Other devices have been provided for this purpose but they are not satisfactory for many reasons. The spreading device may be made of two sections, with one section rotating independently of the other. This causes the major portion of the spreading action to occur on that half of the roll having most intimate contact with the web. When this occurs there is a strong tendency for the web to move off the roll. Even under the best conditions such tendency is present in a less degree.

It is therefore an object of my invention to provide apparatus for spreading a moving web in which the apparatus is relatively independent of the contact pressure on the apparatus.

Another object is to provide such apparatus in which means are provided for centering as well as spreading the web.

These and other objects will be more apparent after referring to the following specification and attached drawings, in which:

Figure 1 is a schematic view of a train of rolls of my invention;

Figure 2 is a view, partly in section, of one of the rolls of Figure 1;

Figure 3 is a view, partly in section, of another roll of Figure 1;

Figure 4 is a view, partly in section, of the spreading roll of Figure 1; and

Figure 5 is an enlarged sectional view of the connection between the sections of the roll of Figure 4.

Referring more particularly to the drawings, reference numeral 2 indicates a spreading roll around a substantial arc of which the moving web W passes. The amount of contact of the web W on the roll 2 should not exceed 90°. A self-centering roll 4 and narrow-bodied roll 6 are arranged in tandem with the roll 2. The web passes from the roll 2 around a substantial arc of the roll 4 and then around a substantial arc of the roll 6. The same side of the web contacts rolls 2 and 6 with the opposite side contacting roll 4. Roll 4 is preferably of the type shown in the copending application to Lorig, Serial No. 541,214, filed October 18, 1955, now Patent No. 2,817,940. As shown in the patent the roll 4 consists of a shaft 8 having a bearing 10 mounted on each end. A hollow roll section 12 is mounted on each bearing 10 by means of a web 14. A ring 16 is welded to the inner side of each roll section 12 at the end facing the other section. A roll section 18 extends between roll sections 12 and is mounted on the rings 16. As the roll 4 rotates the roll sections 12 will rotate on axes that converge toward each other toward the direction of approach of the web W no positive drive is shown between the three sections of the roll, but one may be provided if desired. The amount of wrap of the web on the roll 4 should be between 90°

2

and 160°. The roll 6 has a cylindrical strip supporting surface 20 of less width than the width of the web W and frusto-conical end sections 22 with the large diameter end thereof adjacent the center. The above described combination of self-centering roll 4 and narrow-bodied roll 6 produces a stronger centering action than when using one self-centering roll or two self-centering rolls in series.

The spreading roll 2 is novel and may be used independently of the combination shown. The rolls 2 includes a bent shaft 24 having its ends mounted in a bracket 26. Shaft 24 is generally V-shaped and extends from its apex 28 outwardly toward the direction of approach of the web W. A pair of bearings 30 are mounted on each section of the shaft, one adjacent the apex 28 and the other adjacent the support 26. A roll section 32 is mounted on each pair of bearings 30. Each roll section 32 is preferably frusto-conical in shape with its small diameter end adjacent the other section. Internal webs 34 are mounted on the adjacent ends of the roll sections 32. Pins 36 are welded to one of the sections 34 and extend to the web 34 of the other section 32 which has holes 38 therein for receiving the pins 36. Thus the two roll sections 32 are caused to rotate together. Since the roll sections 32 rotate on axes which intersect at a point between the sections and diverge outwardly toward the direction of approach of said web a wedge shaped space is present between the small diameter ends of the roll sections. With many types of material this space prevents proper spreading. Therefore, a wedge shaped ring section 40 is mounted between the roll sections 32 on a bracket 42 mounted on the support 26. In the arrangement shown in Figure 1 with the roll 2 mounted with its axis substantially horizontal the web W leaves the roll 2 at the point where the two sections present a true straight horizontal line.

While one embodiment of my invention has been shown and described it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

I claim:

1. Apparatus for spreading a moving web comprising a spreading roll, a self-centering roll, and a narrow-bodied roll having a cylindrical web supporting surface of less width than the web, said web passing around a substantial arc of the spreading roll with a first side thereof in contact therewith, then around a substantial arc of the self-centering roll with the opposite side thereof in contact therewith and then around a substantial arc of the narrow-bodied roll with the first side in contact therewith.

2. Apparatus for spreading a moving web according to claim 1 in which said spreading roll includes a general V-shaped bent shaft, said shaft extending from its apex outwardly toward the direction of approach of said web, a pair of frusto-conical roll sections rotatably mounted on said shaft one on each leg thereof with their small diameter ends adjacent each other, a stationary hollow wedge shaped ring section extending between said roll sections, and means extending through said ring section between the adjacent ends of said roll sections to cause them to rotate together.

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