

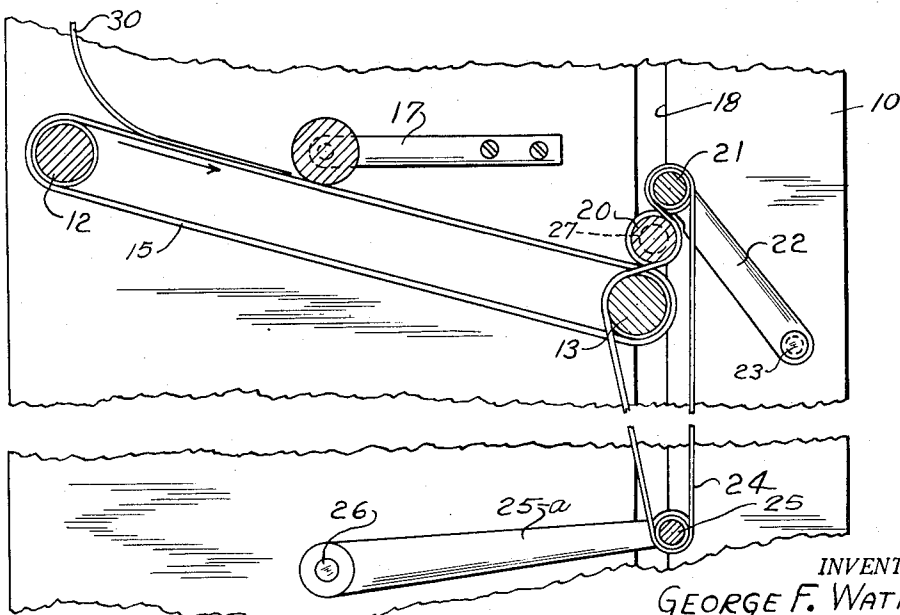
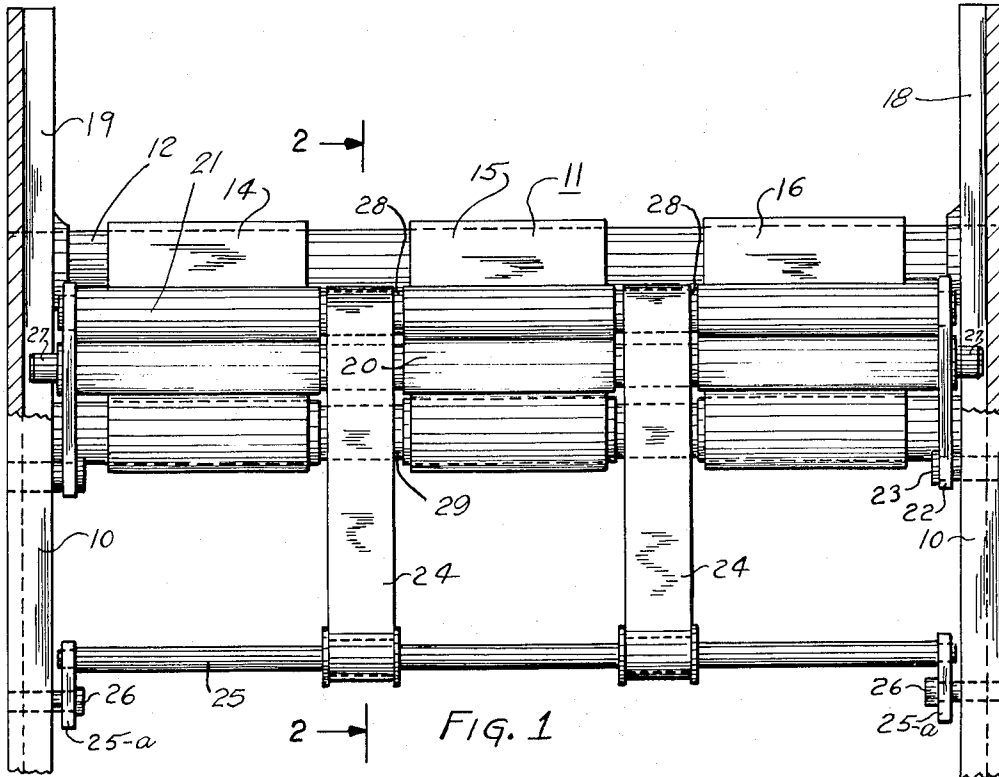
April 24, 1956

G. F. WATKINS
WEB ROLLING MACHINE

2,743,065

Filed April 8, 1952

2 Sheets-Sheet 1



INVENTOR.
GEORGE F. WATKINS
BY
Woodling and Krost
ATTORNEYS

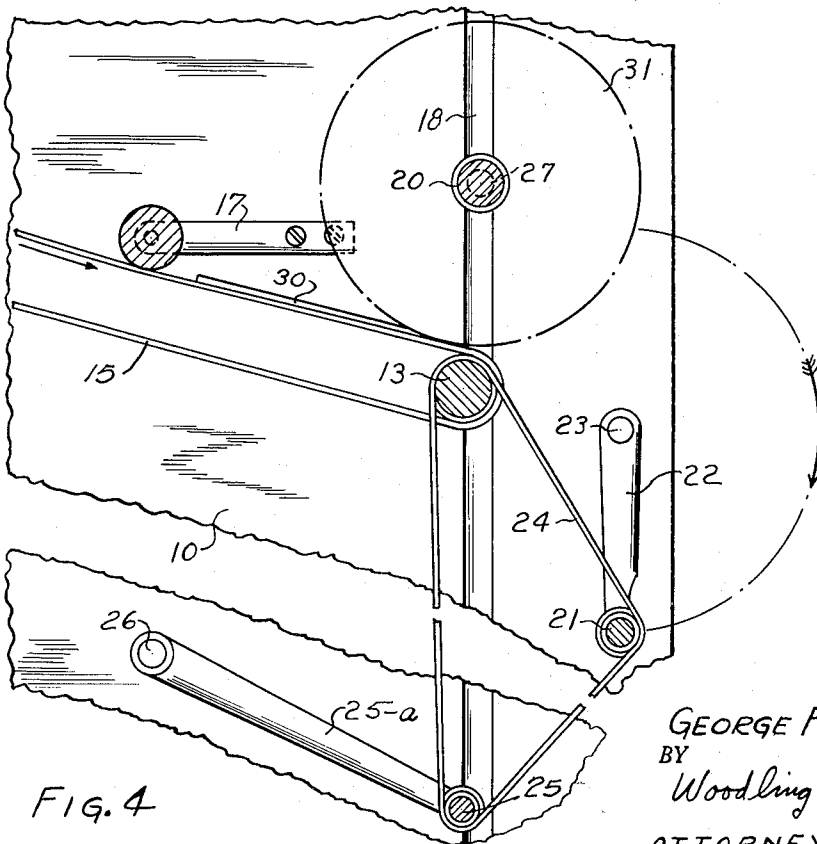
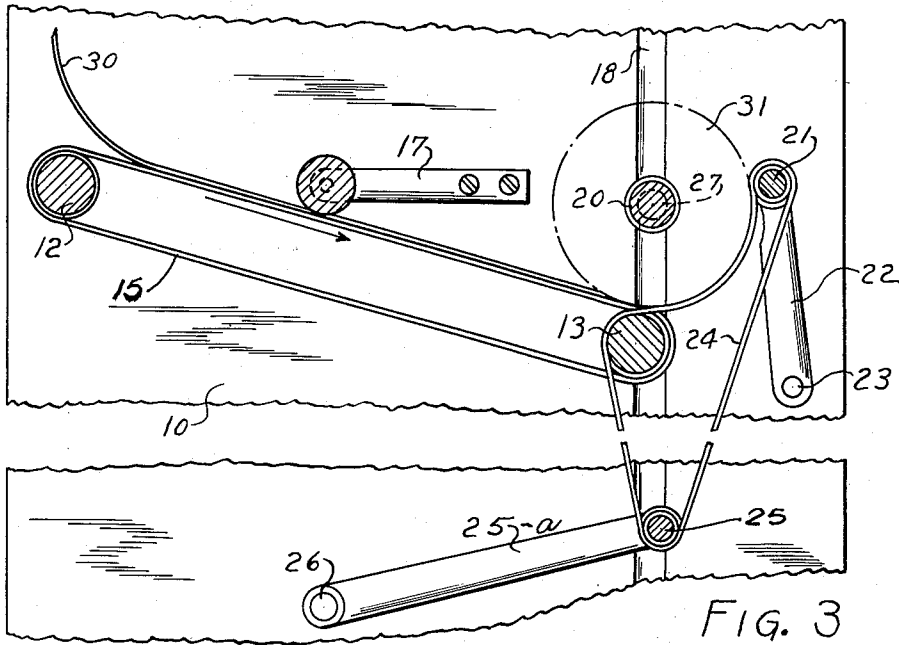
April 24, 1956

G. F. WATKINS
WEB ROLLING MACHINE

2,743,065

Filed April 8, 1952

2 Sheets-Sheet 2



INVENTOR.
GEORGE F. WATKINS
BY
Woodling and Krost
ATTORNEYS

1

2,743,065

WEB ROLLING MACHINE

George F. Watkins, Cleveland, Ohio, assignor, by mesne assignments, to Rol-O-Matic Corporation, a corporation of Ohio

Application April 8, 1952, Serial No. 231,071

6 Claims. (Cl. 242--66)

This invention relates to web conveying and rolling equipment in general and relates specifically to an application thereof for rolling toweling.

Linen supply services provide towel dispensing apparatus which requires a length of toweling to be wrapped in a tight roll. The usual practice is to take the toweling from an ironing machine to a wrapping station. Here the end of the toweling is hand fed to a roller bar, and then a power drive is initiated to drive the roller bar and wrap the toweling thereon.

Therefore, it is an object of this invention to provide apparatus to intercept a web traveling on the surface of a conveyor, and divert that web to another web carrying device.

Another object of this invention is to intercept and invert the web by looping the web to a reverse direction.

Another object of this invention is to adapt the interception apparatus to provide automatic feed starting of a strip of webbing, such as toweling, upon a receiving roller bar without human aid.

Still another object of this invention is to provide feed starting apparatus which is automatically actuated to an out of way position after its purpose has been served.

Yet another object of this invention is to actuate the feed starting mechanism to an inoperative position by use of an overcenter means.

And another object of this invention is to provide an endless belt interception mechanism crossing the path of the towel and gripping the towel against the rear side of the receiving roller bar, with an idler roller to guide the belt until the roll of towel builds up considerably, whereupon a lever arm support for the idler roller falls overcenter and inactivates the interception mechanism.

Other objects and a fuller understanding of the invention may be had by referring to the following description and claims, taken in conjunction with the accompanying drawings, in which:

Figure 1 is a front elevational view of an automatic towel rolling apparatus embodying a specific application of this invention;

Figure 2 is a sectional view of the apparatus, taken along line 2--2 of Figure 1, as it appears when made ready to begin wrapping a length of toweling into a roll upon a bar;

Figure 3 is taken from the same position as Figure 2, but illustrates the actuation of the feed initiating apparatus as the toweling is wrapped; and

Figure 4 is a similar view after the feed initiating apparatus has dropped overcenter to an inactive position.

The specific embodiment of the invention into the form of an apparatus for automatically wrapping long strips of toweling into a tight roll is illustrated in the figures as comprising a frame 10 with a driven conveyor denoted generally by the reference character 11 therein to pick up the toweling, or other flexible web, as it is fed from another machine. In the linen supply industry the toweling is fed through huge ironing machines at a very rapid pace. The toweling comes from the ironing machine into whatever receptacle the operator places to catch the towel. Instead of receptacles, this invention provides

2

the short conveyor 11 to pick up that web and feed it toward the wrapping mechanism hereinafter described.

The conveyor 11 comprises a first roller 12 and a second roller 13 and a plurality of conveyor belts, illustrated as three in number in this embodiment of the invention, are indicated by the reference characters 14, 15, and 16. A roller device 17 may be provided to press against the surface of the belts 14, 15, and 16 to stop any tendency of the belt to vibrate and to hold the webbing in tight contact with the surface of the belts.

There are many instances wherein it is desirable to strip a webbing from the surface of a conveyor, and the present invention provides an improved stripping method, regardless of its application. For stripping the web from the conveyor 11, two belts 24, which may be referred to as belt means to indicate any desired number of individual belts, are threaded upward between the individual belts 14, 15, and 16 on suitable guide rollers placed above and below the conveyor 11. Thus, the web travels along a given path on the surface of the belts 14, 15 and 16 of conveyor 11 until the web is intercepted by the belts 24 passing upwardly between the individual belts of the conveyor 11. The web is then carried off the conveyor 11 by the belts 24.

This stripping action is carried further in the contemplation of this invention and used to invert and return the webbing in a direction generally opposite from which it is traveling. The drawings illustrate a receiving roller bar 20 which may broadly be employed to represent the end roller of a second conveyor, or as specifically employed in the illustrated embodiment of the invention, as a driven roller bar upon which the webbing may be rolled and stored. In either event, as the toweling or web is intercepted by the belts 24, it is gripped between the rear side of the roller bar 20 and carried upwardly along the rear side. The distance that the web will stay in contact with the surface of the roller bar 20 depends upon the distance that the belts 24 are guided around the bar 20, and whether the apparatus is orientated to employ gravity to hold the webbing in contact with the surface a greater period of time. The bar 20, if used as the beginning of a second conveyor, may extend axially parallel with the axis of the second roller 13, or it may be placed parallel with the surface of the conveyor 11 and at an angle with respect to the axis of roller 13.

In the specific application of this invention to the laundry and towel supply industry for the purpose of wrapping towels into rolls for dispensing cabinets, an idler roller 21 for belts 24 is mounted on the end of an arm 22. The arm 22 is swung from a pivot 23.

It is not essential for all uses of the present invention that the roller bar 20 be transversely shiftable with respect to the conveyor 11, but when this bar 20 is used as the core upon which a towel is wrapped, it must be transversely shiftable in order to allow for the toweling to build up thereon. Therefore, slots 18 and 19 are provided in the frame 10. The ends of the roller bar 20 are provided with pins 27 to fit into the slots 18 and 19 and guide the bar 20 as the towel builds up thereon.

Figure 2 of the drawings illustrates the beginning of a towel rolling operation, and a towel 30 is shown dropping onto the conveyor 11 and beginning to move along with the surface thereof towards the roller bar 20. That towel 30 will be gripped between the surface of the belts 24 and the rear surface of the roller bar 20 and carried around the rear side of the roller bar 20 until it emerges on top of the roller bar 20 at the place where the belts 24 and the bar 20 part. When used in a vertical position as illustrated in the drawings and for the purpose of rolling towels from an ironing machine, the toweling

3

will then be pulled down by gravity and will carry on in contact with the front surface of the roller bar 20 as rotation of the bar 20 continues. As a consequence, the towel web will be fed down upon the surface of the toweling lying upon the conveyor 11, and consequently will be fed along with the toweling back around the rear side of the roller bar 20 again. Once the end of the toweling has thus been wrapped completely around the roller bar and the end thereof caught under a layer of toweling, the feeding action has been started and would maintain itself without further aid of the belts 24.

A further feature of this invention is the automatic means for removing the belts 24 from the vicinity of the roll of toweling once the rolling action has been definitely started. Figure 3 illustrates the process of the apparatus as rolling gets definitely under way. The toweling 30 begins to develop into a definite roll 31. This roll forces the idler roller 21 to one side. The pivot 23 on the arm 22 is preferably located at a position lower than the starting position of the roller bar 20 and some arbitrary distance forward of the conveyor II in order to cause the arm 22 to reach a position beyond the vertical position before the roll 31 has been completed. Prior to the time that the arm 22 reaches a vertical position, its weight and the weight of the belts 24 will urge the roller 21 toward the roller bar 20. After the roll 31 reaches such a diameter that the arm 22 is forced beyond the vertical position, the arm is then said to be overcenter and will fall by gravity to the position illustrated in Figure 4 of the drawings. It is, of course, understood that other types of overcenter devices, such for example as a snap action spring device, may be employed in place of the gravity activated arm 22 if it is desired to use the overcenter feature.

Because of the movement of the roller 21, it is necessary to provide a movable guide roller in order to return the endless belts 24 in a proper position to feed upwardly between the belts 14, 15, and 16. In the illustrated embodiment of the invention a gravity actuated take-up roller 25 is pivoted by an arm 25-a on a pivot 26 and serves not only to guide the belts 24 but to take up the slack belting when the machine is empty and to give belting whenever the roll 31 builds up.

The reduced diameter portion 28 on the roller 21 acts as a belt guide. Preferably, the roller 13 is provided with a reduced diameter area 29 to receive and guide the plurality of endless belts 24. The surface of roller 13, other than at the reduced diameter area 29, is preferably roughened to provide a good frictional driving surface to engage belts 14, 15 and 16.

Although the invention has been described in its preferred form with a certain degree of particularity, it is understood that the present disclosure of the preferred form has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and the scope of the invention as hereinafter claimed.

What is claimed is:

1. Web rolling mechanism comprising a first plurality of endless belts movable in a path around a first set of spaced rollers to carry webbing forwardly in a first plane in a direction toward one roller of said first set of rollers, a second plurality of endless belts movable in a path around a second set of spaced rollers, said second plurality of endless belts passing between rollers of said first set of rollers to move across the path of said first plurality of endless belts and around said one roller of the first set of rollers, the path of said second plurality of endless belts being shiftable relative to the path of said first plurality of endless belts in said plane to move the path of said second plurality of endless belts in a first position to intercept and carry upwardly from said plane webbing carried forward in said plane on said first set of endless belts and to a second position to avoid inter-

4

ception of said webbing, and a web-receiving roller positioned adjacent the crossing point of said two paths and above said plane to rollingly receive webbing carried upwardly from said plane by said second plurality of endless belts, said web-receiving roller being on a shiftable axis to accommodate change in diameter of the roll of webbing received thereon, the axes of said web-receiving roller and of said second set of rollers being so arranged relative to each other that a roll of webbing of predetermined size on said web-receiving roller engaging the second plurality of endless belts moves the same to said second position.

2. Web conveying and rolling mechanism comprising a web-receiving roller for rollingly receiving web material, first endless belt means for carrying said web material forward in a plane toward said web-receiving roller, second endless belt means for carrying said web material upwardly from said first endless belt means away from said plane and toward said web-receiving roller, said second belt means intersecting said plane at an angle thereto, said second belt means and said first belt means at the intersection of said plane having interleaved belt portions whereby the web material traveling in said plane on said first belt means is intercepted and carried upwardly from said plane by said second belt means to said web-receiving roller.

3. The combination of first belt means for carrying web material forwardly, second belt means for carrying said web material upwardly from said first belt means, and a receiving roller for receiving said web material thereon upon rotation of the receiving roller, said first and second belt means being interleaved and intersecting each other at an angle to provide for interception of web material carried forward by said first belt means by said second belt means and upwardly by the second belt means toward said receiving roller.

4. The combination of first belt means for carrying web material forwardly, second belt means for carrying said web material upwardly from said first belt means, a receiving roller for receiving said web material thereon upon rotation of the receiving roller, said first and second belt means being interleaved and intersecting each other at an angle to provide for interception of web material carried forward by said first belt means by said second belt means and upwardly by the second belt means toward said receiving roller, and means responsive to the amount of web material received by the receiving roller for moving said second belt means relative to the axis of said receiving roller.

5. The combination of first belt means for carrying forward in a one path a length of webbing or like material, second belt means for carrying said webbing or like material away from said one path and in a diverting path at an angle to said one path, said first and second belt means having interleaved and intersecting portions arranged to provide for interception of said forwardly carried webbing or like material in said one path and the carrying of the same away in said diverting path, and a receiving roller for rollingly receiving said webbing or like material from said diverting path.

6. The combination of first belt means for carrying forward in a one path a length of webbing or like material, second belt means for carrying said webbing or like material away from said one path and in a diverting path at an angle to said one path, said first and second belt means having interleaved and intersecting portions arranged to provide for interception of said forwardly carried webbing or like material in said one path and the carrying of the same away in said diverting path, a receiving roller for rollingly receiving said webbing or like material from said diverting path, and compensating means for changing said diverting path provided by said

second belt means in accordance with the diameter of the roll of webbing or like material received by said receiving roller.

References Cited in the file of this patent

5

UNITED STATES PATENTS

1,810,690 Trinks et al. ----- June 16, 1931

1,995,741

1,959,418

2,270,043

2,573,188

2,641,414

472,844

Eitzen ----- Apr. 24, 1934

Fourness ----- May 22, 1934

Fourness et al. ----- Jan. 13, 1942

Dyken ----- Oct. 30, 1951

Dyken ----- June 9, 1953

FOREIGN PATENTS

Germany ----- Mar. 6, 1929