Sept. 17, 1940. C. P. DYKEN 2,215,174

RUG ROLLING AND WRAPPING MACHINE

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Fig. 2.

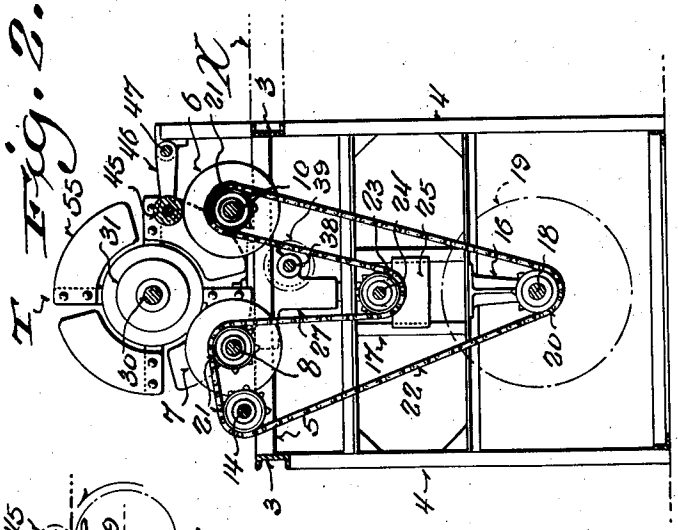


Fig. 5.

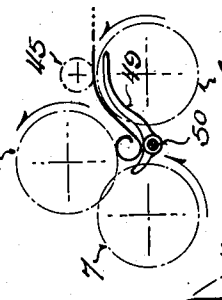


Fig. 1.

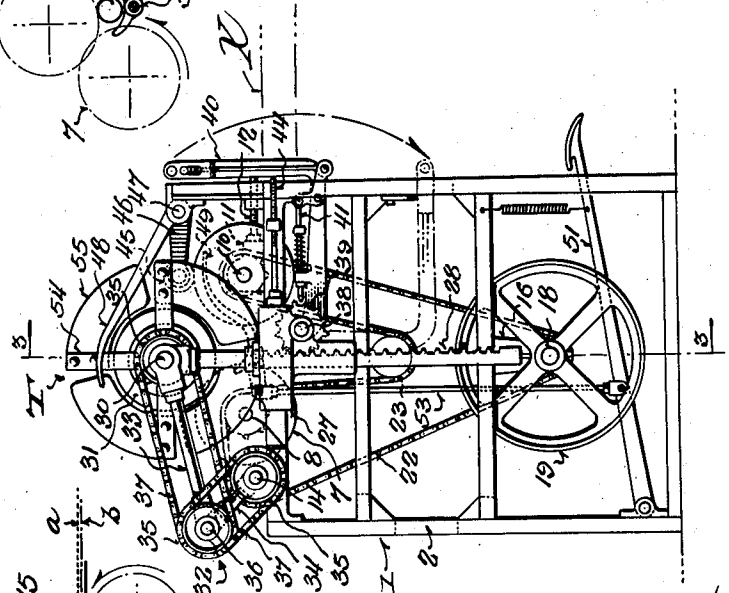
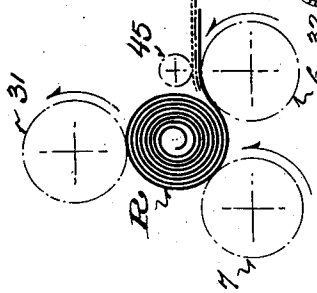


Fig. 6.



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Fig. 3.

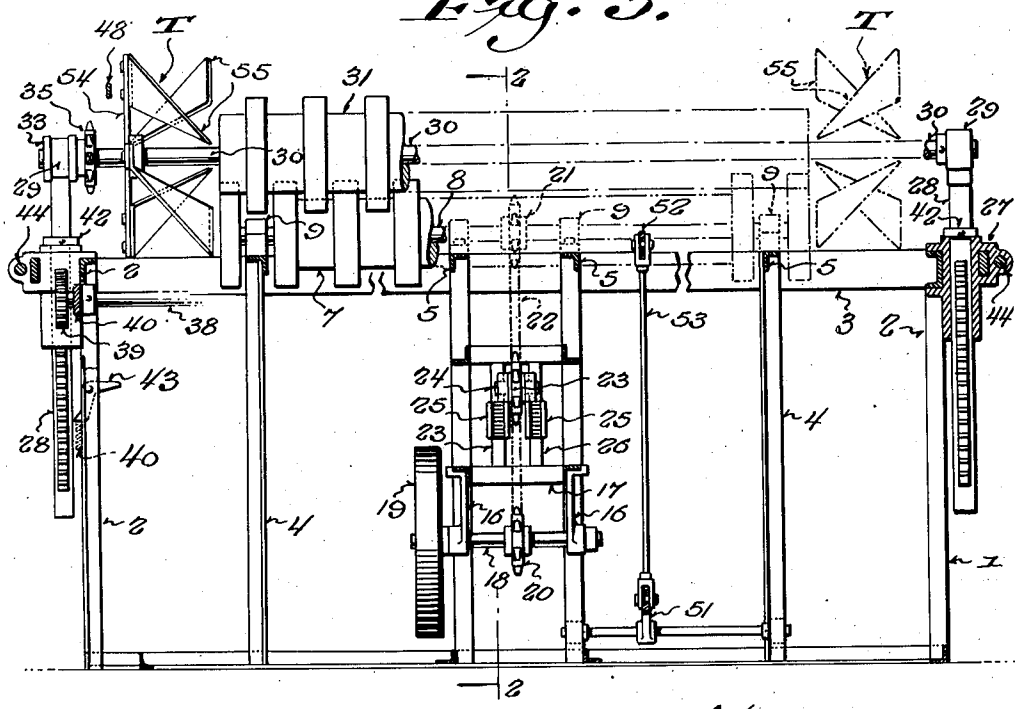
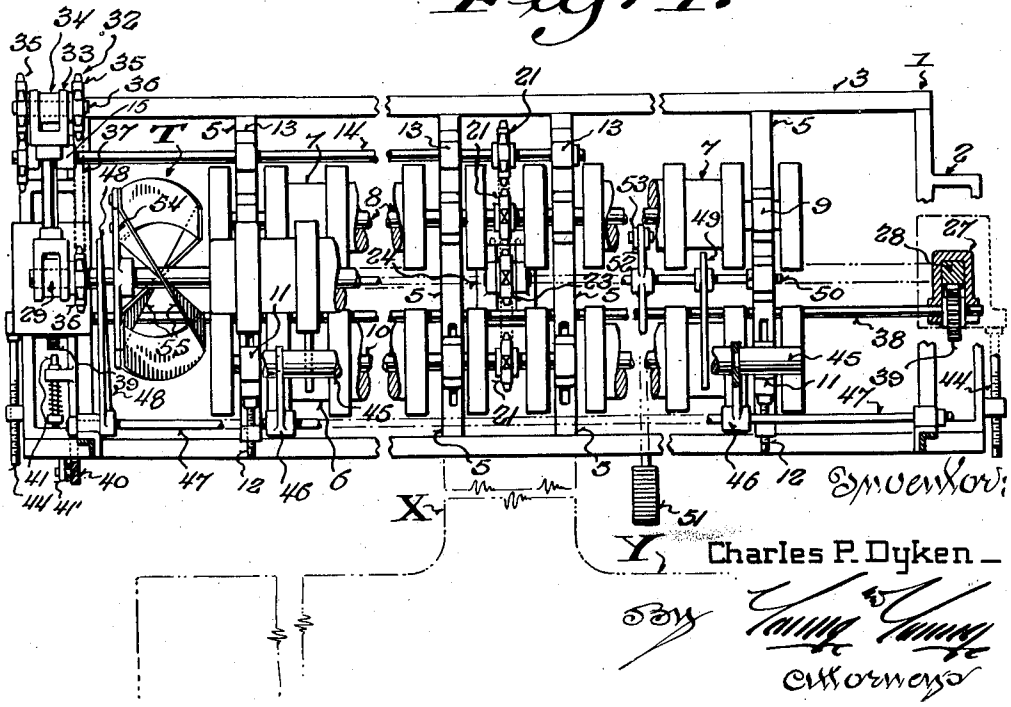


Fig. 4.



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Patented Sept. 17, 1940 2,215,174

UNITED STATES PATENT OFFICE

2,215,174

RUG ROLLING AND WRAPPING MACHINE

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Application June 22, 1939, Serial No. 280,491

4 Claims. (Cl. 93—2)

This invention pertains to a rug rolling and wrapping machine, and has primarily for its object to provide a machine which rapidly and efficiently rolls and wraps a rug, without the use of a winding bar or core, thus materially facilitating the operation, with minimum labor and effort on the part of the operator.

Incidental to the foregoing, a more specific object of the invention resides in the provision of a power-driven machine into which one edge of a rug is fed and directed into a spiral wind, which, when completed and wrapped, is ejected from the machine by a manually actuated mechanism.

Another object of the invention resides in the provision of a driven floating roller cooperating with a pair of fixed driven rolls, to effect both rolling and wrapping of the rug without the aid of a central core or pole, such as now employed.

A still further object is the provision of a pressure roll cooperating with one of the fixed driven rolls to hold the rug upon the same, together with fingers cooperating with the fixed driven rolls for guiding the leading edge of the rug into a spiral wind, and subsequently ejecting the rolled and wrapped rug from the machine.

Lastly, it is an object to provide wipers operatively connected to the floating roller for automatically tucking the ends of the wrapper.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the novel construction, combination, and arrangement of parts, substantially as hereinafter described, and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claims.

In the accompanying drawings are illustrated one complete example of the physical embodiment of the present invention constructed according to the best mode so far devised for the practical application of the principles thereof.

In the drawings:

Figure 1 is an end elevation of a machine incorporating the principles of the present invention;

Fig. 2 is a transverse section taken on the line 2—2 of Figure 3;

Figure 3 is a longitudinal section, taken on the line 3—3 of Figure 1;

Figure 4 is a plan view, partially broken away and in section; and

Figures 5 and 6 are diagrammatic views illustrating the starting and winding operations, respectively.

Referring now more particularly to the accompanying drawings, the numeral 1 indicates generally a fabricated frame consisting of end members 2 connected by longitudinal struts 3, which are supported at spaced intervals by suitable legs 4. Spaced intermediate the end members 2, and connected to the longitudinal struts 3 are transverse beams 5, which carry fixed driven rolls 6 and 7, respectively, the shaft 8 of the roll 7 being journaled in bearings 9 mounted on the cross-beams 5, while the shaft 10 of the roller 6 is journaled in bearings 11 slidably mounted upon the beams 5 and adjusted transversely by jackscrews 12. Preferably, the rollers are of spaced flanged construction.

A shaft 14 journaled in bearings 13 mounted on the members 15, extends to one end of the machine, and is journaled in a bearing 15 mounted upon one of the end members 2.

Journaled in brackets 16, carried by a suitable framework 17 connected to a pair of intermediate legs 4, is a driven shaft 18, provided at one end with a drive pulley 19, which may be driven by a belt from a motor, or other source of power, not shown. Mounted on the shaft 18 is a sprocket 20, alined with sprockets 21 secured to the shafts 8, 10, and 14, all of which are operatively connected by a link-belt or chain 22, one stretch of which receives a floating sprocket or pulley 23, carried by a shaft 24, the ends of which receive weights 25 vertically guided between spaced uprights 26 carried by the frame 17. Obviously, the floating weighted sprocket 23 serves to retain tension upon the link-belt 22, and also compensates for transverse adjustment of the roller 6.

Slidably mounted on the end members 2 are brackets 27 for reception of vertical rack bars 28, provided at their upper ends with bearings 29 in which a longitudinal shaft 30, that carries a flanged roller 31 is journaled. Transverse adjustment of the brackets 27 on the end members 2 is obtained by jackscrews 44. Inasmuch as it is desirable to drive the floating roller 31, a compensating drive 32 is provided at one end of the machine, and comprises a pair of pivotally connected links 33 and 34, the link 33 being pivotally connected to the shaft 30 that carries the roller 31, while the link 34 is journaled on the fixed shaft 14. Sprockets 35 secured on the shafts 14 and 30, respectively, and on the pivotal connection 36 between the links 33 and 34 are operatively connected by link-belts 37.

Journaled in the brackets 27, is a longitudinal shaft 38, having pinions 39 secured upon its ends, and meshing with the rack bars 28 to impart

vertical movement to the bars and roller 31, for the purpose hereinafter explained. For rotating the shaft 38 and pinions 39, a lever 40 is loosely journaled on the shaft 38 and provided with a manually actuated detent 41 for selective engagement with the teeth of one of the pinions 39. Obviously, when the detent engages the pinion 39, and the lever 40 is rotated downwardly, vertical movement will be imparted to the rack bars 26, which causes the floating roller 34 to be raised. At the same time, when the lever 40 is in its normal raised position, and the detent 41 is disengaged from the pinion 39, the rack bars are free to move upwardly as the diameter of the rolled rug increases during the rolling operation to be later described.

As best shown in Figure 1, downward movement of the rack bars 26 is limited by fixed collars 42 carried by the rack bars and engaging bosses on the brackets 27. After a rug has been rolled and wrapped as hereinafter explained, and it is desired to remove the rug from the machine, it is necessary to raise the floating roller 31 sufficiently to allow the rug to clear the roll, and this is accomplished by actuation of the lever 40, which rotates the pinions 39 in the manner described. In the raised position of the roller 31, the lever 40 is releasably latched in its lower position indicated in dotted lines, by a pivotal dog 43 carried by the adjacent end member 2.

To hold the rug against the roller 6, particularly during the initial winding operation, a longitudinal floating roll 45 is mounted above the roller 6, by means of spaced arms 46 secured upon a shaft 47 pivotally connected to the frame 1, as best shown in Figures 2 and 4. To facilitate insertion of the leading edge of a rug into the winding rolls, it is desirable to provide for raising the roller 45 upon completion of each rolling operation. Therefore, an arm 48 is secured to the pivotal shaft 47, and extends into the path of travel of the shaft 30, which carries the floating roller 31. When the roller 31 is raised subsequent to completion of the winding operation, the arm 48 is engaged by the shaft 30, which in turn rotates the shaft 47 to raise the roller 45.

To assist in initial guiding of the leading edge of a rug into a spiral wind, as shown in Figure 5, a plurality of arcuate fingers 49 are mounted upon a longitudinal shaft 50, pivotally carried by the frame 1 and projected between the flanges of the rolls 6 and 7. In addition to serving as guides for the rug, the fingers 49 are also utilized to eject the rug upon completion of the winding and wrapping operations. This is accomplished by means of a foot pedal 51 pivotally carried by the frame 1 and connected with an arm 52 secured upon the shaft 50, by a link 53. Obviously, depression of the pedal 51 will rotate the forward ends of the fingers 49 upwardly, causing the rolled rug to be forced over the rear driven roll 7 for removal from the machine. If desired, tracks or any other receiver may be provided for the ejected rug.

Immediately prior to completion of the winding operation, wrapping of the rug is provided for by inserting the wrapping material, preferably consisting of a sheet of stiff cardboard (*a*) and an outer covering sheet of paper (*b*), between the turns of the rug in the manner shown in Figure 5, after which the driven rolls are again put into operation to wind the wrapper over the rug.

As best indicated in Figures 3 and 4, the ends of the wrapper W extend beyond the rolls and the ends of the rug R, and therefore to complete the wrapping operation, rotary tuckers T are secured on the shaft 30 adjacent the ends of the roller 31. The tuckers comprise spiders 54, having secured upon the ends of their arms, inclined blades 55 projecting inwardly toward the ends of the rug, and which upon rotation engage the projected ends of the wrapper in a wiping action to tuck the same inwardly against the ends of the rug, where they are glued, taped, or otherwise fastened.

From the foregoing explanation considered in connection with the accompanying drawings, it will be seen that a machine has been provided for both winding and wrapping rugs or strips of pliable material, such as floor padding, carpets, linoleum, and the like; and due to the fact that the entire operation, including starting, winding, wrapping, and ejection, is accomplished through the operation of the machine, labor and time required are reduced to a minimum.

In operation, it is merely necessary for the operator to place the leading edge of the rug over the forward roller 6, after which the racks 26 are lowered to allow the roller 45 to engage the driven roll 6, and the floating roll 31 to mesh with the fixed driven roll 7. The machine is then put into operation, and, as best shown in Figure 5, the leading edge of the rug will be guided from the roller 6 to the roller 7 by the fingers 49, and thence into contact with the periphery of the floating roller 31. Due to the fact that the periphery of the rollers 7 and 31 are travelling in opposite directions at their meshing point, the leading edge of the rug is prevented from continuing over the driven roller 6, the roller 31 serving to deflect the same and force the edge into contact with the rug, resulting in a subsequent spiral wind, as shown in Figure 6.

Upon completion of the winding operation and insertion of the wrapper as heretofore explained, the further rotation of the rug serves to wind the wrapper over the same, after which the following edge of the wrapper is glued to the previous turn to seal and completely house the rug, the ends of the wrapper being tucked and secured as heretofore explained. The roller 31 is then lifted upon actuation of the lever 41, and the wrapper roll is easily ejected by manipulation of the foot pedal 51.

The advantages of the foregoing will be obvious when considered in connection with conventional methods now in use, in which two operators are required to place the leading edge of the rug into a slot of a winding core or bar, which must then be inserted into the machine after several turns are made to securely attach the rug to the core. Then, upon completion of the wind, the core must be pulled from the machine, and two operators are required to wrap and tape the ends after the rug is removed from the machine.

While forming no part of the present invention, to facilitate handling of the rugs prior to the rolling and wrapping operations, a table Y is provided in front of the machine and secured thereto by a central extension X, as indicated in dotted lines in Figures 1 and 4, the remaining portion of the table being spaced from the machine to permit an operator to perform the gluing operation at the front of the machine, and also transversely adjust the driven roll 6. The table X serves to support the rugs and facilitates insertion of the leading edges into the machine.

I claim:

1. A machine of the character described com-

prising, an elongated frame, a pair of spaced longitudinal driven rolls journaled on said frame, a floating roller mounted above said driven rolls and cooperating therewith to spirally wind pliable material fed between said floating roller and the driven rolls, means disposed between said spaced rolls to guide the material from one roll to the other, and wipers adjacent the ends of said floating roller for folding the ends of a paper wrapper against the ends of the wound material.

2. A machine of the character described comprising, an elongated frame, a pair of spaced longitudinal driven rolls journaled on said frame, said rolls including longitudinally spaced flanges, a flanged floating roll mounted above said driven rolls and adapted to mesh with one of said rolls, a pressure roll cooperating with one of said driven rolls, an operative driving connection between said floating roll and said driven rolls, means for manually shifting said floating roll, spaced fingers extending between the flanges of said driven rolls, manually actuated means for imparting rotary movement to said fingers to eject wound material from said rolls, and wipers operatively connected with said floating roll adjacent its ends for folding the ends of a wrapper upon the ends of the wound material.

3. A machine of the character described comprising, an elongated frame, a pair of spaced longitudinal driven rolls journaled on said frame, said rolls including longitudinally spaced flanges, a flanged floating roll mounted above said driven rolls and adapted to mesh with one of said rolls, a pressure roll cooperating with one of said driven rolls, an operative driving connection between said floating roll and said driven rolls, means for manually shifting said floating roll, spaced fingers extending between the flanges of said driven rolls, manually actuated means for imparting rotary movement to said fingers to eject wound material from said rolls, wipers operatively connected with said floating roll adjacent its ends for folding the ends of a wrapper upon the ends of the wound material, and means actuated upon movement of said floating roller to disengage said pressure roll from its driven roll.

4. A machine of the character described comprising, an elongated frame, a pair of spaced longitudinal driven rolls journaled on said frame and provided with longitudinally spaced flanges, brackets mounted upon the ends of said frame, rack bars vertically movable in said brackets, a floating roll journaled in said rack bars above said driven rolls, operable means engaged with said rack bars for imparting movement to the same, an operative driving connection between said floating roll and the driven rolls, a plurality of fingers pivotally mounted on said frame and extending between the flanges on said driven rolls, manually operable means rotating said fingers to eject a roll of material from said driven rolls, a pressure roller engaging one of said driven rolls, means actuated by said floating roll for moving said pressure roller out of engagement with its driven roll, and wipers connected with said pressure roller adjacent its ends for folding the ends of a wrapper upon the ends of a wound roll of material.

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