To all whom it may concern:

Be it known that I, James H. Coesir, a citizen of the United States, residing at Joplin, in the county of Jasper and State of Missouri, have invented a new and useful Machine for Wrapping Pneumatic Tires, of which the following is a specification.

The device forming the subject matter of this application is a tire wrapping machine, and one object of the present invention is to provide a means whereby the wrapping may be applied to the core, circumferentially, and from the sides of the core toward the median plane thereof.

Another object of the invention is to provide means whereby a wrapping may be applied to a core circumferentially of the core, the wrapping consisting of two parts wound about the core in opposite directions circumferentially of the core.

Another object of the invention is to provide means whereby the circumferential movement of the applying members may be reversed.

The invention aims to provide a novel driving mechanism for the applying members and to provide a novel tension means whereby the wrapping may be controlled.

It is within the scope of the invention to improve generally and to enhance the utility of devices of that type to which the present invention pertains.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction heretofore described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings:

Figure 1 shows in side elevation, a tire wrapping machine embodying one form of the present invention; Fig. 2 is a top plan of the structure shown in Fig. 1; Fig. 3 is an end elevation of the machine; Fig. 4 is a fragmental section taken through one of the wrapping containers or spools; Fig. 5 is a fragmental section of the core; Fig. 6 is a detail enlarged from Fig. 2 and illustrating the tension means and the mechanism whereby the tension is adjusted.

In carrying out the invention there is provided a support 1 having a bearing 2 in which is journaled for rotation a drive shaft 3 carrying a beveled pinion 4. The beveled pinion 4 meshes into a beveled pinion 5 secured to the periphery of a tubular primary shaft 6 journaled in a bearing 7 on the support 1. A secondary shaft 8 is journaled within the primary tubular shaft 6 and in a bearing 9 on the support 1, the secondary shaft 8 carrying a beveled pinion 10 which meshes into the beveled pinion 5 on the drive shaft 3. The invention further includes a core denoted generally by the numeral 11, the core being journaled on the end of the secondary shaft 8. Although the secondary shaft 8 is mounted to rotate in the core 11, the core, when the machine is in operation, does not rotate. The core 11, therefore, may be described as being relatively fixed, and, when the nature of the invention is better understood it will be appreciated that the core need not of necessity be supported upon the secondary shaft 8. The core 11 is a composite structure and includes a disk-like body 12 in which the shaft 8 is immediately received, the body 12 being provided at one side with an abutment flange 14 shown best in Fig. 2, the abutment flange engaging a flange ring 15 and the body receiving the flange ring 15 and another ring 16, these being a treading held between the flange rings, the flange rings being connected by screws 18 or other clamping means. The periphery of the treading portion 17 of the core is convex as indicated at 17a for a purpose which will be set forth hereinafter.

The invention includes a pair of oppositely moving applying members, one applying member taking the form of an arm 19 held upon the primary shaft firmly but adjustably by means of a clamp bolt 20 or the like. This arm 19 is provided with an extension 21 (see Fig. 2) terminating in an angularly disposed finger 22 (see Fig. 4) from which projects a tubular shaft 23. Journaled on the tubular shaft 23 is a wrapping container preferably taking the form of a spool 24. A spring tongue 25 is secured to the finger 22 and extends through the tubular shaft 23, the tongue 25 terminating at one end in an angularly disposed latch 26 which engages the side face of the spool 24 and holds the same on the shaft 23 for rotation thereon.

A tension means is provided for control-
lacing the movement of the wrapping as the same is drawn off the spool 24, this tension means preferably including a U-shaped member shown in Fig. 6 and secured to the extension 21, the U-shaped member including resilient arms 27 having seats 28 between which the wrapping passes.

A mechanism is provided for adjusting the tension means, and with this end in view, a spring bracket 29 is secured to the extension 21 and bears upon one of the arms 27 of the tension device, there being a screw 30 threaded into the extension 21 and having a head which bears upon the resilient bracket 29 and constrains the same to engage one arm 27 at a varying pressure.

The other applying member takes the form of an arm 31 held firmly but adjustably by means of a clamp bolt 32 or the like on the shaft 8. Referring to Fig. 1, the arm 31 is equipped with an extension 33 carrying a tubular shaft 34 upon which is journaled a wrapping container or spool 35. The spool 35 is held in place on the shaft 34 by a spring tongue 36 of the sort above described, and in this connection, the element 35 in Fig. 3 may be noted for a clear understanding of details, the tongue having a latch 37, indicated in Fig. 2 and engaging the side face of the spool 35. The tension device is indicated at 38 and is controlled as before by a resilient bracket 39 and an adjusting screw 40.

Mounted upon opposite sides of the core 11 are wrapping holders, each wrapping holder comprising a grip 41, one end of which is mounted to swing in the core, the other end of which is provided with a hook 42 which cooperates with a notch 43 in the flange of the core 11. The grip 41 is held in place by means of an angular keeper 44, one end of which is rotatable in the core, the other end of which overhangs the grip.

The wrappings may be of any form and are indicated at 45. One wrapping is wound around the spool 35 and the other wrapping is wound around the spool 24. The ends of the wrappings are engaged by the grips 41 on the core 11.

In practical operation, the wrappings 45 are wound upon the spools 35 and 24 and the spools are placed on the tubular shafts 23 and 34, the spools being held in place by the spring tongues 28 and 36. The keepers 44 are swung to one side so as to free the grips 41, the ends of the wrappings 45 are engaged with the grips, and the grips are swung into the notches 45 to hold the ends of the wrapping 45, and the keepers 44 are turned so as to overhang the grips and maintain the same in position. When the drive shaft 6 is turned, the beveled pinion 4 meshing into the beveled pinions 5 and 10 will rotate the shafts 6 and 8 in opposite directions, causing the arms 19 and 21 to swing in opposite directions, whereby the wrapping containers 24 and 25 will move around the periphery of the core 11 in opposite directions, circumferentially of the core. By this operation, the wrappings 45 will be applied to the core in two series of convolutions, each series beginning adjacent one of the flange rings 15—16 and continuing toward the median plane of the core, where the two series of convolutions will meet. Owing to the fact that the tread portion 17 of the core 11 is convexed as indicated at 17, the convolutions of the respective series as they are applied to the core will be crowded laterally toward the flange rings 15 and 16, thus disposing the wrappings in compact form about the core.

Referring to Fig. 6 it will be obvious without detailed description that the spring arms 27 may be adjusted to regulate the tension or drag upon the wrappings 45, thus altering the tightness with which the wrappings are applied to the core 11.

Since the drive shaft 3 may be rotated in opposite directions, this shaft and attendant mechanisms constitute means whereby the wrapping containers or spools 35 and 24 may be simultaneously reversed, so far as the direction of their orbital movements with respect to the core 11 are concerned.

The wrapping 45 is employed to exert a pressure on the tire during the process of manufacture, the wrapping, ordinarily, constituting no part of the finished tire.

In Fig. 5 of the drawings, a fragment of the tire has been shown and is indicated by the reference numeral 100. The tire is applied to the core, the wrapping is applied to the tire and after the tire has cured sufficiently, the wrapping is removed.

Having thus described the invention, what is claimed is:

1. In a tire wrapping machine, a core having side flanges; and means for applying a wrapping uninterruptedly to the core in oppositely wound convolutions from the side flanges of the core toward the median plane of the core.

2. In a tire wrapping machine, a core having side flanges; wrapping holders on the core adjacent the flanges; and a pair of applying members movable circumferentially of the core; the core having a convexed tread constituting means for crowding the successive convolutions of the wrapping laterally and toward the flanges.

3. In a tire wrapping machine, a core having side flanges; wrapping holders on the core adjacent the flanges; a pair of applying members movable circumferentially of the core and in opposite directions; means for simultaneously reversing the circumferential movement of the applying members; the core having a convexed tread constituting means for crowding the succes-
sive convolutions of the wrapping laterally and toward the flanges.

4. In a device of the class described, a support; a tubular shaft journaled in the support; a second shaft journaled in the tubular shaft; means for driving both shafts; a disk-like core disposed transversely of the second shaft and loose on the second shaft and of greater diameter than the second shaft; arms secured to the shafts and adapted to move in opposite directions circumferentially of the core; and wrapping holders on the arms, the wrapping on the arms coacting with the core to prevent a rotation of the core when the shafts are rotated. 15

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JAMES H. COESIR.

Witnesses:

JOHN L. COESIR,
LOUIS MOLINE.

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