

E. NALL.
 REEL.
 APPLICATION FILED MAY 1, 1914.

1,120,520.

Patented Dec. 8, 1914.

2 SHEETS-SHEET 1.

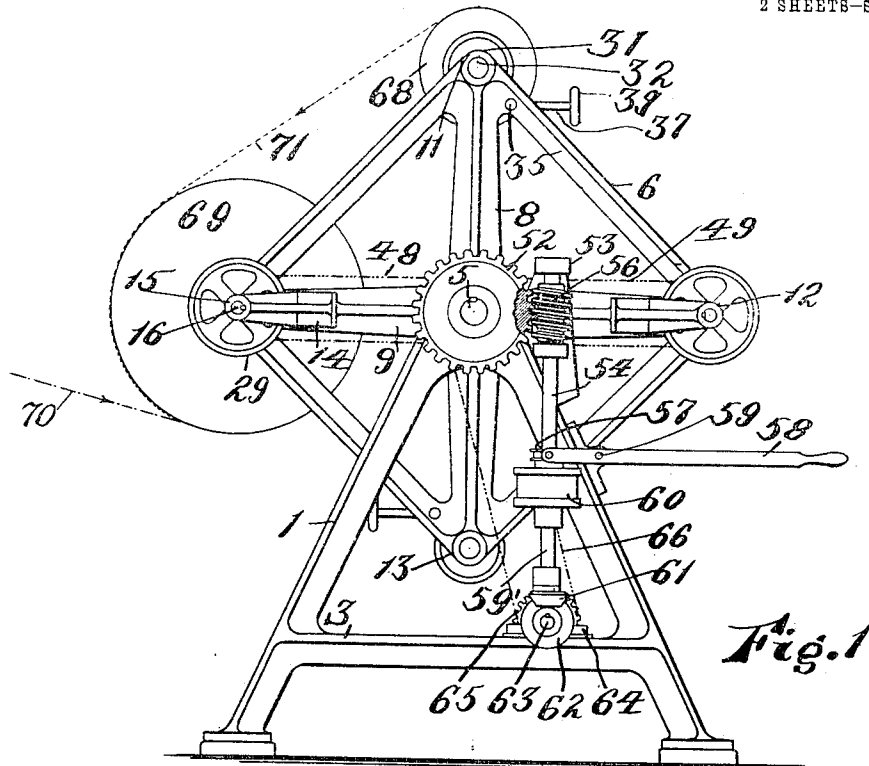


Fig. 1

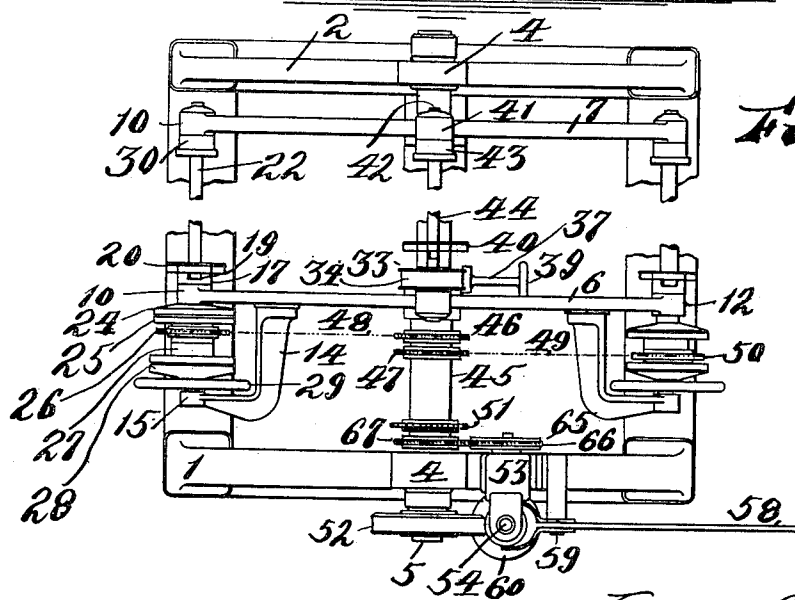


Fig. 2

Witnesses
 Will L. State
 Curt Venzel

By

Inventor
 Edward Nall
 C. E. Humphrey
 Attorney

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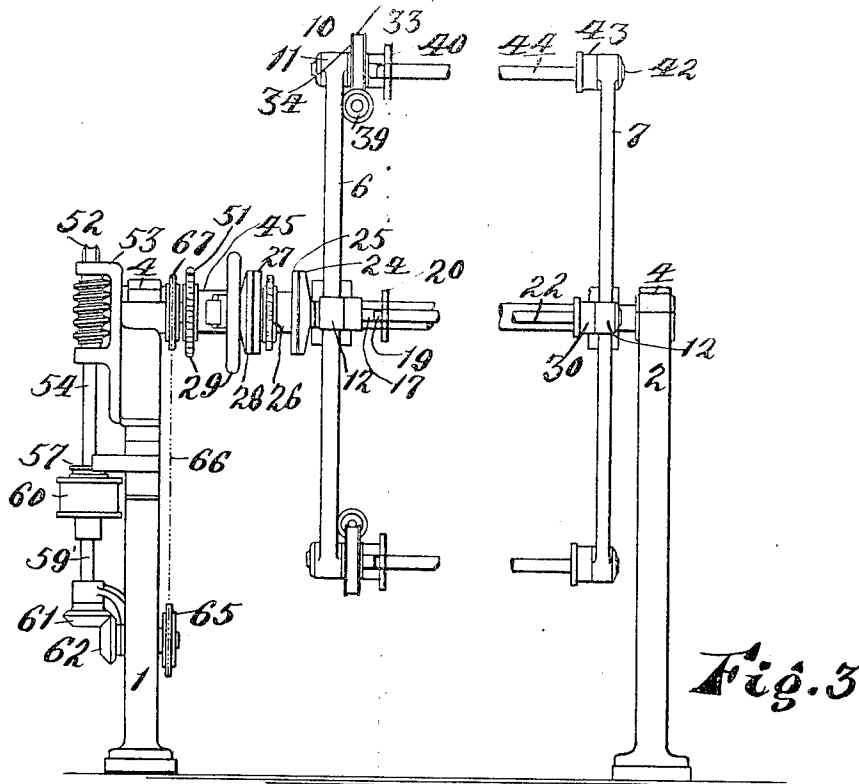
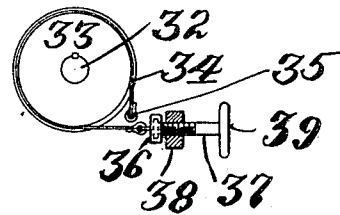
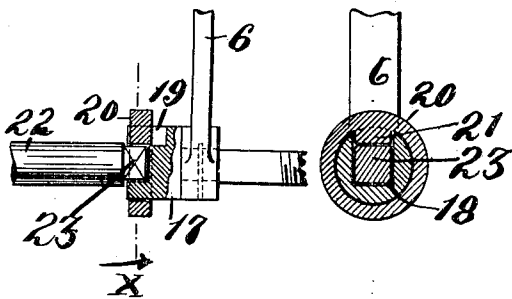


Fig. 4

Fig. 5

Fig. 6



Witnesses
Will L. State
Curt Muntzel

By

Inventor
Edward Hall

C. E. Humphrey

Attorney

UNITED STATES PATENT OFFICE.

EDWARD NALL, OF AKRON, OHIO, ASSIGNOR TO THE GOODYEAR TIRE AND RUBBER COMPANY, OF AKRON, OHIO, A CORPORATION OF OHIO.

REEL.

1,120,520.

Specification of Letters Patent.

Patented Dec. 8, 1914.

Application filed May 1, 1914. Serial No. 835,629.

To all whom it may concern:

Be it known that I, EDWARD NALL, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented new and useful Improvements in Reels, of which the following is a specification.

This invention relates to reels for spooling continuous lengths of fabric, especially fabric covered with an uncured and sticky or tacky rubber.

The object of the invention is to provide new and improved means whereby fabric covered with an uncured rubber or rubber composition may be spooled up and a separate lining or web of muslin or other cloth interposed between the successive windings on the reel.

The invention also contemplates the provision of a reel adapted to hold a plurality of spools or bobbins whereby when one spool or bobbin is filled its position may be shifted and another spool filled during the removal of the filled spool and its replacement with an empty spool, provision also being made for supplying lining or spools of separating fabric for use and connected with the spooling up of the coated fabric.

With the foregoing and other objects in view, the invention consists in the novel construction, combination and arrangement of parts constituting the invention to be hereinafter specifically described and illustrated in the accompanying drawings which form a part hereof wherein is shown the preferred embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the matter hereinafter claimed.

In the drawings in which similar reference numerals indicate like parts in the different figures, Figure 1, is a view in side elevation of a device embodying this invention; Fig. 2, is a plan view; Fig. 3, is a view looking from the right in Fig. 1; Fig. 4, is a detail of the means employed for holding the spool shafts; Fig. 5, is a transverse sectional view of the device shown in Fig. 4 taken on line X looking in the direction of the arrow; and, Fig. 6, is a side elevation of a detail of a band-brake employed.

Referring to the drawing in detail the de-

vice embodies a pair of oppositely disposed triangularly-shaped housings 1 and 2 preferably in the shape of a capital letter A, with the cross bar 3 near the center thereof and with bearings 4 near their upper apices for a transversely-extending shaft 5. Fixedly mounted on the shaft 5 are a pair of oppositely disposed reel frames 6 and 7 preferably in the form of hollow-squares, each provided with cross bars 8 and 9 at right angles and intersecting at the center of the reel frames and supporting bearings to receive the shaft 5. The corners of the two reel frames are denominated in the drawings for convenience by the reference numerals 10, 11, 12 and 13, and with corresponding corners of the frames oppositely disposed to one another.

The mechanisms for spooling up the coated fabric are adapted to be positioned and supported at the corners of the frames denominated by the reference numerals 10 and 12, and as the construction of the mechanisms at these two corners is identical a description of one is deemed to be sufficient.

Secured to the lateral face of the arm 9 is a bracket 14 the free end of which is provided with a lug in which is an aperture constituting a bearing 15 and in the corner of the frame 10, which is provided with an enlargement or head at this point, is an aperture in alinement therewith and also constituting a bearing. Mounted in these two apertures as bearings is a shaft 16, (see Fig. 4). The shaft 16 projects inwardly beyond the frame 6 and is provided with a socket 17 in which is a square recess 18, and in the outer face of the socket 17, is a longitudinal slot 19 in open communication with said recess but extending toward the frame 6 beyond the end wall of the recess 18. Surrounding the socket 17 is a longitudinally-shiftable collar 20 provided with an inwardly-projecting lug 21 adapted to travel in the slot 19 and arranged when shifted to the left to lie flush with the inner face of the socket 17 and the lug 21 fills the space caused by the slot 19.

The device just described is a locking device for holding one end of an axle 22 which is provided with a reduced squared end 23 which is inserted in the recess 18 and held therein through the medium of the collar

20 when moved to its operative position, but it is apparent that when the collar 20 is shifted to its inoperative position the axle is easily removable.

5 On the opposite side of the enlargement at the corner 10 of the frame 6 is one member 24 of a friction clutch, and loosely mounted on the shaft and adjacent to the member 24 is a freely-shiftable clutch member 25. Mounted on the hub of the member 25 is a sprocket wheel 26. The portion of the shaft 16 which extends from the clutch member 26 to the bearing in the head 15 is threaded, and loosely mounted thereon is a collar 27. Mounted on the shaft 16 between the collar 27 and the bearing in the head 15 is a nut 28 provided with a hand wheel 29 by which the same is rotated. The corresponding corner 10 of the frame 7 is provided with a head 30 provided with a recess to receive the opposite end of the shaft 22.

The mechanisms provided at the corners 11 and 13 of the reel frames 6 and 7 are identical one with the other, and it is believed that a description of one will suffice for the understanding of both.

Mounted at the corner 11 of the frame 6 is a bearing 31 for a shaft 32 on which is a flanged drum 33 about which is a brake-band 34 one end of which is anchored on a pin 35 on the frame 6 and the opposite end of which is swiveled at 36 to a threaded shaft 37 on a support 38 and is provided with a hand wheel 39 by which rotation of the shaft 37 and the contacting of the brake-band 34 is effected. The inner portion of the shaft 38 is provided with socket mechanism denominated generally by the reference numeral 40 and similar in all respects to the mechanism described with reference to the socket 17 and further description is believed to be unnecessary. The opposite frame 7 is provided with a bearing 41 in which is a shaft 42 bearing a head 43 provided with a recess for receiving the opposite end of an axle 44 extending between the socket mechanisms 40 and the head 43.

Rotatably mounted on the shaft 5 between the reel frame 6 and the housing frame work 1 is a sleeve 45 which bears two sprocket wheels 46 and 47. From the sprocket wheel 46 on the sleeve 45 to the sprocket wheel 26 on the clutch member 25 is a sprocket chain 48 and from the sprocket wheel 47 there extends a sprocket chain 49 to the sprocket wheel 50 on the shaft on the opposite side of the frame so that either shaft may be operated independently of the other by utilizing the respective clutch. The sleeve 45 bears a sprocket wheel 51 which receives motion from a sprocket chain connected with some source of power such as a motor shaft. Fixedly mounted on the outer end of the shaft 5 is a worm-wheel 52. Mounted in suitable bearings 53 is a vertical

shaft 54, the upper end of which bears a worm 56 adapted to intermesh with the worm wheel 52. The lower end of the shaft 54 bears a shiftable clutch member 57 arranged to be shifted through the medium of a clutch lever 58 fulcrumed at 59. In alignment with the shaft 54 and below it is a shaft 59' the upper end of which bears a clutch member 60 arranged to be engaged by the clutch member 57 when the latter is shifted to its operative position. The lower end of the shaft 59' bears a bevel-gear 61 adapted to intermesh with a bevel gear 62 on a counter-shaft 63 mounted in suitable bearings 64 on the cross bar 3. On the opposite side of the cross bar the shaft 63 bears a sprocket wheel 65 from which extends a sprocket chain 66 running over a sprocket wheel 67 on the sleeve 45.

The operation of the device is as follows: A spool 68 bearing repeated windings of a flexible fabric and known to the trade as a "lining", is placed on the axle 44 and tension is placed on the drum 33 by means of a band-brake 34. A large empty spool 69 is then placed on the axle 22 and the reel frames adjusted as shown in Fig. 1. A strip 70 of coated fabric is led from any source of supply to the spool 69. Motion is communicated to the sleeve 45 on the shaft 5 by means of a sprocket chain running on the sprocket wheel 51 and this motion in turn is transmitted through the sprocket chain 48 to the loose clutch member 26. When it is desired to spool up the fabric the nut 28 is rotated to force the collar and clutch member 25 along the shaft 16 until the members 24 and 25 are in clutching engagement to cause the rotation of the spool 69. The strip of lining 71 is led over to the spool 69 and winds up with the coated fabric and is positioned between each winding of the latter. When the spool 69 has become filled, rotation thereof is arrested and the strip of fabric 70 and the strip of lining 71 are severed. The clutch lever 58 is then shifted to induce clutch relation between the clutch members 57 and 60 which causes a rotation of the shaft 54 and worm 56 which induces corresponding rotation of the worm wheel 52 and shaft 5 causing both frames 6 and 7 which are mounted thereon to revolve, thus moving the spools 68 and 69 orbitally about the shaft 5 until they have assumed the position approximately occupied by the shafts at the corners 12 and 13; that is to say, the corner 10 will assume a position occupied by the corner 12 and the corner 11 occupy the position occupied by the corner 13. During the winding up of the fabric and lining on the spool 69 an empty spool is placed on the axle at the corner 12 and a spool of lining is placed on the axle at the corner 13, so as to be ready for use. When the position of the spools 68 and 69 has been shifted

ed the filled spool 69 and the empty spool 68 are moved from the reel, the spool 69 for use and the spool 68 to be filled with lining.

I claim:—

5 1. A device of the class described comprising a pivotally-mounted reel-frame, a plurality of axles mounted on said frame and adapted to move orbitally about the axis of the pivotal support of said frame, a receiving spool mounted on one axle, means to rotate said spool for winding up a strip of material thereon, a lining-carrying spool mounted on another axle, said lining adapted to be wound up with the fabric on the receiving-spool, braking means for the lining-spool, and means for orbitally revolving said spools for the purpose described.

2. A device of the class described comprising a pivotally-mounted reel frame, a plurality of axles detachably mounted on said frame and adapted to move orbitally about the axis of said frame, a power-driven receiving-spool mounted on one axle adapted to wind up a strip of material thereon, a second spool carrying lining for said material mounted on another axle, braking means for the lining spool, means for orbitally revolving said spools about the reel axis, and means for controlling said orbital movement.

3. A device of the class described comprising a pivotally-mounted reel frame provided with means for detachably holding a plurality of axles thereon, whereby said axles are adapted to move orbitally about the axis of the frame, a plurality of axles in said holding means, a receiving-spool mounted on one axle, means embodying a clutch for transmitting motion to said receiving-spool for winding up a strip of material thereon, a lining-carrying spool mounted on another axle, said lining adapted to be wound up alternately with the fabric on the receiving-spool, braking means for said lining spool, and means for orbitally revolving said spools for the purpose described.

4. A device of the class described comprising a pivotally-mounted reel frame provided with means for detachably holding a plurality of axles thereon, whereby said axles are adapted to move orbitally about the axis of the frame, a plurality of axles in said holding means, a receiving spool mounted on one axle, means embodying a clutch for transmitting motion to said receiving spool for winding up a strip of material thereon, a lining-carrying spool mounted on another axle, said lining adapted to be wound up alternately with the fabric on the receiving-spool, braking means for said lining spool, and means for orbitally revolving said spools for the purpose described, and a clutch for controlling the operation of said last-named means.

5. A device of the class described comprising a pivotally-mounted reel frame provided with means for detachably holding a plurality of axles thereon whereby said axles are adapted to move orbitally about the axis of the reel frame, two of the oppositely-disposed axles adapted to constitute supporting means for receiving-spools, means to rotate either of said spools independently of the other for winding up a strip of material thereon, a pair of lining-carrying spools mounted on the intervening axles between the spool-receiving axles, said lining adapted to be wound up with the fabric on one of the receiving spools independently of the other, means for orbitally revolving said spools, for the purpose described.

6. A device of the class described comprising a supporting frame provided with bearings, an axle mounted in said bearings, a reel frame mounted on said axle, said reel frame provided with means for holding a plurality of axles, said axles adapted to move orbitally about the axis of said reel frame, a receiving-spool mounted on one axle, controlled means for rotating said spool for winding up a strip of material thereon, a lining-carrying spool mounted on another axle, said lining adapted to be wound up alternately with the fabric on the receiving-spool, braking means for the lining spool, means to rotate said reel-frame whereby said spools are moved orbitally about a common axis thereof.

7. A device of the class described comprising a supporting frame provided with bearings, an axle mounted in said bearings, a reel frame mounted on said axle, said reel frame provided with means for detachably holding a plurality of axles, said axles adapted to move orbitally about the axis of said wheel frame, a receiving spool mounted on one axle, controlled means for rotating said spool for winding up a strip of material thereon, a lining-carrying spool mounted on another axle, said lining adapted to be wound up alternately with the fabric on the receiving-spool, braking means for the lining spool, means to rotate said reel-frame whereby said spools are moved orbitally about a common axis.

8. A device of the class described comprising a supporting frame provided with bearings, an axle mounted in said bearings, a reel frame mounted on said axle, said reel frame provided with means for detachably holding a plurality of axles, said axles adapted to move orbitally about the axis of said reel frame, a receiving-spool mounted on one axle, controlled means for rotating said spool for winding up a strip of material thereon, a lining-carrying spool mounted on another axle, said lining adapted to be wound up alternately with the fabric on

the receiving-spool, braking means for the lining-spool, a worm wheel, a worm engaging said worm wheel, a shaft for said worm-wheel, and means for rotating said worm-
5 shaft for revolving said reel frame.

9. A device of the class described comprising a supporting frame provided with bearings, an axle mounted in said bearings, a reel frame mounted on said axle, said reel
10 frame provided with means for holding a plurality of axles, said axles adapted to move orbitally about the axis of said reel frame, a receiving spool mounted on one axle, controlled means for rotating said
15 spool for winding up a strip of material thereon, a lining-carrying spool mounted on

another axle, said lining adapted to be wound up alternately with the fabric on the receiving-spool, braking means for the lining spool, a worm wheel, a worm engaging said worm wheel, a shaft for said worm-
20 wheel, means for rotating said worm-shaft for revolving said reel frame, and a clutch for operating said worm-shaft.

In testimony whereof I have hereunto set
25 my hand in presence of two subscribing witnesses.

EDWARD NALL.

Witnesses:

ROSE M. LE MIEUX,
ANNA J. GILHOOLY.