H. I. MORRIS.

TIRE WRAPPING MACHINE.

APPLICATION FILED NOV. 18, 1916.

1,279,404. Patented Sept. 17, 1918.

Fig. 1.

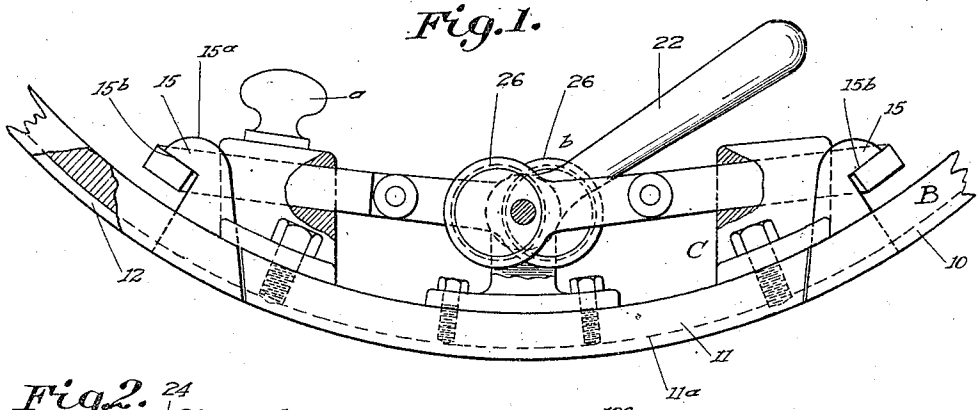


Fig. 2.

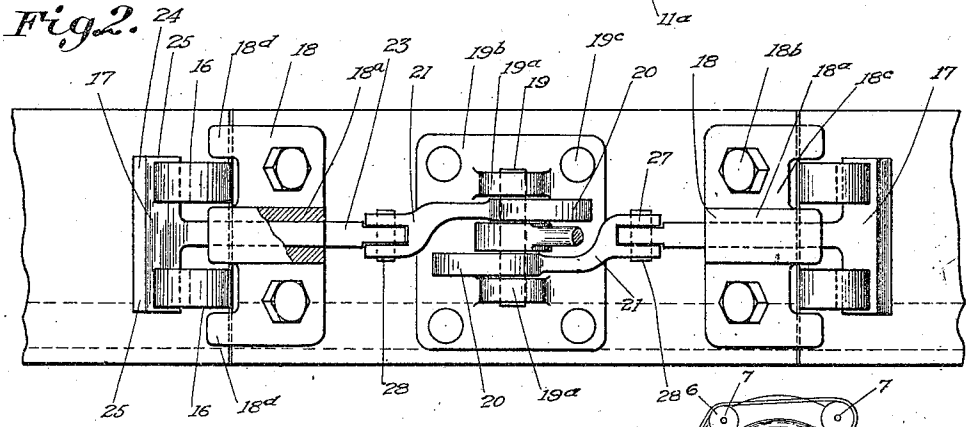


Fig. 3.

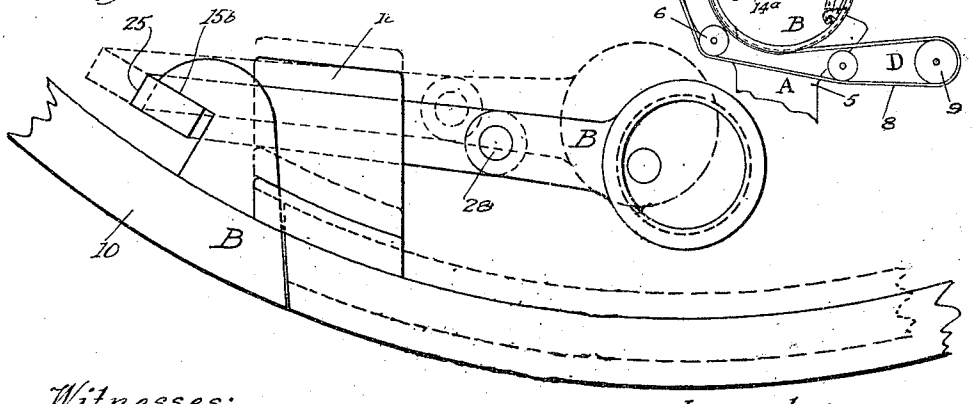
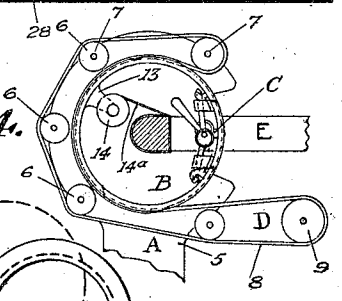


Fig. 4.



Witnesses;

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UNITED STATES PATENT OFFICE.

HOWARD I. MORRIS, OF SAN DIEGO, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE DE LASKI AND THROPP CIRCULAR WOVEN TIRE COMPANY, OF TRENTON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TIRE-WRAPPING MACHINE

1,279,404. Specification of Letters Patent. Patented Sept. 17, 1918.

Application filed November 18, 1916. Serial No. 132,165.

To all whom it may concern:

Be it known that I, HOWARD I. MORRIS, a citizen of the United States, residing at San Diego, in the county of San Diego and State of California, have invented new and useful Improvements in Tire-Wrapping Machines, of which the following is a specification.

This invention relates to tire wrapping machines in which a rotatable annular shuttle is employed for carrying a spool or roll of flexible material to be wound about vehicle tires, and which annulus it is necessary or desirable to provide with a removable section, to the end that vehicle tires may be properly positioned for the wrapping operation, after which positioning the removable section or gate is replaced to complete the annulus and, in some instances, facilitate driving the annulus at the periphery thereof.

In accordance with the present invention, an annular spool or roll-carrying shuttle having a removable peripheral segment is employed, and such segment and the remaining portion of the shuttle are so organized that the segment may be readily removed and as readily replaced when such removal and replacement for the purpose of changing tires becomes necessary; furthermore, means are provided for clamping the segment in position to complete the annular form of the shuttle and rigidly bind the same to remaining portions of the annulus by a simple movement of one hand of the operator, and for removing the segment or gate by a similar motion.

The invention has for a further object the provision of an improved shuttle and gate thereof which will be relatively simple and inexpensive in construction and organization when its features of superiority in positiveness of action, freedom from liability to get out of order or repair, and speed of operation are considered, and which will be generally superior in efficiency and serviceability.

A practical embodiment of my invention is represented in the accompanying drawings in which,

Figure 1 represents a fragmentary side elevation of a spool or roll-carrying annulus and gate thereof for a wrapping machine organized in accordance with the invention, parts being broken away and sectioned for clearness of illustration;

Fig. 2 represents a plan view of the features shown in Fig. 1, parts being broken away and sectioned for clearness of illustration;

Fig. 3 represents a diagrammatic view of parts shown in the other figures illustrating positions assumed by the parts, the view being taken on an enlarged scale; and

Fig. 4 represents a diagrammatic side view of a tire wrapping machine annulus and other features associated therewith showing a fragment of the tire in position for wrapping or winding, the view being on a greatly reduced scale.

Referring with particularity to the drawing, A (Fig. 4) designates a frame portion of a tire wrapping machine, B the spool-carrying shuttle thereof, C the gate, D rotating means for the shuttle and E a vehicle tire being wrapped.

The frame portion A conventionally illustrated in the drawing comprises a vertical part 5, and a plurality of pulleys 6 supported thereon by means of shafts 7 upon which said pulleys are rotatably mounted and such pulleys are arranged to support an endless belt 8, to which power may be applied to rotate the shuttle by frictional engagement with the latter. A driven pulley 9 is provided for actuating the belt.

The shuttle B comprises a member 10 of suitable material (iron) supported for rotation in the frame part 5, and a gate 11 coacting with the member 10 to complete the annular form thereof, and constituting the member C. The member 10 and the gate 11 when united form an annulus which may be rotated by the application of power to the periphery by the belt 8. To this end, a groove 12 is provided around the circumference of the annulus and the belt 8 is adapted to take into such groove and properly drive the annulus. The member 10 is provided at a suitable point interiorly thereof with an inwardly projecting bracket 13 upon which is supported a roll or spool 14 of tape or the like 14^a which is to be wound about a tire. The member 10 is further provided with inwardly projecting catches 15 disposed at opposite sides of the gate space, and such catches may be arranged in pairs two at each side of the gate

opening. The catches may be formed of suitable flat material and let into the member 10 by slotting the same as at 16, or the catches may be otherwise secured in position on the member 10 or formed thereon in any preferred manner. The catches 15 each have a rounded head portion 15^a and an undercut portion as at 15^b, a projecting head with inclined walls being thus formed as clearly illustrated in Fig. 1. The under faces thus formed on the catch head 15^a at 15^b all face away from the gate opening in the member 10 and are adapted to coact with latch features provided on the gate.

The gate 11 preferably comprises a curved segmental portion 11^a curved at its outer face to the same radius as is the outer face of the member 10, a plurality of oppositely operable latches 17, means for supporting and guiding said latches, one such means 18 being provided for each of the latches, and means *b* for actuating the latches to draw the same or the heads thereof into engagement with the under faces of the catch heads 15^a on the member 10 and to move the same out of engagement with such faces. The means *b* for actuating the latches preferably comprises an eccentric shaft 19, an eccentric 20 for each of the latches 17 mounted thereon, a connecting rod or link 21 extending from each eccentric to the respective latch 17, and a lever 22 secured to said eccentric shaft to rotate the same to throw the latches 17 into or out of engagement with the under faces 15^a of the respective heads 15 formed on the member 10. The latches each comprise a longitudinally movable shank portion 23 and a T-head 24 formed thereon producing a T-shaped latch the laterally extending portions 25 of which are each adapted for engagement with the lower surface of a head 15, the latch shanks lying between the catch heads 15. It will be observed that the under faces 15^a slant outwardly toward the gap adapted to receive the gate 11 and toward the periphery of the shuttle as a whole so that, when the laterally extending portions 25 of the latch heads are drawn into engagement with the said faces 15^a by the means which actuates the latches, the gate is forced outwardly toward the periphery of the shuttle and into firm abutment therewith. The fact that the lines of severance between the gate and the remainder of the shuttle are oblique to the radii of the shuttle as a whole, so as to cause the gate and its gap to be longer on the inside than on the outside, also lends to the effectuation of the said result. The supports or guides 18 are each preferably formed of an inwardly ranging boss 18^a secured to the inner face of the curved segment 11^a as by means of cap screws or the like 18^b, such bosses being apertured each to accommodate a latch shank 23. The bosses are of sufficient length to provide the required wearing surface for the latch shanks. The connecting links 21 are each formed with an eccentric strap 26 at one end, such strap encircling the respective eccentric, and the links are bifurcated at their opposite ends as at 27 for connection with the inner ends of the latch shanks 23 and are secured as by means of pins 28. The eccentric shaft 19 is mounted in suitably spaced inwardly facing lugs 19^a preferably integrally formed with a base plate 19^b which is secured to the inner face of the curved segment 11^a as by screws or bolts 19^c. The eccentrics are disposed on the shaft 19 in such a manner that they project in diametrically opposite directions and the operating lever or handle 22 is fixed to the shaft at a suitable angle to said eccentrics so that they may be conveniently actuated thereby and the handle, when the latches are in catch head engaging position, may lie close to the annulus. The guide bosses 18^a are formed integrally with fastening plates 18^c and said plates are each provided with projections 18^d which rest upon the inner surface of the annular member 10 when the gate is in position, the gate being formed to exactly fit the gap provided therefor in the annular member 10.

The tire E is shown as lying in a plane at right angles to the plane of rotation of the shuttle and, as wrapping proceeds, succeeding tire portions may be presented to the wrapping zone at the axis of the rotating shuttle which, in carrying the spool around the tire, will tape or bandage the same as the tire is rotated.

The operation, method of use and advantages of the improved wrapping machine and the gate features thereof, will be readily understood from the foregoing description, taken in connection with the accompanying drawing and the following statement:

The gate being removed a tire may be placed in position for wrapping by introducing a portion of same into the shuttle through the open portion in the member 10, after which the gate may be placed in position and the lever 22 pressed outwardly to draw the eccentrics in the proper direction to move their respective latches into engagement with the catch heads 15^a at the under side thereof and so clamp the gate into position to fill the gap or open portion in the member 10, the projecting portions 18^d resting on the inner surface of the member 10. By exerting slight pressure on the lever 22 the latch heads or the portions 25 thereof, being of a suitable inclination to the latch shanks 23 and at the inclination corresponding to the under faces or surfaces of the catch heads 15, the gate portion will be forced outwardly and firmly secured to the member 10. After the gate has been so

positioned the shuttle may be rotated and the tire taped or wound, after which the gate may be removed by merely throwing the lever 22 inwardly away from the gate, thus forcing the latch portions 22 out of engagement with the surfaces 15^b of the catch heads, when the latch heads with the gate may be lifted out of position in the member 10. A suitable knob *a* may be provided in the inner side of one of the bosses 18^a to afford a hold for the hand of an operator in removing or replacing the gate. After the gate has been moved from its position in the opening, it being understood that the shuttle is in proper position to present its then open portion to the open portion of the looped belt 8 and frame part 5, the tire may be withdrawn and another tire placed into position for wrapping. The gate may be replaced by lifting the same into position and again pressing the lever 22 outwardly to clamp and bind the same to the member 10.

It will be understood that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention, and hence I do not intend to be limited to the details shown and described except as they may be specifically set forth in the claims.

Having thus disclosed my invention, I claim and desire to secure by Letters Patent:

1. In a tire wrapping machine, an annular shuttle, said shuttle comprising a large segment and a gate therefor, said segment and gate being adapted when in abutting engagement to complete the annulus, and means for locking the gate to the large segment, said means comprising a catch near each end of the large segment; a pair of latches on the gate, and eccentric mechanism for operating the latches so as to force them into engagement with the catches.

2. In a tire wrapping machine, an annular shuttle, said shuttle comprising a large segment and a gate therefor, said segment and gate being adapted when in abutting engagement to complete the annulus, and means for locking the gate to the large segment, said means comprising a catch near each end of the large segment, each of said catches having a nose projecting away from the end of the segment; a pair of latches on the gate, each of said latches having a projection for engagement with a nose of a catch, and eccentric mechanism for operating the latches so as to force them into engagement with the catches.

3. In a tire wrapping machine, an annular shuttle, said shuttle comprising a large segment and a gate therefor, said segment and gate being adapted when in abutting engagement to complete the annulus, and means for locking the gate to the large segment, said means comprising a catch near each end of the large segment, each of said catches having a nose projecting away from the end of the segment and toward the axis thereof; a pair of latches on the gate, each of said latches having a projection for engagement with a nose of a catch, and eccentric mechanism for operating the latches so as to force them into engagement with the catches to force the gate outwardly into firm abutment with respect to the segment.

4. In a tire wrapping machine, an annular shuttle, said shuttle comprising a large segment and a gate therefor, said segment and gate being adapted when in abutting engagement to complete the annulus, and means for locking the gate to the large segment, said means comprising a plurality of inwardly extending spaced catches near each end of the segment; a plurality of oppositely movable latches on the gate, each of said latches being provided with lateral extensions for engagement with respective catches; an eccentric for each of said latches adapted to move the same into engagement with respective catches, and a lever for actuating said eccentrics.

5. In a tire wrapping machine, an annular shuttle, said shuttle comprising a large segment and a gate therefor, said segment and gate being adapted when in abutting engagement to complete the annulus, and means for locking the gate to the large segment, said means comprising a catch near each end of the large segment; a pair of latches on the gate, and eccentric mechanism for operating the latches so as to force them into engagement with the catches, said gate being provided with extending portions for engagement with the ends of the segment to limit the outward movement of the gate.

6. In a tire wrapping machine, an annular shuttle, said shuttle comprising a large segment and a gate therefor, said segment and gate being adapted when in abutting engagement to complete the annulus, and means for locking the gate to the large segment, said means comprising a catch near each end of the large segment, each of said catches having a nose projecting away from the end of the segment; a pair of latches on the gate, each of said latches having a projection for engagement with a nose of a catch, and eccentric mechanism for operating the latches so as to force them into engagement with the catches, said gate being provided with extending portions for engagement with the ends of the segment to limit the outward movement of the gate.

7. In a tire wrapping machine, an annular shuttle, said shuttle comprising a large segment and a gate therefor, said segment and gate being adapted when in abutting engagement to complete the annulus, and

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means for locking the gate to the large segment, said means comprising a catch near each end of the large segment, each of said catches having a nose projecting away from the end of the segment and toward the axis thereof; a pair of latches on the gate, each of said latches having a projection for engagement with a nose of a catch, and eccentric mechanism for operating the latches so as to force them into engagement with the catches to force the gate outwardly into firm abutment with respect to the segment, said gate being provided with extending portions for engagement with the ends of the segment to limit the outward movement of the gate.

8. In a tire wrapping machine, an annular shuttle, said shuttle comprising a large segment and a gate therefor, said segment and gate being adapted when in abutting engagement to complete the annulus, and means for locking the gate to the large segment, said means comprising a plurality of inwardly extending spaced catches near each end of the segment; a plurality of oppositely movable latches on the gate, each of said latches being provided with lateral extensions for engagement with respective catches; an eccentric for each of said latches adapted to move the same into engagement with respective catches, and a lever for actuating said eccentrics, said gate being provided with extending portions for engagement with the ends of the segment to limit the outward movement of the gate.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

HOWARD I. MORRIS.

Witnesses:
C. P. TURNER,
CLAUS SHENKEL.