Dec. 4, 1928.

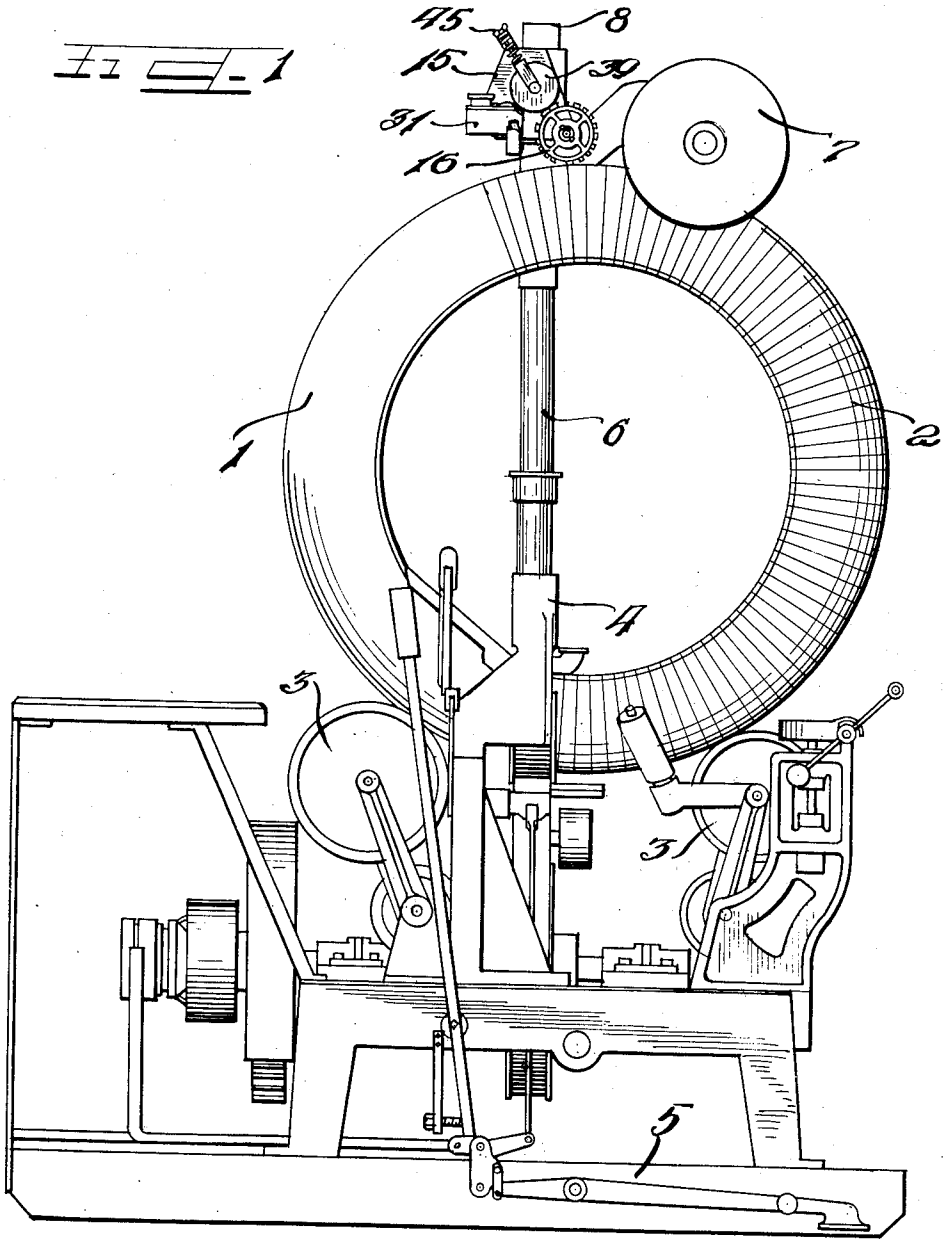
1,693,864

P. PIERCE

PRINTING ATTACHMENT FOR WRAPPING MACHINES

Filed April 30, 1927 2 Sheets-Sheet 1

FIG. 1



INVENTOR

Paul Pierce

BY Carlson & Wiggs ATTYS

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Filed April 30, 1927 2 Sheets-Sheet 2

Fig. 2

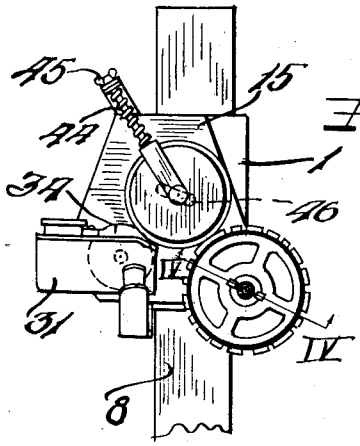


Fig. 3

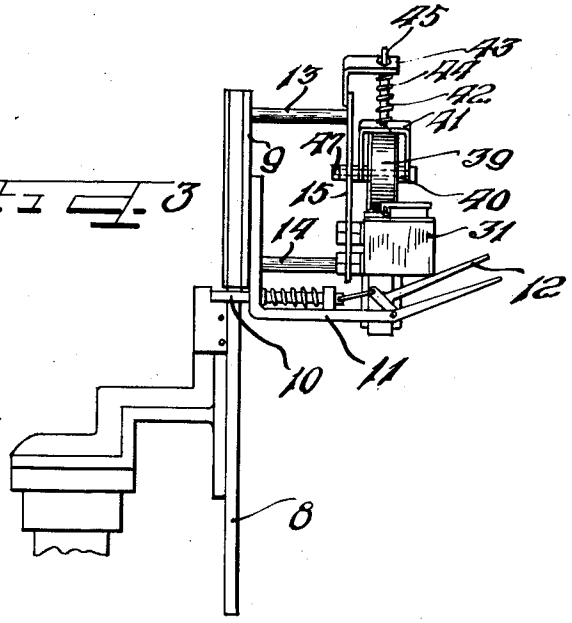


Fig. 4

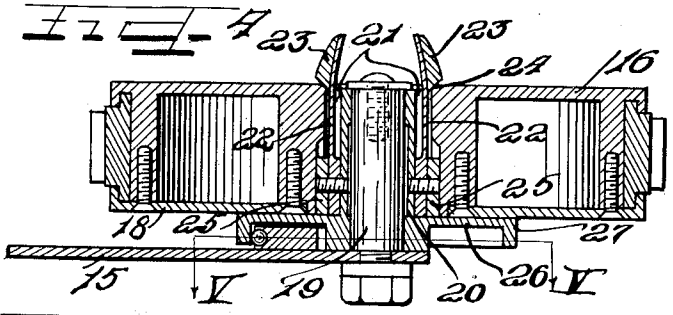


Fig. 6

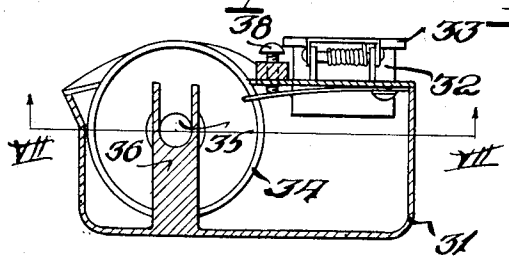


Fig. 5

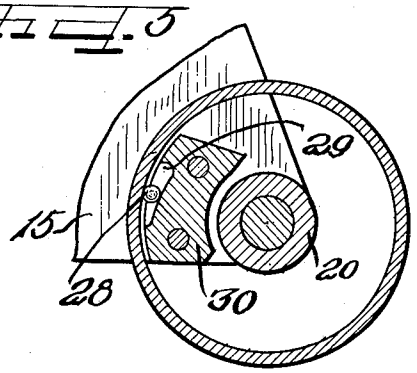
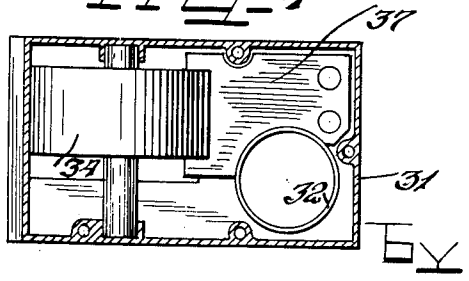


Fig. 7



INVENTOR

Paul Pierce

BY

ATTYS

Patented Dec. 4, 1928. 1,693,864

UNITED STATES PATENT OFFICE.

PAUL PIERCE, OF CHICAGO, ILLINOIS.

PRINTING ATTACHMENT FOR WRAPPING MACHINES.

Application filed April 30, 1927. Serial No 187,770.

This invention relates to a printing attachment for wrapping machines and is particularly concerned with the provision of an improved printing attachment of the general type disclosed in United States Patent to Stern, Number 1,629,934.

The printing attachment provided by the present invention is particularly designed for printing desired indicia upon tire casing wrappings either during or subsequent to the application of such wrappings by a tire wrapping machine. Since the indicia to be so impressed varies widely with the different sized tires, it is necessary that the type or other actual printing means be readily changed.

It is an important object, therefore, of the present invention to provide a printing attachment for tire wrapping machines wherein the type carrying means may be readily changed with a minimum of effort on the part of the operator.

It is a further important object of this invention to provide a printing attachment of the kind described embodying an improved inking mechanism and means for preventing excess application of ink to the printing means.

It is also an important object of this invention to provide a printing mechanism of the kind described wherein the type carrying means are so mounted as to prevent reverse rotation thereof and wherein the inking roll is resiliently mounted and held in contact with the primary inking roller and with the type.

Other and further objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

The invention (in a preferred form) is shown in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a side elevation of a conventional type tire wrapping machine equipped with the improved printing mechanism of this invention.

Figure 2 is a front elevation of the printing mechansm.

Figure 3 is a fragmentary side elevation of the printing mechanism and the support therefor.

Figure 4 is an enlarged detail section on the line IV—IV of Figure 2.

Figure 5 is a fragmentary section on the line V—V of Figure 4.

Figure 6 is a longitudinal vertical section taken through the ink container with parts shown in elevation.

Figure 7 is a section on the line VII—VII of Figure 6.

As shown on the drawings:

The reference numeral 1 indicates a tire casing to which a wrapping 2 is spirally applied by virtue of the relative rotation of said tire casing through driving and supporting rollers 3 and a shuttle 4 which carries the wrapping material to be applied. Projecting upwardly from the base 5 of the tire wrapping machine is a standard 6 which carries an overrunning tire guiding and positioning roller 7 and which is provided with an offset portion in the form of a flat plate or post 8 on which the improved printing mechanism of this invention is adjustably mounted. Said printing mechanism is supported by a carriage 9 slidably mounted on the post 8 and adapted to be held in adjusted position relative to said post by means of a spring-pressed detent or plunger 10 slidably mounted in a bracket 11 carried by said carriage 9. Said detent or plunger 10 may be retracted by means of a release handle 12 connected to one end thereof and adapted when compressed relative to the bracket 11 in a well-known manner to draw the plunger 10 outwardly against the action of the spring which normally forces the same toward the post 8. Supported by the carriage 9 and projecting outwardly therefrom are two posts 13 and 14 which rigidly support a plate 15 which carries the inking and printing mechanism to be described hereinafter.

The printing mechanism proper comprises a wheel or roller 16, the periphery of which is provided with an undercut groove to receive a strip of type 17, preferably constructed of rubber composition or other resilient material and embodying the desired indicia to be printed on the tire casing wrapping. Although the strip of type 17 may be readily forced into the undercut groove in the wheel or roller 16, I have provided the front face of said wheel or roller with a removable inwardly flanged face 18 which completes the roller and forms the opposite side of the undercut groove. It is obvious that removal of this plate permits the insertion and removal of the strip of type 17.

Rotatably mounted on a stub shaft 19 secured to the plate 15 and projecting out-

wardly from the face thereof is a hub member 20 provided at either side with key slots 21. Mounted in said key slots 21 are spring retaining fingers 22 which normally spring apart out of the key slots and which are provided at their outer ends with retaining bosses 23 having beveled edges adapted to frictionally engage the edge 24 of an axial passage through the wheel or roller 16. Said axial passage through the wheel or roller 16 is provided with key slots at its inner end which are adapted to register with keys 25 secured to the hub member 20 directly outside the bosses of the spring fingers 22. Consequently, by aligning the key slots in the wheel with the projections 23 on the spring fingers 22, it is possible to engage the printing wheel or roller 16 over said spring fingers in such a manner that the key slots therein will be engaged by the keys or projections 25 and at the same time the outer face of the wheel at the portion 24 will be engaged by the beveled portions of the projections 23 on the spring fingers 21 and the printing wheel or roller 16 thus locked to rotate with the hub member 20 on the stub shaft 19.

In order to prevent reverse rotation of the hub member 20 and type carrying roller 16, I have provided said hub member with an integral plate 26 having an integral annular flange 27 parallel to the axis of the stub shaft 19 and cooperating with said flange 27 I have provided a ball clutch or lock 28 which is retained in position in a cam recess 29 in a plate 30 secured to the plate 15 inside the flange 27. By virtue of this construction, it will be apparent that rotation of the hub 20 in a clockwise direction in Figure 5 will be unimpeded since the ball 28 moves to the large end of the cam recess 29. On the other hand, attempted reverse rotation in a counter-clockwise direction in Figure 5 will cause the ball clutch 28 to be lockingly engaged between the edge of the cam recess 29 and the flange 27 and thus lock the type carrying roller 16 and the hub 20 from rotation in this direction. This prevention of reverse rotation is an advantageous feature which will be referred to more fully hereinafter.

Ink which is applied to the type carrying roller 16 is contained in a container or reservoir 31 which is secured to the plate 15 and which is adapted to be filled through a large filler opening 32 having a spring closed cover 33. Rotatably mounted in the container 31 and dipping into the ink therein is a primary inking roller 34 which projects upwardly through a side guarded opening in the cover of the container 31 and which is provided with a turning shaft 35 rotatable in open internal bearings 36 inside the container 31. By providing these open internal bearings, the necessity for liquid tight bushings which exist when the shafts project through the container is obviated. Excess ink is removed from the primary inking roller by a scraper or doctor 37 secured to the inner side of the cover of the container 31 and adjustable relative to the primary roller 34 by means of the set screw 38 projecting through said cover and a boss thereon. It will be noted from Figure 7 that the doctor 37 is provided with projections which remove excess ink from the sides of the primary inking roller 34.

For the purpose of transferring a desired quantity of ink from the primary inking roller 34 to the type 17 on the type carrying roller 16, I have provided an intermediate inking roller 39 which is preferably provided with a face of felt or other similar material and which is so mounted as to resiliently contact both the type 17 and the primary inking roller 34 with the desired degree of pressure. Said intermediate inking roller 39 is rotatably mounted on a shaft 40 which is carried by a forked bracket 41, said forked bracket 41 in turn being provided with a central extension 42 which projects through an offset bracket 43 secured to the plate 15. Engaged around the extension 42 between the upper face of the forked bracket 41 and the inner face of the bracket 43 is a helical spring 44, and secured to the threaded upper end of the extension 42 is a wing nut 45 which may be adjusted to compress the helical spring 44 to a desired degree. The plate 15 is slotted as shown in dotted lines at 46 in Fgure 2 to receive the inner end of the shaft 40 so as to permit of adjustment of the intermediate roller 39 through the tensioning of the spring 44 and the positioning of the bracket 41, nuts 47 being provided for the purpose of preventing canting of the shaft and roll.

The structure which I have provided herein is highly advantageous for several reasons. As previously stated, it is necessary that the form of indicia to be applied to the wrapped tire casings be varied from time to time in accordance with varying sizes, qualities, etc., of the wrapped tires and the rapidity with which this work must be done makes it imperative that these changes be quickly made. This is therefore conveniently accomplished by changing the type carrying roller 16 and in the construction which I have provided such a change may be accomplished merely by grasping the roller and pulling it over the projections 23 on the spring fingers 21, after which a substitute type carrying roller may be readily replaced by a reverse operation, each operation being easily accomplished by one hand of the operator. The means which are provided for preventing reverse rotation of the hub 20 facilitate this changing operation since the hub may be turned reversely and thus held rigid during the changing operations. The prevention of reverse rotation further prevents the application of excess quantities of ink to the type carrying roller

and thus removes the objection of blurred and improper printing.

The resilient mounting which has been provided for the intermediate inking roller makes it possible to properly and in fact almost automatically adjust this roller relative to the primary inking roller and the type carrying roller without loss of time on the part of the operator.

It will thus be apparent that I have provided a mechanism which is of simple and effective construction and one which may be operated by an unskilled person with a minimum of time lost.

I am aware that numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted, otherwise than necessitated by the prior art.

I claim as my invention:

1. The combination with a tire wrapping machine, of means mounted thereon for printing desired indicia on the wrapping of a tire wrapped thereby, an ink applying roller resiliently contacting said means, and a second inking roller resiliently contacted by said first ink applying means.

2. The combination with a tire wrapping machine, of means mounted thereon for printing desired indicia on the wrapping of a tire wrapped thereby, and ink applying means resiliently contacting said printing means.

3. The combination with a tire wrapping machine, of a readily detachable type carrying roller mounted thereon for printing desired indicia on the wrapping of a tire wrapped thereby, and adjustably mounted ink applying means contacting said roller.

4. The combination with a tire wrapping machine, of a type carrying roller mounted thereon for printing desired indicia on the wrapping of a tire wrapped thereby, means for applying ink to the roller, and means for preventing reverse rotation of the roller.

5. The combination with a tire wrapping machine, of a type carrying roller mounted thereon for printing desired indicia on the wrapping of a tire wrapped thereby, rotatable inking means contacting said type carrying roller, and means for preventing reverse rotation of said type carrying roller.

6. The combination with a tire wrapping machine, of a type carrying roller mounted thereon for printing desired indicia on the wrapping of a tire wrapped thereby, rotatable inking means contacting said type carrying roller, and ball clutch means for preventing reverse rotation of the type carrying roller.

7. The combination with a tire wrapping machine, of a type carrying roller detachably mounted thereon for printing desired indicia on the wrapping of a tire wrapped thereby, and means associated with said type carrying roller for preventing reverse rotation thereof.

8. The combination with a tire wrapping machine, of a type carrying roller rotatably mounted thereon, an ink container positioned adjacent said roller, a primary inking roller rotatable in said container and projecting thereabove, and an intermediate inking roller resiliently contacting both of said first mentioned rollers.

9. The combination with a tire wrapping machine of a type carrying roller for printing a desired indicia on the wrapping applied by the machine, a supporting spindle for said roller secured at one end only to said machine to allow said roller to be readily detached therefrom and frictional means for securing said roller in position on said spindle.

In testimony whereof I have hereunto subscribed my name at Chicago, Cook County, Illinois.

PAUL PIERCE.