No. 700,871. Patented May 27, 1902.

J. K. WILLIAMS.

RUBBER TIRE SETTING MACHINE.

(Application filed Mar. 18, 1901.)

(No Model.) 2 Sheets—Sheet I.

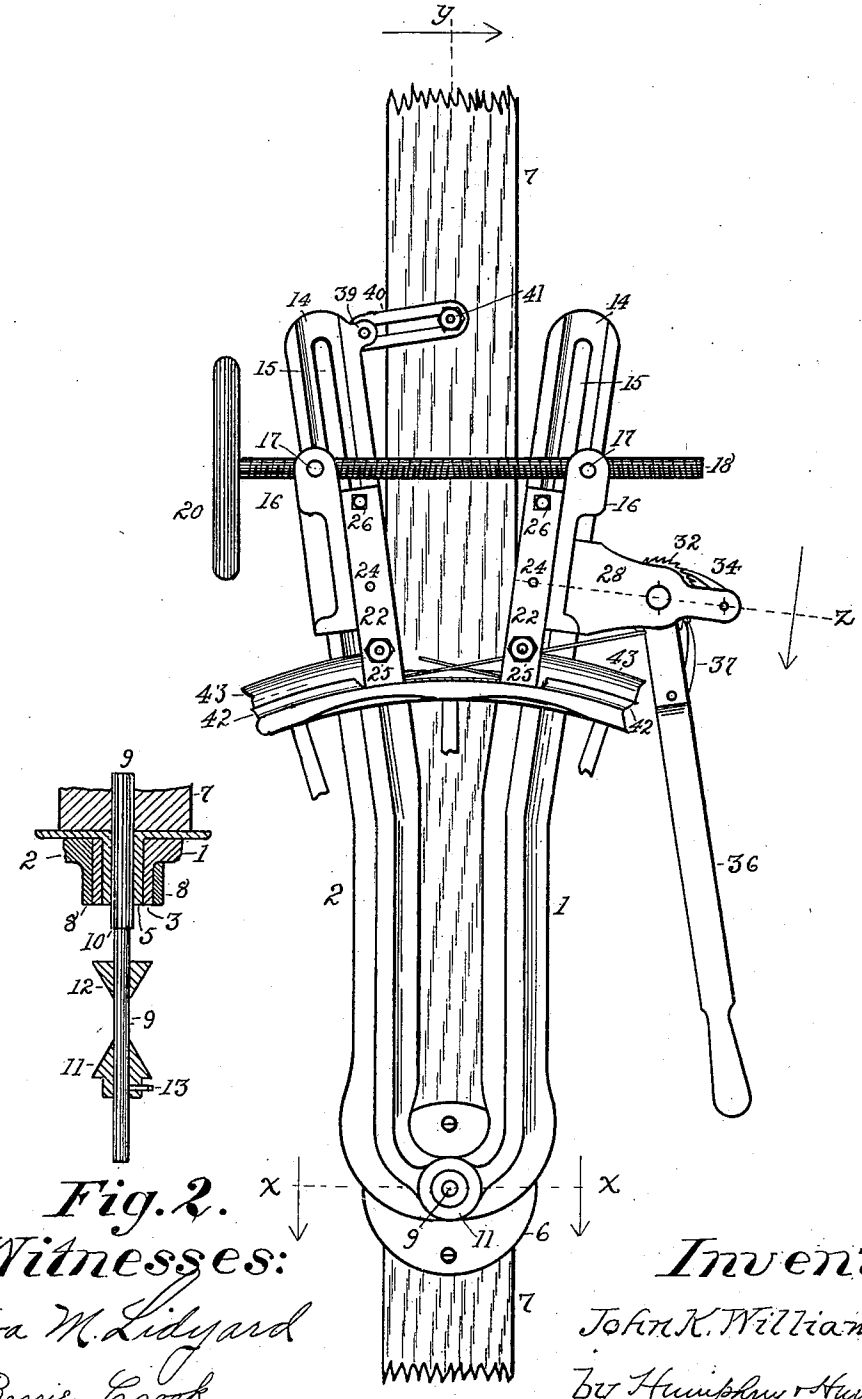


Fig. 1.

Fig. 2.

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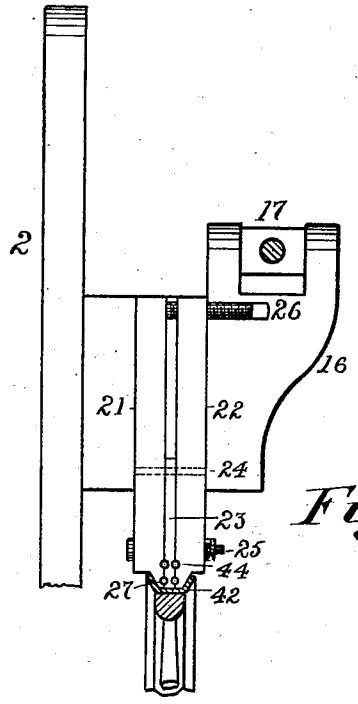


Fig. 3.

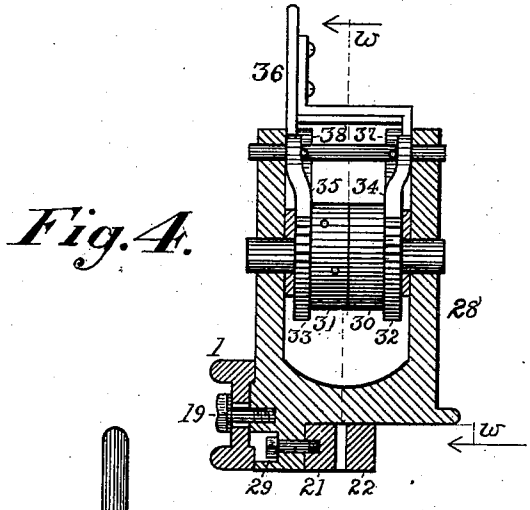


Fig. 4.

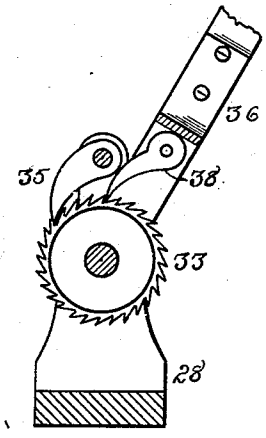


Fig. 5.

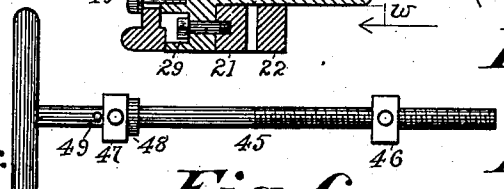


Fig. 6.

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UNITED STATES PATENT OFFICE.

JOHN K. WILLIAMS, OF AKRON, OHIO.

RUBBER-TIRE-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 700,871, dated May 27, 1902.

Application filed March 18, 1901. Serial No. 51,665. (No model.)

To all whom it may concern:

Be it known that I, JOHN K. WILLIAMS, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Rubber-Tire-Setting Machines, of which the following is a specification.

My invention has relation to improvements in devices for placing solid rubber vehicle-tires containing embedded longitudinal wires in channeled metallic tires.

Heretofore considerable difficulty has been found in preserving the line of draft of the wires constantly tangential to the circumference of the tire on the line of the embedded wires, and many ingenious devices have been used for securing this effect. Another difficulty has been found in securing an even strain on both wires at the same time.

The object of my invention is, in the first place, to provide a new and improved machine of the class indicated which shall be simple in construction, efficient in operation, and in which the number of parts shall be reduced to a minimum; and a further object is to provide wire-straining devices by which the parallel wires may be singly strained to bring them as nearly as may be into equal tension; and a final object is to so support the wire-straining devices with reference to the wheel-center that the wires will be at all times drawn tangential to the wheel.

To the securing of the aforesaid objects my invention consists of the peculiar and novel construction, arrangement, and combination of parts hereinafter described and then specifically pointed out in the claims, reference being had to the accompanying drawings, which constitute a part of this specification.

In the accompanying drawings, in which similar reference-numerals indicate like parts in the different figures, Figure 1 is a front elevation of my machine with the supporting-post broken at top and bottom; Fig. 2, a section at the line X of Fig. 1; Fig. 3, a section of a part of the machine at the line Y of Fig. 1 looking from the left; Fig. 4, a section, enlarged, of the winding-drums with their housing and connected parts at the line Z of Fig. 1; Fig. 5, a section of Fig. 4 at the line W W, and Fig. 6 a detail of a different form of screw for operating the parts and hereinafter more fully described.

Referring to the figures, 1 and 2 are oppositely-disposed like arms, having inturned lower ends hinged to move about a common center, as follows: The arm 1 has at its lower end a forwardly-extending hollow wrist 3, Fig. 2, that is fitted to turn on a tubular axle 5, integral with and extending from a base-plate 6, secured to a post 7 or other convenient support. The arm 2 has at its lower end a forwardly-extending sleeve 8, that is fitted to turn on the wrist 3. In the post 7 is removably secured a shaft 9, that extends horizontally and fits the interior of the tubular axle 5. The shaft 9 has its front portion turned down to a smaller diameter than the rear portion and is divided therefrom by an abrupt shoulder 10. On the reduced end of the shaft 9 are two sliding cones 11 12 to enter the opposite ends of the wheel-hub to support and center the wheel while the tire is being placed, the back cone 12 resting against the shoulder 10 and the cone 11 held in place by a pin 13 or other like means. The arms 1 2 are bent outwardly about half the distance between their ends, so that their inner faces are exactly radial to the pivot 9, and in the front upper ends are channels 14, in the center of which are slots 15. In each channel 14 is fitted to slide a block 16, adapted to be retained at any distance from the end, if preferred, by bolts 19, (shown only in Fig. 4,) each block having a recess in its upper end, in which is pivotally mounted a nut 17. These nuts in the form shown in Fig. 1 are internally screw-threaded with threads of opposite pitch, and in these is fitted to run a right and left handed screw 18, provided with a hand-wheel 20, by which it may be turned. Each block 16 bears one fixed jaw 21, secured in an angle of the block by a screw 29, and an oppositely-disposed movable jaw 22, between the lower halves of which are interposed plates 23. The jaws 21 22 and plate 23 of each block are caused to accurately register with each other by a guide-pin 24 (shown in dotted lines in Fig. 3) and are held together when desired by a bolt 25. The grip of their lower ends is still further increased by a screw 26, that runs in a screw-threaded opening in the upper end of the jaw

22 and bears against the jaw 21. The lower ends of the jaws 21 and 22 are reduced on one side to conform them to fit the channeled metallic tire. Their extreme ends are flush with each other and with the plate 23, and the adjacent faces of the jaws and plate have shallow grooves 27 to enable them to securely grip the wires.

Integral with the block 16 of the arm 1 is a frame 28, constituting a housing for windlasses 30 31 and shown in enlarged section (at the line Z of Fig. 1) in Fig. 4. These windlasses consist of drums freely mounted on a shaft, provided, respectively, with ratchet-wheels arranged to be severally engaged by pawls 34 35, pivoted in the housing. A two-armed lever 36 is also hinged on the windlass-shaft and bears pawls 37 38, arranged to engage the ratchet-wheels 32 33, respectively.

To hold the machine upright and prevent it swinging down on its pivot, there is a small boss 39 on the upper end of the arm 2, to which is secured a link 40, the opposite end of this link being fastened to the post 7 by a bolt 41.

In operation a wheel having a channeled metal tire 42 is mounted on the shaft 9 between the cones 11 12, which enter the ends of the hub-box and center the wheel. A rubber tire 43 is then passed around the wheel in the channeled tire and the wire from one end passed between the clamping-jaws and middle plate of the arm 1 and the jaws screwed up thereon. The opposite ends of the wires are then passed between the clamping-jaws and middle plate of the arm 2 and carried to the windlass 30 and 31, through upper and larger openings 44, and fastened thereto by passing through a hole in the drum and turned around it once or more. The ends of the rubber tire will now rest against the opposite clamping-jaws. The windlasses are then turned up until the wires are equally and sufficiently tight. This equality is secured when it is discovered that one wire is tighter than the other by holding the drum of the tightest wire by the proper pawl 34 or 35, throwing back the corresponding pawl 37 or 38, and turning the other drum. The clamping-jaws on the arm 2 are then closed on the wires and the wires cut between these jaws of such length as to lap to form a joint. These ends are then scarfed ready for brazing, and if any further adjustment of their ends with relation to each other is needed it is secured by means of the screw 18. After the brazing is complete the clamping-jaws are released, the cone 11 removed, and the blocks 16 raised in the arms, thus allowing the wheel to be re-turned.

I have not shown devices for leading the ends of the rubber tire together to cover the joints, as any of the well-known devices may be used for the purpose.

Instead of the screw 18 for moving the arms and their connected parts a single-thread screw 45, Fig. 6, may be used, in which case but one nut 46 will be used, and in the place of an opposite nut a perforated block 47 may be used, held in place by a fixed collar 48 on one side arm and a pin 49 on the other.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a rubber-tire-setting machine, the combination of arms mounted to rock on the axial line of the wheel to be fitted, and bearing wire-gripping devices near their free ends, with means independent in action of the wire-gripping devices for drawing the free ends of said arms together, substantially as shown and described.

2. In a rubber-tire-setting machine, the combination of arms mounted to rock on the axial line of the wheel to be fitted, and bearing longitudinally-adjustable wire-gripping devices, at their free ends, and means for drawing said free ends bearing said devices toward each other, substantially as shown and described.

3. In a rubber-tire-setting machine, the combination of arms mounted to rock on the axial line of the wheel to be fitted, bearing wire-gripping devices on their free ends, means for drawing said free ends toward each other, and independently-acting windlasses to severally draw said wires, substantially as shown and described.

4. In a rubber-tire-setting machine, the combination of two arms mounted to rock on the axial line of the wheel to be fitted, bearing longitudinally-adjustable, wire-gripping devices on their free ends, means for drawing said free ends toward each other, and independently-acting windlasses to severally draw said wires, substantially as shown and described.

5. In a rubber-tire-setting machine, the combination of two oppositely-disposed arms mounted to rock on the axial line of the wheel to be fitted, provided in their outer portions with ways, radial to their line of movement, and bearing wire-gripping devices longitudinally adjustable therein, and means for causing said arms to approach each other, substantially as shown and described.

In testimony that I claim the above I hereunto set my hand in the presence of two subscribing witnesses.

JOHN K. WILLIAMS.

In presence of—
C. E. HUMPHREY,
C. P. HUMPHREY.