

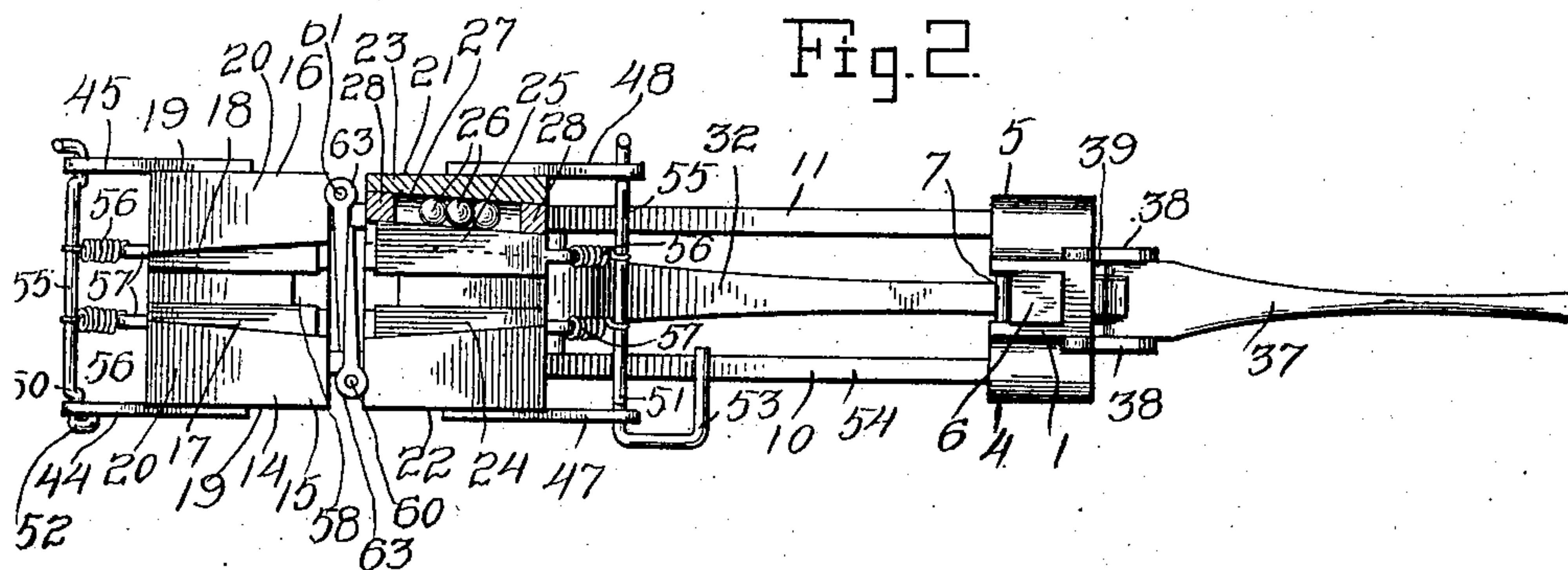
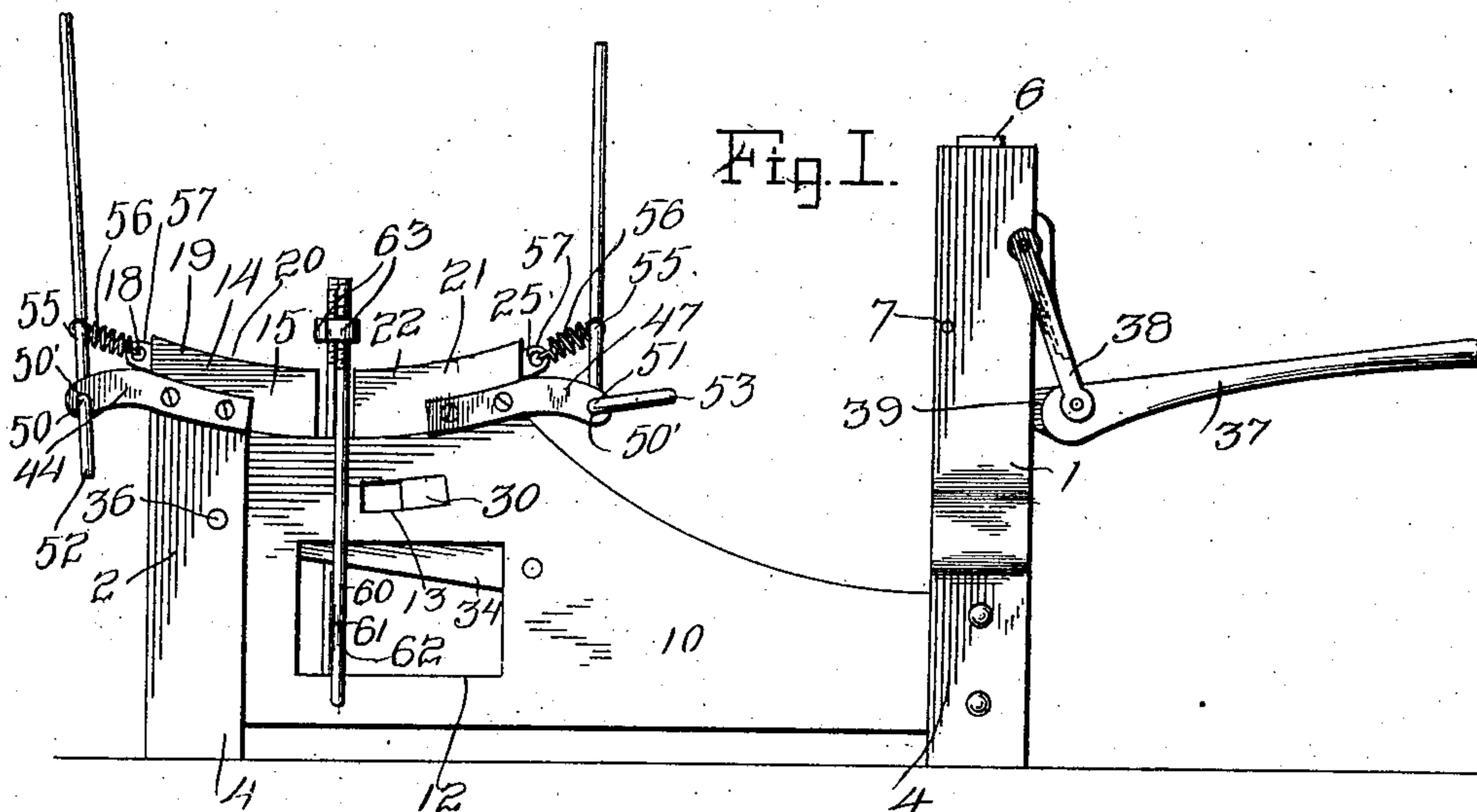
No. 843,392.

PATENTED FEB. 5, 1907.

W. H. FRANCIS.
TIRE SHRINKER.

APPLICATION FILED OCT. 2, 1905.

2 SHEETS—SHEET 1.



Witnesses

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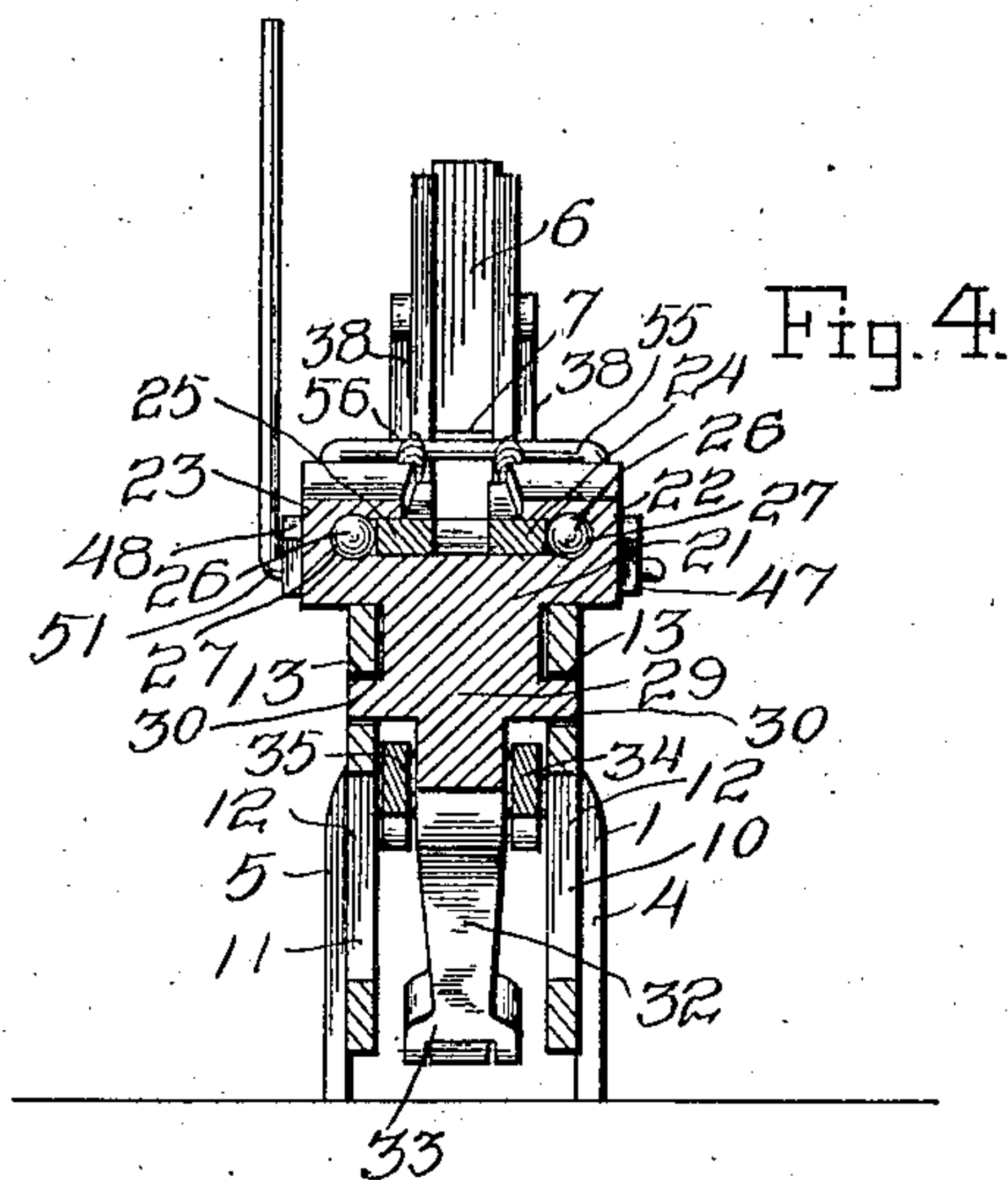
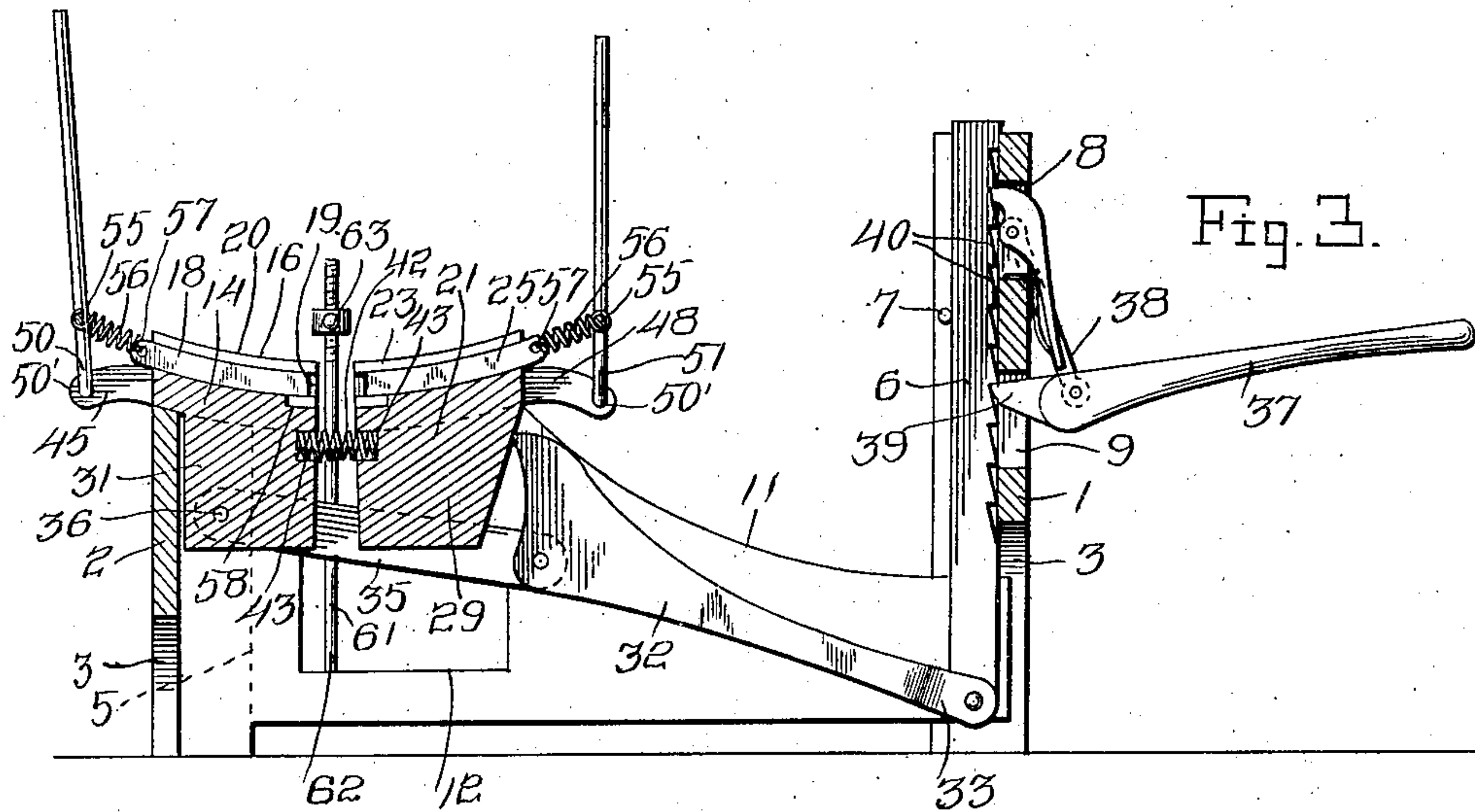
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UNITED STATES PATENT OFFICE.

WILLIAM H. FRANCIS, OF HUGO, INDIAN TERRITORY.

TIRE-SHRINKER.

No. 843,392.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed October 2, 1905. Serial No. 281,074.

To all whom it may concern:

Be it known that I, WILLIAM H. FRANCIS, a citizen of the United States, residing at Hugo, in the Choctaw Nation, Indian Territory, have
5 invented certain new and useful Improvements in Tire-Shrinkers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it
10 appertains to make and use the same.

This invention relates to tire-shrinkers.

One object is to provide a device of the character stated embodying such characteristics that the tire may be shrunk without
15 necessarily heating the same.

Another object of the invention resides in the provision of a tire-shrinker embodying, among other characteristics, the feature of simplicity, inexpensiveness, durability, and
20 effectiveness.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be herein, after more fully described, shown in the
25 accompanying drawings, and particularly pointed out in the appended claim, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claim without departing from the spirit or sacrificing any of
30 the advantages of the invention.

In the drawings, Figure 1 is a side elevation of my invention. Fig. 2 is a top plan view. Fig. 3 is a longitudinal sectional view. Fig. 4
35 is a transverse sectional view.

Referring now more particularly to the accompanying drawings, the reference characters 1 and 2 designate end posts, each having a bifurcation 3 in its lower end and provided
40 with side flanges 4 and 5, the side flanges of the post 1 being designed to inclose the vertically-movable rack 6, which is held between said flanges through the instrumentality of a suitable pin 7, as shown. The post 1 is also
45 provided with upper and lower slots 8 and 9, respectively, for a purpose presently explained.

Connecting the posts 1 and 2 are side members 10 and 11, the upper opposite edges of the said side members 10 and 11 being curved
50 downwardly at adjacent ends, as shown, for engagement with the inner faces of the flanges 4 and 5 and in alinement with the aforesaid bifurcation 3 of the post 1. The
55 opposite edges of the side members 10 and 11 engage the inner faces of the flanges 4 and

5 of the post 2 throughout their length. Each side member has an opening 12 formed therein for the purpose of lightening the device as much as possible, and each side member is
60 provided with a slot 13 above the opening 12, which slots are designed to aline with each other for a purpose presently explained.

Fitted upon the upper end of the post 2 and the upper edges of the side members 10
65 and 11, at one end thereof, is a fixed head 14 which is arranged upon an incline and provided with overhanging side flanges 15 and 16, which terminate short of each other in an inwardly-divergent plane to form guides for
70 the oppositely-disposed jaws 17 and 18, respectively. The side webs 19 of the flanges 15 and 16 are arranged upon the incline for coöperation with the corresponding inclined side of the jaws 17 and 18.
75

It will be observed that the upper edges of the side members 10 and 11 are concaved, as at 20, whereby the aforesaid head 14 might be disposed upon an incline directly opposite to the inclination of a movable head 21,
80 which is mounted also upon the side members 10 and 11 for coöperation with the fixed head 14. This movable head 21 also has overhanging side flanges 22 and 23, which terminate short of each other upon an
85 inwardly-convergent plane, as shown. These overhanging flanges 22 and 23 of the movable head 1 are designed to receive the clamping-jaws 24 and 25, which latter slide in said
90 flanges of the movable head. In order to facilitate the movement of the sliding jaws 17 and 18 and 24 and 25 in their respective heads, I provide bearing-balls 26, which are held in a groove 27 of the side walls of the
95 overhanging flanges and prevented from leaving said grooves 27 by means of abutments 28 at opposite ends of each overhanging flange.

In order that the movable head 21 may have sliding movement upon the upper edges
100 of the side members 10 and 11, I provide the head with a depending member 29, which extends downwardly between the side members 10 and 11 and provided with oppositely-disposed projections 30, designed to enter
105 loosely and slide in the aforesaid oppositely-disposed slots 13 of the side members 10 and 11. It will be observed that the fixed head 14 also has a depending projection 31, and in order to shift the movable jaw toward and
110 away from the fixed jaw I provide a lever 32, which is arranged upon an upward incline

between the side members 10 and 11 and bifurcated at one end, as at 33, for pivotal connection with the lower end of the aforesaid rack 6, the opposite end of the said lever 32 being pivotally mounted in any suitable manner between the corresponding ends of two links 34 and 35, which embrace the depending end 29 of the movable jaw 21, and also the depending portion 31 of the fixed jaw 14 and pivotally connected to a suitable pin 36, which latter is mounted in the side flanges 4 and 5 of the post 2. The operating-lever 37 is pivoted between the outer ends of a pair of links 38, pivotally mounted at the upper end of the post 1. This operating-lever 37 has its inner end reduced, as at 39, and provided with an edge for passage through the aforesaid lower opening 9 of the post 1 for engagement with the teeth 40 of the rack 6, whereby upon operation of the lever 37 with the teeth of the rack the latter may be elevated to cause a consequent pivotal movement of the lever 32 upwardly to throw the inner shouldered end of the lever 32 against the depending portion 29 of the movable jaw 21, and consequently throw the latter toward the fixed jaw, according to the upward movement of the rack 6 through the instrumentality of the operating-lever 37. In order to prevent accidental backward or downward movement of the rack 6, I provide a spring-actuated dog, mounted in the upper opening 8 of the post 1 and designed to engage the teeth of the rack 6.

The heads 14 and 21 are held normally in spaced relation through the instrumentality of a helical spring 42, arranged at its opposite ends in recesses 43 of the respective heads, and each head is provided at its outer end with oppositely-disposed arms 44 and 45 and 47 and 48, respectively. These arms are secured to the outer faces of the walls of the aforesaid overhanging flanges in any suitable manner and are curved, as shown. The oppositely-disposed arms each have a perforation 50' in its outer end for the reception of the respective crank-levers 50 and 51, each crank-lever having an inwardly-directed projection 52 and 53, respectively, the inwardly-directed projection 53 contacting with the upper downwardly-curved edge portion 54 of the side member 10 to limit the swinging of the crank-lever 51, while the opposite crank-lever 50 has its inner projection 52 designed to contact with the curved arm 44 of the fixed head 14, whereby the downward-swinging movement of the crank-levers is limited. Secured to the portion 55 of the respective crank-levers is a pair of springs 56, each spring having its opposite end secured in an eye 57 at the outer end of each of the

aforesaid clamping-jaws 17 and 18 and 24 and 25, respectively, whereby the jaws may be moved inwardly and outwardly of the guides formed by said overhanging flanges. 65

Formed in the upper face of the fixed and movable heads 14 and 21 at their inner ends is a depression 58, in which a bridge-plate may be inserted for the proper seating of the tire. When, therefore, it is desired to shrink the tire of a vehicle-wheel, the latter is placed between the roughened inner faces of the jaws 17 and 18 and 24 and 25, respectively, the wheel extending across the bridge-plate seated in said depressions. The operating-lever 37 is operated to force the movable head toward the fixed head. The crank-levers 50 and 51 are swung outwardly from each other, causing the respective jaws 17 and 18 and 24 and 25 to be moved outwardly of their respective heads through the instrumentality of the expanding of the aforesaid springs 56 upon said outward movement of the crank-levers. Obviously, therefore, by reason of the movement of the heads and jaws as just described there is an even distribution of wedging action upon the tire. 75 80 85

In order to positively hold the vehicle-wheel upon the device prior to and after the engagement therewith of the jaws and the inward movement of the movable head with respect to the fixed head, I provide a pair of pivotally-mounted arms 60 and 61, which are pivoted at the lower edges of the respective side members 10 and 11 and near one end thereof. Each arm has its upper end screw-threaded for the engagement therewith of an elongated nut 63, designed to engage the inner face of the felloe of the wheel, and thereby hold the wheel in proper position. 90 95 100

What is claimed is—

A tire-shrinker comprising end posts, side members connecting the end posts, a fixed head mounted upon one of the posts, a movable head mounted upon the side members, a rack-bar mounted within the other post, a lever connected at one end with the lower end of the rack-bar, and at the other end with the movable head, and an operating-lever pivotally mounted upon the last-named post for engagement with the rack-bar to elevate the latter and throw the inner end of the aforesaid lever into engagement with the movable head to move the latter toward the fixed head. 105 110 115

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. FRANCIS.

Witnesses:

R. J. BROWER,
T. W. YATES.