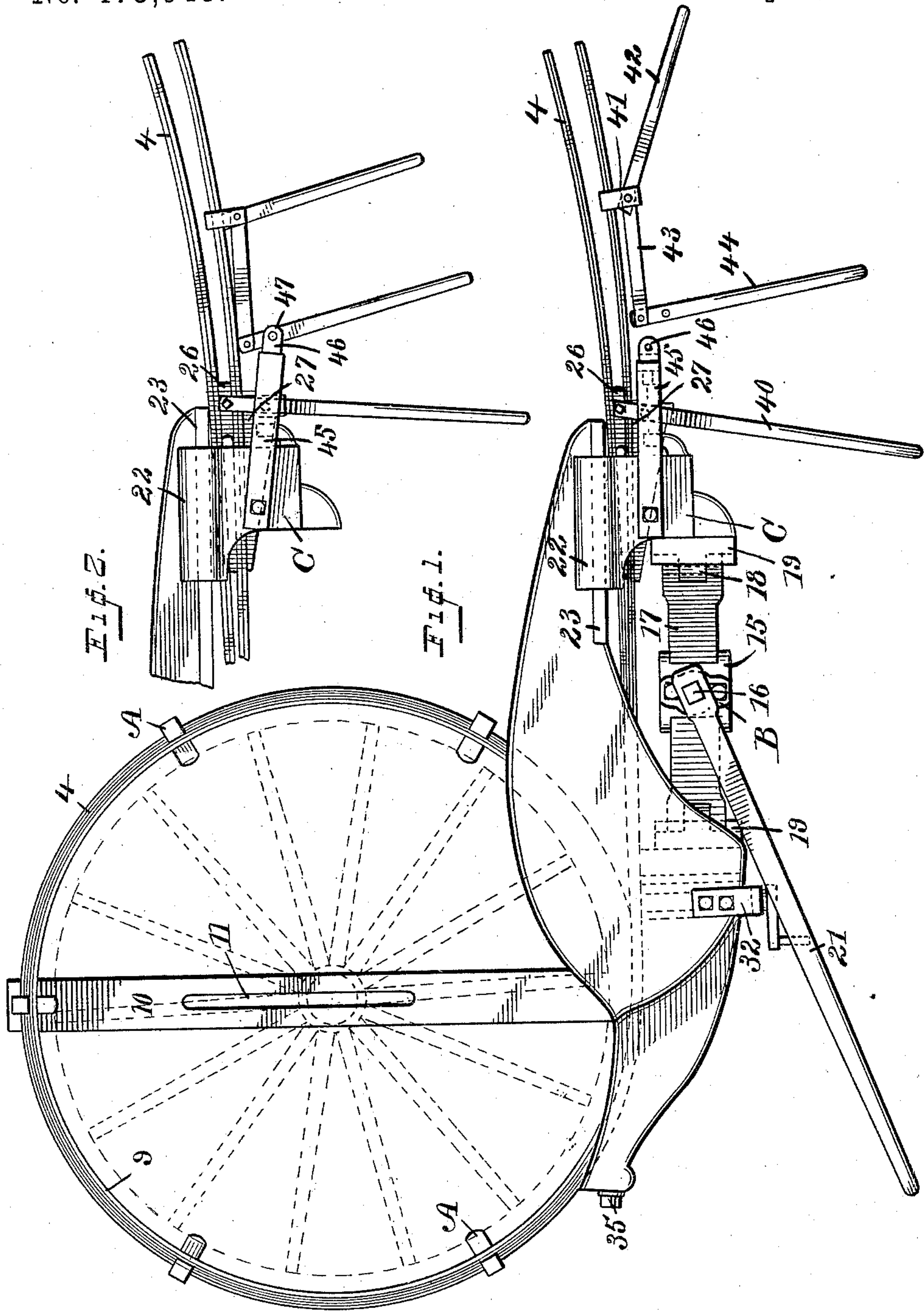


B. McGOVERN.
MACHINE FOR SETTING TIRES.

No. 473,948.

Patented May 3, 1892.



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Fig. 5.

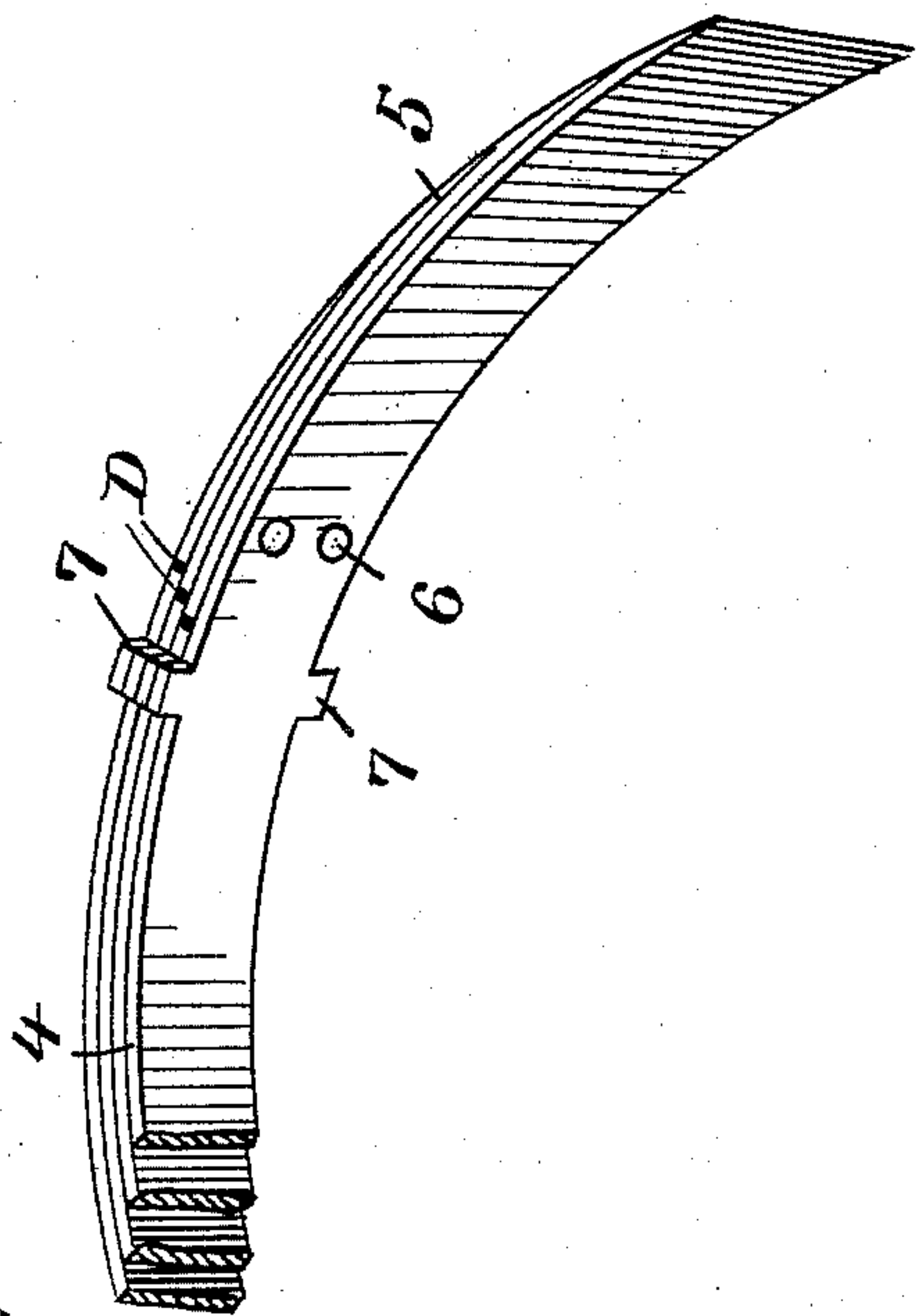
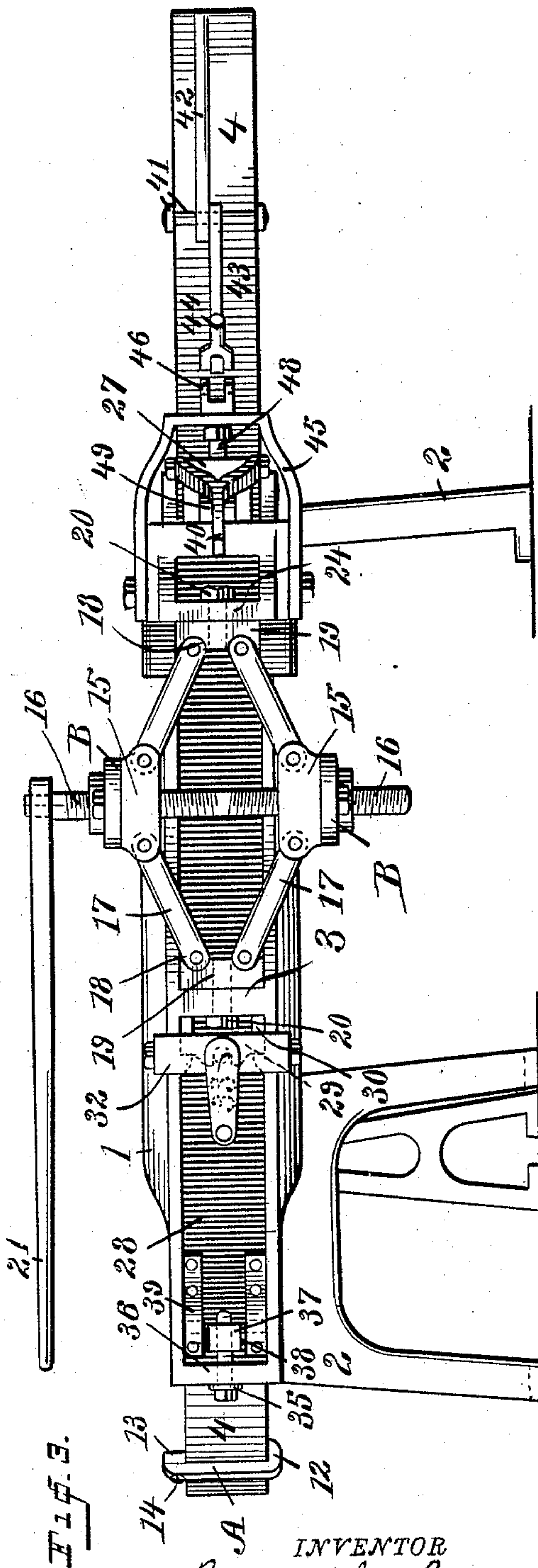
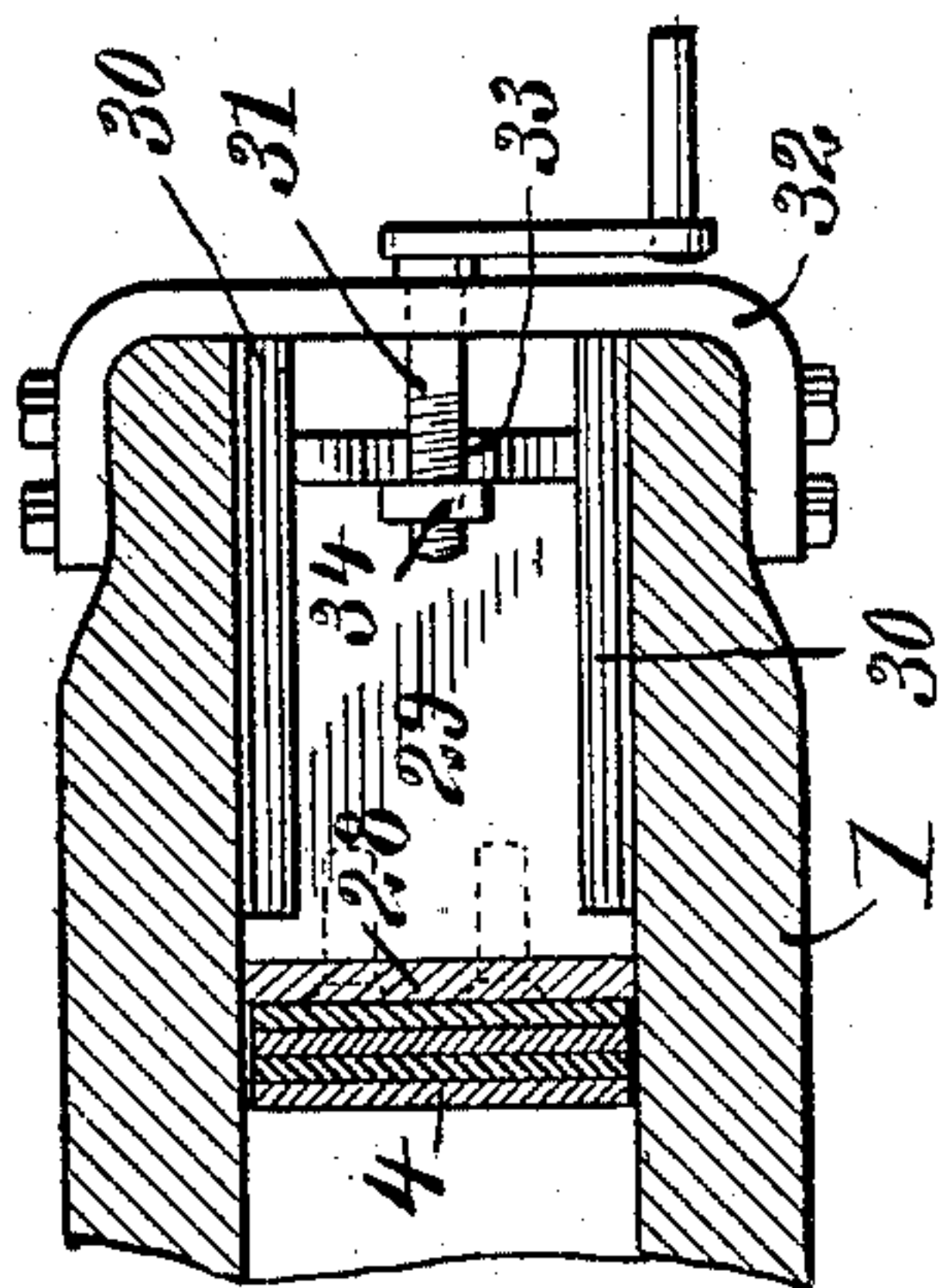


Fig. 5.



WITNESSES

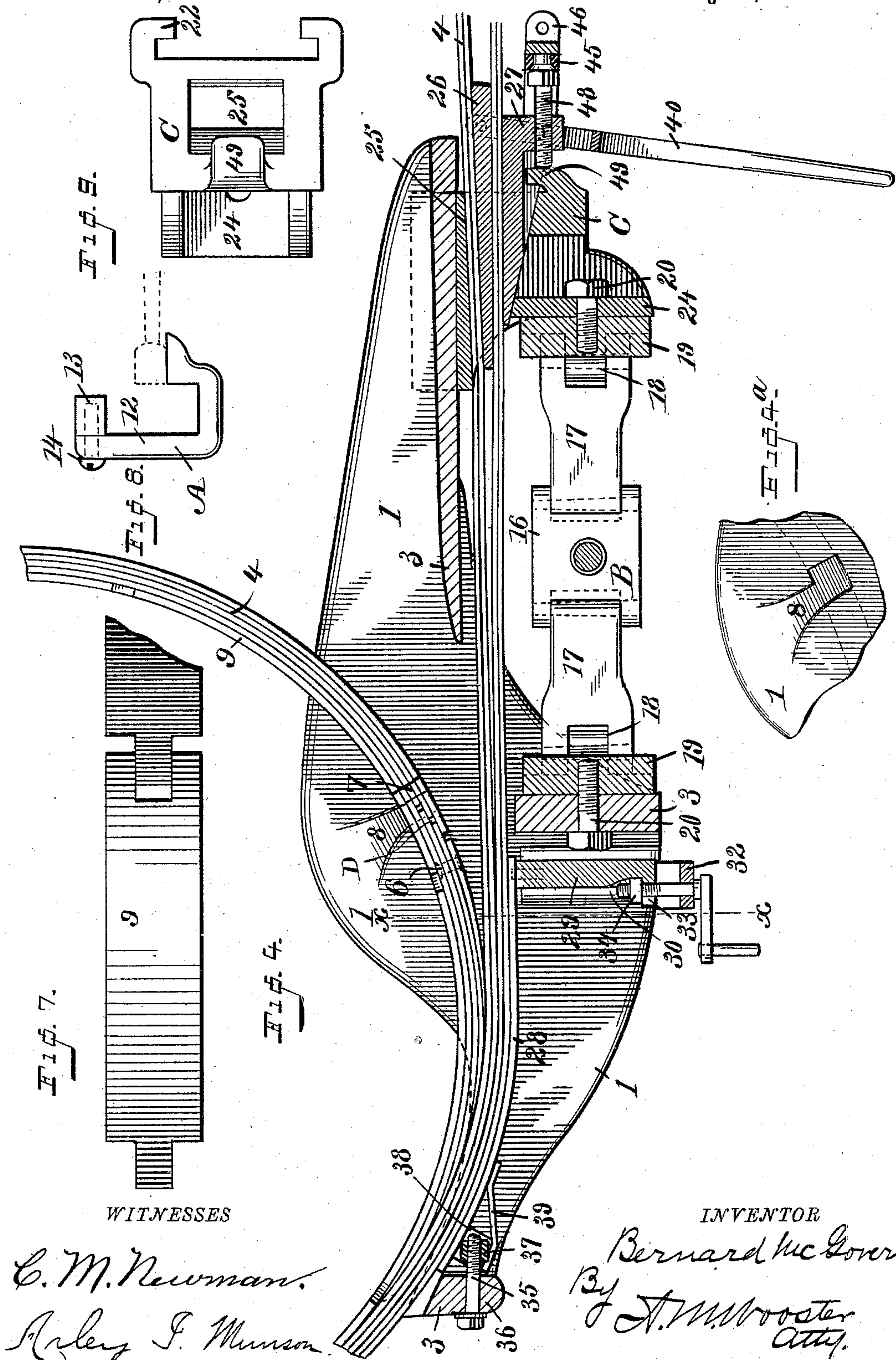
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UNITED STATES PATENT OFFICE.

BERNARD MCGOVERN, OF NORWALK, CONNECTICUT, ASSIGNOR TO OSCAR E. MADDEN, OF BOSTON, MASSACHUSETTS.

MACHINE FOR SETTING TIRES.

SPECIFICATION forming part of Letters Patent No. 473,948, dated May 3, 1892.

Application filed February 26, 1891. Serial No. 382,908. (No model.)

To all whom it may concern:

Be it known that I, BERNARD MCGOVERN, a citizen of the United States, residing at Norwalk, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Machines for Setting Tires; 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 appertains to make and use the same.

My invention has for its object to produce a machine of this class adapted to be operated by hand which shall be amply strong to stand the strain of use and which shall have sufficient compressive power to set a cold tire of any required thickness upon a wheel of any size within the capacity of the machine, the machine being so constructed that compressive action shall be produced upon all portions of the tire.

With these ends in view I have devised the simple and novel tire-setting machine which I will now describe, referring by letters and numerals to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of the machine complete, the position of a wheel that is being acted upon being indicated by dotted lines; Fig. 2, a partial plan view illustrating special mechanism for setting and loosening the wedges; Fig. 3, a side elevation of the entire machine in operative position; Fig. 4, a horizontal section, on an enlarged scale, corresponding with Figs. 1 and 3; Fig. 4^a, a detail view illustrating one of the slots in the frame; Fig. 5, a detail section on the line *x x* in Fig. 4; Fig. 6, a perspective of the end of the clamping-straps; Fig. 7, a detail view, on an enlarged scale, of the sectional band which engages the tire; Fig. 8, a detail view of one of the clips which support a wheel in the machine; and Fig. 9 is an end elevation, on an enlarged scale, of the sliding block detached.

1 denotes the body or frame of the machine, which is supported by suitable legs 2. The frame is a single casting and may of course be made of any desired form in accordance with the taste of the manufacturer or the special use for which it is intended. I have shown the frame as consisting of upper and

lower plates, which are connected by webs 3. (See Fig. 4.) The compressive action in use is produced by contracting a series of metallic straps or bands 4 about the tire. These straps are preferably made of steel and lie one within the other, their outer faces at their inner ends being beveled, as at 5. Any convenient number of these straps may be used. In practice I ordinarily use four. As indicated at D in the drawings, the inner ends of the three outer straps are separated from the main portions thereof and secured together and to the inner strap by rivets 6. (See Fig. 6.) This is in order to permit the straps to adapt themselves readily to wheels of any size, to avoid friction, and to assist in distributing the strain equally about the circumference of the tire. The straps are provided near their inner ends on both edges with lugs 7, which in practice engage slots 8 in the upper and lower plates of the frame, one of these slots being clearly shown in Fig. 4. The inner ends of these slots are preferably made L-shaped, so that the lugs after being passed in may be moved sidewise slightly, so as to be locked in position. The straps are curved so as to encircle a wheel, as shown in Fig. 1, the beveled ends lying within the circle and the free ends extending outward tangentially. Within the straps and directly in contact with the tire that is being acted upon is a sectional band 9. (See Fig. 7.) This sectional band is made of a number of pieces, each piece being provided at its ends, respectively, with a mortise and tenon to engage the contiguous pieces. In use the parts of the sectional band are placed as shown in Fig. 7, so that when compressive strain is applied the parts will be forced toward each other endwise, thereby distributing the compressive strain upon the entire circumference of the tire. The outer sides of the straps rest upon a suitable support 10, which is rigidly secured to the body. This support is provided with a slot 11, through which a bolt passes in use, said bolt passing, also, through the hub of the wheel and serving to lock the latter in place on the support. The wheel that is being acted upon is held in place within the straps and sectional band by means of clips A. (See Fig. 8 in connection with Fig. 1.) Each clip

consists of a U-shaped piece 12, which partially encircles the straps, and a detachable block 13, which is secured to the U-shaped piece by a screw 14. This construction enables the clips to be readily placed in position or removed. The compressive action of the straps upon the tire is produced by means of a toggle B, one end of which is connected to the body or frame of the machine and the other end to a sliding block C. The toggle consists, essentially, of upper and lower blocks 15, which are engaged by a right-and-left-threaded screw 16.

17 denotes links, one end of each link being pivoted to one of the blocks and the other ends, respectively, to the frame-work and to the sliding block. I have shown the outer ends of the links as pivoted to knuckles 18 upon blocks 19, which are rigidly secured, respectively, to the frame and to the sliding block by means of screws or bolts 20.

It will be clearly understood from Fig. 3 that one of the blocks 15 is engaged by the right thread and the other by the left thread of screw 16, so that when said screw is rotated by means of hand-lever 21 or in any suitable manner said blocks will be moved toward or from each other and will act by means of the links to force the sliding block outward in compressing a tire upon the wheel or to draw it inward toward the center, as when relieving pressure upon the tire.

The special construction of the sliding block will be understood from Fig. 9, in connection with the other views. It will of course be understood that the special shape of this sliding block is not of the essence of my invention. It is held in position by inwardly-turned flanges 22, which engage and slide upon ways 23 upon the frame.

24 is a wall forming part of the sliding block, to which one of the blocks 19 is secured, as clearly shown in Fig. 4.

25 denotes an opening through the sliding block, which tapers from rear to front, as clearly shown in Figs. 4 and 9. The four straps or clamping-bands pass through this opening in the sliding block, and the block is locked to the straps by means of wedges 26 and 27, as will presently be more fully explained.

28 is a curved shaping-plate, which in use is set by springing into the required shape to correspond with the curvature of the tire that is to be acted upon. I preferably, as shown in the drawings, lengthen one end of the plate, so that said plate forms a backing for the straps at the place where the several beveled ends of said straps intersect with the main portion thereof, as clearly shown in Fig. 4. The straight end of the shaping-plate is adjusted by means of a slide 29, to which it is rigidly attached. The slide lies between ways 30 and is moved in or out to adjust the straight end of the shaping-plate by means of a screw 31, which passes through a strap 32, which is bolted to the plates of the

frame through a slot 33 in an angular projection at the outer end of the slide, and engages a nut 34. The curved end of the band is adjusted by means of a screw 35, which passes through a projection 36 on the frame and engages a block 37, which is itself pivoted in blocks 38, (one only of said blocks being shown, see Fig. 4,) said blocks being rigidly secured both to the shaping-plate and to brackets 39, which are themselves secured to the shaping-plate.

It will readily be understood that the shaping-plate does not require to be adjusted except when a different-sized wheel is to be operated upon. When a tire is to be set, the shaping-plate having been properly adjusted, the wheel is placed in position, as indicated by dotted lines in Fig. 1, and supported by clips A. The operator first loosens the wedges by means of a hand-lever 40, which is pivoted to both wedges, and then draws the straps through the sliding block, so as to close the straps and the sectional band as closely as possible about the tire that is to be set. This tightening up of the straps may be accomplished in any suitable manner. I have shown as a means for tightening up the straps a clip 41, through which two of the straps are passed and in which a clamping-lever 42 is pivoted.

43 is a link, one end of which is pivoted to the clip. At the other end of this link is pivoted a lever 44.

45 is a yoke pivoted to the sliding block and having at its forward ends ears 46, between which lever 44 is adapted to be pivoted, as shown in Fig. 2, said figure showing these parts in operative position and Fig. 1 showing them out of operative position. (See also Fig. 3 in connection with these figures.) The wedges having been loosened, the operator secures lever 44 to yoke 45 by means of a pin 47, and then clamps the clip to the straps by swinging lever 42 from the position shown in Fig. 1 to that shown in Fig. 2. A movement of lever 44 toward the left, as seen in Fig. 2, will draw the straps through the sliding block and close the straps and the sectional band tightly about the tire. Having closed the straps about the tire, the operator disconnects lever 44 from the link and then sets the wedges up more tightly by means of hand-lever 40 and a screw 48, which passes through wedge 27, one end of said screw bearing against the inner side of link 43 and the other end against a projection 49 on the sliding block, so that rotation of said screw will move said wedge in or out.

Having locked the sliding block to the straps by means of the wedges, the machine is ready for the operation of setting the tire. This is accomplished by means of toggle B and right-and-left screw 16. It will be seen that as the sliding block is forced outward by the toggle, the inner ends of the straps being locked to the body by means of lugs 7, which engage slots 8 in the face of the body, the free end of the series of straps will be drawn outward

and enormous compressive power exerted upon the tire. This compressive power, owing to the adjustment of shaping-plate 28 and the use of sectional band 9, will be exerted upon all parts of the tire, the tire being thus compressed evenly upon the felly. This distribution of the pressure upon all portions of the tire is found to add greatly to the wearing qualities of the wheel in use.

10 Having thus described my invention, I claim—

1. The combination, with a suitable frame, of a series of straps connected thereto and coiled upon themselves, the inner ends of the outer straps beyond their point of connection to the frame being separated from the main portions thereof and secured together and to the inner strap by rivets 6, and suitable means for compressing the straps about a tire.

20 2. The combination, with a suitable frame, of a series of straps 4, connected thereto and coiled upon themselves, the inner ends of said straps having bevels 5 and the beveled portions of the outer straps being separated from the main portions thereof and connected to each other and to the inner strap by rivets 6, the free ends of said straps extending outward tangentially, and suitable means for contracting the straps, so as to compress a tire placed within them.

3. The combination, with a series of straps coiled upon themselves and means for closing said straps inward about a tire, of a sectional band 9, consisting of independent pieces, each piece having a mortise and tenon by which it is connected to the contiguous pieces.

4. A frame consisting of upper and lower plates having slots 8 on their upper and under sides, respectively, in combination with a series of metallic straps coiled upon themselves and having lugs 7 on their opposite edges, which engage said slots to lock the straps in position, the free ends of said straps extending outward tangentially, and means acting in connection therewith to close said straps inward, as and for the purpose set forth.

5. The frame consisting of upper and lower plates connected by webs and having L-shaped slots 8, in combination with a series of straps coiled upon themselves and having lugs 7 on their edges, adapted to engage said slots, the inner ends of said straps being beveled, as shown, and the beveled portions of the outer straps being separated from the main portions and connected to each other and to the inner strap, as shown, a sectional band 9, lying within said straps, and suitable means for drawing the free ends of said straps outward to close the sectional band inward upon a tire.

6. The combination, with the frame, straps 4, connected thereto, and means for closing said straps inward about a tire, of shaping-plate 28, and slide 29, screw 35, and block 37 for curving said plate to correspond with the curvature of the tire to be set.

7. The combination, with the frame, straps 4,

connected thereto, and means for closing said straps inward about a tire, of shaping-plate 28, slide 29, to which said plate is connected, and screw 31 for moving said slide, whereby one end of said plate is adjusted, pivoted block 37, connected to the other end of the shaping-plate, and a screw 35, engaging said block for adjusting the other end of said shaping-plate.

8. The combination, with the frame and a series of straps connected thereto, which form a circle, the free ends of said straps extending outward tangentially, of a sliding block having an opening, through which the free ends of the straps pass, wedges 26 and 27 for locking the straps to the block, suitable means for setting and releasing said wedges, and a toggle, one end of which bears against the block and the other against the frame, whereby the block is forced outward to compress the straps about a tire.

9. The combination, with the frame and a series of straps, the inner ends of which are connected to the frame and which form a circle, the free ends extending outward tangentially, of clips A for holding a wheel and tire in place, said clips consisting of U-shaped pieces 12, which partially encircle the straps, and detachable blocks 13, whereby they are held in place, and suitable means for closing said straps inward upon the tire.

10. The combination, with the frame, straps 4, connected thereto, and the sliding block, of wedges 26 and 27, whereby the block is locked to the straps, and hand-lever 40 and screw 48, by which the blocks are set and released.

11. The combination, with the frame, straps 4, connected thereto, and the sliding block, of wedges 26 and 27, whereby the block is locked to the straps, hand-lever 40 and screw 48, by which the blocks are set and released, clip 41, through which certain of the straps are passed, a clamping-lever for locking the clip in position, yoke 45, pivoted to the block, link 43, and lever 44, pivoted to the link and adapted to be pivoted to the yoke, whereby the straps may be drawn through the block when the wedges are loosened.

12. The combination, with the frame, straps 4, and sliding block C, of yoke 45, connected to the block, clip 41, clamping-lever 42 for locking the clip to the straps, link 43, and a lever 44, pivoted to the link and adapted to be pivoted to the yoke, whereby the straps may be drawn through the sliding block.

13. The combination, with the frame, straps 4, connected thereto and adapted to curve around a wheel, the ends thereof extending outward tangentially, of sliding block C, means for locking the sliding block to the straps, and a toggle consisting of blocks 15, links 17, bearing against the blocks and against the sliding block and the frame, respectively, and a right-and-left screw engaging blocks 15, whereby the sliding block is forced outward to close the straps inward, as and for the purpose set forth.

14. The combination, with the frame and a series of straps secured thereto and coiled upon themselves, the inner ends of said straps being beveled and the beveled portions of the 5 outer straps being separated from the main portions thereof and secured to the inner straps by rivets 6, of sectional band 9 within said straps, which engages the tire, a sliding block adapted to be locked to the straps, and 10 a toggle acting to force said block outward, as and for the purpose set forth.

15. The combination, with the frame, straps 4, connected thereto and coiled upon themselves, the inner ends of the outer straps being

separated therefrom, substantially as shown 15 and described, and sectional band 9, of sliding block C, adapted to be locked to the straps, means for moving said block outward, shaping-plate 28 and slide 29, screw 35, and block 37, whereby the curvature of the straps may 20 be adjusted to different sizes of wheels.

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

BERNARD MCGOVERN.

Witnesses:

A. M. WOOSTER,
ARLEY I. MUNSON.