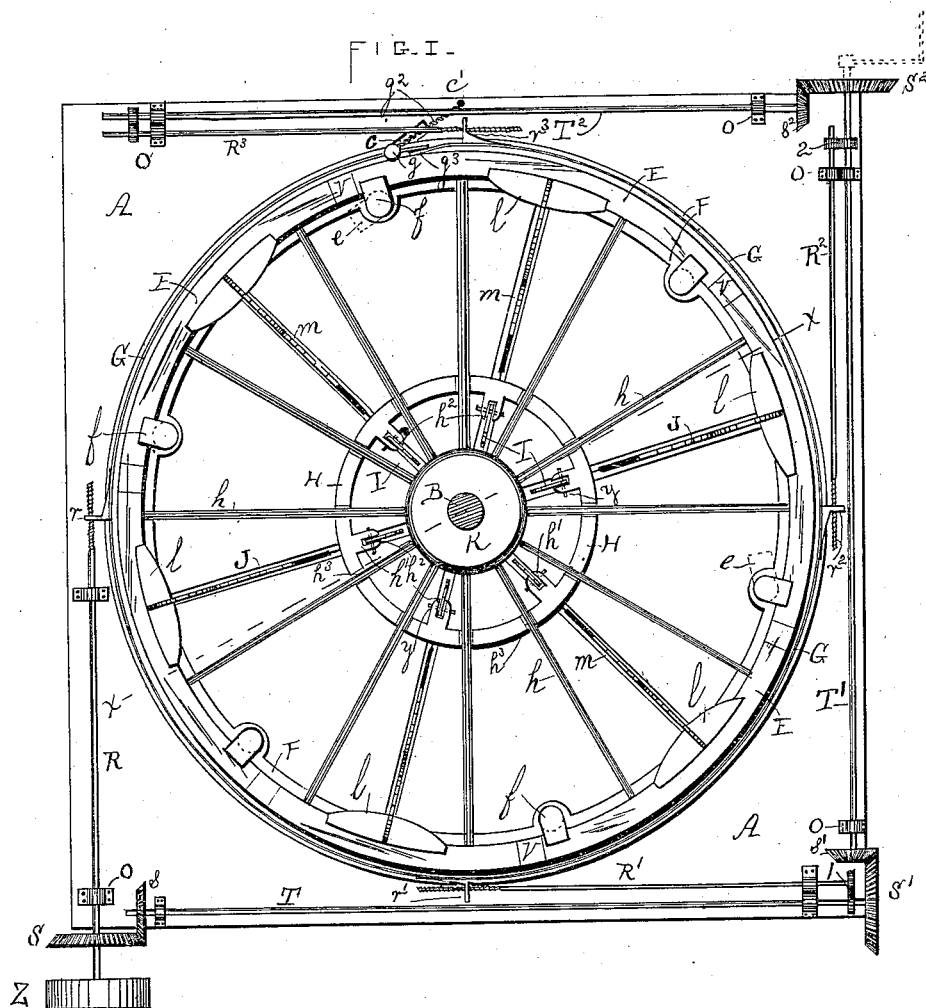


H. & J. S. ROHRER.

SETTING TIRES.

No. 345,322.

Patented July 13, 1886.



WITNESSES

Geo. W. Lane
Thos. Blochman

INVENTOR

Henry Rohrer
John S. Rohrer
Wm. R. Gerhart
Their Attorney

(No Model.)

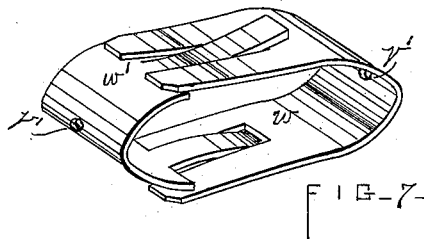
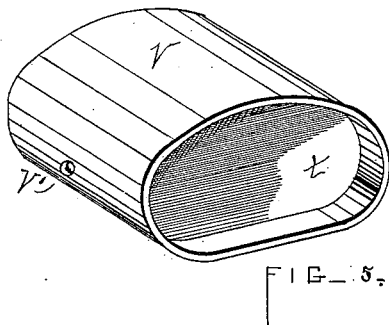
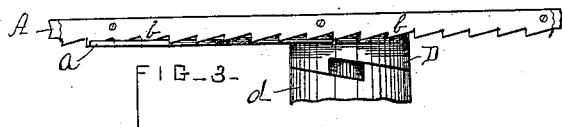
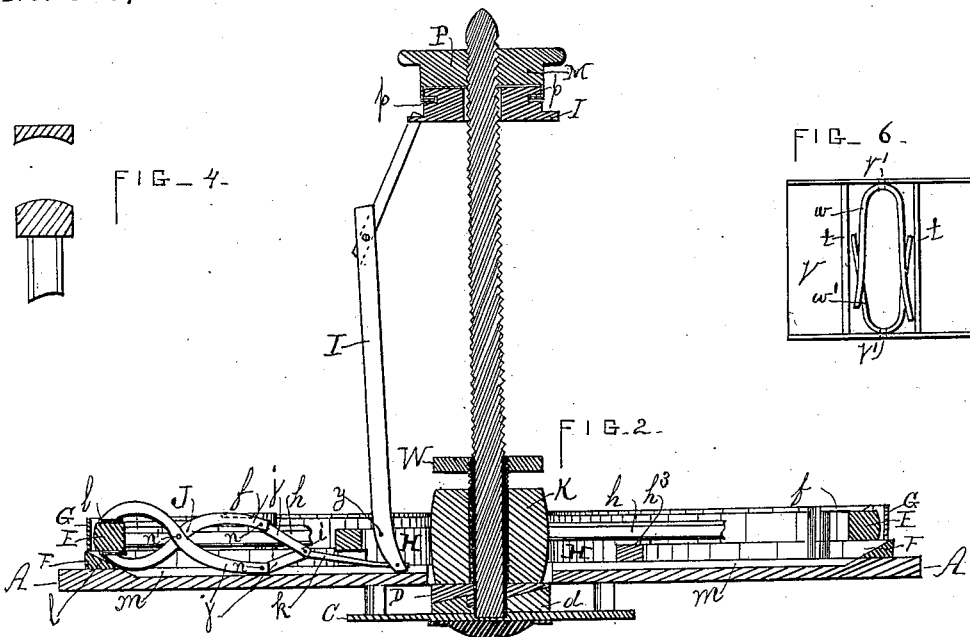
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UNITED STATES PATENT OFFICE.

HENRY ROHRER, OF NEW YORK, N. Y., AND JOHN S. ROHRER, OF LANCASTER, PENNSYLVANIA.

SETTING TIRES.

SPECIFICATION forming part of Letters Patent No. 345,322, dated July 13, 1886.

Application filed May 16, 1885. Serial No. 165,718. (No model.)

To all whom it may concern:

Be it known that we, HENRY ROHRER and JOHN S. ROHRER, citizens of the United States, residing, respectively, at New York, in the county of New York and State of New York, and at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain Improvements in Setting Tires, of which the following is a specification.

It has heretofore been found impossible to use steel tires, by reason of inability to set them; and it is the object of our invention to overcome this difficulty—to set the tires without expanding them by heat, and to so set them that they will remain in place without the use of bolts or screws to connect them with the fellyes.

By reason of the liability of steel to become hard and brittle when set as tires in the ordinary way (by heating to expand sufficiently to put on the wheel and then cooling suddenly to avoid burning the felly) it is necessary that the wheels themselves should be of peculiar construction.

We construct our wheel and set the tire in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a top view of our device with the king-bolt shown in section below the forcing-screw. Fig. 2 is a vertical section through *xx* of Fig. 1. Fig. 3 is a side view of the platform, showing how the plate supporting the hub is regulated. Fig. 4 is a cross-section of the felly and tire. Fig. 5 is a perspective view of the felly-joint; Fig. 6, a top view of the same, with the upper plate removed, and Fig. 7 a perspective view of the spring used in the joint.

Similar letters refer to similar parts throughout the several views.

The platform A supports the wheel and the mechanism for setting the tire. In the center of this platform there stands a king-bolt, B, having its seat in a sub-platform, C, placed a short distance below the platform A. The bolt B is placed in the middle of a circular opening in the platform A, which is sufficiently large to receive the end of the hub of any wheel to be tired. Immediately below this opening there is a bearing-plate, D, working about the bolt B, which serves as a sup-

port for the hub. The under surface of the bearing-plate has a spiral or inclined face, and rests upon a stationary boss, *d*, supported by the platform C, the upper surface of which is the counterpart of the under side of the bearing-plate. The plate D is moved around the king-bolt by means of an arm, *a*, and by reason of the shape of its bearing-face is raised or lowered to conform as a support to the depth of the hub which rests upon it. In order to prevent the plate D from slipping back when raised upon the boss *d*, the arm *a* is locked in the ratchet *b*, attached to the side of the platform A.

The fellyes E of the wheel are supported by a circular wheel-rest, F, raised above the upper surface of the platform, and of sufficient width to hold the draw-band G, to be hereinafter described, as well as the fellyes. Inside of the wheel-rest are pivoted catches *f*, to hold the felly down. When the wheel is being put in place or removed, these catches are turned so as to uncover the rest, as shown by the dotted lines *e*. Between the rest and the central opening in the platform, but much nearer the latter, there is a fulcrum wheel or flange, H, having slots, in which rest the spokes *h*, and lugs *h'* on its inner side with vertical slots *h''*, in which are pivoted the jointed lever-arms I, which actuate the duplex levers J. When pressure is brought to bear upon the outer rim of the wheel, the spokes buckle horizontally between the fulcrum-wheel and the felly. As the spokes fit snugly in the slots *h''*, the bend caused in them is prevented from extending to the hub K, thereby avoiding loosening them in their sockets in the hub.

The duplex levers J are formed of four links, *j*, placed between the fellyes and the fulcrum-wheel. The inner ends of the two links nearest the fulcrum-wheel are pivoted together at *i*, and their outer ends to the inner ends of the outer links at *n n*, these outer links being pivoted together near their other extremities at *n'*, each having a jaw, *l*, integral with it at its free end. The lower points of these duplex levers are received by grooves *m* in the upper surface of the platform A, and the levers themselves are connected with the jointed levers I by means of rods *k*, passing through openings in the bottom of the fulcrum-wheel. The

jointed levers are pivoted to a plate, L, fitting loosely on the king-bolt B. The plate L has a circular boss on its upper surface, having a groove about its periphery, which receives a flange, *p*, in the lower edge of the hollow neck M of the knob P. There is a screw-threaded opening through the center of the knob, which engages the screw-thread cut in the king-bolt. The result is, that as the knob is screwed up or down the plate L moves with it, but without revolving.

The lower part of the king-bolt is somewhat enlarged below a point which is a little above where the top of the hub will rest when in place, so that the bearing-plate D can be the more readily unscrewed and slipped off.

A draw-band, G, before mentioned, is placed on the wheel-rest F around the wheel, one end of which is fastened to a post, *g*, set in a slot, *c*, through the platform A, secured below by a nut, and having attached to it one end of a spiral spring, *g*², the other end of the spring being held by a pin, *c*¹, in the platform. This band is tightened on or loosened from the wheel by means of rods revolving in the journal-bearings O, fastened to the platform A, and having screws at their inner ends, which work in threaded openings through lugs secured to the side of the draw-band. The first rod, R, acts on the band by and through the lug *r*, and has a belt-pulley, Z, at its outer end and a bevel-pinion, S, inside of and near the belt-pulley, which meshes with a pinion, *s*, of one-half its size, on a shaft, T, which, by means of the cog-gearing 1, actuates the rod R¹, and through its bevel-pinion S¹ the pinion *s*¹, one-fourth smaller, of the shaft T¹. The shaft T¹, in a similar manner, by means of the cog-gearing 2 and the bevel-pinion S², actuates the rod R² and the pinion *s*², one-fourth the size of S², of the shaft T². The last shaft, T³, in a like manner, and by like means, turns the rod R³. The rods R¹, R², and R³ act upon the draw-band by the lugs *r*¹, *r*², *r*³, respectively. The object being to draw the band in upon the wheel with a uniform pressure, the rod R¹ must work twice as fast as R, R² one-fourth faster than R¹, and R³ one-fourth faster than R². The free end *g*³ of the band rests between the post *g* and the felly of the wheel. The outer surface of the felly is preferably made convex, and the inner face of the tire concave.

To press the felly inward toward the hub, it is necessary that at least parts of it should be susceptible of compression, and it is also requisite that, in order to restore and keep it in its normal shape, the felly should have within itself an expansive force. To meet these requirements, we use a thin thimble or joint consisting of a shell, V, the shape of the cross-section of which is similar to that of the felly, having a movable head at either end, and between these heads a powerful spring. The spring we use consists of two broad U-shaped pieces of steel, the prongs of one, *w*, having a deep recess cut in their ends, and those of the other, *w*¹, a corresponding tongue. The prongs

of *w*¹ are entered between those of *w*, and the tongues of *w*¹ pass out of the corresponding recesses in *w*, and lap the prongs of the same. These thimbles are used at each joint between sections of the felly, the end of each section being received by one end of the thimble. The size of the thimble is so arranged that when the tire is in place the pressure of the spring is great enough to force the felly immovably against it. As the spring might be liable to rust, we fill the spring-chamber, between the bearing-heads *t*, with asphaltum or any similar non-corrosive substance after the tire is set. The asphaltum is sufficiently softened by the heat in summer to permit the spring to give under the pressure caused by the expansion of the felly. After the thimble has been filled it will be secured in place by a bolt through the bolt-hole V¹.

In order to place a tire on a wheel with our device, the knob P, with its attached plate, and the levers I are removed, the levers having recesses which engage the fulcrum-rods *y*, which pass through the slots *h*² of the lugs *h*¹, so that they may be removed at pleasure. The wheel is put in place, the bearing-plate D is adjusted, a plate, W, is screwed down on the hub, so as to hold it in place, and the catches *f* are adjusted. The draw-band G is brought into play to force the felly inward by pressure sufficient to cause the spokes to buckle, the levers J are then tightened until the jaws *l* close upon and grasp the felly, after which the band G is loosened and is drawn back into its original position by the spring *g*², when the tire is put into place, and the jaws *l* being loosened the wheel springs back into its proper position.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, in a tire-setter, with a compression-band, of screw-threaded rods located in journal-bearings placed at intervals about the rest for the wheel, and working through lugs on the side of said band, whereby the said band can be drawn toward the center, substantially as specified.

2. The combination, in a tire-setter, with a compression-band, of screw-threaded rods located in journal-bearings placed at intervals about the rest for the wheel, and working through lugs on the side of said band, and shafts connecting said screw-rods, and geared therewith so as to transmit motion from one screw-rod to the other, thereby drawing the band toward the center uniformly and throughout its entire length at the same time, as and for the purpose specified.

3. The combination, in a tire-setter, of duplex levers J, adapted to hold the fellies of a wheel in a fixed position, jointed levers I, which connect said levers J with a screw-knob, P, operating on a center or king bolt, B, the knob actuating, by means of the jointed levers, the levers J to close upon or free themselves from the fellies, with the said knob and bolt, substantially as specified.

4. The combination, in a tire-setter, of grips

adapted to hold the fellies in a fixed position, with a knob working on a post in the center of the tire-setter, and levers connecting the knob with the grips, the knob, by means of the levers, actuating the said grips to close upon or free themselves from the fellies, substantially for the purpose specified.

5 5. The combination, in a tire-setter, of a fulcrum-wheel having slots h located near the support for the hub of the wheel, with a compressor for forcing the fellies inward and grips for holding the fellies in position after being pressed inward, whereby the buckling of the spokes may be prevented from affecting their
10 seats in the hub, substantially as specified.

15 6. The combination, in a tire-setter, of a spoke-rest located near the support for the hub of the wheel, with a compressor for forcing the fellies inward and grips for holding the
20 fellies in position after being pressed inward, whereby the buckling of the spokes may be

prevented from affecting their seats in the hub, substantially as specified.

7. The combination, in a tire-setter, with the platform upon which the wheel rests, of a sub-platform the upper surface of which is a spiral or inclined face, a bearing-plate pivoted about a king-post, upon which the hub rests, the under face of which is the counterpart of the top of the sub-platform, an arm for actuating the hub-rest, and a ratchet for holding said arm in a fixed position, substantially as specified.

HENRY ROHRER.

JOHN S. ROHRER.

Witnesses to the signature of Henry Rohrer:

DANIEL HEFLEBOWER,

DAVID HOWELL.

Witnesses to the signature of John S. Rohrer:

GEO. A. LANE,

WM. R. GERHART.