

(No Model.)

P. B. TICE.
COLD TIRE SHRINKER OR EXPANDER.

No. 568,643.

Patented Sept. 29, 1896.

Fig. 1.

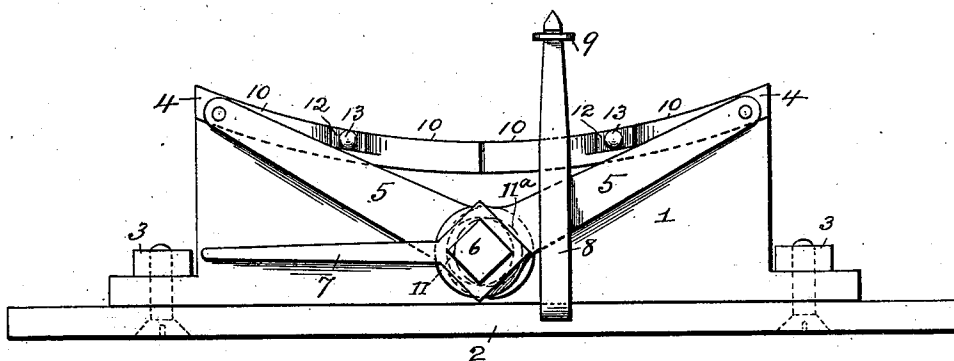


Fig. 2.

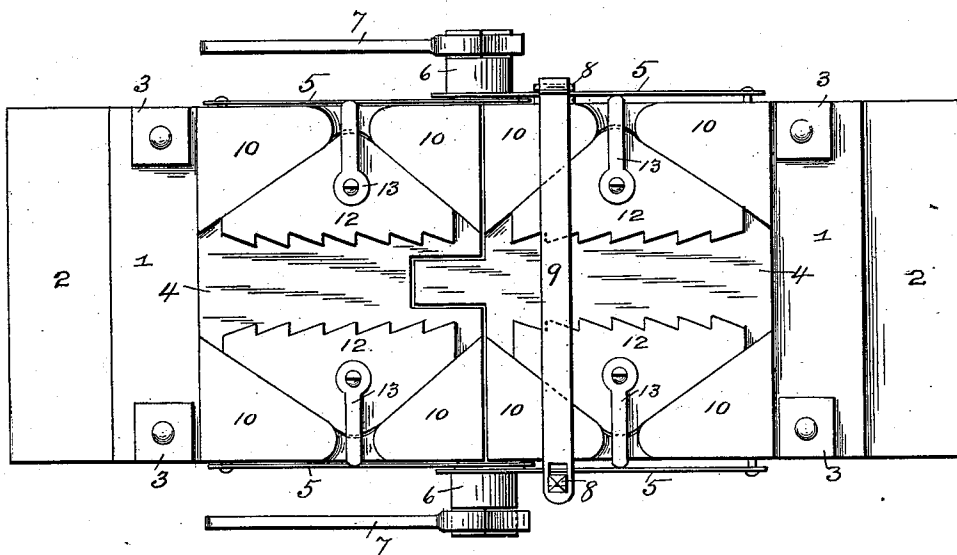
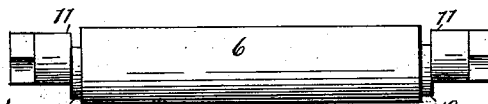


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

PHILLIP BITHSEA TICE, OF ELK COUNTY, KANSAS.

COLD TIRE SHRINKER OR EXPANDER.

SPECIFICATION forming part of Letters Patent No. 568,643, dated September 29, 1896.

Application filed November 15, 1894. Serial No. 528,867. (No model.)

To all whom it may concern:

Be it known that I, PHILLIP BITHSEA TICE, a citizen of the United States, residing in the county of Elk and State of Kansas, and having the post-office address Longton, in said county and State, have invented a new and useful Cold Tire Shrinker or Expander, of which the following is a specification.

My invention relates to that class of machines used for upsetting, shortening, shrinking, or expanding metallic pieces, and more particularly the tires of wheels while on said wheels, whereby the necessity of heating the said tires previous to said operation is avoided. The essential parts of such machines are gripping devices to hold the tire, retaining devices to support the wheel in proper position, and means to force the gripping devices toward or from each other, thus shrinking or expanding the tire, as may be desired.

In the accompanying drawings, forming a part of my application, Figure 1 is a side elevation of the device. Fig. 2 is a plan view of the same, and Fig. 3 is a detail view of one of the operative parts.

Like numerals of reference denote corresponding parts in the several views.

In the said drawings, the numeral 1 denotes the bed-plate of the machine, mounted on a support 2, of any suitable construction, and fastened thereto by the bolts 3. As is customary in this class of machines the top surface of the bed-plate is slightly concaved to conform with the general curvature of wagon-tires. Mounted upon the bed-plate are two movable plates 4, curved to correspond with the upper surface of the bed-plate and adapted to be moved longitudinally thereon. Pivoted to the sides of the said plates 4, near their outer ends and on each side, are the metallic straps or links 5, running from thence downwardly and engaging with the double cams 11 and 11^a, formed on the shaft 6, passing through the bed-plate from side to side. That is to say, the links running from one plate engage with the cams 11, while those from the other plate engage with the cams 11^a. The ends of the shaft are squared to receive the operating-levers 7. Also pivoted in the bed-plate on each side near its bottom, and

to one side of the side of the shaft 6, are the vertical rods or bars 8, which are connected at their tops by the cross-bar 9, hinged to one of said rods or bars and adapted to engage a suitable catch on the other, the whole forming a stirrup for a purpose to be hereinafter described.

Referring now more particularly to the movable top plates 4, it will be seen that there are upon each of the same four wedge-surfaces 10, formed thereon when the plates are cast. Within said wedge-surfaces are placed the four wedges 12, adapted to be removed at will by means of the handles 13. The adjacent edges of these wedges are provided with teeth, as shown.

The operation of my device is as follows: When it is desired to shrink a tire on its wheel, throw the plates 4 apart by means of the cams on the shaft 6, place the wedges 12 with their teeth pointing inward, as shown in Fig. 2, place the wheel and tire on the machine, retaining the wheel in an upright position in place by passing the cross-bar or stirrup 9 through the wheel across the felly and pressing said cross-bar firmly down upon the felly and securing the free end of said cross-bar by engagement with a suitable notch on the vertical rod 8 on the opposite side of the shrinker, engage the edges of the tire with the toothed edges of the wedges 12, forcing the said wedges inward, so that they will bear against the outer wedge-surfaces, thereby firmly clamping the tire. By now turning the shaft 6 the plates 4, through the operation of the cams 11 and 11^a on the straps 5, will be forced toward each other, thus shrinking or bending the firmly-clamped tire onto the wheel.

It will readily be seen that by employing the wedges and wedge-surfaces the greater the pressure inward the more firmly will the tire be clamped, while at the same time when the plates 4 are moved apart the tire will be instantly released.

In order to expand a tire, reverse the wedges, so that their teeth point outward, bring the plates 4 close together, insert and support the wheel with its tire in the same manner, except that the wedges should engage against

the inner wedge-surfaces. When the tire is clamped by the wedges, move the plates 4 apart, and the tire will be expanded.

When the diameter of the wheel is smaller than usual, small blocks or wedges may be placed under the outer ends of the plates 4, thereby raising said plates and shortening the arc of the circle.

I prefer to construct the bed-plate and plates 4 of cast-iron, while the other parts of the machine are preferably made of steel.

The advantages of my construction are that by means of a very simple change or adjustment the same machine is adapted to operate as effectually either as a tire-shrinker or a tire-expander, while by the employment of the wedges and wedge-surfaces the operation of the machine itself affords the necessary gripping power to hold the tire, it being seen that the greater the pressure the more firmly will the tire be gripped.

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

1. In a tire upsetting or expanding machine, the combination with the bed-plate; movable plates mounted thereon, and means for reciprocating the same, of the reversible wedges 12 engaging the wedge-surfaces on the movable plates, substantially as shown and described.

2. In a tire-upsetting machine, the combination with the bed-plate, movable plates mounted thereon and having wedge-surfaces formed integral therewith, and means for reciprocating said plates, of the reversible wedges carried by said plates and adapted to

engage against the wedge-surfaces to clamp a tire either to shrink or expand the same, substantially as shown and described.

3. In combination with the bed-plate, reciprocating plates, means for reciprocating the same, and reversible serrated wedges mounted on said plates for clamping a tire to shrink or expand it, of the vertical bars 8 connected at their tops by the cross-bar 9, said cross-bar 9 being hinged to the top of one of said bars 8, and adapted to engage with a suitable catch on the opposite bar 8, and hold the wheel upright in an operative position while the tire is being manipulated, substantially as shown and described.

4. In a tire-upsetting machine, the combination with a bed-plate, of the movable plates 4 thereon having the wedge-surfaces 10 formed integral therewith, the removable wedges 12 having their adjacent edges toothed and adapted to be reversed on the movable plates 4, the said wedges engaging the wedge-surfaces on the movable plates against movement in either direction, and means for longitudinally moving the movable plates, substantially as shown and described.

5. A tire upsetting and expanding machine consisting of the bed-plate 1; the movable plates 4 having the wedge-surfaces 10; the reversible wedges 12; the straps 5, and the shaft 6 having cams thereon for operating said straps, substantially as shown and described.

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Witnesses:

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