

1,009,563.

UNITED STATES PATENT OFFICE.

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BARREL-HOOP DRIVER.

1,009,563.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN E. PETTIT, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Barrel-Hoop Drivers, of which the following is a specification.

My invention relates to an apparatus for tightening hoops of barrels or the like, and a main object thereof is to provide an apparatus in which the hoop tightening mechanism is simple in construction and positive in operation, and which may be manually operated.

Another object is to provide a mechanism in which the barrels may be readily placed in an operative position under the tightening mechanism without elevating or raising the barrels from the floor.

Another object is to provide an apparatus in which the driving arms are uniformly pressed inwardly against the barrel being operated upon, so as to insure at all times a perfect contact of the shoes attached to the arms against the hoops being tightened.

A further object is to provide an apparatus in which the operating arms attached thereto may be instantly forced into or out of engagement with the hoops on the barrel.

I accomplish the above objects by means of the apparatus described herein and illustrated in the accompanying drawings, in which:—

Figure 1— is a front elevation of my complete apparatus, portions being in section. Fig. 2— is a sectional plan view taken on line 2—2 of Fig. 1. Fig. 3— is a sectional detail of one of the driving arms. Fig. 4— is a detail side elevation of the mechanism for operating the driving arms. Fig. 5— is a detail plan view of the mechanism illustrated in Fig. 4.

Referring more particularly to the drawings, 10 designates a floor, to which is rigidly secured by means of bolts 11 a pair of vertical tubular standards 12 and 13 jointed at the top thereof by a cross head or beam 14. In place of this cross head the ceiling of the warehouse may be utilized, the standards being secured thereto in a suitable manner.

Bolted or otherwise secured to the under face of beam 14 is a lifting mechanism 15 of any suitable type, but preferably a hy-

draulic jack. In this instance I have illustrated a rack and pinion movement, which consists of a cylindrical casing 16 open at the lower end for the passage therethrough of the upper end of a centrally disposed reciprocating shaft 17 having a rack gear 18 formed thereon. Pinion 19 secured on the inner end of a horizontally disposed shaft 20 is mounted in bearings 21 formed on casing 16, and bearings 22 on standard 12 meshes with rack 18. Shaft 20 extends through standard 12 and mounted thereon is a sprocket wheel 23 that is connected by means of a drive chain 24 with a sprocket wheel 25 secured to a shaft 26 mounted in a bearing 27 formed on standard 12. Rigidly secured on the outer end of this shaft is a balance wheel 28 provided with a handle 29. By means of the above described mechanism the hoop tightening device may be raised or lowered as occasion requires and which I will now proceed to describe.

The hoop tightening mechanism preferably consists of a flat circular driving head 30 provided on the edge thereof with oppositely disposed guides 31 adapted to engage vertical guideways 32 formed on the inner faces of standards 12 and 13. Head 30 is provided in the center thereof with a bearing hub 33 preferably formed integrally therewith in which the lower end of lifting shaft 17 is secured. Spaced apart at equal intervals around the periphery of head 30 are a plurality of recesses 34 which form with recessed bearing blocks 35 bolted or otherwise secured to the under face of head 30, bearings 36 for a plurality of pivoted driving arms 37. These arms are preferably bifurcated on their upper ends to form bearings for pins 38 which are engaged by the slotted ends of driving arm operating link rods 39, their inner ends extending toward the center of head 30 and are pivotally secured to a sliding sleeve 40 mounted on the lower end of shaft 17. Sleeve 40 is forced downwardly by means of a coiled compression spring 41 which is interposed on shaft 17 between the upper edge of sleeve 40 and a flange 42 formed on the shaft.

By means of the above described device operating rods 39 are normally forced outwardly, thus depressing the lower ends of the pivoted driving arms inwardly and against the barrel. The outer ends of rods 39 are provided with slots 43 so as to permit

of an individual or separate adjustment of the rods, if the barrel being operated upon is imperfect in contour. Each operating rod 39 is provided with a coiled compression spring 44 that bears against the upper bifurcated ends of driving arms 37. By means of these springs a separate tension is maintained on each rod.

When the driving arms are operating upon the uppermost or first hoop of the barrel, the operating rods 39 will be inclined at such an angle that springs 44 will not exert as powerful a tension on the arms 37, and to provide for this I have provided an additional tension mechanism for each arm, which preferably consists of a vertical standard 45 having an adjustable sleeve 46 secured thereto. Mounted in sleeve 46 is a spring pressed plunger 47, the outer end of which bears against the inner face of the upper end of driving arms 37.

The driving arms are spread apart or drawn together by means of a forked operating lever 50 pivotally mounted on a standard 51 secured to circular head 30. The forked end of lever 50 is pivotally secured to a pair of lifting rods 52, their lower ends being pivotally secured to the lower end of sleeve 40. Pivotally secured to standard 51 is a dog 53 adapted to engage notches 54 formed in the upper edge of lever 50, by means of which sleeve 40 may be maintained in an adjusted position.

By means of the above described mechanism the driving levers may be adjusted instantly without utilizing the lifting mechanism hereinbefore described.

The inner faces of the lower ends 55 of driving arms 37 are curved outwardly to prevent interference with the hoops 56 on the barrel, and are preferably formed of hardened steel and bolted or otherwise secured to the ends of arms 37. These arms are recessed to form bearings for steel contact shoes 57 adapted to engage the barrel hoops, and are reversible so that when they wear they may be turned.

The floor 10 between the vertical standards may be recessed or depressed as clearly shown in Figs. 1 and 2 of the drawings to accommodate a barrel truck or car 60 provided with flanged wheels 61 that are mounted on rails 62 laid in the floor recess. This truck is preferably provided with an upper circular table 63 mounted on ball bearings 64 secured to the under frame 65. Secured to the upper face of table 63 are a plurality of barrel stops or gages 66. These stops are for the purpose of positioning the barrel on the table 63 before rolling the truck under the lifting mechanism. Table 63 is rotatively secured to the truck frame so that the barrels may be placed on the table from either side of the vertical standards, the stops 66 being rotated to the side

opposite from which the barrel is placed upon the table.

It will be observed from the foregoing description that by recessing the floor directly beneath the driving mechanism, and providing a truck whose platform is flush with the floor line that I am enabled to quickly place a filled barrel on the truck without necessitating excessive labor on the part of the operator.

The operation of the device is as follows: When it is desired to tighten the hoops on a filled barrel, the barrel is first ended and placed in position upon the truck, and the lifting mechanism is then operated so as to bring the lower end of the driving arms in a position so that the barrel will not contact therewith when pushed into position. The lifting mechanism is then rotated downwardly and the lever 50 is operated so as to spread the driving arms outwardly until they are in a position to contact with the hoops on the barrel, lever 50 is then released so as to bring the steel contact shoes 57 into engagement with the upper edge of one of the hoops. The lifting mechanism is now rotated downwardly until the contact shoes have tightened the hoop on the barrel to the desired extent. The same operations occurring with the successive hoops until all have been sufficiently tightened.

It will be noted from the foregoing description that I have provided an apparatus which is extremely simple in construction and highly efficient in operation, and by means of which I am enabled to quickly tighten the hoops on filled barrels.

Special attention is called to the slots 43 which connect the links or operating rods 39 with the arms 37. In order to understand the advantage of these slots it should be understood that when the shoes 57 first strike the side of the barrel in their descent, the pins 38 are disposed at the outer ends of the slots. As the shoes move down on the side of the barrel they are forced outwardly on account of the increasing diameter of the barrel, and the slots 43 permit this outward movement without affecting the sleeve 40. The slots enable the driving arms to adapt themselves to irregularities in the form of the barrel.

Special attention is called to the utility of the turn table 63. It enables the barrel to be rotated so as to bring the rivets on the hoops out of alinement with the driving shoes 57. This is advantageous as the rivets may interfere with the operation of the shoes, and in fact the shoes may sometimes operate to cut the rivets.

What I claim is:—

1. A hoop driving mechanism comprising a reciprocating head, a plunger carrying the same, barrel engaging arms having hoop

engaging end portions pivoted upon said head, a reciprocating sleeve carried by said plunger and connected with the upper ends of all of said arms, spring tension means
5 common to all the said arms, and actuating the said reciprocating sleeve for bringing all of said arms into contact with a barrel hoop, individual tension springs interposed
10 between said sleeve and each of said arms, and a lever capable of instantly disengaging the arms from a barrel without the necessity of operating the said plunger.

2. A hoop driving mechanism comprising a reciprocating head, a plunger for operating the same, hoop engaging arms pivoted to said head, the said arms projecting above said head at their upper ends, a reciprocating member movable upon said plunger, links connecting the arms with said sleeve,
20 a spring tension means actuating the said sleeve for bringing all of said arms into hoop engaging position, individual tension means upon said links, and carried by each of said arms whereby the arms will accommodate themselves to unevenness in the barrel surface and auxiliary tension means
25 affecting each of said arms, and mounted upon the said reciprocating head.

3. A hoop driving mechanism comprising, a reciprocating head, a plunger for removing the same, barrel hoop driving arms pivoted intermediate their lengths to the said reciprocating head, a reciprocating member carried by the plunger, links connecting the same with the upper ends of
35 the hoop driving arms, the said links having slots in their arm engaging ends, individual tension springs carried by said links and affecting the arms individually, a common spring tension exerting a pressure
40 upon said movable member, a lever pivoted upon the said head and engaging the said movable member for resting it against the common spring tension whereby all of the arms may be disengaged from a barrel
45 without the necessity of operating the head reciprocating plunger, and means for holding the lever in its adjusted position.

In witness that I claim the foregoing I have hereunto subscribed my name this 16th
50 day of November, 1908.

J. E. PETTIT.

Witnesses:

EDMUND A. STRAUSE,
M. A. PALMER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."