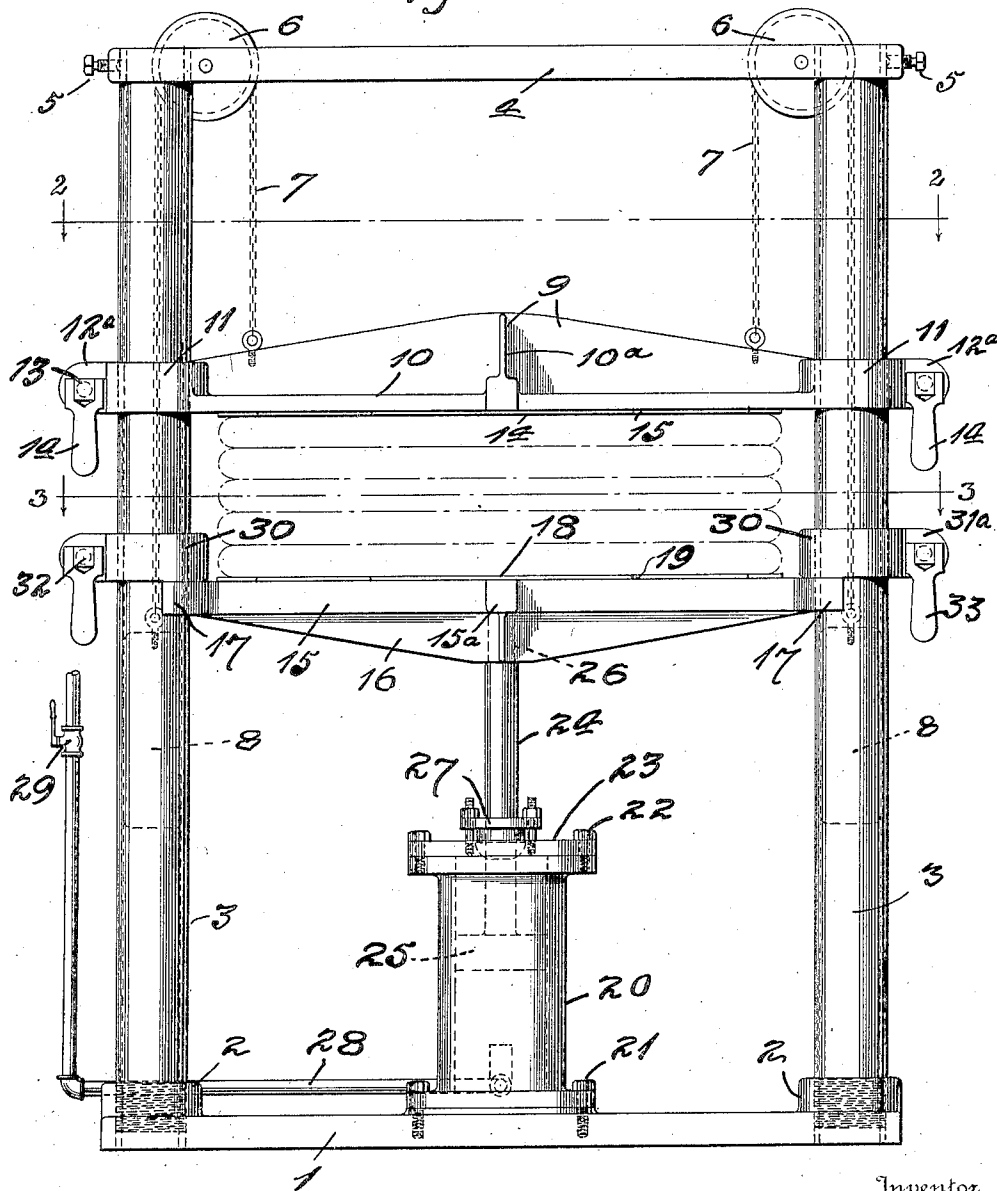


1,464,010

TIRE BUNDLING MACHINE

2 Sheets--Sheet 1

Fig. 1.



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TIRE BUNDLING MACHINE

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2 Sheets-Sheet 2

Fig. 2.

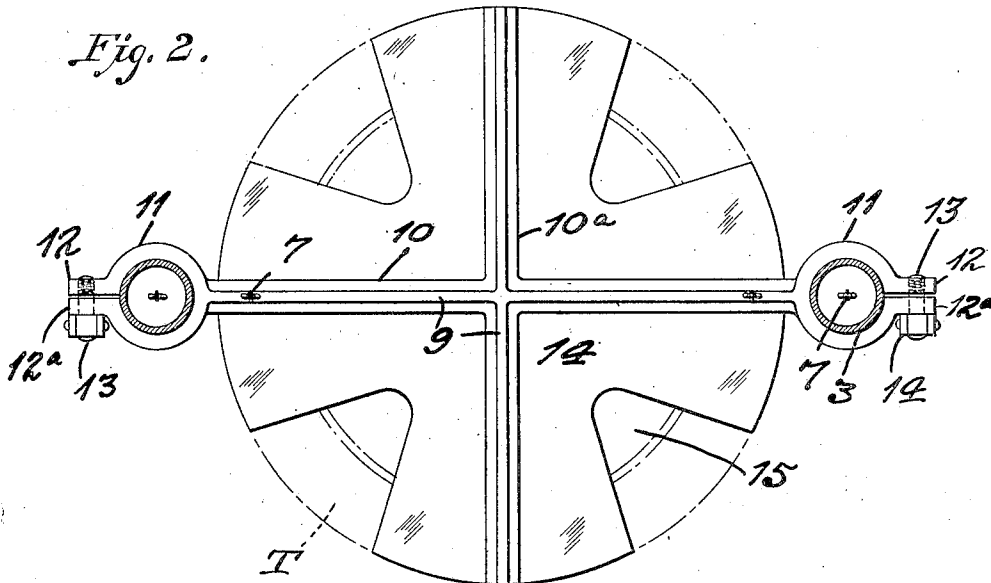
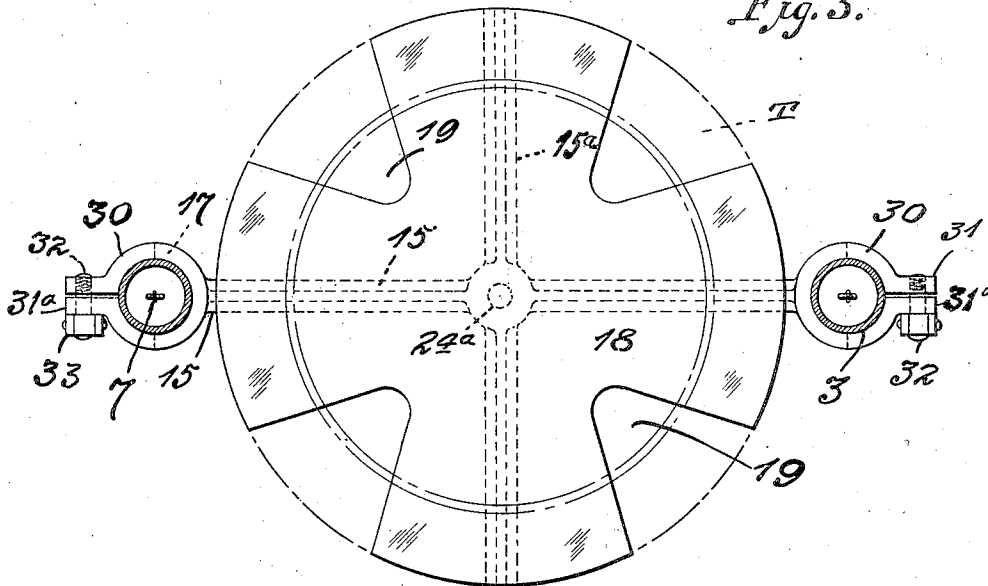


Fig. 3.



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UNITED STATES PATENT OFFICE.

ALBERT MILLER, OF AKRON, OHIO, ASSIGNOR TO THE AMERICAN RUBBER & TIRE COMPANY, OF AKRON, OHIO, A CORPORATION OF OHIO.

TIRE-BUNDLING MACHINE.

Application filed April 13, 1922. Serial No. 552,331.

To all whom it may concern:

Be it known that I, ALBERT MILLER, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Tire-Bundling Machines; 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.

This invention relates to machines for pressing together a plurality of superposed tires, tire casings, or like annular objects, and holding them so compressed while they are being bound together by yarns, cords, or other flexible binders, in order that, when pressure is removed, the bundles expand in the binders and may be handled and rolled around without danger of the separate objects slipping with respect to each other.

The invention consists in a press having a pair of opposed platens, at least one of which is movable during operation, and mechanical advantage means for effecting relative movement of said platens toward and from each other, each platen being so constructed as to admit of a plurality of binder cords or the like to be passed around the annular objects and snugly secure them while held under compression.

By means of this improved machine bundles of rubber tires (for example) may be snugly bound together at a plurality of separated points so that the bundles may be rolled around and otherwise handled, each as a unity, without the separate tires becoming displaced or slipping upon one another, resulting in tearing of paper wrappers, chafing, and other mishaps.

In the accompanying drawings in which like reference characters indicate like parts throughout the several views:

Figure 1 is a side elevation of a preferred embodiment of this invention;

Figure 2 is a section on the line 2—2 of Figure 1 looking down upon the adjustably fixed platen;

Figure 3 is a section on the line 3—3 of Figure 1 looking down upon the plunger platen.

In the embodiment illustrated, 1 indicates the base of a press frame adapted to rest upon a floor or other foundation and to be secured thereto. At diametrically opposite

points on said base 1 are bosses 2, in which are threaded openings for the reception of hollow columns 3 screwed thereinto and extending upward from the base 1 in parallel relation. The upper ends of columns 3 are tied together and braced by a cross tie 4 which may be secured to the upper ends of the columns in any suitable manner as by being fitted over the upper ends and secured in place by set screws 5. The cross tie or brace 4 may be divided, or have openings therein, to receive sheaves 6 and the upper ends of the columns may be slotted to accommodate said sheaves. A chain 7, or other flexible member, is passed over each sheave, one end of each chain being attached to a counterweight 8 within a column 3 and the other to an adjustable platen that is adapted to be fixed at any desired level to the columns 3.

In this embodiment the said fixed platen comprises a plurality of arms 10 and 10^a, preferably four, suitably strengthened and reinforced by the ribs 9. The ends of the two arms 10 may be expanded to form split circular clamps 11, or the said clamps may, if desired, be secured to said arms. Each clamp is provided with laterally extending lugs 12 and 12^a having aligned openings drilled therein, the opening in the lug 12 being slightly smaller than the opening in the lug 12^a and threaded, as shown. A clamp bolt 13 passed through the opening in lug 12^a is threaded into lug 12. By means of the clamp bolts clamps 11 may be tightened upon the columns 3 or released therefrom. In order to turn the bolts 13, handles 14 are pivoted to the bolt heads; and it will be obvious that the ends of said handles adjacent the clamp may serve as cams whereby quick setting action of the clamps may be secured. Secured to the under side of the platen arms 10, 10^a is a plate 14 having equally spaced peripheral openings or notches 15 for the purpose of enabling a binder cord to be readily passed around the tires, tire casings, or other annular bodies T, that may be pressed against the under face of said plate.

A movable, pressure exerting or plunger platen, adapted to be moved toward and from the fixed platen, comprises a plurality of arms 15, 15^a, preferably four, arranged similarly to the corresponding arms 10 and 10^a of the adjustably fixed platen and simi-

larly strengthened by ribs 16. The ends of the arms 15 in the movable platen need not, however, embrace the columns 3 but are preferably provided with yokes or curved guides 17 fitting the inner faces of the columns 3 so that the said platen in its up and down movements may be guided by said columns. At the center of the movable platen there is a hole 24^a which is adapted to receive the upper end of a piston rod 24 to be presently described. Upon the upper face of the plunger platen a supporting plate 18 rests and may be bolted or otherwise secured to the arms 15 and 15^a if desired. The supporting plate 18 is provided with peripheral notches 19 corresponding in position and preferably also in shape with the notches 15 of the described plate 14 so that when a bundle of superposed tire casings or the like are held between the plunger platen and the fixed platen an operator may readily pass binding cord around the several tires or other annular objects through said notches or openings and securely tie them together.

Mounted on the central portion of the base 1 is a cylinder 20 having flanged upper and lower ends, the lower flange being perforated for the reception of cap screws 21 which are threaded into the base 1 in order to secure said cylinder in place, and the upper flange having threaded holes for the reception of cap screws 22 which secure the cylinder head 23 on the cylinder. Said cylinder head 23 has a central opening for the passage of the piston rod 24 attached to the piston 25, the upper end of the rod 24 being reduced as at 26, said reduced end entering the opening 24^a at the center of the plunger platen, the shoulder at the junction of the reduced portion 26 with the main portion of the piston rod 24 supporting said plunger platen. Adjustably secured to the cylinder head 23 is a stuffing box 27 of any approved type adapted to pack the piston rod. Tapped into the lower end of the cylinder 20 is a main 28 for conducting air or other suitable fluid into the cylinder 20 for forcing the piston 25 upward and thereby lifting the plunger platen. The inlet of fluid to the cylinder 20 may be controlled by a three way valve 29 which when in one position admits fluid to the cylinder 20 and while in another position opens cylinder 20 to the atmosphere in order to exhaust the fluid therefrom and permit the descent of the plunger platen. The main 28 will of course be connected to a suitable source of fluid under pressure, not shown. I prefer to use air for the motor fluid.

In order to fix a definite limit to the upward movement of the plunger platen (which may be varied as desired) so as not to put too much pressure upon the bundle of tires or other objects to be compressed, adjustable stops 30 are mounted on the columns 3.

Each stop 30 may consist of a circular split clamp adapted to embrace one of the columns, each clamp having lugs 31 and 31^a provided with alined perforations, the perforation in the lug 31 being slightly smaller than that in the lug 31^a and having screw threads therein adapted to engage the threaded end of a bolt 32 provided with a handle 33 pivoted thereto for the purpose of manipulating the screw and clamping or unclamping the adjustable stop members 30. The handles 33 may, it will be obvious, be used as cams so that the stops 30 may be quickly adjusted and released.

Although the utilities of my invention may be realized to an extent by arranging the plunger platen and an operating means above the adjustably fixed platen, yet I prefer the arrangement shown because of the greater convenience in using the apparatus. By means of the construction shown the plunger platen may be lowered to a height making it convenient for workmen to lift heavy objects onto it preparatory to compressing them.

In operation, tires suitably wrapped in paper, or other annular objects, may be superposed on the plunger platen. For example, a set of five tires may be placed one upon the other in a pile on top of the plate 18 of the plunger platen and centered thereon by hand. When so placed sufficient space is provided at the inner portions of the notches 15 and 19 (which are of greater radial extent than the thickness of the objects) for the ready passage of rope yarn, cord or other binding material between the inner surface of the bundle and the plate. Also the plates 18 and 14 present sufficient sustaining surface to the tires so that they cannot bulge materially into the notches 15 and 19 under the pressure exerted.

According to the size of the tires or other objects and the number to be bundled in a single bundle the fixed platen and the gage stops 30 should be adjusted a proper distance apart in order that the necessary amount of pressure, and no more, shall have been exerted upon the bundle when the plunger platen engages the stops. After the plunger platen has been raised into engagement with the stops the tires or other annular objects will be held clamped and squeezed together under moderate pressure such that, after the superposed objects have been snugly tied by passing cords around them through the notches 15 and 19 and pressure has been released, there will be sufficient expansion of the bundle to bind the cords so tightly that there can be no slipping or relative displacement of individual objects during normal handling.

I have found by experiment that the best results compatible with economy of labor and binding cord is secured by tying the

bundle of tires or other annular objects in four places substantially equally spaced. Less than four ties about a plurality of tires makes an insecure bundle and more than four is wasteful. I have therefore shown each plate 14 and 18 provided with four notches symmetrically spaced about the edges of the plates.

The adjustable platen 9 is counterweighted so that it may be readily adjusted to position without excessive labor.

Cord for tying the compressed bundles may be carried on spools arranged on a reel above the apparatus in such position that the ends may depend within convenient reach of the workmen; or the workmen may be supplied with yarns, or binder cord, cut to proper length for surrounding the bundle and affording ends for tying. The manner of supplying the cord is no part of the present invention and is not illustrated.

Having described my invention what I claim and desire to secure by Letters Patent is:

1. In a machine for bundling tires or the like, a frame, a platen adapted to be adjustably fixed thereto, a plunger platen guided thereby, fluid operated means for moving the plunger platen toward the fixed platen, and separate means for adjustably limiting the extent of movement of said plunger platform toward the adjustably fixed platform.

2. In a machine for bundling tires or the like, a frame, a platen adapted to be fixed to said frame, a plunger platen movable toward and from said fixed platen, mechanism

for moving said plunger platen toward the fixed platen, and adjustable stop means carried on the frame for limiting the movement of said plunger platen toward the fixed platen.

3. In a machine for bundling tires or the like, a frame comprising parallel upright columns, a platen adapted to be fixed to said columns, a plunger platen guided by said columns, means for moving it toward said fixed platen, and stops on said columns adapted to be secured at different distances from the fixed platen in order to limit the movement of the plunger platen toward said fixed platen.

4. In a machine for bundling tires or the like, a frame comprising upright parallel columns, a platen adapted to be fixed adjustably at various elevations along said columns, a plunger platen guided by said columns beneath said fixed platen, fluid pressure mechanism adapted to lower or raise said plunger platen, and separate means for adjustably limiting the extent of upward movement of said plunger platen.

5. In a machine for bundling tires or the like, a frame, opposed platens mounted on the frame, means whereby one of said platens may be fixed at different distances from the other, counterbalancing means for the adjustable, fixed platen, means for forcing the other platen toward the adjustable, fixed platen and separate means on the frame for limiting the movement of said other platen.

In testimony whereof I affix my signature.
ALBERT MILLER.