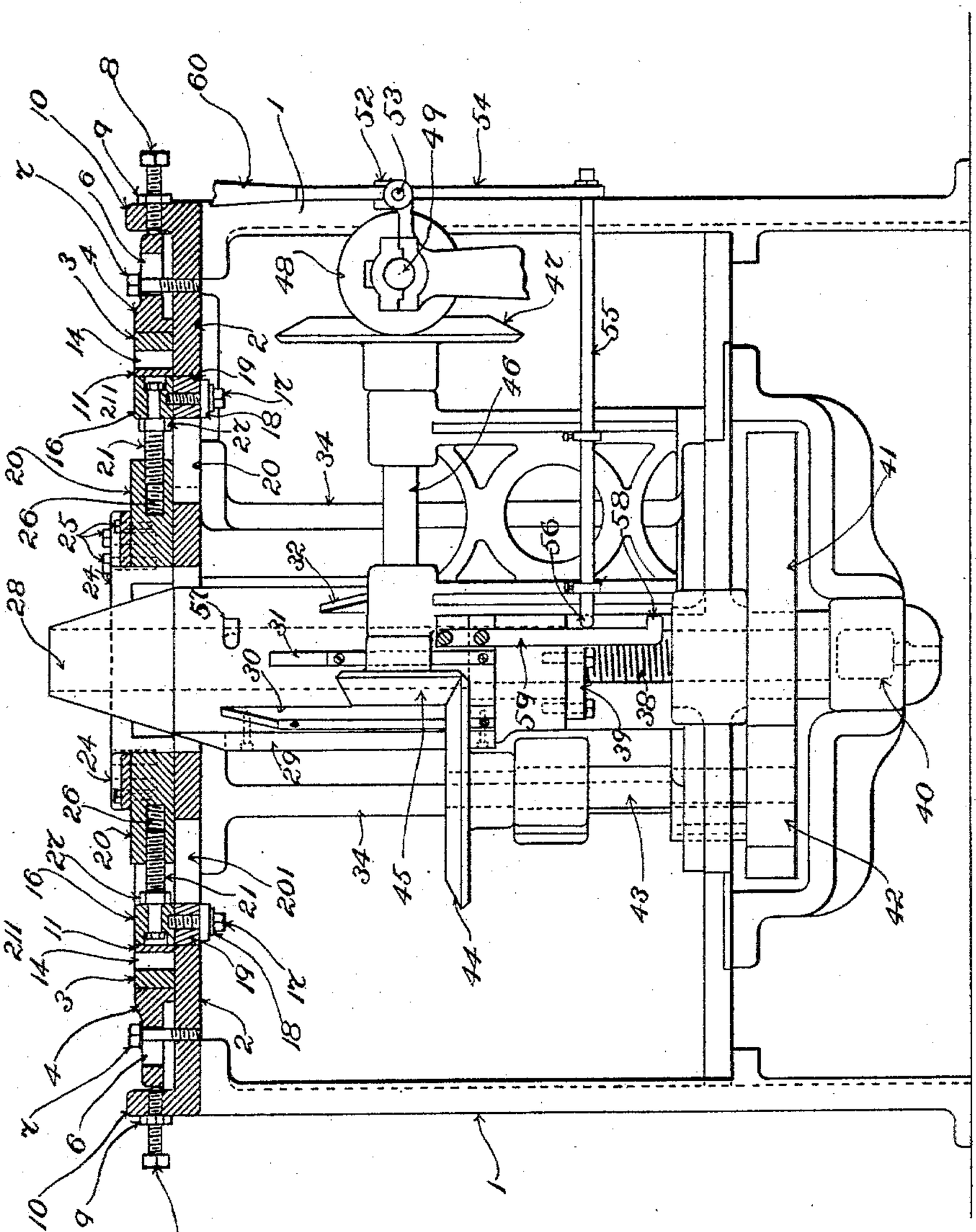
(No Model.) 3 Sheets—Sheet 1.

O. A. HANFORD.

GLUING PRESS FOR WOODEN WHEEL RIMS.

No. 565,166. Patented Aug. 4, 1896.

Fig. 1.



(No Model.) 3 Sheets—Sheet 2.

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GLUING PRESS FOR WOODEN WHEEL RIMS.

No. 565,166. Patented Aug. 4, 1896.

Fig. 2.

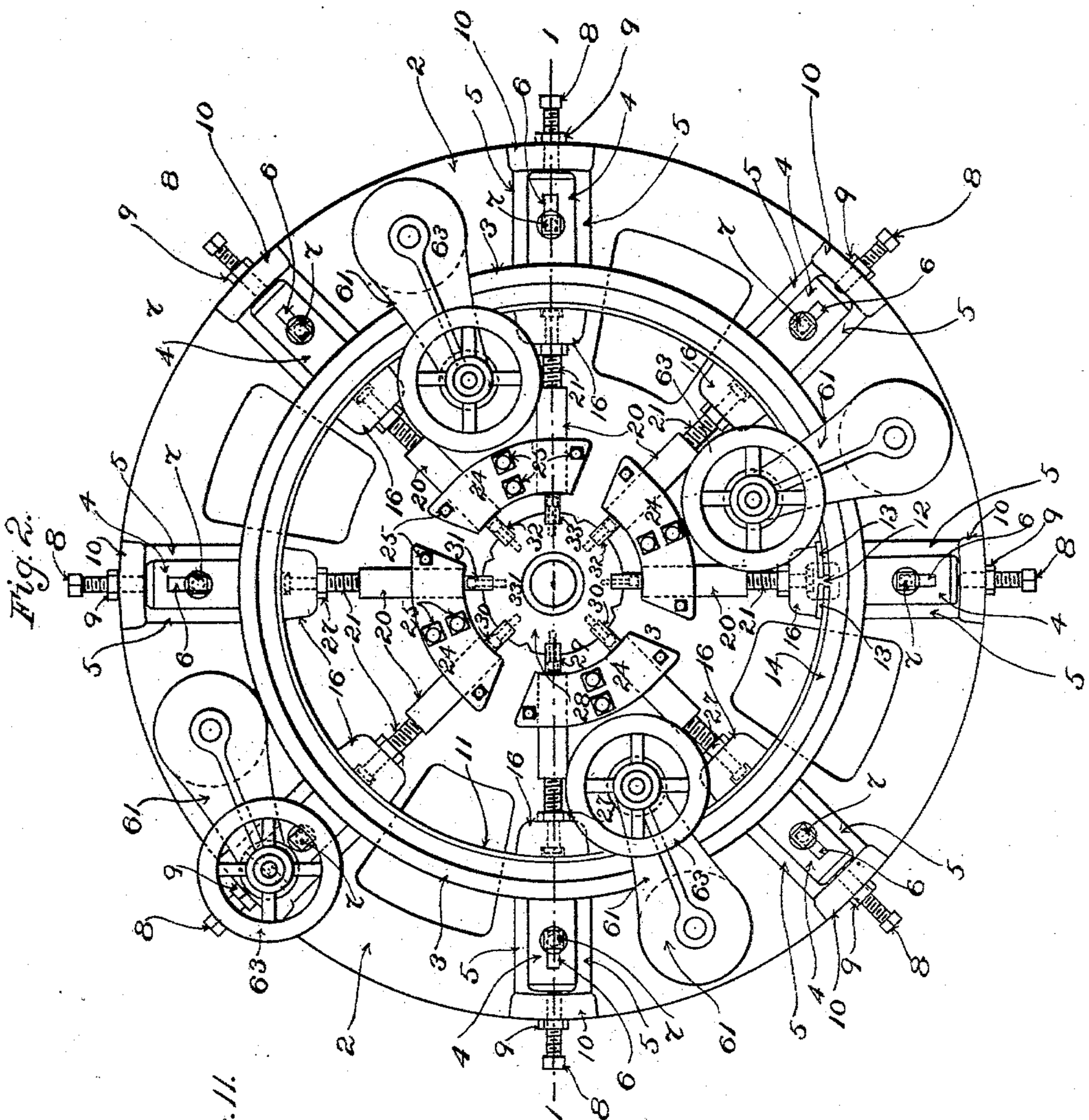


Fig. 11.

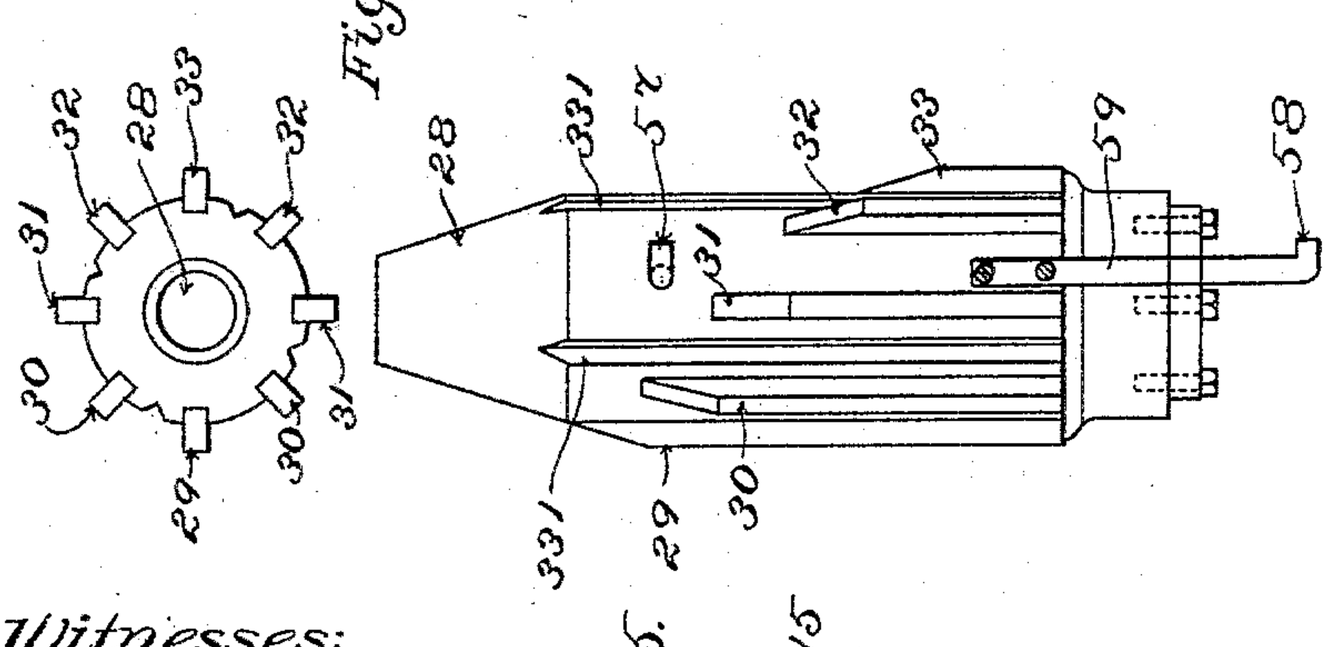


Fig. 4.

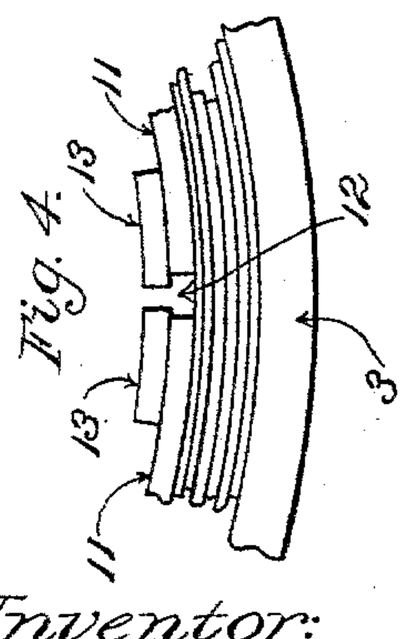
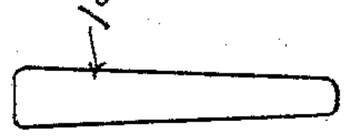


Fig. 5.



Witnesses:
Oscar F. Hill
Robert Wallace.

Inventor:
Orin A. Hanford
by Macleod Calver & Randall
Attorneys.

(No Model.) 3 Sheets—Sheet 3.

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Fig. 6.

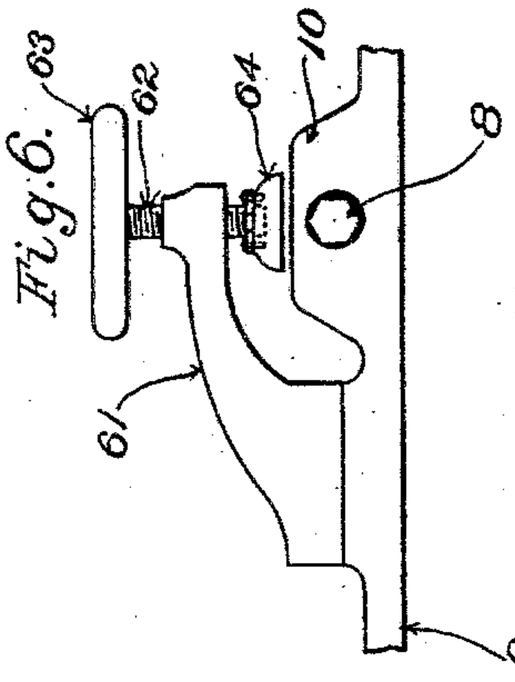

Fig. 10.

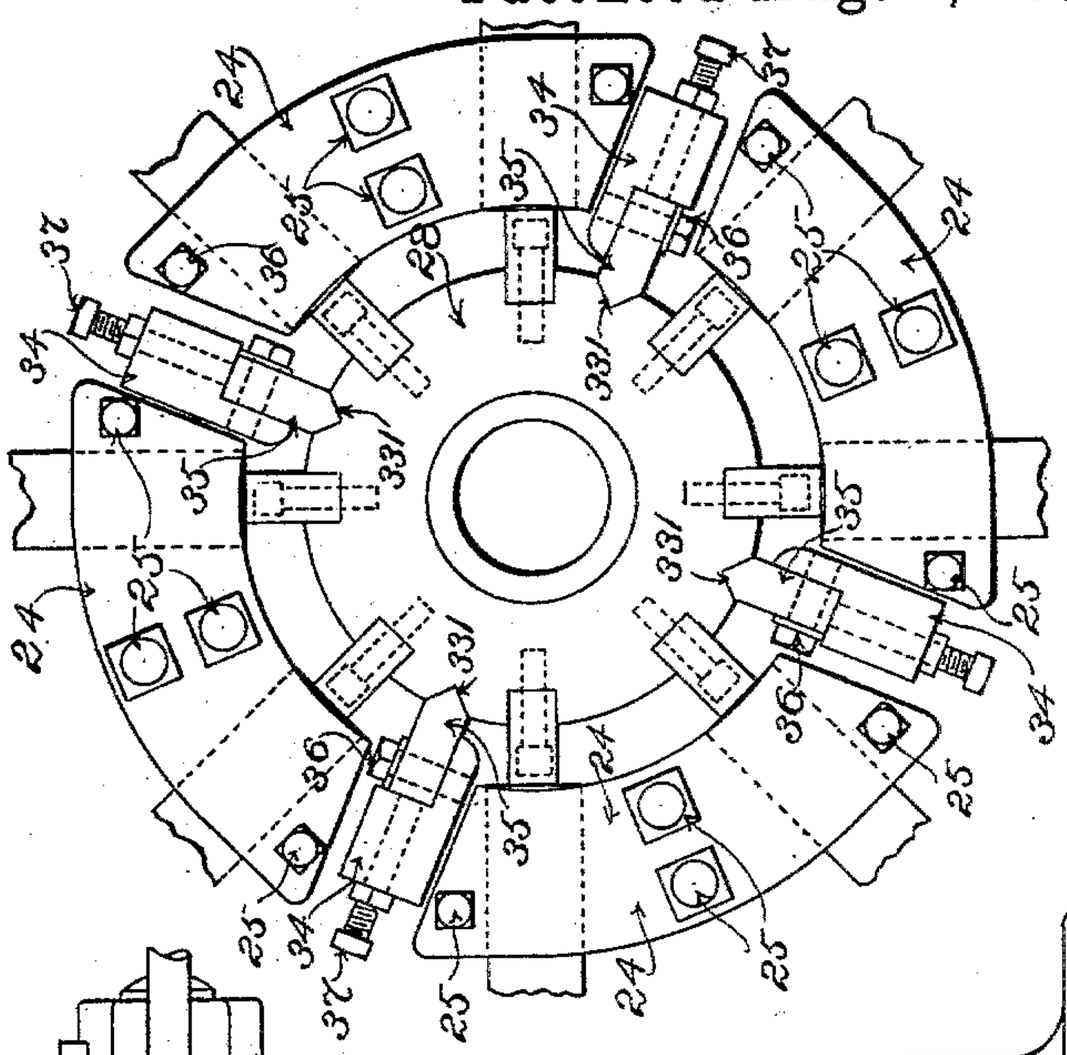

Fig. 7.

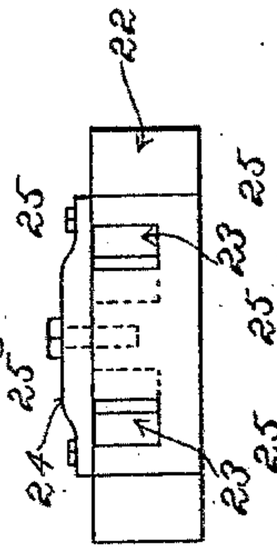

Fig. 8.

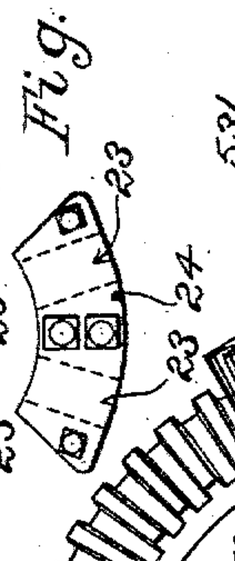

Fig. 3.

Fig. 9.

Witnesses.
Oscar F. Hill
Robert Wallace.

Inventor.
Orrin A. Hanford
by Macleod Calvert & Randall
Attorneys

UNITED STATES PATENT OFFICE.

ORIN A. HANFORD, OF SALEM, MASSACHUSETTS.

GLUING-PRESS FOR WOODEN WHEEL-RIMS.

SPECIFICATION forming part of Letters Patent No. 565,166, dated August 4, 1896.

Application filed March 13, 1896. Serial No. 583,035. (No model.)

To all whom it may concern:

Be it known that I, ORIN A. HANFORD, a citizen of the United States, residing at Salem, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Gluing-Presses for Wooden Wheel-Rims, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention will be described first with reference to the accompanying drawings, in which is represented the best embodiment thereof which has yet been devised, after which the distinguishing characteristics thereof will be particularly pointed out and distinctly defined in the claims at the close of this specification.

Figure 1 of the drawings shows, chiefly in section on line 1 1 of Fig. 2, a wheel-rim press embodying my present invention. Fig. 2 is a view showing in plan the machine of Fig. 1. Figs. 3 to 9 are views which are referred to hereinafter and which represent certain of the details. Fig. 10 is a plan view, on an enlarged scale, showing the central cone and certain of the adjacent parts. Fig. 11 shows the cone in elevation and in plan.

1 is the upright framework of the machine.

2 is the horizontal table, which is supported at the top of the said upright framework.

3 is a large retaining-ring, of cast-iron or steel or other suitable material, which rests on the surface of table 2. Within this ring is placed the material of which is to be composed the wheel-rim that it is desired to make, and the interior diameter of the ring determines the exterior diameter of the wheel-rim as the latter is produced in the machine. This ring is removable and is intended to be taken out of the machine with the wheel-rim which has been expanded and compressed within the same.

4 4 are blocks which are intended to come in contact with the exterior of the ring 3 and to hold the latter in the desired position in the machine. They are disposed at equal intervals apart in a circular series upon the table 2. These blocks are each located between a pair of guides 5 5, Fig. 2, that are provided on the table 2, the respective blocks being capable of movement between their respective pairs of guides along lines which radiate from a common center. Each block 4 is slotted lengthwise at 6, and through the slot passes the stem of a bolt 7, the threaded end of which enters a threaded hole in the table 2, by means of which bolt the block is secured in place on the top of the table 2. A set-screw 8 bears against the outer end of the block 4 and determines its distance radially from the center aforesaid. By means of the set-screws 8 8 the blocks 4 4 may be adjusted as required in order to locate the ring in exact concentricity with the center. The radial adjustment of the blocks 4 4 is made necessary also by the use that in practice is made of rings 3 of various sizes, it becoming necessary at times to substitute rings of one diameter for those of a different diameter. It is well known that the wheel-rims now in use are of various diameters, and the machine preferably is fitted in the manner which has been described, so as to render it adjustable, and thereby adapt it for the reception of correspondingly varied sizes of rings 3.

9 is a lock-nut on each set-screw 8.

The set-screws 8 8 pass through upwardly-extending lugs 10 10 on the table 2.

11 is a second ring, which is placed on table 2, within the ring 3. This ring 11 is split or open at 12, Figs. 2 and 4. 13 13 are lugs or plates on the ends of the split ring 11, at the inner side of the said ring, the said lugs or plates projecting slightly beyond the said ends. The ring 11 is enough smaller in diameter than ring 3 when ring 11 is expanded fully, as shown in Fig. 2, to leave between the two rings a space 14 (see more particularly Figs. 1 and 2) sufficient to receive a wheel-rim.

In the use of the machine a number of strips or veneers are put together, their surfaces which come in contact with one another having been coated with glue, and they are then bent into circular shape so as to inclose ring 11 and fit within ring 3. At first the ends of the ring 11 overlap somewhat. On force being applied radially outward from within ring 11 the latter is expanded so as to compress the said rim between the two rings. By this expansion the opposite ends of the ring 11 are brought into line with one another. A key 15 (shown separately in Fig. 5) is then slipped between the ends of the ring 11. Thereby

the ring 11 is locked in expanded condition, and this having been effected the two rings 3 and 11, with the wheel-rim compressed between them, are removed from the machine and stored away to dry. Another retaining-ring 3 then is placed upon the table 2 and the operations are repeated. The key 15 consists of a wedge which is driven between the ends of the ring 11, it being held from lateral dislodgment by means of the lugs or plates 13 13 above mentioned.

For the purpose of expanding ring 11 and compressing the rim between the said ring 11 and the retaining-ring 3 a series of radially-movable heads or blocks 16 16 is provided. These heads or blocks have curved outer faces to fit the interior surface of the ring 11. They are free to be moved radially upon the upper surface of the table 2 toward and from the center aforesaid, and each is confined to the said surface by means of a bolt 17. The head of each bolt 17 is located beneath the table, and a washer 18 is placed on the bolt above the said head. The stem of each bolt 17 passes through a follower-block 19 and into a threaded hole in the under side of the corresponding head or block 16. The follower-block 19 works in a radial slot 201, that is made through the table 2, and it is T-shaped in cross-section, as indicated most clearly in Fig. 9, the lateral flanges thereof fitting against the under side of the table 2, while the vertical portion thereof fits in the slot 201. Each head or block 16 is connected with the outer end of an extensible or adjustable arm comprising the two parts 20 and 21. The part 20 is in the form of a rectangular slide, it moving radially in guides which are indicated in Figs. 1, 2, 7, and 8. These guides comprise segmental blocks 22, Fig. 7, which are fitted to the upper surface of the table, and have radial slots or passages 23 therethrough for the reception of the slide portions 20 of the adjustable or extensible arms. These passages 23 are most clearly indicated in Figs. 2, 7, and 8. Covers 24 are held by bolts 25 upon the blocks 22 and prevent the slide portions 20 from rising. The portion 21 of each adjustable or extensible arm is in the form of a cylindrical rod, which is screw-threaded, as shown, throughout the inner portion of its length, and is fitted within a screw-threaded socket 26 in the portion 20. As will be obvious, by turning the portion 21 it may be caused to project more or less from the portion 20 and thereby the total length of the arm composed of portions 20 and 21 may be varied as desired. The outer plain part of the portion 21 passes through a hole in the corresponding head or block 16, and is headed or provided with a nut or collar 211 to prevent it from becoming disengaged from the said head or block 16.

At 27 is a polygonal head or the like on the portion 21, by means of which to rotate the latter for the purpose of effecting the adjustment in the length of the compound arm 20 21.

I commonly designate the part 20 a "slide" and the part 21 a "bolt." At the inner ends of the circular series of extensible or adjustable arms 20 21 I employ an expanding device 28, which latter is commonly designated by me a "cone." This so-called "cone" is cylindrical throughout the greater portion of its length, the upper portion thereof being formed like a truncated cone, as shown most clearly in Fig. 1. Upon the exterior of the cylindrical portion of the cone I secure a number of ribs 29, 30 30, 31 31, 32 32, and 33.

In the working of the machine, after a rim has been placed within the ring 3 and a ring 11 has been placed within the rim, the cone is moved vertically upward, it being prevented from rotation by means presently to be described. As it rises the conical upper portion of the cone acts against the slides 20, thereby operating to force the arms 20 21, with their connected heads or blocks 16, radially outward. As the cone continues to rise the vertical ribs aforesaid come into play and complete the outward movement of the radially-movable parts, so as to effect the expansion of the ring 11 and a compression of the rim within the retaining-ring 3, as aforesaid.

In practice, when placing within the retaining-ring 3 the strips or veneers of which a wheel-rim is to be composed, I dispose the free or meeting ends of each strip or veneer closely adjacent to the free or meeting ends of each of the other strips. The ends of each strip or veneer are beveled off so as to make a scarf-joint, and the joints of all the strips or veneers are disposed closely together in the rim, that is to say, within at the greatest one-quarter of the circumference thereof.

An essential feature of my invention as embodied in the machine that is represented in the drawings is the construction by means of which the rim first is compressed at a given point and thence the compression is effected progressively at successive points around the rim. Preferably I effect the first compression at a point or points diametrically opposite from the joints aforesaid, or substantially so, the compression being progressively effected from the said point or points around to the place at which the joints are located. In this manner I provide effectually for forcing any slack which may exist at the outset in the strips or veneers around to the joints, where it disappears, and thus I attain perfect and secure union to one another of the various strips or veneers that are embodied in a wheel-rim. To the foregoing end I make the vertical ribs which are provided upon the cylindrical portion of the cone 28 of various lengths, so that they shall come successively into action upon the arms 20 21. The rib 29, which is located diametrically opposite to the position which the joints in the strips or veneers are in practice given in the machine, is the longest, the upper ends thereof extending above the upper ends of all

the remaining ribs. The strips 30 30, which are next adjacent to the rib 29 on the opposite sides of the ribs, are the next longest, the ribs 31 31, which come next to the ribs 30 30 on the opposite side sof the cone, are the next in length, and the ribs 32 32, which are next adjacent to the ribs 31 31 on the opposite sides of the cone, are the next in length, while rib 33, which substantially corresponds in position with the joints, is the shortest.

As will be apparent, as the upward movement of the cone 28 progresses the rib 29 comes first into action and then successively the pairs of ribs which are numbered 30 30, 31 31, and 32 32, and finally the rib 33. When the said rib 33 has acted upon the corresponding arm 20 21, the ring 11 thereby has been expanded to its full extent, and the rim is compressed between the said ring 11 and the retaining-ring 3. The locking-wedge 15 now is driven into the opening between the ends of the rings 11, and the two rings 3 and 11, with the rim between them, are removed from the machine and stored away to permit the rim to dry, as aforesaid. To prevent the cone from rotating, I form vertical grooves in the surface of the cylindrical portion thereof, as indicated at 331 331, Fig. 10, and to the upright standards 34, which are arranged around the central opening in the plate 2, the said standards extending above and below the said plate, I apply guiding-plates 35 35. The said guiding-plates are held on the said standards by means of bolts 36 36, the latter passing through slots in the guiding-plates to permit of adjustment of the plates toward and from the cone. Set-screws 37 37 bear against the outer edges of the guiding-plates, and provide for adjusting the position thereof with certainty.

The cone 28 is made with a hole throughout the whole or a greater portion of its length to receive the actuating-screw 38, and has bolted to the lower end thereof the nut 39. I prefer to provide for occasioning the vertical movement of the cone 28 automatically, and to this end I combine with the screw 38, which is stepped at 40, a spur-gear 41, the latter meshing with a spur-pinion 42 on an upright shaft 43, the latter having secured to its upper end a beveled gear 44. Said gear 44 is in mesh with a beveled gear 45 on the inner end of a horizontal shaft 46, the said shaft 46 having fast upon its outer end a beveled gear 47, the latter meshing with two beveled gears 48 48, loose upon a driving-shaft 49. Each of the said beveled gears 48 48 has formed or applied thereto a clutch-surface, and between the two beveled gears 48 48 a double clutch member 51 is splined upon the driving-shaft 49. For the purpose of moving the said double clutch member lengthwise upon the said driving-shaft 49, I provide a shifting-fork 52, which is carried by a shifter-rod 53, the latter supported in guide-bearings 531 531, Fig. 3, and being engaged by the upwardly-extending arm 54 of a rock-shaft 55. At the inner end of the said rock-shaft 55 is provided a lateral projection or arm 56, the latter being disposed in the path of projections 57 and 58, Fig. 11, which move with the cone. The lug or projection 57 is secured to the upper part of the cone, and is arranged to engage with the arm or projection 56 when the cone has descended to the proper extent. The lug or projection 58 is carried by the rod 59, which projects downwardly from the cone, and is arranged to engage with the arm 56 when the cone has risen to the proper height. By means of these lugs or projections 57 and 58 the movement of the cone is arrested when it has reached the proper limit in either direction, the double clutch member being disengaged from the clutch portion of the beveled gear 48, which previously was driven.

At 60, Fig. 3, is a handle by means of which to operate the shifter-carrying rod 53, in order to restart the cone by hand when necessary.

In order to force the strips or veneers down to one level after they have been applied to the table 2 within the retaining-ring 3 and hold them in place during the compressing operation, I provide clamps such as are shown in place in Fig. 2, one of said clamps being represented detached in Fig. 6.

61 61 are arms mounted upon the outer portion of the table 2 and arranged to swivel thereon, so that they may be turned from the outer position, in which one of said arms is represented at the top of Fig. 2, into either the extreme inner position, in which three of the arms are represented in Fig. 2, or into any desired intermediate position. This enables me to place the free ends of the arms immediately over the rim which is within the retaining-ring 3, whatever may be the diameter of the rim that is being made. The position in which three of the arms are represented in Fig. 2 is that which is required for the smallest diameter of rim that can be made on the machine. For the larger size of rim which is provided for by the rings, &c., that are represented in Fig. 2, the arms 61 would be swung into an intermediate position, as will be obvious. To the free end of each arm 61 is applied a screw-spindle 62, which fits within a correspondingly-threaded socket in the said free end of the arm, and is provided at its upper end with a hand-wheel 63, by means of which the screw-spindle may be rotated, the said screw-spindle having loosely swiveled on its lower end a disk 64, that is intended to bear upon the upper edges of the strips or veneers.

What I claim is—

1. The combination with a retaining-ring 3, a split ring 11, between which latter and the retaining-ring the strips or veneers to compose the wooden wheel-rim are placed, and a series of compressing devices acting against the ring 11, of means to operate the said compressing devices successively and progress-

ively around the rim beginning at a given point at one side of the rim and proceeding thence, substantially as and for the purposes set forth.

2. A gluing-press for making wooden wheel-rims, provided with a circular series of radially-movable blocks or heads 16, 16, whereby to effect the compression of the strips or veneers of which a rim is composed, and having devices whereby to actuate the said series successively and progressively beginning at a given point at one side and proceeding thence, substantially as and for the purposes set forth.

3. A gluing-press for making wooden wheel-rims, provided with a circular series of radially-movable heads or blocks 16, 16, whereby to effect the compression of the strips or veneers of which a rim is composed, and having also a cone 28 located centrally of the said series, intermediate devices whereby the heads or blocks may be actuated from the said cone, the latter having thereon actuating-ribs varying in length in progressive series at opposite sides of the cone, and means whereby to move the cone vertically, substantially as and for the purposes set forth.

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

ORIN A. HANFORD.

Witnesses:
CHAS. F. RANDALL,
WM. A. MACLEOD.