G. T. EAMES.

MANDREL PRESS.

APPLICATION FILED AUG. 28, 1914.

1,201,162.

Patented Oct. 10, 1916.

3 SHEETS—SHEET 1.

Fig. I.

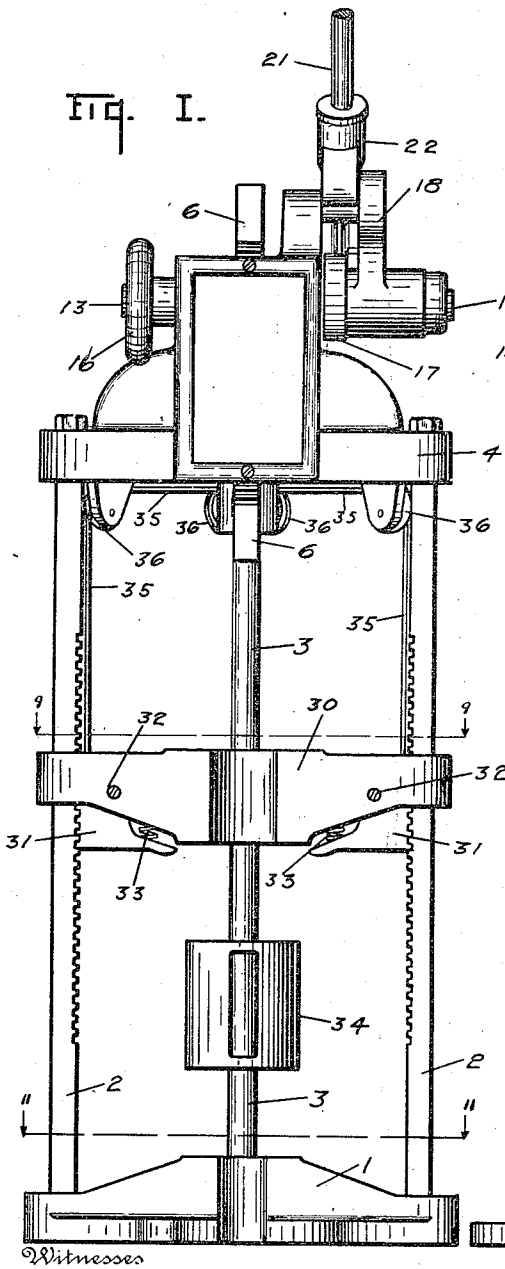
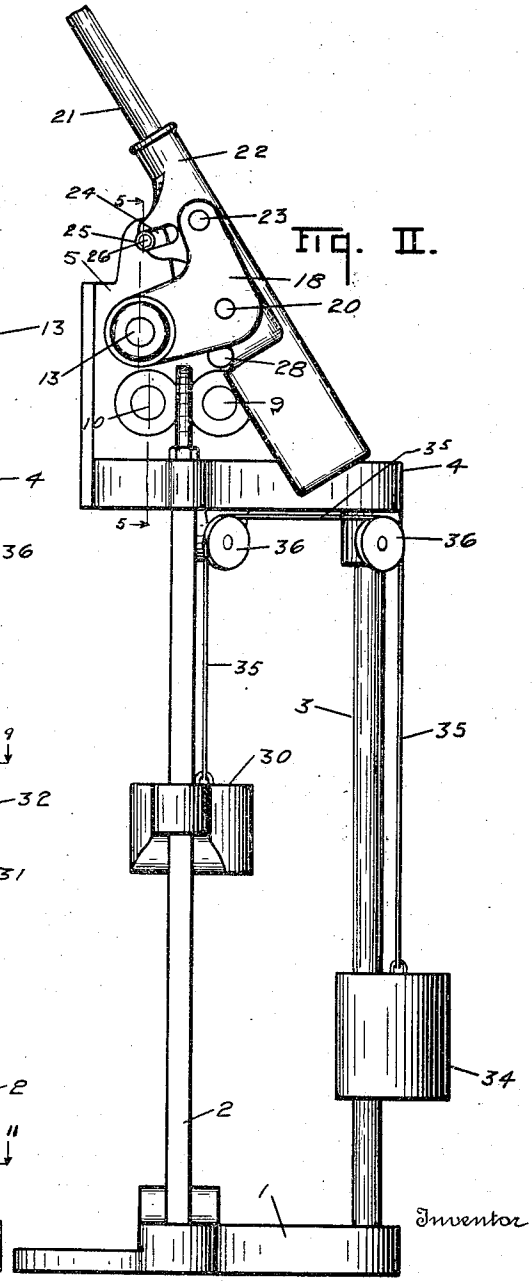


Fig. II.



Witnesses

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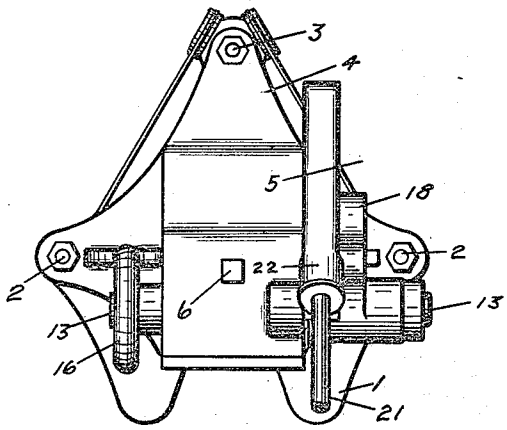


Fig. IV.

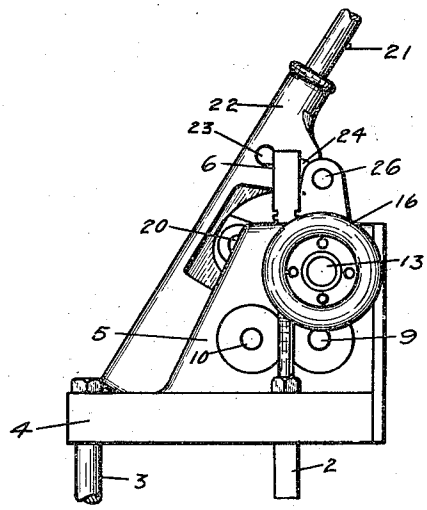


Fig. III.

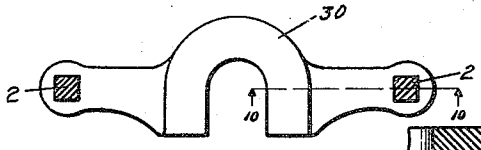


Fig. IX.

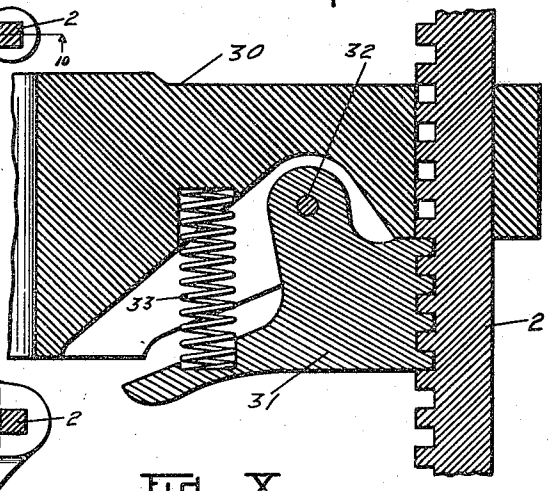


Fig. X.

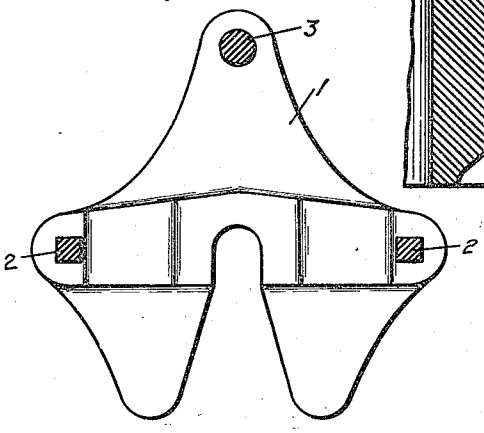


Fig. XI.

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3 SHEETS—SHEET 3.

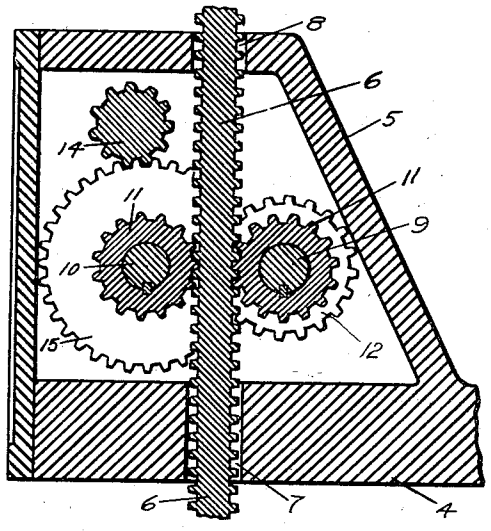


FIG. VII.

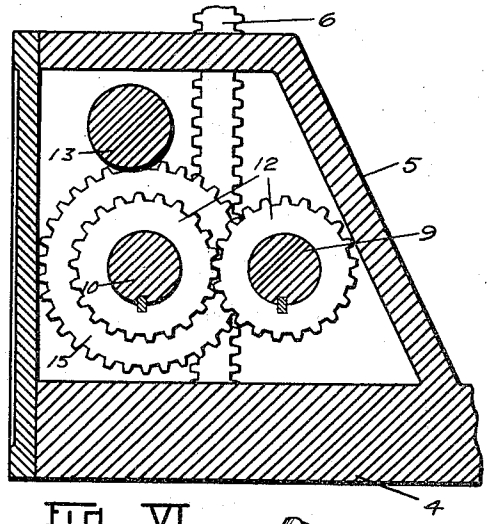


FIG. VI.

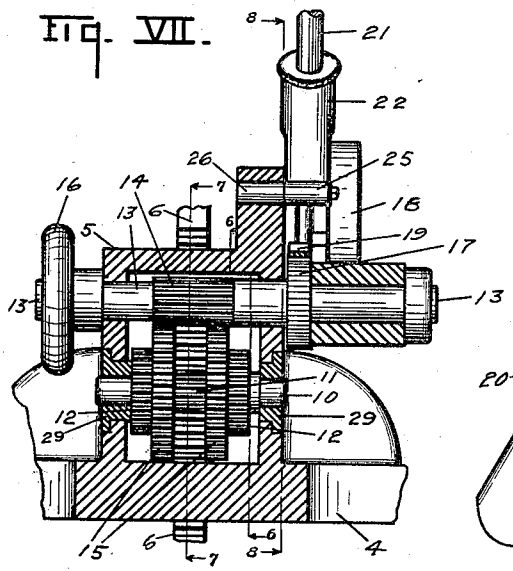


FIG. V.

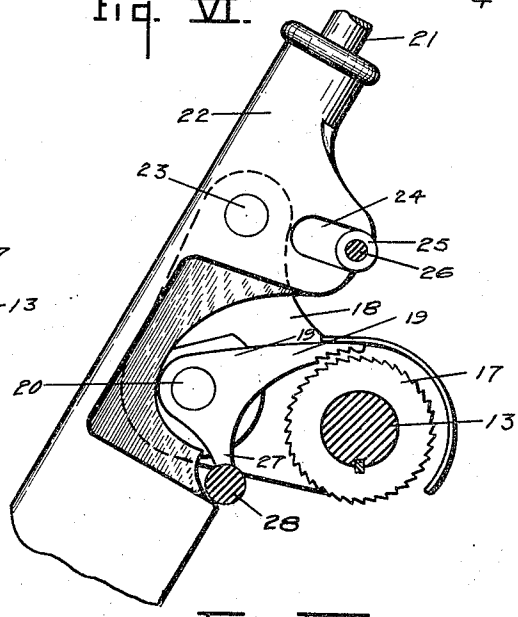


FIG. VIII.

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MANDREL-PRESS.

1,201,162. Specification of Letters Patent. Patented Oct. 10, 1916.

Application filed August 28, 1914. Serial No. 859,131.

To all whom it may concern:

Be it known that I, GARDNER T. EAMES, a citizen of the United States, residing at Kalamazoo, Michigan, have invented certain new and useful Improvements in Mandrel-Presses, of which the following is a specification.

This invention relates to improvements in mandrel presses.

The main objects of this invention are: First—To provide a mandrel press having an improved ram driving mechanism. Second—To provide an improved mandrel press which is comparatively economical in structure, is very powerful, and one in which the parts are so disposed that the strain thereon is very effectively distributed and well balanced.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure I is a front elevation of a mandrel press embodying features of my invention, parts of the actuating lever being broken away. Fig. II is a side elevation looking from the left of Fig. I. Fig. III is a detail side elevation looking from the right of Fig. I. Fig. IV is a plan view. Fig. V is a detail view partially in vertical section on a line corresponding to the broken line 5—5 of Fig. II. Fig. VI is a detail vertical section on a line corresponding to the broken line 6—6 of Fig. V. Fig. VII is a detail vertical section on a line corresponding to line 7—7 of Fig. V. Fig. VIII is a detail vertical section on a line corresponding to line 8—8 of Fig. V. Fig. IX is a detail horizontal section on a line corresponding to line 9—9 of Fig. I, showing structural details of the table. Fig. X is an enlarged detail vertical section on a line corresponding to line 10—10 of Fig. IX, showing details of the adjustable supporting means for the table. Fig. XI is a detail horizontal section on a line corresponding to line 11—11 of Fig. I, showing the details of the base.

In the drawings, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the frame comprises a base 1, uprights 2—2 and 3, the uprights being disposed in the triangular position upon the base, with the upright 3 at the rear, and the top plate 4 having a housing 5 for the gearing formed integrally therewith. The ram 6 reciprocates through the opening 7 in the top plate 4 and the opening 8 in the top of the housing 5. The ram is provided with racks on its front and rear sides. Driven shafts 9 and 10 are provided, the shafts being disposed on opposite sides of the ram and provided with pinions 11 meshing with the ram racks. The driven shafts 9 and 10 are connected by the pairs of gears 12 disposed on opposite sides of the racks. A driving shaft 13 having a pinion 14 thereon is provided. The driving shaft is connected to the driven shaft 10 by the gears 15 meshing with the pinion 14. The gears 15 are disposed between the pairs of connecting gears 12 and so as to embrace the sides of the rack and have bearing engagement therewith, and coacting to support the rack laterally. On one end of the shaft is a hand wheel 16. At its other end the shaft 13 is provided with a ratchet wheel 17. A pawl carrier 18 is mounted on the shaft 13 on the outside of the ratchet wheel 17. The pawl 19 is mounted on the pawl carrier at 20 to coact with the ratchet wheel. The actuating lever 21, having a head 22, is pivotally mounted on the pawl carrier at 23. The lever head 22 is provided with a slot 24 engaging the roller 25 on the fulcrum pin 26. With the parts thus arranged when the actuating lever 21 is drawn forwardly the pawl carrier is actuated to engage the pawl and turn the ratchet wheel. On the return movement of the actuating lever, the tail 27 of the pawl engages with the releasing pin 28, disengaging the pawl as shown in Fig. VIII. This releasing pin is also in the structure illustrated adapted as a stop for the pawl carrier.

The bearings 29 for the driven shafts 9 and 10 are removable from the housing 5 so that the shafts may be driven into or out of the gears in assembling or disassembling.

When the actuating lever is in the posi-

tion shown in Fig. VIII the driving shaft 13 may be manipulated by means of the hand wheel 16 to advance or retract the ram in adjusting it to and from the work. The driving connections for the ram are very powerful, at the same time are compact and disposed so as to withstand heavy strains.

The table 30 is slidably mounted on the uprights 2. These uprights 2 are provided with inwardly facing racks with which the pawls 31 coact. These pawls are pivoted at 32 on the table and held yieldingly in engagement with the racks by means of the springs 33. The pawls are preferably provided with a plurality of teeth as illustrated. The counterweight 34 for the table is slidably mounted on the rear upright 3, and is connected to the table by cables 35 arranged over the supporting guide and pulleys 36. By this arrangement of parts the structure is easily and quickly adjusted to the particular work, and, as stated, is very powerful.

I have illustrated and described my improved mandrel press in a simple embodiment. I have not attempted to illustrate or describe various modifications which I contemplate, but I believe the disclosure made will enable those skilled in the art to embody or adapt my invention as conditions may require.

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

1. In a press the combination of the frame, a ram having racks on opposite sides thereof, a pair of driven shafts disposed on opposite sides of said ram, and provided with pinions meshing with the racks thereof, pairs of connecting gears for said shafts disposed on opposite sides of said ram, a pair of driving gears on one of said driven shafts disposed between said connecting gears and having bearing engagement with the sides of the rack, a driving shaft provided with a pinion meshing with said driving gears, said driving shaft being provided with a hand wheel at one end and with a ratchet wheel at the other, a pawl carrier pivotally mounted on said driving shaft, a pawl pivotally mounted on said pawl carrier to coact with said ratchet wheel, an actuating lever pivotally connected to said pawl carrier and provided with a fulcrum engaging slot in front of its pivot connection to said pawl carrier, a fulcrum pin provided with a roller engaging said fulcrum slot of said lever, and a pawl releasing pin, the said pin also constituting a stop for said pawl carrier, the pawl being adapted to engage the pin prior to the engagement of the pawl carrier therewith.

2. In a press the combination of the frame, a ram having racks on opposite sides thereof, a pair of driven shafts disposed on opposite sides of said ram, and provided with pinions meshing with the racks thereof, pairs of connecting gears for said shafts disposed on opposite sides of said ram, a pair of driving gears on one of said driven shafts disposed between said connecting gears and having bearing engagement with the sides of the rack, a driving shaft provided with a pinion meshing with said driving gears and with a ratchet wheel, a pawl carrier pivotally mounted on said driving shaft, a pawl pivotally mounted on said pawl carrier to coact with said ratchet wheel, an actuating lever pivotally connected to said pawl carrier and provided with a fulcrum engaging slot in front of its pivot connection to said pawl carrier, a fulcrum pin engaging said fulcrum slot of said lever.

3. In a press the combination of the frame, a ram having racks on opposite sides thereof, a pair of driven shafts disposed on opposite sides of said ram and provided with pinions meshing with the racks thereof, pairs of connecting gears for said shafts disposed on opposite sides of said ram, a pair of driving gears on one of said driven shafts disposed between said connecting gears and having bearing engagement with the sides of the rack, a driving shaft provided with a pinion meshing with said driving gears, and means for driving said driving shaft.

4. In a press the combination of the frame, a ram having racks on opposite sides thereof, a pair of driven shafts disposed on opposite sides of said ram and provided with pinions meshing with the racks thereof, pairs of connecting gears for said shafts disposed on opposite sides of said ram, a pair of driving gears on one of said driven shafts disposed between said connecting gears and having bearing engagement with the sides of the rack.

5. In a press the combination of the frame, a ram having racks on opposite sides thereof, a pair of driven shafts disposed on opposite sides of said ram and provided with pinions meshing with the racks thereof, pairs of connecting intermeshing gears on said shafts disposed on opposite sides of said ram, a pair of driving gears on one of said driven shafts disposed between said connecting gears, a driving shaft provided with a pinion meshing with said driving gears, and means for driving said driving shaft.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

GARDNER T. EAMES. [L. S.]

Witnesses:

WALTER CRAWFORD,

OTIS A. EARL.

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