

O. P. BUSHNELL.
HYDRAULIC RAM CYLINDER.
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1,049,204.

Patented Dec. 31, 1912.

Fig. 1.

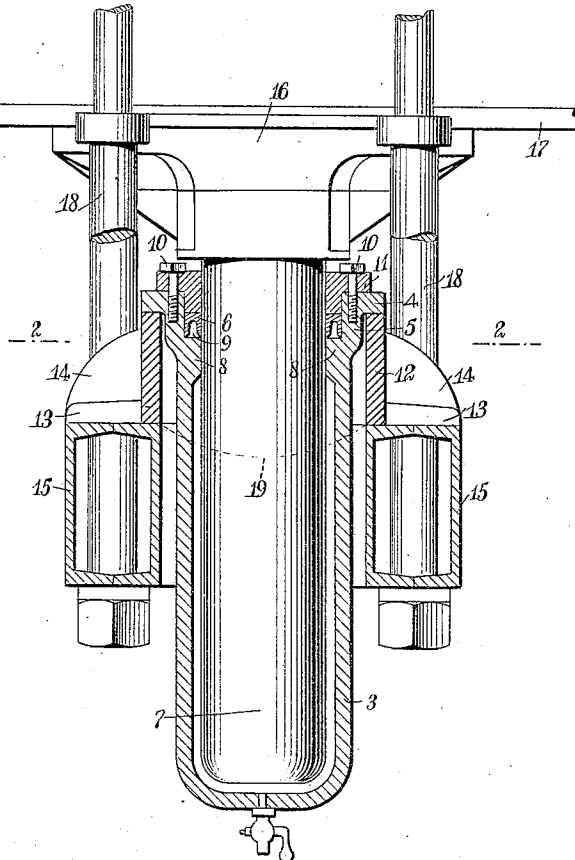
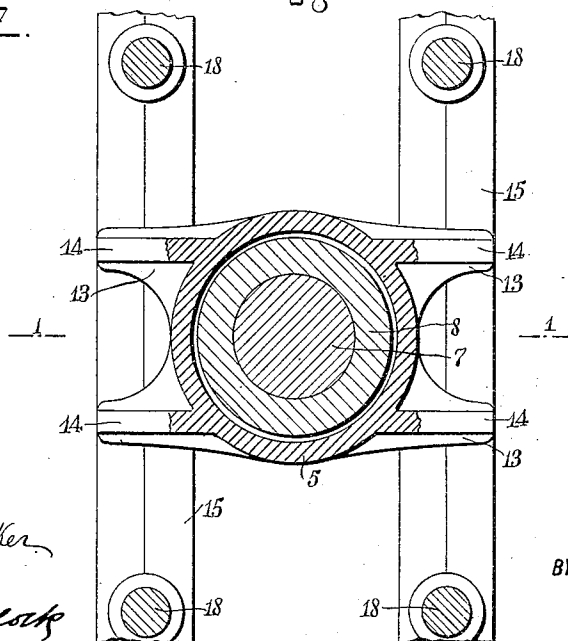


Fig. 2.



WITNESSES:

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HYDRAULIC-RAM CYLINDER.

1,049,204.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed April 5, 1910. Serial No. 553,492.

To all whom it may concern:

Be it known that I, OSCAR P. BUSHNELL, a citizen of the United States, and a resident of Belleville, in the county of Essex and State of New Jersey, have invented a new and Improved Hydraulic-Ram Cylinder, of which the following is a full, clear, and exact description.

The principal object which the present invention has in view is to provide a cylinder formed from cast steel and to avoid defects incident to the construction thereof.

Other objects are sought in the present invention, such as forming a construction wherein the parts are stronger and lighter; and to provide a structure wherein the method of manufacturing the same is simplified.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in both the views, and in which—

Figure 1 is a vertical section of a hydraulic jack constructed in accordance with the present invention, the section being taken on the line 1—1 in Fig. 2; and Fig. 2 is a cross section in plan of the jack, the section being taken on the line 2—2 in Fig. 1.

Heretofore in hydraulic presses the cylinder in which is mounted and operated the ram, has been constructed from a good quality of soft cast iron. This has answered the purpose to which machines of the character specified are subjected better than any known material excepting cast steel. The usual form of the cylinder has been that wherein the cylinder body and the saddle have been integrally formed by being cast in one piece. This method of construction is rendered feasible in cast iron due to the equality of cooling in the iron. This form, however, is not adapted to the employment of steel, for the reason that the contracting strains of the latter are such that the casting is invariably broken at or near the junction of the cylindrical extension of the cylinder from the saddle. Many attempts to obtain the result in steel heretofore accomplished in iron have been made, and with a large measure of failure of success. The proportion of poor castings is very large in the total output of cylinders.

In order to avoid this I have formed a separate cylinder 3, at the upper edge

whereof is formed an annularly extended flange 4. The flange 4 is connected with the body of the cylinder by a vertical wall 5 of substantially the same thickness as the body of the cylinder 3, and is offset, as shown in Fig. 1 of the drawings, to provide room to receive a packing ring 6 between the said wall 5 and a ram 7. To support the ring 6 the cylinder 3 is provided with an internally extended annular flange 8, the upper surface whereof is machined to form a seat for the packing ring 6. The ring 6 is provided with the usual channel 9 for soft packing. In the flange 4 and the wall 5 are formed, at suitable intervals, threaded perforations to receive bolts 10, 10, whereby a gland 11 is held and adjusted upon the ring 6.

The under surface of the flange 4 is machined, or otherwise leveled, to form a seat upon a ring 12 of the saddle. The upper edge of the ring 12 is trued to form a seat for the flange 4. Integrally formed on the ring 12 are feet 13, 13, which are reinforced by webs 14, 14. The ring 12 is provided with depended extensions 19, which are rounded in form and rest between bolsters 15, 15 to form centering members therebetween for the seating of the saddle as shown in dotted lines in Fig. 1.

In practice the saddle is assembled in position, the feet 13, 13 and ring 12 being disposed with reference to the channel beams constituting the bolsters 15, 15, substantially as shown in the drawings. The saddle being disposed in position, the cylinder 3 is introduced thereon, the outer surface of the wall 5 centering the cylinder within the ring 12, while the flange 4 supports the said cylinder in accurate vertical adjustment in the said saddle. With their securement the cylinder rests in the saddle to receive the ram 7. Prior to inserting the ram 7 the packing ring 6 and the gland 11 are adjusted, when the ram 7 is inserted between the inner walls of the flange 8, which serves as a guide for the subsequent operation of the said ram. The ram 7 is constructed of any suitable material, and is provided with a head 16, upon which a platform 17 is adjusted and secured. The ram 7, the head 16 and platform 17, with the bolsters 15, 15 and tie rods 18, 18 are of usual construction, and not herein further specified, the present invention being lim-

ited to the construction and arrangement of the cylinder 3 and parts connected therewith, and the saddle constructed to support the same.

5 By long practice I have discovered that steel cylinders and saddles, constructed of cast steel, when formed to the shape shown in the accompanying drawings, give complete and entire satisfaction, and a uniform
10 and perfect result in the output of the foundry.

In operation, the cylinder and ram perform the same functions as now well known in the art.

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

A hydraulic ram cylinder, comprising a cylinder having a closed bottom end and a

continuous wall structure of a substantially uniform thickness, and provided with a laterally extended top rim flange adapted to support the said cylinder; a supporting saddle for said cylinder having a continuous vertically extended ring provided with laterally extended feet, said ring and feet
25 being of substantially uniform structural thickness throughout; and depended guide-like extensions adapted to rest between structural members of the supporting structure for said saddle. 30

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

OSCAR P. BUSHNELL.

Witnesses:

E. F. MURDOCK,
J. P. DAVIS.

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