No. 885,556. PATENTED APR. 21, 1908.

J. K. WILLIAMS.

CYLINDER PACKING.

APPLICATION FILED JUNE 6, 1907.

2 SHEETS—SHEET 1.

Fig. 3.

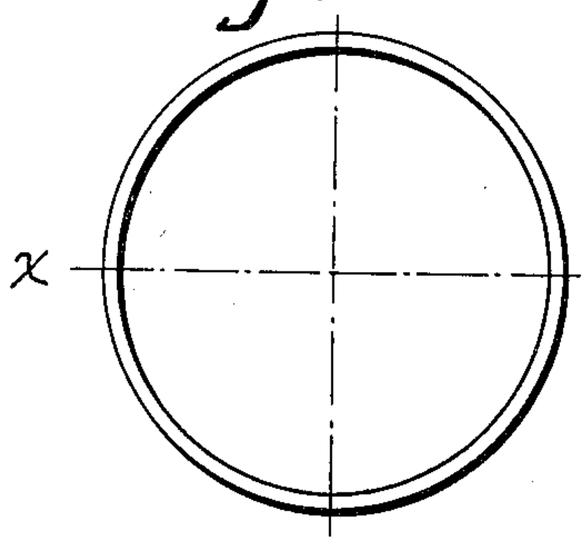


Fig. 4.

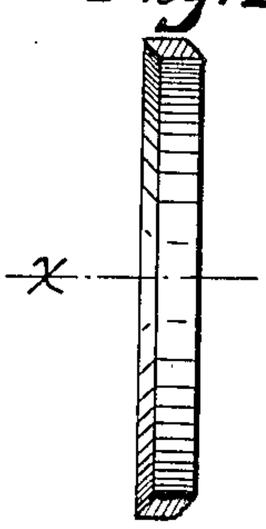


Fig. 2.

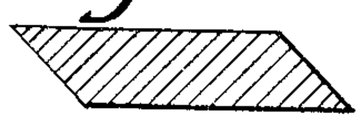
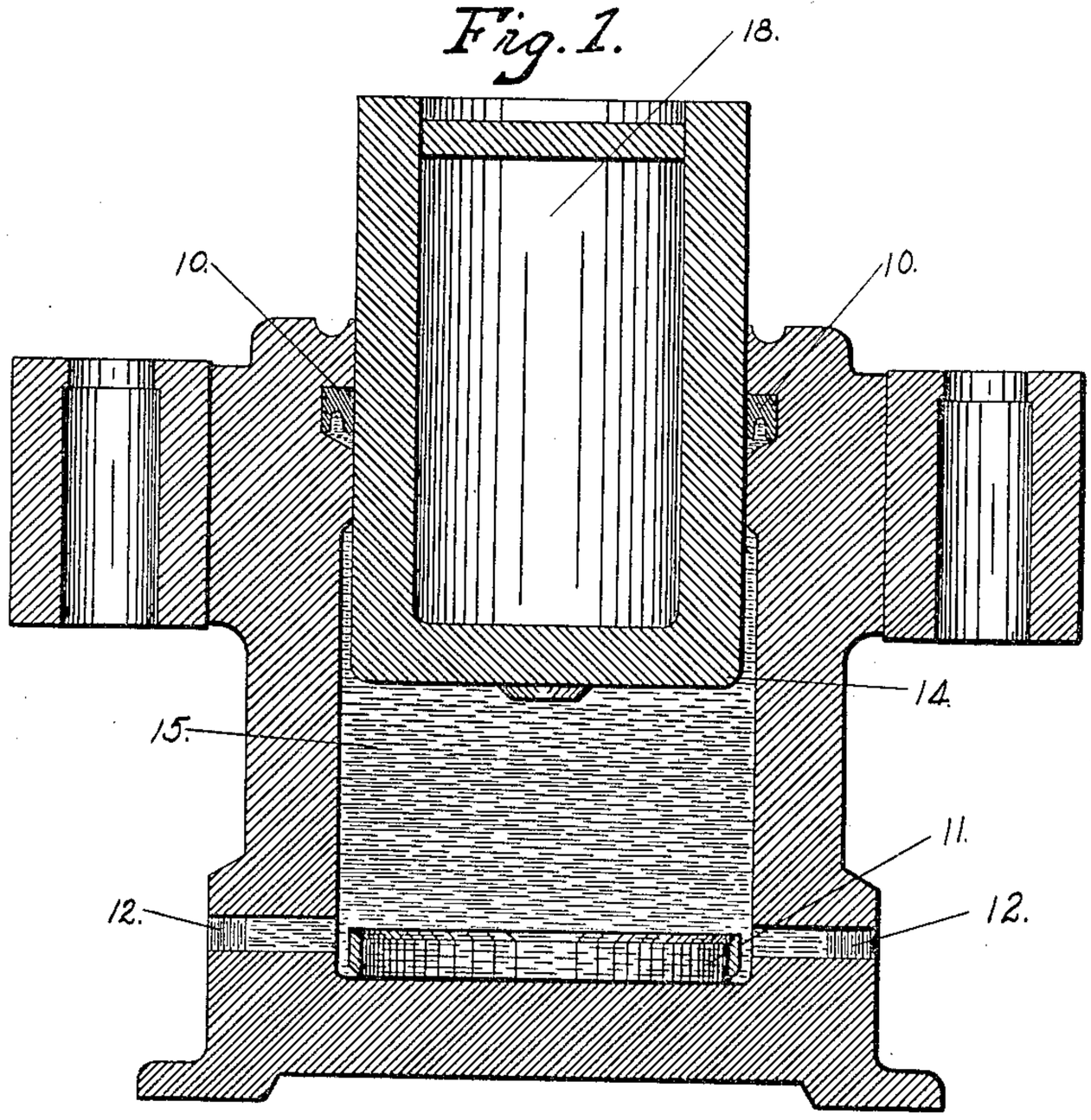


Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 7.

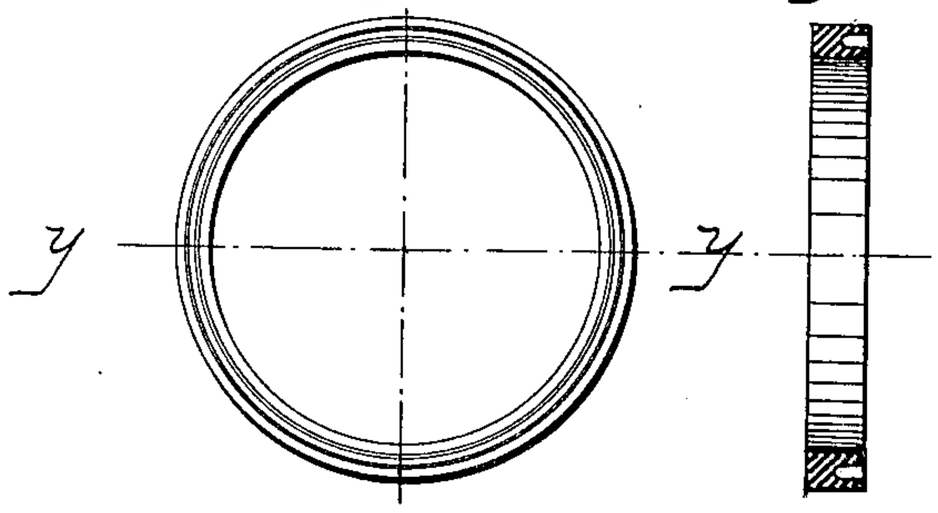


Fig. 8.

Fig. 6.

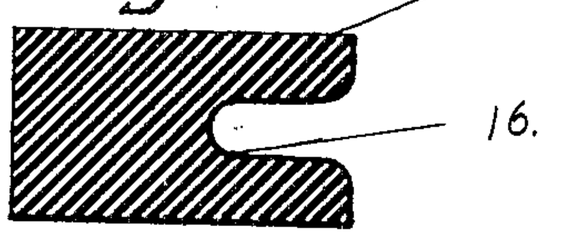
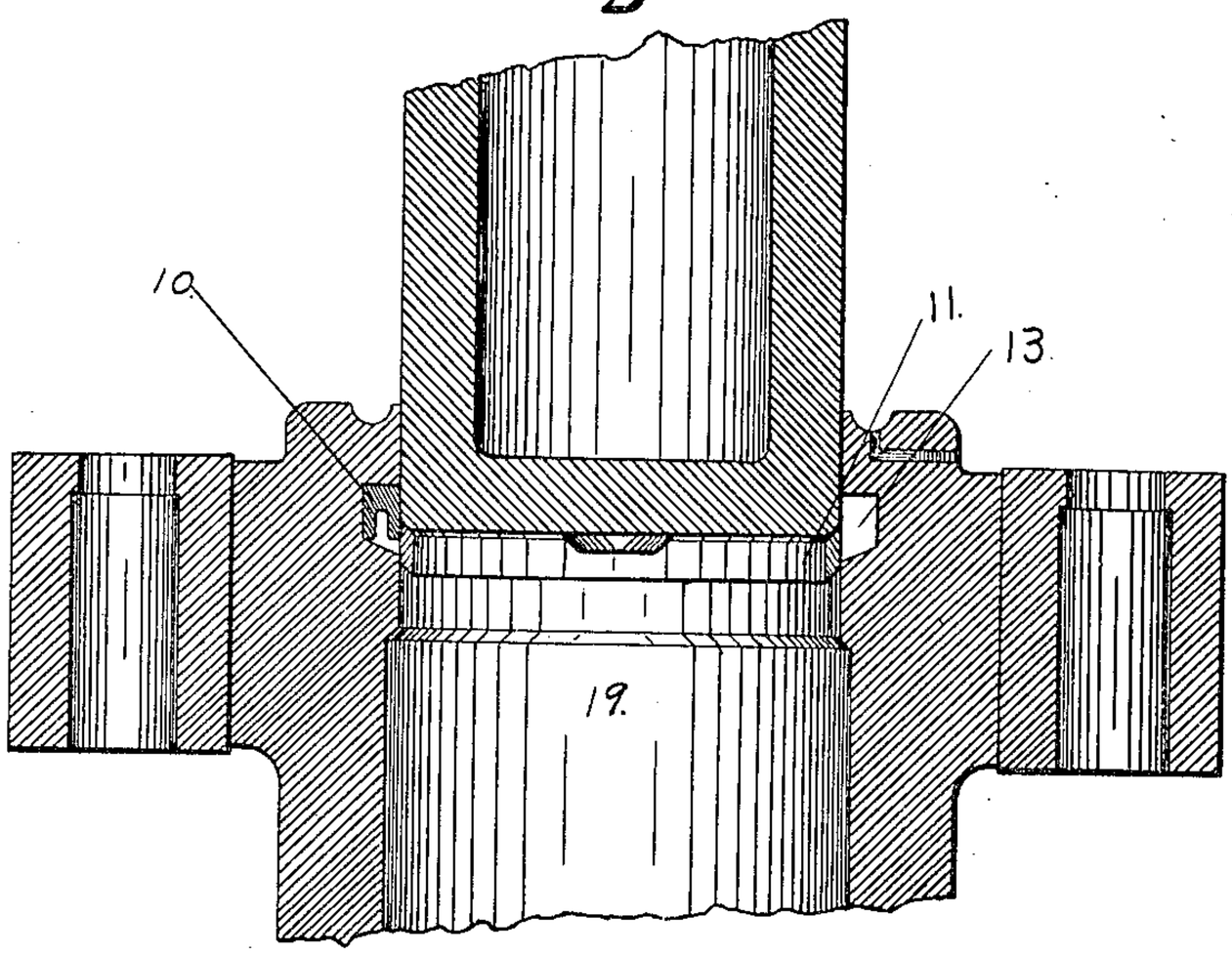


Fig. 5.



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UNITED STATES PATENT OFFICE.

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CYLINDER-PACKING.

No. 885,556. Specification of Letters Patent. Patented April 21, 1908.

Application filed June 6, 1907. Serial No. 377,650.

To all whom it may concern:

Be it known that I, JOHN K. WILLIAMS, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented new and useful Improvements in Cylinder-Packing, of which the following is a specification.

My invention has relation to hydraulic presses, otherwise known as hydrostatic presses, pneumatic presses, force pumps, air pumps, and steam cylinders, and it relates more particularly to the cylinders of such presses and pumps and the device for holding in position and making effective the packing used in connection with cylinders for the prevention of leakage of the gas or liquid used in the operation of the said cylinders.

The object of my invention is to provide an effective and improved means for holding and retaining the packing used in connection with the ram or plunger and the cylinder or barrel of a press or pump.

The description of my invention hereinafter given applies more particularly to hydraulic presses although it may be used in connection with other machines using a cylinder operating by means of a liquid or a gas.

Heretofore in the construction and operation of hydraulic presses an independent collar or flange has been employed to fit over the top or end of the cylinder of the press to hold the packing used to prevent leakage, said collar or flange being fastened or held in place by means of bolts and nuts.

In my invention a further object is to dispense with the independent flange or collar and to accomplish the same result as to the prevention of leakage by effective and economical means.

It is well known that in the use of hydraulic presses it becomes necessary frequently to replace worn out packing. The accomplishment of this renewal of packing has heretofore required considerable time and work in the unfastening and removing of the flange or collar, and also the means for retaining the packing has been troublesome in the bursting and breaking of bolts and nuts used as retaining devices and leakage has been prevented, if at all, with difficulty.

In my invention a further object is to dispense with the necessity of such unfastening and removing of the collar or the flange in the renewal of packing and to provide instead thereof a device making possible the expeditious removal of the worn out packing and the installation of new packing and also effectually preventing breaking, bursting and leakage.

My invention consists of a cast iron or steel base member of a press, in general outline of known construction, having a circumferential groove or grooves in the curved walls of the cylinder thereof into which groove or grooves is fitted packing consisting of a yielding rubber ring or rings, and a steel band or retaining ring of diameter approximately the same as the diameter of the cylinder of the said press all assembled and operating together as more particularly hereafter set forth and described.

In the accompanying drawings Figure 1 is a cross sectional view of a fully equipped press showing the ram partially elevated in the cylinder; Fig. 2 is a cross sectional view of the steel band or retaining ring somewhat enlarged and showing the beveled edge of said band; Fig. 3 is a top view of the steel band or retaining ring; Fig. 4 is a cross sectional view of Fig. 3 on the line X—X; Fig. 5 is a cross sectional view of a portion of the press showing the relative positions of the ram, the packing, and the retaining ring when the ram is being inserted in the cylinder; Fig. 6 is a cross sectional view of a ring of packing somewhat enlarged and showing the U shaped channel in said packing ring; Fig. 7 is a bottom view of the entire packing ring; Fig. 8 is a cross sectional view of Fig. 7 on the line Y—Y.

In the accompanying drawings similar numerals represent similar parts of the mechanism of my invention.

10 is a ring of packing; 11 is a steel band or retaining ring; 12 is an opening into the cylinder through which a liquid or gas is driven; 13 is a circumferential groove; 14 is the beveled or rounded shoulder of the lower end of the ram or plunger; 15 is the liquid or gas used as the power for elevating the ram; 16 is the U shaped channel in the packing ring; 17 is one of the arms or extremities of the packing ring; 18 is the hollow opening or cored portion of the ram or plunger; and 19 is the cylinder of the press.

In carrying into effect my invention I provide a cast iron or steel base member of a press of pattern and form of known construction as to its general outline, at or near the upper end or top of the barrel or cylinder of

the said base member of the said press I cause to be made a circumferential groove (13) in the curved walls of the said barrel or cylinder (19) of size and depth commensurate with the size and capacity of the press. In this circumferential groove is fitted a yielding ring of rubber or leather or some other similar material having at the base thereof a U shaped channel as shown in the accompanying drawings. When the said yielding ring or packing is placed in the circumferential groove in the walls of the cylinder of the press it is strongly flush with the walls of the cylinder and fits tight around the ram or plunger of the press when the same is placed in the cylinder.

In order that the ram or plunger may be disposed in the cylinder without displacing the packing, in my invention, I provide a steel band or ring (11) whose outer diameter is approximately the same as the diameter of the cylinder, which said ring serves as a support or retaining wall to hold the packing in the groove while the ram or plunger is being inserted in the cylinder. The edge or shoulder of the lower end of the ram or plunger is somewhat beveled or rounded and this shape, together with the supporting ring as aforesaid, permits the insertion of the ram or plunger without displacing the packing, and at the same time the retaining ring is forced downward by the descending ram or plunger; the pressure of the packing being removed from the outer circumferential surface of the retaining ring said ring falls to the bottom of the barrel or cylinder.

When liquid or gas is forced with great pressure into the cylinder through the openings (12) the liquid or gas ascending between the walls of the cylinder and the outer curved surface of the ram or plunger is intercepted by the packing (10) which fits tight around the ram or plunger and which is driven tighter by the force and pressure of the said liquid or gas and the rising ram or plunger.

Without departing from the spirit of my invention, instead of but one circumferential groove in the walls of the cylinder of the press there may be two or more of the same kind and style of grooves placed at slight distances apart, one above another, and each equipped with the aforesaid ring or packing, and the steel band or ring may be made of sufficient width to support the packing in more than one of the said grooves and the said groove or grooves may be located at such distance or distances apart and at such distance or distances from the top of the cylinder as to provide a flange or collar above said groove or grooves of size and strength commensurate with the size and capacity of the press. The ring of packing material may be of rubber, leather, or other yielding material and is to be of size and design to be suitable to the press or pump in connection with which it is to be used.

Having fully described my invention, what I claim is:

In a hydraulic press, the combination with a base member having a cylinder therein, of a circumferential groove in the curved walls of the interior of said cylinder in said press, of a ring of packing placed in said circumferential groove and having a substantially U-shaped channel upon the under side thereof, of a retaining band of approximately same diameter as the interior of the aforesaid cylinder, and of a ram with slightly rounded shoulder, all substantially as set forth.

JOHN K. WILLIAMS.

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