Aug. 2, 1938. W. B. WARE 2,125,701

PACKING FOR HYDRAULIC PRESSES

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FIG. 1

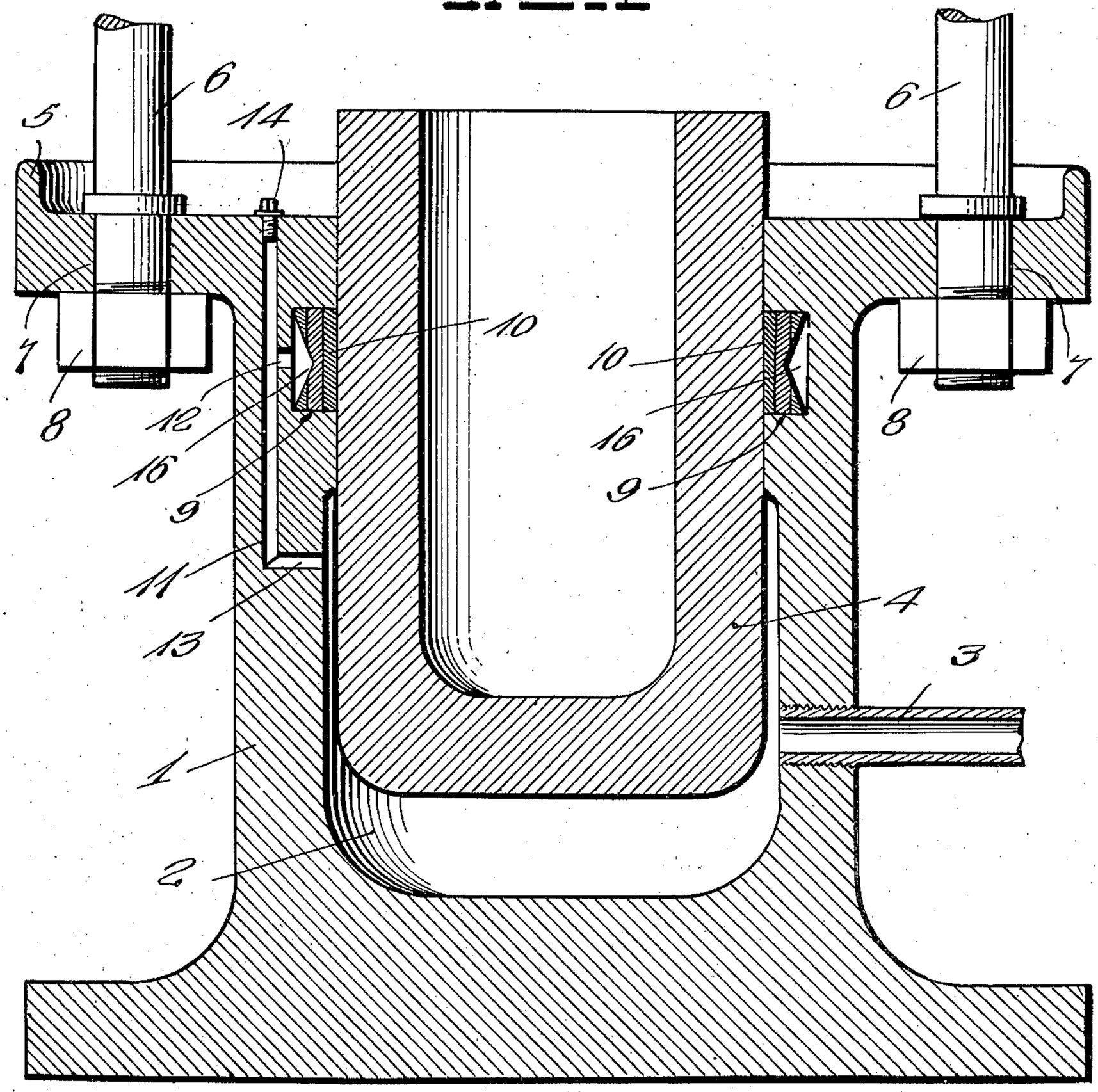


FIG. 7

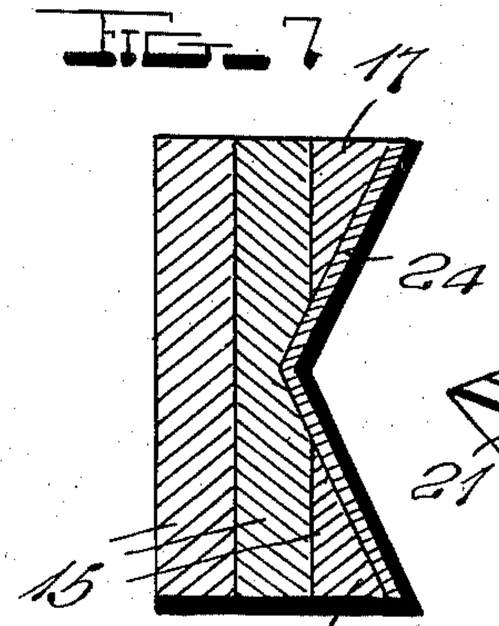


FIG. 6

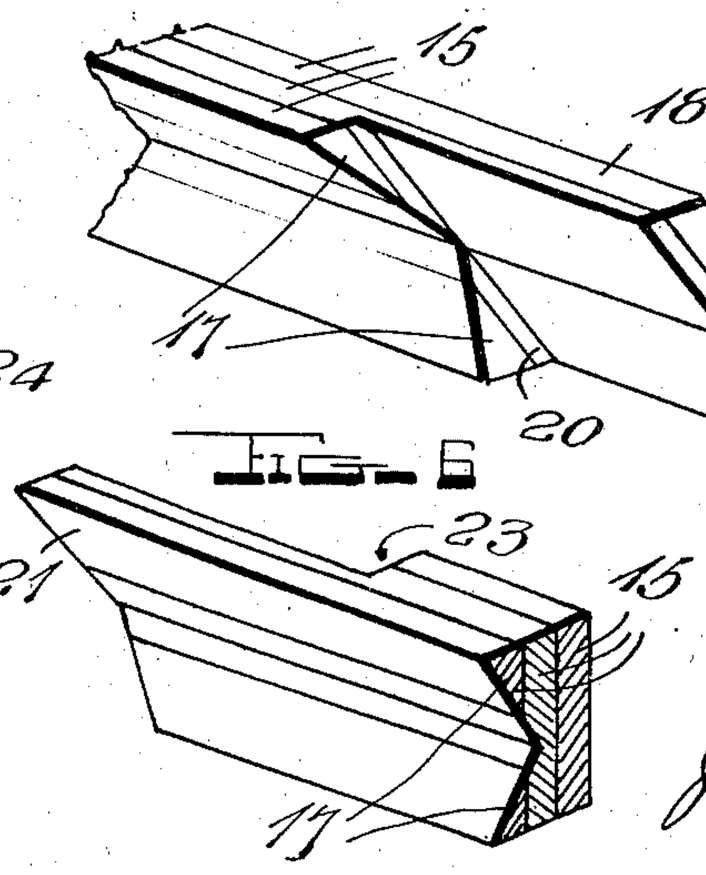


FIG. 5




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Fig. 2

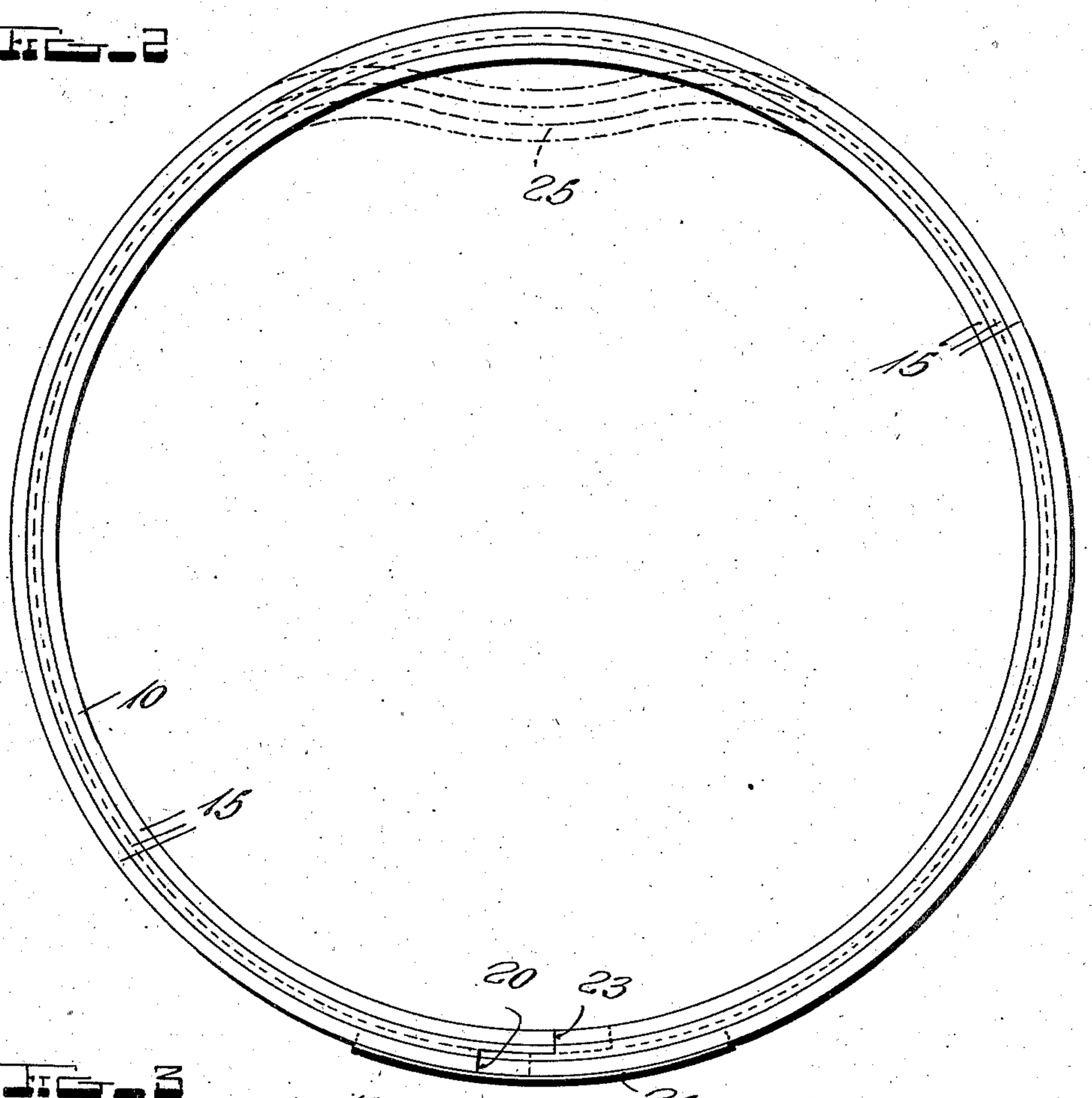
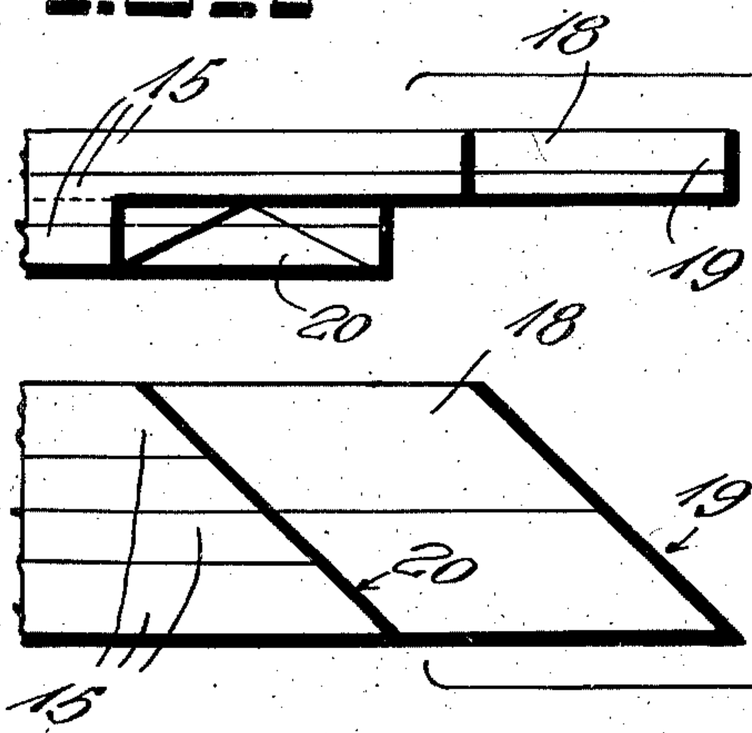
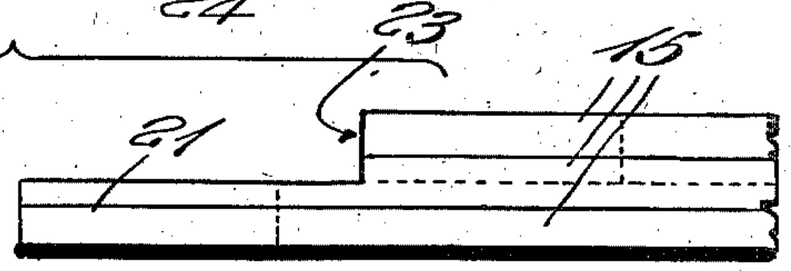



Fig. 3







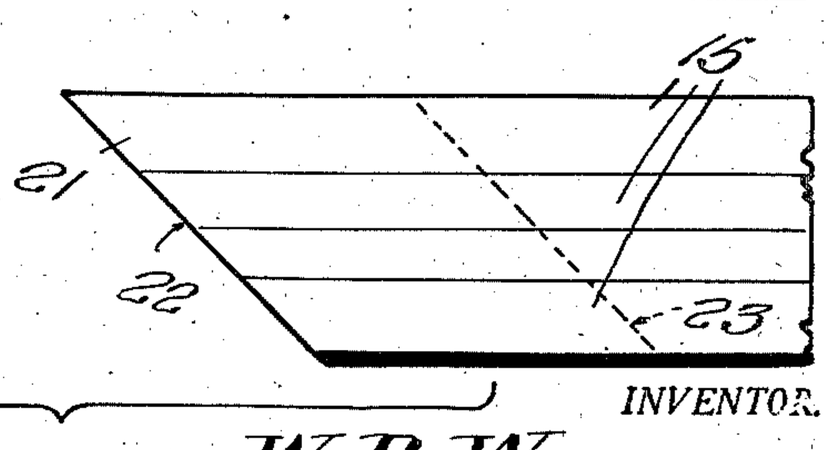



Fig. 4

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# UNITED STATES PATENT OFFICE

2,125,701

## PACKING FOR HYDRAULIC PRESSES

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Application October 22, 1936, Serial No. 107,066

2 Claims. (Cl. 288—1)

This invention relates to an improved packing for a hydraulic press and one object of the invention is to provide a hydraulic press of an improved construction wherein the cylinder has an improved construction which will cause the packing ring to be held tightly about the ram and likelihood of leakage about the ram eliminated.

Another object of the invention is to provide the cylinder with means whereby liquid forced under pressure into the lower portion of the cylinder may have a portion conducted to the pocket or recess in the wall of the cylinder in which the packing ring is seated and thus cause the packing ring to be compressed about the ram. It will thus be seen that as pressure applied under the ram is increased the pressure about the packing ring will also be increased and a tighter seal provided between the packing ring and the ram surrounded thereby.

Another object of the invention is to so form the packing ring that a relatively large surface will be presented for action by the liquid under pressure and to also so form the packing that when it is seated in the ring receiving groove or recess of the cylinder, space to receive the liquid under pressure will be provided.

It is another object of the invention to so form the packing ring that when it is subjected to pressure its portion facing the inner wall of the recess and acted upon by the liquid under pressure will be urged towards upper and lower walls of the recess and forced tightly against the same to provide a tight seal.

Another object of the invention is to provide an improved joint between end portions of the packing ring including means for tightly sealing space between abutting portions of overlapping ends of the ring.

Still another object of the invention resides in providing a construction which is simple and durable, inexpensive to manufacture and one which will be very efficient in use.

With these and numerous other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

The invention is illustrated in the accompanying drawings wherein:

Figure 1 is a sectional view taken vertically through a hydraulic press of the improved construction;

Figure 2 is a top plan view of the packing ring shown in place in Figure 1;

Figure 3 is an enlarged view of ends of the packing showing the same separated and in position to be brought together;

Figure 4 is a view in side elevation of the end portions of the ring shown in Figure 3;

Figure 5 is a perspective view of one end portion of the packing ring;

Figure 6 is a perspective view of the other end portion of the packing ring; and

Figure 7 is a sectional view taken transversely through the packing ring.

The hydraulic press illustrated in Figure 1 is for use when extracting cotton seed oil and for similar pressing operations which require exceedingly heavy pressure such as four or five thousand pounds or more to the square inch and has a cylinder 1 formed of strong metal and defining a chamber 2 into which liquid under pressure is admitted through a pipe 3 so that a ram 4 which is slidably received in the chamber may be forced upwardly. The usual flange 5 is provided about the upper end of the cylinder and there have also been provided the usual columns 6 extending upwardly from the flange with their lower end portions extending through openings 7 in the flange and secured by nuts 8.

A recess 9 is formed in the annular wall of the cylinder to receive the packing ring 10 and special attention is called to the fact that a passage 11 is formed vertically in the cylinder at one side of the chamber 2 and formed with side extensions 12 and 13 which project towards the chamber, the upper side extension opening into the recess or ring receiving groove 9 and the lower extension opening into the lower portion of the chamber which is of enlarged diameter so that a portion of the liquid forced into the chamber through the pipe 3 may enter the passage 11 through the lower side extension 13 and move upwardly through the passage and into the recess 9 through the upper side extension 12. A plug 14 is threaded into the upper end of the passage 11 to close the same and prevent escape of liquid through the upper end of the passage. By providing the passage 11 and its side extensions pressure will be applied about the packing and this pressure will be increased as pressure upon the liquid in the chamber 2 is increased. Therefore as pressure upon the liquid which elevates the ram is increased the packing will be forced more tightly about the ram and leakage between the ram and the packing will be prevented. It should also be noted that even if the ram or portions of the walls of the cylinder engaged thereby become worn a tight joint will

still be formed and reboring of the cylinder or renewal of the ram will not be necessary.

The ring is of a special construction and referring to Figures 3 through 7 it will be seen that it is of a laminated formation and consists of a plurality of strips 15 of leather, rubber composition or any other suitable material which are secured in face to face contact with each other by water proof cement. The outer surface of the packing ring which faces the inner wall of the recess or ring seat 9 is formed with a recess so that it will be V-shaped in cross section and provide space 16 between the inner wall of the recess 9 and the confronting face of the packing ring to receive the liquid which enters the recess through the side extension 12 of the passage 11. By forming the packing ring with a channeled or substantially V-shaped outer face the surface acted upon by the liquid under pressure in the space 16 will be comparatively large and the packing ring will be held very tightly about the ram. It should also be noted that pressure in the space 16 will act upon the upper and lower portions 17 of the packing ring and force these reduced portions towards upper and lower walls of the recess 9 and cause the ring to fit tightly against the same to prevent the liquid from leaking about the packing ring between its upper and lower faces and the faces of the recess engaged thereby. The entire force of the liquid in the space 16 will thus be applied to the channeled face of the packing ring and likelihood of leakage eliminated.

In addition to being formed with a channeled outer face the packing ring is also provided with end portions so constructed that a tight joint will be formed between them when the ring is seated in the recess 9. Referring to Figures 3 through 6 it will be seen that one end portion of the laminated strip from which the ring is formed is cut to provide a tongue 18 having a diagonally extending free end 19 and a diagonally extending shoulder 20 at its inner end. The other end portion of the laminated strip is also cut to form a tongue 21 corresponding in length to the tongue 18 and having a diagonally extending free end 22 and a diagonally extending shoulder 23 at its inner end. By so forming ends of the packing ring the tongues may be disposed in overlapping relation to each other and the diagonally extending free end of each tongue will be disposed in confronting relation to the diagonally extending shoulder of the other end portion of the ring. Since the tongues have sliding engagement with each other the packing ring may conform to the diameter of the ram and fit tightly about it. It is desired to have spaces between the overlapping end portions of the ring sealed and in order to do so there has been provided a shoe or sealing strip 24 formed of thin leather or any other flexible material desired. This sealing strip is cemented or otherwise firmly secured against the outer face of one end portion of the ring and projects from this end of the ring so that it may overlap the other end portion of the ring as shown in Figure 2 when the two ends of the laminated strip forming the ring are brought into engagement with each other to form the ring. The strip is only secured to one end portion of the ring and therefore the ring can expand or contract when necessary but pressure applied by liquid in the space 16 will cause all portions of the strip to be held firmly against the outer face of the ring and a tight joint will be formed between the overlapped end portions of the ring and leakage will be prevented.

The ring can be very easily mounted in the recess or seat 9 by overlapping the tongues at its ends and after smoothing the free end portion of the strip 24 applying this portion of the ring in the recess. It is then merely necessary to crumple a portion of the ring as indicated by dotted lines at 25 and the ring can be moved into position to spring outwardly into the recess 9 when it is released and allowed to expand. I have therefore provided a hydraulic press having a packing ring of an improved construction and also so constructed the cylinder that liquid under pressure may enter the ring receiving seat or recess and encircle the ring to force the ring tightly about the ram of the press.

From the foregoing description of the construction of my improved apparatus, the application of the same to use will be readily understood. It will be seen that I have provided a simple, inexpensive and efficient means for carrying out the objects of the invention.

While I have particularly described the elements best adapted to perform the functions set forth, it is obvious that various changes in form, proportion and in the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the principles of the invention.

Having thus described the invention what is claimed is:

1. A packing ring comprising a laminated structure consisting of strips of flexible material adheringly secured in face to face engagement with each other, portions of the strips at their ends being cut away to provide the same with end tongues and with shoulders at the inner ends of the tongues, said tongues being overlapped and having their free ends disposed in confronting relation to the shoulders, and a sealing strip adheringly secured against the outer side face of one tongue and extending in overlapping relation to the outer side face of the other tongue.

2. A packing ring formed from a laminated strip of flexible material, certain of the laminations having their end portions cut away to form longitudinally extending tongues on the projecting end portions of the other laminations, said tongues being disposed in overlapping relation to each other, the outer side face of said ring being formed with a longitudinally extending recess V-shaped in cross section and providing the ring with upper and lower portions gradually reduced in thickness to feathered edges and defining a channel when the ring is seated in a ring-receiving groove with the recessed face of the ring in confronting relation to the inner wall of the ring-receiving groove, and a sealing strip adheringly secured against the recessed outer side face of one tongue and overlapping the outer side face of the other end portion of the ring.

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