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R. E. HALL

PULP PRESSING HEAD

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Fig. 1.

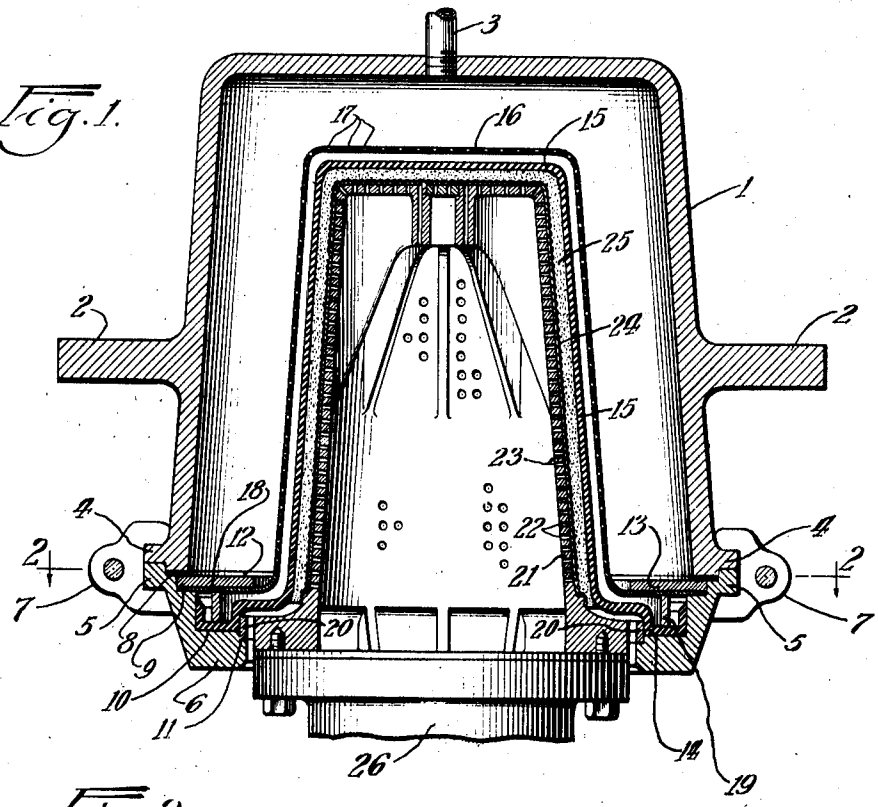
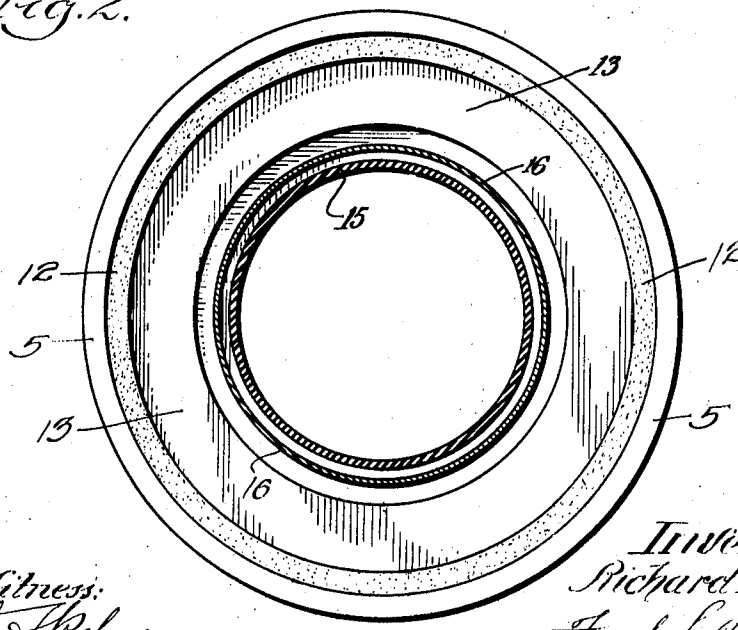


Fig. 2.



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UNITED STATES PATENT OFFICE.

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PULP-PRESSING HEAD.

Application filed January 27, 1926. Serial No. 84,108.

This invention relates to improvements in pulp pressing head, and refers more particularly to a pressing head adapted to express excess water from felted fibrous containers.

In my co-pending application, Serial No. 744,586, filed October 20th, 1924, I have described and illustrated a pressing head comprising a hood, the interior of which has communication with a pressure-medium, and a flexible bag or "hat" in combination with foraminated molds, the pulp being first felted on the foraminated molds and these molds subjected to pressure introduced between the flexible hat and the hood.

The present invention contemplates the provision of means for utilizing foraminous molds and flexible bags of varying sizes and shapes for various size and shaped articles in a standard size head, thus eliminating the necessity of providing heads of different sizes.

Many advantages and objects will be hereinafter more particularly brought out.

In the drawings:

Fig. 1 is a cross sectional view of a pressing head illustrating the present invention.

Fig. 2 is a cross sectional view taken on line 2—2 of Fig. 1.

Referring more in detail to the drawings, 1 designates an outer shell or hood constructed of heavy metal, which may be provided with the braces 2 and pipe 3. This pipe 3 communicates with a suitable source of pressure and vacuum, for instance, hydraulic pressure or the like, as explained in detail in my said co-pending application.

The lower edge of the head 1 may be provided with an outwardly projecting annular flange 4 adapted to abut a similar flange 5 on the removable ring 6, the head 1 and ring 6 being adapted to be locked together by the clamp 7. The ring 6 may be provided with successive shoulders 8, 9, 10 and 11, the function of which will be hereinafter explained. The upper surface of the shoulder 8 may form a seat for the flexible washer 12. The upper surface of shoulder 9 forms a seat for the flat extension 18 of hood 16 on which extension 18 is mounted the annular ring 13. The upper surface and an upwardly projecting side surface of the shoulder 10 forms a seat for the flanged end 14 of the flexible bag 15. The flexible bag 15 may be made of heavy rubber or other elastic material, the shape of which resembles a hat, as shown. A metal hood or hat 16 which may be perforated as shown at 17, is adapted to fit over the flexible hat 15, it being noted that there is provided a clearance space between the two to allow for expansion and contraction of the flexible bag under suction and pressure. The arrangement is such that the pressure medium will pass through the perforations 17 in the hood 16 to press against the bag, while allowing for expansion of the bag against the inner wall of the head 16 after pressure has been released and suction applied. Thus the pressure and suction are applied and released uniformly and the expansion of the bag being limited, there is no danger of stretching the bag out of shape, and the amount of the pressing medium is kept to a minimum.

The flat ring 13 is adapted to encircle the lower outwardly projecting edge 18 of the hood 16, the ring 13 being itself held in place by the washer 8 and inner portion of the wall of the head 1. An annular ring 19 may be positioned between the edge 18 of hood 16 and flanged edge 14 of the flexible hood 15. A ring 20 is seated on the upper surface and upwardly projecting side wall forming shoulder 11, functioning as a retaining ring to hold the lower edge of the flexible hat 15 in place.

A foraminous mold is shown diagrammatically and may comprise a relatively thick metal casting 21 having holes 22 drilled therein. The casting may be covered with a relatively thin sheet of non-rusting metal 23, such as Monel, having holes drilled therein. This perforated sheet 23 may be covered with a fine wire mesh screen 24 adapted to receive the pulp 25. The casting 21 is adapted to have removable engagement with a support shown diagrammatically at 26.

In operation, I may provide a single pressing head for a number of foraminated molds, the foraminated molds being adapted to first have fibres felted thereon, said molds being then inserted in the pressing head to express excess water. The entire operation may be automatic, as explained in said co-pending application.

Describing now the operation of the present invention, assume that fibrous containers are being first felted and then pressed, having a maximum size relative the head 1. The flexible hat 15 and hood 17 will be but

slightly spaced from the inner wall of the head 1, the size of the foraminated mold being relative, of course. The desired quantity have been produced and it is then desirable to felt and press containers of much smaller capacity, and perhaps of slightly different shape. The clamp 7, ring 20 and ring 6 are first removed; then the flexible bag 15 and hood 17 together with rings 19 and 13 and washer 8. A smaller flexible bag 15 and hood 17 which may or may not be of similar shape relative the before-mentioned flexible hat and rigid hood are then inserted, the rings, clamps and other retaining elements being replaced in an obvious manner. It is to be noted that the circumference of the lower edges of hoods 15 and 17 is always uniform, while it is the body portion that is changed in size or shape. The relative size and shape of the foraminated mold of course, also is changed.

Thus, it is possible to substitute pressing elements of varying sizes and shapes in a standard size head without the necessity of providing heads 1 of different sizes and shapes. The heads 1, in addition to being expensive, are very heavy and difficult to manipulate and use. Further, in one embodiment of the invention, the head is adapted to be automatically raised and lowered in a guide, and the advantage of providing a permanently mounted head in combination with pressing elements of various sizes and shapes, is obvious.

I claim as my invention:

1. In combination, a hollow outer shell having pressure and suction communication and an annular flange on its base, a flexible pressing bag and a perforated metal hood adapted to have removable engagement with said shell, the perforated metal hood being interposed between said flexible bag and the shell, and retaining elements adapted to have cooperative locking engagement with the flange on the shell and with the base of the perforated metal hood and flexible bag respectively, including a removably mounted ring having cooperative engagement with the lower ends of the shell, flexible bag and metal hood respectively, and clamping means for locking said ring in position.

2. In combination, a hollow outer shell having pressure and suction communication and an annular flange on its base, a flexible pressing bag and a perforated metal hood adapted to have removable engagement with said shell, the perforated metal hood being interposed between said flexible bag and the shell, retaining elements adapted to have cooperative locking engagement with the flange on the shell and with the base of the perforated metal hood and flexible bag respectively, including a removably mounted shouldered annular ring, said shoulders forming seats for the bases of the shell, metal hood and flexible bag respectively, and clamping means for locking said ring in position.

3. In combination, a hollow outer shell having pressure and suction communication and an annular flange on its base, a flexible pressing bag and a perforated metal hood adapted to have removable engagement with said shell, the perforated metal hood being interposed between said flexible bag and the shell, and retaining elements adapted to have cooperative locking engagement with the flange on the shell and with the base of the perforated metal hood and flexible bag respectively, including a removably mounted ring having cooperative engagement with the lower ends of the shell, flexible bag and metal hood respectively and clamping means for locking said ring in position, the lower end of said flexible bag being flanged, and a spacing member between the base of the metal hood and flanged base of the flexible bag spacing these two elements from each other.

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