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FILTER BAG HEAD

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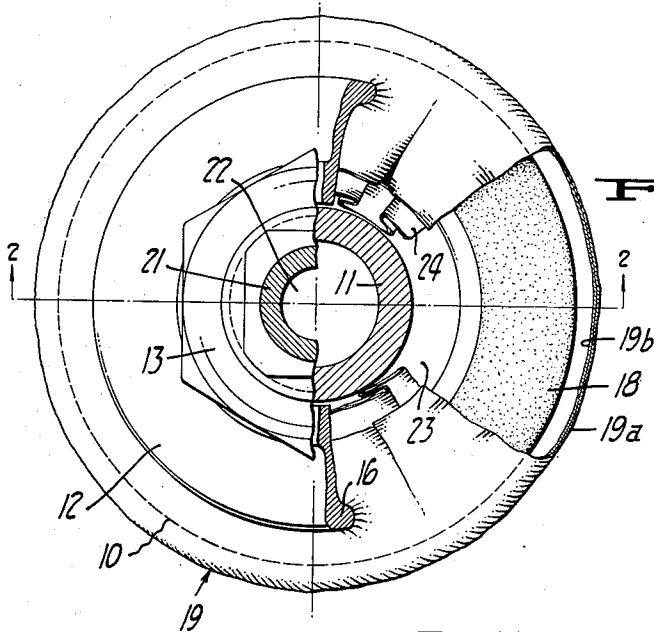


FIG. 1

FIG. 3

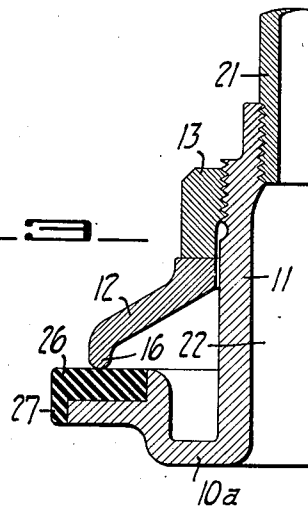
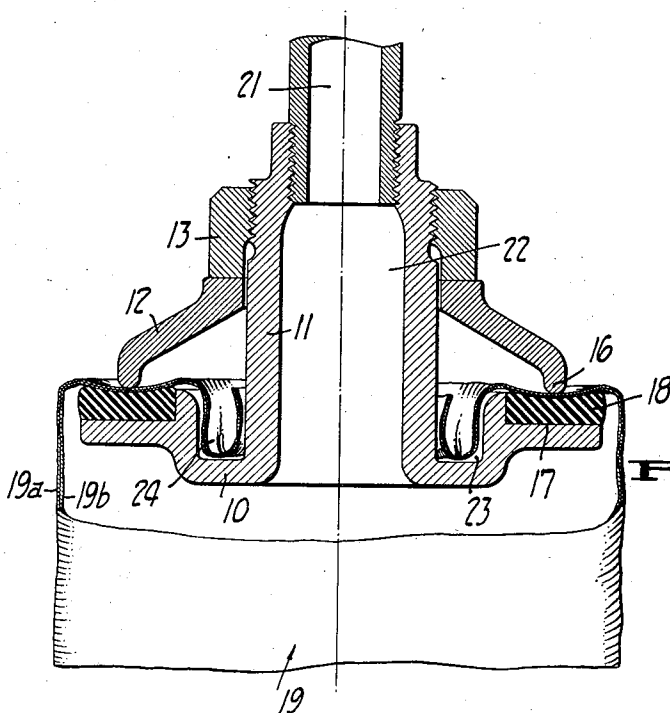


FIG. 2

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FILTER BAG HEAD

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1 Claim. (Cl. 210—190)

This invention relates generally to devices for use with filtering equipment of the bag type, and which form heads to which the filter bags are attached.

5 In filters of the so-called bag type the filter elements are in the form of cloth bags, which have their open ends attached to individual bag heads. These heads in turn are connected with liquid pipes, for communication with the interior of the bags. In cyanidation systems for recovery of precious metals from ores, where the present invention has found useful application, filters of the bag type are frequently employed in the precipitating circuit, whereby the precious 15 metals being precipitated from the cyanide solution are collected in the form of a thin film or layer on the inner surfaces of the bags.

In the past it has been conventional practice to employ annular bag heads, provided with a 20 simple cylindrical periphery. The filter bag is generally attached to the head by means of a cord which is wrapped about the end of the bag and tied. In cyanide precipitating systems such simple bag heads have been used for many years, 25 but are known to be subject to certain disadvantages. The use of a cord as described above, involves considerable time and trouble in removing and attaching new bags. Unless the attachment to the head is carefully and properly made, some 30 leakage will result, with loss of precious metal values in the effluent. It will be evident that in cyanide precipitating systems such loss of precious metal values must be reduced to a minimum. Some attempts have been made to use 35 metal clamping bands in place of the cords. However, such clamping devices have not proven practical, since they require too much time for their application and removal. In addition to the fact that they do not always afford a proper seal.

40 It is an object of the present invention to provide an improved form of bag head, suitable for use in cyanide precipitating systems, which will avoid the necessity of using the conventional tie cords or like troublesome attaching means. 45 The present invention is characterized by the fact that clamping means is incorporated as a part of the bag head structure. This clamping means engages an inturned margin of the end of the filter bag, instead of causing the bag to 50 engage a substantially cylindrical surface, as in the past.

Further objects of the invention will appear from the following description in which the preferred embodiment of the invention has been

set forth in detail in conjunction with the accompanying drawing.

Referring to the drawing:

Fig. 1 is a plan view, partly in cross section, illustrating a bag head incorporating the present invention. 55

Fig. 2 is a cross sectional view taken along the line 2—2 of Fig. 1, illustrating the manner in which the head can be clamped upon one end of a filter bag. 10

Fig. 3 is a cross sectional detail, illustrating a possible modification.

The bag head as illustrated in the drawing makes use of a main body or disc 10, which is circular in contour, and which has a stud 11 extending centrally from one side of the same. 15 Surrounding the stud 11, there is an annular clamping member 12. The stud 11 is threaded to receive the clamping nut 13, whereby the clamping member 12 can be forced down upon 20 the upper face of disc 10. Opposed annular clamping faces 16 and 17 are formed upon members 10 and 12, and in the modifications shown in Figs. 1 and 2, one face is formed of resilient material to conform and accommodate themselves 25 to irregularities or folds in the filter bag. Thus the upper face of the disc 10 is shown provided with a recess, to receive the ring 18 of resilient material like vulcanized rubber.

A cloth filter bag 19 such as may be used with 30 the bag head described above, may be made of any suitable membrane, although in cyanide precipitating systems it is customary practice to use an outer canvas bag 19a, provided with an inner cloth liner 19b. As representative of a conventional filter installation the upper end of the 35 stud 11 is shown removably attached to the liquid pipe 21, and this pipe communicates with the interior of the filter bag 19, through the passage 22.

The body or disc 10 is also formed to be provided with an annular recess 23 which is of a depth greater than its width. As will be presently explained, this recess serves as means to frictionally retain a gathered end portion 24 of the 40 filter bag.

Use of the bag head described above can be briefly described as follows: To apply a bag to the head, nut 13 and also the clamping member 12, are removed from the stud 11. The disc 10 is now inserted in the open end of the filter bag 50 (which is usually in moist or wet condition) and the end margin of the bag is then gathered about the base of the stud 11 and tucked into recess 23, somewhat as illustrated in Fig. 2. Clamping member 12 is now slipped over the stud 11 to 55

engage the inturned margin of the bag as shown in Fig. 2, and then nut 13 is applied, and turned down with a sufficient degree of tightness to tightly grip the inturned margin of the bag between the gripping faces 16 and 17. There will be some folds or gathers of cloth between the gripping faces 16 and 17. However, at least one gripping face is resilient and may give, whereby an adequate seal is assured regardless of such irregularities. The recess 23 affords a frictional retention of the cloth and makes it possible to dispense with the use of means, such as a cord or rubber band, for temporarily retaining the end of the bag in proper position on disc 10 until gripped by clamping member 12.

The modification of Fig. 3 is the same as Figs. 1 and 2 except that the rubber ring 26 has been altered to provide an integral annular flange or skirt 27 which covers the outer peripheral edge of the body or disc 10a. The purpose of this skirt is to provide a resilient cushion for the edge of disc 10a, thus preventing damage to the filter cloth by blows or impacts such as might cause the cloth to be cut or mutilated, if such protection were not provided.

It will be evident that a bag head such as described lends itself particularly well to cyanidation systems, where a filter of the pressure bag type is being used for the precipitation of precious metals from the cyanide solution. In such instances the filter heads are from time to time detached with respect to the liquid pipes 21, for the purpose of stripping out the accumulated precipitate, after which the head and a cleaned

or new bag are again introduced into the filter and attached to its individual liquid supply pipe 21. As compared with the labor and time required to attach bags by means of a tie cord as previously described, the assembly of my head is a simple and rapid operation.

The attachment afforded to the filter bag is sufficiently secure that the operating pressures can be safely increased beyond values previously employed when the bags were tied with cord or twine. The ability to withstand higher operating pressures is desirable in that it enables an increase in rate of filtration, and permits a longer operating cycle before a filter bag is stripped.

I claim:

In a device of the character described for use with cloth filter bags, a disc like member having a centrally located stud extending from the upper side of the same, there being a liquid passage through the disc and the stud, an annular clamping member having an opening to receive the stud, an annular area on the upper face of the disc and an annular area on the lower face of the clamping member, said areas forming opposed clamping surfaces adapted to grip and seal upon the inturned upper edge of a cloth filter bag, and an annular recess formed in said disc and disposed about the lower end of the stud, said recess having a depth substantially greater than its width and serving to frictionally retain the gathered end portion of the bag while applying said clamping member.

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