Dec. 12, 1950 R. R. COLLINS 2,534,161

FILTER DRUM SCREEN FASTENING MEANS

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Fig. 1.

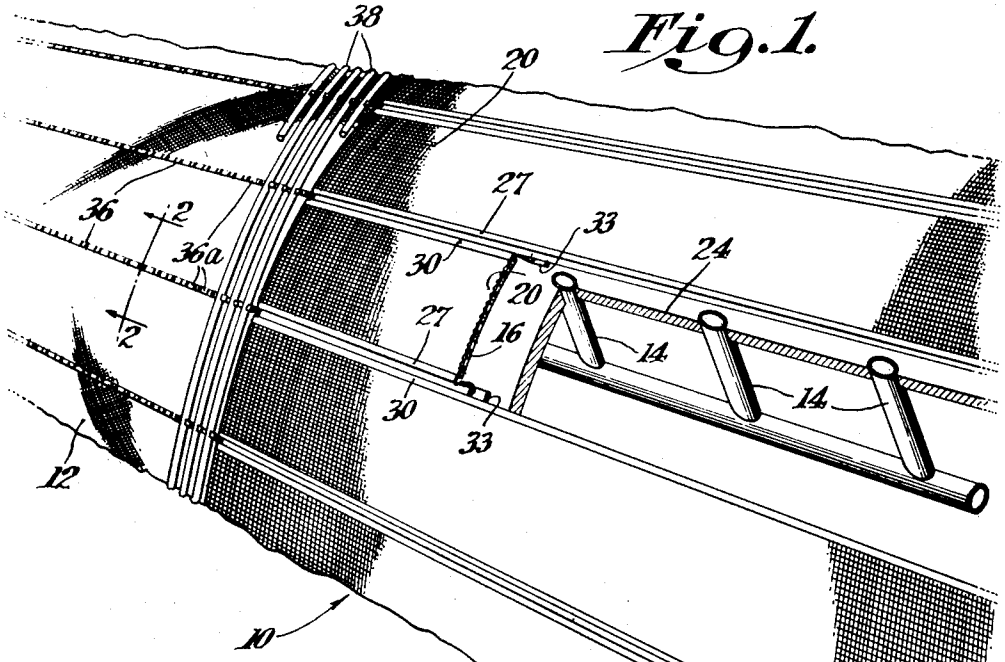
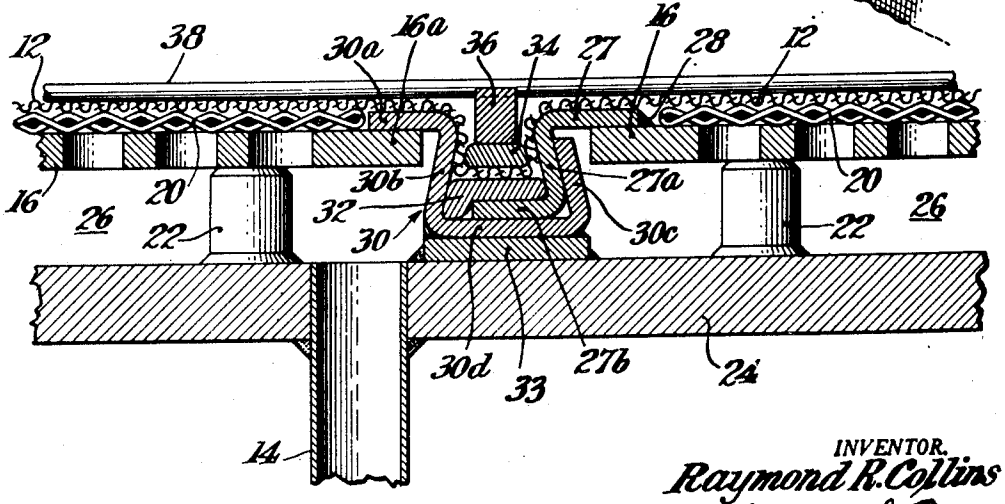


Fig. 2.



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FILTER DRUM SCREEN FASTENING MEANS

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2 Claims. (Cl. 210—202)

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This invention relates to improvements in rotary drum filters.

Filters of this type which have sectional filter chambers are usually provided with detachable panel members which are adapted to support the external filter cloth. It is known that the cloth must be removed at relatively short intervals due to deterioration and wear and ordinarily the panel members are seldom removed and only then when it is necessary to have access to the liquid ports which carry the filtrate from the space between the drum and the panel. In prior practice either a solid partition strip has been used or one half of the partition strip has been left floating, restrained only by clips and positioning studs. In the first instance the removal of the backing plate requires removal of the partition strip. In the second instance the floating half of the partition strip can be removed by pulling out all of the caulking, but the tolerances required for this type of construction result in uneven spacing of the floating half of the partition strip in reference to the fixed half and excessive amounts of caulking are required to fill the space between the two halves of the partition strip. Inequalities of alignment of the partition strips frequently exist.

The principal object of my invention is to provide an improved means for securing filter sections to a rotary filter drum whereby quicker and easier attachment and detachment of the cloth can be accomplished without the loosening of the filter panel members.

A further object of my invention is to provide an improved form of panel member for a rotary drum type filter in which one of the securing elements is permanently attached to the filter drum and the other element is permanently attached to the panel member whereby the panel members may be more quickly and positively sealed in position and whereby a fixed spacing of the filter medium from the drum is assured for a uniform surface for the filter cloth.

A more specific object of the invention is to provide a die formed sheet metal strip of U shape which may be permanently welded to the drum shell to serve as a division strip and a Z shaped member also of die formed sheet metal integrally secured to the perforated plate panel member, the sides of the Z member and the U-shaped member cooperating to fixedly position the panel with respect to the drum.

Further objects and advantages of the invention will appear from the following description of a preferred form of embodiment thereof taken in

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connection with the drawings attached which are illustrative thereof and in which:

Figure 1 is a partial perspective view with parts in section of a rotary filter drum.

Figure 2 is an enlarged cross section taken on the line 2—2 of Figure 1 showing the attaching details for the filter panel.

In accordance with the preferred form of embodiment of my invention, the drum generally indicated at 10 is adapted to be mounted in a suitable housing, or vat not shown. In the usual manner, the material to be filtered is subjected either to a pressure or vacuum in such a manner that the filter cloth indicated at 12 will serve to separate the filter cake from the filtrate. As shown, the filtrate is conducted away from the filter surface by suitable conduits 14.

It is usual practice in a filter of this type, to provide individual filter cloth backing panels generally indicated at 16 which may extend throughout the length of the drum. A panel may consist of a perforated plate covered with a coarse wire backing screen 20 which thus serves as the support for the filter cloth 12. These panels 16, each of which is arcuate in form, are conveniently supported by stud blocks or supporting buttons 22 projecting from the drum shell 24. This arrangement serves to form a filtrate chamber 26 which is subject to drainage by the conduits 14.

In order to secure the panels 16 to the drum shell 24 and to each other along the longitudinal edges, I prefer to use the structure shown in Figure 2. Each panel 16 has a securing strip 27 on one side, the other side 16*a* being planar. The securing strip 27 is conveniently of die formed metal and of generally Z shape. The outer flange is welded as at 28 to the panel 16 and the radial wall 27*a* and base 27*b* of the Z member extend inwardly of the panel member 16. Inasmuch as the flange portion of the Z member 27 overlies the edge of the panel member 16, the panel member will be effectively held in position whether or not the parts are integrated by welding.

Mounted on the drum shell 24 is a generally U-shaped division strip 30, such strip also being preferably of die formed metal. It has a laterally outwardly projecting lip or flange 30*a*, and radially extending side walls 30*b* and 30*c* extending from the base 30*d*. For manufacturing reasons, this division strip is preferably mounted on shim members 33 which in turn are secured to the drum shell 24 as by welding. The division strip and shims make a sealed edge for the filtrate chamber 26.

Mounting of the panel 16 on the drum is ac-

complished by extending the planar end 16*a* of the panel under the projecting lip or flange 30*a* on the division strip 30. The other end of the panel having the securing strip 27 is then moved into place with the side wall 27*a* closely engaging the radial wall 30*c* on the division strip. At the same time, the base 27*b* of the securing strip engages and rests on the base 30*d* of the division strip to afford a predetermined position with respect to the drum shell 24.

Sealing of the parts is accomplished by the use of caulking 32 which is generally of a soft metal such as lead. As the side walls 27*a* and 30*c* are slightly inclined in a dovetailed manner, the seal will permanently hold the panels in a fixed position.

The cloth 12 may then be wrapped over the entire drum surface with suitable folds extending into the remainder of the groove of the division strip. This cloth may likewise be held by caulking such as lead as shown at 34. A longitudinal pitch lock bar 36 having grooves 36*a* to receive and space the ultimate wire binding 38 is then applied.

It will be appreciated that the strips 27 and 30 are suitably proportioned to provide proper clearance for the cloth and a minimum of clearance for the caulking. It will also be seen that any panel may be separately removed if desired and that the removal of the cloth does not release the panels. This is of importance for the filter cloth may be replaced a number of times without requiring the removal of a panel.

Although the end construction of the panel 16 is not shown it may also have a Z shape member such as 27 which will engage a suitable base member such as the drum shell 24 and be locked to the edge of the filter drum as by caulking.

It will be appreciated that the filter panels may thus be removed and replaced without the need of hold down clips, securing bolts, or welding and the filter may thus be easily serviced in the field without special equipment.

While I have shown and described a preferred form of embodiment of my invention I am aware that modifications may be made thereto within the scope and spirit of the description herein and of the claims appended hereinafter.

I claim:

1. In a drum type continuous filter of the class described, having a drum shell, a plurality of

support buttons extending above and mounted on the drum shell, a series of substantially U-shaped division strips extending longitudinally of the shell and integrally secured thereto, the side walls of the divisions strips being narrower at the open end than at the base to form a substantially dovetail recess, one of the side walls of the division strip being planar in a plane substantially perpendicular to the drum shell, the other side wall of the division strip being provided with a laterally projecting flange substantially parallel with the drum shell and approximately spaced from the drum shell the height of the support buttons, rigid arcuate filter cloth backing panels extending between each of the division strips, a Z-shaped member extending along one edge of each of said panels and having a flanged portion overlying the edge of the panel, the base and side of the Z-shaped member being closely embraced against the base and the planar wall of the division strip, said panels being uniformly spaced from the drum shell by the support buttons, and of a width to be held under the fixed flange of the division strip and the flanged portion of the removable Z-shaped member, a caulking material engaging the free edge of the Z-shaped member and the lower portion of the dovetail recess in the division strip, a filter cloth extending over said panels and into said dovetail recess engaging the outer side of said caulking material, and separate caulking material on top of said filter cloth and within the narrow opening of said dovetail recess to independently retain the filter cloth on said filter.

2. A filter of the class described in claim 1 in which the Z-shaped member is integrally secured along its overlapping edge to the panel member, the base of the Z-shaped member being narrower than the opening in the division strip whereby the panel member may be inserted in position without bending.

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