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CASING FOR PUMPS

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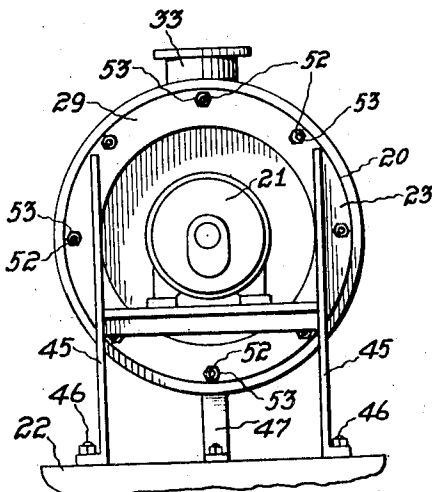


FIG-2.

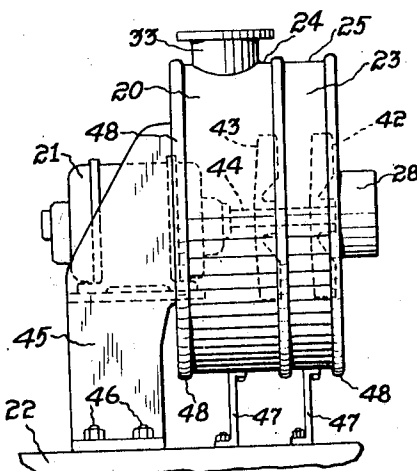


FIG-1.

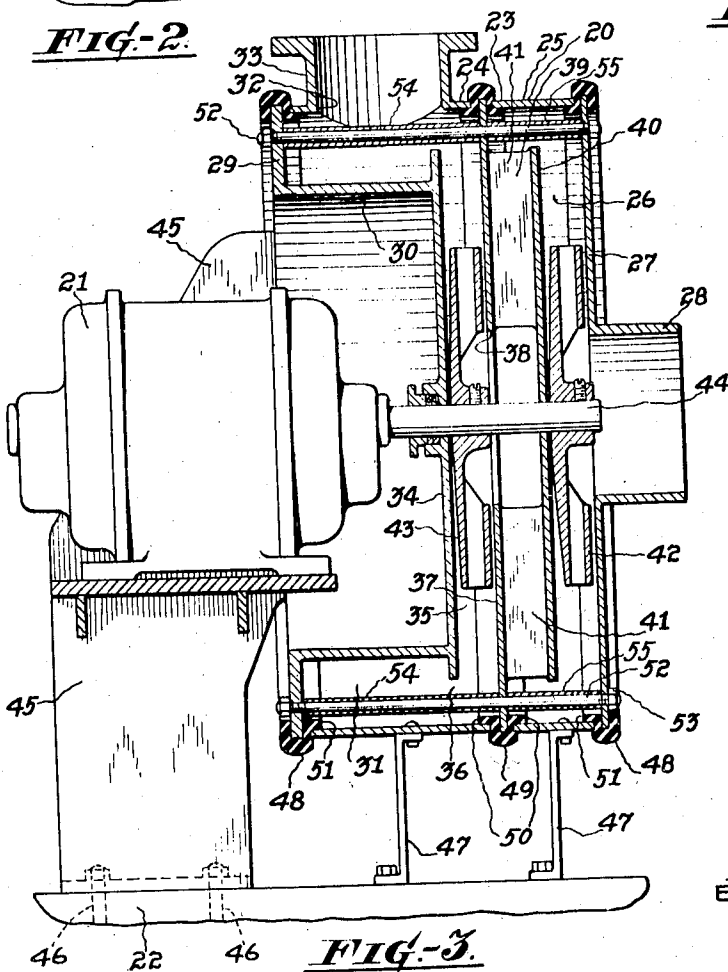


FIG-3.

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CASING FOR PUMPS

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2 Claims. (Cl. 230—130)

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This invention relates to pumps, and more particularly to a casing for pumps of the centrifugal blower type.

One object of the invention is to simplify the construction and minimize the cost of production of casings for pumps of this type.

Another object is to enable the casing to be expeditiously disassembled and reassembled for purposes of inspection and repairs.

A further object is to effect adequate fluid-tight joints between the casing parts.

Other objects will be in part obvious and in part pointed out hereinafter.

In the drawings accompanying this specification and in which similar reference numerals refer to similar parts,

Figure 1 is a side elevation of a centrifugal blower constructed in accordance with the practice of the invention,

Figure 2 is an end view, in elevation, of the blower, and

Figure 3 is a longitudinal elevation, partly in section, of the blower.

Referring more particularly to the drawings, 20 designates the blower in its entirety, 21 a motor for driving the blower, and 22 a foundation upon which the assembly rests.

The blower 20, constructed in accordance with the practice of the invention, is shown for the sake of illustration as being of the multi-stage type. Its casing 23 consists of a pair of tubular sections 24 and 25 shown as being of the same diameter and arranged in end-to-end relation with respect to each other.

The sections 24 and 25 are of different lengths, the section 25 being shorter than the section 24 and its interior constitutes the primary stage pumping chamber 26 which is closed at its outer end by a cover 27 having an inlet conduit 28 for the admission of fluid medium into the blower.

At the opposite end of the casing is a cover plate 29 having a cylindrical portion 30 that extends into the casing section 24 and cooperates therewith to define an annular discharge chamber 31 into which the fluid medium pumped by the blower is finally discharged and from whence it passes through an outlet opening 32 and a discharge conduit 33. The inner end of the cylindrical portion 30 is closed by a plate 34 that forms a side wall for the secondary pumping chamber 35 which communicates with the chamber 31 through an annular space 36 between the periphery of the plate 34 and the inner surface of the casing section 24.

The pumping chambers 26 and 35 are separated

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by a diaphragm 37 in the form of a plate having its marginal portions interposed between the opposed ends of the casing sections 24 and 25. The diaphragm 37 has a central opening 38 to afford communication between the pumping chamber 35 and an interstage passage 39 leading from the pumping chamber 26 and defined by a circular plate 40 forming a side wall for the pumping chamber 26 and attached to the diaphragm 37 by guide vanes 41 in the interstage passage 39.

Within the pumping chambers 26 and 35 are impellers 42 and 43, respectively, which are mounted upon and suitably secured to the shaft 44 of the motor 21. The motor extends part way into the tubular portion 30, to maintain the length of the overhanging portion of the shaft 44 to a minimum, and is supported by a bracket 45 which supports the blower and rests upon and is secured to the foundation 22 by bolts 46.

Additional support means are provided for the blower in the form of braces 47 which are interposed between the casing sections and the foundation 22 and may be suitably secured to these parts in any well known manner.

In the form of the invention shown, the casing sections 24 and 25 are of cylindrical shape and have walls of uniform thickness throughout their lengths. The diaphragm 37 and the covers 27 and 29 are of the same diameters as the sections 24 and 25, and their marginal portions are encased by sealing rings 48 and 49, respectively, which are preferably constructed of rubber and are of U-shaped cross-section, the leg portions of which bear against the adjacent portions of the sides of the covers and the diaphragm and engage the end surfaces of the casing sections 24 and 25 to form fluid-tight joints at these points.

At the inner margins of the legs of the sealing ring 49 are oppositely directed flanges 50 that bear against the inner surfaces of the casing sections 24 and 25 to centralize said sections with respect to each other. Similarly, at the inner margins of the rings 48 and on the sides thereof confronting the ends of the casing are flanges 51 that bear against the inner surfaces of the casing sections to hold the covers 27 and 29 in concentric relation with the casing.

The casing sections, the covers 27—29 and the diaphragm 37 are held firmly in their assembled positions with respect to each other by bolts 52 arranged in a circle near the outer portion of the casing. The bolts have their ends threaded for the accommodation of nuts 53 that bear against the outer surfaces of the covers 27 and

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29 for pressing the sealing rings into intimate sealing engagement with the casing parts, and spacers 54 and 55, on the bolts 52, are respectively placed between the diaphragm 37 and the covers 29 and 27 to limit the degree of pressure that may be applied to the sealing rings and to determine the widths of the pumping chambers 26 and 35.

I claim:

1. A casing for pumps, comprising hollow casing sections arranged in end-to-end fashion, covers for the ends of the casing, a diaphragm having its marginal portion lying between the opposed ends of the casing sections to divide the interior of the casing into pumping chambers, sealing members to encircle the covers and the diaphragm and having portions covering the marginal portions of the side surfaces of the diaphragm and the covers to seat against the ends of the casing sections, and adjustable means for pressing the ends of the casing sections in sealing engagement with the sealing members.

2. A casing for pumps, comprising hollow casing sections arranged in end-to-end fashion, covers for the ends of the casing, a diaphragm between the opposed ends of the casing sections to divide the interior of the casing into pumping chambers,

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endless elastic sealing members of U-shaped cross-section encasing the outer marginal portions of the covers and the diaphragm and engaging the ends of the casing sections, flanges on the sealing members to engage the inner surfaces of the casing sections for holding the covers and the diaphragm in concentric relation with the casing sections, bolts acting against the covers for pressing the sealing members into fluid-tight engagement with the ends of the casing sections and with the covers and the diaphragm, and spacers between the diaphragm and the covers to determine the width of the pumping chambers.

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