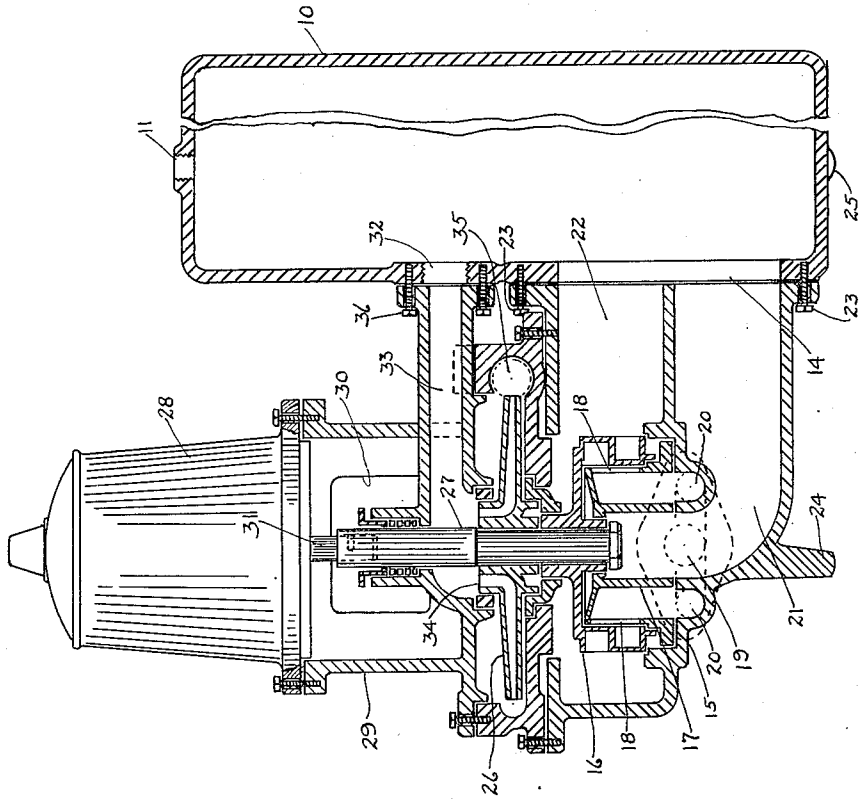
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VACUUM AND BOILER FEED PUMP

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VACUUM AND BOILER-FEED PUMP.

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This invention relates to improvements in vacuum and boiler feed pumps for use in steam heating sustems and for other purposes where liquid and gases are simultaneously handled, and one of the objects of the invention is to construct and arrange the various parts so that the pump bearings, flexible couplings and subbase are eliminated, and at the same time produce a compact, sturdy unit of pleasing design, at a considerable saving in weight and cost of manufacture and requiring a minimum amount of floor space for installation.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in substantially the combination and arrangement of the several parts as hereinafter more fully described and claimed and as shown in the accompanying drawing illustrating this invention, and in which drawing;

The figure is a view partly in vertical section and partly in elevation of a pumping apparatus of this character embodying the features of this invention.

Referring more particularly to the drawing the numeral 10 designates generally a receiver or container which is provided with an air outlet 11.

The receiver is provided with an opening 14 adjacent its bottom and this opening is preferably of a size to form both an inlet and an outlet for the receiver.

The numeral 15 designates generally a pump casing in which is arranged a suction pump for handling the condensates and air and delivering them into the receiver.

Any suitable form of suction pump may be used in connection with this apparatus, but in the present exemplification of this invention, and for the purpose of a clear understanding of the operation of the same, the drawings illustrate a suction pump similar to that disclosed in United States Patent 1,390,390, issued September 13, 1921.

The pump consists essentially of the casing 15, within which is arranged a rotor 16 adapted to co-operate with a stationary member 17 having openings 18. The pump casing is provided with an inlet opening 19 constituting a suction inlet for the condensates and air and leads to an annular chamber 20, which connects through member 17 to openings 18. In the member 15 is a passageway 21, which latter is connected with the opening 14 of the receiver 10 so that the operating water or liquid for the pump will be supplied to the pump through the passage 21 at a low elevation. When the rotor 16 is rotated suction will be created so as to draw the condensates and air in through the suction inlet 19, the operating water being supplied through the passage 21. The air and water drawn in by the rotor will be discharged into the receiver or separator 10 through a passage 22 and the opening 14.

The passages 21 and 22 in the pump casing may be surrounded by a flange 23 which abuts a surface on the wall of the receiver 10, and the pump is fastened to the receiver by means of suitable fastening bolts passing through the flange.

Depending from the pump casing is a short leg 24 and projections or formations 25 extend from the bottom of the receiver 10. This leg 24 and formations 25 constitute a support for the receiver and the pump casing.

Arranged above the suction pump is another pump 26 preferably of centrifugal type, and the pump 26 and the rotor 16 are superposed and are suspended from a vertical shaft 27. A motor 28 is supported by the pump casing preferably through the medium of a formation 29 which may be in the form of uprights or of a circular flange projecting above the casing. If in the form of a flange, one or more openings 30 may be provided in the flange to permit access to some of the parts.

The rotors may be connected with any suitable power mechanism for operating them, but preferably by telescoping or otherwise connecting the vertical shaft 27 with the shaft 31 of the motor 28, thereby rendering it possible to readily remove the motor without dismantling the remaining parts of the mechanism.

Leading from the receiver 10 is an opening 32 arranged preferably at a comparatively high elevation and through which opening excess water or liquid in the receiver 10 is adapted to flow.

Communicating with this opening 32 is a pipe or conduit 33 which leads to the suction eye 34 of the centrifugal pump 26, and serves as a means whereby the excess liquid will be conveyed to the pump 26 to be discharged through a shiftable discharge outlet

35 to a boiler or to any other desired point of use, when the liquid in the receiver 10 reaches a predetermined high level.

The conduit 33 may be provided with a flange 36 extending thereabout and by means of which flange the end of the conduit may be secured to a surface on the wall of the receiver.

With this improved construction it will be manifest that pump bearings, a flexible coupling and a subbase for the apparatus will be dispensed with and a compact, sturdy unit of a comparatively light weight will be produced and the pump casing and separating tank or receiver will constitute the support therefor.

What is claimed as new is:—

1. As a unitary structure a pump casing, a suction pump of a liquid using type therein, a boiler feed pump also in the casing, each of said pumps embodying a rotor, a liquid receiver to which the said pumps are connected, the suction pump delivering to the receiver and the feed pump removing the contents of the receiver, a vertical shaft from which each of said rotors is suspended, and a motor mounted upon the said casing for rotating the shaft, the suction rotor receiving its supply of operating liquid from a point in proximity to the bottom of the said receiver.

2. As a unitary structure, a pump casing, a vacuum pump therein, a boiler feed pump also in the casing, each of said pumps embodying a rotor, a liquid receiver with which the pumps have communication and to which receiver the said pumps are attached, the suction pump delivering to the receiver and the feed pump removing the contents of the receiver, a vertical shaft from which each of said rotors is suspended, and a motor mounted upon the pump casing for rotating the shaft, the pump casing and the said receiver constituting the sole support for the structure.

3. As a unitary structure, a pump casing, a suction pump therein, a pressure pump also in said casing, each of said pumps embodying a rotor, a liquid receiver with which the pumps have communication and to which receiver the pumps are attached, the suction pump delivering to the receiver and the feed pump removing the contents of the receiver, a vertical shaft from which each of said rotors is suspended, and means for rotating the shaft, the pump casing and the said receiver constituting the sole support for the structure.

In testimony whereof I have signed my name to this specification, on this 15th day of July, A. D. 1927.

BENJAMIN SKIDMORE, JR.