No. 721,324. PATENTED FEB. 24, 1903.

E. B. RAYNER.

DIAPHRAGM FOR PUMPS, AIR BRAKES, COMPRESSORS, OR THE LIKE.

APPLICATION FILED MAY 2, 1902.

NO MODEL.

Fig. 1.

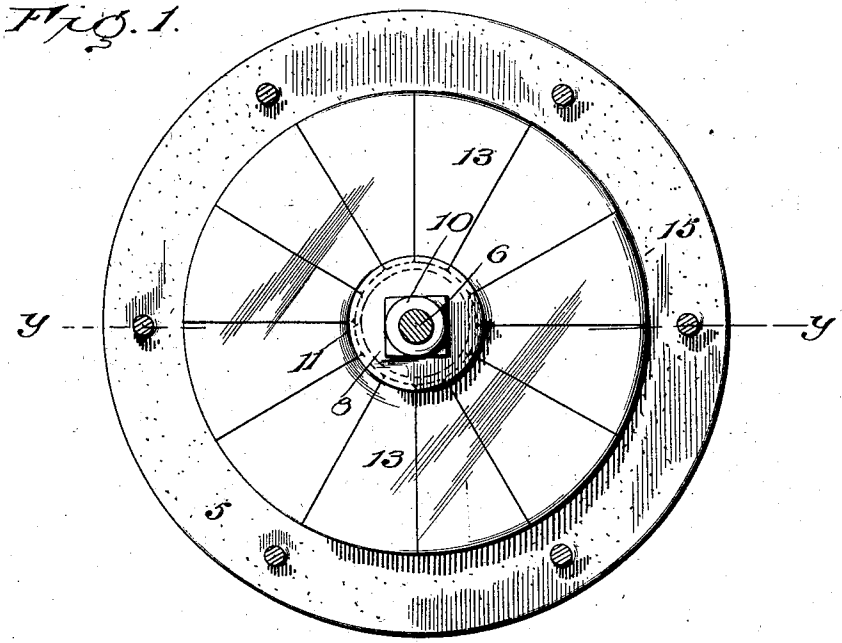
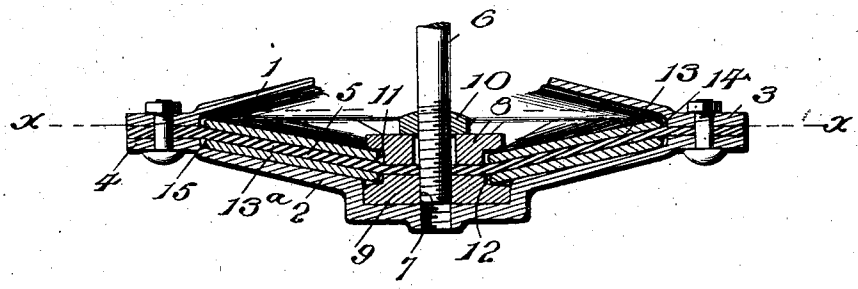


Fig. 2.



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UNITED STATES PATENT OFFICE.

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DIAPHRAGM FOR PUMPS, AIR-BRAKES, COMPRESSORS, OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 721,324, dated February 24, 1903.

Application filed May 2, 1902. Serial No. 105,699. (No model.)

To all whom it may concern:

Be it known that I, EDWIN B. RAYNER, a citizen of the United States, residing at Piqua, in the county of Miami and State of Ohio, have invented certain new and useful Improvements for Diaphragms for Pumps, Air-Brakes, Compressors, or the Like; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has relation to means for armoring or reinforcing distensible impervious diaphragms for pumps, compressors, air-brakes, regulators, and the like, as will appear more fully hereinafter, reference being had to the following description and the drawings hereto attached, in which—

Figure 1 is a plan view of a diaphragm and the lower portion of a casing about on the line X X of Fig. 2, showing the application of the invention. Fig. 2 is a transverse section about on the line Y Y of Fig. 1.

Corresponding and like parts are referred to in the following description and indicated in both views of the drawings by the same reference characters.

The casing inclosing the diaphragm comprises the parts 1 and 2, having outer flanges 3 and 4, between which the outer portion of the diaphragm 5 is held, the parts 1 and 2 being secured by bolts passing through registering openings in the rims 3 and 4. The rod 6 has its end portion threaded, as shown at 7, and is provided with plates 8 and 9 and a nut 10, the plate 9 being threaded upon the rod and the plate 8 being loose and confined between the nut 10 and plate 9. The plates 8 and 9 have an inner peripheral portion cut away to form shoulders 11 and 12, and the middle portion of the diaphragm 5 is clamped between the said plates.

The diaphragm 5 may be of any distensible impervious material commonly employed for this purpose.

Plates 13 and 13^a are arranged upon opposite sides of the diaphragm 5 and are of sector shape and are preferably of metal, so as to protect, reinforce, and constitute an armor for the distensible diaphragm 5. The plates 13 have their inner ends confined between the outer portion of the plate 8 and the diaphragm 5 and adapted to abut against the shoulder 11 and have their outer ends confined between said diaphragm and the outer portion of the part 1 adjacent to the shoulder 14, formed at the inner edge of the rim 3, against which the outer ends of the plates are adapted to abut. The plates 13^a are similarly confined at their ends, and their inner ends are adapted to abut against the shoulder 12 of the plate 9 and their outer ends to abut against the shoulder 15 at the inner edge of the rim 4. In order to allow for the movements of the plates 13 and 13^a as the diaphragm pulsates, the plates 13 must be of a size to about touch at their longitudinal edges when said plates and the shoulders 11 and 14 and 12 and 15 are in planes parallel with a plane passing through the confined rim portion of the diaphragm. The length of the sector-shaped plates 13 and 13^a must about equal the distance between the shoulders 11 and 14 and 12 and 15 when in horizontal alinement, this being necessary to allow for the free movements of the diaphragm.

Having thus described the invention, what is claimed as new is—

1. In combination with the distensible diaphragm of a pump, compressor or the like, a reinforcement applied to and covering a side thereof and consisting of a series of sector-shaped plates, substantially as set forth.

2. In combination with the distensible diaphragm of a pump, compressor or the like, a reinforcement applied to and covering a side thereof and consisting of a series of sector-shaped plates, and means for confining the said sector-shaped plates, substantially as described.

3. In combination with the distensible diaphragm of a pump, compressor or the like and confining means at the center and outer edge of the diaphragm, a reinforcement applied to and covering each side of the diaphragm and composed of sector-shaped plates having their ends loosely secured by the said confining means, substantially as specified.

4. In combination, a casing having inner shoulders, a rod, plates secured to the rod

and having inner peripheral portions cut away to form shoulders, a diaphragm confined between the said plates and the parts of the shoulders, and a reinforcement applied to each side of the diaphragm and consisting of sector-shaped plates having their ends confined between the diaphragm and the proximal parts of the plates and adapted to abut against the shoulders of the respective parts, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN B. RAYNER. [L. S.]

Witnesses:

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WM. C. JOHNSTON.