

No. 861,418.

PATENTED JULY 30, 1907.

M. S. WRIGHT.

APPARATUS FOR MAKING PNEUMATIC DIAPHRAGMS.

APPLICATION FILED DEC. 12, 1904.

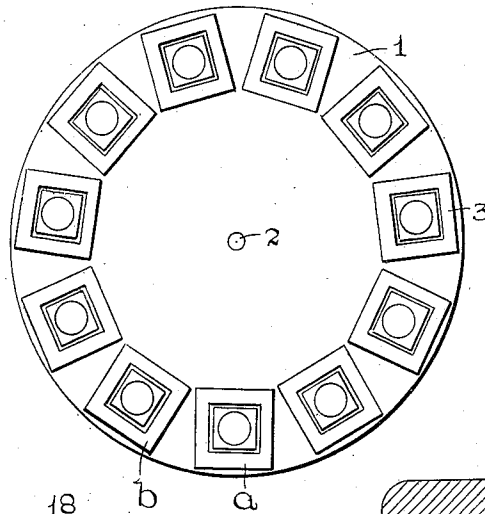


Fig. 1.

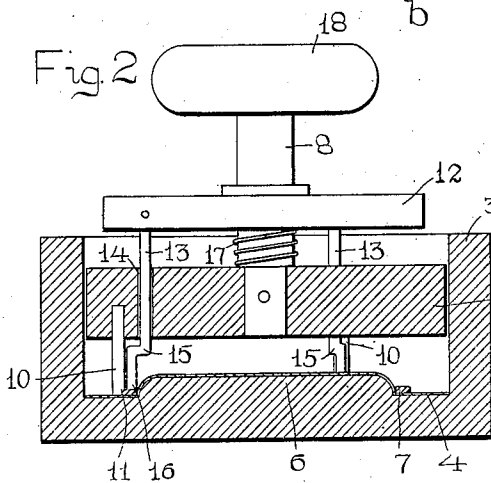


Fig. 2.

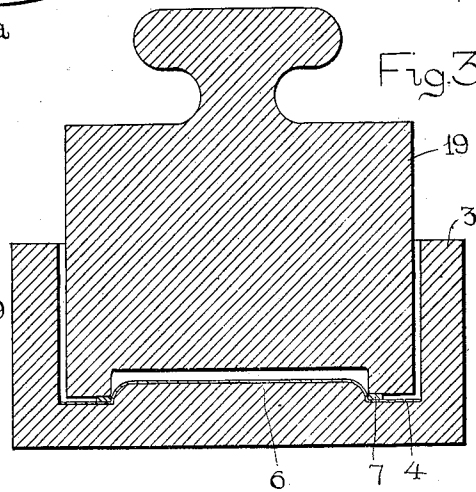


Fig. 3.

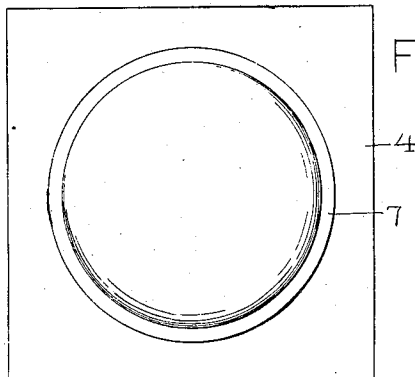


Fig. 4.

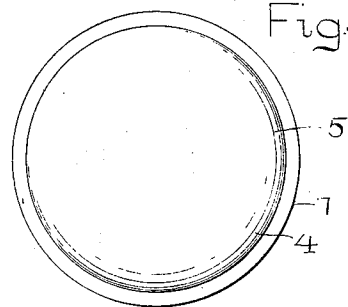


Fig. 5.

Witnesses

Roy D. Tolman.
Envelope Comberbach.

Inventor
Morris S. Wright
By Rufus B. Towles
Attorney

UNITED STATES PATENT OFFICE.

MORRIS S. WRIGHT, OF WORCESTER, MASSACHUSETTS.

APPARATUS FOR MAKING PNEUMATIC DIAPHRAGMS.

No. 861,418.

Specification of Letters Patent.

Patented July 30, 1907.

Application filed December 12, 1904. Serial No. 236,486.

To all whom it may concern:

Be it known that I, MORRIS S. WRIGHT, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Apparatus for Making Pneumatic Diaphragms, of which the following is a specification, accompanied by drawings forming a part of the same, in which—

Figure 1 is a plan view showing the mounting of my apparatus. Fig. 2 is a view partly in section showing the method of applying the gasket to the diaphragm. Fig. 3 is a sectional view showing the method of holding the gasket upon the diaphragm. Fig. 4 is a plan view of the diaphragm after being removed from my apparatus, and Fig. 5 is a plan view of the same ready for insertion in the pneumatic.

Similar reference letters and figures refer to similar parts in the different views.

My invention relates to an apparatus for attaching the necessary gasket to a diaphragm for pneumatics for musical instruments, and has for its objects to increase the rapidity of such attachment and to insure the absolute uniformity of position of the gasket and proper tension of the diaphragm.

The gasket serves for a reinforcement of the diaphragm and strengthens it at its attachment to the pneumatic. I also secure by my invention that the slackness required for the movement of the diaphragm to actuate the pneumatic valve shall be uniform in all diaphragms constructed by my apparatus. I accomplish this by attaching the gasket to the diaphragm while the latter is extended over a boss so that when the diaphragm is completed it will be capable of a certain predetermined amount of motion above and below the gasket.

Referring to the accompanying drawings 1 denotes a table capable of revolution around a pivot 2. Mounted upon the table 1 are a number of boxes 3, each of the size required to accommodate extended on the bottom, a piece of rubber cloth, leather, or similar material 4, from which the diaphragm 5 is constructed. These boxes 3 are each provided with a boss 6 upon the bottom, and this boss is of the size and curvature necessary to give the required slackness to the diaphragm, as will be afterward explained.

To insert the gasket 7, which is formed from a stiffer cardboard, or leather, or like material, in the box 3 and attach it to the rubber cloth or leather 4 for the diaphragm 5 which is previously placed in the bottom of the box 3 over the boss 6, I provide an apparatus shown in Fig. 2 and constructed as follows. Mounted on a spindle 8 is a plate 9 which approximately fills the inside of the box 3. This plate 9 is provided with a number of legs 10 provided with notches 11, arranged to embrace a circle slightly smaller than the outside of the gasket 7, the inside of which fits around the base of

the boss 6. Sliding upon the spindle 8 is a second plate 12 slightly smaller than the plate 9. Fastened to the plate 12 at corresponding intervals to the legs 10 are legs 13 extending through holes 14 in the plate 9, and each having a knee or bend 15 below said plate 9 so arranged to bring the ends 16 directly above the gasket 7.

Between the plates 9 and 12 is a spring 17 which normally elevates the plate 12 so that the knees 15 are in contact with the lower side of the plate 9. The operation of this portion of my apparatus is as follows:— To insert a gasket the position of the apparatus shown in Fig. 2 is reversed and the gasket sprung within the notches 11 on the legs 10. Glue or other adhesive substance is then applied to that side of the gasket which is to contact with the pneumatic. The apparatus is then given the position of Fig. 2 and inserted in one of the boxes 3, as shown at *a*, Fig. 1. The legs 13 which are normally held, with the knees 15 in contact with the plate 9, are then brought in contact with the gasket 7 by pressure on the plate 12 and the plate 9 and legs 10 are lifted by the handle 18; the plate 12 is released and the apparatus is removed from the box 3 while the gasket remains in the position on the diaphragm 4 and encircling the boss 6. Upon the curvature and size of this boss 6 depends the amount of slackness in the diaphragm 4 inside the gasket 7 and hence the amount of motion possible for such diaphragm. My improved method accomplishes the identity of the amount of such slackness and hence of such motion in all diaphragms constructed by it and this insures accuracy of result in the completed pneumatics. The height and extent of curvature of this boss may of course be varied as desired. After the gasket 7 has been inserted in its proper position and the apparatus of Fig. 2 removed, I insert a weight 19, as shown in Fig. 3, or other equivalent means, to hold the gasket in contact with the diaphragm until their union is complete. The weight 19 then being removed the diaphragm is taken out, and trimmed around the outside of the gasket; the completed diaphragm being shown in Fig. 5. Fig. 4 represents the diaphragm immediately subsequent to its removal from the box 3.

In operation, a number of boxes 3 are mounted on the revoluble table 1 as shown in Fig. 1, and each box in succession is used to construct a diaphragm. After the first is supplied with material for a diaphragm, the gasket is inserted by the apparatus shown in Fig. 2, as has been described. After this apparatus has been removed and the weight 19 of Fig. 3 inserted in the box, the table is revolved to bring a new box into position for a repetition of the operation. The boxes 3 of Fig. 1 are shown with the weights 19 inserted except at *a*, which contains the apparatus shown in Fig. 2. At this point the gasket and dia-

phragm of the first box shown at *b* have become united and may be removed and the revolution of the table and attachment of gaskets proceeded with.

What I claim as my invention and desire to secure
5 by Letters Patent is:—

1. In an apparatus for attaching a gasket to a pneumatic diaphragm, the combination of two concentric supporting surfaces for the diaphragm lying in different planes, means for bringing a gasket provided with adhesive substance into contact with that portion of the
10 diaphragm supported by the outer supporting surface and means for applying pressure to said gasket.

2. In an apparatus for attaching a gasket to a pneumatic diaphragm, the combination with a surface on which the material of the diaphragm may be placed, means for
15 supporting the gasket and placing it in contact with the diaphragm, and means for preventing the movement of the gasket during the withdrawal of said supporting means.

3. In an apparatus for attaching a gasket to a pneumatic diaphragm, the combination with a supporting surface provided with a boss over which the material of the diaphragm may be placed, of means for placing the gasket provided with an adhesive substance in contact with said material at the base of and surrounding said boss, and
20 means for preventing the movement of said gasket while the means for placing said gasket in position are withdrawn.

4. In an apparatus for attaching a gasket to a pneumatic diaphragm, the combination with a supporting sur-

face provided with a boss over which the material of the diaphragm may be placed, of a plate provided with legs adapted to contact with said material approximately at the base of said boss, means for holding the gaskets against gravity in contact with said legs, a second plate sliding on a spindle attached to said first plate and also
30 provided with legs inserted through holes in said first plate and capable of contacting with said gasket, and means for holding said legs of said second plate normally out of contact with said gasket.

5. In an apparatus for attaching a gasket to a pneumatic diaphragm, the combination with a supporting surface provided with a boss over which the material of the diaphragm may be placed, of means for placing the gasket provided with an adhesive substance in contact with said diaphragm at the base of and surrounding said boss, and
40 means for applying pressure to said gasket in such contact both while the means for placing said gasket in position are withdrawn and also after said withdrawal.

6. In an apparatus for attaching a gasket to a pneumatic diaphragm, the combination with a supporting surface provided with a boss over which the material of the diaphragm may be placed, of an apparatus for attaching the gasket provided with an adhesive substance to said material, and means for exerting pressure upon said gasket after said apparatus is withdrawn.

MORRIS S. WRIGHT.

Witnesses:

RUFUS B. FOWLER,

PENELOPE COMBERBACH.