

I do not confine myself to connecting the group of cylinders by a web, but prefer its use, as it strengthens the parts; neither do I confine myself to using three cylinders in each group as two may be employed, if preferred.

Having thus explained my invention, what I claim is—

1. In a tubular boiler a group of two or more cylinders connected by webs and ducts formed in said webs, and provided with heads all being cast integral.

2. In a tubular boiler a main cylinder in combination with a series of supplemental cylinders arranged in groups of two or more, the cylinders of each group being connected by ducts and cast integral and one of said cylinders of each group being connected by ducts with said main cylinder substantially as set forth.

3. In a tubular boiler the grouped cylinders, *k*, *m*, *p*, provided with heads, *v*, and connected by webs, *i*, and inclined ducts, *h*, all cast integral in combination with the flues, *t*, shrunken into the heads of said cylinders substantially as described.

LEWIS SAUNDERS.

Witnesses:

O. M. SHAW,  
C. M. WILBUR.

549,690. ORGAN. William Schuelke, Milwaukee, Wis.  
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*To all whom it may concern:*

Be it known that I, WILLIAM SCHUELKE, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Organs; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide a simple, economical, and positive pneumatic valve action; and it consists in certain peculiarities of construction and combination of parts hereinafter specified with reference to the accompanying drawings and subsequently claimed.

In the drawings, Figure 1 represents a section taken on line 1 1 of the succeeding figure and illustrates a portion of a pipe-organ embodying my improvements; Fig. 2, a horizontal section taken on line 2 2 of the preceding figure, and Fig. 3 another sectional view illustrating a more compact form of my invention than is shown in the preceding figures.

Referring by letter to the drawings, A represents the vertical partitions in the wind-chest of an organ, and abutting these partitions are parallel walls B, the sides of the latter adjacent to the former being beveled. The walls have horizontal apertures *b*, leading from the wind-chest channels into the spaces

between the beveled sides of said walls and the adjacent partitions.

Above the apertures *b* passages *d* in the walls B communicate with the reed or pipe openings in the sound-board C, and diaphragms D of suitable flexible material—such, for instance, as tanned sheep-skin—are made fast and air-tight at their edges to the beveled surfaces of said walls for the purpose of controlling said apertures and passages.

The spaces above specified are divided at intervals by vertical partitions E at right angles to those aforesaid, and thus each aperture *b* and adjacent channel *d* is isolated from the others in each series. A wind-trunk F below the wind-chest has its divisions provided with ports *e*, leading into the compartments formed by partitioning the spaces above specified, and air admitted through these ports into said compartments acts on the aforesaid diaphragms to cause the latter to close the apertures and passages in the walls B, this result being due to the area of said diaphragms.

Air being exhausted from any division of the wind-trunk, the pressure from the wind-chest will cause the diaphragms in a corresponding row of the aforesaid compartments to recede and thereby open the adjacent apertures and passages in communication with a rank of reeds or pipes.

The diaphragms above specified take the place of the valves in common use, and are not only more simple and economical than said valves, but absolutely positive in their action either to open or close the apertures and passages that lead from the wind-chest to the reeds or pipes of the organ.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In an organ, a wind-chest having vertical partitions, a wall abutting each partition parallel thereto but beveled away therefrom, each wall provided with a series of horizontal apertures and a series of upwardly extending passages above the apertures, other vertical partitions at intervals intermediate of the former partitions and beveled walls to isolate each wall-aperture and its companion passage from the others of each series, diaphragms secured in place between each pair of isolating partitions to constitute a valve for a wall-aperture and companion passage, and a wind-trunk beneath the aforesaid partitions provided with divisions having ports that communicate with the spaces inclosing said diaphragms.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

WM. SCHUELKE.

Witnesses:

N. E. OLIPHANT,  
HENRY DANKERT.