No. 636,594. Patented Nov. 7, 1899.

E. S. VOTEY.

BELLOWS FOR MUSICAL INSTRUMENTS.

(Application filed Feb. 5, 1897. Renewed Aug. 19, 1899.)

(No Model.)

Fig. 1,

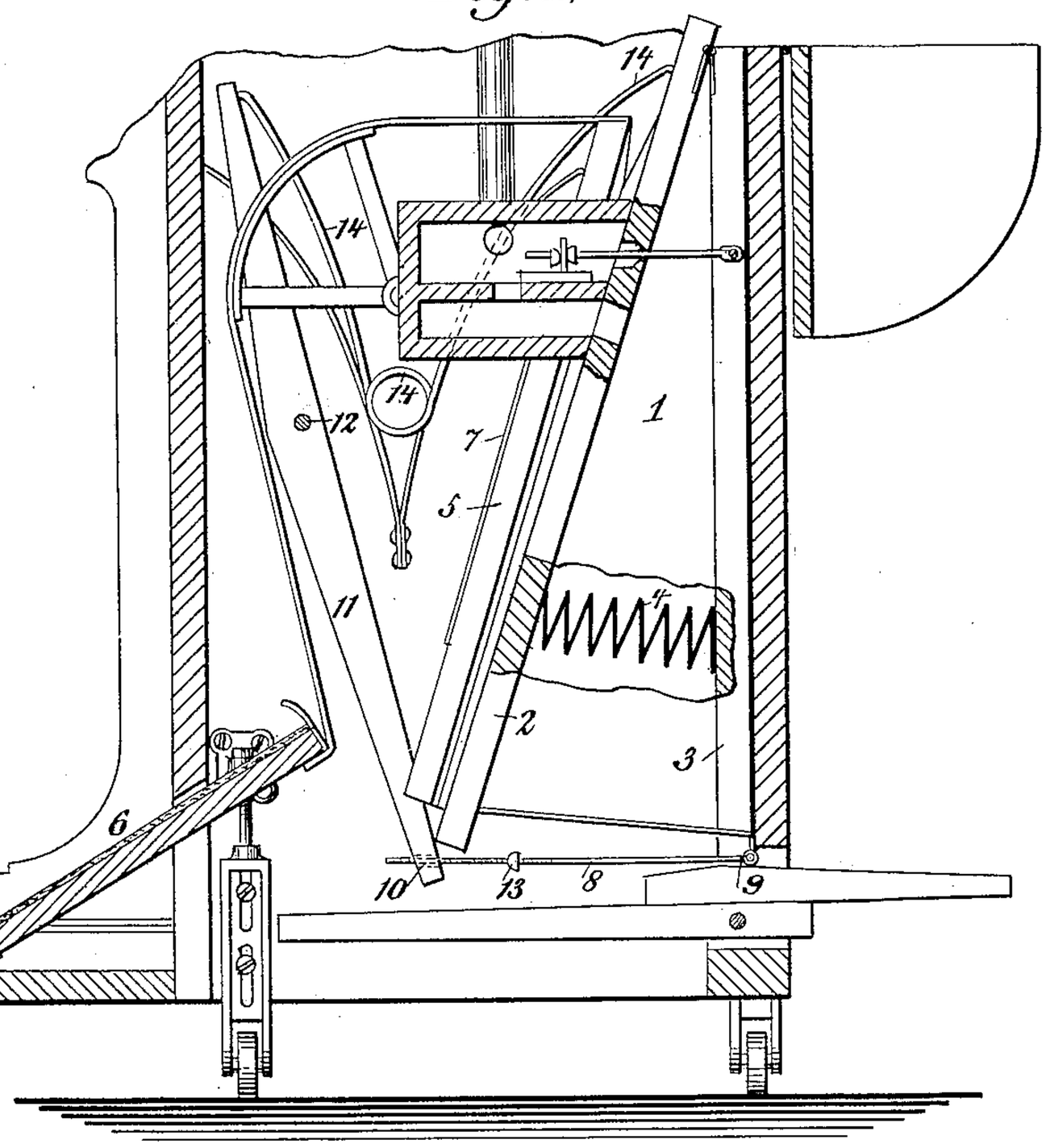


Fig. 2,

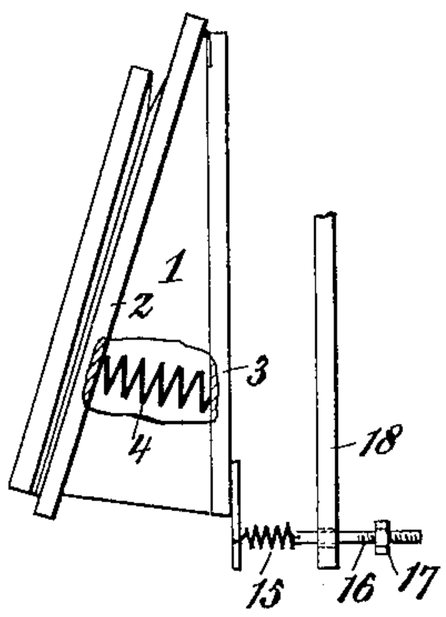
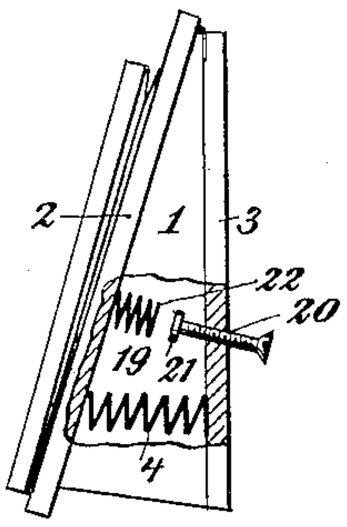


Fig. 3,



WITNESSES:

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BELLOWS FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 636,594, dated November 7, 1899.

Application filed February 5, 1897. Renewed August 19, 1899. Serial No. 727,853. (No model.)

To all whom it may concern:

Be it known that I, EDWIN S. VOTEY, a citizen of the United States, residing at Detroit, in the county of Wayne, State of Michigan, have invented a certain new, useful, and valuable Improvement in Bellows for Musical Instruments, of which the following is a full, clear, and exact description.

This invention relates to bellows for musical instruments, and particularly to that style of bellows, exhaust or pressure, which is employed in pneumatic self-playing organs and pianos.

In the accompanying drawings, forming a part of this specification, Figure 1 is a transverse vertical section of the lower part of a pneumatic musical instrument, showing my improved bellows in operative position therein. Figs. 2 and 3 show modified forms of my improved bellows.

Like numerals of reference indicate corresponding parts throughout the several views.

A special application of my improved bellows is fully shown and described in my application, of even date herewith, for improvements in pneumatic piano attachments and wherein the advantage of my improved bellows for this particular class of instruments is specially set forth, but not claimed, such subject-matter being reserved for this application and preference being given to the claims concluding this specification.

Those familiar with the art to which this invention pertains are aware that in the ordinary construction of bellows for musical instruments coil, lever, or blade springs of ordinary form and arrangement are used to keep the bellows normally open or closed, according to whether the exhaust or pressure system is employed, and it is further known that such springs as ordinarily arranged exert a nearly uniform power—*i. e.*, there being little difference in the powers of a spring in an exhaust-bellows when the bellows is completely exhausted or closed over that exerted when the bellows is but slightly exhausted.

In my improved bellows I employ a secondary or auxiliary spring or springs and provide adjustable means for bringing such secondary spring or springs into joint action with the ordinary or primary spring or springs at any predetermined point of compression or expansion of the bellows.

In the form of bellows shown in Fig. 1 of the accompanying drawings the main bellows 1, comprising the stationary board 2 and movable board 3, has the usual interiorly-located bed-spring 4, tending to keep the bellows normally opened, and even though the exhausters 5 be kept moving so rapidly by the operation of the foot-pedals 6 as to entirely exhaust the main bellows 1 and completely compress the primary spring 4, the latter, as above recited, would ever when thus compressed effect but a slight increase in the exhausting power of the bellows through its flap-valve 7. By securing a rod 8 to the lower end 9 of the movable board 3, allowing said rod to slide through the lower end 10 of the lever 11, pivoted at point 12, and adjusting the button 13 so that it engages the lever 11—say when the primary spring is one-half compressed—from this point on to further exhaust the bellows requires considerable power, because a further advancement of its movable board 3 must be attended by a movement of the said lever 11, bearing against a heavy spring 14 at its upper end. As a consequence the bellows 1 upon being exhausted against both its primary and secondary springs will in turn thereafter exhaust through its flap-valve with greater power than when the primary spring alone was compressed and resulting in a more forcible operation of the pneumatics connected with said bellows, and, for instance, if such pneumatics operate a piano-key then a heavier blow is given the latter, and in this way permitting of a variation of strength of stroke through the operation of the bellows alone, which result no other bellows will accomplish.

In the modification shown in Fig. 2 I arrange the secondary or auxiliary spring 15 to extend rearwardly from the lower end of the movable board 3 and connect with the sliding bolt 16, having the adjustable nut 17 thereon, said nut contacting with the support 18 at any predetermined degree of movement of the board 3, thus effecting in a different way the results above set forth in connection with Fig. 1.

In the modification shown in Fig. 3 I ar-

range the secondary spring 19 in the interior of the bellows with the primary spring 4, and in the back of the movable board 3 I set an adjustment-screw 20, having its inner end capped with felt 21 and so adjusted with relation to the end 22 of the spring 19 as to contact with and compress the latter at any predetermined point, as in the modifications hereinbefore described.

It will be observed by the constructions herein shown and described that the means for bringing the secondary spring into action is made adjustable. Hence the said secondary spring can be made to act at any predetermined point, according to the adjustment given the nuts or buttons 13 17 or the rod 20.

Having described my invention, what I claim is—

1. In a bellows for musical instruments or the like, the combination with the primary spring normally acting upon the bellows, of a secondary spring coöperating with the primary spring, a movable rod or bar upon one end of which said secondary spring is arranged to act, and adjustable means coöperating with the said rod or bar for bringing the secondary spring into action only after the primary spring has been acted upon to a predetermined degree.

2. In a bellows for musical instruments or the like, the combination with the primary spring normally acting upon said bellows, of a rod having a connection with the bellows, a secondary spring coöperating with the primary spring and having a connection with the said rod, and adjustable means carried by the rod for varying the limit of movement of the secondary spring whereby the latter is brought into action only after the primary spring has been acted upon to a predetermined degree.

3. In a bellows for musical instruments, the combination with the primary spring normally acting upon said bellows, of a rod connected to the movable board of said bellows, a secondary spring coöperating with the said primary spring, a pivoted lever upon one end of which the secondary spring acts, and an adjustable nut or button on the said rod, said nut or button being arranged to act upon the opposite end of the lever to move the same, whereby the secondary spring is brought into action.

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

EDWIN S. VOTEY.

Witnesses:
OWEN WARD,
G. H. DAVIS.