J. WIESER.

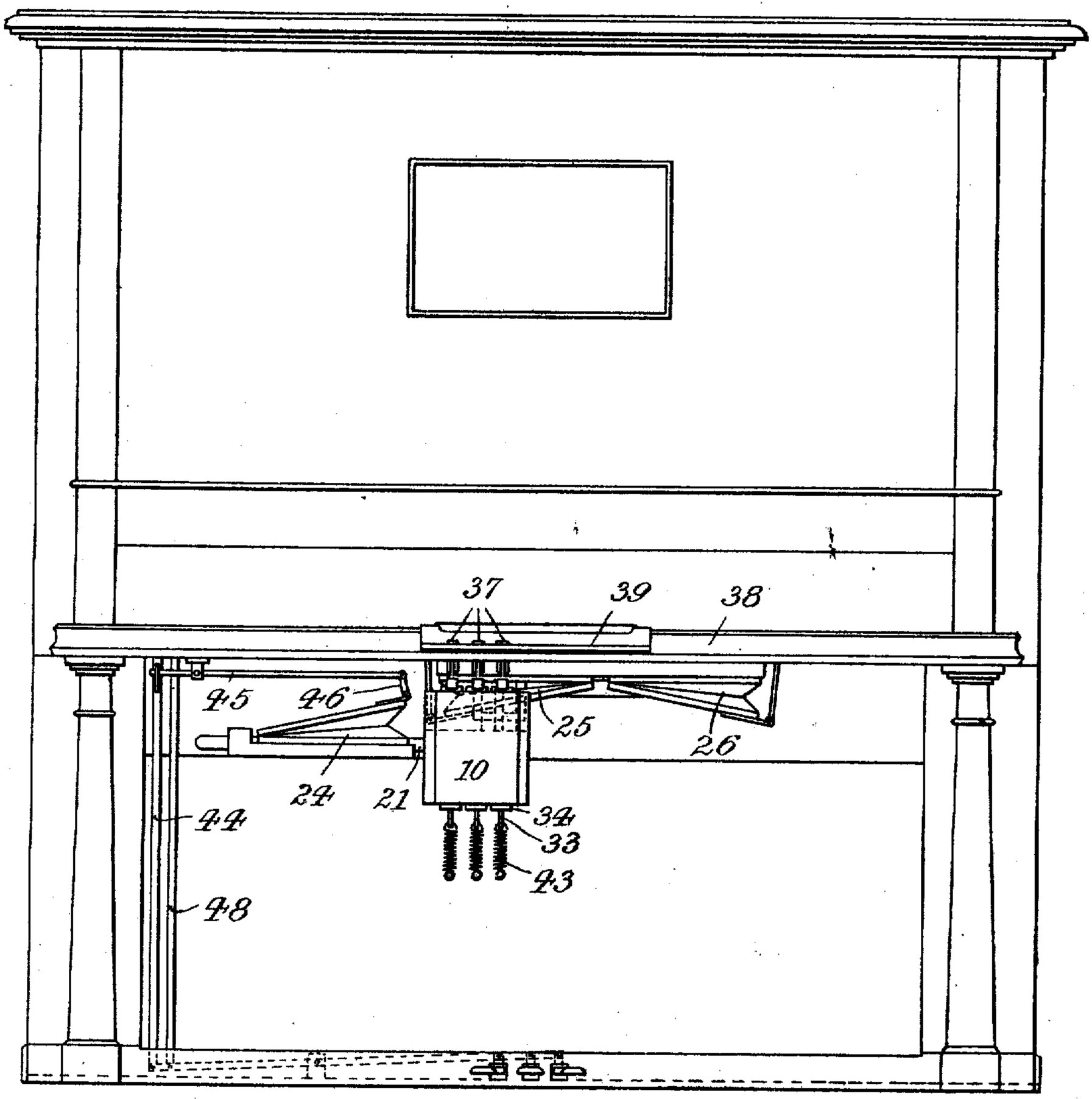
EXPRESSION DEVICE FOR PNEUMATIC PIANO PLAYING MECHANISMS.

APPLICATION FILED DEC. 12, 1908.

929,740. Patented Aug. 3, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



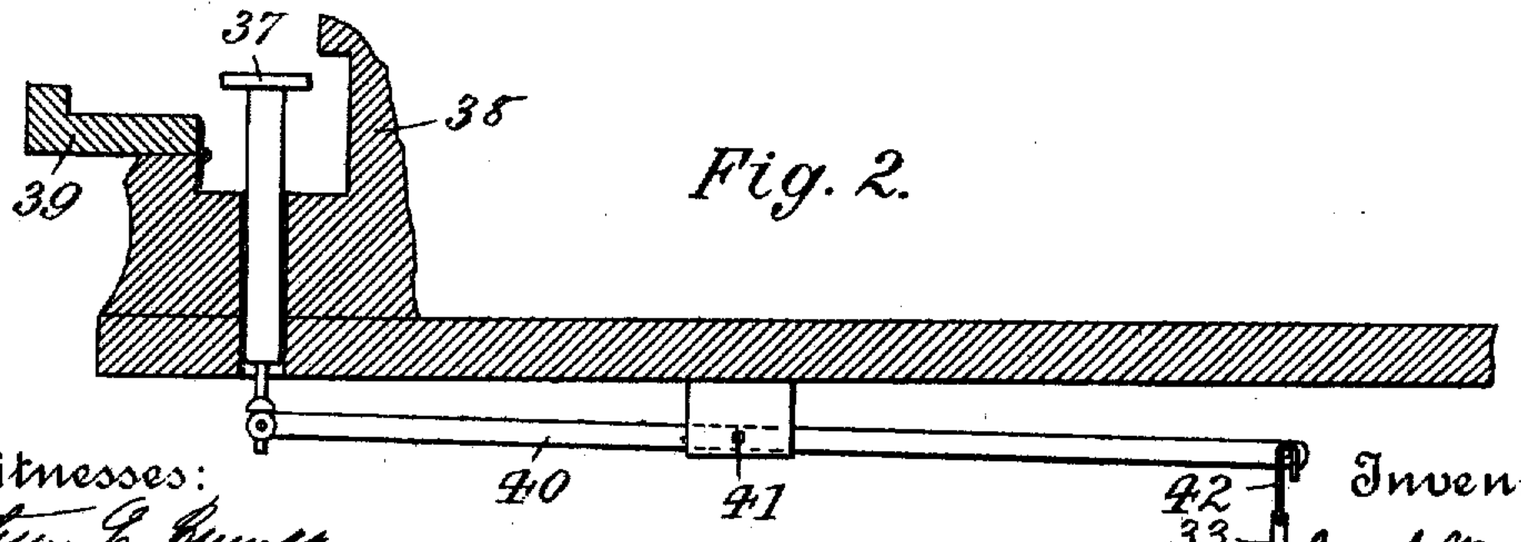


Fig. 2.

Witnesses:
Arthur E. Bumpus
W. R. Schulz.

Inventor
Joseph Wieser
By his Attorney
Hauff & Briesen

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Fig. 3.

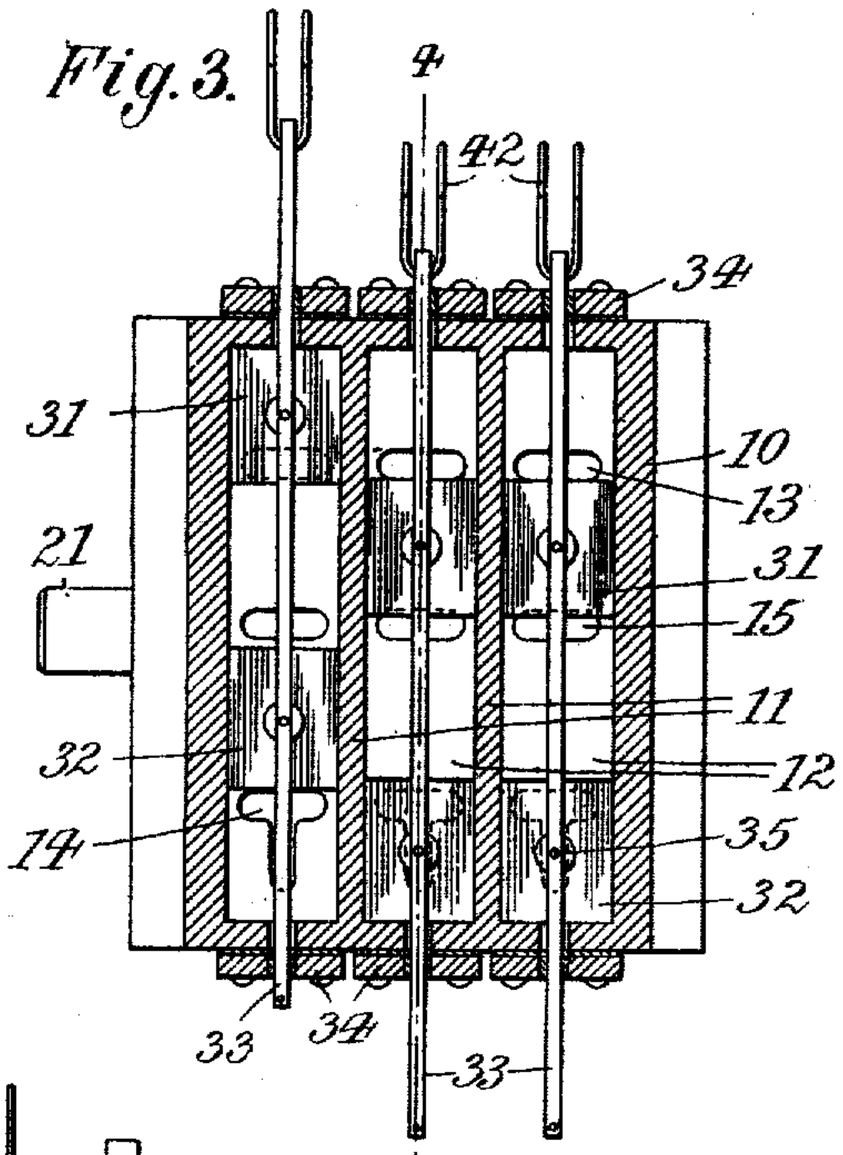


Fig. 4.

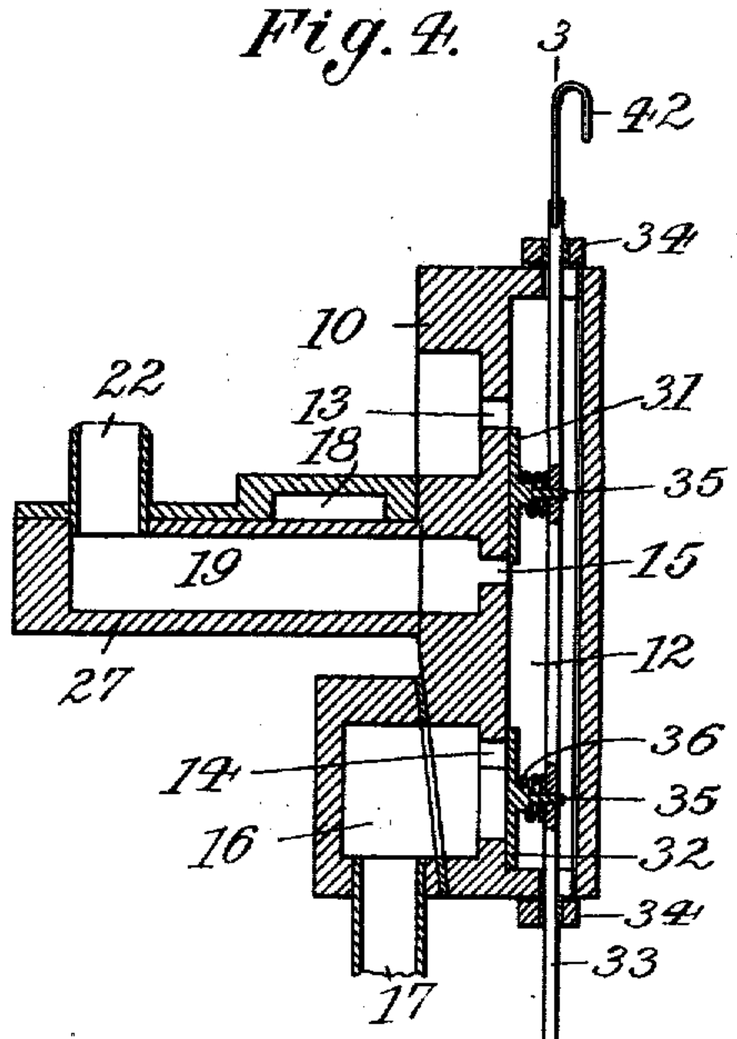


Fig. 6.

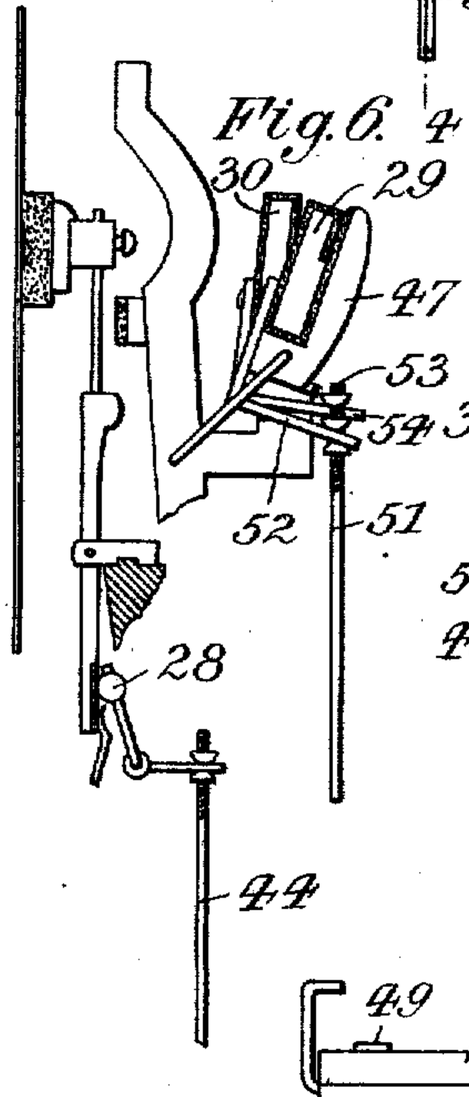


Fig. 7.

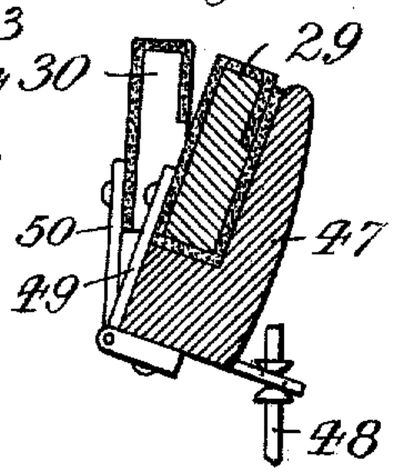


Fig. 5.

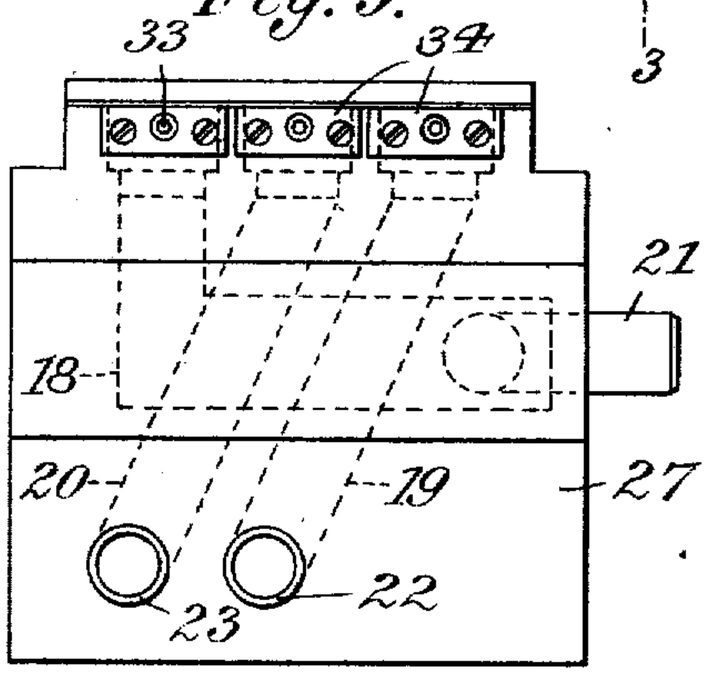
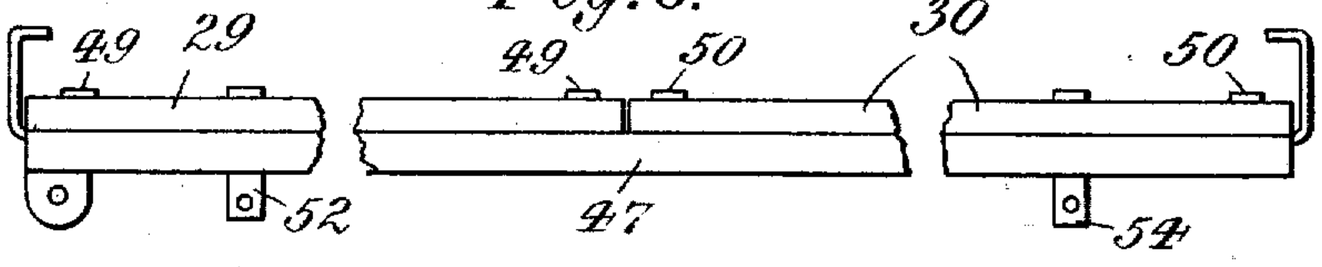


Fig. 8.



Witnesses:
Arthur E. Zemper.
N. R. Schulz.

Inventor
Joseph Wieser
By his Attorney
Hauff & Wieser

UNITED STATES PATENT OFFICE.

JOSEPH WIESER, OF ST. JOHNSVILLE, NEW YORK.

EXPRESSION DEVICE FOR PNEUMATIC PIANO-PLAYING MECHANISMS.

No. 929,740. Specification of Letters Patent. Patented Aug. 3, 1909.

Application filed December 12, 1908. Serial No. 467,138.

To all whom it may concern:

Be it known that I, JOSEPH WIESER, a citizen of the United States, residing at St. Johnsville, Montgomery county, State of New York, have invented new and useful Improvements in Expression Devices for Pneumatic Piano-Playing Mechanism, of which the following is a specification.

This invention relates to an improved manually operated expression device for pneumatic pianos or piano players which is under the full control of the operator. By my invention the damper rail and hammer rest rail may be set at variable distances from the strings through pneumatic means controlled by push buttons, so that either a forte or a piano effect may be obtained.

In the accompanying drawings: Figure 1 is a front view of a piano provided with my improved expression device; Fig. 2 an enlarged cross section through part of the keyboard, showing the push button in view; Fig. 3 a longitudinal section through the air box, on line 3—3, Fig. 4; Fig. 4 a cross section on line 4—4, Fig. 3; Fig. 5 a plan of the air box; Fig. 6 a detail of the damper-rail, hammer-rail and adjoining parts; Fig. 7 a cross section through the hammer-rail, and Fig. 8 a plan, partly broken away, thereof.

A box 10 is divided by two parallel partitions 11 into three air chambers 12. Each of these chambers is provided with an upper perforation 13, a lower perforation or port 14 and an intermediate perforation 15. Port 14 is composed of a transverse upper section and a communicating longitudinal lower section, so as to be substantially T-shaped. The three ports 14 communicate with a common vacuum chest 16, in which a constant vacuum is maintained through a tube 17 leading to the exhaust bellows, (not shown). Upper perforations 13 are vents, being, when open, in communication with the air. Central perforations 15 communicate by ducts 18, 19, 20, respectively, with pipes 21, 22, 23, that lead to the power pneumatics 24, 25, 26. Ducts 18, 19, 20, so cross within a common block 27, that duct 18 of right hand chamber 12 leads to left hand bellows 24; duct 19 of left hand chamber 12 leads to central bellows 25, and duct 20 of central chamber 12 leads to right hand bellows 26. Bellows 24, 25, 26 are, respectively, connected, in manner hereinafter described, to the damper-rail 28 and to the two sections 29, 30 of a divided auxiliary hammer-rail, so that when either one of the bellows is exhausted, its rail will be tilted to lift the dampers off the strings, or raise the hammers toward the strings, in well known manner. As the bellows communicate by openings 15 with chambers 12, it is evident that their collapse is effected by exhausting the air from said chambers. To accomplish this result, each chamber is provided with an upper slide valve 31 and a lower slide valve 32 carried by a common stem 33 which is slidable in packed bearings 34. Valves 31, 32 are connected to stem 33 by pins 35 projecting from the valves and engaging corresponding apertures in the stem. Pins 35 are encompassed by spiral springs 36 which serve to hold the valves to their seats. The correlation of the parts is such that when stem 33 is raised, in manner hereinafter described, valve 31 will first close vent 13 and then valve 32 will open port 14 to effect the exhaustion of air from chamber 12 and thus collapse the power pneumatic connected therewith. The elongated shape of port 14 enables the operator to exhaust chamber 12 gradually, by slowly raising the valve stem, so that a corresponding slow collapse of the bellows to which the chamber is connected may be obtained, if desired. If the valve stem is lowered, air is re-admitted to chamber 12 and consequently to the corresponding power pneumatic, to permit the expansion of the latter in well known manner.

Each of the valve stems 33 is operated by a separate push button 37 guided in key-rail 38 and accessible by opening lid 39. Push button 37 is pivoted to one end of a lever 40 fulcrumed at 41 and connected at its other end by hook 42 to upper end of stem 33. By pressing the button, more or less, stem 33 will be correspondingly raised, while upon the release of the button, the stem will be lowered by a spring 43 connected to its lower end, which thus also serves to return the push button to its normal position.

The two sections 29, 30 of the auxiliary hammer-rail are seated within a corresponding recess of the hammer-rail proper 47, the latter being operable in the usual manner from the pedal through lifter 48. Sections 29, 30 are arranged side by side, so as to engage the base and treble hammers, respectively, and are separately pivoted to rail 47 by arms 49, 50. Rail 29 is operatively connected to bellows 25 by lifter 51 and bracket 52, while rail 30 is in similar manner connected to bellows 26 by lifter 53 and bracket 54.

It will be seen that by the construction described, the damper rail and the divided hammer rest rail are set manually by pneumatic means, so that the expression of the instrument may be readily controlled in a simple and effective manner.

I claim:

1. A device of the character described, comprising an air chamber having a vent, a central perforation, and a port, a power pneumatic, a pivoted hammer rail operatively connected thereto, piano hammers engaging said rail, a pipe connecting the power pneumatic with the central perforation of the air chamber, a vacuum chest communicating through the port with the air chamber, a valve stem, a first slide valve connected to said stem and controlling the vent, a second slide valve also connected to the stem and controlling the port, and means for manually operating said valve stem.

2. A device of the character described, comprising an air chamber having a vent, a central perforation, and a port, a power pneumatic, a pivoted damper rail operatively connected thereto, piano dampers engaging said rail, a pipe connecting the power pneumatic with the central perforation of the air chamber, a vacuum chest communicating through the port with the air chamber, a valve stem, a first slide valve connected to said stem and controlling the vent, a second slide valve also connected to the stem and controlling the port, and means for manually operating said valve stem.

Signed by me at St. Johnsville, N. Y., this 8th day of December, 1908.

JOSEPH WIESER.

Witnesses:
W. L. ENGELHARDT,
JOHN D. CAIRNS.