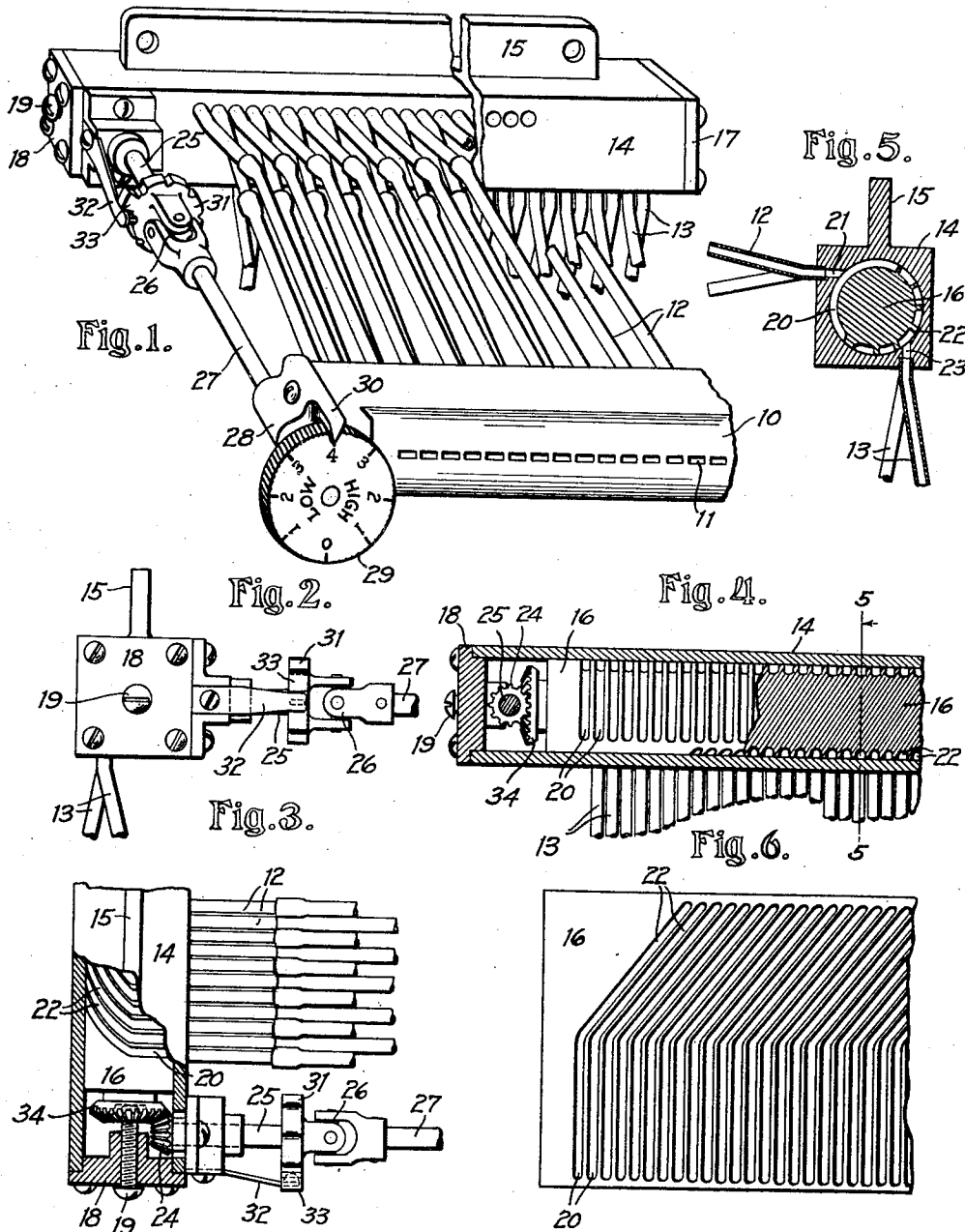


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TRANPOSER FOR PNEUMATIC MUSICAL INSTRUMENTS.
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To all whom it may concern:

Be it known that I, JOHN J. DOSSERT, a citizen of the United States, and resident of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Transposers for Pneumatic Musical Instruments, of which the following is a specification.

This invention relates to transposers for pneumatic instruments such as autopianos, organs, and the like, in which the playing-mechanism is controlled by a perforated note-sheet or analogous device governing a set of pneumatics.

The invention relates particularly to transposers of the type in which a valve-mechanism is employed for transposing the connections between the tracker-ducts and the pneumatics of a musical instrument, whereby the music is transposed without varying the relative position of the tracker and the note-sheet.

One object of the invention is to produce a transposer, of the type in question, in which the valve-mechanism is of a form which can be constructed accurately and inexpensively, and in which the moving parts are protected against injury or the ingress of dust. To this end I employ a construction in which a cylindrical valve-member closely fits within a surrounding casing, the valve-member being provided with channels adapted to register with suitably arranged ports in the valve-casing, the channels and ports being so arranged that a partial rotation of the valve-member changes the intercommunicating relation between the passages and the ports.

Another object of the invention is to provide novel and improved means for manually operating the movable valve-member, and to this end I employ a shaft which extends transversely into the valve-casing and is connected with the valve-member by gearing inclosed within the casing.

A further feature of the mechanism last referred to resides in the use of a yielding device for retaining the mechanism in its several operative positions.

Other objects and features of the invention will be set forth in connection with the following description of the illustrated embodiment of the invention.

In the accompanying drawings:—Figure 1 is a perspective view showing a transposer embodying the present invention, together

with a portion of the tracker and the ducts connecting the tracker and the transposer; Fig. 2 is a left-hand end-view of a portion of the transposer, including the valve-casing and the parts immediately associated therewith; Fig. 3 is a partial plan-view of the same parts, showing the valve-casing partly in section; Fig. 4 is a partial front-elevation of the valve-mechanism, showing the valve-casing and a part of the movable valve-member in vertical section; Fig. 5 is a vertical section on the line 5—5 in Fig. 4; and Fig. 6 is a development of a part of the surface of the rotary valve-member.

The invention is illustrated as applied to any pneumatic musical instrument of ordinary form, which may be either a piano or an organ, and the instrument as a whole is not illustrated, as the particular form and arrangement of its parts is not material. It will be understood, however, that the instrument comprises the usual pneumatics and mechanism for operating the note-sheet.

In Fig. 1 a portion of the usual tracker 10 is shown, having a series of perforations over which the perforated note-sheet passes, and these perforations are connected, through tubular ducts 12, with the valve-casing 14 of the transposer, this casing being also connected, through ducts 13, with the pneumatics (not shown) of the instrument. The valve-casing 14 is provided with a flange or lug 15 by which it may be fixed in place in the instrument. In an upright piano having the playing-mechanism inclosed within its case the tracker 10 is usually arranged at the front of the instrument, above the key-board, in which case the valve-casing 14 will be mounted directly in the rear of the tracker and in front of the action of the piano. The valve-casing 14 is bored to receive a rotary valve-member 16 of generally cylindrical form. One end of the casing is closed by a plate 17, which prevents endwise movement of the valve-member in that direction, and the other end of the casing is closed by a plate 18 through which a screw 19 passes, this screw engaging the left-hand end of the valve-member and being adjustable to take up any lost motion between the valve-member and the casing. The valve-member is thus restricted to rotative movements in the casing. The cylindrical surface of the rotary valve-member is provided with a series of channels 20 which extend, over nearly one-half the periphery

of the valve-member, in planes normal to the axis of the valve-member. These channels are so spaced and located that they communicate, respectively, with a series of valve-ports 21 in the casing, these ports being connected, respectively, through the ducts 12, with the openings 11 of the tracker. It will be apparent, therefore, that the valve-member 16 may be turned through nearly a half-rotation without interrupting the communication between the channels 20 and the respective ducts 12. The other half of the periphery of the valve-member 16 is occupied by a series of channels 22 which communicate, or are continuous with, the respective channels 20, but the channels 22 extend helically along the surface of the valve-member, as shown particularly in the development, Fig. 6. The channels 22 cooperate with a second series of valve-ports 23 in the valve-casing, and these ports are connected, respectively, with the tubular ducts 13 leading to the pneumatics of the instrument. In any operative position of the valve-member 16 the ducts 22 communicate, respectively, with the ports 23, but it will be apparent that by a partial rotation or oscillation of the valve-member in the casing each of the helical ducts 22 may be caused to register successively with a series of adjacent ports 23. Thus, by rotating the valve-member through an angular space corresponding to the vertical distance in Fig. 6 between two adjacent channels 22, the connections between the tracker and the pneumatics may be transposed one semitone above or below the preceding position, according to the direction of rotation of the valve-member.

The means for actuating the transposer are brought to a position at the front of the machine adjacent the end of the tracker. For this purpose a bevel-gear 34 is fixed to the left-hand end of the valve-member 16, and a pinion 24, meshing with the gear 34, is fixed on the inner end of a shaft 25 journaled at the end of the valve-casing. This shaft is connected, by a universal joint 26, with a shaft 27, which is supported, near its forward end, in a bearing 28 fixed upon, or adjacent to, the left-hand end of the tracker. Upon the forward extremity of the shaft is a disk 29 which is milled at the edge for convenience in rotating it to turn the shaft. This disk constitutes also a dial to indicate the position of the transposer. Upon the front of the disk are a series of graduations which cooperate with a pointer 30 projecting from the bearing 28. These graduations indicate a neutral position, that is, a position in which the music of the notesheet will be reproduced in the normal key, and also a succession of positions in which it will be transposed one or more semitones above or below this key. The transposer as

illustrated is adapted to transpose downwardly through four semitones, and upwardly through three, and it is shown in Fig. 1 in a position to transpose downwardly four semitones.

In order that the valve-mechanism may be arrested accurately in the several positions in which the channels 22 register with the ports 23, a disk 31 is fixed to the shaft 25, this disk having notches cooperating with a tooth at the end of a spring 32 fixed to the valve-casing. A lug 33 is also fixed on the disk, for the purpose of positively arresting the disk at each extremity of its operative movement. As this lug permits nearly a complete rotation of the disk from one extreme position to the other, the pinion 24 has half the diameter of the gear 34, thus providing for nearly a half-rotation of the valve-member 16, whereby eight of the channels 22 may be brought successively into registration with any one of the ports 23.

It will be apparent that the transposer above described may be made very compact, so that it may be conveniently embodied in pneumatic musical instruments of any ordinary form. It is adapted, in fact, for ready introduction into such instruments, as already built, without any change in their construction.

It will be apparent that by the use of a rotative, cylindrical valve-member entirely inclosed within a casing I produce a construction in which the moving surfaces are completely protected against dust, or any accidental injury, and in which the surfaces, when once accurately ground or machined to fit each other, remain always in proper operative position, without the possibility of any looseness between them which might result in leakage between the several closely adjacent passages and ports. By inclosing the gearing within the same casing this part of the mechanism is also protected against any derangement, and a construction is produced which is efficient, compact and simple, and which may be readily applied to instruments already constructed according to the usual designs without any substantial modification in the construction of such instruments.

My invention is not limited to the embodiment thereof hereinbefore described and illustrated in the accompanying drawings, but may be embodied in various other forms within the nature of the invention as it is defined in the following claims.

I claim:—

1. A transposer for pneumatic musical instruments having, in combination, a cylindrical valve-member provided, on a portion of its surface, with a series of channels extending partially around the surface in planes normal to the axis thereof, and, on the opposite portion of its surface, with a

series of channels communicating, respectively, with the channels of the first-mentioned series and extending helically along said surface; a valve-casing closely fitting and surrounding said valve-member, the valve-casing being provided with a series of ports adapted to register, respectively, with the passages of one of said series and to be connected, respectively, with the tracker-ducts of the instrument, and a second series of ports adapted to register, respectively, with the passages of the other of said series and to be connected, respectively, with the pneumatics of the instrument, and manually-operable means for partially rotating the valve-member in the valve-casing to cause the helical passages to register respectively with different valve-ports.

2. A transposer for pneumatic musical instruments having, in combination, a cylindrical valve-member provided, on a portion of its surface, with a series of channels extending partially around the surface in planes normal to the axis thereof, and, on the opposite portion of its surface, with a series of channels communicating, respectively, with the channels of the first-mentioned series and extending helically along said surface; a valve-casing closely fitting and surrounding said valve-member, the valve-casing being provided with a series of ports adapted to register, respectively, with the passages of one of said series and to be connected, respectively, with the tracker-ducts of the instrument, and a second series of ports adapted to register, respectively, with the passages of the other of said series and to be connected, respectively, with the pneumatics of the instrument, and manually-operable means for partially rotating the valve-member in the valve-casing to

cause the helical passages to register respectively with different valve-ports, said means comprising a shaft extending transversely into the valve-casing and gears inclosed within the casing and connecting the shaft with the valve-member.

3. A transposer for pneumatic musical instruments having, in combination, a cylindrical valve-member provided, on a portion of its surface, with a series of channels extending partially around the surface in planes normal to the axis thereof, and, on the opposite portion of its surface, with a series of channels communicating, respectively, with the channels of the first-mentioned series and extending helically along said surface; a valve-casing closely fitting and surrounding said valve-member, the valve-casing being provided with a series of ports adapted to register, respectively, with the passages of one of said series and to be connected, respectively, with the tracker-ducts of the instrument, and a second series of ports adapted to register, respectively, with the passages of the other of said series and to be connected, respectively, with the pneumatics of the instrument, and manually-operable means for partially rotating the valve-member in the valve-casing to cause the helical passages to register respectively with different valve-ports, said means comprising a shaft geared to the valve-member and yielding means for arresting the shaft in different positions corresponding to the operative positions of the valve-member.

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