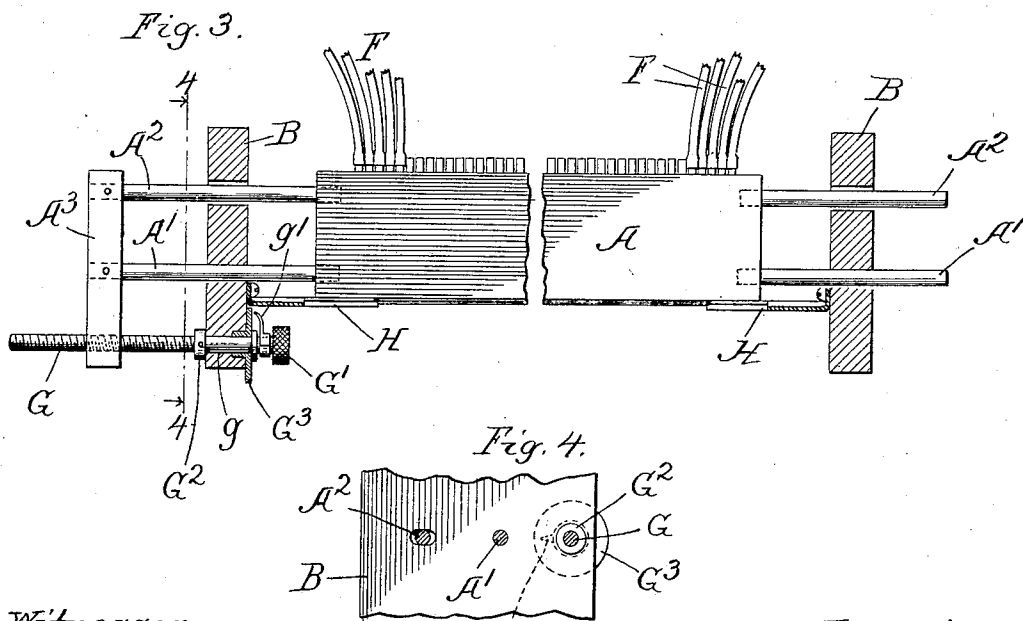
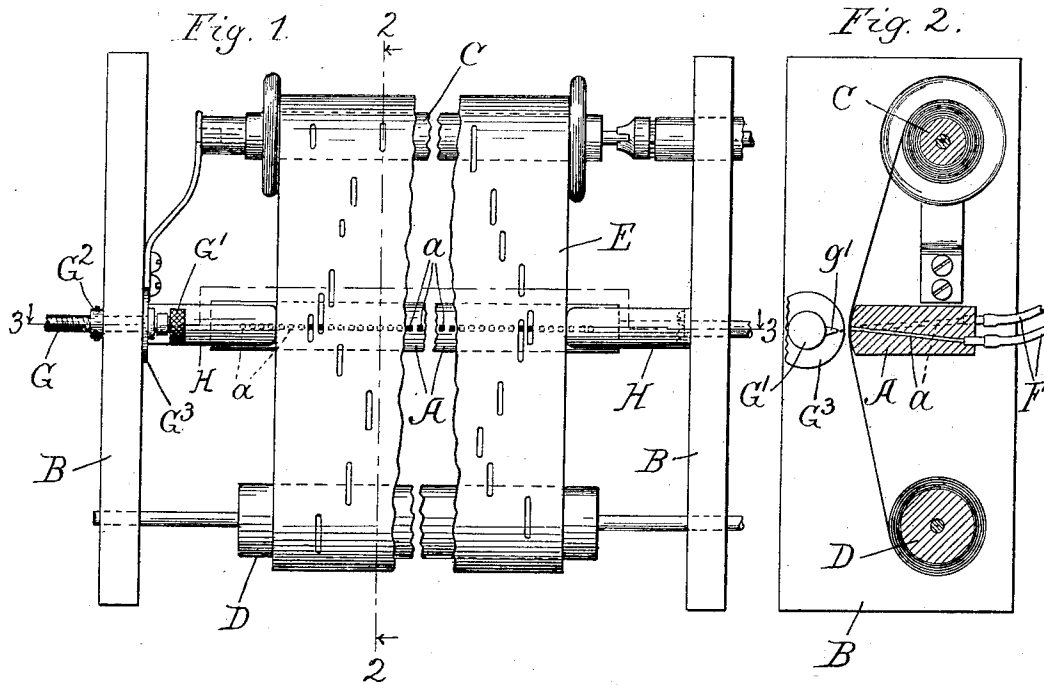


M. CLARK.

ADJUSTING AND TRANSPOSING DEVICE FOR AUTOMATIC ORGANS.

(Application filed July 7, 1898.)

(No Model.)



Witnesses.

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# UNITED STATES PATENT OFFICE.

MELVILLE CLARK, OF CHICAGO, ILLINOIS.

ADJUSTING AND TRANSPOSING DEVICE FOR AUTOMATIC ORGANS.

SPECIFICATION forming part of Letters Patent No. 625,744, dated May 30, 1899.

Application filed July 7, 1898. Serial No. 685,297. (No model.)

*To all whom it may concern:*

Be it known that I, MELVILLE CLARK, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Adjusting and Transposing Devices for Automatic Organs and other Automatically-Operated Selecting Mechanisms, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates to structures in which from a multiplicity of similarly-operated devices automatic selections are made of specific devices to be operated from time to time, such selection being controlled by traveling sheets perforated or otherwise configured in a manner to correspond to the order of selection to be effected. The most familiar devices of this class are automatic musical instruments controlled by perforated music-sheets; but the class to which this invention is applicable is not only such musical instruments, but machines for perforating or otherwise marking the sheets which are used in such musical instruments or for perforating sheets for the purpose of controlling other selecting mechanisms.

In the drawings I have represented only the parts necessary to illustrate my invention of a pneumatically-controlled musical instrument or machine for perforating music-sheets, the structures being identical for both purposes, so far as it is necessary to illustrate it for the purpose of this invention.

In the drawings, Figure 1 is a front elevation of a tracker-range and perforated sheet and rollers for the same, with their bearings and supports, to illustrate my invention. Fig. 2 is a section at the line 2 2 on Fig. 1. Fig. 3 is a section at the line 3 3 on Fig. 1. Fig. 4 is a detail section at the line 4 4 on Fig. 3.

In the further description of my invention I will refer to the parts as if they pertained to musical instruments; but it should be understood that, as above stated, they are equally applicable to mechanisms of other sorts.

A represents the tracker-range of an automatic organ whose sounding devices are controlled by the movement of a perforated sheet over such tracker-range, which constitutes

the mouthpiece of the ducts leading to the pneumatic devices.

B B are cheeks or supports for the tracker-range and music-sheet rollers.

C is the music-roll.

D is the take-up or winding roll.

E is the perforated music-sheet.

F F F, &c., are pneumatic ducts leading to the tracker-range. They are flexible tubes which may extend for some distance over the tracker-range to their nearest point of fixed support on the organ-framework in which the pneumatic ducts are continued to the pneumatic. The tracker-range is supported on the cheeks B B by means of rigid stems A' A' and A<sup>2</sup> A<sup>2</sup>, which are parallel and penetrate the two cheeks, so that the tracker-range is guided in a longitudinal movement—that is, a movement transverse with respect to the music-sheet. The stems A' A' fit closely in the cheeks B B, so as to afford accurate guidance, but the stems A<sup>2</sup> A<sup>2</sup> are preferably made to fit closely only in respect to vertical dimension, as seen in Fig. 4, the apertures provided for them in the cheeks B B being elongated horizontally to avoid danger of cramping by any slight distortion that might occur in the adjusting movement of the tracker-range A. At one end the stems A' A<sup>2</sup> are rigidly united by a cross-head A<sup>3</sup>, which extends forward from the forward stem A' and has a threaded aperture adapted to receive an adjusting-screw G. This screw is journaled at g in the cheek B, being stopped against longitudinal movement by the head G' and the collar G<sup>2</sup>, with which it is provided. It will be seen that by rotating the adjusting-screw G, which may be done by means of the milled head G', which is exposed forward of the vertical plane of the tracker-range, the latter may be adjusted longitudinally transversely with respect to the movement of the music-sheet and at all points securely held. Preferably the thread of the screw G is made so that a half or quarter or full turn of the screw moves the tracker-range a distance equal to the interval between consecutive mouths or pneumatic apertures a a of the range.

H H are lips or fixed valve-pieces secured to the cheeks B B, respectively, and extending onto the tracker-range, covering such of

the mouths *a* as lie beyond the margin of the music-sheet, so that as the tracker-range is adjusted longitudinally it moves under these valve-lips, and thus all the apertures which are not traversed by the music-sheet are covered by the lips at all positions to which the tracker-range may be adjusted.

It will be seen that inasmuch as each duct and tube *F* of the tracker-range communicates with the pneumatic devices for a given reed of the instrument corresponding to a given pitch the shifting of the mouthpiece across the line of travel of the music-sheet changes the key of the music which will be produced by the travel of the music-sheet, movement to the right having the effect to expose to the action of the music-sheet a range of notes lower down and lower the key, while movement to the left for like reason will raise the key in which the music will be played. The head *G'* of the screw *G* is preferably provided with an index-finger *g'*, and a dial *g*<sup>3</sup> will be mounted on the surface of the cheek *B*, and on such dial the point or points indicated corresponding to the adjustment of the tracker-range a distance equal to the interval between consecutive apertures in the latter. This enables the operator accurately to adjust the tracker-range to lower or raise the key one or more semitones.

It frequently happens that the music-sheet, by reason of slightly-inaccurate margin or inaccurate adaptation to the particular instrument with which it is being used, travels over the range with its perforations not accurately registering with the mouths of the tracker-range. This inaccuracy can be corrected by the same device, a partial turn of the screw being made until the registration of the perforations of the music-sheet with the mouths of the tracker-range is accurate. If when thus adjusted the pointer *g'* does not stand at the division-point of the dial, which is designed to indicate accurate registration, the finger which is frictionally held on the head *G'* may be rotated to the nearest indicated point on the dial, and the rotation of the adjusting-screw thereafter from point to point on the dial will effect adjustment as to the key by semitones, maintaining throughout such adjustment accurate registration of the music-sheet with the tracker-range.

It will be noticed that the take-up roller *D* is without guide-flanges for the music-sheet. I find the omission of these flanges advantageous, because the most accurately-cut paper is liable to become slightly distorted through unequal absorption of moisture and other causes, and if compelled to run from between the flanges of the music-roller onto and between rigidly-fixed flanges of the take-up roller the slight distortion of the margin, to which it is liable from this cause, makes it crowd against one flange or the other of the take-up roller and even to become chafed and worn at the edges, besides retarding the action

and sometimes causing the paper to halt altogether. When, however, the music-roll only has guide-flanges, they will cause the paper to be delivered accurately onto the tracker-range and any slight inaccuracy of the margin which may exist will find accommodation on the flangeless take-up roll without the slightest disturbance in the action. When the paper is rewound onto the music-roll, it resumes naturally the position from which it was delivered, and having been originally delivered from between the flanges it passes back between them without disposition to bind upon either flange. The slight distortion of the margin, due to inequality in shrinkage and expansion of the paper at different parts of its width or even to a slight irregularity in cutting, may be corrected as it passes over the tracker-range without causing the difficulty which arises from restraining it on the take-up-roll, and this is effected by the lips *H H*, between whose ends the paper passes as it traverses the range, thus insuring accurate registration notwithstanding the slight inaccuracy in the cutting of the paper.

Although I have here shown a tracker-range having ducts, constituting thereby virtually a mouthpiece for a series of pneumatic conductors, the construction being such as would be employed in a pneumatically-operated instrument, it will be seen that the invention would be equally applicable in connection with a tracker-range of a different sort—that is, one which constitutes the terminal of a series of conductors other than pneumatic—and I desire to be understood as claiming this invention without limitation to pneumatic conductors as distinguished from others—such, for example, as electric.

I claim—

1. In an automatic selecting mechanism, which is constructed and arranged to be controlled by a traveling sheet or belt, the combination with a tracker-range and a traveling sheet, of mechanism for causing the sheet to travel across the range; and mechanism for adjusting the tracker-range at will transversely with respect to the direction of travel of the sheet.

2. In an automatic selecting mechanism, which is constructed and arranged to be controlled by a traveling sheet or belt, the combination with a tracker-range and a traveling sheet, of mechanism for causing the sheet to travel across the range; mechanism for adjusting the tracker-range at will, transversely with respect to the direction of travel of the sheet; and flexible conductors from the tracker-range adapted to make connection with the selecting devices.

3. In a pneumatically-operated musical instrument, in combination with the tracker-range or mouthpiece; flexible pneumatic ducts therefrom to the sound-controlling devices; a perforated music-sheet, mechanism for feeding it across the mouthpiece; and

mechanism for adjusting the mouthpiece transversely with respect to the direction of movement of the music-sheet.

4. In an automatically-operated musical instrument, having a tracker-range; flexible pneumatic ducts therefrom to the sound-controlling devices; a perforated music-sheet and mechanism for feeding it across the tracker-range; such tracker-range being adjustably mounted on supports, and provided with means for adjusting it transversely with respect to the direction of movement of the music-sheet; and lips H H extending onto the end portions of the tracker-range and adapted to operate as slide-valves over the mouths of the tracker-range at such end portions, the music-sheet being of suitable width to extend between the proximate ends of such lips, whereby the mouths of the tracker-range which would be exposed beyond the margins of the paper are closed by the lips.

5. In an automatically-operated musical instrument, in combination with the cheeks B B; music-rollers supported thereon, the music-sheet operated by such rollers; the tracker-range or mouthpiece A having stems by which it is mounted between and supported by such cheeks with a range of longitudinal adjustment between them; and the screw rotating

in a part fixed with respect to the cheeks and also in a part fixed with respect to the mouthpiece and threaded at one of said points to adjust the mouthpiece relative to the music-sheet.

6. In an automatically-operated musical instrument, the combination with the cheeks B B; the music-rollers supported thereon, and the music-sheet operated by such rollers; the tracker-range or mouthpiece A having stems by which it is mounted in such cheeks, with a range of longitudinal adjustment between the cheeks; the cross-head A<sup>3</sup> connecting the stems at one end, and having a threaded aperture; and the adjusting-screw G journaled in the cheek and engaging the cross-head to adjust the tracker-range.

7. In combination with the adjustable tracker-range and the screw G for adjusting same; an index-finger adjustably secured on the screw; and a dial over which said finger is rotated by the screw.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 20th day of June, 1898.

MELVILLE CLARK.

Witnesses:

CHAS. S. BURTON,  
JEAN ELLIOTT.