T. H. CABASINO & T. W. VRANA.

SELF ADJUSTING ATTACHMENT FOR PIANO PLAYERS.

APPLICATION FILED MAY 4, 1910.

1,023,005.

Patented Apr. 9, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

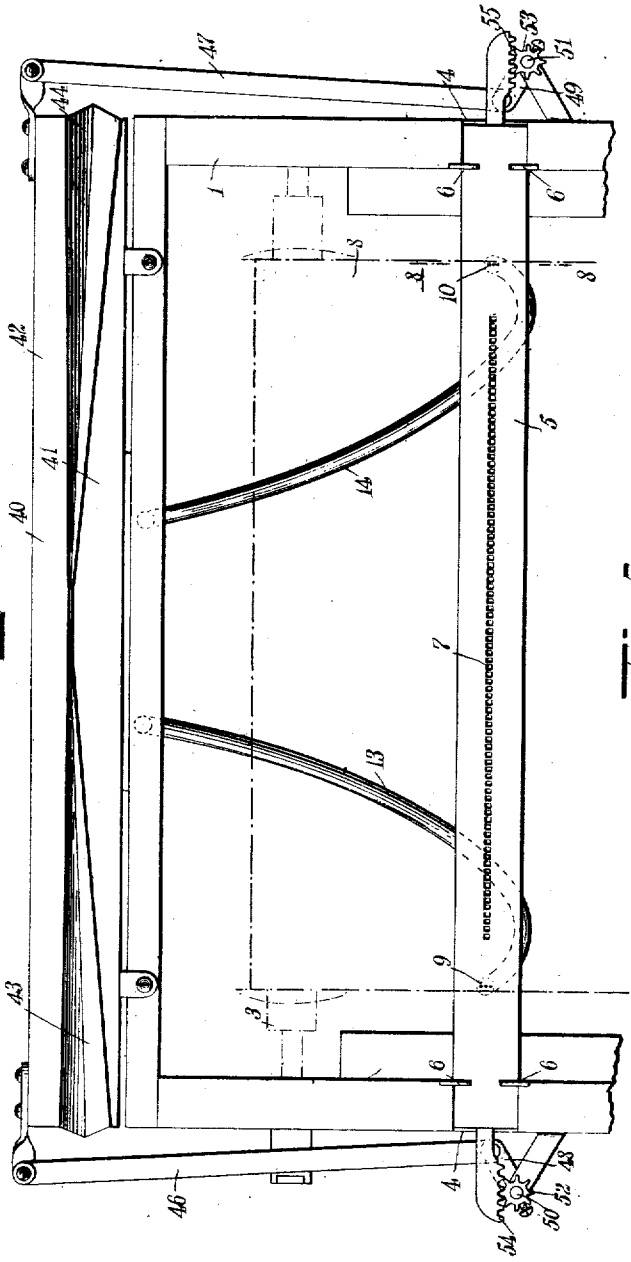
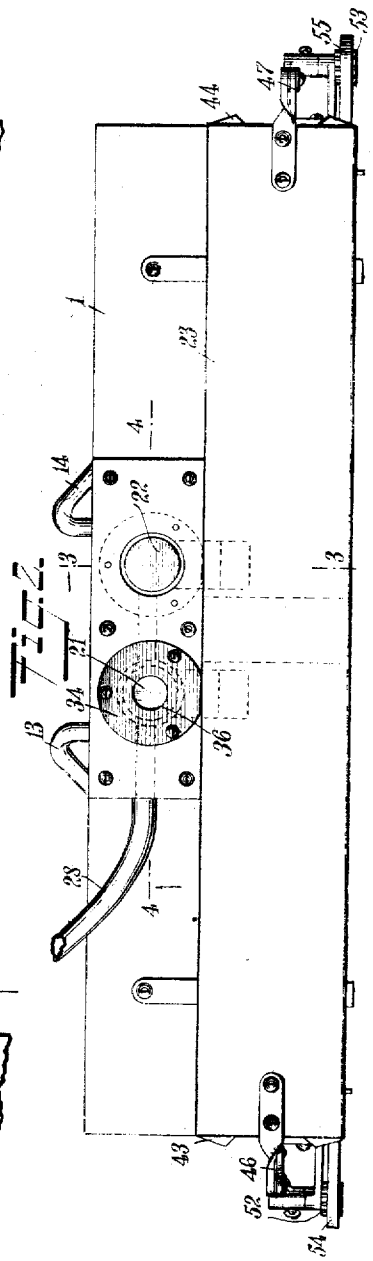


Fig. 2.



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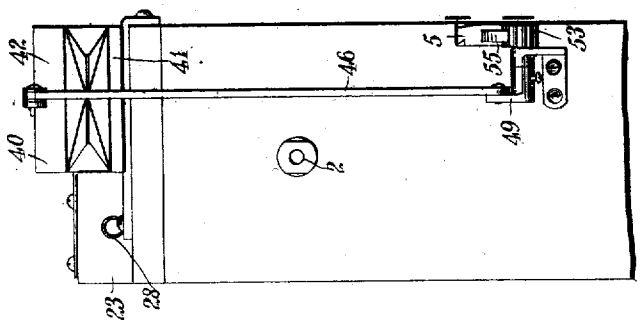

Fig. 7.

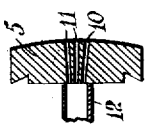

Fig. 4.

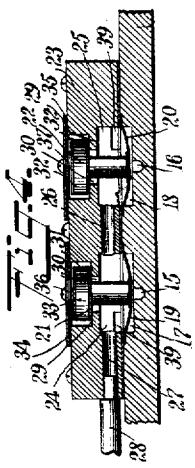

Fig. 1.

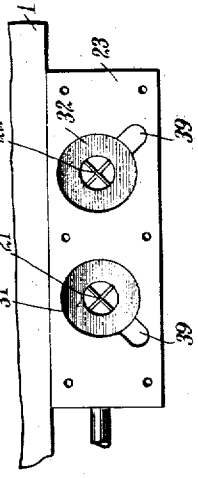

Fig. 5.

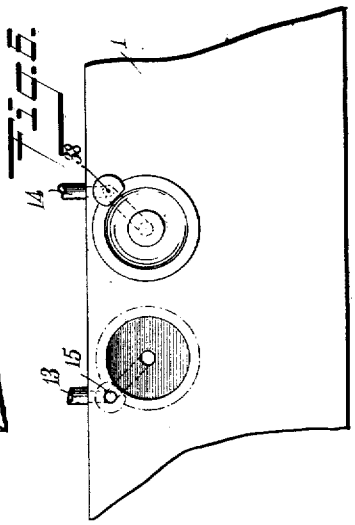

Fig. 6.

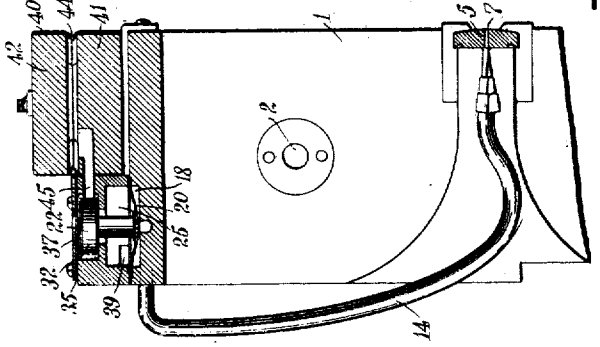

Fig. 3.

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UNITED STATES PATENT OFFICE.

THOMAS H. CABASINO AND THEODORE W. VRANA, OF NEW YORK, N. Y.

SELF-ADJUSTING ATTACHMENT FOR PIANO-PLAYERS.

1,023,005. Specification of Letters Patent. Patented Apr. 9, 1912.

Application filed May 4, 1910. Serial No. 559,295.

To all whom it may concern:

Be it known that we, THOMAS H. CABASINO, a citizen of the United States, and THEODORE W. VRANA, a subject of the Emperor of Austria-Hungary, and residents, respectively, of the city of New York, Corona, borough of Queens, in the county of Queens and State of New York, and of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Self-Adjusting Attachment for Piano-Players, of which the following is a full, clear, and exact description.

This invention relates to a new and improved attachment for a piano player, whereby the openings in the perforated sheet or roll will always be maintained in proper register with the corresponding openings in the tracker.

A difficulty which has arisen in most piano players is in maintaining the corresponding openings on the perforated sheet in proper register with the openings in the tracker, whereby the instrument will be caused to play the music as originally rendered when forming the music sheet. It often occurs that in reeling or unreeling the perforated sheet it becomes slightly twisted, and travels at a slight angle, thereby bringing the corresponding openings out of register.

An object, therefore, of this invention, is to so arrange the tracker that it will be automatically manipulated by the position of the playing sheet. It is to be always maintained in such a position, so that its openings will be in register with the proper openings in the playing sheet.

Another object of this invention is to provide a device which will be comparatively simple in construction, inexpensive to manufacture, strong, durable, and both quick and reliable in its operation.

These and further objects, together with the construction and combination of parts, will be more particularly pointed out hereinafter and specifically set forth in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a fragmentary detached view in elevation of the attachment to the piano player; Fig. 2 is a top plan view showing one of the valve retaining plates removed; Fig. 3 is a vertical section on the line 3—3 of Fig. 2; Fig. 4 is a vertical section on the line 4—4 of Fig. 2; Fig. 5 is a bottom plan view of the valve casing; Fig. 6 is a top plan view showing the valve casing removed, and one of the diaphragms also removed; Fig. 7 is an end view in elevation; and Fig. 8 is a section on the line 8—8 of Fig. 1.

Referring more particularly to the separate parts of the device, 1 indicates a framework of any suitable form and material, and which is provided with suitable bearings 2 for a music roll indicated in dotted lines at 3 in Fig. 1.

In the face of the frame 1 there are provided slots 4, which form ways for a tracker 5, which is slidingly mounted therein. The tracker is further held and guided in the ways 4 by means of guides 6 arranged in juxtaposition to the ways, and positively engaging the tracker. The tracker 5 is provided with the usual bent openings 7 which are connected in any suitable manner to a pneumatic player action of any suitable character, and there is one of them for each of the keys in the piano, whereby they are adapted to actuate the sounding mechanism when the perforations in the sheet 8 of the music roll come in opposition or register therewith.

In order that the corresponding openings may be always maintained in register even when the sheet 8 unwinds unevenly, there are provided at each side of the series of openings 7, openings 9 and 10, which are normally covered by a sheet of the proper width so that no air can pass therethrough. These openings 9 and 10 might be a single narrow slot extending vertically, but we prefer to construct them in the form of a plurality, preferably three, miniature openings 11, arranged in vertical alinement. The object of having a plurality of vertical perforations or openings is so that if one or even two of them should happen to be momentarily uncovered, by a jagged or torn portion on the edge of the music sheet, sufficient air would not be permitted to pass therethrough to actuate the mechanism. If, however, the sheet should pass sufficiently to one side to entirely uncover the three openings, sufficient air would be permitted to pass through to actuate the mechanism. For

this purpose, as illustrated in Figs. 3 and 8, the openings 11 are connected to attaching pipes 12 which in turn are connected by any suitable pipes, such as the flexible tubes 13 and 14, to passages 15 and 16, in the frame 1, which in turn are connected to chambers 17 and 18. The tops of the chambers 17 and 18 are closed by suitable members 19 and 20, preferably in the form of impervious flexible diaphragms, which form yielding supports for valves 21 and 22, slidingly mounted in a valve casing 23, which is mounted on the frame 1 in any well-known manner, preferably so as to form an air-tight fit.

The valve casing is preferably provided with cavities 24 and 25, which are arranged in opposition to the chambers 17 and 18, and are interconnected among themselves by means of a channel 26. One of the cavities 24 is connected by means of a passage 27 and a suction pipe 28 to a suitable vacuum former separated from the cavities 24 and 25 by means of flanges 29, and communicating therewith by means of openings 30, therethrough. There are provided recesses 31 and 32 in the valve casing 23, in which are located heads 33, of the valves 21 and 22, the spindles of these valves extending downwardly through the openings 30, until they come into contact with the diaphragms 19 and 20, which are adapted to support them. The recesses 31 and 32 are partially closed at the top by means of plates 34 and 35, which are provided with openings 36 and 37 which are adapted to be closed by the valves 33, when the latter are in their raised position, and to be opened when the valves are in their lowered position.

For the purpose of connecting the suction or vacuum of the chambers 24 and 25 to the underside of the diaphragms 19 and 20, and thus to the chambers 17 and 18, the passages 15 and 16, as will be noted by reference to Fig. 6, are provided with pin-hole openings 38, which are in register with channels 39 (see Figs. 3, 4 and 5) which let into the cavities 24 and 25.

Mounted on the frame 1 in juxtaposition to the valve casing 23, there is provided an actuator 40, in the form of a base 41, and a pneumatically operated lever 42, pivoted to the base 41 intermediate its ends. The lever 42 is spaced apart from the base 41 on either side of its pivot point, and these spaces are occupied by flexible chambers 43 and 44, formed in any well-known manner, as by means of accordion plaited casings. The chambers 42 and 43 communicate respectively with the recesses 31 and 32 by means of passages 45, so that when the valves 21 and 22 are in their raised position communication will be opened between the chambers 43 and 44, and the vacuum former connected to the pipe 28.

The means for transmitting the motion of the lever 42 on the actuator 40 may be of any suitable sort, such as links 46 and 47 pivotally connected to opposite ends of the lever 42, and also pivotally connected to arms 48 and 49. These arms 48 and 49 are secured on opposite sides of shafts 50 and 51, which in turn are rotatably supported in any well-known manner on the frame 1, and are provided with gears 52 and 53, which mesh with racks 54 and 55, provided on the tracker 5.

The means for reciprocating the tracker 5 back and forth, to bring the openings therein in proper register with the openings on the music sheet, may be termed the manipulator.

The operation of the device will be readily understood when taken in connection with above description. For the purpose of illustration, we wiill suppose, for example, that the sheet 8 has traveled slightly to the left in Fig. 1, so that the perforations therein are brought out of exact register with the openings 7 in the tracker 5. This movement to the left will uncover the vertically alined openings 10. The act of uncovering these openings will permit atmospheric pressure to enter the tube 14, and thus come under the diaphragm 20. Inasmuch as the chamber 25 is connected to the source of vacuum indicated by the pipe 28, the diaphragm 20 will be raised by the suction or, stating it in other terms, by the difference in pressure, due to the atmospheric pressure; the raising of the valve of the diaphragm 20 will lift the valve 22, off its flange, or seat 29, simultaneously closing the opening 37 so that the recess 32 is cut off from communication with the atmosphere. The recess 32 will thereby be brought into communication with the cavity 25, and thus with the source of vacuum indicated at 28. Hence the chamber 44 which is in communication with the recess 32, will be brought into communication with the source of vacuum and a suction will be created therein, thereby depressing the right-hand side of the lever 42, and raising the left-hand side so that the shaft 51 will be rotated to the left, and the shaft 50 also rotated toward the left by reason of the opposite positions of the arms 49 and 48, so that the racks 55 and 54 will be shifted toward the left thus forcing the tracker 5 also toward the left, until the proper openings 7 in the tracker come in register with the corresponding openings on the paper 8, which will occur when the openings 10 are once more covered by the edge of the paper 8.

It will be noted that as soon as the paper 8 covers the openings 10, the supply of air to the under side of the diaphragm 20 will be cut off, so that the air which remains in the tube 14 and the chamber 18, will be

sucked out by means of its communication with the cavity 25 through the passage 39 and the opening 38, so that the diaphragm 20 will be permitted to fall under the weight of the valve 22, thus cutting off communication between the chamber 44 and the source of vacuum and admitting air under atmospheric pressure to the chamber 44, so that it will remain in its adjusted position until a subsequent movement of the sheet relative to the tracker causes a movement of the tracker. In case the opposite condition of affairs should take place, and the sheet of music 8 moves abnormally to the right, the openings 9 would be uncovered, and the opposite condition of affairs would take place; that is to say, the chamber 17 would be brought into communication with the atmosphere, thereby causing the diaphragm 19 to be sucked up, and the valve 21 raised, thus cutting off communication between the chamber 43 and the atmosphere, and opening communication between the chamber 43 and the source of vacuum, so that the lever 42 would be drawn down to the left, and the tracker would be forced toward the right until the openings 9 came under the paper once more.

It will be noted that if by any chance the paper should have shrunken, or for any other reason be of a size too narrow to cover the openings 9 and 10, both of the pneumatics will be actuated so that the tracker will not be shifted out of adjustment. The same is true if the paper should happen to be too wide, in which case neither of the pneumatics would be operated, and the tracker would be maintained in a normal mid position.

While we have shown one embodiment of our invention, we do not wish to be limited to the specific details thereof, but desire to be protected in the various changes, alterations and modifications which we may make within the scope of the appended claims.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:

1. The combination with a frame, of a tracker slidingly mounted on said frame, a lever pivotally connected to said frame, connections between the opposite ends of said lever and said tracker, whereby said tracker is operated from said lever, and connections between said lever and said tracker, whereby the operation of said lever is controlled from said tracker.

2. The combination with a frame, of a tracker movably mounted on said frame, a lever pivotally connected to said frame, connections between the opposite ends of said lever and the opposite ends of said tracker, whereby said tracker is moved by said lever, collapsible chambers for operating said lever, a suction pipe, said tracker having a plurality of openings therein, and connections between said openings and said suction pipe, whereby the connection and disconnection of said chambers with said suction pipe is controlled.

3. The combination with a frame, of a movable tracker on said frame, a lever pivoted intermediate its ends on said frame, connections between each end of said lever and each end of said tracker, whereby said tracker may be manipulated by said lever, and pneumatic means located on each side of the pivot point of said lever, for operating said lever.

4. The combination with a frame, of a movable tracker on said frame, a lever pivoted intermediate its ends on said frame, connections between each end of said lever and each end of said tracker, whereby said tracker may be manipulated by said lever, pneumatic means located on each side of the pivot point of said lever, for operating said lever, and means for controlling said pneumatic means from said tracker.

5. The combination with a frame, of a movable tracker on said frame having a plurality of duct openings arranged in series, a lever pivoted intermediate its ends on said frame, connections between each end of said lever and each end of said tracker, whereby said tracker may be manipulated by said lever, pneumatic means located on each side of the pivot point of said lever, for operating said lever, and means for controlling said pneumatic means from said tracker, comprising a series of alined openings disposed on each side of said tracker at an angle to said first-mentioned series of openings, adjacent the ends thereof, and connections between said pneumatic means and said openings.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

THOMAS H. CABASINO.
THEODORE W. VRANA.

Witnesses:
HORATIO WHITING,
PHILIP D. ROLLHAUS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."