No. 855,465. PATENTED JUNE 4, 1907.

F. L. MARSHALL.

PLAYING ATTACHMENT FOR MUSICAL INSTRUMENTS.

APPLICATION FILED OCT. 15, 1904. RENEWED FEB. 26, 1906.

2 SHEETS—SHEET 1.

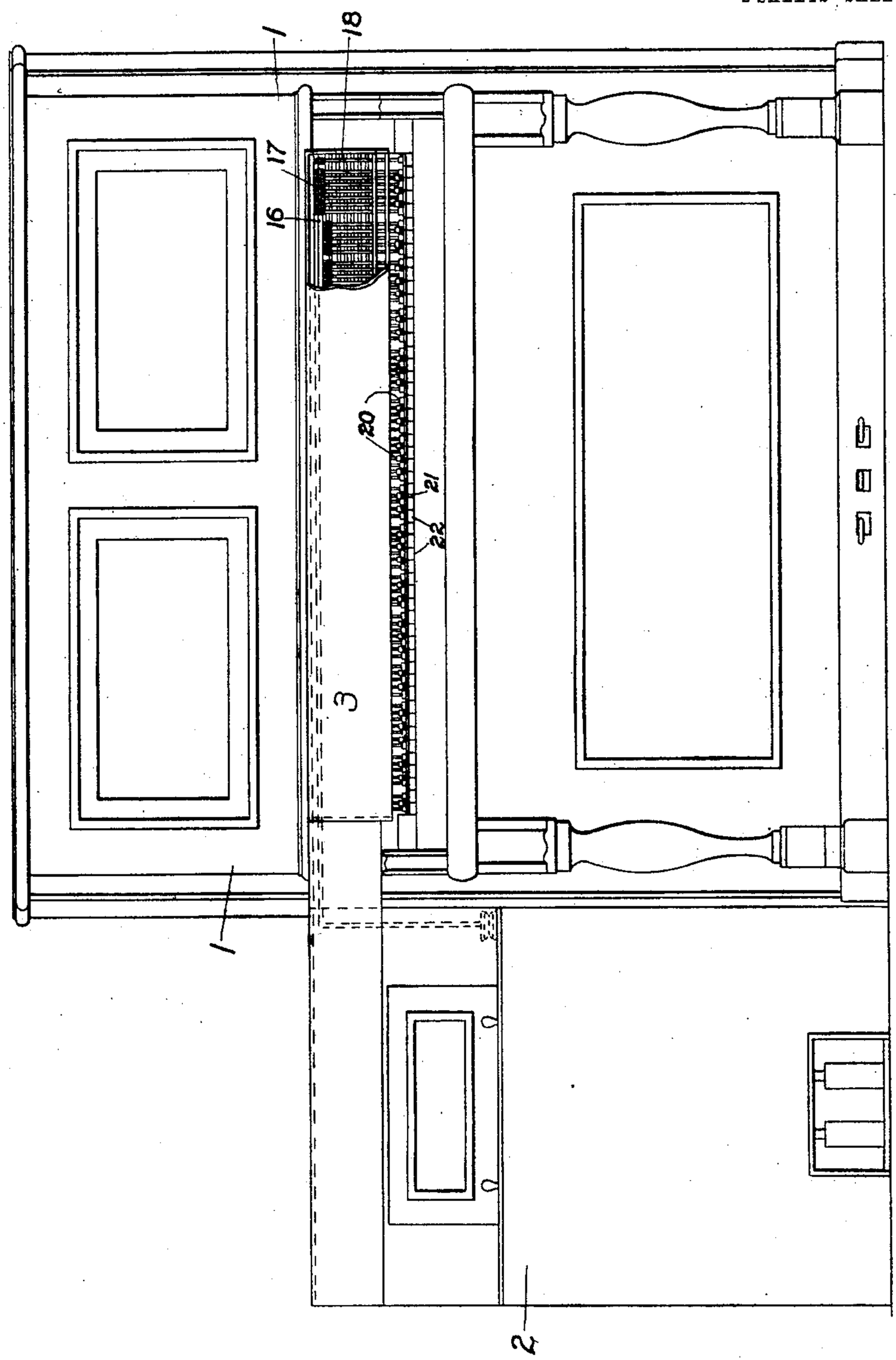

FIG. 1

Witnesses:
Alton K. Ehrman.
Stephen R. Dow.

Inventor:
Frank L. Marshall

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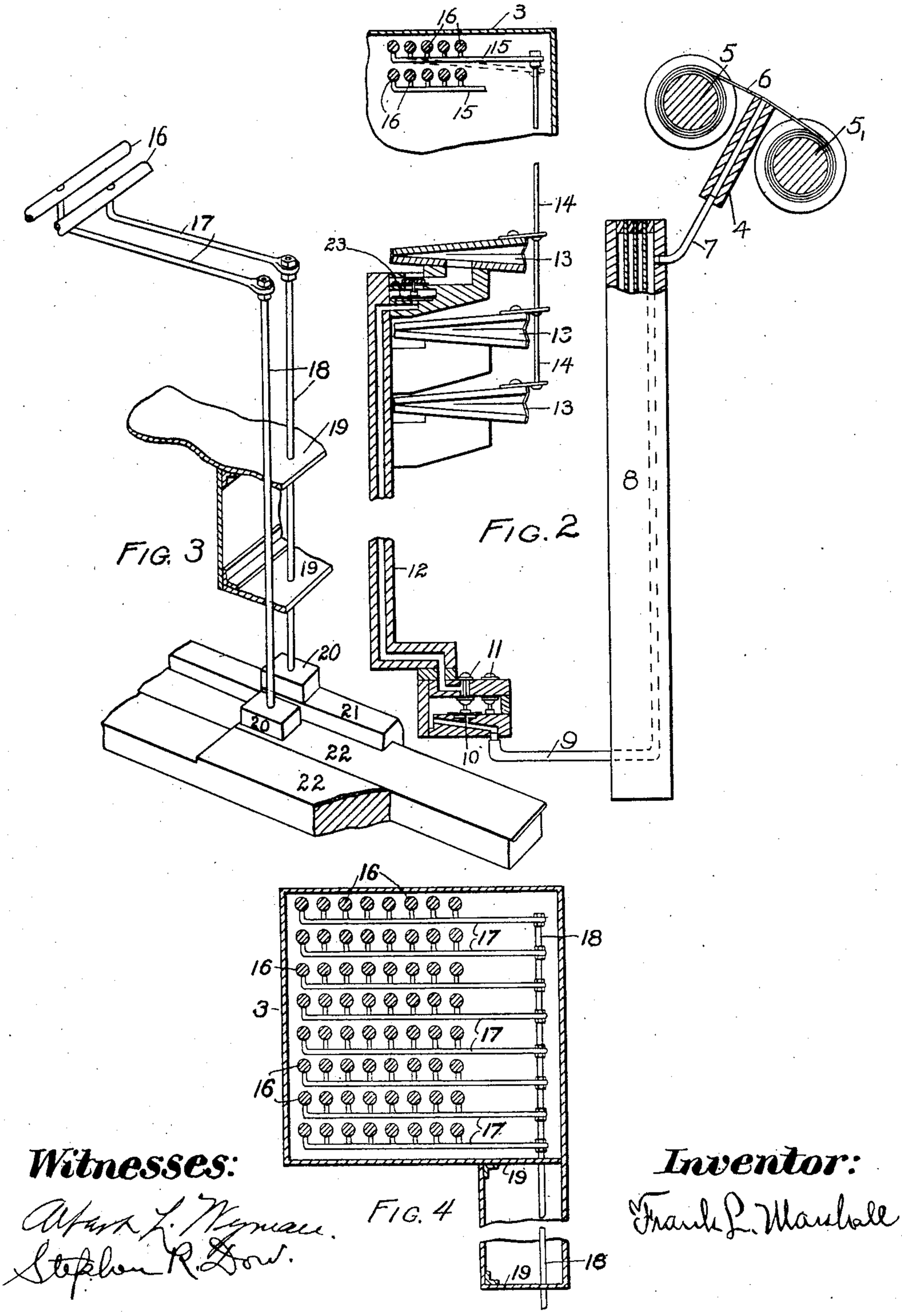

FIG. 3

FIG. 2

FIG. 4

Witnesses:

Albert L. Wyman.
Stephen R. Dow.

Inventor:

Frank L. Marshall

UNITED STATES PATENT OFFICE.

FRANK L. MARSHALL, OF BOSTON, MASSACHUSETTS.

PLAYING ATTACHMENT FOR MUSICAL INSTRUMENTS.

No. 855,465. Specification of Letters Patent. Patented June 4, 1907.

Application filed October 15, 1904. Renewed February 26, 1906. Serial No. 303,016.

To all whom it may concern:

Be it known that I, FRANK L. MARSHALL, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Playing Attachments for Musical Instruments, of which the following, together with the accompanying drawings, is a complete and exact description.

My invention relates to a new and improved construction whereby a piano or other instrument may, without any disconnection or removal of parts, be operated, either manually in the ordinary way, or by the so-called mechanical "player," or by both simultaneously.

In other words, my invention consists of an improved means of operatively connecting a piano, for instance, and a mechanical player, whereby the piano key-board, while actuated by the player is not obstructed thereby, but is open to manual operation independent thereof.

More specifically, my invention consists in means of attaining the ends indicated without any alteration or mutilation of the standard piano structure.

There are two types of so-called "players" now in use. One of these may be designated as self-contained in that the mechanism for operating the piano is confined entirely thereto, by virtue of which construction the "player" may be used in connection with any ordinary piano. As now constructed, however, a "player" of this character must be placed immediately in front of the piano, thereby concealing and preventing free access to the piano key-board and involving the removal of the "player" whenever it is desired to operate the piano manually. The other type is that in which the mechanism for operating the piano is partially within the "player" and partially within or mounted on the piano, the two being usually pneumatically or electrically interconnected. This structure may permit of the manual operation of the piano without the disconnection of the "player," but has the disadvantage that the piano must, of course, be of special construction, and must have provision for the admission or attachment of the "player" connections. Furthermore, the presence within the piano of the operating mechanism mentioned often impairs its tone or quality.

An object of my invention is the construction or arrangement of instrument and "player" whereby all the advantages of each of the existing types mentioned may be obtained, while all the objectionable features of each are eliminated.

More particularly my invention resides in the means by which I secure communication between a "player" of the self-contained type first mentioned, and an instrument or piano of ordinary construction.

Of course, since my invention resides largely in the communicating or connecting feature as stated, the special form or class of "player" or instrument is not material, except in so far as the form of these may be controlled or determined by their use and connection with my invention. For example,—the so-called "player" would perhaps ordinarily be automatic. It might, however, itself be manual in operation. Again, whereas I have defined my invention more particularly in connection with a piano, it is perfectly possible that it may be useful in connection with other instruments.

Briefly, I attain the objects of my invention by locating the "player" to the side of, or away from immediately in front of the piano, and by placing the operating mechanism within the "player," in communication with the external or visible portion of the keys forming what is known as the piano key-board. In order that the communicating mechanism may not obstruct access to the piano key-board, that portion of it, actually contacting with the keys, is placed well to the rear end of the visible portion of the latter. It will be seen that this disposition of the player, away from the front of the piano, leaves the keyboard unobstructed for manual operation; and the combination of a piano and player in which this result can be secured I consider the essence of my invention, regardless of the particular relation of the player with respect of the piano; so long, of course, as the other distinguishing features of invention, namely, the location of the playing devices well to the rear of the visible keyboard and unsupported by the piano, are preserved. It will thus be seen that so long as the general arrangement of player and communicating means described, is had, the specific style of the intercommunicating parts is of minor importance. The communicating means shown in the drawings and hereinafter described by me consists of a bank of hammer-levers connected with the

"player" and located over the piano key-board to operate the keys thereof. This bank of levers and hammers is extended over the rear of the key-board in such a way as to allow free access to the keys for manual operation. The lever bank, although perhaps preferably attached to or forming part of the "player," may be in the nature of a separable feature provided with means of attachment to the "player" and piano.

Having set forth the objects and nature of my invention I will now describe the same in connection with the accompanying drawings, in which—

Figure 1 is a front view of a piano with the "player" located in operating position. Fig. 2 is a diagrammatic view of the connections between the tracker-board and the co-operating mechanism. Fig. 3 is a fragmentary view of two of the hammers and their operating levers. Fig. 4 is a sectional view through a bank of rocker shafts carrying the hammer operating levers.

Referring to the drawings, the construction, application, and description of my invention is as follows: Within a case 2 are located the various pneumatics common to this class of "players," and consisting, as shown, of tracker board 4, channel board 8, primary pneumatics 10, main pneumatics 13, connecting tubes 7 and 9, and controlling valves 11, all performing their usual functions in this class of apparatus. Extending from the end of case 2 is an arm 3 within which are pivoted rocking shafts 16, one for each main pneumatic. Arms 15 from the rocker shafts extend over the back of pneumatics and each main pneumatic is connected to its appropriate rocker shaft by links 14. Similar arms 17 extend from the opposite ends of the rocker shafts and connect with the plungers 18 carried in guides 19. On the arm 3 of the piano case and on the lower ends of the plungers 19 are fixed the hammers 20, normally standing just clear of the tops of the piano keys 21 and 22. Thus a connecting link 14, a rocker shaft 16, its arm 15 and 17, plunger 18, hammer 20, and their supports, make up a complete operating mechanism whereby the movements of the main pneumatic may be transmitted to the piano key.

Any equivalent system of levers and links may be substituted for that shown without departing from the spirit of my invention. In fact, as apparent from the statement of my invention, the connections need not be entirely mechanical, but may be more or less electrical or pneumatic in character.

Having fully described my invention, what I claim and desire to secure by Letters Patent of the United States is:—

1. In combination, a piano, a player unsupported by the piano and so located with respect thereto as to leave the keyboard unobstructed for manual operation, and means acting on top of the outer keyboard of the piano to communicate the action of the player to the piano.

2. In combination, a piano, a player unsupported by the piano and located away from the front thereof so as to leave the key-board in its normal unobstructed condition for manual operation, and player-operated means disposed above the piano keyboard to communicate the action of the player to said keyboard.

3. In combination, a piano, a player unsupported by the piano and located away from the front thereof so as to leave the key-board in its normal unobstructed condition for manual operation, and means operatively connecting said player and keyboard to transmit the impulses of the player action to the top of the outer keyboard of the piano.

4. In combination, a piano, a player, unsupported by the piano, and located away from the front thereof so as to leave the key-board in its normal unobstructed condition for manual operation, and means operatively connecting said player and keyboard and so disposed relative to said keyboard as to transmit the impulses of the player action to the top and rear of the visible keyboard.

5. In combination, a piano, a player unsupported by the piano and located at one side thereof so as to leave the keyboard in its normal unobstructed condition for manual operation, and means extending from said player over the rear portion of the visible keyboard to transmit the impulses of the player action to the top of said keyboard.

6. In combination, a piano, a player located to the side of said piano, a casing extending lengthwise over the piano key-board, said casing containing means in communication with the player action and with the piano key - board, said means being constructed to receive impulses from the player action and to operate the piano by delivering said impulses to the key-board thereof, and said casing being arranged over the key-board at the rear thereof so as to permit of free access to said board for manual operation of the piano.

7. In combination, a piano, a player located to the side of said piano, a casing extending from said player lengthwise over the piano key - board, said casing containing means in communication with the player action and with the piano key-board, said means being constructed to receive impulses from the player action and to operate the piano by delivering such impulses to the key-board thereof.

8. A player, an arm attached thereto and extending outward thereform, means within said arm and in communication with the player action to receive impulses therefrom, and constructed to transmit said impulses

according to their note to points along the arm increasingly remote from the player action.

9. A player, an arm attached thereto and extending outward therefrom, a bank of levers within said arm and in communication with the player action to receive impulses therefrom, and constructed to transmit said impulses according to their note to points along the arm increasingly remote from the player action.

In testimony whereof I have affixed my signature, in presence of two witnesses.

FRANK L. MARSHALL.

Witnesses:
STEPHEN R. DOW,
ALBERT L. WYMAN.