

Sept. 4, 1928.

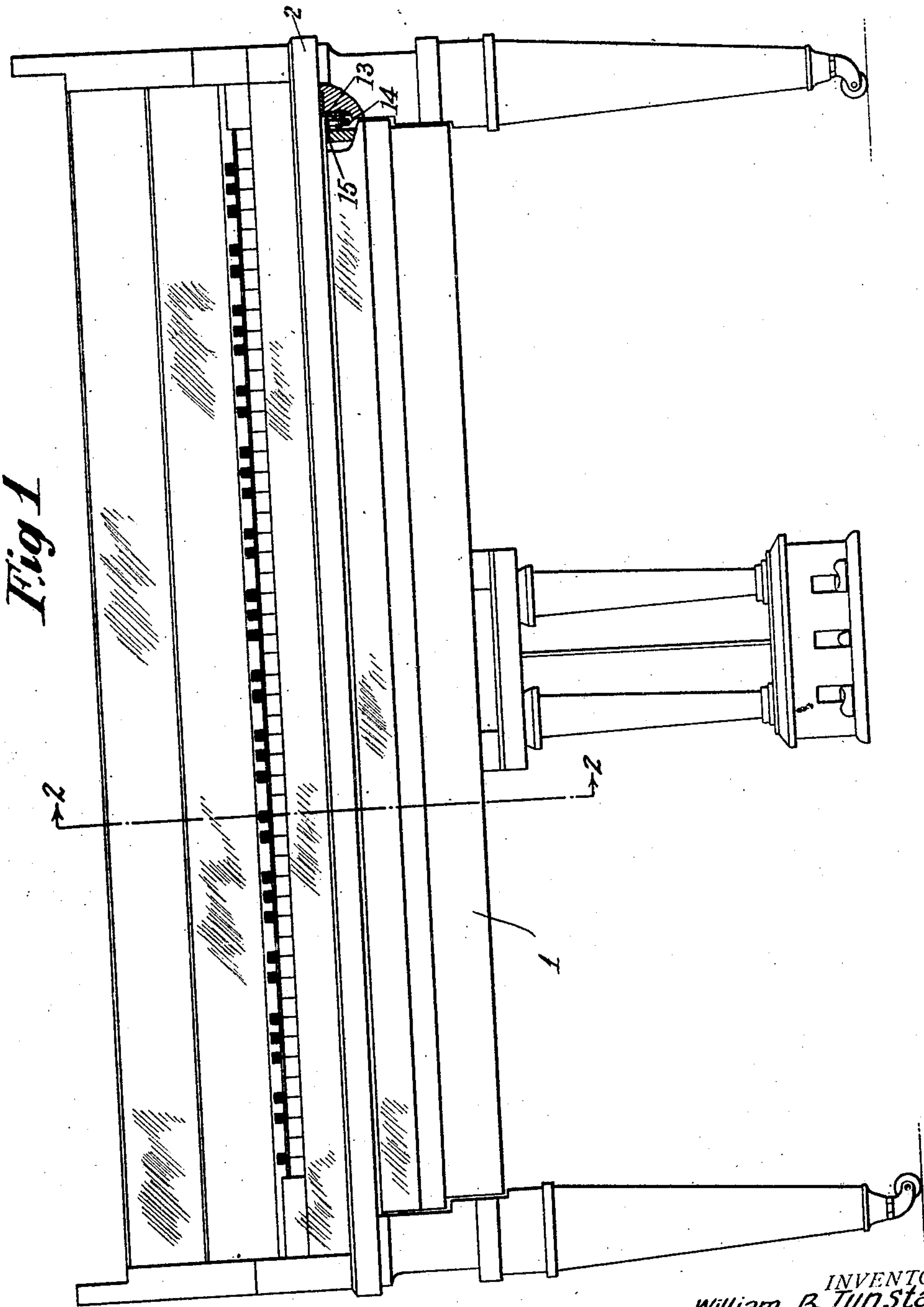
W. B. TUNSTALL

PLAYER GRAND PIANO

Filed Jan. 24, 1923

1,682,869

4 Sheets-Sheet 1



INVENTOR
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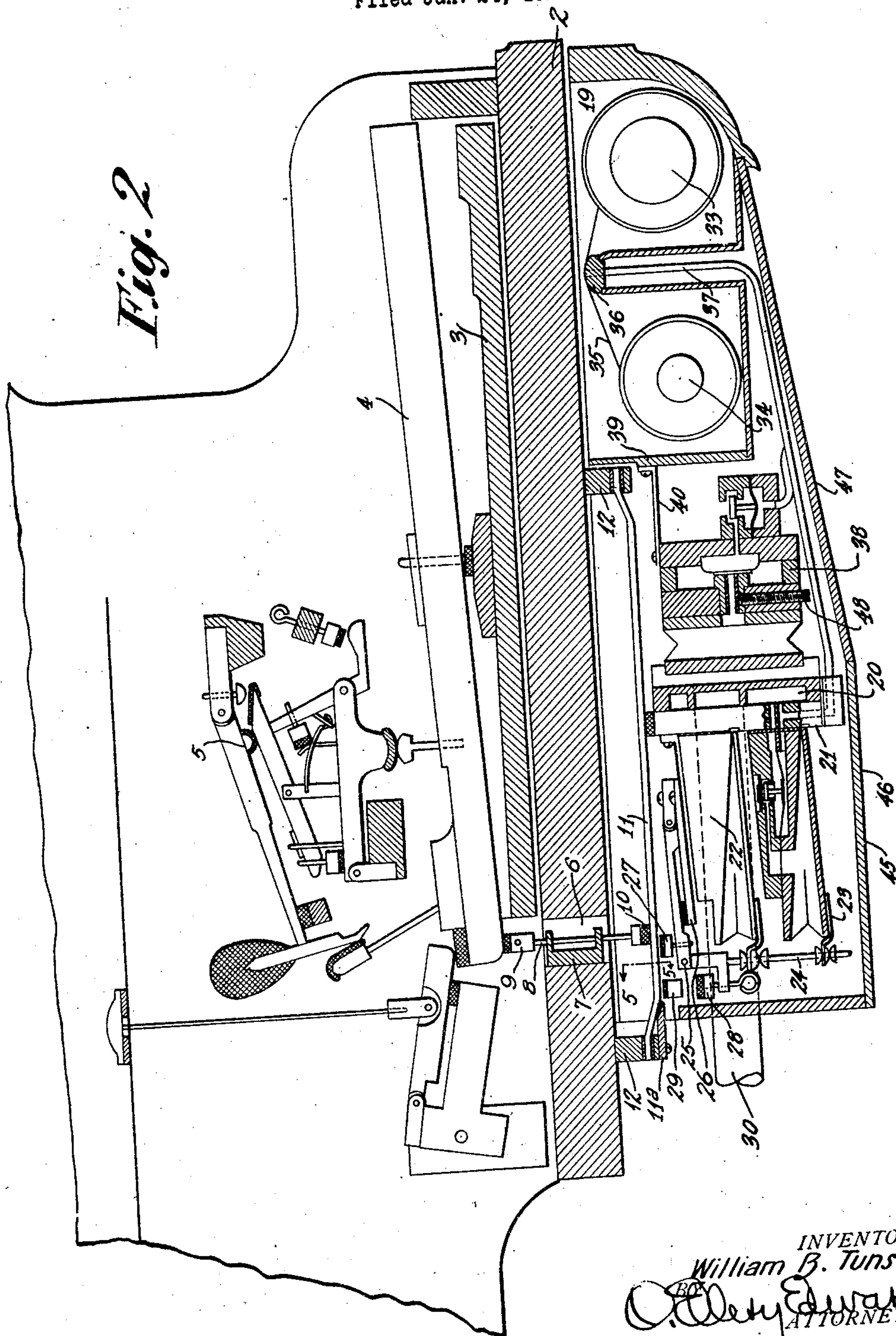
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4 Sheets-Sheet 2

Fig. 2



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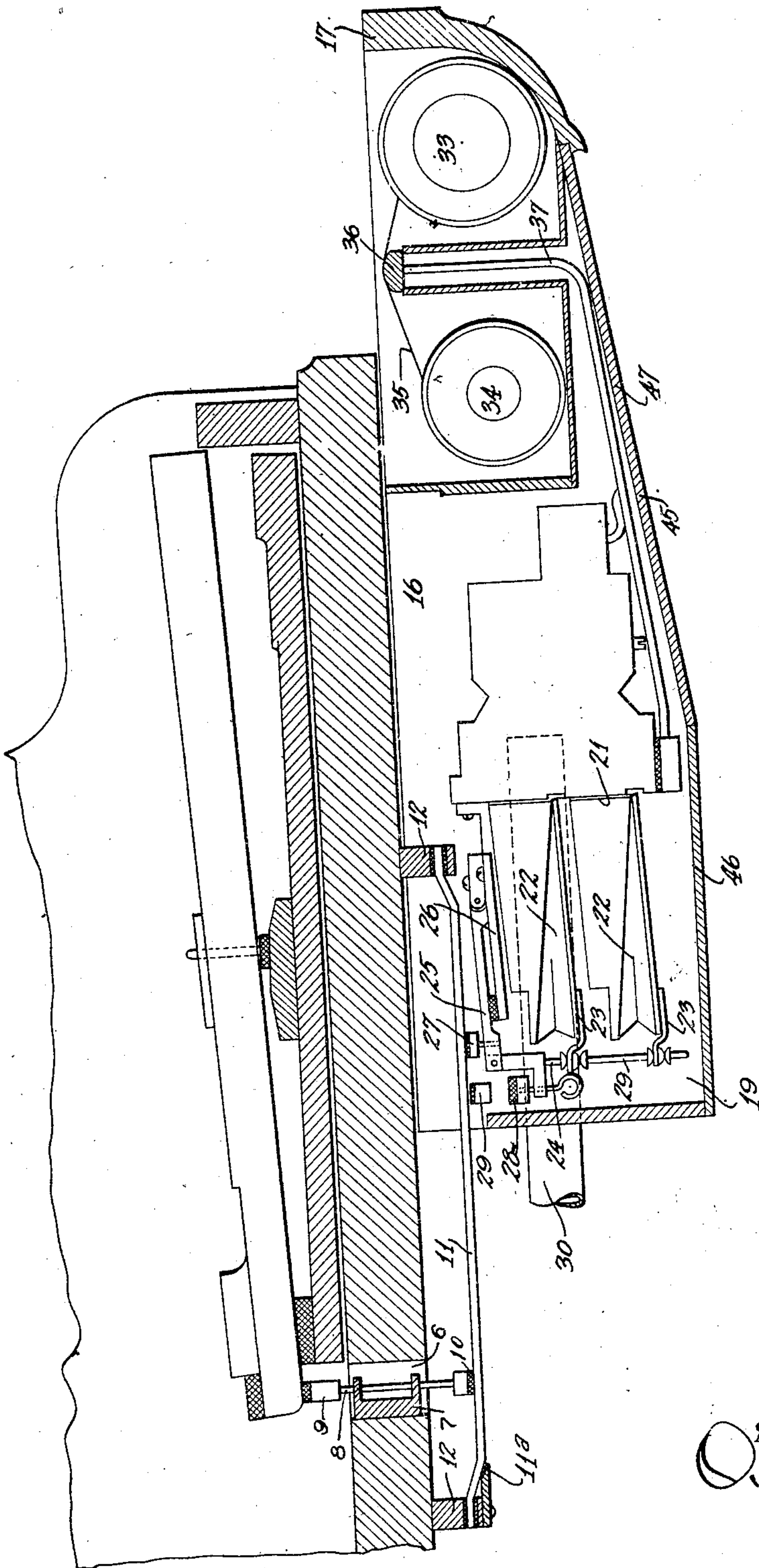


Fig. 3

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4 Sheets-Sheet 4

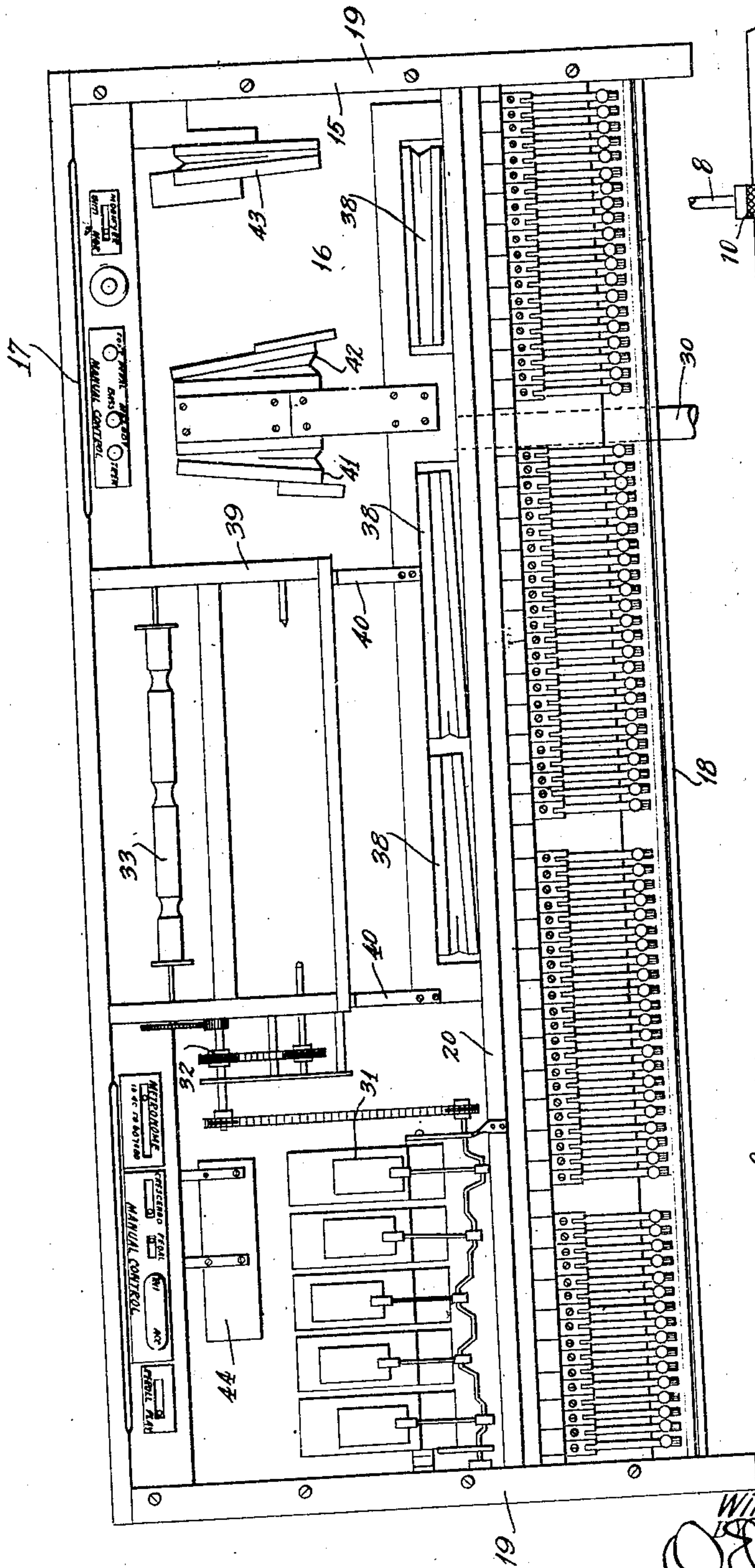


Fig. 4

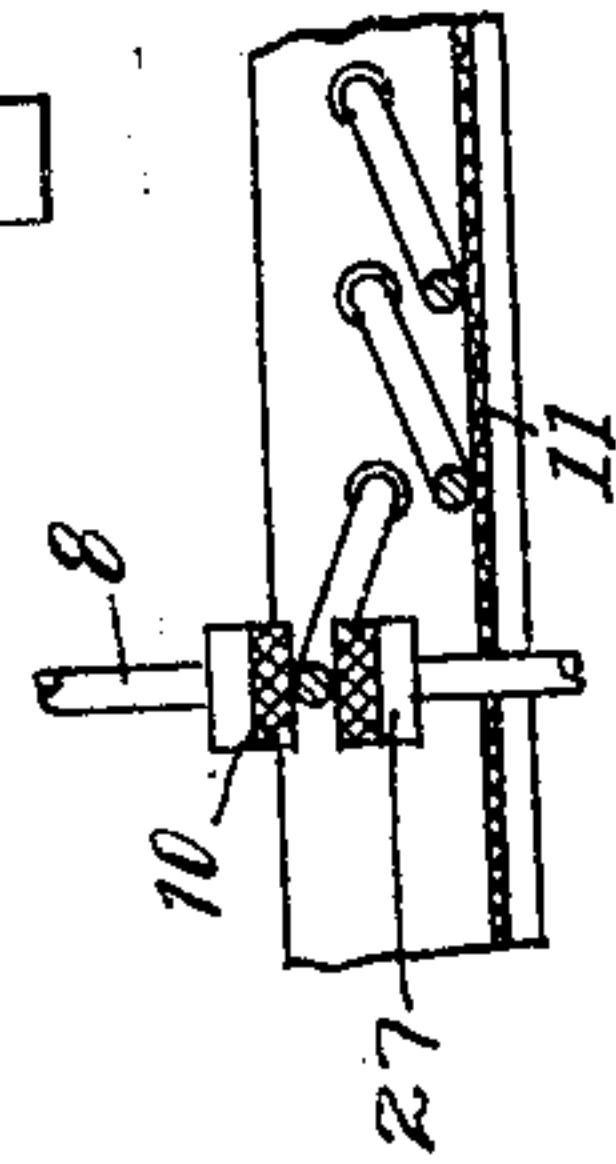


Fig. 6

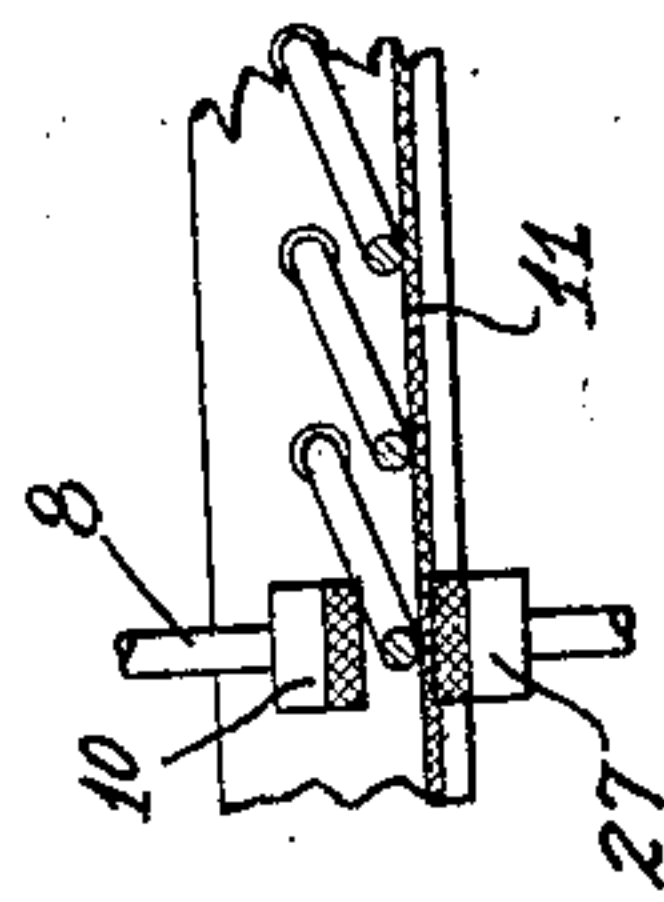


Fig. 5

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UNITED STATES PATENT OFFICE.

WILLIAM B. TUNSTALL, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO EARLE E. CONWAY, OF BOSTON, MASSACHUSETTS; CARLE C. CONWAY, OF SCARBORO, NEW YORK, AND THEODORE P. BROWN, OF WORCESTER, MASSACHUSETTS, TRUSTEES.

PLAYER GRAND PIANO.

Application filed January 24, 1923. Serial No. 614,599.

The object of my invention is to provide a player grand piano of any suitable type or size which will have the player action inserted or removed as a unit, the music sheet roll visible or invisible at will, as the person playing the piano may desire, to put the player mechanism where it will not interfere with the sound or the tone or structural details of the piano and to place the player mechanism where it will change the appearance of the piano as little as possible. This and other objects are accomplished by my invention, one embodiment of which is hereinafter more particularly set forth.

For a more detailed description of my invention, reference is to be had to the accompanying drawings, forming a part hereof, in which

Figure 1 is a front elevation of a piano provided with my improvement.

Figure 2 is a sectional view, taken on the line 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a similar view showing the drawer, partially open, which contains the player mechanism.

Figure 4 is a plan view of the drawer with the player and other pneumatic actions mounted therein.

Figs. 5 and 6 show a detailed construction relating to the elongated crank members, Fig. 5 showing one of these members at rest and Fig. 6 showing the same elevated.

Throughout the various views of the drawings, similar reference characters designate similar parts.

My improved piano 1 is provided with the usual key-bed 2 which supports the key frame 3 which carries the usual keys 4 and piano action 5 in the conventional manner. The key-bed differs from the ordinary, however, in that a suitable opening 6 is provided beneath the rear ends of the keys and in the opening is placed a guide 7 which has many bushed perforations and each pair of bushed perforations carries a slidably mounted spindle, rod or abstract 8 with adjustable cushion capstan top 9 adapted to engage the lower surface of the key. The lower end of each spindle 8 has a cushion 10 which rests on an elongated crank member 11 and each wire has its ends supported in bushed openings in rails 12 which are secured to the bottom of the key-bed. Each elongated

crank member 11 normally rests on a stop 11^a when the drawer, described below, is removed, and this stop 11^a may be supported in any suitable manner as from a rail 12.

Below the key-bed 2 and secured thereto at each side are angles 13 (see Figure 1) which carry rollers 14 which may be ball bearing rollers, if desired, and on these rollers 14 are mounted plates 15 which are fixed to the tops of the ends of the drawer 16 so that the drawer 16 may be pulled forward or back on the rollers 14. This drawer 16 has two sides, a front side 17 and a rear side 18 and ends 19 which are connected by the main wind chest 20 of the player action. The main wind chest 20 supports a bank of player pneumatics 21 and each pneumatic 22 has the usual lug 23 which is connected to an abstract or spindle 24 which runs to a striker 25 which is pivoted at its front on the striker rail 26 secured to the bank 21 and each striker 25 is provided with a button 27 which is adapted to rest against the lower surface of its elongated crank member 11 and engage the same at any point between the bends to which it may be applied so that the drawer may be moved forward or back without in any way changing or disturbing the action of the striker 25 on its elongated crank member 11. To prevent the striker 25 from forcing the elongated crank member 11 too far each abstract 24 is provided with an adjustable stop 28 which engages the stop rail 29. Suction is had for the pneumatic mechanism of the drawer 16 by means of the conduit 30 which preferably has telescoping parts so that it will not in any way interfere with the movement of the drawer. It will be understood that this conduit is connected in the conventional manner to any suitable exhausting means and in case the player is driven by power, this exhausting means will be driven by an electric motor, which is the preferred form.

The wind chest 20 also supports one end of the pneumatic motor 31 which drives the spool mechanism 32 which is of any suitable type and is connected with the usual take up roller 33 and spool 34 in the usual manner, and of course, this spool and take up roller carry a music sheet 35 over a tracker bar 36 in the usual way and this tracker bar has conduits 37 and run not only to the striking pneumatics 22, but also to the expression

control devices 38. It will be noted that these expression pneumatics are to some extent placed between the spool box and the main pneumatic stack and they are also connected to the spool box 39 by suitable brackets 40. The wind chest also supports reroll pneumatics 41 and the replay pneumatic 42 which are connected to the motor mechanism in the usual manner. A side 19 also supports an electric switch pneumatic 43 by means of which power to the motor is shut off as controlled from the note sheet 35.

The front 17 supports the spool box 39 and also the various manual controls, such as the modifier lever, electric switch, button, soft pedal button, base and treble melody buttons, metronome lever, crescendo lever, sustaining pedal lever, phrasing lever and reroll and play lever and the motor governor or tempo box 44. All these elements are connected in the conventional manner, and for the conventional purposes, the pneumatic contrivances having suitable conduits for pneumatic connections and links and levers for mechanical connections so that each and all will function together in the usual way. These connecting parts are omitted from Fig. 4 to avoid confusing the drawings. It will be noted that none of these elements 21 to 44 inclusive, is supported from the bottom. This is because the bottom 45 is divided into two parts 46 and 47 either or both of which may be removed without in any way disturbing the pneumatic mechanism of the drawer. When the part 46 is removed, the adjustable stop devices 28 of the striking pneumatics may be adjusted with regard to the rail 29 and when the part 47 is removed the adjustable devices 48 of the expression mechanism may be adjusted and both the aforesaid adjustments can and should be made while the instrument is in operation. The parts 46 and 47 of the bottom 45 are held in position by means of screws, not shown. The details of the pneumatic action and expression devices are not described because, like the piano action, they may be of any suitable type or form.

In view of the foregoing, the operation of my improved player grand piano will be readily understood, assuming that the note sheet 35 is in place and passing in the normal way over the tracker bar 36 and that power is applied to the wind chest 20 and through the expression devices 38 and to the pneumatics 22 in the usual way. If the person playing the instrument does not care to observe the note sheet while passing, the drawer may be closed and then each striker 25 will, when called upon, strike its elongated crank member 11 and cause the corresponding note to be sounded. If he wishes to observe the music sheet, as it passes over the tracker bar as when singing a song to which the music is an accompaniment, he

can pull the drawer out sufficiently far to enable him to read the note sheet in this way, and then each striker 25 will actuate the elongated crank member 11 from a different position, but otherwise, identically the same so that identically the same movement and force is imparted to the piano action regardless of the position of the drawer within the limits of its movement so that the instrument may be operated pneumatically with the note sheet visible or invisible, as desired. In addition to the foregoing, it will be noted that the drawer 16, with its contents, may be removed or inserted without in any way changing the adjustments and all parts of the player mechanism may be put in or removed from the drawer while the drawer is removed from the piano.

In the foregoing has been shown and described one embodiment of my invention, but it is obvious that it is not restricted thereto, but that it is broad enough to cover all structures that come within the scope of the annexed claims.

Having thus described my invention, what I claim is:

1. In a piano, a keybed, a piano action, keys, a rod below each key, an elongated crank member below each rod, and a stop to limit the downward movement of each elongated crank member.

2. In a piano, a keybed, a series of elongated crank members pivotally connected to said keybed, a player action movably mounted under said elongated crank members with strikers engaging said elongated crank members, and adjustable stops adapted to limit the movement of said strikers against said crank members.

3. In a piano, a player action, a keybed, a drawer supported from said keybed, a player action in said drawer and supported thereby from the sides, means for adjusting said action and a removable bottom for said drawer, whereby the adjustable means may be adjusted while the bottom is removed and the mechanism is in operation.

4. In a piano, a piano action, a keybed, a drawer containing a player action and expression devices supported by the sides of the drawer, means for regulating the player action and means for regulating the expression devices and a removable bottom on said drawer, whereby the regulating means of either kind may be regulated while the piano is playing pneumatically and the bottom is removed.

5. In a piano equipped with pneumatic playing devices, a drawer containing a complete pneumatic action for striking the notes located at the rear of said drawer, an expression device mounted on the front side of said pneumatic action and a spool box and other roll actuating and controlling devices located in the front portion of the drawer, said

drawer being movably and operatively connected with the keybed of the piano and means located between the said drawer and the action of the piano, whereby the said
5 pneumatic action in the drawer is in continuous operative contact with the piano action as the drawer may be moved from one position to another.

6. In a player piano, a piano action, a
10 drawer having positioned at its rear a complete pneumatic action for striking notes of the piano, and having fastened to the front side of said pneumatic action, an expression

device for controlling the flow of air to the said pneumatic action and roll carrying and
15 operating means located on the front side of said drawer, all the component parts of the drawer forming a unit movably attached to the piano and means between the piano
20 action and drawer contained pneumatic action whereby they are in continuous operative contact within certain fixed points.

In testimony whereof, I have hereunto set my hand this 20th day of January, 1923.

WILLIAM B. TUNSTALL.