

A. NORDEEN.
REWINDING MECHANISM FOR PNEUMATIC PIANOS.
APPLICATION FILED DEC. 16, 1907.

925,130.

Patented June 15, 1909.

3 SHEETS—SHEET 1.

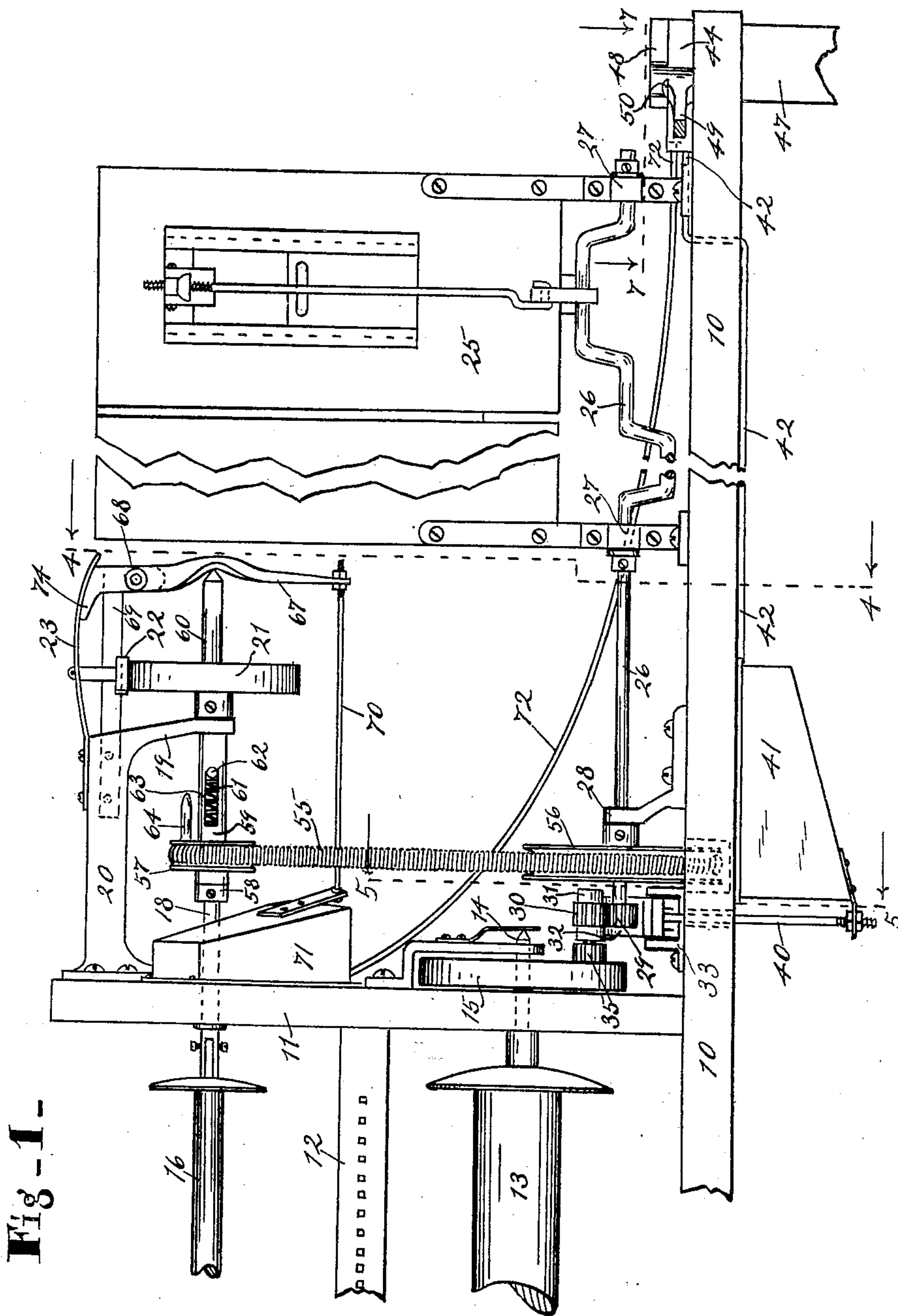


Fig. 1-

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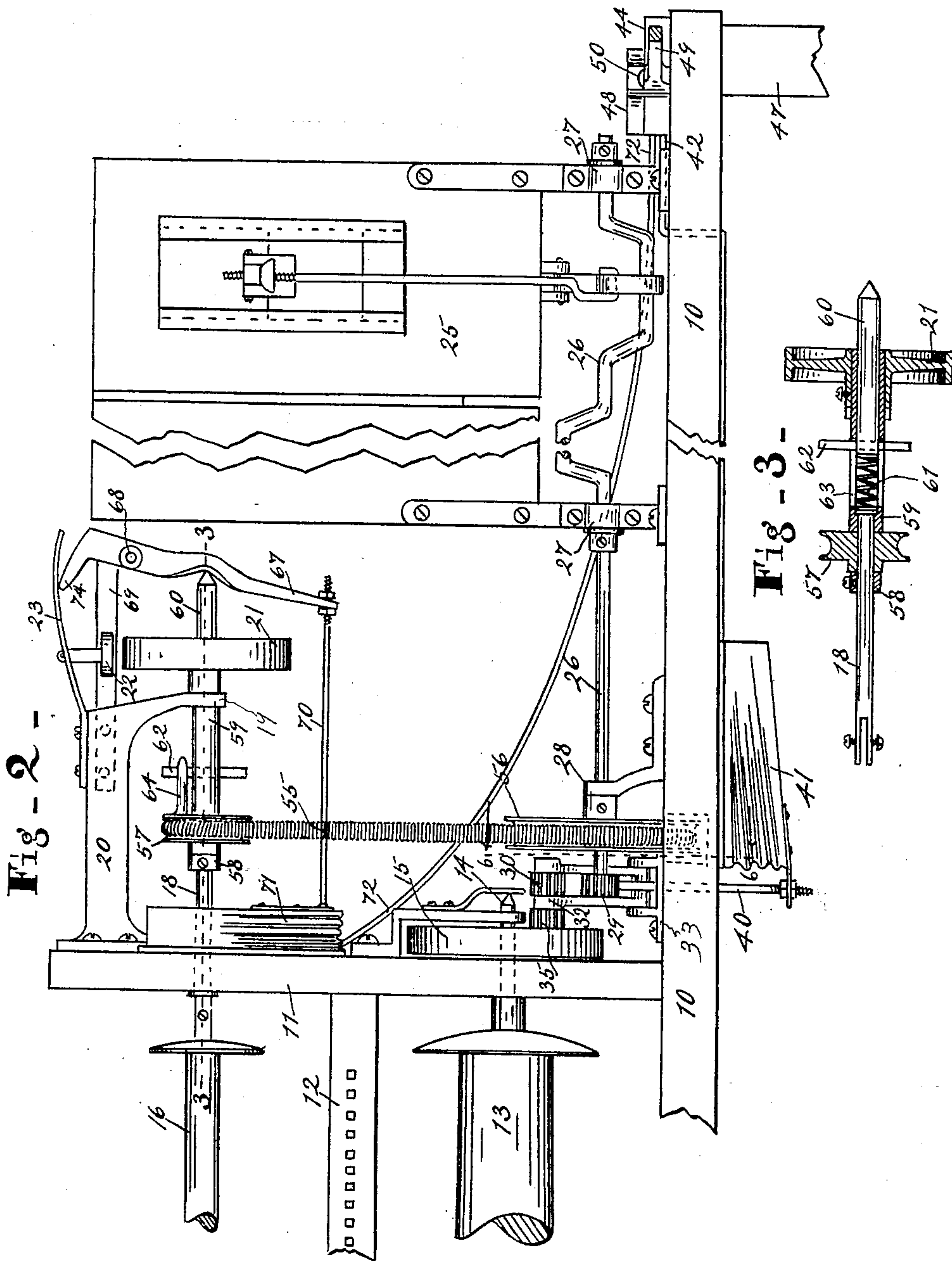
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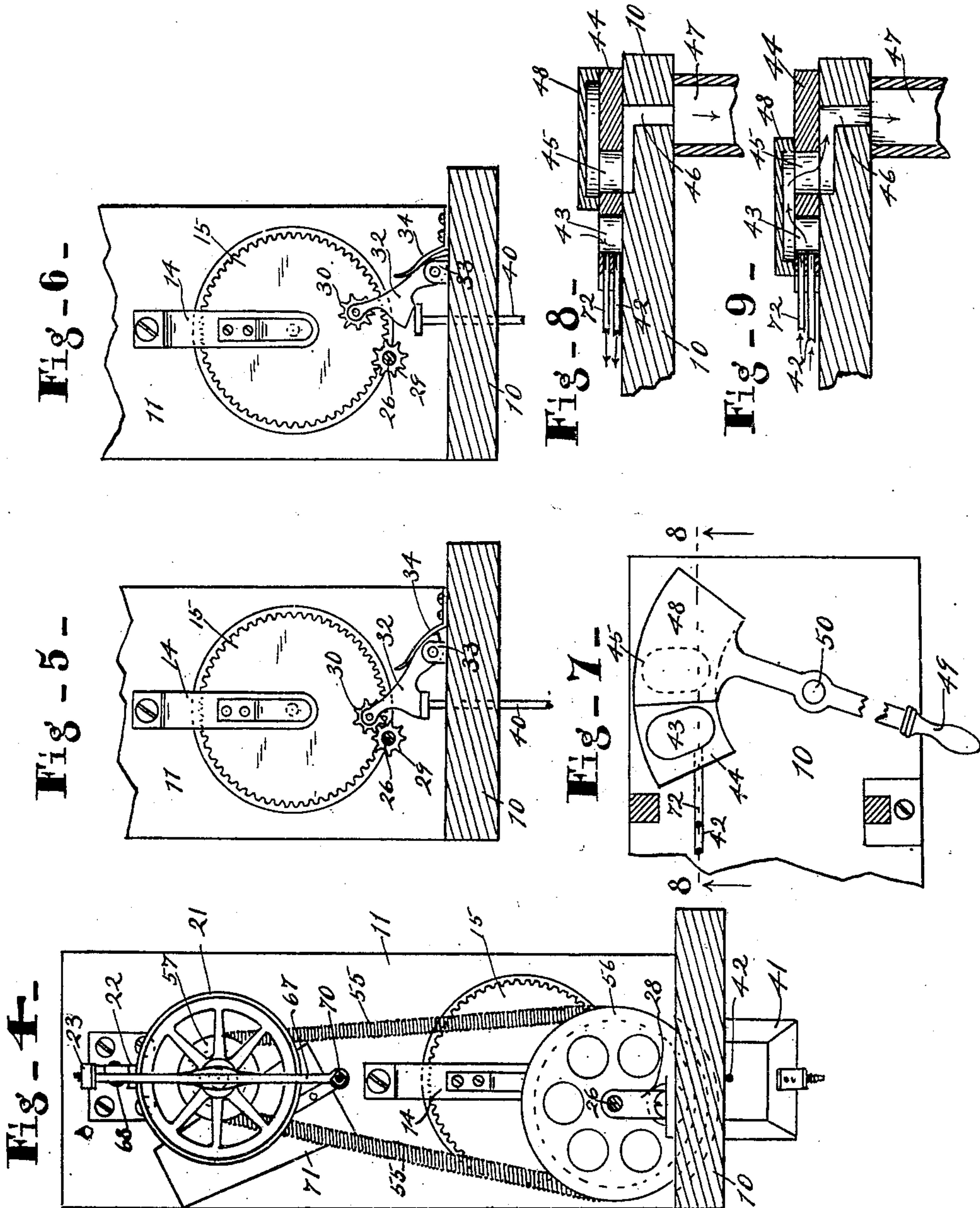
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AUGUST NORDEEN, OF NEWCASTLE, INDIANA, ASSIGNOR TO RAY PIANO COMPANY, OF NEWCASTLE, INDIANA, A COPARTNERSHIP.

REWINDING MECHANISM FOR PNEUMATIC PIANOS.

No. 925,130.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed December 16, 1907. Serial No. 406,636.

To all whom it may concern:

Be it known that I, AUGUST NORDEEN, of Newcastle, county of Henry, and State of Indiana, have invented a certain new and useful Rewinding Mechanism for Pneumatic Pianos; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

The object of this invention is to improve the construction of the mechanism in pneumatic pianos for rewinding the perforated music sheets. This part of the mechanism of pneumatic pianos has been heretofore a source of considerable difficulty because of the use of purely mechanical means for rewinding the sheet of music.

The chief feature of my invention consists in using pneumatically operative means for said purpose, there being provided pneumatically operative means for throwing the winding mechanism out of gear and pneumatically operative means for throwing the rewinding means into operation and releasing a brake thereon, the whole being controlled by one pneumatic switch lever.

The nature of this invention will be understood from the accompanying drawings and the following description and claim.

In the drawings Figure 1 is a front elevation of that portion of a pneumatic piano relating to my invention, the parts being shown in a normal or winding position, and parts being broken away. Fig. 2 is the same as Fig. 1 with the parts in position to rewind. Fig. 3 is a central longitudinal section of the spindle for actuating the music roll and rewinding the sheet of music, the parts being in an inoperative position. Fig. 4 is a vertical section on the line 6—6 of Fig. 2, that is being the same as Fig. 5 with the winding mechanism out of gear. Fig. 7 is a plan view of the switch mechanism, parts being in horizontal section on the line 7—7 of Fig. 1. Fig. 8 is a vertical section on the line 8—8 of Fig. 7, showing the pneumatic valve in its normal winding position. Fig. 9 is the same showing the valve in an unwinding position.

There is a base board 10 having a pair of parallel uprights 11, only one of which is shown, between which a tracker board 12 extends. A winding drum 13 is mounted below the tracker board and between the

uprights 11, and has a spindle 14 having bearing in and projecting through the upright 11, as shown, and on its outer end there is mounted an internal gear wheel 15. Above the tracker board a roll 16 is mounted that carries the music sheet, said roll having its end detachably mounted in a rewinding shaft 18 that extends through and has bearing in the upright 11 and a downwardly projecting arm 19 from a bracket 20. On its outer end it carries a brake wheel 21 which is engaged by a brake shoe 22 carried by a spring 23 secured on the bracket 20 and projecting laterally therefrom.

While the music is being played, the music sheet winds upon the winding roll from the music roll 16. This winding movement is caused by the actuating bellows 25 operating through a crank-shaft 26 mounted in bearings 27 and 28 and having on its inner end a pinion 29 that meshes with a pinion 30, that is mounted on a spindle 31 carried by a bifurcated arm 32 mounted in a bearing 33 secured to the base board 10. A spring 34 bears against said arm and tends to force the pinion 30 into engagement with the driving pinion 29. There is a pinion 35 on the spindle 31 that engages the internal gear 15, and in this way power is transmitted from the driving pinion 29 to the winding roll.

The winding mechanism just described is thrown out of operation by the arm 32, see Fig. 5, being elevated to the position shown in Fig. 6 so as to disengage the pinions 29 and 30. This is caused by a pin 40, which operates vertically through the base board 10 under the influence of bellows 41 secured to the under side of said board, and which is actuated by the air being exhausted therefrom through a tube 42 leading from a port 43 in the valve plate 44, shown in Figs. 8 and 9, and which is secured upon the base board 10 near one end. There is another port 45 in said plate 44 that is in constant communication with a passage 46 from an exhaust air chest 47. A sliding valve 48 operates on the plate 44 so that when it is in the position shown in Fig. 9, it will throw the two ports 43 and 45 into communication with each other, and the air will be exhausted from the bellows 41, and thus the winding mechanism be thrown out of operation. When the valve 48 is in the position shown in Fig. 8, the ports 43 and 45 are not in communication, and, therefore, the bellows 41 as-

sumes its normal and expanded position, and the spring 34 moves and holds the pinion 30 in engagement with the driving pinion 29, which again puts the winding mechanism in
5 operation.

The valve 48 is oscillated or actuated by a hand lever 49 fulcrumed at 50 upon the base plate 10. The rewinding shaft 18 is driven by a spiral wire cable 55 from the
10 crank-shaft 26, said cable passing about a large sheave wheel 56 on said shaft 26 and a small sheave wheel 57 on the rewinding shaft 18. The wheel 57 is loosely mounted on said shaft 18 between a fixed collar 58
15 and a fixed enlargement 59 of the shaft 18. When music is being played, and the sheet of music is being wound on the winding roll 13, the small wheel 57 runs idle. When, however, it is desired to rewind, and the
20 winding mechanism below is thrown out of operation, it is necessary to throw the rewinding mechanism above into operation simultaneously. This is done by the following mechanism: The enlarged portion 59
25 of the shaft 18 is hollow at its outer end for a longitudinally reciprocal clutch rod 60. It is normally pushed outwardly by a spring 61, and on its inner end carries a pin 62 that projects upwardly through a slot 63 in said
30 tubular portion 59, so that said pin 62 serves as a stop to limit the outward movement of the rod 60, and the spring 61 serves to hold the pin 62 out of engagement with a pin 64 extending laterally from the side of the
35 wheel 57 while music is being played and the rewinding mechanism is not in operation. This is set in operation by the rod 60 being moved inwardly from the position shown in Fig. 1 to that shown in Fig. 2 to
40 cause the pins 62 and 64 to interlock. Then the wheel 57 will revolve the part 59 and the shaft 18. The rod 60 is forced inwardly by a lever 67, which is fulcrumed at 68 on the outer end of an arm 69 from the bracket
45 20. Said lever 67 is actuated, or turned to the left from the position shown in Fig. 1, by a connecting rod 70 and the bellows 71,

which are secured to the side of the upright 11, and from which the air is exhausted through a tube 72 that extends to the port 50
43 on the pneumatic valve mechanism, as appears in Figs. 8 and 9. Therefore, when the valve 48 is operated to the position shown in Fig. 9, the bellows 71 will be ex-
55 hausted and actuated as well as the bellows 40, the two simultaneously, and hence, the rewinding mechanism will be thrown into operation at the same instant the winding mechanism is thrown out of operation, and this condition of the mechanism will remain 60
as long as the valve is in the position shown in Fig. 8. At the same time that the rewinding mechanism is thrown into operation, the brake 22 is released from the wheel 21 by a projection 74 on the upper end of 65
the lever 67 that engages the lower side of the spring 23 and elevates it and the brake shoe 22. When the valve is moved to the position shown in Fig. 8, the parts are re-
70 turned by the springs 34, 61 and 23 to the position shown in Fig. 3, which is the winding position and the usual position.

What I claim as my invention and desire to secure by Letters Patent is:

A pneumatic piano including a shaft for 75
rewinding a sheet of music that has a tubular end portion, a driving wheel mounted loosely on said shaft with a laterally projecting pin therefrom, a clutch rod mounted
80 slidably in the hollow portion of said shaft and carrying a pin adapted when the rod is moved inwardly to interlock with the pin on said wheel, a spring for normally holding said rod outwardly, and pneumatic means
85 for moving said rod into the clutching position.

In witness whereof, I have hereunto affixed my signature in the presence of the witnesses herein named.

AUGUST NORDEEN.

Witnesses:

D. W. KINSEY,
FRED. SAINT.