

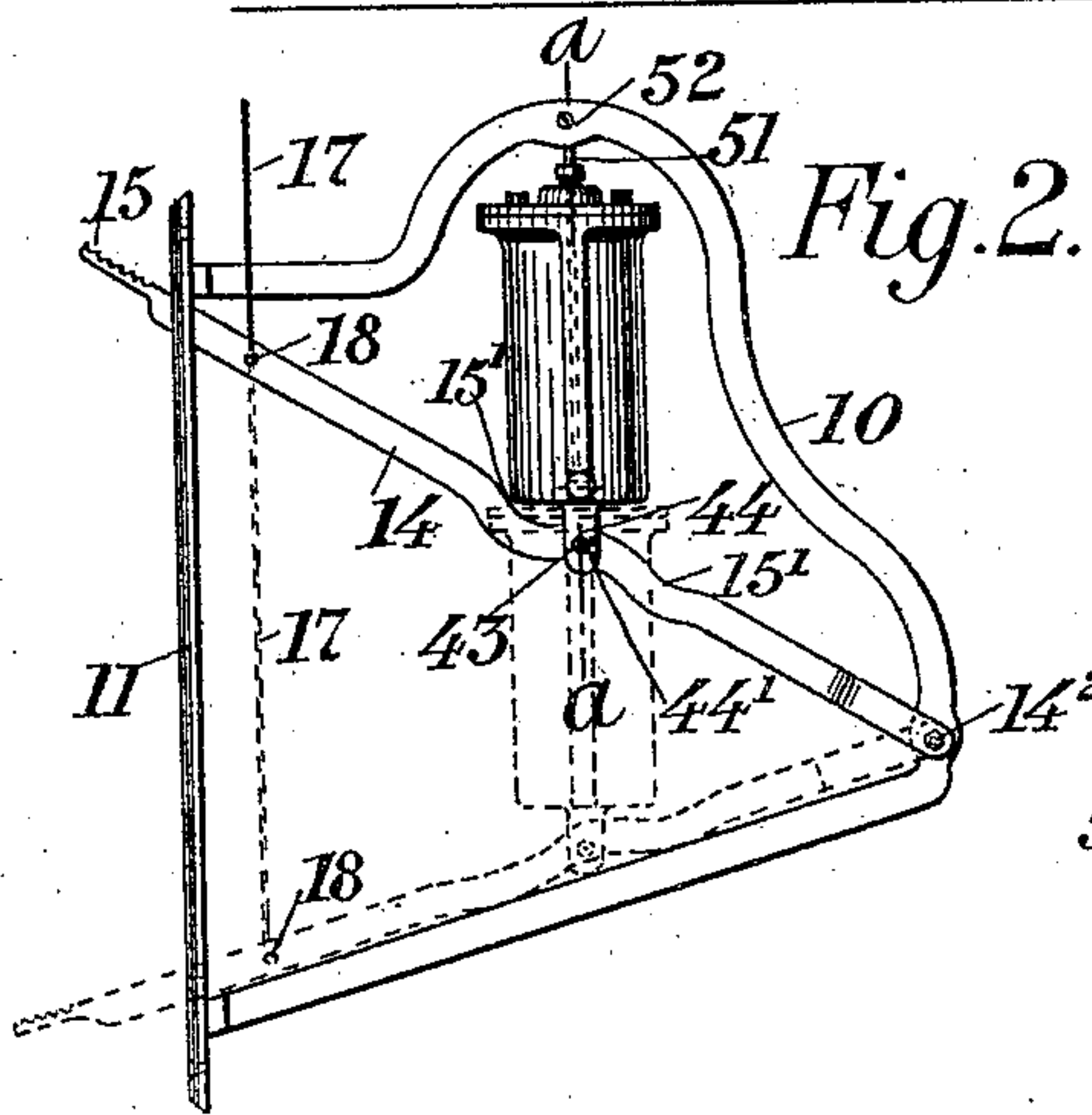
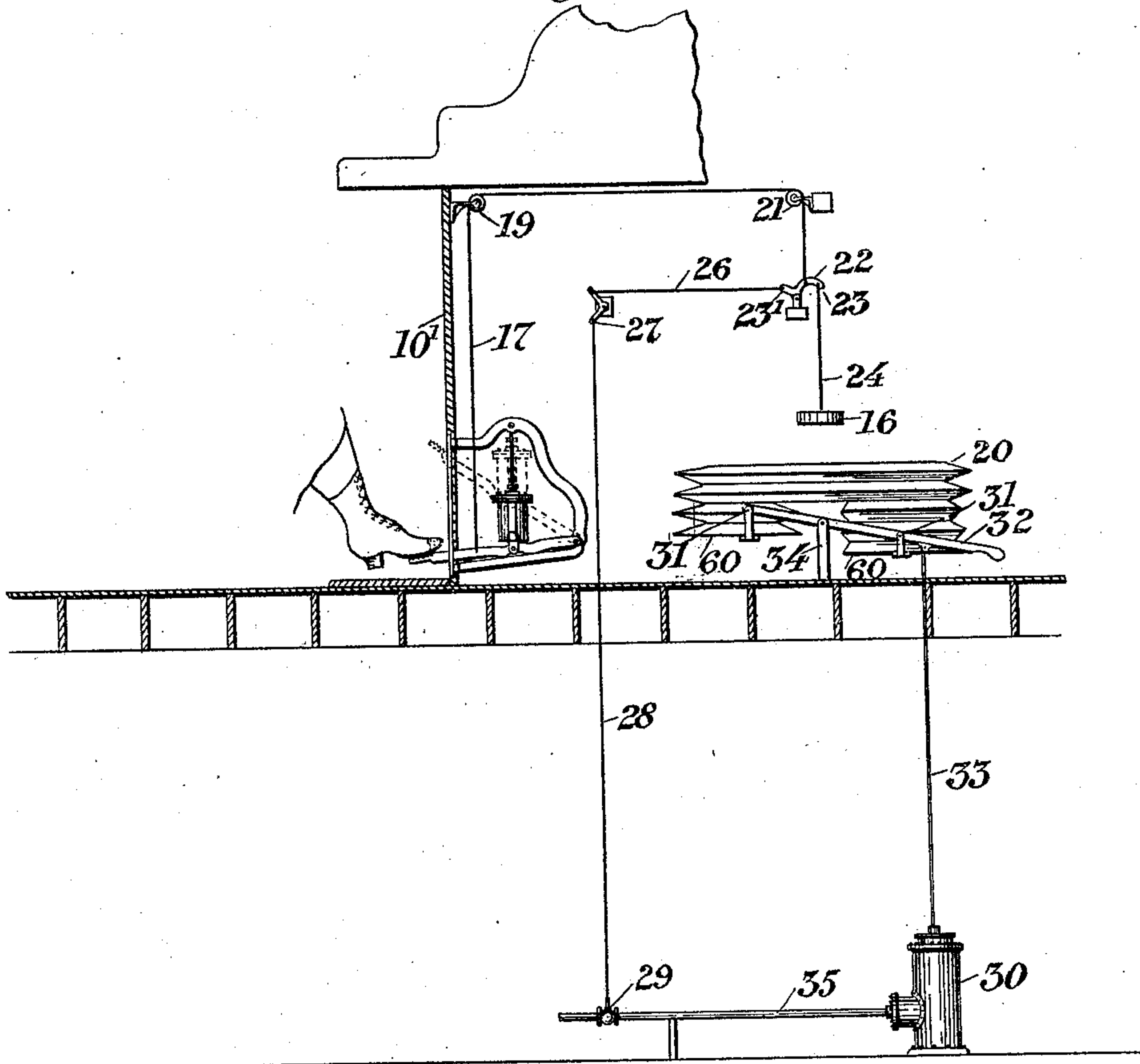
(No Model.)

I. H. SPENCER.  
STARTING APPARATUS FOR ORGANS.

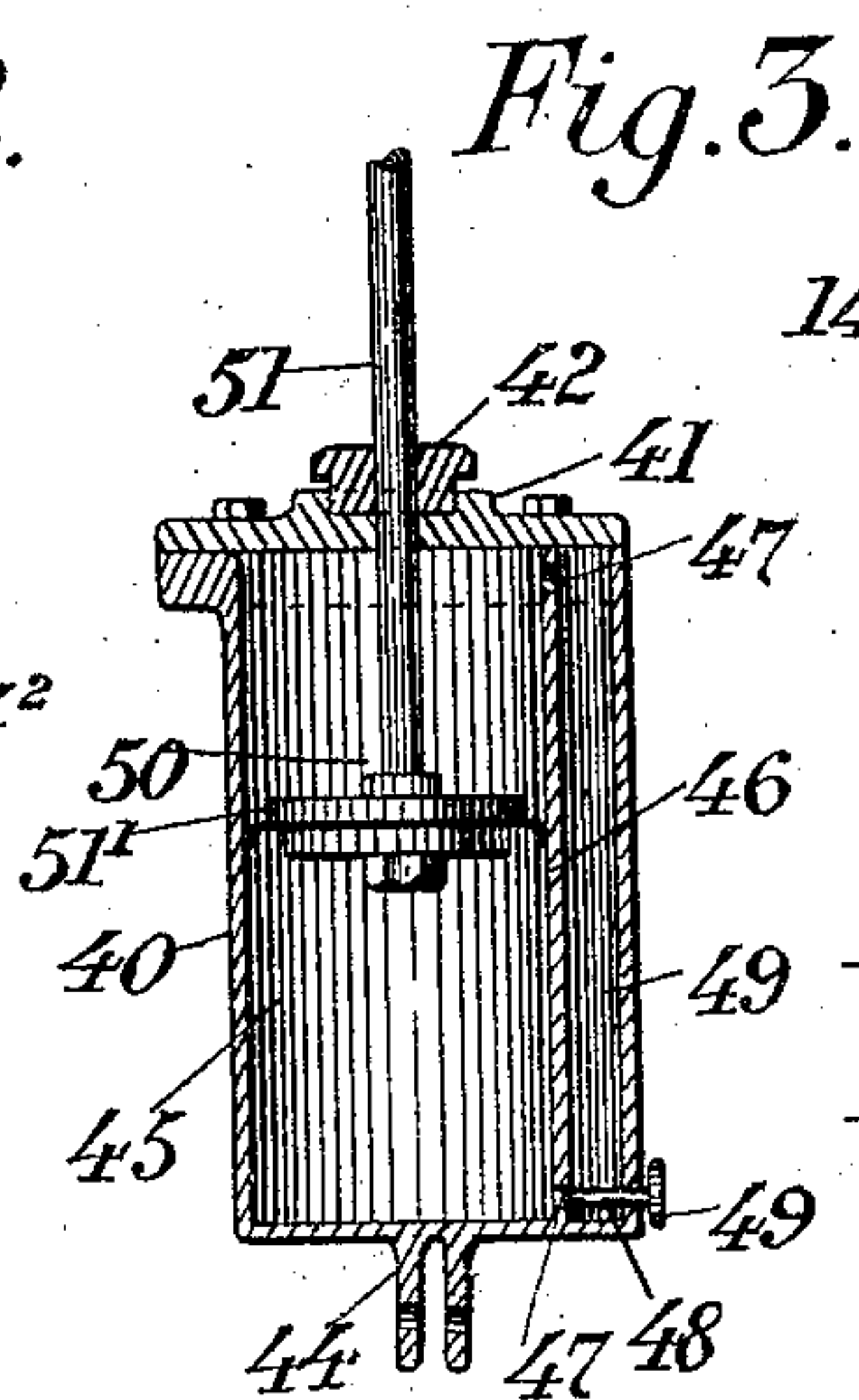
No. 553,695.

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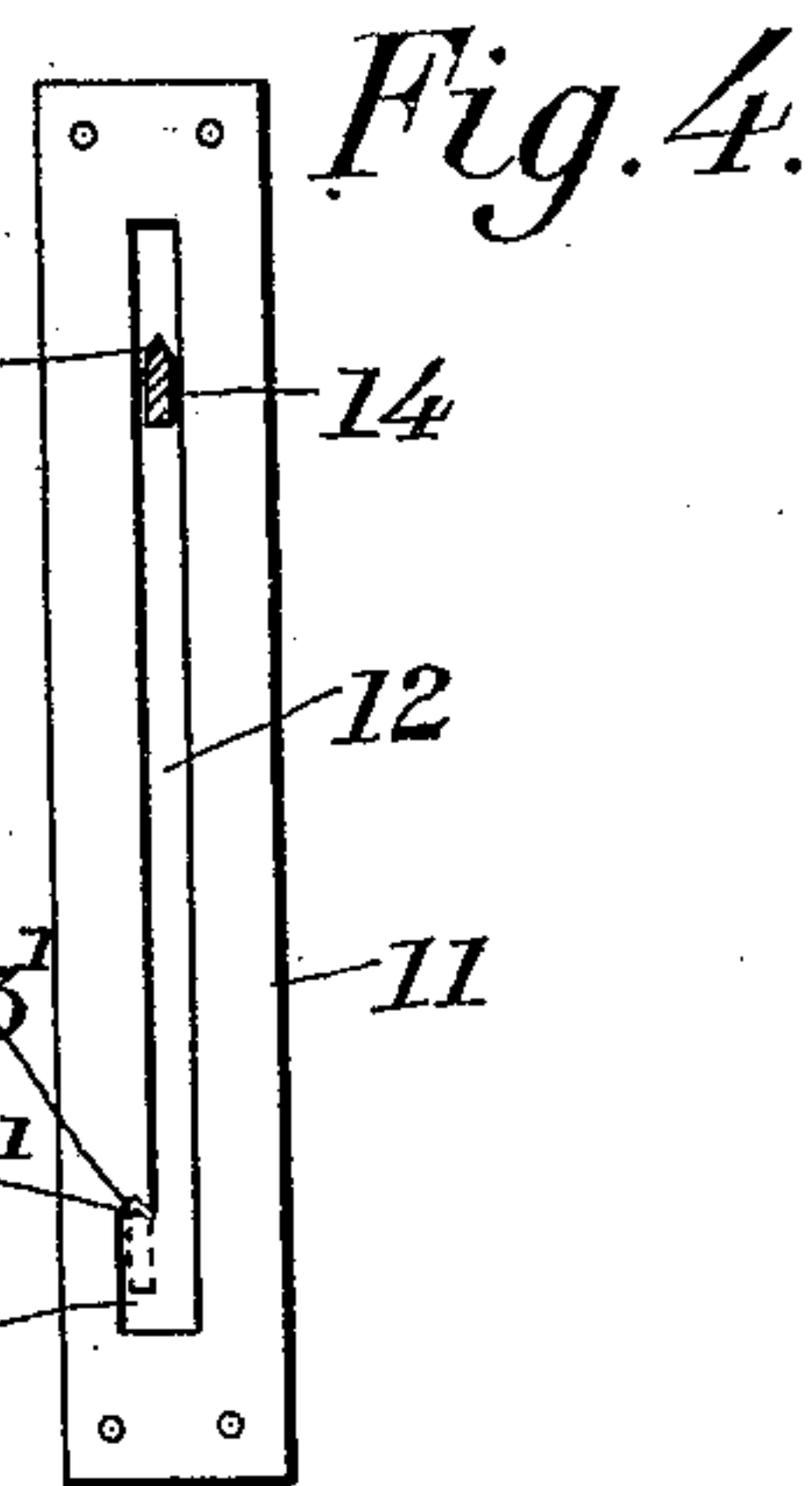
*Fig. 1.*



Witnesses:  
J. S. Bowen,  
Fred. J. Dole.



*Fig. 3.*



*Fig. 4.*

Inventor:  
Ira H. Spencer,  
by his Attorney,  
J. H. Richards.



# UNITED STATES PATENT OFFICE.

IRA H. SPENCER, OF HARTFORD, CONNECTICUT.

## STARTING APPARATUS FOR ORGANS.

SPECIFICATION forming part of Letters Patent No. 553,695, dated January 28, 1896.

Application filed April 11, 1895. Serial No. 545,271. (No model.)

*To all whom it may concern:*

Be it known that I, IRA H. SPENCER, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Starting Apparatus for Organs, of which the following is a specification.

This invention relates to an improvement in starting and controlling apparatus for organs or other instruments of that class operated by air; and the object of the invention is to provide an apparatus for starting organs or similar instruments by means of an apparatus which will be simple and durable in construction, and which will permit the storage-bellows, the feeder-bellows, the bellows-motor and its accompanying mechanism, together with the organ, to be started without shock, jar, or noise; and the invention relates, especially, to starting organs of large size without attracting the attention of a congregation by reason of the noise and jar usually appertaining thereto.

A further object of the invention is to permit the bellows-motor and its accompanying mechanism to be started with gradually-increasing speed and to be controlled during the operation of the organ so as to limit the speed with which air is supplied by means of the storage-bellows to the wind-chests.

In the drawings accompanying and forming part of this specification, Figure 1 is a side elevation, partly in section, of the improved starting and controlling apparatus, showing its connection with the valve of the bellows-motor and showing the storage and feeding bellows in connection with said motor or engine. Fig. 2 is also a side elevation, on an enlarged scale, of the improved starting and controlling apparatus, a portion thereof being in dotted lines to show the operation of the same. Fig. 3 is a vertical section of the preferred form of controlling device herein shown, taken in line *a a*, Fig. 2; and Fig. 4 is a front view of the slotted plate for the starting-lever of the controlling device.

Similar characters designate like parts in all the figures of the drawings.

This invention in the preferred form thereof herein shown and described consists of

any suitable bracket frame or support, as 10, connected to the organ by means of a plate 11, set into the front 10' thereof or into the front support for the organ, as shown in Fig. 1. This frame 10, however, may be connected to the organ at any other suitable place, or to the floor which supports the organ, as may be desired.

The plate 11 is provided with a slot 12, enlarged at its lower end, as shown at 13, to form an offset 13'. A suitable lever 14, provided at its outer end with a treadle or foot portion 15 and with a wedge-shaped portion 14', adapted to fit the offset 13', is pivoted to the frame 10, preferably at the rear side thereof, as at 14<sup>2</sup>, and is adapted to work in the slot 12. When the frame 10 is connected to the front of the organ or the front support thereof by means of the plate 11, said organ front or support 10' is slotted adjacent to the slot in the plate 11 to permit said lever 14 to work therein. The lever 14 is connected by any suitable means to a pressure-weight 16, adjacent to the top of the usual storage-bellows 20 of any suitable construction. The preferred means of connection herein shown consists of a cord 17, connected to the lever near its outer free end in the rear of the plate 11, as at 18, and extends over pulleys 19 and 21 to a bell-crank lever 22, with which it is connected, one end of said lever, as 23, being connected to the pressure-weight 16 by means of a cord 24. A cord 26 connects the other end 23' of said bell-crank lever with the upper end of a second bell-crank lever 27, and a cord 28 connects the lower end of said bell-crank lever 27 to the lever of the supply-valve 29, located in the supply-pipe 35 of the feeder-bellows motor or engine, which may be of any suitable construction. These bell-crank levers 22 and 27 are pivoted to suitable beams or supports near the organ or the starting apparatus and at any suitable place thereon.

A horizontally-swinging lever 32, supported by any suitable means on the floor upon which the organ rests, or at any other suitable place, the preferred means herein shown being an upright 34, is pivoted, as at 31, to the lower plates or beds of the feeder-bellows 60, and is connected to the piston-rod of the motor or engine by means of a suitable rod 33.

The feeder-bellows 60 of the usual construc-



tion are connected to and supply air to the storage-bellows 20.

The speed regulator or device for controlling the amount of air admitted to the storage-bellows, in the preferred form thereof herein shown and described, consists of a cylinder 40, provided with a removable head 41 having a removable stuffing-box 42 therein for the piston-rod. This cylinder, in the preferred form thereof herein described, is connected to the lever 14 at any suitable place thereon by any suitable means, as herein shown, and it is preferably connected to the lever 14 near the middle thereof, as shown at 43, by means of downwardly-projecting lugs 44, integral with said cylinder, and a screw 44'. The lever 14 is preferably cut away, as at 15', to permit said lever to be raised and lowered a greater distance with relation to the lower edge of said cylinder.

The cylinder 40, for containing any suitable fluid, is provided with a partition 46 integral with the heads of said cylinder, forming a piston-compartment 45 and a fluid-passage 49. A regulating-valve is connected to said cylinder near one of the apertures 47 for regulating the flow of fluid in said passage. As herein shown, in the preferred form thereof, said regulating-valve comprises a threaded stem 48, adapted to work in the lower aperture 47, said stem being provided on its outer end with a head 49, located on the exterior of the cylinder, for turning said stem inward or outward to close the aperture 47. Working in the cylinder is a suitable piston, (designated generally as 50,) consisting of the usual piston-rod 51 and head 51', said head being provided with any suitable packing for making the same close fitting with relation to the cylinder. The piston-rod 51 is connected in the preferred form thereof, as herein described, at its upper end to the frame 10, as at 52. If desired, the connection of this piston and cylinder with the frame or support and lever might be reversed and the piston-rod be connected to the lever 14, while the cylinder, by means of its lugs 44, or by any other suitable means, might be connected to the frame or support. A suitable fluid is placed in the cylinder and forms a certain amount of resistance to the movement of the piston, thereby controlling the movements of the lever 14 and regulating the feed of the bellows-motor 30.

It will be understood that the frame 10 can be made of any suitable shape. As herein shown, in the preferred form thereof, the frame is made substantially as shown in the drawings, in order to inclose the same in a small space. It will also be understood that the frame may be entirely dispensed with, and the lever and piston-rod or cylinder and lever may, if desired, be connected to any suitable support.

In the use of my improvements when it is desired to start the organ the lever 14, being in the position shown in full lines, Fig. 1, and

holding the weight adjacent the top of the storage-bellows in raised position, is pressed downward and sidewise against the pressure of said weight, thereby releasing said lever from the offset 13 and permitting the weight to descend, causing said lever to gradually rise by means of its controlling device, and by means of the bell-crank levers 22 and 27 to open the valve of the supply-pipe of the bellows-motor and to permit the piston in said motor to reciprocate to force the feeder-bellows 60 to supply air to the storage-bellows 20. When the storage-bellows 20 is filled up to a given limit the top thereof rises and forces said weight 16 upward and permits the starting-lever to gradually descend by means of its own weight and controlling device, and thereby permits the valve in the supply-pipe to close and gradually cut off the supply to the bellows-motor. When it is desired to entirely stop the supply of air to the storage-bellows 20, the lever is depressed its full play in the slot 12 and permitted to slip into the offset 13', thereby permitting the valve in the supply-pipe 35 to cut off the supply to the bellows-motor and so stop the reciprocatory movement of the piston and the consequent stoppage of the feeder-bellows 60. When the lever 14 is released to start the motor, said lever will not rise with a jerk, as would be the case by the sudden descent of the weight 16 without my controlling device, but by means of my controlling device will rise gradually, and thereby permit the starting of the bellows-motor and its connecting mechanism without shock or jar either to the annoyance of an audience or to the injury of the delicate parts of the organ.

By means of the improved controlling device herein shown I am not only enabled to start the supply of air to the storage-bellows without shock or jar and with a gradual movement of the mechanism, so that neither the organ nor the parts forming the starting mechanism will be liable to get out of order; but I am enabled to cut off the supply of air by a gradual movement or to partially cut the same off by a gradual movement without violent motion of the lever or connecting mechanism, and thereby prevent any jar or shock to the organ and its delicate parts, and also by means of the said improved controlling device the lever 14 can be suddenly released by the operator at any moment without causing any jar by means of the lever falling or rising in connection with the weighted top of the storage-bellows.

I claim as my invention—

1. In a starting and controlling device for organs, the combination with the motor provided with a supply-valve; of a feeder-bellows; mechanism connecting said feeder-bellows and motor; a starting-lever; means for connecting said lever with the supply-valve of the motor; means for operating said lever; means for controlling the movements of said starting-lever; and a storage-bellows con-



connected with said feeder-bellows, and adapted to operate said starting-lever.

2. In a starting and controlling device for organs, the combination with the motor provided with a supply-valve; of a feeder-bellows connected with said motor, a starting-lever connected with the supply-valve of the motor; means for operating said lever; means for controlling the movement of said starting-lever; and a storage-bellows connected with said feeder-bellows, and adapted to operate said starting-lever.

3. In a starting and controlling device for organs, in combination with a support; of the motor provided with a supply-valve; a feeder-bellows connected with said motor; a starting-lever connected with said supply-valve of the motor; means for operating said lever; a storage-bellows connected with said feeder-bellows, and adapted to operate said starting-lever; and a cylinder connected to said lever and provided with a piston connected to said support, for regulating the speed of said lever.

4. In a starting and controlling device for organs, the combination with the motor provided with a supply-valve; of a feeder-bellows connected with said motor; a starting-lever connected with the supply-valve of the motor; a weight connected with said lever for operating the same; means for controlling the movement of said starting-lever; and a storage-bellows connected with said feeder-bellows, and adapted to operate said weight.

5. In a starting and controlling device for organs, in combination with a support; of a motor provided with a supply-valve; a feeder-bellows connected with said motor; a starting-lever connected with said supply-valve of the motor; means for operating said lever; a storage-bellows connected with said feeder-bellows, and adapted to operate said lever; and a controlling device for said starting lever connected to said support and lever.

6. In a starting and controlling device for organs, the combination with a support; a motor provided with a supply-valve; a feeder-bellows connected with said motor; a starting-lever connected with said supply-valve of the motor; means connected with said lever for operating the same; a storage-bellows in operative connection with the lever-operating means and with the feeder-bellows; a cylinder, adapted to contain a fluid, pivoted to said lever, and having a partition therein provided with apertures forming a fluid-passage; means for regulating the flow of fluid in said passage; and a piston working in said cylinder and pivoted to said frame, whereby said lever will be controlled during its movement, substantially as described.

7. In a starting and controlling device for organs, the combination with a motor provided with a supply-valve; of a feeder-bellows connected with said motor; a starting-lever connected with the supply-valve of the

motor; means for operating said lever; means for controlling the movement of said starting lever; and a storage-bellows connected with said feeder-bellows and in operative connection with said lever-operating means, substantially as described.

8. In a starting and controlling device for organs, the combination with a motor and with a feeder and storage-bellows; of a starting-lever operatively connected with said motor, and adapted to be operated by said storage-bellows; and a controlling device for said lever, whereby the movement thereof will be regulated, substantially as described.

9. In a starting and controlling device for organs, the combination with a support; of a motor provided with a supply-valve; a feeder-bellows connected with said motor; a starting-lever connected with the supply-valve of the motor; means connected with said lever for operating the same; a storage-bellows in operative connection with the feeder-bellows and with the lever-operating means; and a controlling device pivoted to said frame and lever for regulating the movement of said lever, and comprising a cylinder adapted to contain a fluid, a partition therein having an aperture and forming a fluid-passage and a piston working in said cylinder, substantially as described.

10. In an organ apparatus, a starting and controlling device, comprising an inclosing bracket embodying a base-bar, a slotted front plate having an offset adjacent to the slot thereof, and a bar connecting said front plate and base-bar and having an approximately U-shaped extension; a lever pivoted to the bracket adjacent to the rear end of the base-bar and adapted to reciprocate in said slotted plate and be held in its normal position by the offset; and a controlling device for regulating the movement of said lever, pivoted to said lever and to the approximately U-shaped extension of the bracket, substantially as described.

11. In an organ apparatus, a starting and controlling device, comprising an inclosing bracket embodying a base-bar, a slotted front plate having an offset adjacent to the slot thereof, and a bar connecting said front plate and base-bar and having an approximately U-shaped extension; a lever pivoted to the bracket adjacent to the rear end of the base-bar, and adapted to reciprocate in said slotted plate and be held in its normal position by the offset; and a controlling device for regulating the movement of said lever, comprising a cylinder pivoted to said lever and a piston working therein, and pivoted to the substantially U-shaped extension of the bracket, substantially as described.

IRA H. SPENCER.

Witnesses:

FRED. J. DOLE,

BENTON N. PARKER.