

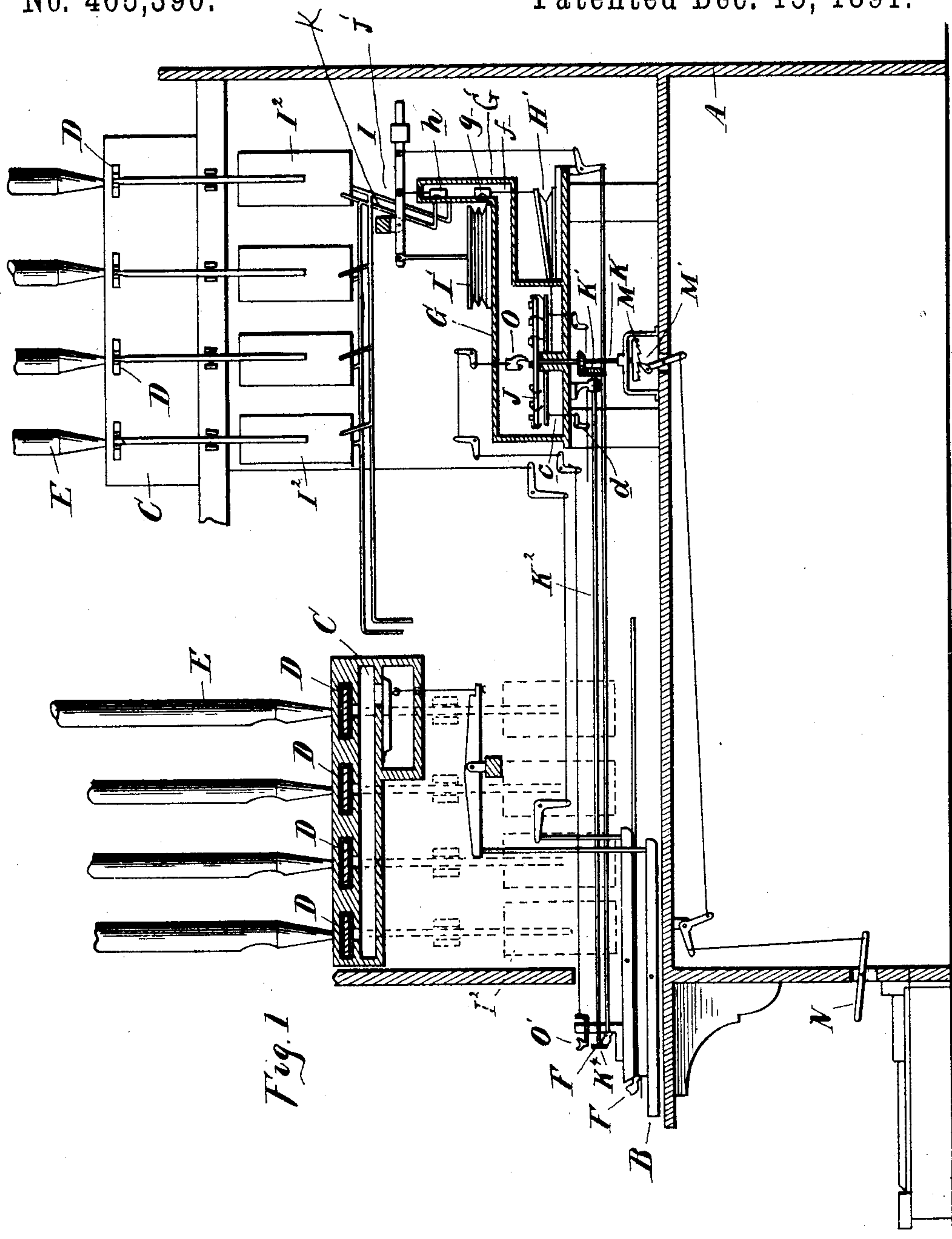
(No Model.)

3 Sheets—Sheet 1.

J. SCHWERTNER.
PIPE ORGAN.

No. 465,390.

Patented Dec. 15, 1891.



Witnesses:
P. M. Hulbert
A. L. Hallock

Inventor:
Joseph Schwertner
By *Mor. S. Magner & Co.*
Attys.

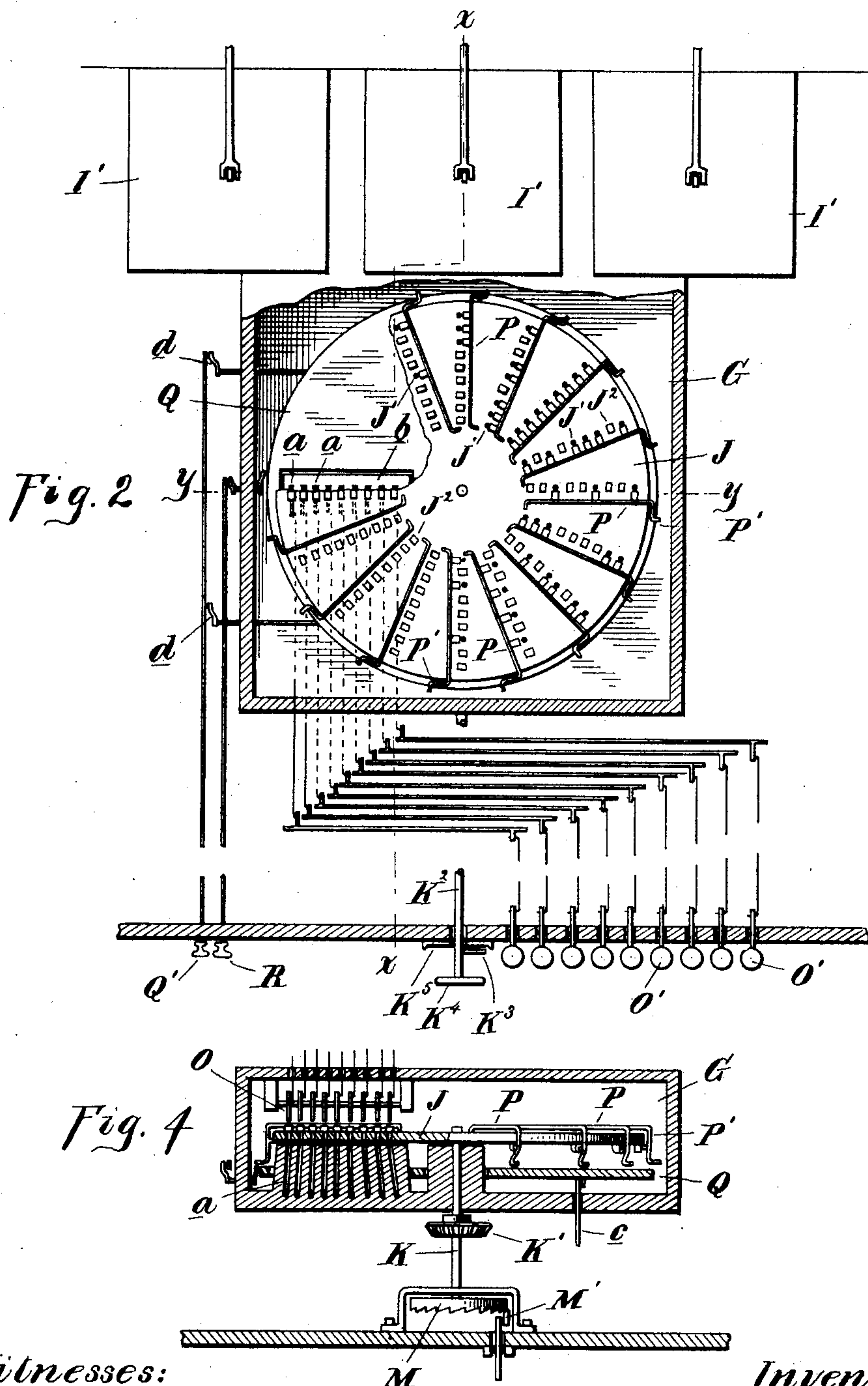
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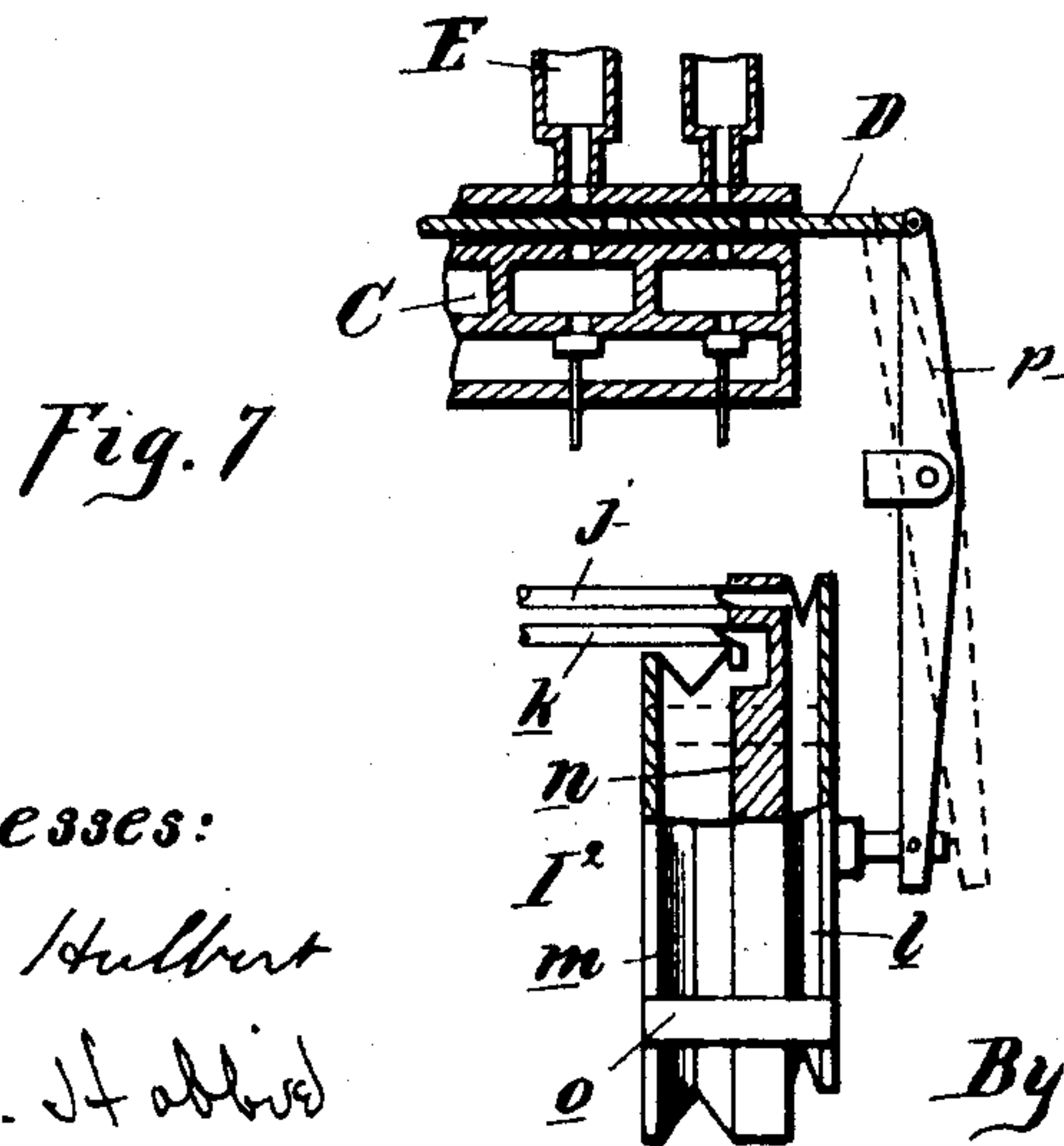
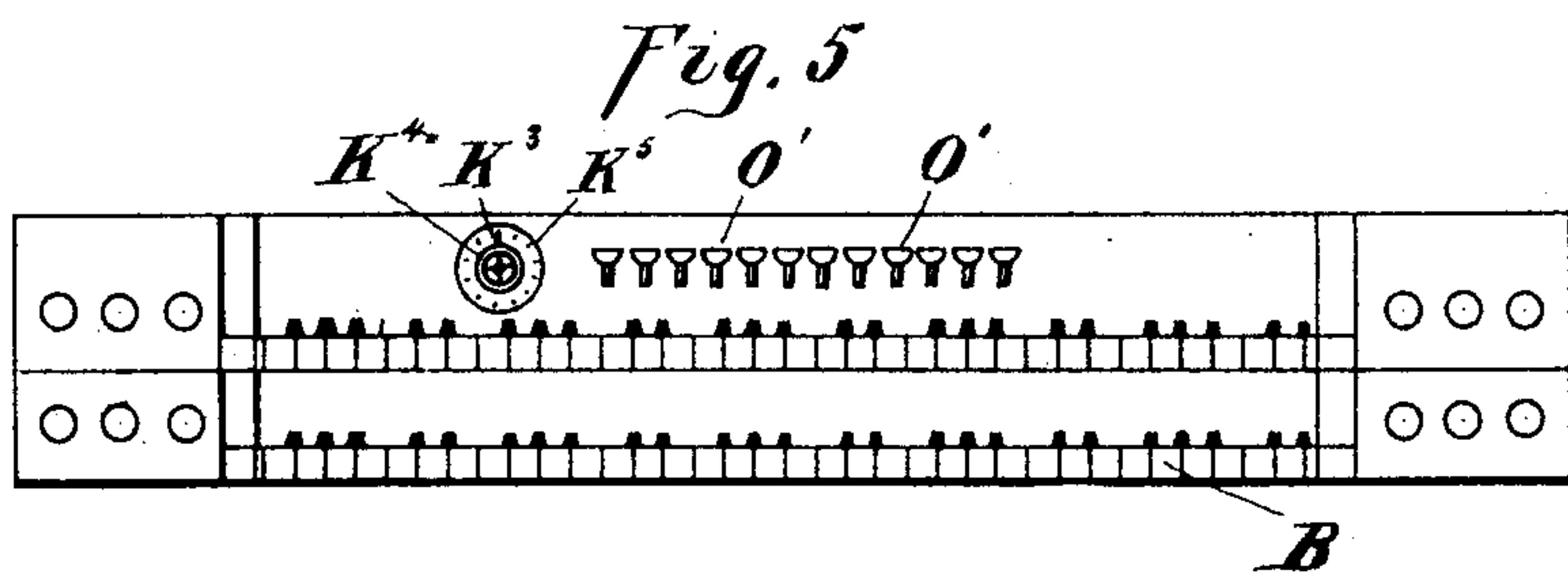
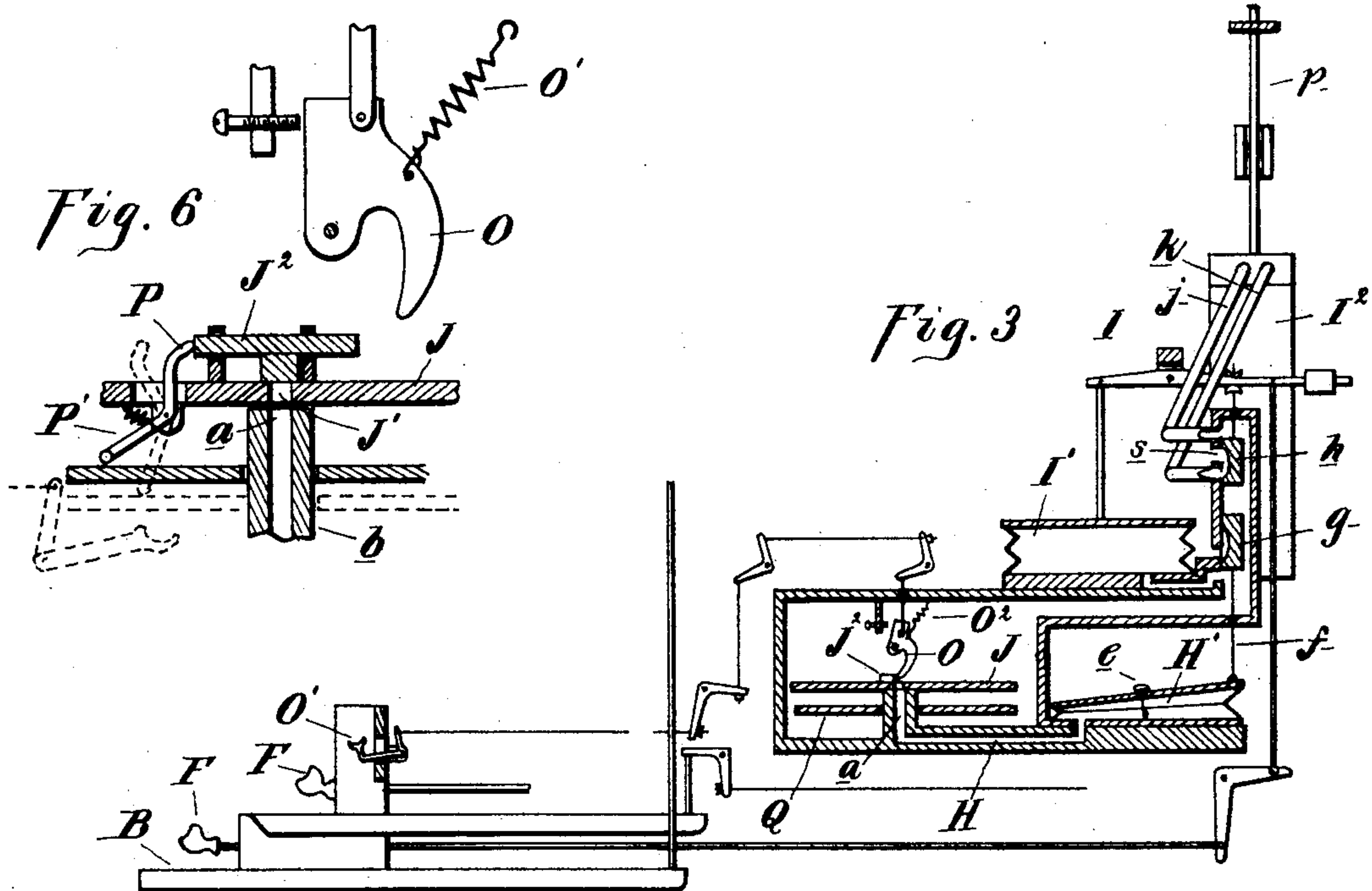
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3 Sheets—Sheet 3.

J. SCHWERTNER.
PIPE ORGAN.

No. 465,390.

Patented Dec. 15, 1891.



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UNITED STATES PATENT OFFICE.

JOSEPH SCHWERTNER, OF DETROIT, MICHIGAN.

PIPE-ORGAN.

SPECIFICATION forming part of Letters Patent No. 465,390, dated December 15, 1891.

Application filed November 6, 1890. Serial No. 370,554. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SCHWERTNER, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Pipe-Organs, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to new and useful improvements in organs; and the object of the invention is to simplify the operation of registration by enabling the performer to set a number of musical combinations before beginning to play and subsequently throw on
15 any desired combination by a movement of a single lever or other mechanical connection.

The invention relates to an improvement in pipe-organs; and it consists in the peculiar
20 construction and arrangement of parts more fully hereinafter described, and definitely pointed out in the claims.

In the drawings, Figure 1 is a sectional side elevation of an organ to which my device is
25 applied. Fig. 2 is a plan view of the valve register and operating mechanism. Fig. 3 is a vertical longitudinal section on line *x x*. Fig. 4 is a vertical cross-section on line *y y*. Fig. 5 is a front elevation of the key-board.
30 Fig. 6 is a detail of one of the valves of the valve-register. Fig. 7 is a detail of one of the pneumatic motor devices.

A is the casing, B the key-board, C the wind-chest, D the register-slides, E the pipes, F the
35 draw-stops, of the pipe-organ, of usual construction, the bellows, wind-trunk, and some of the minor parts being omitted from the drawings.

G is an air-chamber having conduits leading therefrom to suitable pneumatic motor
40 devices I', (more fully hereinafter described,) said motor devices corresponding in number to the musical registers of the organ, and adapted to throw the same in or out of action,
45 either by direct connection to the register-slides or (in a pneumatic organ) to the register-valves.

H are a series of control-passages governing the action of the pneumatic-motor devices I',
50 which I preferably form in the following manner:

J is a valve-register within the air-chamber

G, having a system of ports J', provided with valves J². These ports are arranged in series, each series corresponding in number to the
55 musical registers and are adapted to register with a corresponding series of ports *a* in the air-chamber. Each of the ports *a* opens into a conduit leading to an expansion device or bellows H', which has a bleeding-valve *e* and
60 a connecting-rod *f*, through which the movement of the bellows in expanding is communicated to the valve *g* of the pneumatic-motor device I, all so arranged that if one or more of the valves J² in any series or port J' are
65 open and said series is made to register with the ports *a* the compressed-air from the air-chamber G is free to pass through said open ports and conduits into the bellows H'.

Although the bleeding-valve *e* allows a por-
70 tion of the air to escape, the aperture is so small in comparison with the size of the conduit that it does not interfere with the operation of the device; but as soon as the air-current is cut off by the closing of the port *a* the
75 bellows will collapse, either by its own gravity or the tension of a spring, and the valve *g* will assume its normal position.

The valve-register J may be of any desired form and operate in any way, admitting of
80 such a movement that each series of its ports J' may be made to register with the ports *a*; but I preferably use a rotary slide, arranging the ports J' in radial series and the ports *a* in a radial line in the bearing *b* beneath, as
85 shown in Figs. 2 and 4.

K is a shaft on which the valve-register is mounted, which is connected by bevel gear-wheels K' to the shaft K², extending to the
90 front of the organ in reach of the performer, and the latter is provided with the indicator K³ and hand wheel or knob K⁴, preferably so arranged that a complete revolution of the valve-register is made for each revolution of the hand-wheel K⁴.
95

K⁵ is an indicator-dial, having marked around its periphery numbers corresponding to the different series of valves on the valve-register.

M is a ratchet-wheel on the shaft K, adapted
100 to be operated by the pawl M', suitably connected to the foot-lever N, also under the control of the performer.

O are a series of fingers pivotally secured

within the air-chamber above the valve-register J and corresponding in number to the valves J² of each series of ports J'. These fingers are for the purpose of opening the valves J² whenever the latter stand in proper relation thereto, and are adapted to be operated by a series of extra stops or levers O', (corresponding to the musical stops of the organ,) to which they are suitably connected by connecting-rods, rolling-rods, &c., as shown in Figs. 2 and 3.

O² are springs normally holding the fingers O in their raised position out of the path of the valves. On the drawings I have shown the finger O arranged to operate that series of valves which is directly over the ports a; but it is evident that they may be placed in any other position around the valve-register and operate in the same manner.

P are universal bars extending radially across the slide behind each series of valves and adapted to close the same. P' are actuating striker-arms on each bar.

Q is a disk beneath the slide J, supported on rods c, connected to the bell-cranks d, adapted to be operated by the stop Q', all so arranged that by a suitable movement of the stop-rod Q' the disk Q may be raised, striking the levers P' and closing all the valves.

R is another stop-rod adapted to operate any one of the bars P in the proper position of the slide.

The motor device I' may be of any suitable construction for operating the registers; but in order to give a sufficient amount of power with the lightest and most delicate action I preferably use two or more motors for each stop, such as shown in the drawings, in which I' is a small bellows placed in proximity to an extension G' of the air-chamber G and having the valve g, controlling its air-supply, connected by the rod f to the bellows H', as before described. The bellows I' in turn is connected by suitable levers to the valve h, controlling the admission of air into the two conduits j k, leading, respectively, into each half of the double bellows I², which latter is of sufficient size to furnish all the power necessary to operate the registers of the organ, and, as shown in Fig 7, is constructed in the following manner:

l and m are the two parts of the bellows, which are secured to opposite sides of the stationary division-board n. The part l receives its air from the conduit j and the part m from the conduit k. o are links holding the parts l and m in fixed relation to each other, but admitting of a movement in relation to the board n. p is a lever connecting the bellows l to the register-slide D or (in pneumatic organs) the register-valve.

Each of the valves g h is provided with an exhaust-port through which the air can escape from the bellows I' I² when the valves are in the proper position to register therewith.

In practice the operation of the device is

as follows: Before beginning to play, the performer determines the proper registration of the piece to be executed and sets the desired musical combination in the following manner: Supposing the indicator at first to be set at No. 1, the operator sets the first combination by pressing the proper stop-levers O', which, through their connecting mechanism, operate the fingers O and open the corresponding valves J² of the first series of apertures J'. The indicator is now turned to No. 2, which brings another series of valves in proximity to the fingers O, and the second combination may be set, and so on until the desired combinations are set. The indicator is now turned back to No. 1, or whichever one of the combinations is first to be used, and the main bellows of the organ is set in operation, filling the air-chamber G with compressed air, which passes through the open ports of the first series of valves of the valve-register and the ports a, with which they are registered, thence through their respective conduits to the bellows H', which in expanding move the valves g, allowing the bellows I' to fill. They in turn move the valves h, admitting the air to the conduit j and filling the part l of the bellows I², and at the same time allowing the air in the part m to exhaust through the conduit k and exhaust-port s. This operation moves the lever p, and through it the registers D. When the proper time for a new combination arises, it may be instantly thrown on either by a movement of the foot-lever N or the hand-wheel K⁴, which revolves the valve-register J, registering another set of ports J' with the ports a, and thereby throwing into action another set of musical registers at the same time the old combination is thrown out of action, for as soon as any of the control-currents are cut off the valves of the pneumatic-motor devices which they govern will be reversed in the manner before described.

Although I have shown and described my device as adapted to be operated by compressed air, it is obvious that it may be so constructed as to work with an exhaust system and that it may be applied to either pipe or reed organs, as the spirit of my invention embodies any pneumatic system for the purpose of throwing into action the musical registers of any organ, whereas the motor devices are governed by control-currents, which are themselves under the control of the performer.

What I claim as my invention is—

1. In an organ, the combination, with a series of musical registers, a series of pneumatic motors for the registers, a control-current passage for each motor, a single rotary valve-register for said passages arranged to rotate in a horizontal plane over the ends of the passages, and means for actuating the rotary valve-register, substantially as described.

2. In an organ having a number of musical registers adapted to be operated by a corresponding number of pneumatic-motor de-

vices, each motor device governed in its action by a control-current, and a single rotary valve-register rotating in a horizontal plane and forming the means of selecting said control-currents, substantially as described.

3. In an organ having a number of musical registers adapted to be operated by a corresponding number of pneumatic-motor devices, each motor device governed in its action by a control-current, a flat rotary valve-register rotating in a horizontal plane for selecting said control-currents having a system of valve-controlled ports in series adapted to be registered with the ports of said control-currents, and means for actuating the valve-registers in whole or in part, substantially as described.

4. In an organ having a number of musical registers adapted to be operated by a corresponding number of pneumatic-motor devices, each motor device governed in its action by a control-current, a flat rotary valve-register for selecting said control-currents, having a system of valve-controlling ports in series, and means for registering said series of ports *seriatim* with the ports of the control-current and simultaneously, substantially as described.

5. In an organ having a number of musical registers adapted to be operated by a corresponding number of pneumatic-motor devices, each motor device governed in its action by a control-current, a rotary valve-register for selecting said control-currents, having a system of valve-controlled ports in series, corresponding to the ports of the control-currents, and means for registering said series of ports *seriatim* with the ports of the control-currents through a foot-lever under the control of the performer, substantially as described.

6. In an organ having a number of musical registers adapted to be operated by a corresponding number of pneumatic-motor de-

vices, each motor device governed in its action by a control-current, a rotary valve-register for selecting said control-currents, having a system of valve-controlled ports in series corresponding to the ports of the control-currents, means for registering each series of ports with said ports of the control-currents, and an indicator for indicating the portion of the valve-register, substantially as described.

7. In an organ having a number of musical registers adapted to be operated by a corresponding number of pneumatic-motor devices, each motor device governed in its action by a control-current, a rotary valve-register for selecting said control-currents, having a system of valve-controlled ports in radial series corresponding to the ports of the control-current, means for rotating said valve-register to register each series of ports *seriatim* with the ports of the control-currents, separate means for rotating the valve-register to register any series, and an indicator, substantially as described.

8. In an organ having a number of musical registers adapted to be operated by a corresponding number of pneumatic-motor devices, each motor device governed in its action by a series of control-currents, a rotary valve-register for selecting said control-currents, having a system of valve-controlled ports in the radial series corresponding to the ports of the control-currents, and a pawl-and-ratchet device for rotating said valve-register by means of a foot-lever under the control of the performer to register each series of ports *seriatim* with the ports of the control-currents, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH SCHWERTNER.

Witnesses:

M. B. O'DOHERTY,
P. M. HULBERT.