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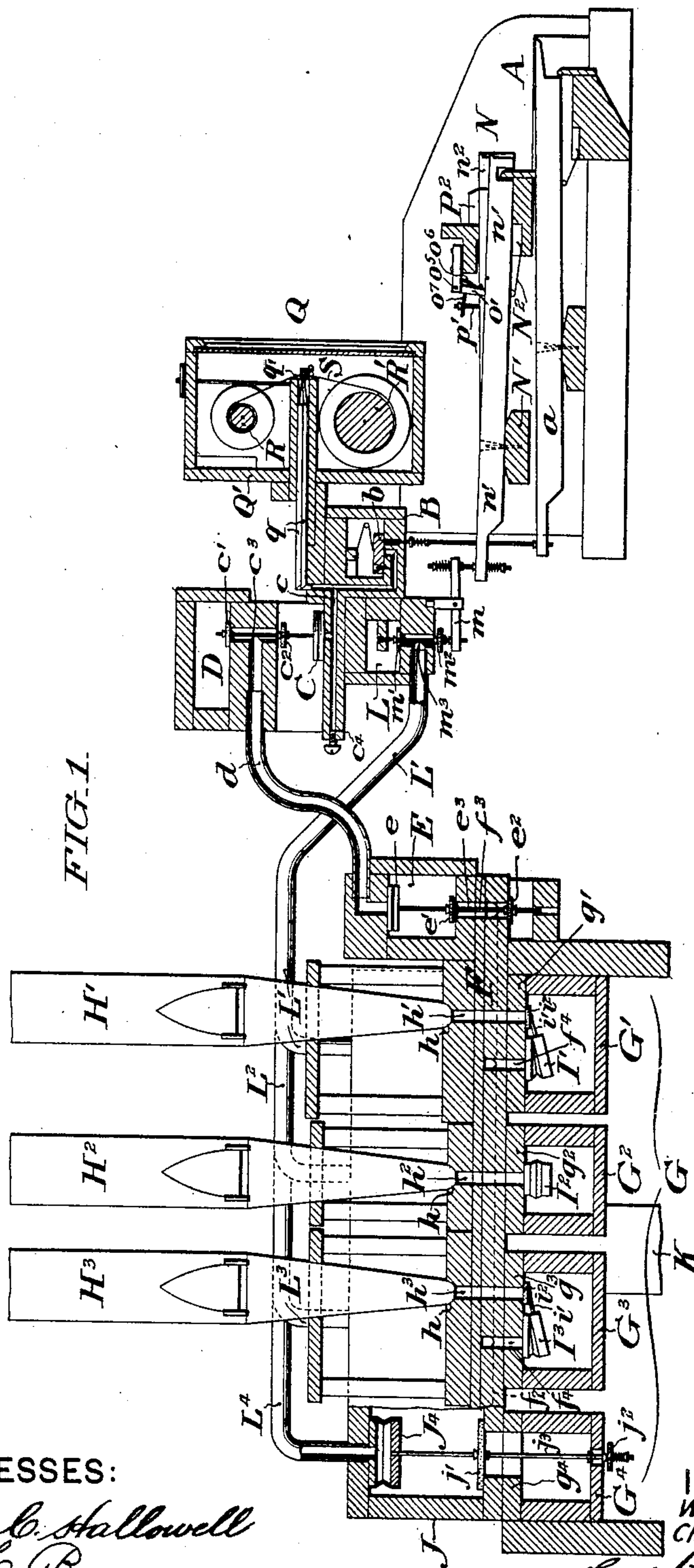
W. E. & C. S. HASKELL.  
ORGAN.

Patented Sept. 9, 1902.

(Application filed Apr. 29, 1901.)

(No Model.)

3 Sheets—Sheet 1.



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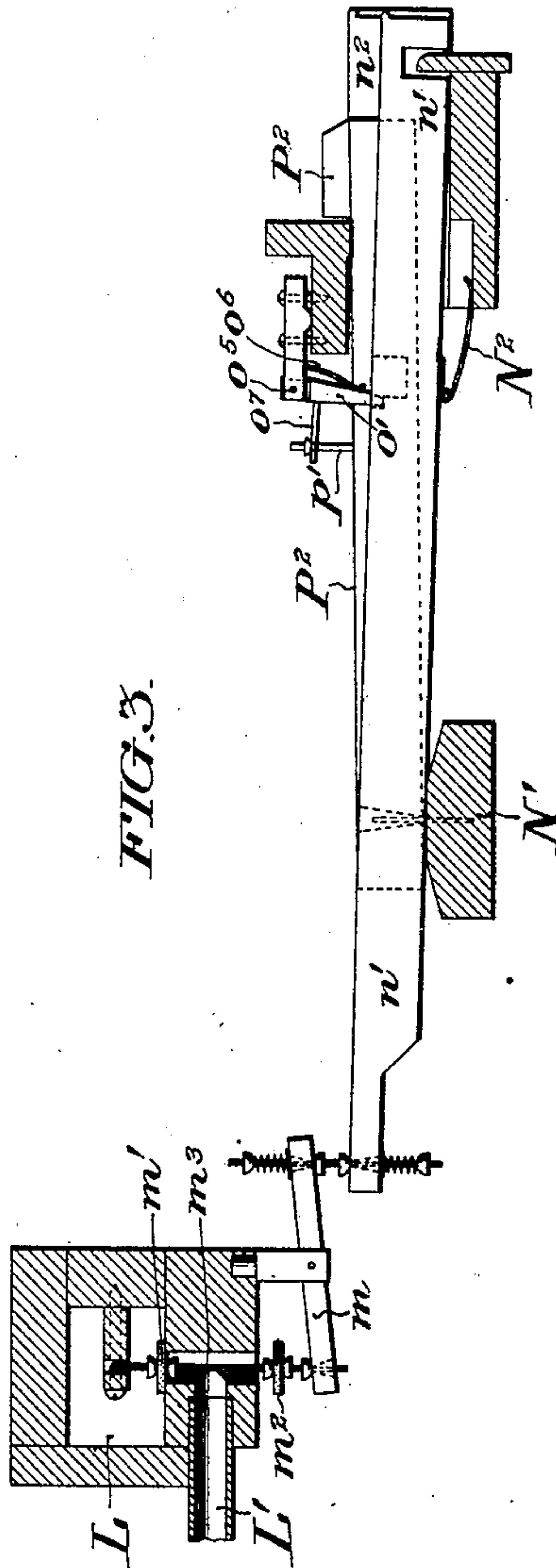
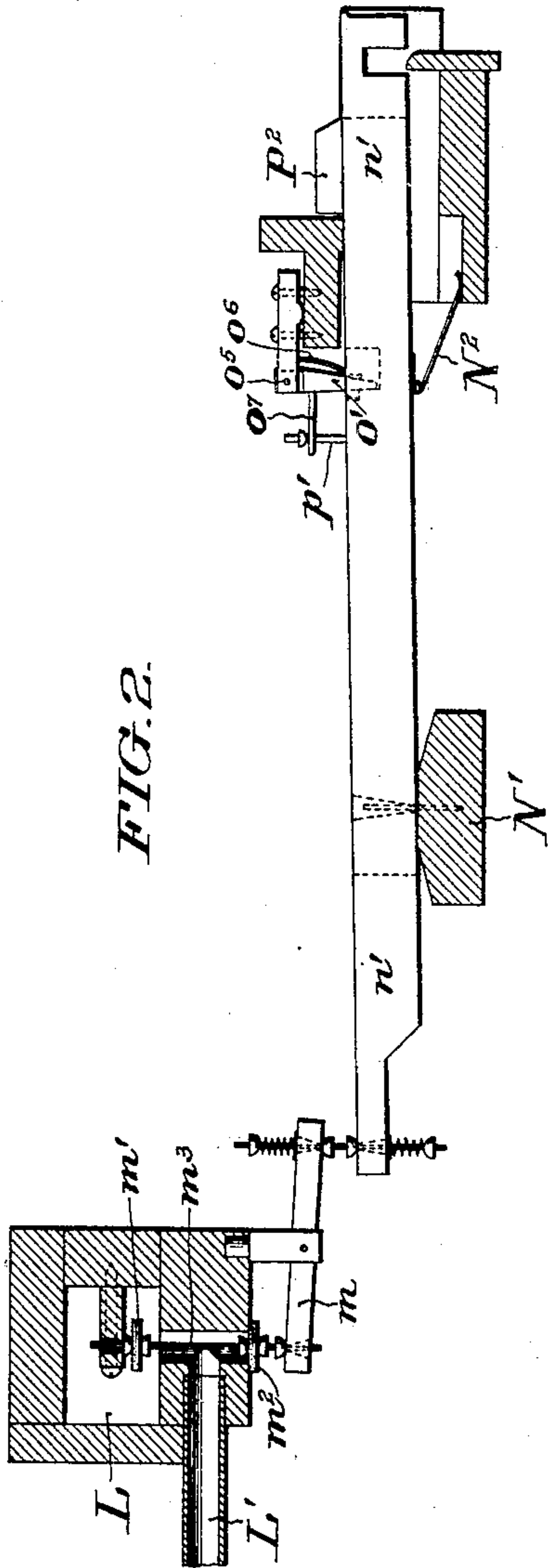
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3 Sheets—Sheet 2.



WITNESSES:

*Clifton C. Halliwell*  
*John C. Bergner.*

INVENTORS:

*WILLIAM E. HASKELL,*  
*CHARLES S. HASKELL,*  
*By Arthur E. Paige,*  
*Atty.*

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3 Sneets—Sheet 3.

FIG. 4.

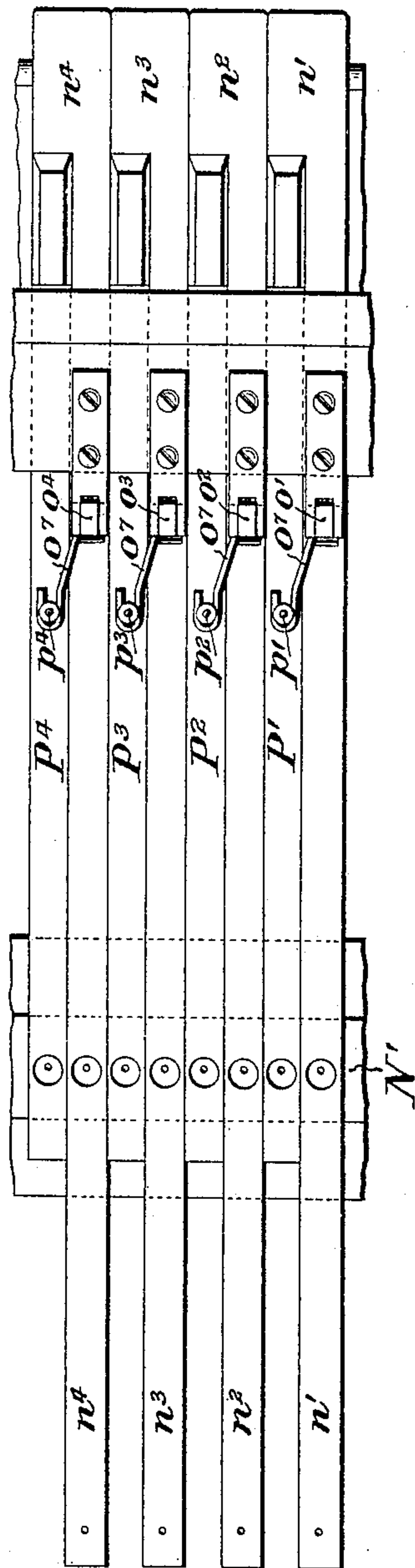
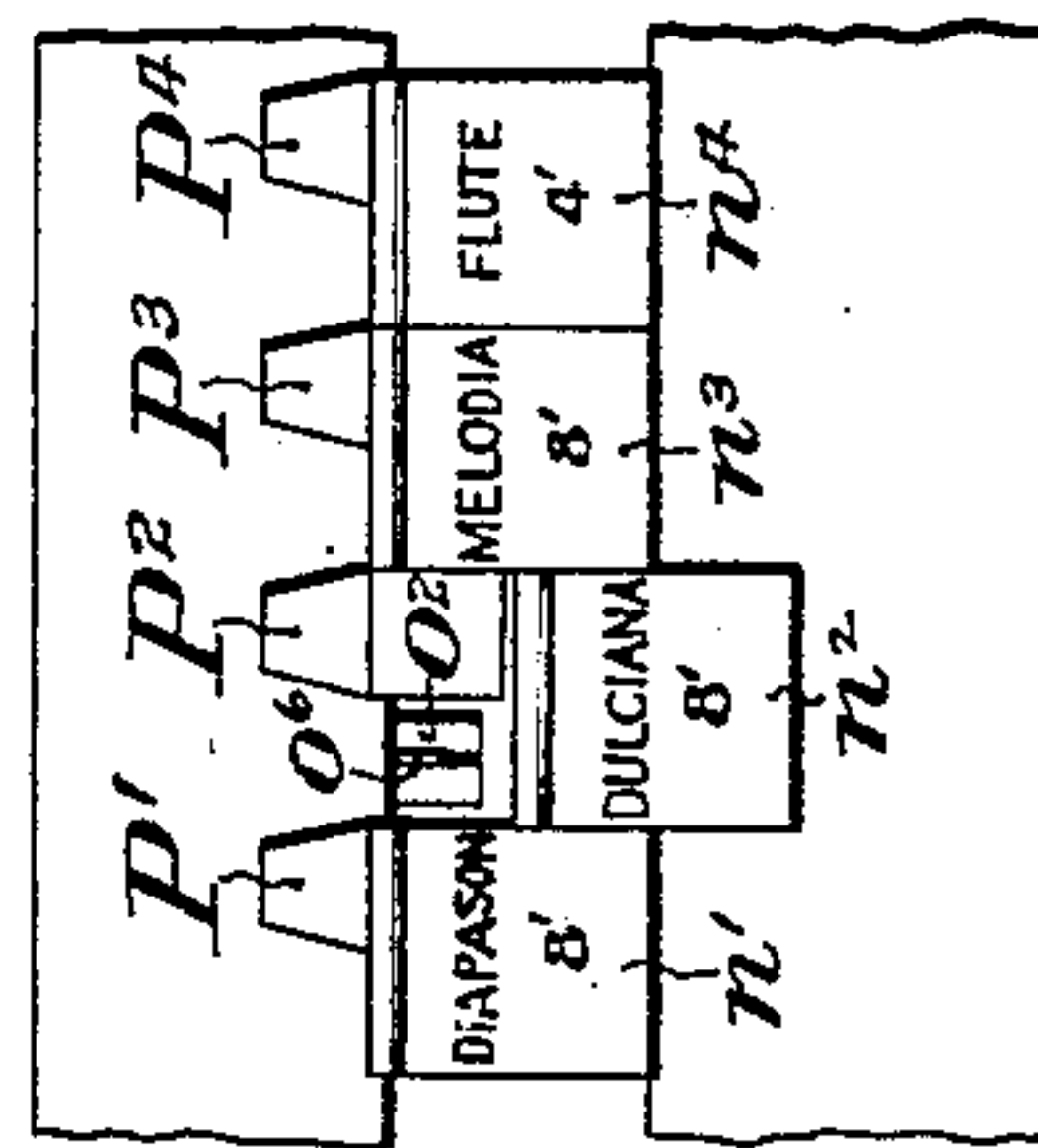


FIG. 5.



WITNESSES:

*Clifton C. Halliwell*  
*John C. Bergner*

INVENTORS:

WILLIAM E. HASKELL,  
CHARLES S. HASKELL,

*By Arthur E. Paige*  
*Atty.*



# UNITED STATES PATENT OFFICE.

WILLIAM E. HASKELL AND CHARLES S. HASKELL, OF PHILADELPHIA, PENNSYLVANIA.

## ORGAN.

SPECIFICATION forming part of Letters Patent No. 708,765, dated September 9, 1902.

Application filed April 29, 1901. Serial No. 58,071. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM E. HASKELL and CHARLES S. HASKELL, of Philadelphia, in the State of Pennsylvania, have invented  
5 certain new and useful Improvements in Organs, whereof the following is a specification, reference being had to the accompanying drawings.

Our invention relates generally to the members of an organ which distribute the wind and control the admission thereof to the sounding devices, and particularly to stop mechanism whereby the operator may independently control the several registers of sounding de-  
15 vices.

The ordinary form of organ stop mechanism terminates in a group of draw stops or knobs adjacent to the organ-manual, and it is necessary to draw out such stops as are to  
20 be placed in action and to push in such stops as are to be placed out of action. The hand and arm movement of the operator required to reciprocate the stops, as aforesaid, is so different from that required for the manipulation of the digitals of the organ-manual as to occasion the maximum delay in effecting any transposition of the stops during the playing operation.

Therefore it is the object of our present improvement to provide a stop mechanism which may be shifted to and from operative position by the manipulation of a stop-manual comprising digitals the arrangement and movement of which are substantially identical with that of the organ-manual, so that  
35 the operator can by striking said digitals with a single movement similar to that of striking the organ-digitals effect any desired transposition of the stop mechanism with the minimum interruption of the operation of playing.

Our invention comprehends the novel arrangement and construction of parts hereinafter more definitely specified and claimed.

In the accompanying drawings, Figure 1 is  
45 a sectional view of a partial organ conveniently embodying our invention. Figs. 2 and 3 are enlarged sectional views showing the different positions of the digitals of the register stop-manual and the parts connected therewith. Fig. 4 is a plan view of the register stop-manual. Fig. 5 is a front view of

the register stop-manual as the same is presented to the operator.

Referring to Fig. 1, A is the organ-manual, whose digitals *a* are respectively connected  
55 with the manual-action valves *b*. Said valves control the admission of wind from the manual action box B through the ducts *c* to the respective primary pneumatic-bellows C. Each of said primary pneumatics C is provided with a pressure-valve *c'* and an exhaust-  
60 valve *c''*, coupled by a rod *c'''*, to control the admission of wind from the primary valve-box D through the respective conduits *d* to the intermediate pneumatic-bellows *e*. Said  
65 pneumatics *e* are each provided with a pressure-valve *e'* and an exhaust-valve *e''*, coupled by a rod *e'''*, to control the admission of wind from the intermediate valve-box E to the sound-board F. Said sound-board F is provided with internal wind-ducts *f''*, which are  
70 respectively in communication with the valve-box E by the openings *f'''* and comprise branch openings *f''''*, extending through the bottom of the sound-board and the several pneumatic-  
75 bars *g'* *g''* *g'''* *g''''*. Said bars are fixed to the sound-board and form the respective tops of the separate unit wind-boxes G' G'' G''' G''', which constitute the wind-chest G.

The sound-pipes in the registers H', &c.,  
80 are provided with the individual seats *h* in the top of the sound-board F, and said pipes are respectively connected with the wind-boxes by the ports *h'*, &c., which extend from said  
85 seats through the sound-board F and the respective pneumatic-bars *g'* *g''* *g'''* *g''''* into the respective wind-boxes G', &c. The pneumatic-bars *g'*, &c., respectively support the pneumatic-levers I', &c., in horizontal position on the under side of the sound-board F and  
90 within the respective wind-boxes G', &c. Each of said levers comprises a pneumatic-bellows provided with a horizontal arm *i'*, fixed upon the movable cheek-piece of the bellows and provided at its extremity with a valve *i''*,  
95 in registry with the respective valve-ports *h'*, &c. The wind-chest G projects beyond the sound-board F and supports the register stop-box J, which is connected with the supply of compressed air by the wind-trunk K. The  
100 admission of wind from said stop-box J to the respective units G', &c., of the wind-chest is



separately effected by respective stop-pneumatic bellows  $J'$ ,  $J^2$ ,  $J^3$ , and  $J^4$ , corresponding to  $G'$ , &c., and of which only  $J^4$  is shown, each of said pneumatics being provided with a pressure-valve  $j'$  and an exhaust-valve  $j^2$ , coupled by a rod  $j^3$ . Said stop-pneumatics  $j'$ , &c., are independently connected with the primary stop-valve box L by means of the respective wind-conduits  $L'$   $L^2$   $L^3$   $L^4$ , and the admission of wind to said conduits  $L'$ , &c., is effected by respective valve-levers  $m$ , each provided with a pressure-valve  $m'$  and an exhaust-valve  $m^2$ , coupled by a valve-rod  $m^3$ , said levers  $m$  being arranged to be independently controlled by the respective digitals  $n'$   $n^2$   $n^3$   $n^4$  of the stop-manual N, which digitals are arranged to be engaged or disengaged by respective detents  $o'$   $o^2$   $o^3$   $o^4$  at the will of the operator. Each of said stop-digitals  $n'$ ,  $n^2$ , &c., has a depression in its upper surface, in which the free extremity of its respective detent  $o'$ ,  $o^2$ ,  $o^3$ , or  $o^4$  is arranged to oscillate, and each of said detents being pivoted, as indicated at  $o^5$ , and provided with a spring  $o^6$ , each stop-digital is automatically engaged in operative position by its respective detent when depressed into the position shown in Fig. 3 by the operator. In order that the respective stop-digitals may be released from operative position at the will of the operator, we provide a corresponding series of auxiliary digitals  $P'$   $P^2$   $P^3$   $P^4$ , which are arranged between the adjoining stop-digitals  $n'$ , &c., in the lateral recesses of said stop-digitals and terminating short of the front ends of said stop-digitals, both series of digitals being mounted for vertical oscillation upon the fulcrum-bar  $N'$ , in arrangement similar to that of the ordinary organ-manual. Each of said detents  $o'$ , &c., is provided with a rearwardly-extending arm  $o^7$ , and said arms are respectively engaged by the studs  $p'$   $p^2$   $p^3$   $p^4$ , fixed in the auxiliary digitals  $P'$ , &c., so that when any one of the stop-digitals is engaged in operative position, as indicated in Fig. 3, depression of its respective auxiliary digital suffices to release it from its respective detent and permit its return to the normal position shown in Fig. 2, each of the digitals being independently provided with a spring, such as is indicated at  $N^2$  in Figs. 2 and 3.

The conduits  $L'$   $L^2$   $L^3$  respectively terminate in stop-pneumatics  $J'$   $J^2$   $J^3$ , which are not shown, but are counterpart to the pneumatic  $J^4$ , shown in Fig. 1, and the normal position of all of said pneumatics is that in which  $J^4$  is shown in said figure, wherein its valve  $j'$  is closed and its valve  $j^2$  opened, so that there is no wind delivered from the stop-pneumatic box J to the wind-box  $G^4$ , and the latter is opened to the atmosphere. In said normal position of the stop-pneumatics  $J'$ , &c., they are charged with wind from the primary stop-valve box L, the respective coupled valves  $m'$   $m^2$  being uplifted from the position shown in Fig. 1. However, if any one of the series of coupled valves  $m'$   $m^2$  is shifted to

the position shown in Fig. 1 the corresponding stop-pneumatic is opened to the atmosphere and the wind-pressure within the stop-pneumatic box J collapses that pneumatic and causes it to uplift its coupled valves  $j'$   $j^2$ , whereby wind is admitted from the stop-pneumatic box J to the respective wind-box thus placed in communication therewith. Thereafter the register of sound-pipes corresponding to that particular wind-box may be caused to speak by the manipulation of the digitals  $a$  of the organ-manual A.

The complete operation of the devices above described is as follows: It being desired to use the register of pipes  $H'$ , the digital  $n'$  of the stop-manual N is depressed, as indicated in Fig. 1, which opens the conduit  $L'$  to the atmosphere and permits the stop-pneumatic  $J'$  (not shown, but similar to  $J^4$ ) to be collapsed by the wind within the box J, thus admitting the wind to the wind-chest box  $G'$  common to said register  $H'$ . The pneumatic pressure thus produced in the box  $G'$  being external to the pneumatic-lever  $I'$  is balanced by the pneumatic pressure within the bellows of said lever while said bellows remains in communication with the wind-box E by the duct  $f^2$ , &c. However, if any one of the digitals  $a$  in the manual A is depressed the corresponding manual-action valve  $b$  is uplifted, wind is admitted beneath the respective primary pneumatic C, and its valve  $c^2$  is closed and its valve  $c'$  opened, admitting wind from the primary valve-box D to the respective intermediate pneumatic  $e$ , thereby closing its valve  $e'$  and opening its valve  $e^2$ , which opens the corresponding duct  $f^2$  to the atmosphere, so that the bellows of the respective lever  $I'$  is instantly collapsed and opens the respective port  $h'$ , leading to the particular pipe of the register  $H'$  corresponding to the digital  $a$  depressed, thereby causing that pipe to speak. To terminate the action of said pipe, the depressed digital  $a$  is released, the valve  $b$  is closed, the pressure falls within the respective duct  $c$  by means of the escape of wind from the exhaust-vent  $c^4$ , leading from each duct to the atmosphere, and the pneumatic C is collapsed by the wind-pressure upon the valve  $c'$  within the box D, thus closing the valve  $c'$  and simultaneously opening the valve  $c^2$ . Opening of the valve  $c^2$  permits the pressure in the intermediate pneumatic  $e$  to escape, and said pneumatic is collapsed by the pressure within the intermediate valve-box E, thereby opening the valve  $e'$  and simultaneously closing the valve  $e^2$ , so that pressure is admitted to the bellows of the lever  $I'$ , and the latter gravitates to its normal position, wherein its valve  $i^4$  closes the port  $h'$  leading to said pipe.

The embodiment of our invention which we have illustrated includes an automatic playing device Q, comprising the wind-casing  $Q'$ , containing the tracker-bar  $q'$ , which latter is provided with a series of apertures equal in number to the digitals of the manual



A and respectively connected by the independent conduits *q* with the respective ducts *c*. Said casing *Q'* also contains the rollers *R* *R'*, which cause the traverse of a perforated web *S* over the tracker-bar *q'* to admit wind to operate any selected sound-pipe, as will be readily understood. However, we do not desire to limit ourselves to the particular embodiment of our invention which we have illustrated, as it is obvious that various modifications may be made therein without departing from the essential features of our invention.

We claim—

1. In an organ, the combination with a register-stop; of an oscillatory stop-digital; means operatively connecting said stop-digital with said register-stop; an oscillatory detent arranged to engage the stop-digital in operative position; a lever-arm upon said detent; an auxiliary digital mounted independently of said stop-digital; and means operatively connecting said auxiliary digital with the arm of said detent, whereby the stop-digital may be released, substantially as set forth.

2. In an organ, the combination with a register-stop; of an oscillatory stop-digital; means operatively connecting the stop-digital with said register-stop; an auxiliary digital provided with a stud; an oscillatory detent arranged to engage said stop-digital in operative position; and an arm upon said detent operatively connected with the auxiliary digital, by said stud, whereby the stop-digital may be released, substantially as set forth.

3. In an organ, the combination with a register-stop; of an oscillatory stop-digital; means operatively connecting said stop-digital with said register-stop; an auxiliary digital mounted to oscillate at one side of said stop-digital and independently thereof; an oscillatory detent; and means operatively connecting said auxiliary digital with said detent; whereby said stop-digital may be engaged or released, substantially as set forth.

4. In an organ, the combination with a

register-stop; of an oscillatory stop-digital; means operatively connecting said stop-digital with said register-stop; an auxiliary digital mounted to oscillate at one side of said stop-digital; an oscillatory detent; and an arm operatively connecting said auxiliary digital with said detent, whereby said stop-digital may be engaged or released, substantially as set forth.

5. In an organ, the combination with a series of register-stops; of a series of oscillatory stop-digital; means operatively connecting the stop-digital with the register-stops; a corresponding series of auxiliary digital arranged in alternation, respectively at one side of the corresponding stop-digital; a corresponding series of oscillatory detents; and arms operatively connecting the auxiliary digital with the detents, whereby the stop-digital may be engaged or released, substantially as set forth.

6. In an organ, the combination with a series of independent registers of sound-producing devices; of a series of oscillatory stop-digital arranged to selectively determine which of said registers shall be operative; means controlled by a perforated web, arranged to determine which of the individual sounding devices in the selected operative register shall be operated; a corresponding series of independent auxiliary digital arranged in alternation, respectively at one side of the corresponding stop-digital; a corresponding series of oscillatory detents; and means operatively connecting the auxiliary digital with the detents, whereby the stop-digital may be engaged or released, substantially as set forth.

In testimony whereof we have hereunto signed our names, at Philadelphia, Pennsylvania, this 23d day of April, 1901.

WILLIAM E. HASKELL.  
CHARLES S. HASKELL.

Witnesses:

ARTHUR E. PAIGE,  
CLIFTON C. HALLOWELL.