

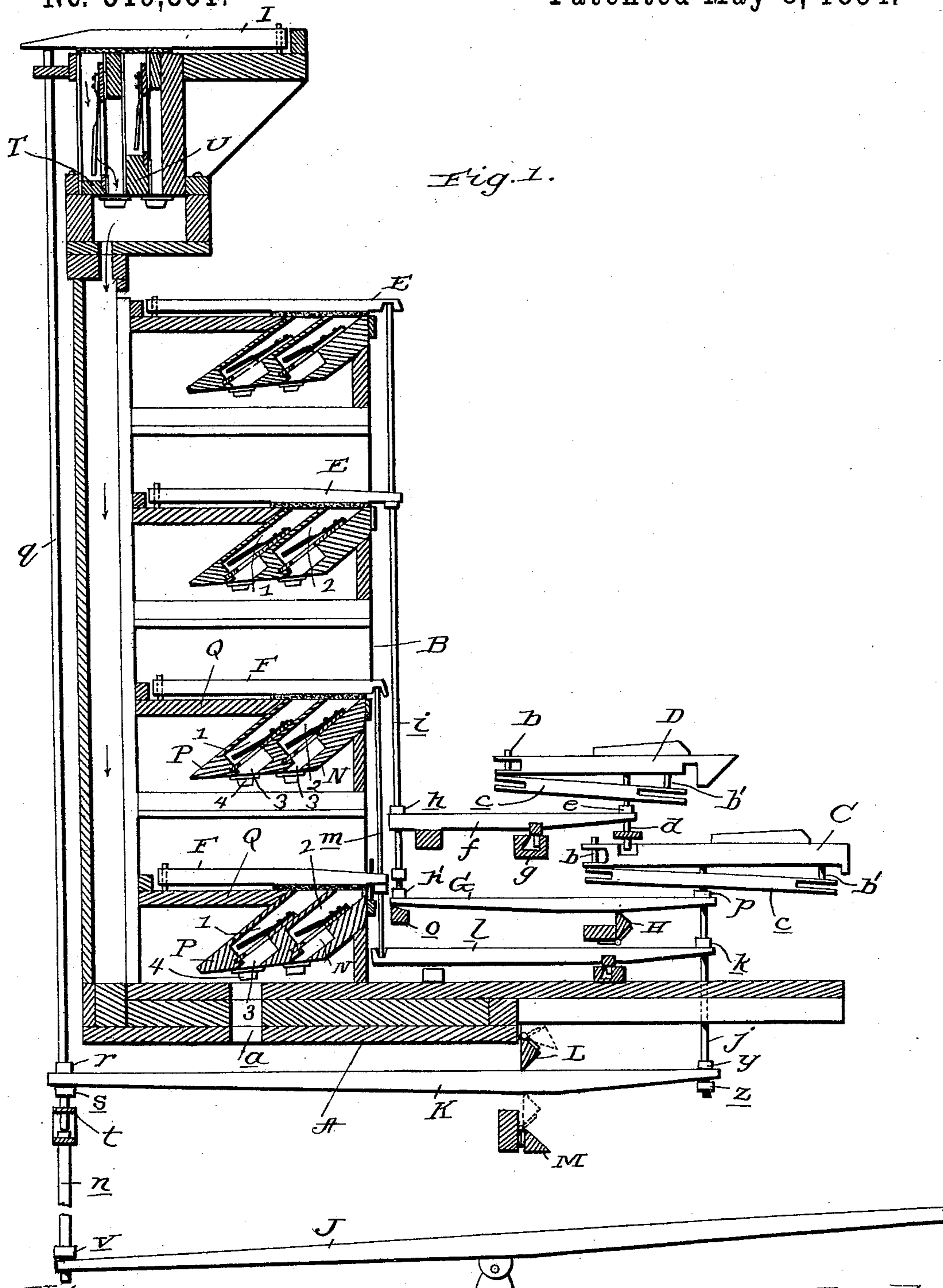
(No Model.)

2 Sheets—Sheet 1.

J. W. TRAINER.  
REED ORGAN.

No. 519,361.

Patented May 8, 1894.



Witnesses:

*Wm. A. Haeder*  
Thomas E. Turpin

*Inventor*  
*John W. Trainer*  
*By James J. Shuey*  
*Attorney*

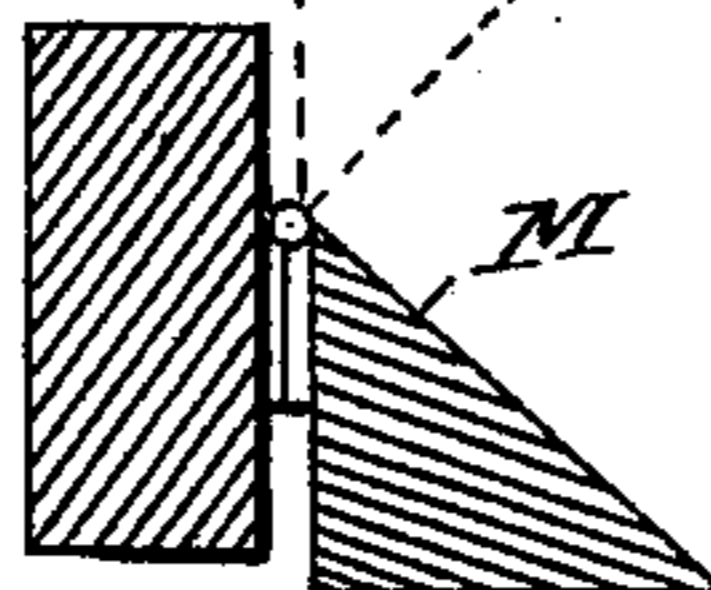
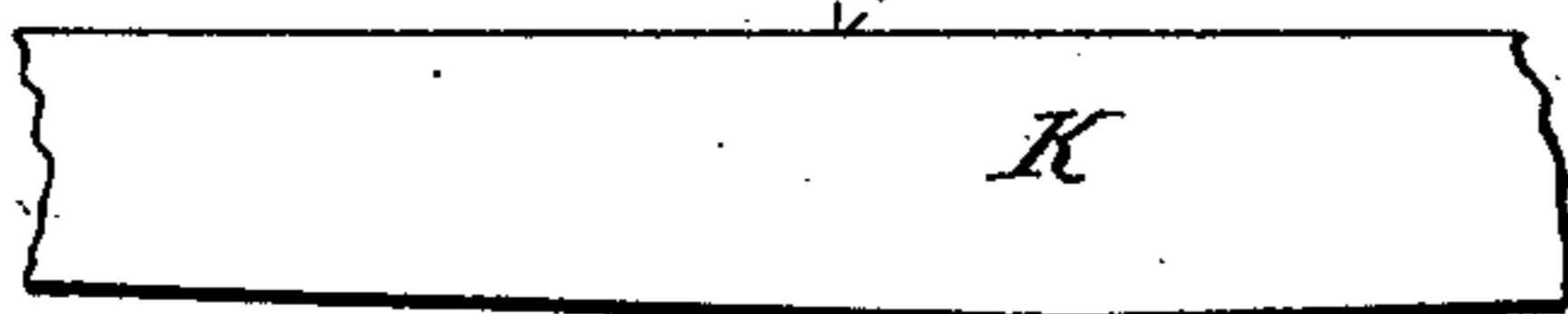
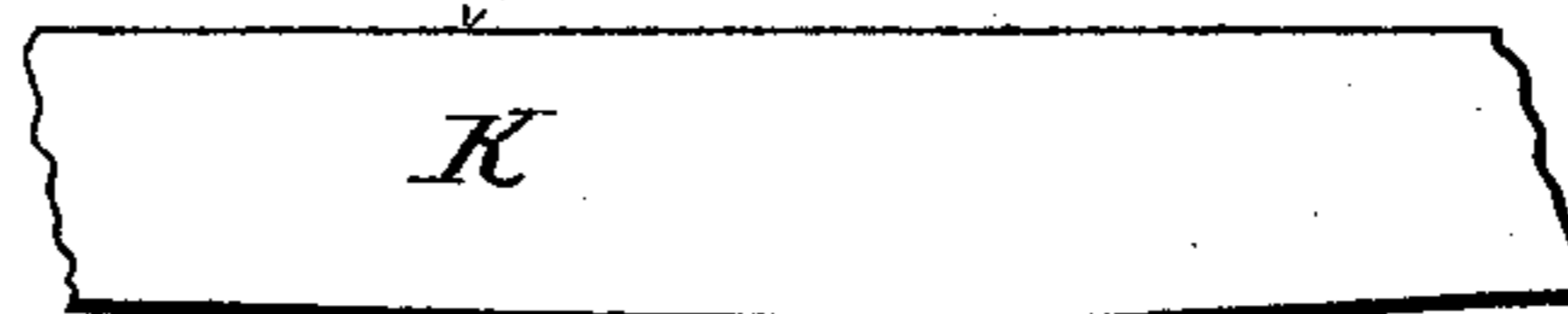
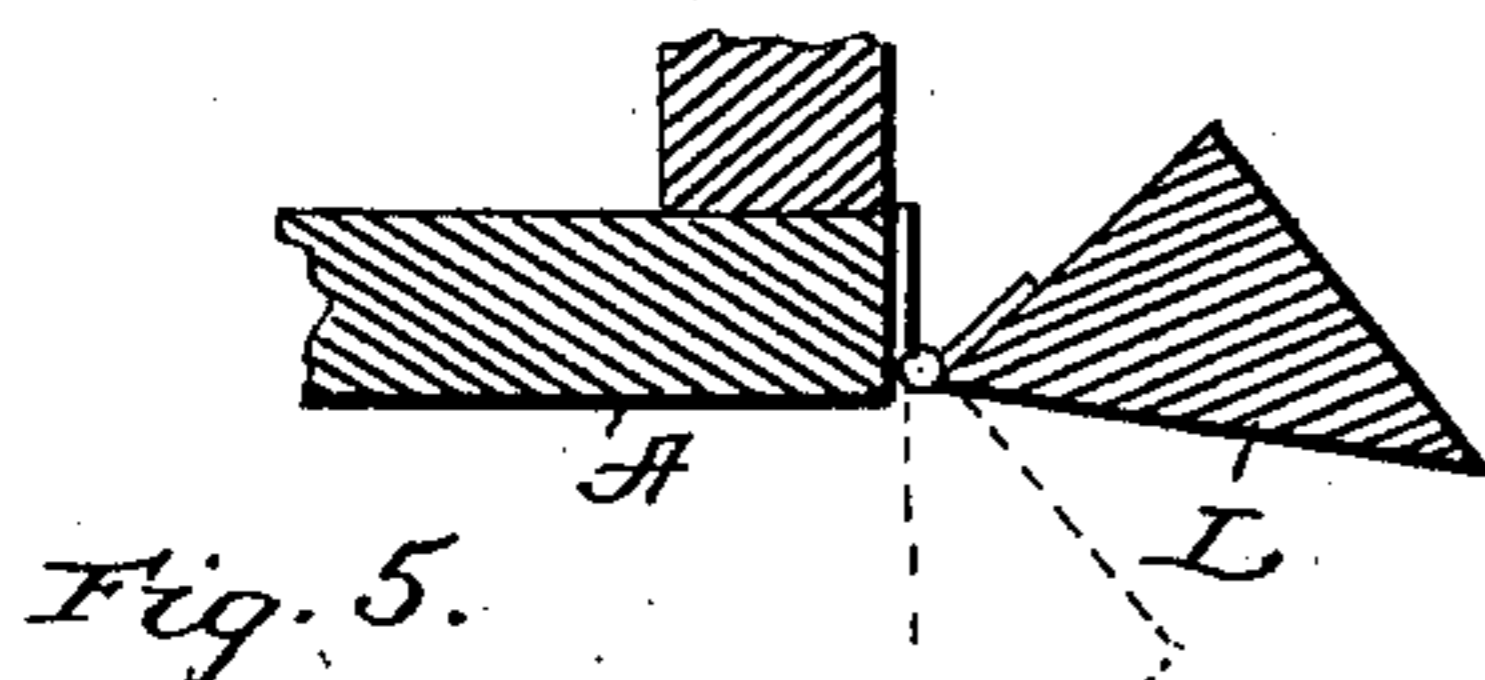
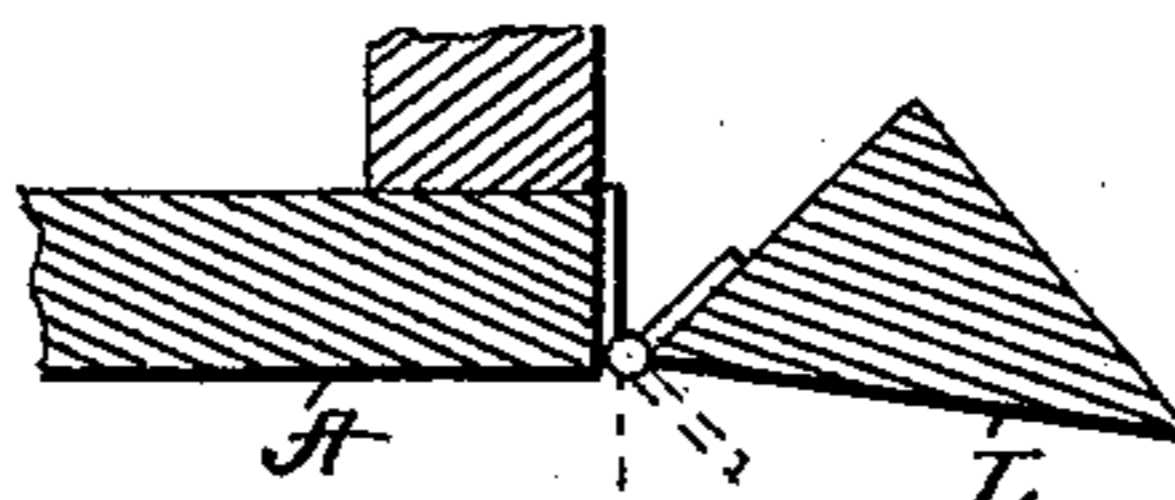
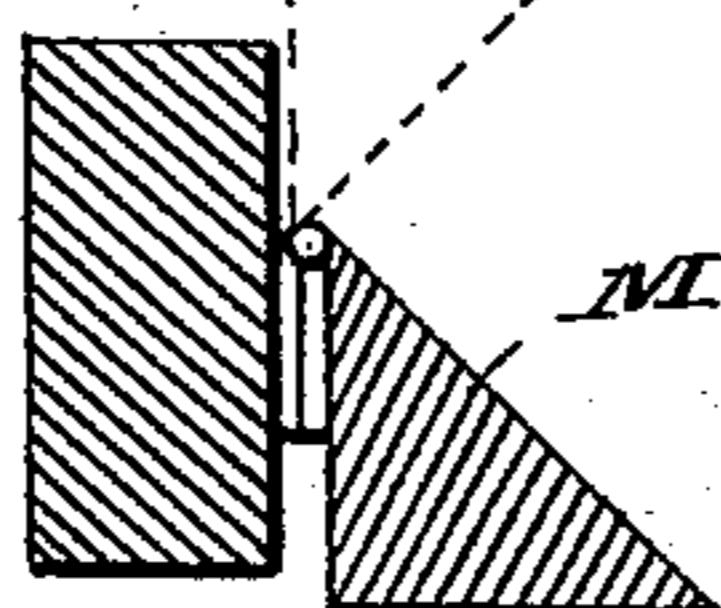
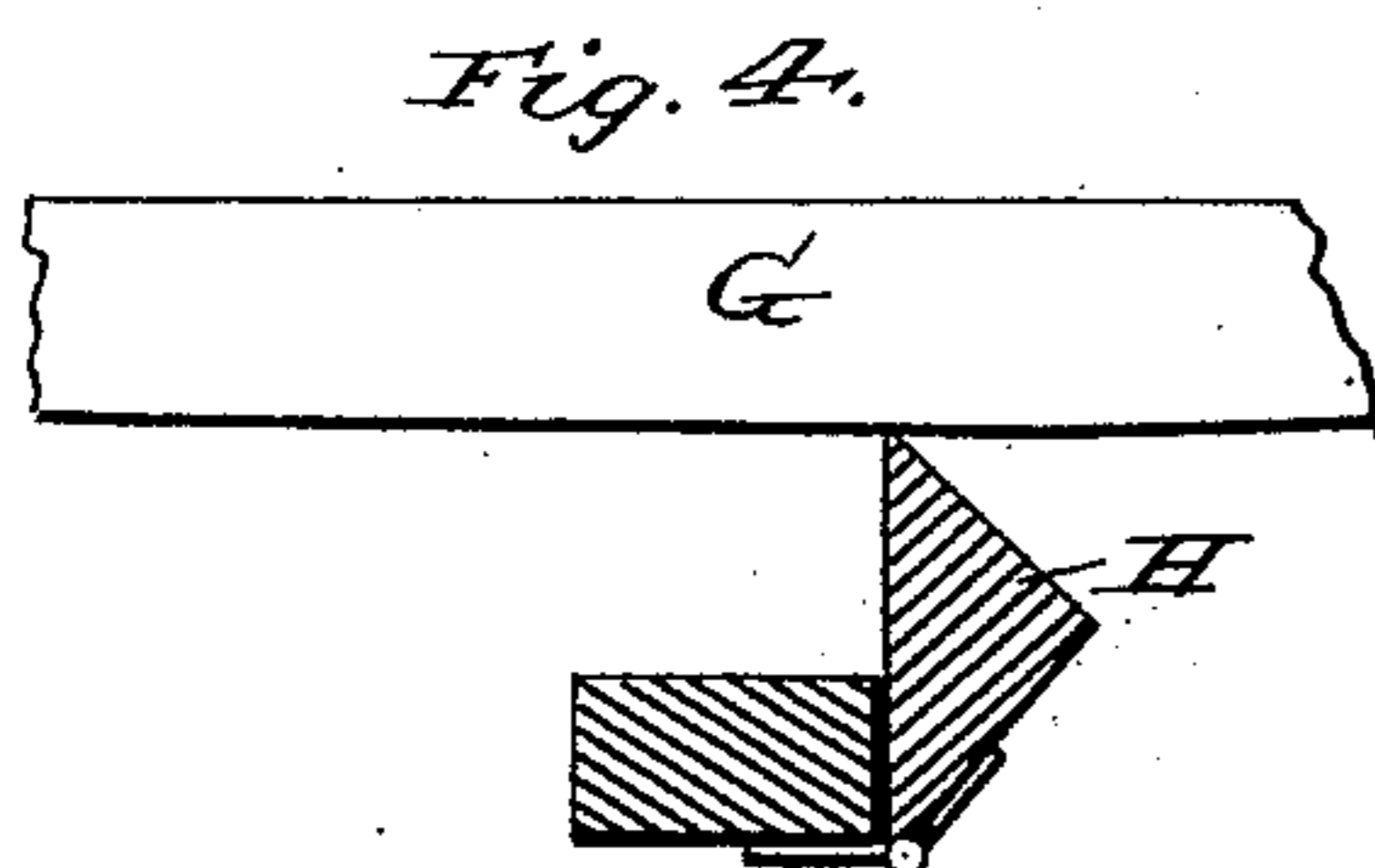
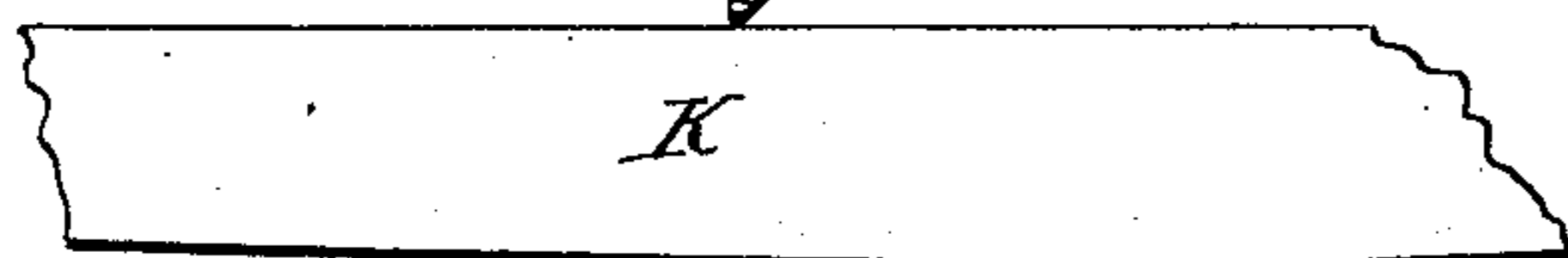
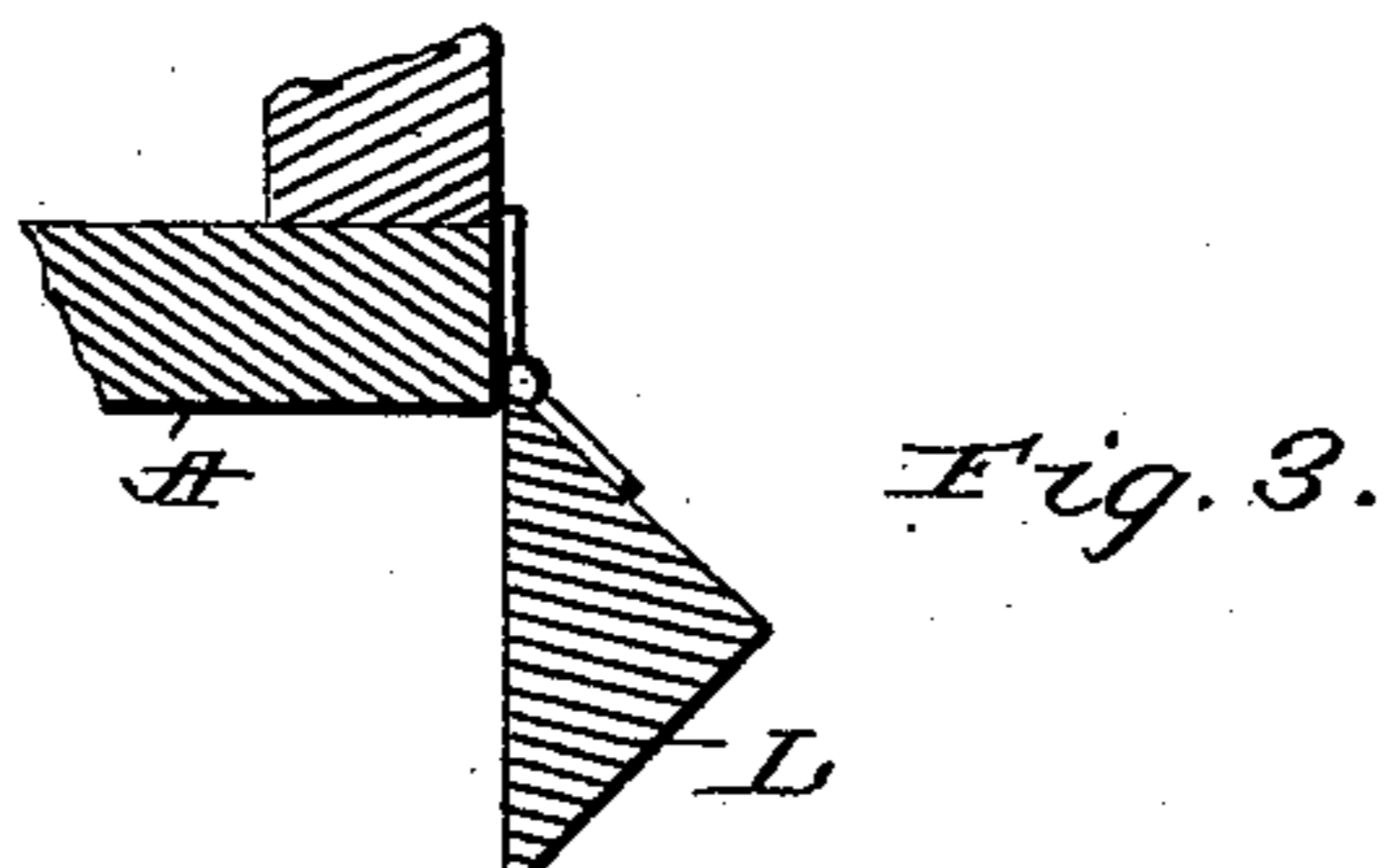
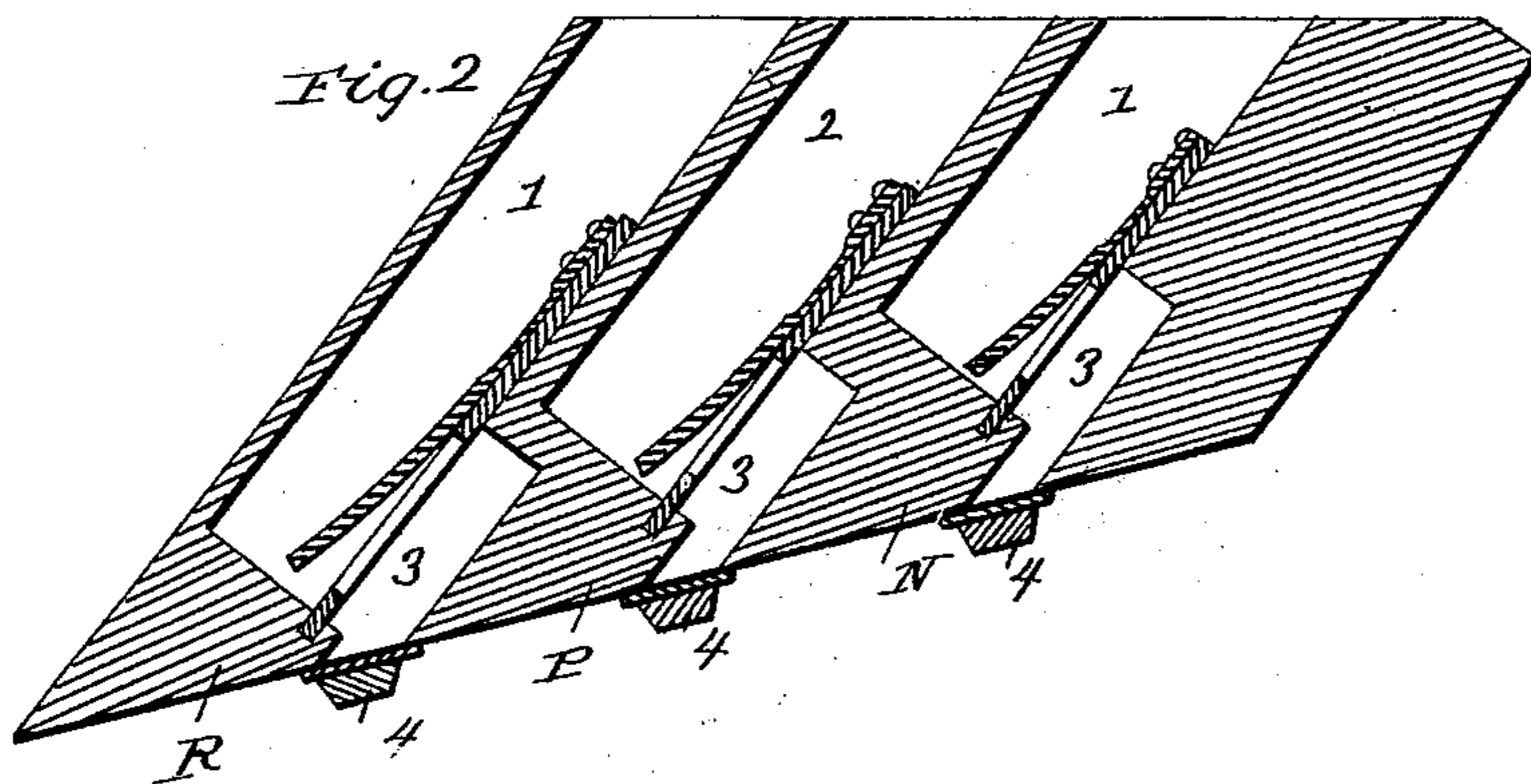
(No Model.)

2 Sheets—Sheet 2.

J. W. TRAINER.  
REED ORGAN.

No. 519,361.

Patented May 8, 1894.



Witnesses:  
*Chas. Haeder*  
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# UNITED STATES PATENT OFFICE.

JOHN W. TRAINER, OF FORT WAYNE, INDIANA.

## REED-ORGAN.

SPECIFICATION forming part of Letters Patent No. 519,361, dated May 8, 1894.

Application filed July 8, 1893. Serial No. 479,949. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN W. TRAINER, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Reed-Organs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in reed organs, and it has for its general object to provide a double manual, reed organ embodying such an action that the foot pedals or base levers may be utilized to operate the valves of the sub-bass group or groups of reeds either alone or together with the valves of the group or groups of reeds of the first manual, or together with the valves of the groups of reeds of the first and second manuals; and the keys of the first manual may be utilized to operate the valves of their group or groups of reeds either alone or together with the valves of the group or groups of reeds of the second manual, or together with the valves of the sub-bass group of reeds, or together with the valves of both sub-bass and second manual groups of reeds, as desirable.

Another object of the invention is to provide a seat or surface for the reed controlling valves, which will not be liable to be affected by atmospheric conditions and which will consequently not be warped so as to cause the valves to rest unevenly.

Other objects and advantages of the invention will be fully understood from the following description and claims when taken in connection with the accompanying drawings, in which—

Figure 1, is a vertical, transverse section of so much of a reed organ as is necessary to illustrate my invention; such section being taken at the bass end of the organ. Fig. 2, is an enlarged, transverse section of a bank or group comprising a series of three reed boards. Fig. 3, is a detail view illustrating the positions of the adjustable fulcrums with respect to the coupling levers when it is desired to utilize the pedals or bass levers to operate the valves of the first manual, or the valves of the first and second manuals. Fig.

4, is a detail view illustrating the position of the adjustable fulcrum of the manual levers with respect to said levers, when it is desired to operate the valves of the second manual by the first manual and when it is desired to operate the valves of the first and second manuals by the pedal or bass levers. Fig. 5, is a detail view illustrating the position of the adjustable fulcrums with respect to the coupling levers when it is desired to operate the valves of the sub-bass group of reeds with the keys of the first or lower manual, and Fig. 6, is a detail view showing the positions of the adjustable fulcrums when the pedals or foot levers and the keys of the first manual are employed independently.

In the said drawings, similar letters designate corresponding parts throughout the several views, referring to which—

A, indicates the base board, having an air passage *a*, to connect the interior of the casing B, and the bellows and exhaust chamber (not illustrated), and C, D, indicate the keys of the upper and lower manuals, respectively, which keys are pivoted at their inner ends upon the studs as *b*, and are guided adjacent to their outer ends upon pins *b'*, rising from the boards *c*, in the ordinary or any approved manner. The keys D, of the second or upper manual which are designed to operate the valves E, of the two upper groups or banks of reeds, are provided, as shown, with depending pusher-rods *d*, which carry collars or buttons *e*, designed to engage and depress the inner ends of the levers *f*. These levers *f*, which I term key levers are fulcrumed at an intermediate point, upon a rail or support as *g*, and they have their inner ends adapted to engage the collars *h*, of the rods *i*, which rods engage the valves E, as shown, whereby it will be seen that when the keys are depressed, the valves will be raised so as to admit air to the reed cells and cause them to speak. The keys C, of the first or lower manual, are provided with depending pusher rods as *j*; and they are designed to operate the valves F, of the two lower banks or groups of reeds through the medium of the said rods *j*, the collars *k*, thereof, the key lever *l*, which is fulcrumed at an intermediate point in its length, and the rod *m*, which engages the valves F, and

bears upon the weight end of the lever L, as shown. In some cases it is desirable to operate the valves E, F, of the several groups or banks of reeds by a single manual of keys, and I have therefore provided what I term the manual levers G, and the adjustable fulcrum H. The manual levers G, engage the adjustable collars or buttons  $h'$ , on the pusher rods  $i$ , and the collars  $p$ , upon the rods  $j$ , and they rest and ordinarily have their fulcrum upon a rail or support  $o$ , whereby it will be seen that they are normally idlers and do not serve any function. When however, it is desired to transmit motion from the first manual keys to the pusher rods  $i$ , of the valves E, E, the adjustable fulcrum H, which is supported and operated in any approved manner, is moved into the position shown in Figs. 1, and 4, so as to change the levers G, to elementary levers or levers of the first class, and enable them to lift the rods  $i$ , when their outer or power ends are depressed. Thus it will be seen that the lower manual keys may be utilized to operate the valves E, in addition to the valves F, which is an important desideratum. If the inner ends of the manual levers are too high or too low when the fulcrum H, is placed in engagement with the same, said ends may be readily raised or lowered by moving the buttons  $h'$  (which are preferably screw-threaded) up or down.

I, indicates the valves of the sub-bass group or bank of reeds, and  $q$ , indicates the rods which engage and are designed to transmit motion to said valves as will be presently described. These rods  $q$ , are provided with collars  $r$ ,  $s$ , and they have their lower ends passed through a suitable guide  $t$ , so as to enable them to engage the rods  $n$ , which are provided with collars  $v$ , and engage the pedals or bass levers as shown. By this construction it will be perceived that the valves I, may be raised to admit air to the reed cells of the sub-bass group or bank by depressing the forward ends of the levers J, and it will also be perceived that when the rods  $q$ , are moved upwardly through the medium of mechanism other than the lever J, and rod  $n$ , (as will be presently described,) the unnecessary movement of said lever J, and rod  $n$ , is obviated and the movement of the rod  $q$ , and the valves is consequently rendered easier.

I prefer for the reason above stated to employ the two rods  $q$ ,  $n$ , intermediate of the levers J, and valves I, but I do not desire to be understood as confining myself to the employment of such rods as a single pusher rod would serve to transmit motion from a lever to its valve.

K, indicates what I term "coupling levers," which engage the rods  $q$ , between the collars  $r$ ,  $s$ , and the rods  $j$ , of the lower manual keys C, between the collars  $y$ ,  $z$ . These levers K, are normally idlers; and when the valves I, of the sub-bass group or bank of reeds are operated by the pedals or bass levers J, they

have their fulcrums upon the rods  $j$ , between the collars  $y$ ,  $z$ , and when the keys C, of the first or lower manual are employed to operate the valves F, alone or together with the valves E, they have their fulcrums upon the rods  $q$ , between the collars  $r$ ,  $s$ . In other words the coupling levers K, will normally move with the rods  $j$ , and  $q$ , alternately, without effecting a transmission of motion from one to the other, and they will consequently not interfere with the independent operation of the valves I, and the valves F, or E, and F. Now when it is desired to transmit motion from the rods  $q$ , to the rods  $j$ , so as to operate the valves F, or the valves E, and F, by the pedals or bass levers J, it is necessary to change the levers K, to levers of the first class or kind and have the fulcrum above the said levers; and when it is desired to transmit motion from the rods  $j$ , to the rods  $q$ , so as to operate the valves I, by the lower manual keys C, it is also necessary to change the levers K, to levers of the first class or kind and have the fulcrum below the same. To these ends I have provided the adjustable fulcrums L, M, one of which is arranged above and the other below the levers as shown. These fulcrums L, M, may be supported, adjusted, and held in their adjusted position in any approved manner, and they are operated as follows, viz: When it is desired to operate the valves I, by the levers J, alone, and the valves F, or the valves E, F, by the keys C, alone, the fulcrums L, M, are thrown and held away from the levers K, as shown in Fig. 6, so as to allow a free idle movement of the said levers. When it is desired however to utilize the pedals or levers J, to operate the valves F, or the valves E, and F, in addition to the valves J, the fulcrum L, is moved into the position shown in Fig. 3, so that when the forward ends of the levers are raised by the rods  $q$ , the rear ends thereof will be swung downwardly so as to depress the rods  $j$ , and raise the valves F, or the valves E, and F, according to the position of the fulcrum H. When it is desired to change the operation of the levers K, so as to enable the performer to operate the valves I, by the keys C, the fulcrum L, is moved away from the levers, and the fulcrum M, is moved into engagement therewith as shown in Fig. 5. Thus it will be seen that when the keys C, are depressed the rear end of the levers will be swung downwardly and their forward ends will be raised so as to elevate the rods  $q$ , and lift the valves I, off their seats. At this point it is well to mention that by reason of two rods  $q$ ,  $n$ , being employed intermediate of the levers J, and valves I, as before described, the objectionable necessity of the performer moving the levers J, when the valves I, are operated by the keys C, is obviated, which is an important advantage as is obvious. All of the adjustable fulcrums H, L, and M, are, by preference, of a general triangular form in cross-

section so as to present a knife edge fulcrum to the levers G, K, and they are hinged or pivoted to suitable fixed supports so that they may be swung entirely out of engagement with their respective levers when desired.

N, P, indicate a series of reed boards having reed cells which are preferably of the shape shown although they may be of any approved shape. These reed or cell boards are arranged in groups or series of two or more, with the open ends of the reed cells in such position that a single flat valve may be employed to control one cell in each board comprised in the series.

The present embodiment of my invention, comprises four groups, each of which may have any approved number of reed boards which preferably extend through the sounding boards Q, as disclosed in my Letters Patent No. 472,201, so as to admit of the employment of a single valve to close the open ends of a transverse series of reed cells and afford a seat for said valve.

Each of the reed cells has at its inner end an air opening through its inner wall as indicated at 1, and 2, which openings communicate with the slots 3, which are cut at the points of the reeds, and are controlled by mutes 4, which are arranged lengthwise of the board. The slots 3, extend the full length of the board and have their base and treble ends closed, whereby it will be seen that when the mutes are closed over the slots they are perfectly air tight.

T, U, indicate the sub-bass reed boards, which are preferably arranged in the upper part of the organ and are designed to be controlled by the valves I, before described.

In Fig. 2, of the drawings, I have illustrated a bank of reeds which embodies the same construction as those shown in Fig. 1, but which comprises three boards N, P, and R; the board N, being a four foot scale, the board P, an eight foot scale, and the board R, a sixteen foot scale.

With the construction described it will be seen that when it is desired to give voice to any set or scale of reeds, for instance the four foot set or scale (which derives its name from the fact that its lowest F, corresponds in pitch to that of an open organ pipe four feet long), it is simply necessary to open the mute under the said set, so as to permit a passage of air through any reed cell that is beneath the valve opened.

The reed boards comprised in the several groups or banks are cut with the grain of the wood so as to afford an "end wood" surface to seat the valves, or in other words the boards are so formed that the direction of the length of the grain will be approximately at right angles to the valve to be seated.

I have found by practical experiments that when the reed boards are cut with the grain of the wood, they will not warp or be otherwise affected by atmospheric conditions, and

they will consequently afford a permanent, even seat for the valves, so as to keep the same straight which is a highly important advantage in organs and the like.

In the foregoing description, I have entered into a specific and detailed description of some of the elements of my improved organ in order to impart a full and clear understanding of the same, but I do not desire to be understood as confining myself to the specific construction of such elements, as such changes or modification may be made in practice as fairly fall within the scope of my invention. I also do not desire to be understood as confining myself to the specific arrangement of parts herein disclosed, nor do I desire to be understood as confining myself to the use of my improved double manual action in conjunction with the arrangement or construction of reed boards disclosed.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a reed board cut or formed with or in the direction of the grain in the wood so as to afford an end grain surface to seat a valve, substantially as specified.

2. A reed board having a longitudinal slot communicating with its reed cells and having its ends closed, in combination with a mute adapted to cover and close said slot, substantially as specified.

3. The combination with a set of valves, a manual of keys, and a set of normally idle levers intermediate of the keys and valves; of a fulcrum pivotally connected to a stationary support and having an adjustment with respect to said normally idle levers, whereby it may be swung into engagement with the same to change them from idlers to elementary levers or levers of the first class, substantially as and for the purpose set forth.

4. The combination with a set of valves as E, pusher rods as *i*, engaging said valves and having collars, a manual of keys D, for operating said valves and mechanism intermediate of said keys D, and the pusher rods *i*; of another manual of keys C, pusher rods disposed below the keys C, and having collars as *p*, a set of normally idle levers intermediate of the pusher rods of the valves E, and the pusher rods of the keys C, and engaging the collars of said pusher rods, and an adjustable or movable fulcrum adapted to be placed in engagement with said levers, substantially as and for the purpose set forth.

5. The combination with a set of valves E, rods *i*, engaging the same and having collars, a set of valves F, and rods M, engaging the same; of a manual of keys D, levers intermediate of said keys and the rods *i*, a manual of keys C, pusher rods disposed beneath the keys C, and having collars as *p*, levers *l*, intermediate of the keys C, and the rods M, a set of normally idle levers intermediate of the pusher rods of the keys C, and the pusher

rods *i*, and resting in engagement with the collars on said pusher rods, and an adjustable or movable fulcrum adapted to be placed in engagement with said normally idle levers, substantially as and for the purpose set forth.

6. The combination with a valve, a key and a normally idle coupling lever intermediate of the key and valve; of fulcrums pivotally connected to stationary supports and arranged above and below the coupling lever, and having an adjustment with respect to said coupling lever, substantially as and for the purpose set forth.

7. The combination with a valve, a key and a normally idle coupling lever intermediate of the key and valve; of the adjustable or movable fulcrums of triangular form in cross section, pivotally connected to stationary supports above and below the said lever, substantially as and for the purpose set forth.

8. The combination with a set of valves *F*, rods *m*, engaging the same, a manual of keys having thrust pins or rods *j*, mechanism intermediate of the pins or rods *j*, and the rods *m*, a set of valves *I*, rods *q*, engaging said valves, pedal or foot levers adapted to move the rods *q*, and operate their valves, and normally idle levers engaging and connecting the rods *j*, and *q*; of an adjustable or movable fulcrum adapted to be placed in engagement with the said normally idle levers, substantially as and for the purpose set forth.

9. The combination with a set of valves *I*; of pedal or foot levers, the rods *n*, engaging the pedal or foot levers, and the rods *q*, engaging the valves *I*, and bearing loosely upon the ends of the rods *n*, and adapted to move independently of said rods *n*, substantially as and for said purpose set forth.

10. The combination with a set of valves *I*; of pedal or foot levers, the rods *n*, engaging the pedal or foot levers and carrying guides as *t*, at their upper ends, and the rods *q*, engaging the valves *I*, and taking loosely through the guides *t*, and bearing upon the ends of the rods *n*, substantially as and for the purpose set forth.

11. The combination with a set of valves

*I*, pedals or foot levers, rods as *q*, intermediate of the levers and valves and having collars *r*, *s*; of a manual of keys *C*, thrust pins or rods disposed beneath said keys and provided with collars *y*, *z*, a set of valves *F*, mechanism intermediate of the thrust pins or rods and the valves *F*, normally idle levers arranged intermediate of the thrust pins or rods of the keys *C*, and the rods *q*, and resting between the collars *y*, *z*, of the former and the collars *r*, *s*, of the latter, and fulcrums arranged above and below the said normally idle levers, all substantially as and for the purpose set forth.

12. The combination with a set of valves, rods *i*, engaging the same, buttons or collars *h'*, adjustably mounted on the rods *i*, a manual of keys *C*, rods *j*, depending from said keys and having buttons *p*, and a set of normally idle levers intermediate of the rods *j*, and the rods *i*, of an adjustable fulcrum adapted to be placed in engagement with said normally idle levers, substantially as and for the purpose set forth.

13. The combination with a set of valves, rods *i*, engaging the same, a manual of keys *C*, rods *j*, depending from said keys and having buttons *p*, and a set of levers intermediate of the rods *j*—and the rods *i*, of buttons *h'*, adjustably mounted upon the rods *i*, and adapted to engage the levers, substantially as and for the purpose set forth.

14. The combination with a set of valves as *I*, pedal levers as *J*, rods as *q*, intermediate of the pedal levers and valves *I*, valves as *F*, a manual of keys as *C*, having depending rods as *j*, and mechanism intermediate of the manual of keys and the valves *F*; of normally idle coupling levers intermediate of the rods *j*, and *q*, and adjustable or movable fulcrums arranged above and below said coupling levers, all substantially as and for the purpose set forth.

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

JOHN W. TRAINER.

Witnesses:

WM. P. BECK,

HENRY C. HANNA.