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J. F. NEILL

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J. F. NEILL

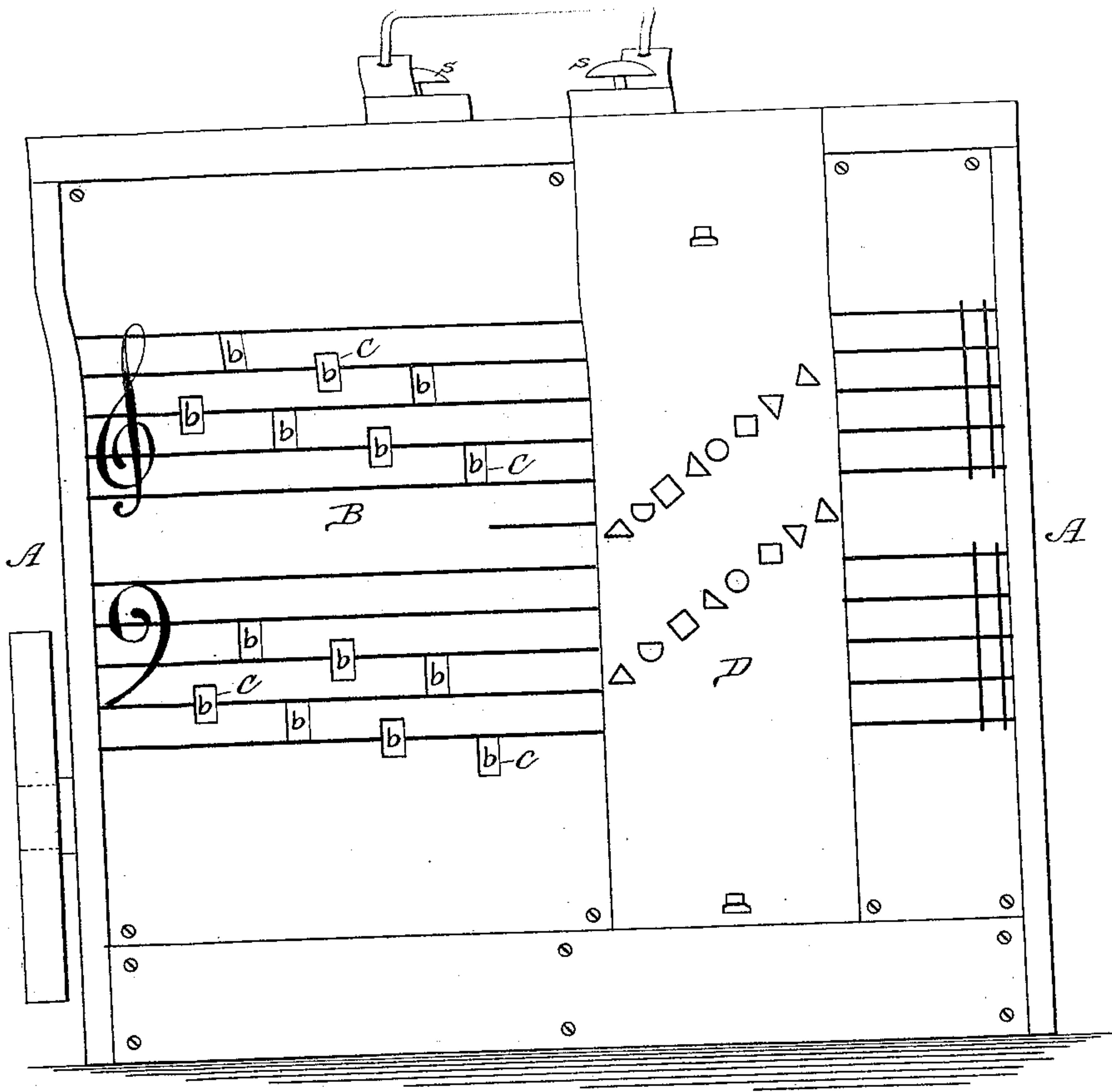
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DEVICE FOR ILLUSTRATING THE TRANSPORT OF MUSICAL SCALES.

No. 323,196.

Patented July 28, 1885.

Fig. 1.



Witnesses:

J. W. Garner  
J. W. Garner

Inventor:  
J. F. Neill,  
per  
F. A. Lehmann, atty

(No Model.)

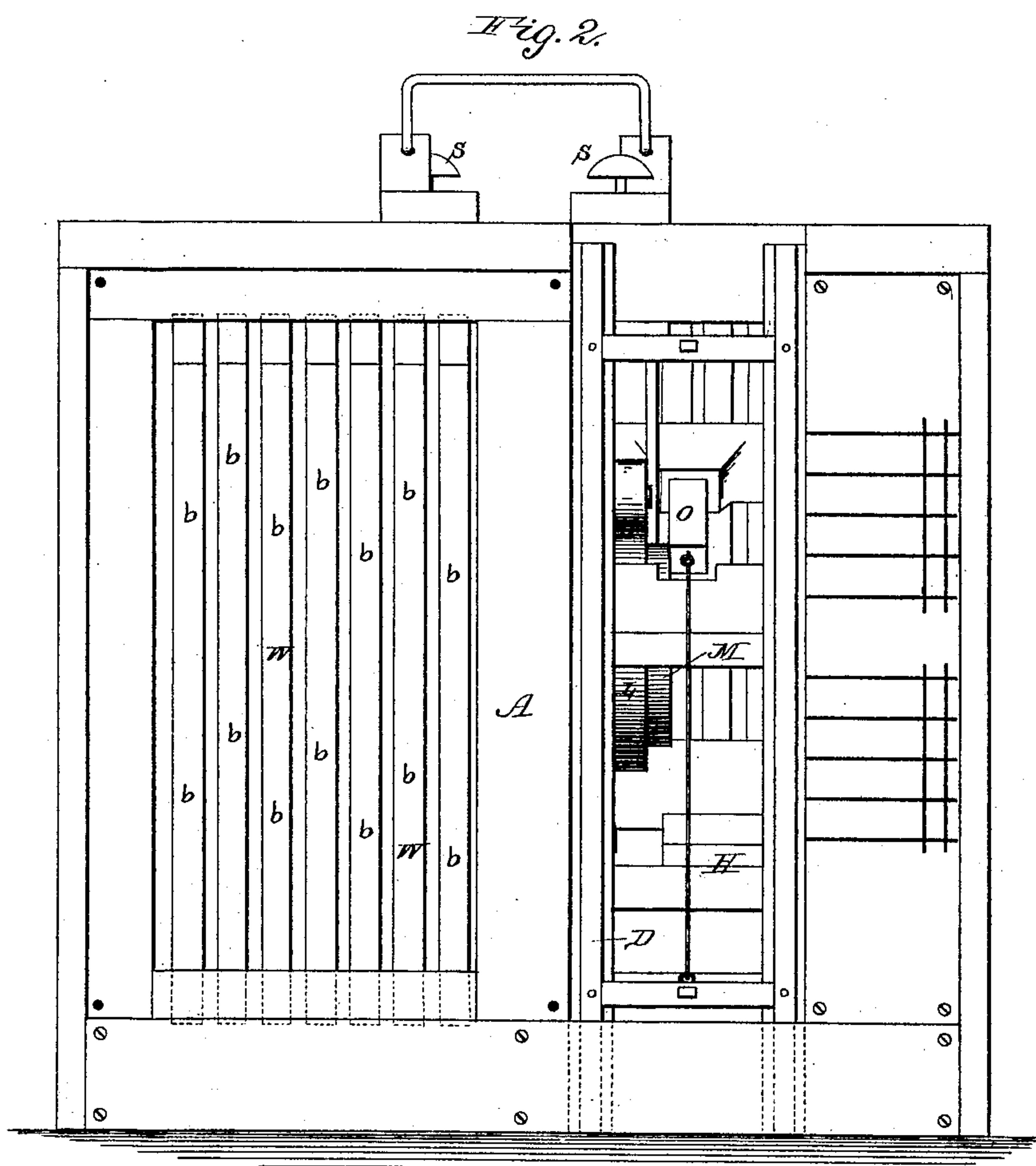
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J. F. NEILL.

DEVICE FOR ILLUSTRATING THE TRANSPOSITION OF MUSICAL SCALES.

No. 323,196.

Patented July 28, 1885.



Witnesses:

*J. W. Garner*  
Jas. W. Garner

Inventor:

*J. F. Neill*  
per  
*F. A. Lehmann, atty*

(No Model.)

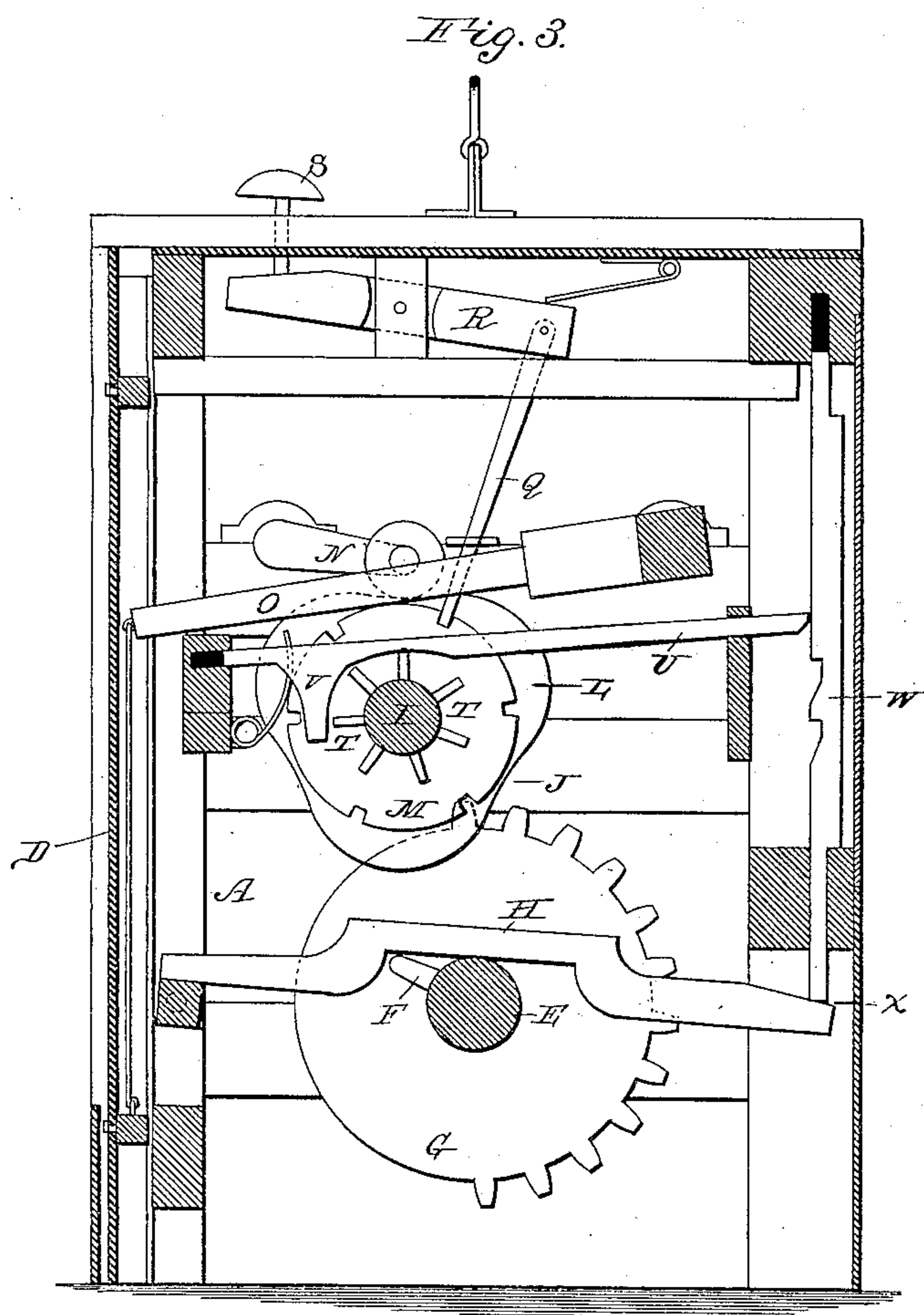
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J. F. NEILL.

DEVICE FOR ILLUSTRATING THE TRANSPOSITION OF MUSICAL SCALES.

No. 323,196.

Patented July 28, 1885.



Witnesses:

*J. W. Garner*  
This *June*

Inventor:

*J. F. Neill,*  
per  
*F. A. Lehmann,*  
att'y.

(No Model.)

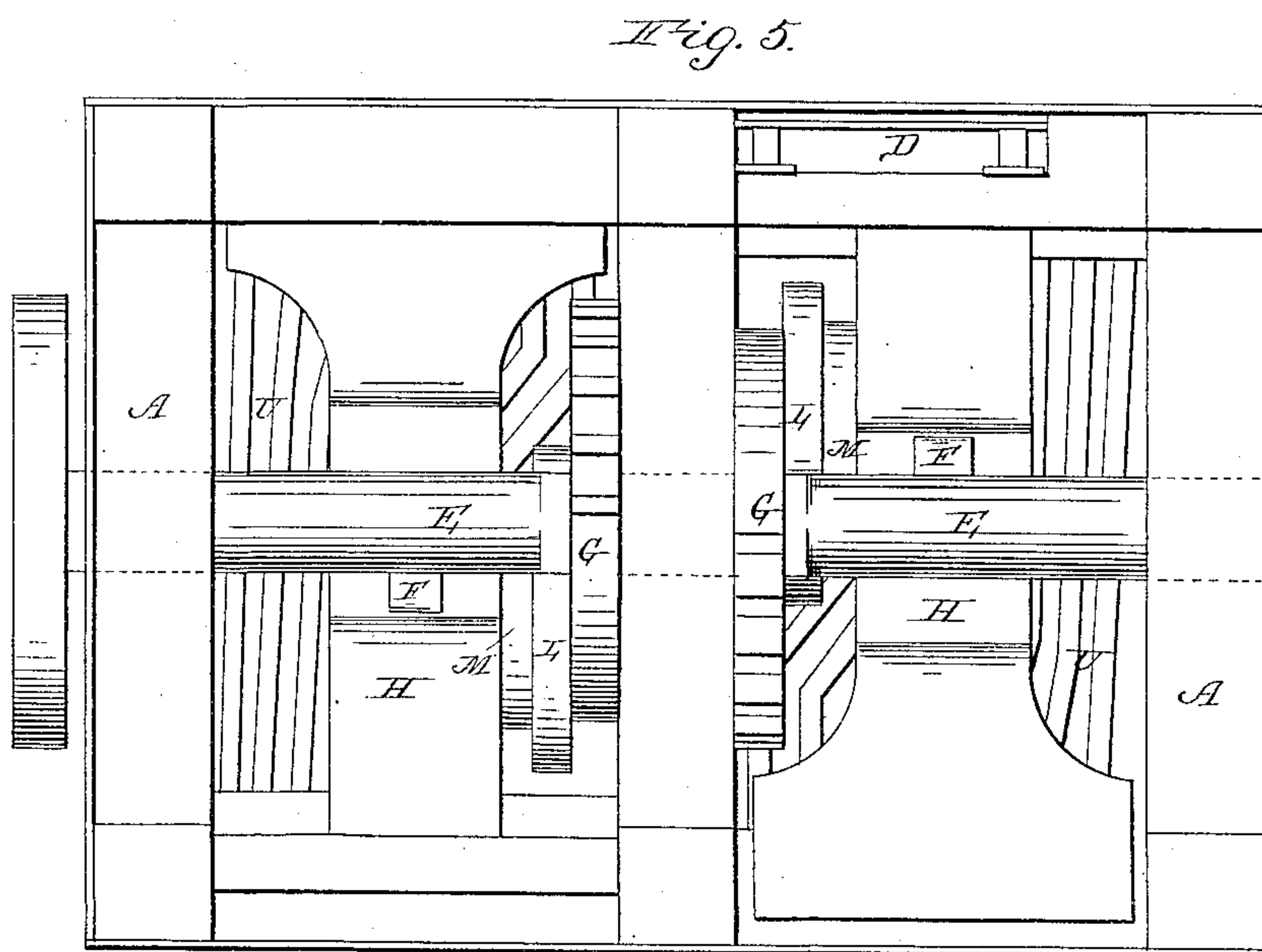
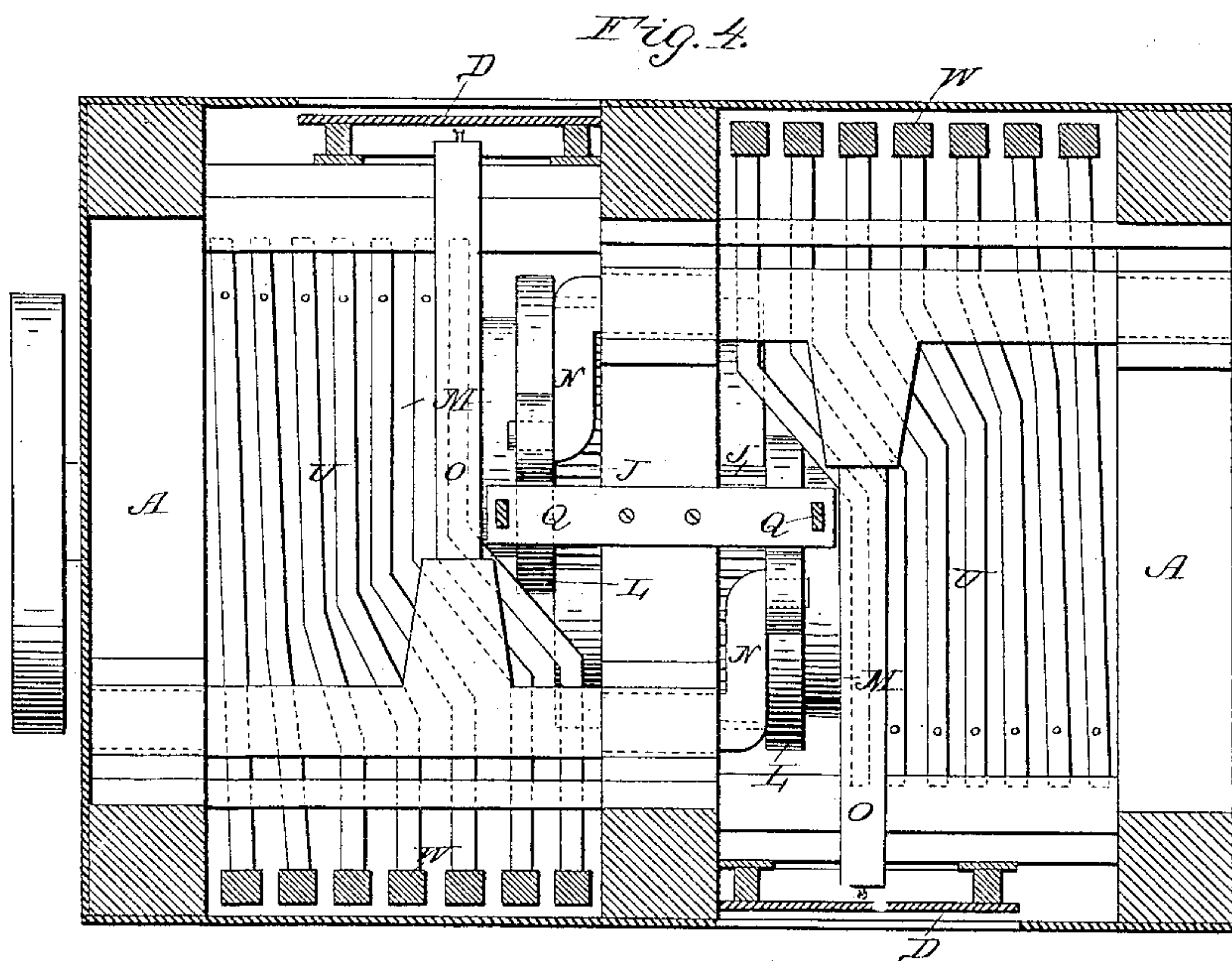
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J. F. NEILL.

DEVICE FOR ILLUSTRATING THE TRANSPOSITION OF MUSICAL SCALES.

No. 323,196.

Patented July 28, 1885.



Witnesses:

*J. W. Garner*  
*Thos. R. R. R.*

Inventor:

*J. F. Neill,*  
*per*  
*J. A. Lehmann* atty.



# UNITED STATES PATENT OFFICE.

JOHN FRANCIS NEILL, OF RUSK, TEXAS.

DEVICE FOR ILLUSTRATING THE TRANSPOSITION OF MUSICAL SCALES.

SPECIFICATION forming part of Letters Patent No. 323,196, dated July 28, 1885.

Application filed September 30, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. NEILL, of Rusk, in the county of Cherokee and State of Texas, have invented certain new and useful Improvements in Machines for Transposing Musical Scales; and I do hereby 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in machines for transposing musical scales; and it consists in, first, the combination of a suitable frame having marked upon one or more of its sides musical scales, and through which suitable perforations are made with movable levers or devices upon which the sharps and flats are marked, and movable slides for changing the keys, and suitable mechanism for moving the slides, and the devices upon which the flats and sharps are marked; second, the combination of the operating-shaft, having a cam, and a wheel having teeth upon a portion of its periphery secured thereto, with a second shaft provided with a pinion for meshing with the wheel upon the main shaft, and a cam-wheel for operating the slide, and a suitable number of cams for operating the devices upon which the flats and sharps are marked, all of which will be more fully described hereinafter.

The object of my invention is to provide a machine which, by simply turning the shaft, will transpose musical scales correctly, and thus enable music to be rapidly and easily taught.

Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a similar view, showing the side removed. Fig. 3 is a cross-section. Fig. 4 is a horizontal section, taken through the frame just above the mechanism. Fig. 5 is an inverted view.

A represents the frame-work, which will be of any desired size or construction that may be preferred, and upon one or more of its sides will be marked the musical scale B, as shown. Through the side of this frame, in any desired relation to the lines, will be made a number of perforations, C, through which the flats and sharps will be shown. A portion of the side

of the frame is removed, and the vertically-moving slide D, having suitable musical characters marked thereon, is substituted for that portion which was removed. This slide D is made vertically movable, so that it will change the keys or characters marked thereon from one letter to another. Passing horizontally through the frame is the shaft E, which has a cam, F, and a wheel, G, secured thereto.

Where the machine is to be made double-acting, so as to make the transpositions upon two sides of the frame, the parts about to be described will in every case be duplicated. Instead of the single cam and a wheel upon the shaft E there will be two of each. The wheel G has teeth projecting from one half of its periphery, while the other half of the periphery is left perfectly smooth, so that it will not move any of the parts. Where two wheels are used, as here shown, the teeth will be placed in such relation to each other that while the scales are being transposed upon one side of the frame they will not be transposed upon the other side at the same time. By this construction the scales are alternately transposed upon opposite sides. The cam F upon the shaft E projects toward that portion of the wheel G which has a smooth periphery, so that after the teeth have ceased to move those parts which transpose the scales the cam will strike against the under side of the lever H, which operates all of the sliding bars or rods upon which the flats and sharps are marked, so as to return them to their first position, ready to be operated again.

Above the shaft E is placed a second shaft, I, which is provided with a pinion, J, for each wheel G; also, secured to this upper shaft, I, is a cam-wheel, L, and a locking-wheel, M. The cam catches under the crank-arm N and serves to operate the levers O, which are connected to the slides D. As the shaft I is made to revolve, this cam-wheel catches under the crank-arm, which is provided with a friction-roller, and raises the outer end of the lever, which in turn moves the slide D, for the purpose of transposing the keys. After the slide D has been raised by the arm O it drops again into position from its own weight.

The locking-wheel M has a series of notches made in its edges, in which the locking-rod Q



catches, for the purpose of preventing the parts from being turned, except when this rod is raised. The upper end of this rod is connected to the spring-actuated lever R, which is connected to the push-button S at one end. When the push-button is forced downward by one of the fingers, the locking-rod is disconnected from the locking-wheel, and then the shaft E can be freely turned. Until the button has been pressed downward the machine cannot be made to operate.

Also secured upon the shaft I are a series of cams or studs, T, which are spirally arranged around the shaft, so as to alternately be brought into play. Extending horizontally through the frame are a number of spring-actuated sliding rods, U, which have the arms or projections V extending from their top edges for the purpose of being operated by the cams T upon the shaft I. As the shaft E is made to revolve these cams T alternately catch against the arms V and force the sliding rods backward. As soon as the rods are left free to move, the springs which are applied to their ends force them back into position again. The outer ends of these rods catch in suitable holes or notches made in the inner sides of the sliding rods or bars W, upon which the flats and sharps are marked. As soon as the sliding rods U are forced backward by the cams T the rods W are left free to move, and then they drop downward from their own gravity. When these rods W are raised, no characters marked upon them show through the openings C in connection with the musical staves; but when the rods drop downward they bring the characters marked upon them into sight in connection with the ten lines of the musical staff. After these rods W have alternately been dropped downward, so as to bring their respective characters marked upon them into view, the cam F upon the shaft E catches under the lever H, and then the lever which has its free end to catch under the shoulder X, which is formed upon each of the bars W, raises all of the rods upward far enough to enable the spring-actuated sliding rods U to

begin to engage with them, and thus support them in position. The vertically-moving rods W, having the sharps and flats upon them, are made to move in unison with the slides D.

As here shown, the parts of the machine are duplicated, so as to show transpositions upon the scales upon two sides of the frame alternately, and hence there are two push-buttons shown upon the top of the machine. These buttons must be pushed downward before the machine can be operated. The notches in the stop-wheels are arranged so as to stop the movement of the parts when the musical characters have been brought into play, and hence the push-knobs must be operated each time that the parts of the machine are moved.

Having thus described my invention, I claim—

1. The combination of the frame having a musical staff marked thereon and provided with openings C, movable devices with flats and sharps marked thereon, and a vertically-movable slide having the scales marked upon it, and the lever for moving the slide, substantially as described.

2. The combination of the frame having the perforations C, made through its side in any desired relation to the musical staff which is marked thereon, the vertically-moving rods W, the sliding spring-actuated rods U, which are alternately moved by the cams T upon the shaft I, and the lever H, for raising the rods W into position again, substantially as set forth.

3. The combination of the shaft I, provided with cams T, the spring-actuated sliding rods U, vertically-moving rods W, the shaft E, provided with cams F, lever H, cam-wheel upon the shaft I, and the lever for operating the slide, substantially as specified.

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

JOHN FRANCIS NEILL.

Witnesses:

S. B. BARRON,  
M. JERNIGAN.