(No Model.)

2 Sheets—Sheet 1.

# M. H. McCHESNEY & J. G. KUNZE.

## PIANO.

No. 527,533. Patented Oct. 16, 1894.

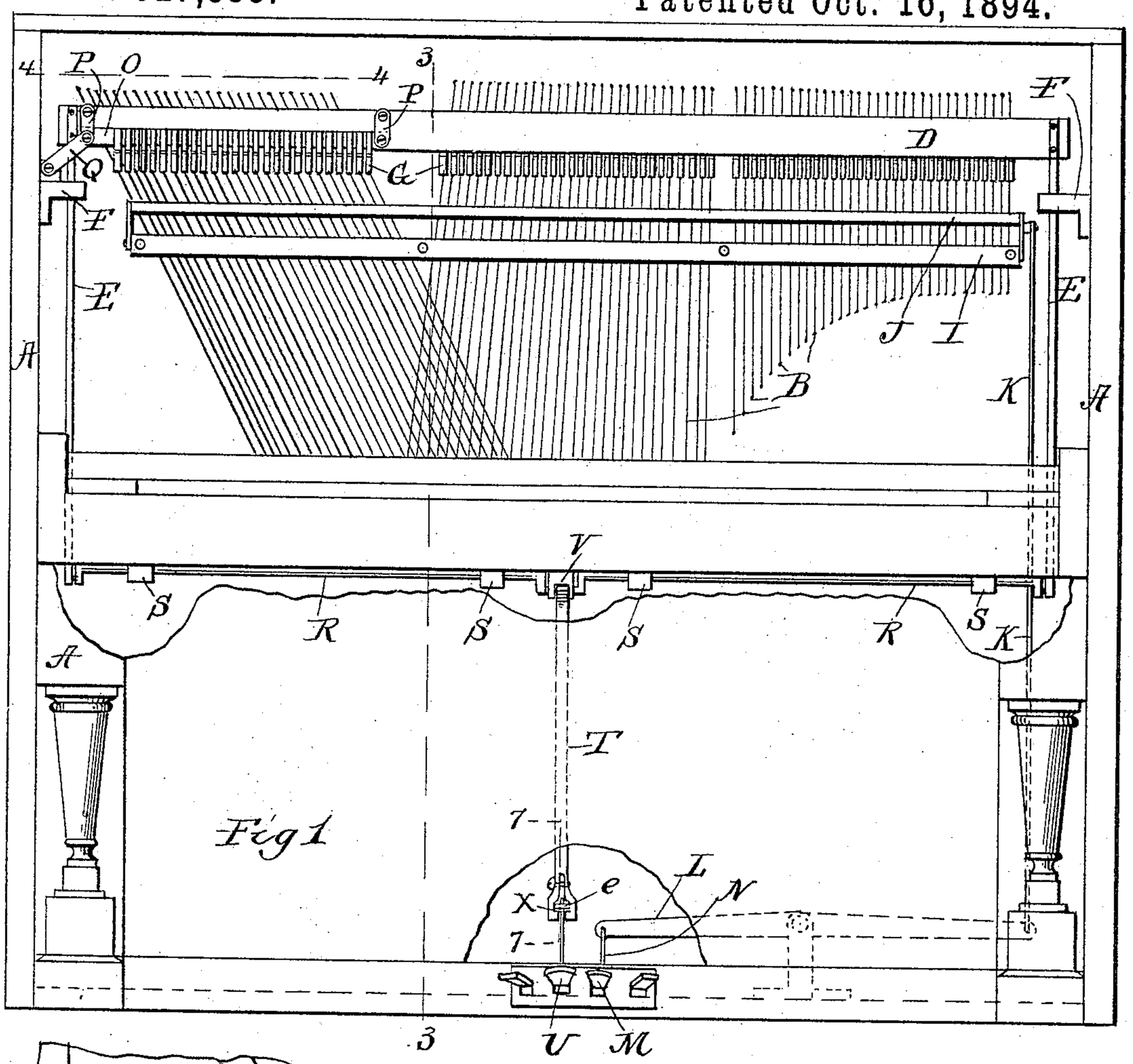


Fig 1

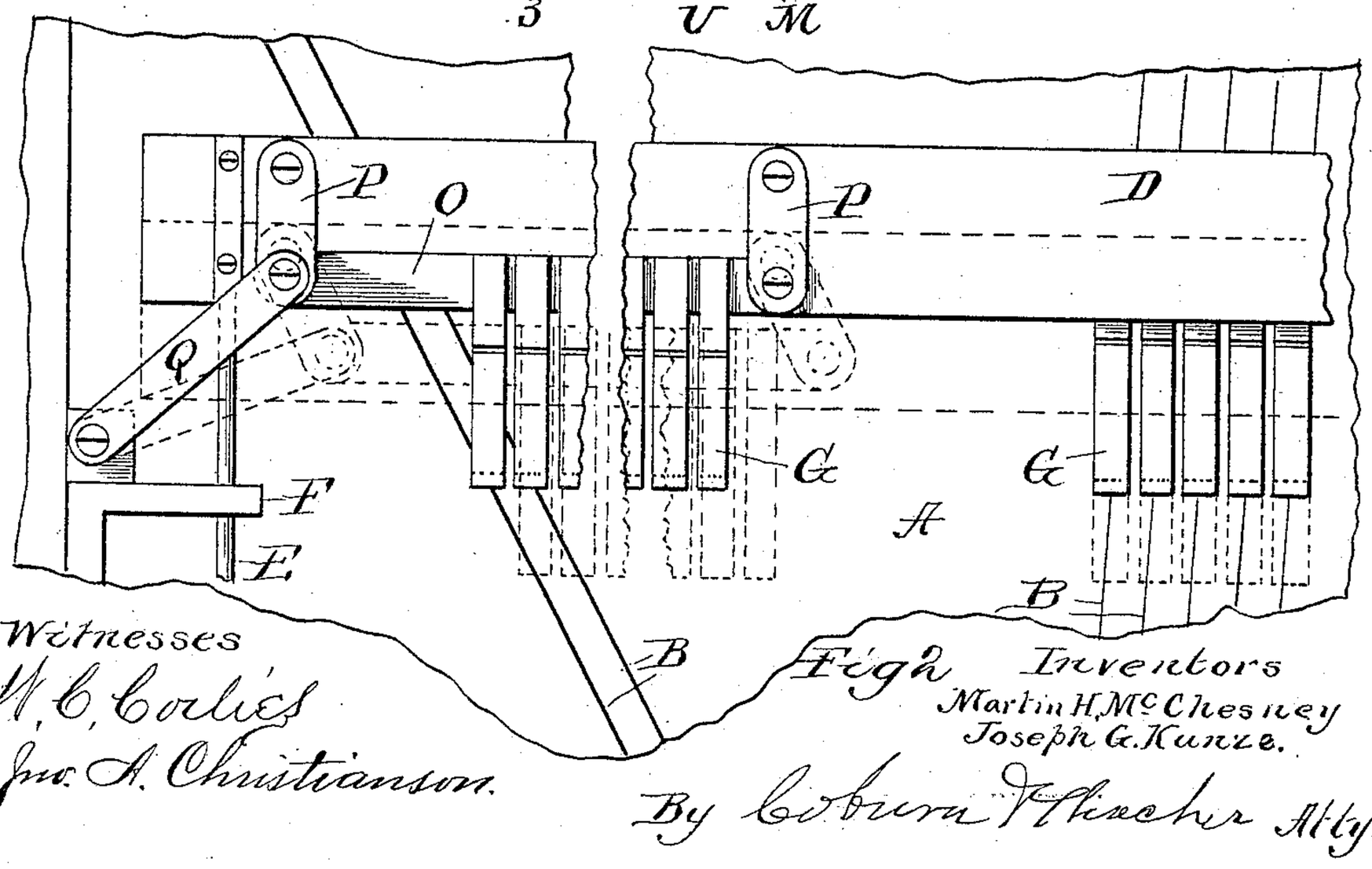


Fig 2

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(No Model.) 2 Sheets—Sheet 2.

# M. H. McCHESNEY & J. G. KUNZE.

## PIANO.

No. 527,533. Patented Oct. 16, 1894.

Fig 3

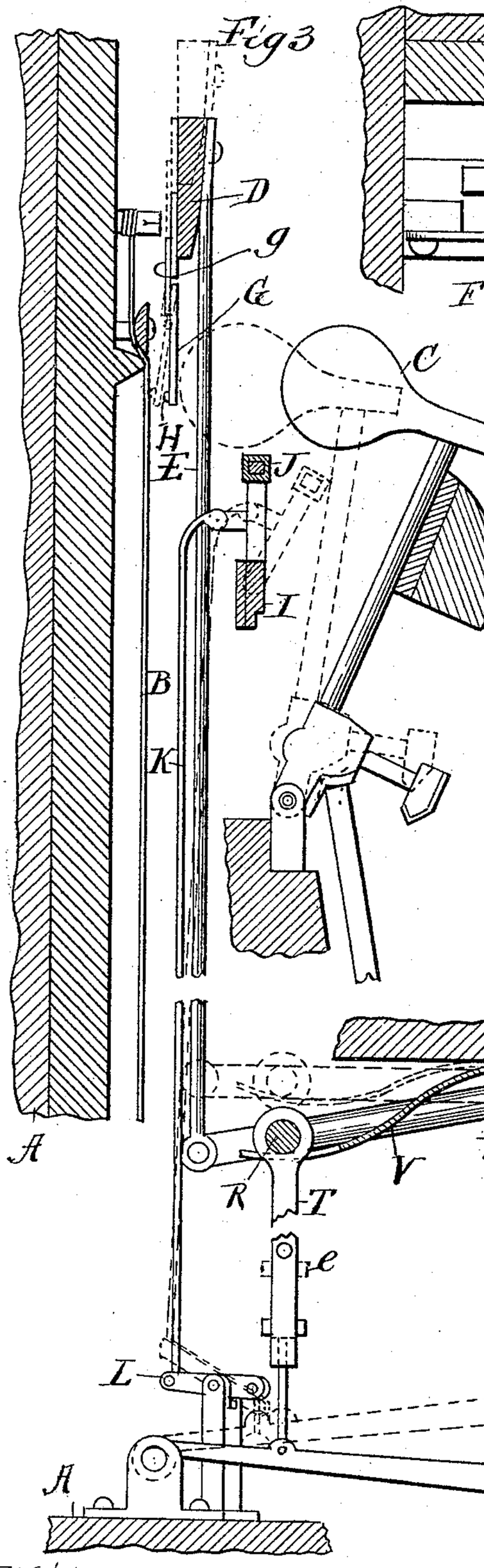



Fig 4

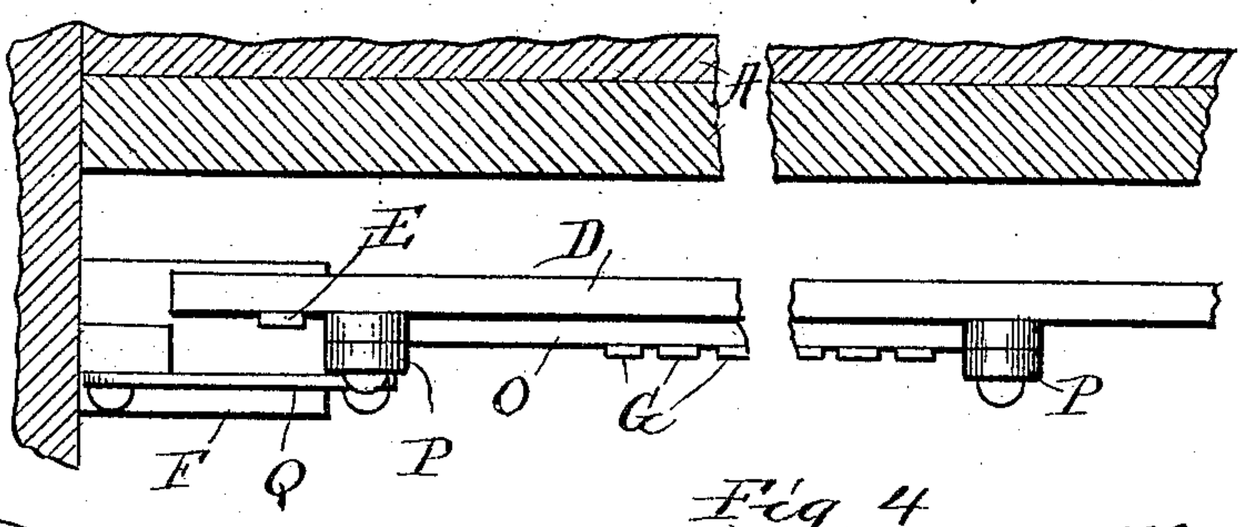



Fig 5

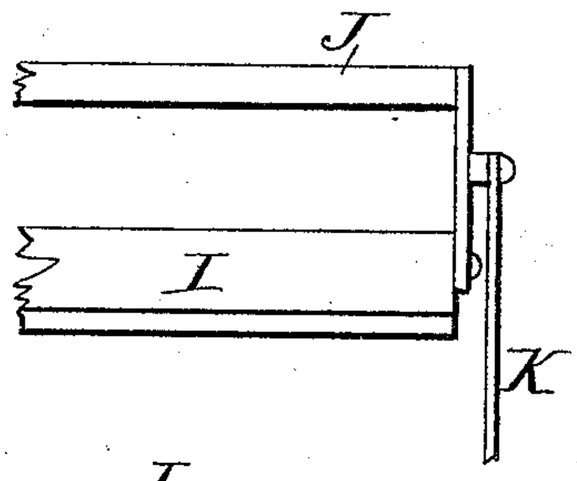



Fig 6

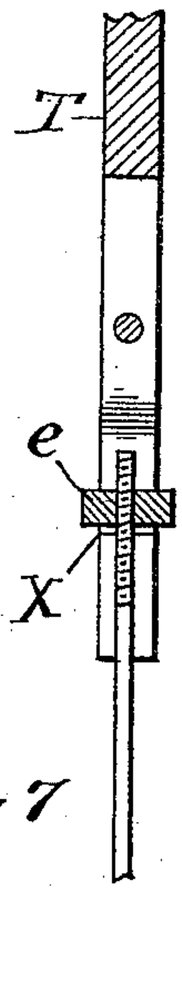



Fig 7

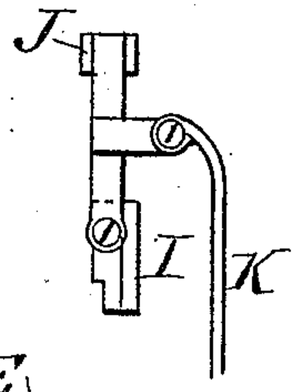
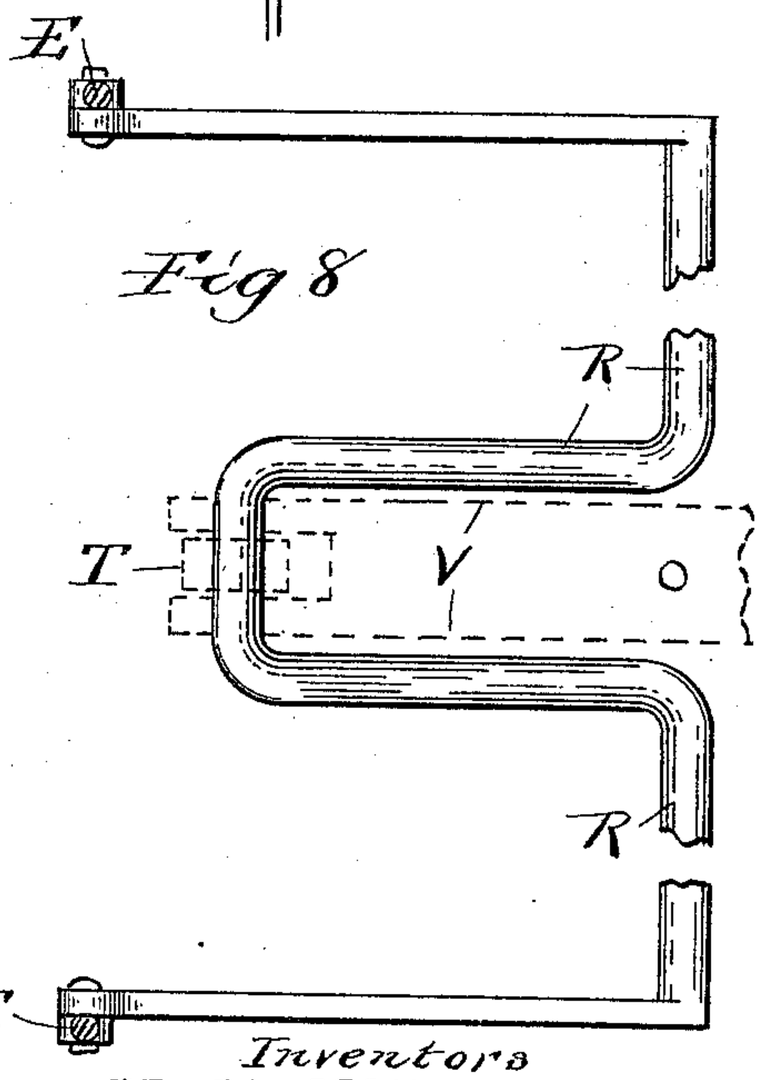



Fig 8

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# UNITED STATES PATENT OFFICE.

MARTIN H. McCHESNEY AND JOSEPH G. KUNZE, OF CHICAGO, ILLINOIS, ASSIGNORS TO GEORGE P. BENT, OF SAME PLACE.

## PIANO.

SPECIFICATION forming part of Letters Patent No. 527,533, dated October 16, 1894.

Application filed May 14, 1894. Serial No. 511,147. (No model.)

*To all whom it may concern:*

Be it known that we, MARTIN H. McCHESNEY and JOSEPH G. KUNZE, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Pianos, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a front elevation of an upright piano with certain parts removed or cut away. Fig. 2 is an enlarged view of a portion of the piano. Fig. 3 is a vertical sectionl view, taken at the line 3—3, Fig. 1, looking to the right, with parts of the piano omitted. Fig. 4 is a transverse sectional view, taken at the line 4—4, Fig. 1, looking down. Fig. 5 is a detached view showing the details of one end of the damper-bar and the hammer arrest. Fig. 6 is an end view of the same. Fig. 7 is a central sectional view of the pitman for the crank-bar Fig. 8 is a plan view of the crank-bar to which the pitman is attached, showing the flat spring in dotted lines.

The object of our invention is to add to the piano constructed in any of the well-known ways, certain devices whereby the tone is changed or modified and controlled to vary it according to the wishes of the performer; and also to control the stroke of the hammers so that they will either make a stroke directly upon the strings, or so that they can be arrested before reaching the strings so as not to make them sound, thereby converting the piano into a toneless piano or practice-clavier.

Our invention consists of the mechanisms and combination of mechanisms hereinafter fully described and made the subject matter of the claims hereof.

In the accompanying drawings, A represents the frame of the piano; B, the ordinary strings mounted in the usual way; C, the hammer-head, which is operated from the key-board in the usual way and by the usual connection.

D, is the adjustable slide-bar or tongue-bar which is supported at each end by the vertical rods, E, which pass through guides, F, that are secured to the frame of the piano. These vertical rods E are pivoted at their lower ends to the crank pedal-bar by which they are moved up and down.

G, are tongues, some of which are hinged by hinges *g* to the slide bar D and some to the auxiliary pivoted slide-bar, O. There are as many of these tongues as the piano has keys and they are moved out of the path, or in front of the path of the stroke of the hammer-head by operating the crank pedal-bar, as shown in full lines in Fig. 3.

H, are hard points or strikers on the hinged tongues G where they will strike the strings when the tongues are vibrated by the hammers.

The tongues G are hinged so that when they are brought between the hammer-heads and the strings, they will be struck by the hammers and swung against the strings, thereby causing a different tone than when the hammer strikes the strings direct. The tone of the piano is also changed by arresting the stroke of the hammer, so that when it strikes the tongue and gives it impetus, the hammer stops, the impetus of the tongue causing the sound which is a very different tone from that given when the hammer is not arrested, but continues its stroke carrying the tongue with it, pushing, as it were, the loose end of the tongue against the strings of the piano. We in this way produce three different qualities of tone besides the modified qualities given to each of these tones by the usual devices used in pianos to vary the tones produced thereby.

I, is a fixed bar attached to and forming a part of the piano-action, and to which fixed bar the hammer-arrest J, is pivoted.

K, is a rod pivotally connecting the hammer-arrest J to a lever, L, one end of which is pivotally connected to the pedal, M, by the rod, N. The operator is able to throw the hammer-arrest J into various positions which either allow the hammer-head C to strike the strings in the usual manner; or to strike the tongue G and move with it till the tongue strikes the strings; or to strike the tongue and give it an impetus which carries it against the strings while the hammer is prevented

from following it, as shown by dotted lines in Fig. 3; or into the positions which arrest the stroke of the hammer so that the hammer-head cannot be driven against the tongue G or against the piano strings which enables any one to practice upon the piano without making any sound. The use of the hammer-arrest does not change the touch of the keys nor necessitate any change of regulation in the action of the piano from that which is usual.

The striking-face of the hammer-head is that part of the piano-action which most quickly deteriorates by use, as in striking the strings it is cut into by them and loses its firmness. When the hammer-arrest is used to control the stroke of the hammers upon the tongues G, this deterioration is greatly lessened, and when used to change the piano into a silent practice-clavier the deterioration is entirely avoided.

We consider it very important that any one wishing to use a silent instrument for keyboard practice, should use one which has a regular piano action, as the user thereby becomes accustomed to and acquires the same touch as that of the usual piano, while the touch and action of the keys in the ordinary practice-clavier and other devices used for the same purpose, are entirely different from those of the piano.

It is usual, if not necessary, to arrange a portion of the strings in a piano in an inclined position, and to provide for this arrangement we have an auxiliary pivoted slide-bar O which is supported upon hangers, P, which are pivoted to the slide-bar D. There is a pivoted arm, Q, pivoted to the case or frame of the piano and attached to bar O, or to one of its hangers, in such position that when the bar D is lowered this arm Q pushes the bar O in an oblique direction to the perpendicular, so that the end of every tongue which is suspended from the bar O keeps always in front of its own inclined strings in position to strike them whenever it is hit by the hammer-head. When the bar D is raised, the arm Q is swung up from the horizontal and swings the bar O gradually, thereby causing the ends of the tongues to travel in line with the inclined piano strings.

The rods E with which the slide-bar D is raised and lowered, are operated by means of the crank-bar, R, which is hung in loops, S, in which it turns like a rock-shaft.

T, is a pitman attached to the pedal, U, and also to the crank of the crank-bar, R.

V, is a spring attached to the piano, and holds the crank-bar R in its normal position, in which position the rods E hold the bar D in its elevated position so that the tongues are not in front of the hammer-heads. When the operator desires to bring the tongues into position in front of the hammer-heads, he presses upon the pedal U sufficiently to overcome the tension of the spring V and throw the parts into the position shown by the full lines in Fig. 3. When the pressure from the pedal is relieved, the spring V throws the parts back into the position of dotted lines, Fig. 3. When the pedal U is pressed down, overcoming the tension of the spring V, the crank-bar R is rocked in the bearings S, and the arms of this crank-bar to which the rods E are attached, are thrown down. When the pressure is removed from the pedal, the spring V rocks the crank-bar back or turns the crank-bar in its bearings, and the rods E are thrown up, raising the slide-bar D, thereby removing the tongues out of the paths of the hammers.

The pitman T is made with a recess in which is formed a shoulder, X. The lower part of the pitman is made of a rod screw-threaded at its upper end, and a nut, *e*, is screwed upon it, resting on the shoulder X. By this device we are able to regulate the length of the pitman T as desired.

Having fully described the construction and operation of our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a piano, in combination with the strings, the hammers and mechanisms for operating them; a series of tongues having hard strikers or contacts on the faces nearest the strings, said tongues being adjustable to receive the stroke of the hammer at a point opposite to the said hard strikers or contacts and directly behind the hard strikers or contacts, as specified.

2. In a piano, in combination with the strings, the hammers and mechanisms for operating them; two or more adjustable slide-bars adapted to move at angles or obliquely to each other; one or more of said bars being adapted to travel in lines parallel or nearly parallel with the inclined strings of the piano, and devices adapted to adjust said slide-bars.

3. In a piano, the combination with the strings, the hammers and mechanisms for operating them; an adjustable hammer arrest adapted to arrest the stroke of the hammers as may be desired, and devices to adjust the same; and two or more adjustable slide-bars adapted to move at angles or obliquely to each other, and devices adapted to adjust the same.

4. In a piano, in combination with the strings, the hammers and mechanisms for operating them; a hammer-arrest adapted to arrest the stroke of the hammers and the devices adapted to adjust the same; and a series of tongues adapted to receive the stroke of the hammers, when desired.

5. In a piano, in combination with the strings, the hammers and mechanisms for operating them; two or more slide-bars adapted to move at angles or obliquely to each other and devices adapted to adjust the same; and a series of tongues adapted to receive the stroke of the hammers, when desired.

6. In a piano, in combination with the strings, the hammers and mechanisms for operating them; an adjustable hammer-arrest adapted to arrest the stroke of the hammers and devices adapted to adjust the same; two or more adjustable slide-bars adapted to move at angles or obliquely to each other and devices adapted to adjust the same; and a series of tongues adapted to receive the stroke of the hammers when desired.

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