

(No Model.)

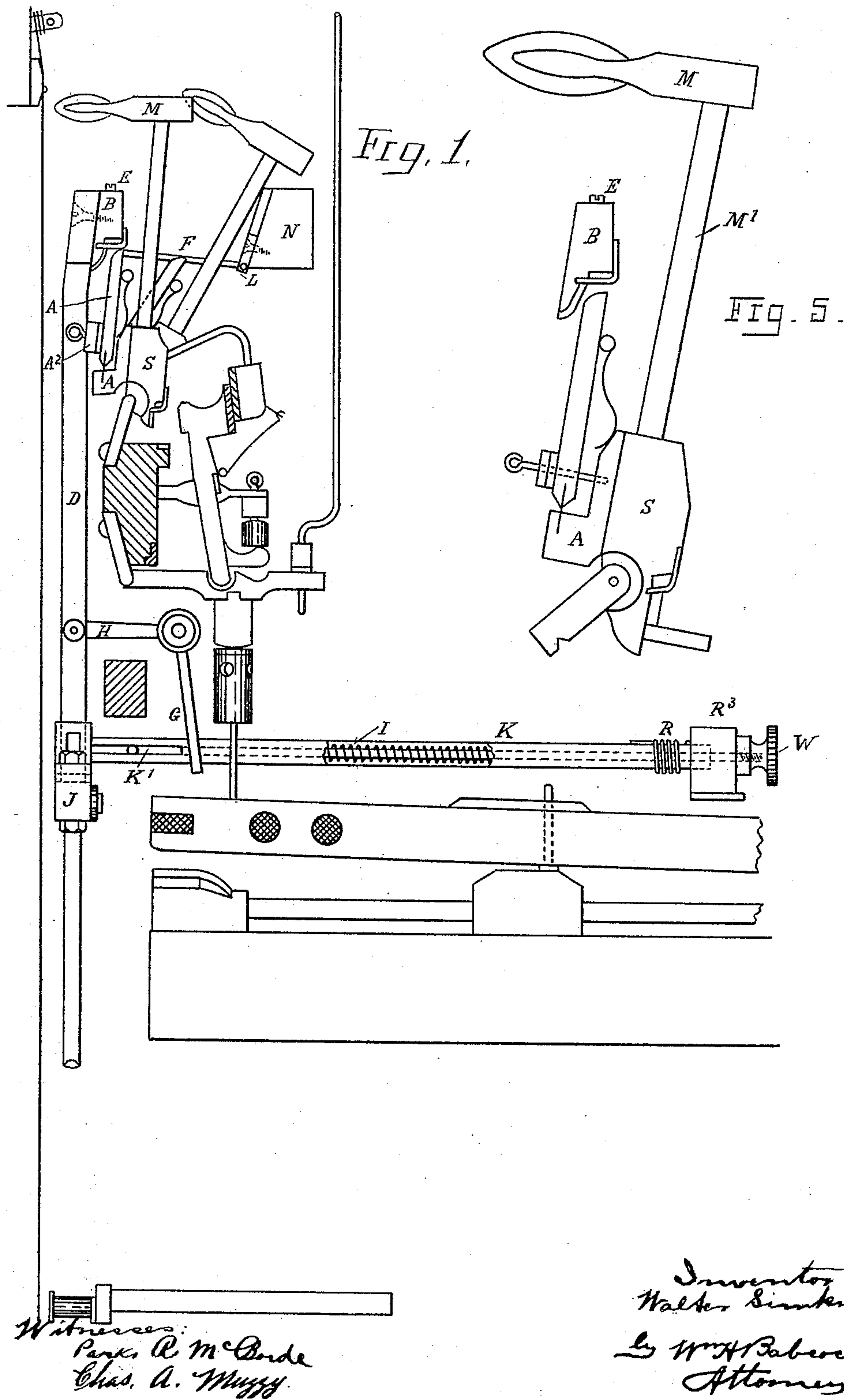
4 Sheets—Sheet 1.

W. SIMKINS.

REPETITION ATTACHMENT FOR PIANOFORTES.

No. 527,028.

Patented Oct. 2, 1894.



(No Model.)

4 Sheets—Sheet 2.

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Fig. 6.

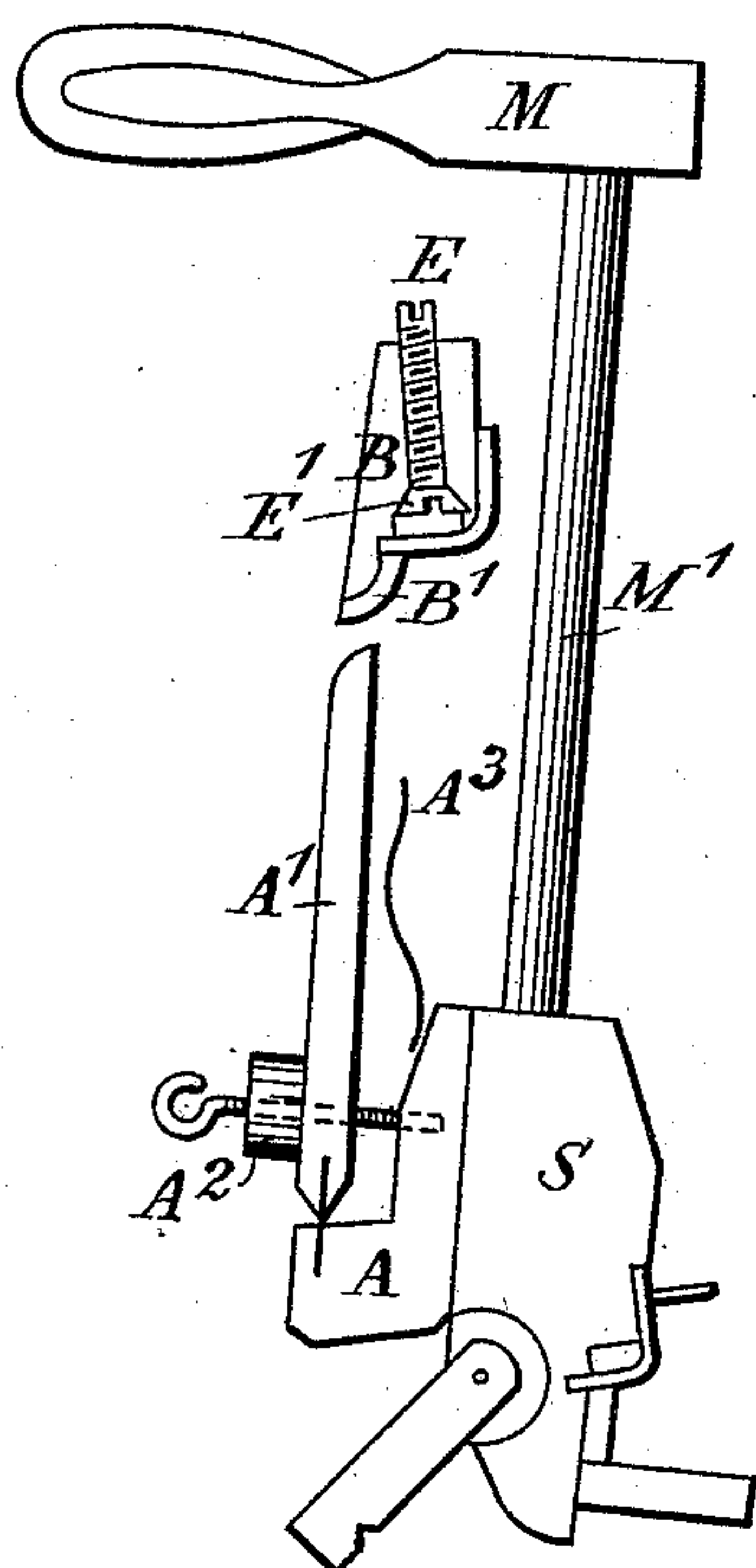
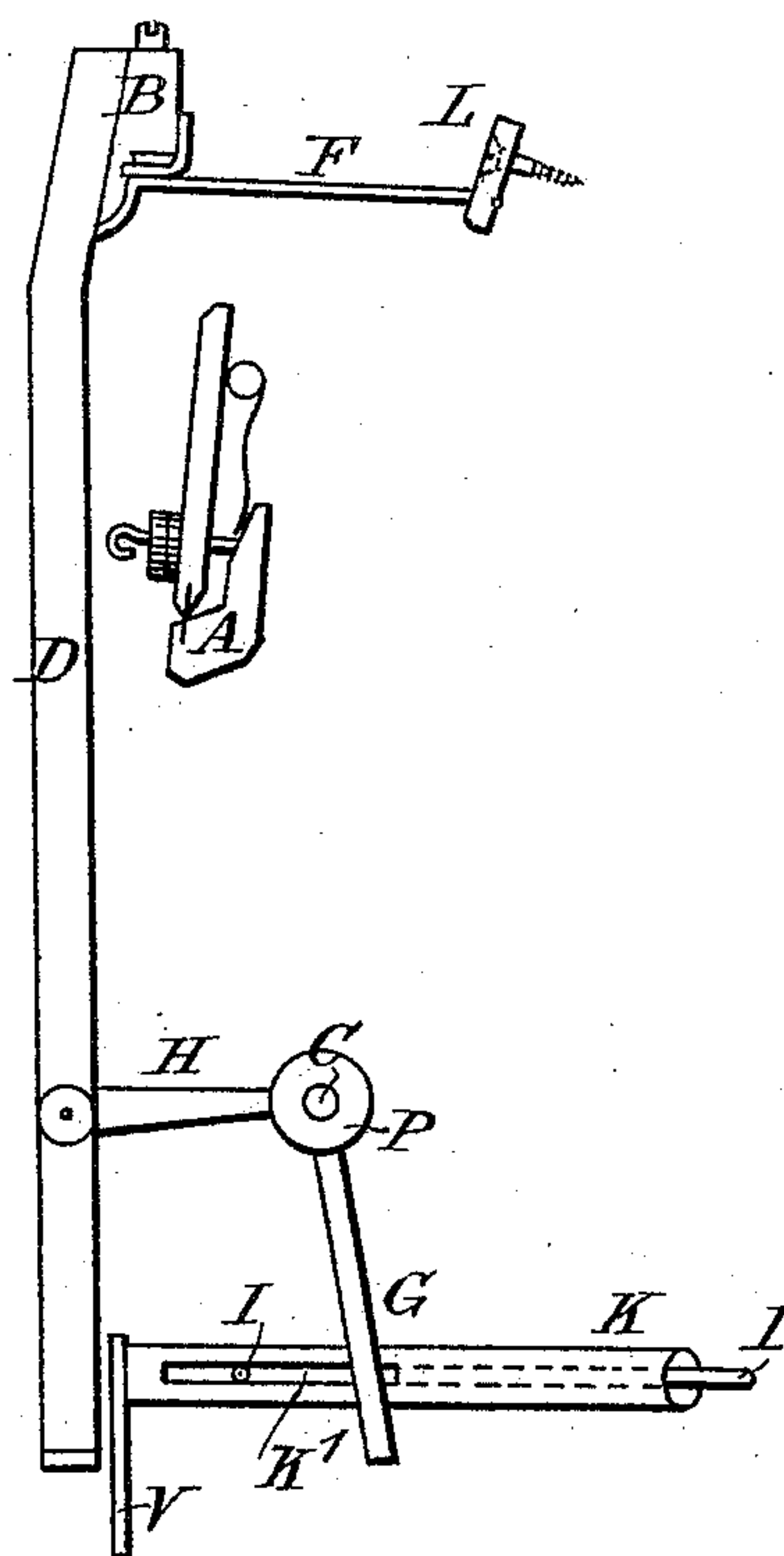


Fig. 2.



Witnesses.  
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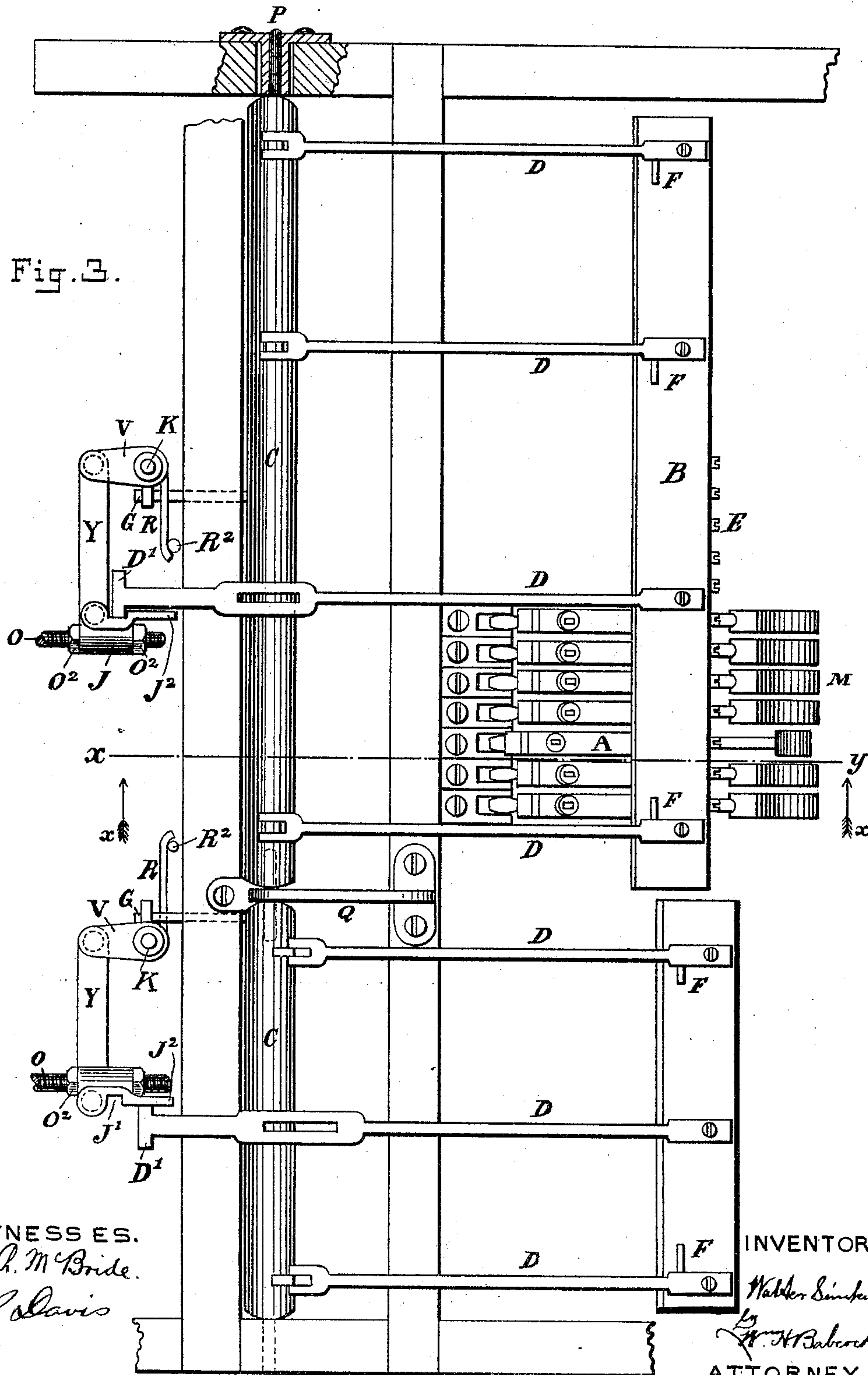
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Fig. 3.



WITNESS ES.

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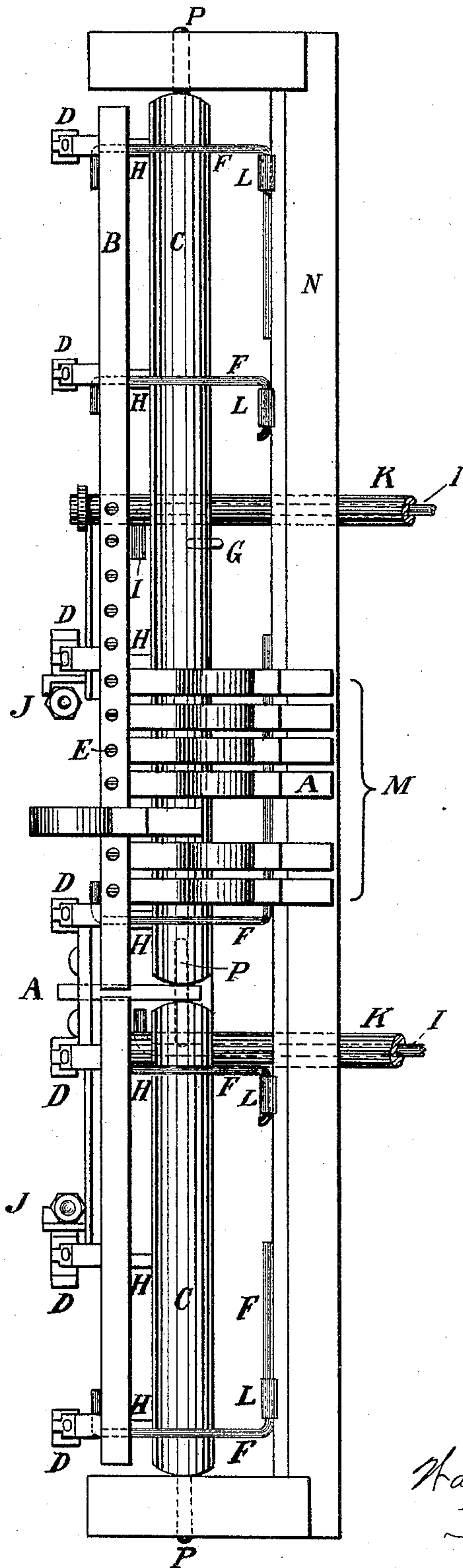
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Fig. 4.



WITNESSES

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# UNITED STATES PATENT OFFICE.

WALTER SIMKINS, OF LONDON, ENGLAND.

## REPETITION ATTACHMENT FOR PIANOFORTES.

SPECIFICATION forming part of Letters Patent No. 527,028, dated October 2, 1894.

Application filed January 8, 1894. Serial No. 496,179. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER SIMKINS, machinist, a subject of the Queen of Great Britain, residing at 104 Park Street, Camden Town, in the city of London, England, have invented a new and useful Improved Repetition Attachment for Pianofortes, of which the following is a specification.

This invention relates to a repetition attachment for pianofortes whereby, when any note is struck, its hammer is caused to continue striking the string in a rapid manner from the check position so long as the key is depressed, thus repeating or sustaining the note.

The repetition attachment, which may be applied to most existing pianofortes or to those hereafter manufactured, consists essentially of a bar which is reciprocated by means of a pedal or other suitable motor. When in their check position the hammers of the action or attachments on said hammers are brought into connection with the aforesaid reciprocating bar whereby said hammers are caused to partake of the reciprocating motion of the bar, means being also provided for moving the bar out of or into the path of the hammers, or the attachments thereon, so that the repetition attachment may be brought into, or thrown out of action as desired.

In order that my invention, and the manner of carrying it into practice, may be well understood, I will describe it with reference to the accompanying drawings in which the invention is shown as applied to the action of an ordinary upright cottage pianoforte.

In all the figures of the drawings the same letters of reference, where they occur, are used to denote the same or corresponding parts.

Figure 1 is a sectional elevation taken on the line X Y of Fig. 3 looking in the direction of the arrows  $\alpha$  and showing sufficient of the ordinary cottage pianoforte action to illustrate the disposition relatively thereto of my repetition attachment. Fig. 2 is a similar view showing parts of my repetition attachment detached from the pianoforte action. Fig. 3 is a portion of a rear elevation of Fig. 1 showing the repetition attachment

in two parts, one of which is in, and the other out of action, and Fig. 4 is a plan of Fig. 3. Figs. 5 and 6 are enlarged detail views.

On the rear of each hammer butt or shank, but preferably on the butt S as shown in the drawings, I rigidly secure a projection A to which is hinged a tongue piece A' provided with a regulating check button A<sup>2</sup> and a spring A<sup>3</sup> which together tend to keep the tongue piece A' in a definite position relatively to the shank M' of the hammer. By means of the check button A<sup>2</sup> the tongue piece A' can be set nearer to or farther away from the hammer shank M' as required. (See Fig. 6.)

Preferably between the hammer shanks and the strings of the action I mount a bar B which is reciprocated by the arrangement of mechanism hereinafter described. This bar B may extend the whole length of the action or it may be divided into two or more parts each part being provided with means for putting it into or out of gear independently of the other part or parts. In Fig. 3 the bar B is shown divided into two parts, one for the treble and the other for the bass notes, the treble portion being shown in the operative position and the bass portion in the inoperative or normal position. Figs. 1 and 5 also show the operative position of the bar B, and Fig. 6 shows its inoperative position. The edge of the bar B nearest the hammer butts S is notched as shown in Fig. 6 the notch being covered with cloth or other suitable material B' to deaden the sound of impact. The free end of the tongue piece A' is beveled or curved on the side adjacent to the notch of the bar B into which said notch it takes as shown in Fig. 5 when the key is struck. The bar B is provided with a series of regulating screws E, one for each of the hammers for which the bar is fitted up, each of said screws having a broad flat base E' the area of which is approximately equal to the area of the free end of the corresponding tongue piece A'. By rotating the screws E the bases E' can be brought nearer to or removed farther away from the free ends of the tongue pieces A' as circumstances require.

The bar B is rigidly secured to a number



of parallel rods D the lower ends of which are pivoted or jointed to arms H rigidly affixed to a shaft C which is parallel to the bar B and journaled in suitable bearings P or is otherwise mounted so as to be capable of rotation through a small arc. One of the aforementioned rods D is extended beyond the arm H and the extension is furnished with a flanged foot or base D'. (See Fig. 3.) The bar B is sustained in the raised inoperative position shown at the right hand side of Fig. 3, by means of wires F which are secured at one end to the under side of the bar B then passed between the hammer shanks M' and turned over in the same plane at right angles and passed through the eyes L on the hammer rest N to which their ends are rigidly secured. (See Figs. 2, 3 and 4.) It follows therefore that, as the hammer rest is a fixture, when the bar B is moved toward the hammer butts S, those parts of the wires F which lie against the hammer rest N are subjected to a torsional strain and the wires F thus act as springs tending to return the bar B to its initial position. I have found this arrangement efficient for the purpose and as it takes up very little space it is well adapted for application to existing pianoforte actions, but any other spring device which is suitable for the purpose may be used instead.

When the bar B is brought into its operative position, the manner of doing which will be hereinafter explained, the flange D' engages in a notch J' in the clutch piece J on the connecting rod O. (See Fig. 3.) O<sup>2</sup> are nuts working on the screwed end of the rod O whereby the clutch piece J can be adjusted in position. J<sup>2</sup> is a face plate on or forming part of the clutch which is held against the edge of the flange D' and is of a size corresponding to the travel of the connecting rod O so that when the latter is reciprocated the said face plate rubs against the edge of the flange D' without engaging its notch J' therewith. When however the bar B is brought into action the flange D' enters the notch J' and the two move conjointly, the reciprocation of the connecting rod O being transmitted to the bar B which is caused to move parallel to itself by means of the parallel rods D and the shaft C. The other end of the rod O is connected to pedal mechanism or other suitable motive power.

I will now describe the mechanism for bringing the bar B into the operative position and for releasing it therefrom. The clutch J is connected by the link Y to a crank arm V secured to a tube K. (See Fig. 3.) On the other end of this tube is a spring R one end of which is fixed to the tube and the other end passed under a fixed stop or projection R<sup>2</sup> on the interior of the name board R<sup>3</sup> of the instrument. (See Figs. 1 and 3.) By this means the clutch J is kept in such a position that the face plate J<sup>2</sup> is caused to press against the edge of the flange D' as before stated. The tube K is supported at the rear in a

bracket, not shown in the drawings, and at the front it is let into the name board R<sup>3</sup> and is capable of being slightly rotated in its supports. Passing through the tube K is a spring controlled rod I one end of which terminates in a stop knob W outside the name board R<sup>3</sup>, the other end being turned over at right angles and passed through a longitudinal slot K' in the rear end of the tube K. (See Figs. 1 and 4.) Rigidly secured to the shaft C is an arm G which lies adjacent to the slot K' in the tube K and in the path of the right angled extremity of the rod I. When the stop knob W is drawn out the extremity of the rod I engages the arm G and draws its lower end toward the front of the instrument thus partially rotating the shaft C and with it the arms H secured thereto which latter actuate the parallel rods D and thus bring the bar B from the inoperative position shown at the right hand side of Fig. 3 to the operative position shown at the left hand side of the same figure. In this latter position the flange D' is in gear with the clutch J and the two move conjointly. When the operative position has been attained the stop knob W may be released and the spring on the rod I will return it to its original position. To restore the repetition attachment to its inoperative position it is only necessary to give the stop knob W a partial rotation, when the farther extremity of the rod I will catch against the side of the slot K' and partially rotate the tube K against the action of the spring R. The tube as it rotates will carry with it the crank arm V which will, by the link Y, push the clutch J away from and out of engagement with the flange D' on the rod D. The latter being free the spring wires F will then return the bar B to its inoperative position.

The following is a general summary of the method of working of a pianoforte fitted with my repetition attachment: When the bar B is out of action and the keys are depressed the hammers will strike the strings and will remain in the ordinary check position clear of the bar B. This is the position shown in Fig. 6; and when the pressure is removed from the notes the hammers will fall back to the hammer rest so that the ordinary playing of the instrument is not interfered with by the repetition attachment. Nor is it interfered with by the reciprocation of the connecting rod O, as until the latter is clutched to the flange D', its motion is not transmitted to the bar B, so that the motive power operating the connecting rod may be started at any time. When the stop knob W is pulled out however, the connecting rod O is clutched to the flange D' and the bar B is brought into the path of the tongue pieces A' on the hammer butts or shanks. If any key is subsequently depressed, the hammer will strike the string and in its check position the tongue piece A' will be held to the bar B. This is the position shown in Figs. 1 and 5.



If the bar is reciprocating in a plane parallel to the plane of the strings, as would be the case with the arrangement of mechanism shown in the drawings if the motive power were in operation, it follows that the hammer will turn on the center of the hammer butt in a plane at right angles to the plane of the string causing it to repeatedly strike the string. When the pressure is removed from the note, the check is removed and the hammer and tongue piece A' fall away from the bar B to the hammer rest. The relative positions of the bar B and tongue pieces A' may be adjusted, first, by means of slotted bearings to the shaft C; second, by the regulating screws E on the bar B; third, by the regulating buttons A<sup>2</sup> on the tongue pieces A', and, fourth, by the nuts on the connecting rod O.

It will be seen that the attachment is capable of great nicety of adjustment so as to allow for unequal wear of the coverings, slight defects in the shape and size of the hammers and hammer butts and such like defects in the ordinary action which might otherwise render it inapplicable for my repetition attachment.

As previously stated, the drawings and the relative description relate to my repetition attachment and the mode of application of the same to an ordinary upright cottage pianoforte. The modifications required to adapt my invention to other kinds of pianofortes will be readily understood by persons familiar with the construction of pianoforte actions.

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. A repetition attachment for pianofortes comprising a notched and clothed bar such as B, supported in a plane parallel to the plane of the strings by rods such as D jointed to arms H secured to a shaft C, and reciprocated by means of an extension to one of the rods D engaging in a clutch such as J on the end of a connecting rod actuated by any suitable motive power, the said bar B being brought into its operative position by partially rotating the aforesaid shaft C and put into its inoperative position by releasing the extension from the clutch J, the said bar B when in its operative position being located in the path of projections such as the adjustable spring controlled tongue pieces A', secured to or formed one on each hammer butt or shank, all the parts being arranged so as to operate substantially in the manner and for the purposes hereinbefore set forth and illustrated in the accompanying drawings.

2. The combination of bar D and a rotating shaft and arms for reciprocating the said bar with a series of hammer butts provided with adjustable tongue pieces arranged to be operated on by the said bar substantially as and for the purposes set forth.

WALTER SIMKINS.

Witnesses:

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