

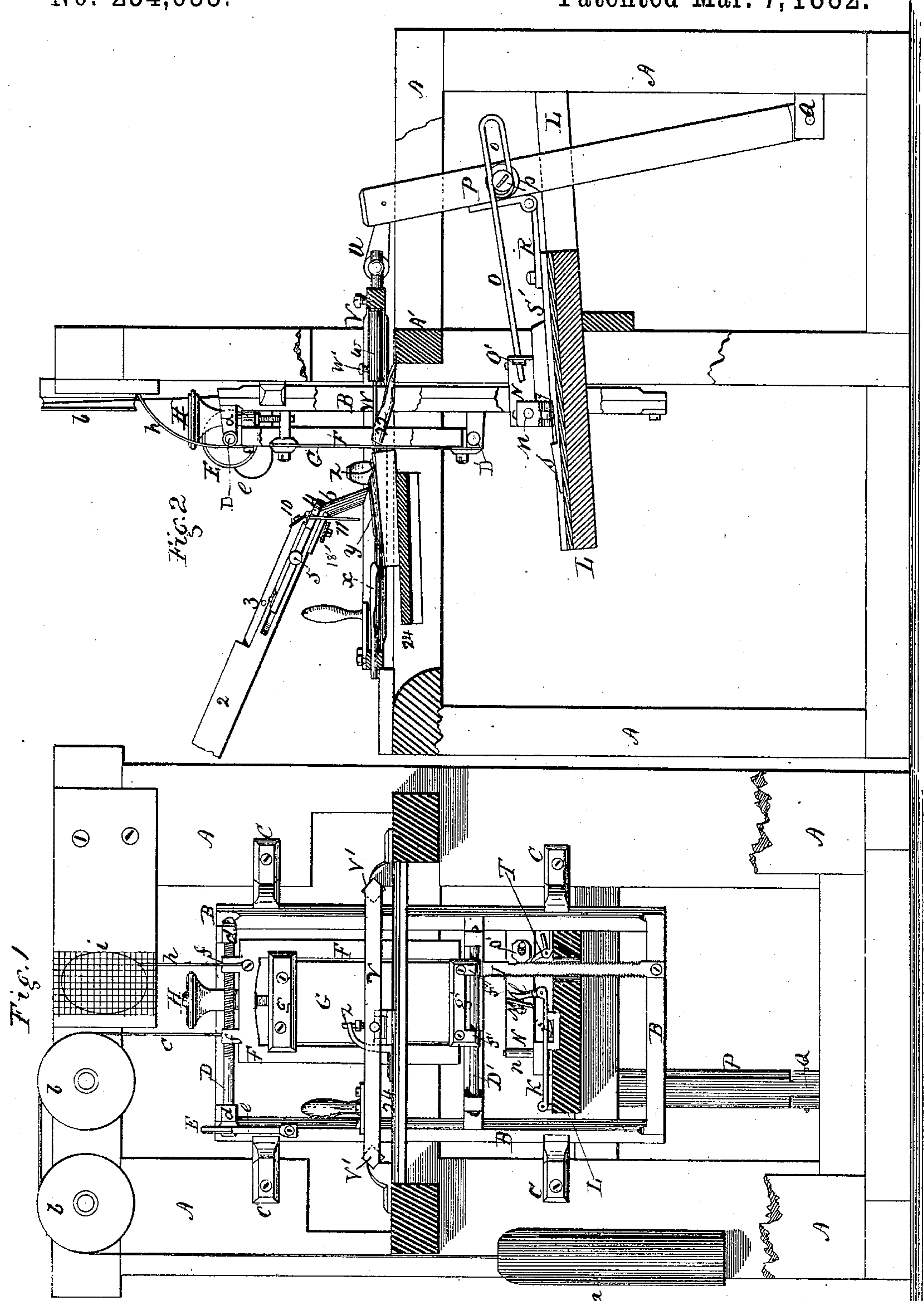
J. E. & C. E. HOWARD.

J. E. HOWARD administrator of C. E. HOWARD, deceased.

WIRE BRUSH MACHINE.

No. 254,655.

Patented Mar. 7, 1882.



Witnesses.
T. J. Bally
Geo. E. Filkins

Inventors.
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Fig. 4.

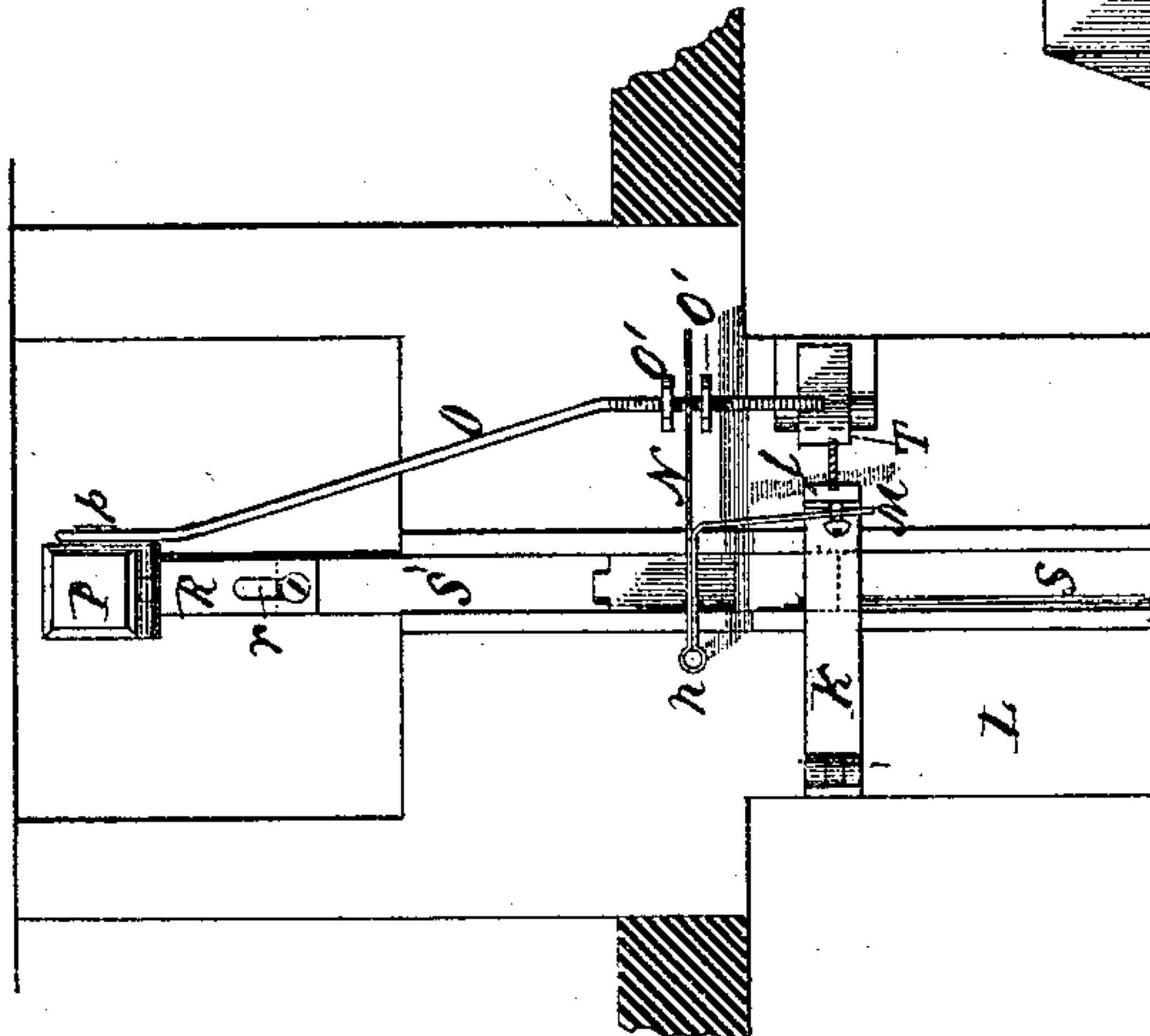


Fig. 5.

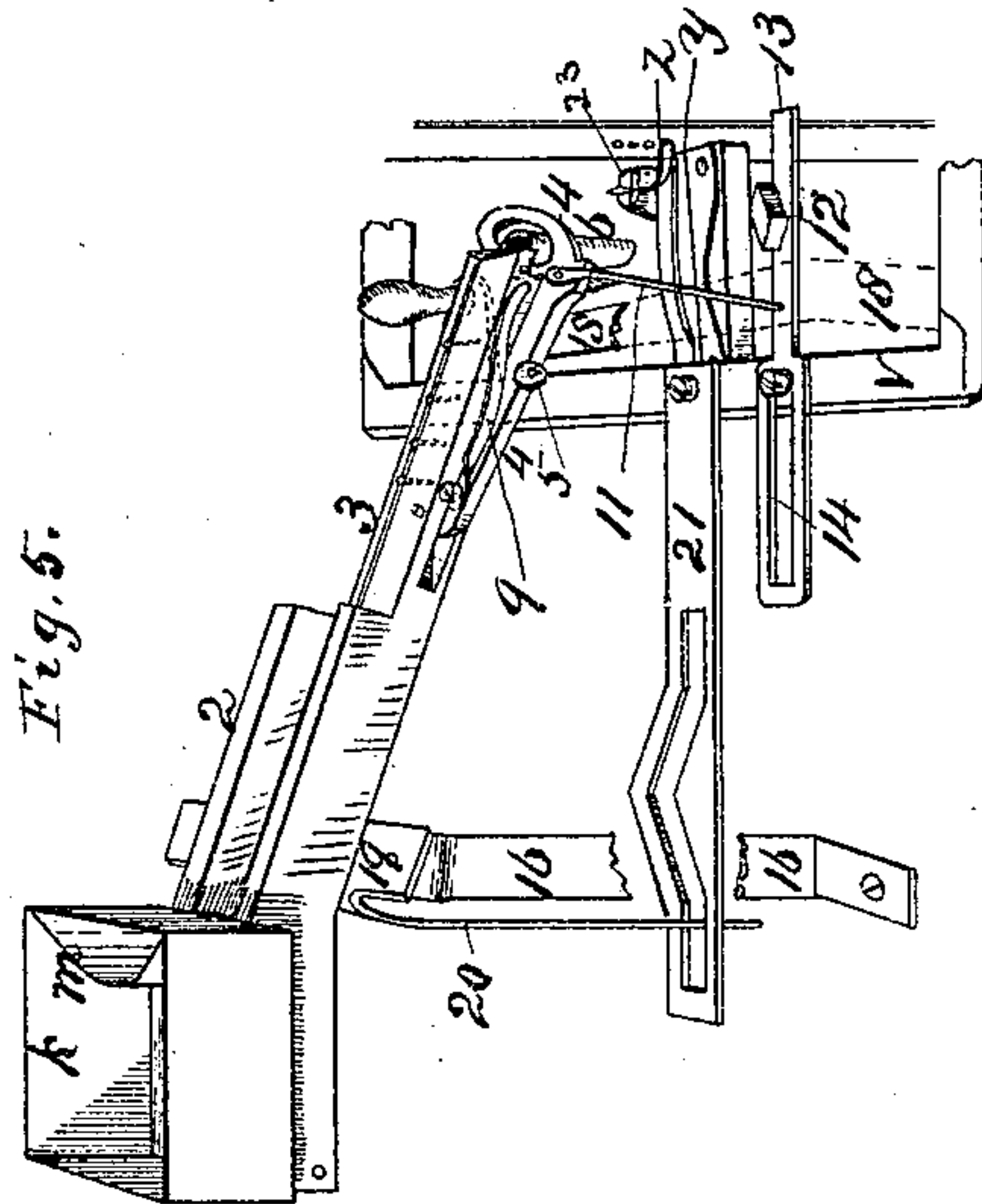


Fig. 6.

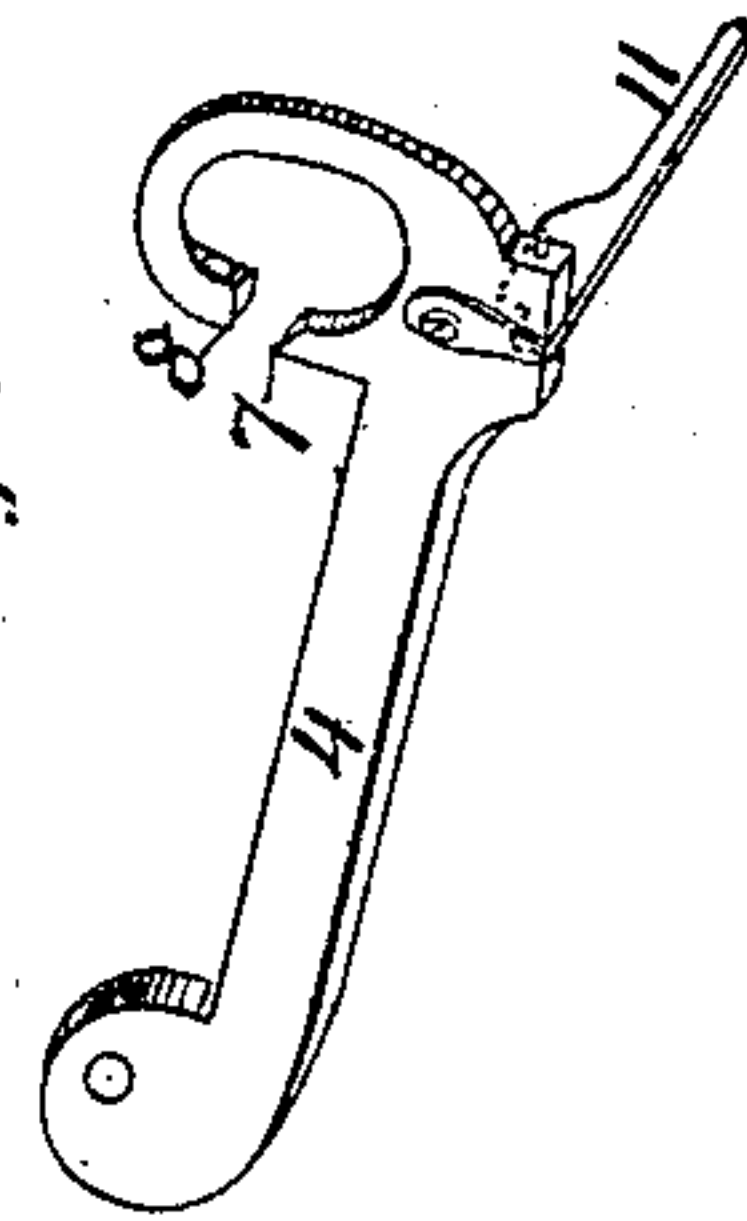
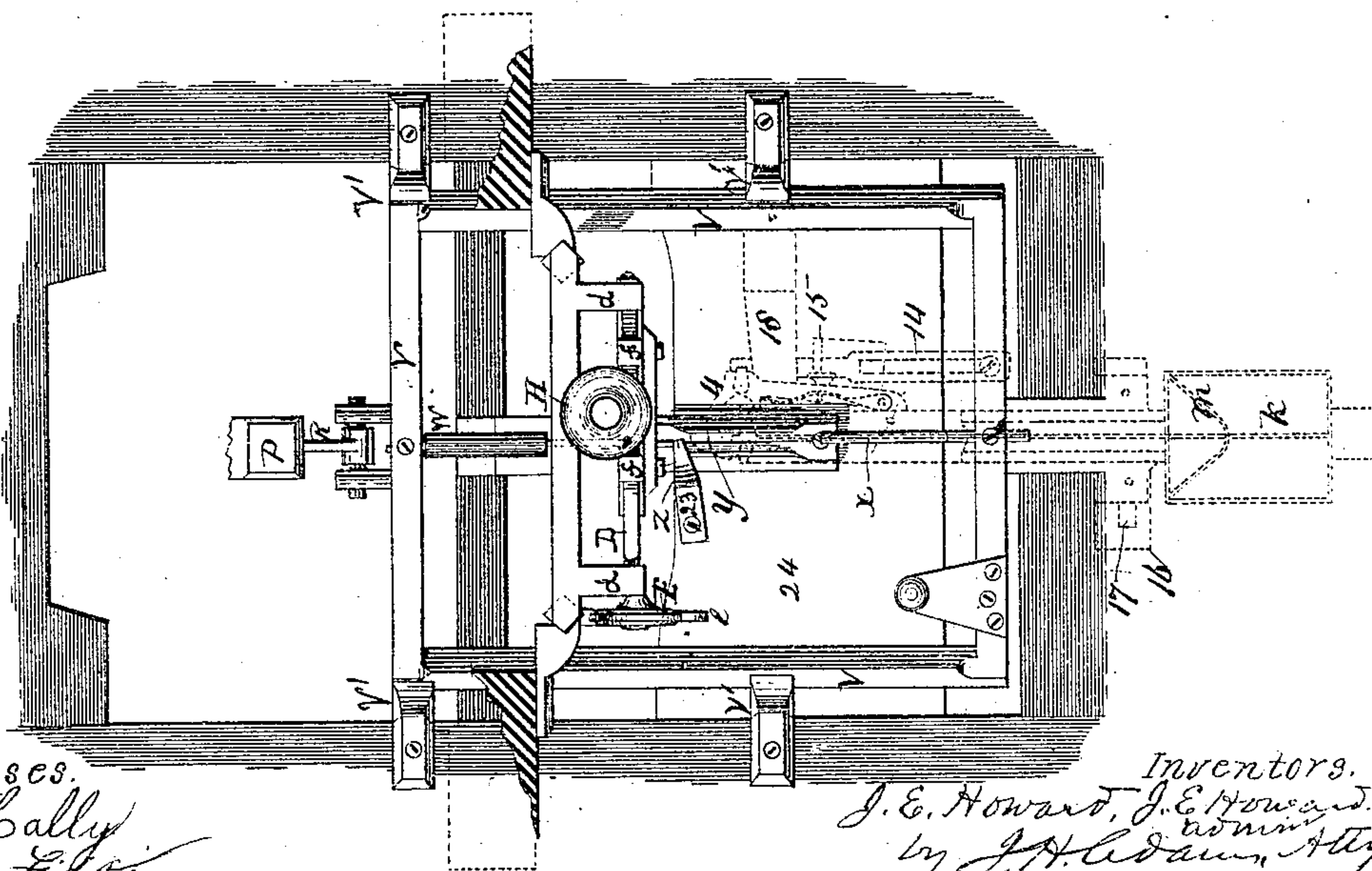


Fig. 3.



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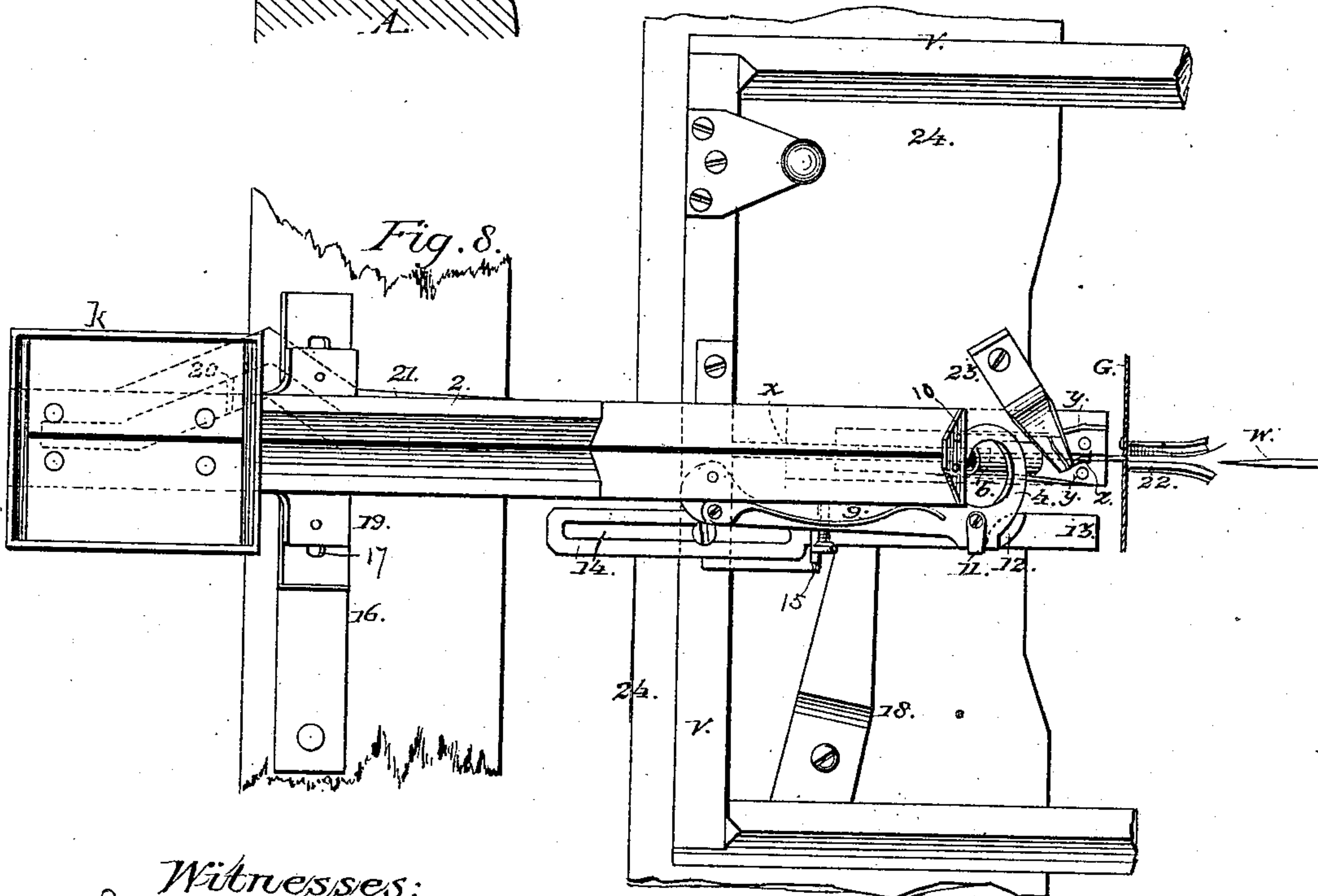
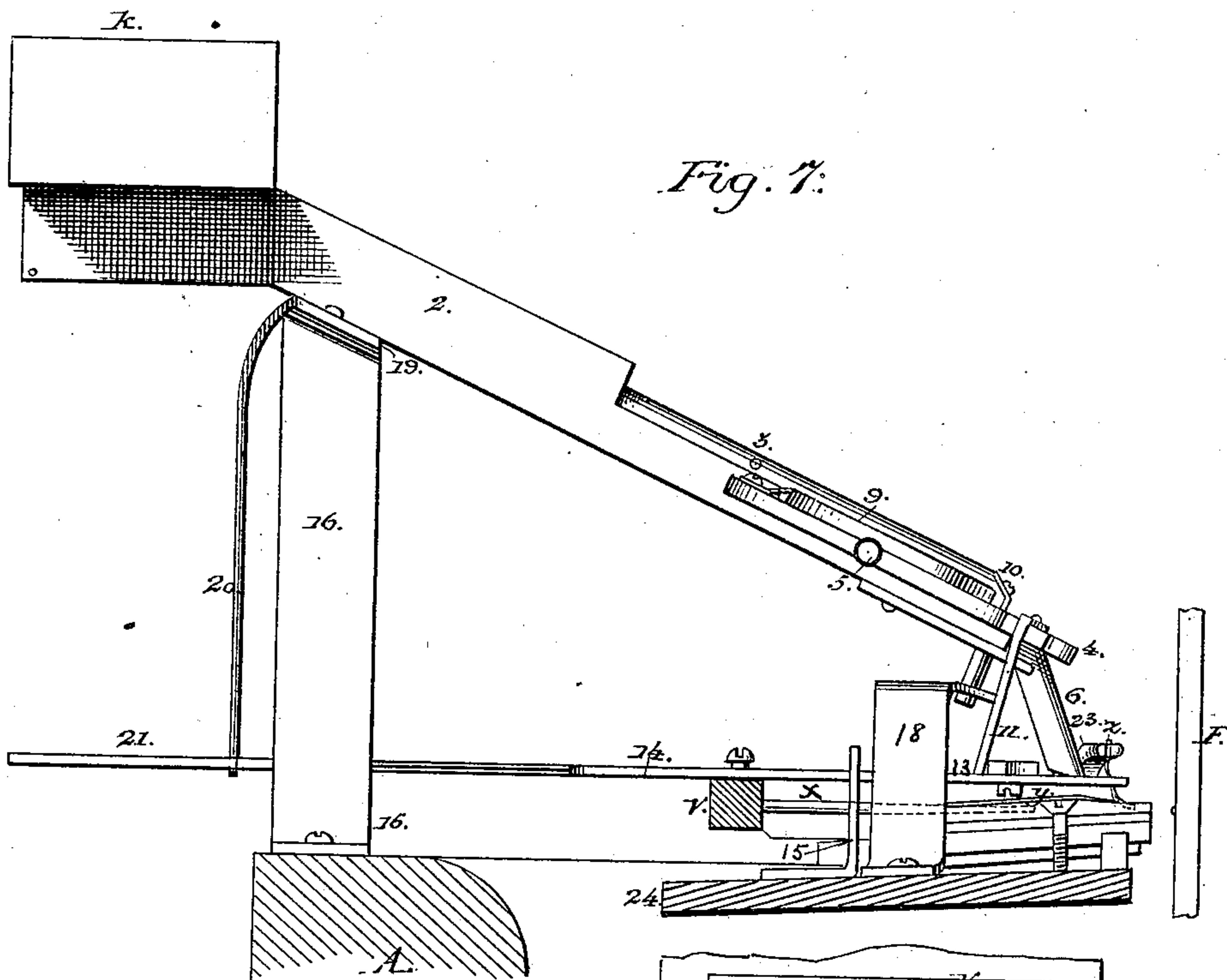
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Witnesses:

J. N. Korb

James Ellwood

Inventors:

J. E. Howard & C. E. Howard

per Edw. W. Dunn
Atty.

UNITED STATES PATENT OFFICE.

JOHN E. HOWARD, OF READING, MASSACHUSETTS, FOR HIMSELF AND AS ADMINISTRATOR OF CLARENCE E. HOWARD, DECEASED.

WIRE-BRUSH MACHINE.

SPECIFICATION forming part of Letters Patent No. 254,655, dated March 7, 1882.

Application filed August 26, 1878.

To all whom it may concern:

Be it known that JOHN E. HOWARD and CLARENCE E. HOWARD, of Reading, Massachusetts, did invent an Improvement in Wire-Brush Machines; and I do hereby declare, on my own behalf and as administrator of said CLARENCE E. HOWARD, now deceased, that the following is a specification thereof.

The invention relates to certain improvements in machines for setting the teeth or pins in the rubber or flexible material used in the manufacture of wire brushes; and the invention consists in a novel construction of devices and combination of parts, hereinafter fully described and set forth.

Referring to the drawings, Figure 1 represents a front elevation of a machine embodying my improvements, with a portion removed in order more clearly to show the working of several features of my invention. Fig. 2 is a side elevation of the machine with a portion of the frame removed. Fig. 3 is a top or plan view. Figs. 4, 5, and 6 are enlarged views, in detail, of separate portions of the machine. Fig. 7 is a side, and Fig. 8 a plan, view of the pin feeding and inserting devices.

Similar letters indicate like parts in the several figures.

A A represent the frame of the machine. Within the frame A is mounted in guides C C a vertically-moving carriage, B, to the top of which is attached a cord, c, passing over pulleys b b, and having at its lower end a counter-balance, a.

In front of the upper end of the carriage B is mounted in bearings d d a cylindrical bar or rod, D, having a screw-thread cut on a portion of its length, as shown in Fig. 1.

Upon the screw-rod D is supported a carriage, F, by means of bearings f f, provided each with a female screw fitting upon the screw of rod or bar D, so that as the latter turns or is rotated a lateral motion will be imparted to the frame F. The lower end of the frame F is attached by means of bearings f' f' to a rod, D', upon which it moves freely, the rod D' being attached to the carriage B, as shown in Fig. 1.

Upon one end of the screw-rod D is secured a wheel, E, to be provided with one or more notches, in which the end of a spring-catch, e,

attached to the carriage B, engages, so as to hold the screw-rod D in place. The rotation of the screw-rod D causes the frame to move laterally, and the amount of motion governed by the notched wheel E and spring e is adapted to the required distance between the teeth to be set in the rubber back G. Within the frame F is secured the rubber back G, its lower end being fastened in a fixed clamp, g', and its upper end in a clamp, g, that moves up and down within the frame F. At the rear of the clamp g is an ear, in which is fitted a thumb-screw, H, by which the clamp is moved up to tighten the rubber back G when necessary.

To the upper portion of the frame F is attached a rod or pointer, h, extending upward to an index, i, on which are marked a series of rectangular lines to indicate the points of insertion of the wire teeth in the back G.

The mode of elevating the frame or carriage B to admit of the insertion of the vertical rows of wire teeth is as follows:

To the lower portion of the carriage B, at one side, is attached the flat bar I, having ratchet-teeth on both edges, as shown in Fig. 1.

At one side of the ratchet-bar I is arranged the elevating-pawl l, which is hinged to a flat bar, K, (shown in Figs. 1 and 4,) and which said bar is also hinged to the inclined bed or table L, secured within the main frame A.

In the center of the table L is a longitudinal recess or groove, S, in which moves a sliding bar, S', attached to a slotted pitman, R, which in turn is hinged to the rock-shaft P, Figs. 2 and 4. At the end of the sliding bar S' is a wedge-shaped projection, s, which, as the said bar moves backward and forward, serves to raise the pawl l, which in the forward movement engages with and elevates the ratchet-bar I and with it the carriage B.

The pawl l is operated by means of the plate M, a pin on which passes through a slot in pawl l, and the plate or arm M is connected at nearly a right angle with an arm or plate, N, which is hinged to the table L at n, Fig. 4. The arm or elbow M N is moved forward and back by means of a rod, O, provided with the adjusting-nuts O' O', by which the motion of the hinged arm N is limited. The rear end of the rod O terminates in a loop or slot, o, in which

plays a screw-pin, *p*, fixed in the rocking bar P, which latter is pivoted to the frame A at Q at its lower end, and at the upper is hinged to a pitman, U, connected to the horizontally-sliding frame V.

The ratchet-bar I, and with it the frame or carriage B, is held up by a pawl, T, hinged to the table L, and made to engage with the teeth of ratchet-bar I by means of a spring placed under a rectangular arm of pawl T. By simply pressing down the rectangular arm the pawl T is released from the ratchet-teeth of bar I.

In the upper portion of the main frame A is a horizontal sliding carriage, V, mounted in guides or supports V' V', attached to frame A.

To the center of the rear bar of frame V is attached the needle-bar *w*, holding the needle W by means of an adjusting-screw, *w'*. The object of the needle is to perforate the rubber back G for the insertion of the wire teeth. To the center cross-piece, A', of the frame A is attached a shoe or guide, 22, (shown in Fig. 2,) which consists of a metal plate turned up at each side to form a groove, at the end, which comes in contact with the rubber back and serves as a guide or bearing to receive the ends of the wire teeth as they are forced through the back G.

In front of the rubber back G is placed a trough or guide, *y*, which receives the wire teeth as they drop from the conducting-tube 6. At the end of the trough *y* is a spring, *z*, held by a finger, 23, attached to the table 24, for the purpose of retaining the wire teeth in position to insure their proper insertion in the back G.

To the front of the frame V, and pointing inward, is attached a bar, *x*, which constitutes the driver to force the wires into the back G from the trough *y*. The driver *x* is on a line with the needle W, and as the needle moves back after piercing the back G the driver forces the wire into the hole made by the needle.

The teeth used for the brush consist of short pieces of wire provided with heads, and are fed to the machine as hereinafter described.

k represents a hopper in the form of a rectangular box, and having a narrow slit in the bottom, as indicated in Fig. 3, so as to allow the headed wires to drop into and be held by the head. Within the hopper is a curved plate, *m*, extending from the top to the bottom of the hopper, and having an opening at the bottom sufficiently large to allow the heads of the wires to pass through. The object of this plate is to prevent the nails from clogging the exit of the hopper. The hopper *k* is mounted on the trough 2, which latter forms the upper part of the raceway for the wires. The trough 2 is supported on a standard, 16, at the elevated end and pivoted to a standard, 18, at the depressed end.

In the top of standard 16 are slots 17, Fig. 3, through which pass screws or pins in a plate, 19, attached to the under side of the trough 2, so as to admit of a lateral motion of the trough

and hopper to agitate the wires, so as to cause them to pass into the trough. Extending downward from the plate 19, and of which it forms a part, is a bar, 20, the lower end of which enters an angular slot in the bar 21, Fig. 5, which latter is attached to the sliding frame or carriage V, so that as the latter traverses back and forth a vibratory motion will be imparted to the hopper and the raceway, through which the headed wires pass.

Q is a trough, which forms the upper portion of the raceway, the lower portion, 3, being without sides, so as to allow the wires whose ends have not entered the raceway to drop off at the sides. At the lower end of the raceway 3 is a plate, 10, Fig. 2, arranged to allow of the escape of only one wire at a time.

To the side of the raceway 3 is hinged a finger, of the form shown in Fig. 6, the opening between the curved ends 7 8 of which corresponds to the opening at the end of the raceway.

6 is a tube attached to the end of the raceway for receiving the wires or teeth and conducting them to the trough *y*.

The curved ends 7 and 8 are caused to move to and fro across the end of the raceway, the pointed end 7 taking out one wire and the blunt end 8 immediately closing the passage to prevent the escape of the wires until each preceding one is disposed of. The finger 4 is pressed out from the raceway by a spring, 9, so as to hold the point 8 over the opening of the raceway.

To the outer forward end of the finger 4 is attached a shipping-bar, 11, extending downward to the level of bar 13. The bar 13 is supported in a slotted standard, 15, Fig. 3, through which it moves freely. In one end of the bar 13 is a slot, 14, through which passes a screw attached to the sliding carriage, by the movement of which latter an intermittent motion is imparted to the bar 13.

On the bar 13 is placed a diamond-shaped shipping-block, 12, so arranged in relation to the shipping-bar 11 that as the bar 13 is moved forward and back by the motion of carriage V the arm 11 will pass on one side of the block 12 in one direction, causing the finger 4 to move so as to carry the point 7 across the end of the raceway 3 and remove a wire from the same, and when the bar 13 moves in the opposite direction the shipping-bar 11 will pass along the other side of the block 12, and thus retract the finger 4, bringing the point 8 across the end of the raceway and preventing the escape of the wires from the same. The relation of the finger 4 to the spring *g* is adjusted by the screw 5.

The machine is put in operation by any suitable power applied to the carriage V.

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

1. The combination, with the sliding carriage F, of the adjustable sliding clamp *g* and thumb-screw H, as and for the purpose set forth.

2. In a wire-brush machine, the combination of the needle W and the driver x , each attached to opposite ends of a moving carriage, the shoe or guide 22, and the trough y , all arranged and operating as and for the purpose set forth.

3. The combination, with the movable frame F, carrying the rubber back G, of the screw-rod D, provided with the wheel E and spring-catch e , the index i , and the pointer h , as and for the purpose described.

4. The combination, in a wire-brush machine, of the carriage B, the ratchet bar I, and the pawls l and T, as set forth.

5. The combination of the recessed plate S, the sliding bar s , the angular plate M N, the rod O, and the rocking bar P, all arranged for operating the intermittently-elevating pawl l , as set forth.

6. The combination, with the finger 4, of the bar 11, the shipping-block 12, and the slotted bar 13 14, operated by the sliding frame V, as and for the purpose specified.

7. In a wire-brush machine, the combination, with the hopper h and raceway 2 3, of the standards 16 18, the bar 20, and the angularly-slotted bar 21, operated by the carriage V, for imparting an oscillating motion to the hopper and raceway, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN E. HOWARD.

JOHN E. HOWARD,

Administrator, &c.

Witnesses:

J. H. ADAMS,

THOMAS LALLY.