

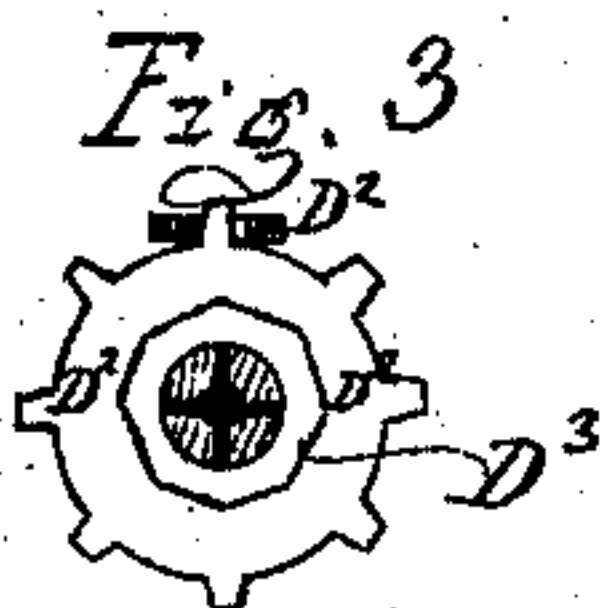
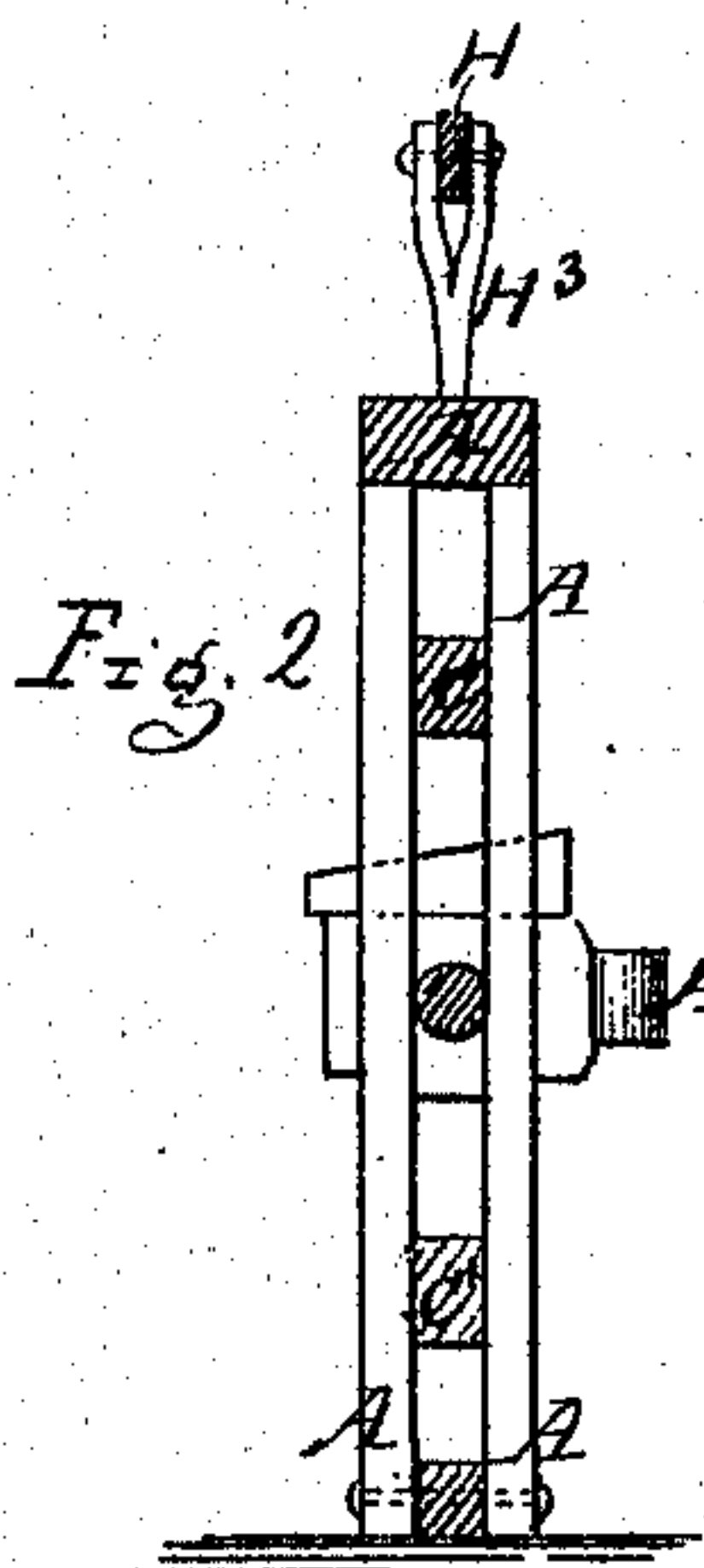
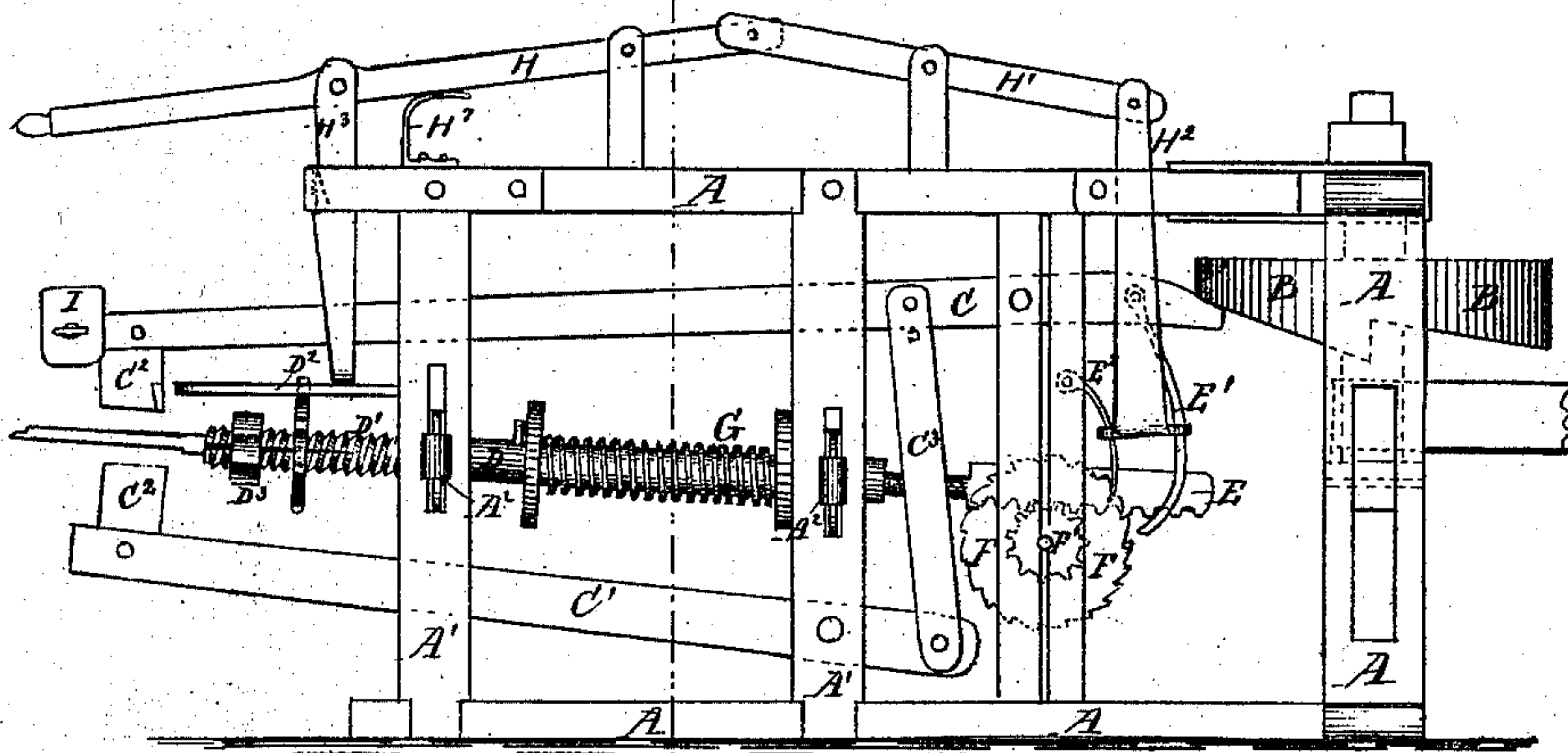
E. B. Rollins,

File Cutting.

No. 103240.

Patented May 17, 1870.

Fig. 1.



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EDWARD B. ROLLINS, OF POLAND, NEW YORK.

Letters Patent No. 103,240, dated May 17, 1870.

IMPROVED MACHINE FOR MAKING FILES.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, EDWARD B. ROLLINS, of Poland, in the county of Herkimer and State of New York, have invented an Improvement in File-cutting Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

Drawings.

Figure 1 is an elevation of my improved machine, showing the cam-wheel for moving the hammers or cutters, the tube or shaft to which the blank is secured while being cut, the mechanism for feeding such files to the cutter, and the mechanism for throwing the machinery into and out of gear.

Figure 2 is a transverse vertical section on line $x x$ of fig. 1, showing one method of raising and lowering the shaft which carries the blank while being cut.

Figure 3 is an end view of the shaft which carries the blank, and the guide-wheel which is placed upon such shaft for the purpose of preventing it from turning while the blank is being cut.

Figure 4 is an end view of the dies or hammers which carry the cutting-chisels, and showing also the position of such chisels in such hammer.

Corresponding letters refer to corresponding parts in the several figures.

This invention relates to file and rasp-cutting machines; and

It consists in the construction of such machines, and in the combination and arrangement of the parts of which they are composed, as will be more fully described hereinafter.

A, in the drawings, refers to the frame-work of the machine, which may be such as is shown in the drawings, or it may be of any other form that is adapted to receive the parts of the machine which it is designed to support. That portion which carries the driving-pulley may, if desired, be square in form, so as to adapt it to any form of power with which it may be necessary or convenient to drive it.

B refers to the cam-wheel, which consists of a disk of metal, having upon its lower surface cam-shaped projections, which, during its movement, come in contact with the end of the hammer or die-helve, thus depressing its rear end, and giving its front end the required movement. This wheel is placed upon a vertical shaft which has its bearings in the cross-beams of the rear end of frame A, as shown in fig. 1. To this shaft may be secured a pulley or gear-wheel for driving it, which may receive its motion from any prime mover.

C refers to the helve of the hammer, which receives its motion direct from the cam-wheel, it being pivoted to the vertical posts of the frame A, from which point it

extends forward through the guarding posts and beyond the same for any distance that may be required.

Just forward of the point where this helve is pivoted there is attached to it straps of metal, or it may be a connecting-rod, which may be adjustable as to length, and which connect it with the outer or rear end of the helve C' of another hammer, which is pivoted to another upright somewhat in advance or in front of the one to which the helve C is pivoted.

From this pivoted point this helve extends forward through the guide-posts, and to such a distance as to bring its front end about on a line vertically with the end of helve C, where the two are provided with hammers or dies, which are to be attached thereto by any suitable means.

The faces of these hammers or dies are provided with grooves, through which the file-blank is to be passed while being cut, the flanges upon their outer edges preventing them from coming too near together at the points where the blank passes through them. Across these grooves are set the chisels for cutting the teeth or serrations upon the file-blank, they being placed at such an angle to the line of motion of the blank as to give the required angle to the teeth when cut.

These chisels may be secured in their places by bolting, or by being passed into dovetailed grooves in the faces of the hammers or dies. The point at which the connecting links or rod is attached to the helves of the hammers should be such as to give their outer ends the same, or about the same, amount of movement, in order that each one shall be carried the same distance from the blank, and that both shall return to contact with said blank at the same instant of time.

It will be observed that the rear ends of the helves C and C' are at a greater distance from each other than are their front ends. This arrangement is of great importance, as it enables me to cut the teeth with any desired amount of bevel or over-hang, which feature gives hand-cut files their peculiar value.

In this machine any amount of bevel may be given to the teeth by changing the pivoted points of the helves and the length of the connecting-rod or link, thus increasing the angles of said helves to an extent sufficient to enable the machine to cut coarse rasps for iron or wood.

D refers to a shaft, which has its bearings in adjustable boxes A², which move in slots in the vertical posts A¹ of the frame A.

The forward end of this shaft is provided with a screw-thread, D¹, upon which a nut, D², is fitted; slots are cut in the end of this shaft, as shown in fig. 3; it is also provided with a round hole in its center, which, with the slots, extend into the shaft for some distance, the design being to give the parts some elasticity, so

that as the shank of the file blank is inserted therein, the parts may be sprung or pressed outward slightly, so that as the nut is turned outward upon the shaft, they may take firm hold of such shank and compel the blank to move with the shaft in a manner soon to be described.

The rear end of this shaft is hollow for some distance, so as to admit the end of rack E, while upon its front end, and just in the rear of the screw-thread above alluded to, there is placed a guide-wheel, D², which has projections upon its periphery, as shown in fig. 2, which projections move in a slotted arm or guide, which projects from the front side of the guide-posts A¹, the object being to prevent the possibility of the blanks turning or being turned while the cutting is being done. The bearings in which shaft D rests are made adjustable in this instance by means of wedges, but for which screws may be substituted, the object being to enable the operator to so adjust the blanks that both of the chisels shall come in contact with it at the same instant of time, and thus relieve the blank from any strain and from all liability of being broken.

E refers to a rack, which works in guides upon the posts of the frame, as shown in fig. 1, its lower edge being provided with cogs, for a purpose soon to be described.

The forward end of this rack is round, and is furnished with a screw-thread, which enters a nut in the rear end of shaft D, it being for adjusting said shaft for cutting different lengths of blanks, as it will be seen that by screwing this rack a greater or lesser distance into the shaft, the position of the front end of such shaft with reference to the chisels will be determined.

The longitudinal movement of this rack is imparted thereto, by means of a pawl, E¹, the upper end of which is pivoted to the rear end of the helve C, so that, as that is pressed downward, the pawl engages with a ratchet-wheel, and imparts its motion thereto. Just in front of this pawl there is placed another pawl, E², which is pivoted to the post to which helve C is hung, its lower end resting upon the same ratchet-wheel, as does the end of E¹, its office being to prevent the ratchet-wheel from turning in the wrong direction.

F is the ratchet-wheel above alluded to, it being placed upon a shaft which has its bearings in the posts which guide the rack E, and so arranged that the pinion F', which is secured to the same shaft, shall work into the cogs upon the under side of rack E, thus giving the said rack the motion required to move the blank the proper distance at each downward movement of helve C, to receive the impact of the chisels, which, at each stroke, forms a tooth upon each side of the file.

G refers to a spring, which is placed upon the shaft D, and between collars also placed upon such shaft, the rear one being loose, so that it may rest against the posts A¹, and thus through the action of the spring pressing against the fixed front collar, prevent the

shaft from retreating while the machine is in operation.

H refers to a lever, which is pivoted to a bifurcated stud secured to the upper cross-bar of frame A, its outer end extending outward, so as to be within reach of the operator, while its rear end is pivoted to another lever, H¹, which is also pivoted to a forked stud secured to the same cross-bar, its rear end carrying a hanger, H², through a projection, upon the lower end of which the pawls E¹ and E² pass, so that as the front end of lever H is depressed, said pawls may be allowed to engage with and move wheel F. To that point of lever H, which is just outside of the frame A, there is suspended a yoke, H³, which works through a guide attached to the frame A.

The front edge of this yoke is provided with notches, so arranged that when the outer end of lever H is depressed, and with it the yoke, such notches will engage the lower edge of the guide through which it passes, and hold the yoke down in such a position that its lower end shall come in contact with one of the projections upon guide-wheel D², when the shaft D has moved the length of the blank, and been carried to the rear a distance to relieve it from the control of its guide, and thus permit the spring H⁴ to throw the lever H up, which will raise the outer end of helve C, and thus depress the rear end thereof until it is out of the reach of the cam-wheel B, when all the parts of the machine, except said wheel, will cease to move, and the file may be removed from the shaft D, and another blank inserted preparatory to being cut. When it becomes desirable to put the machine in operation again, the operator depresses the front end of lever H until the hanger H² engages the guide, when the rear end of helve C is brought within reach of the wheel B, and all of the parts commence working again.

I refers to an adjustable weight, which is placed upon the forward end of helve C when found necessary to give the hammers the required rapidity of movement and force of blow, or to keep its rear end in contact with the wheel B.

Having thus described my invention,

What I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination of the helves C C¹, dies or hammers C², with their chisels, connecting-rod C³, and driving-wheel B, substantially as and for the purpose set forth.

2. The combination of the helve C, the pawl E¹, ratchet-wheel F, pinion F', rack E, and shaft D, substantially as and for the purpose set forth.

3. The combination of the guide-wheel D², hanger H², lever H, and spring H⁴, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two attesting witnesses, at the city of Washington, D. C., this 26th day of March, 1870.

Witnesses:

EDWARD B. ROLLINS.

JOSEPH R. EDSON,

EDM. F. BROWN.