

No. 612,307.

Patented Oct. 11, 1898.

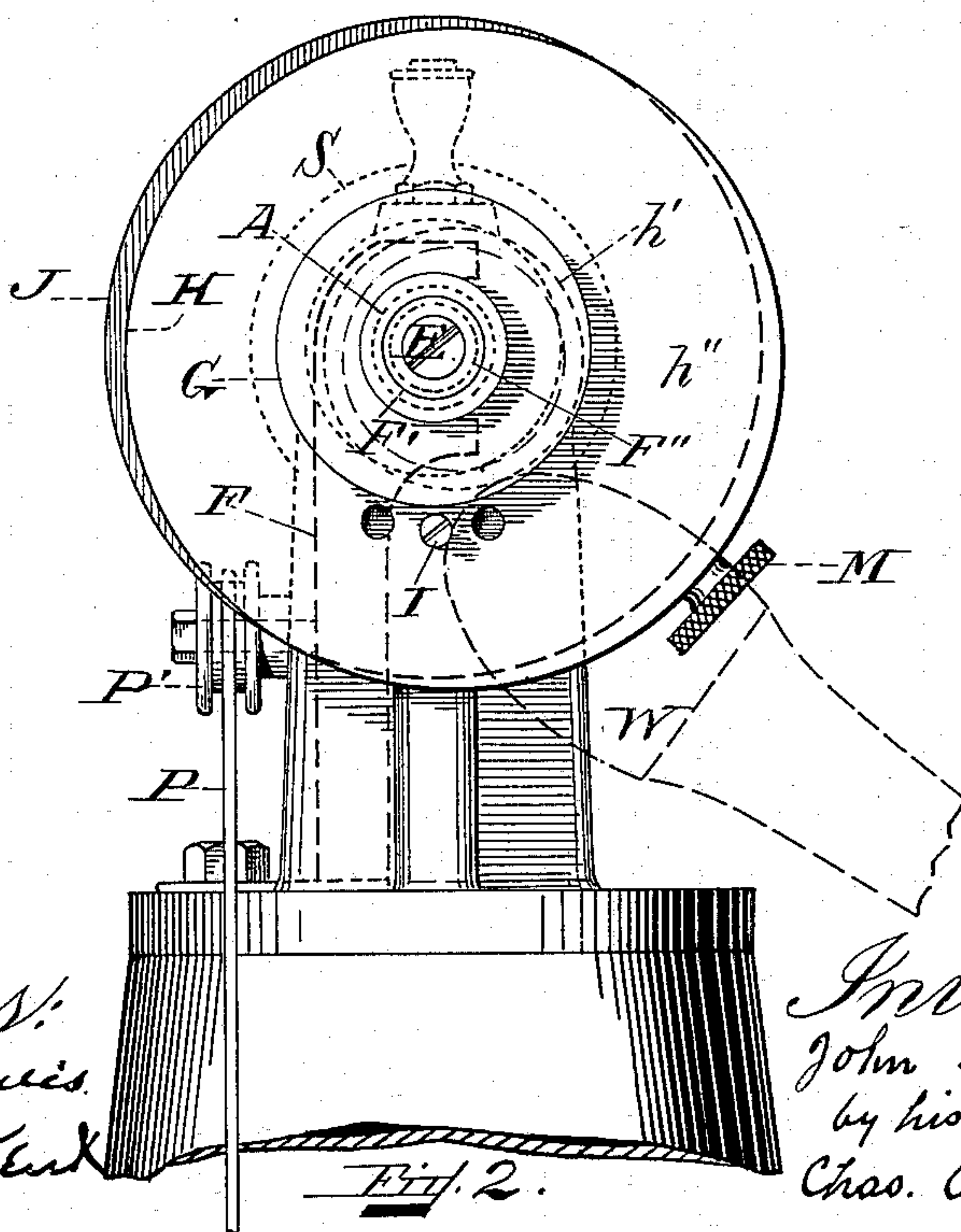
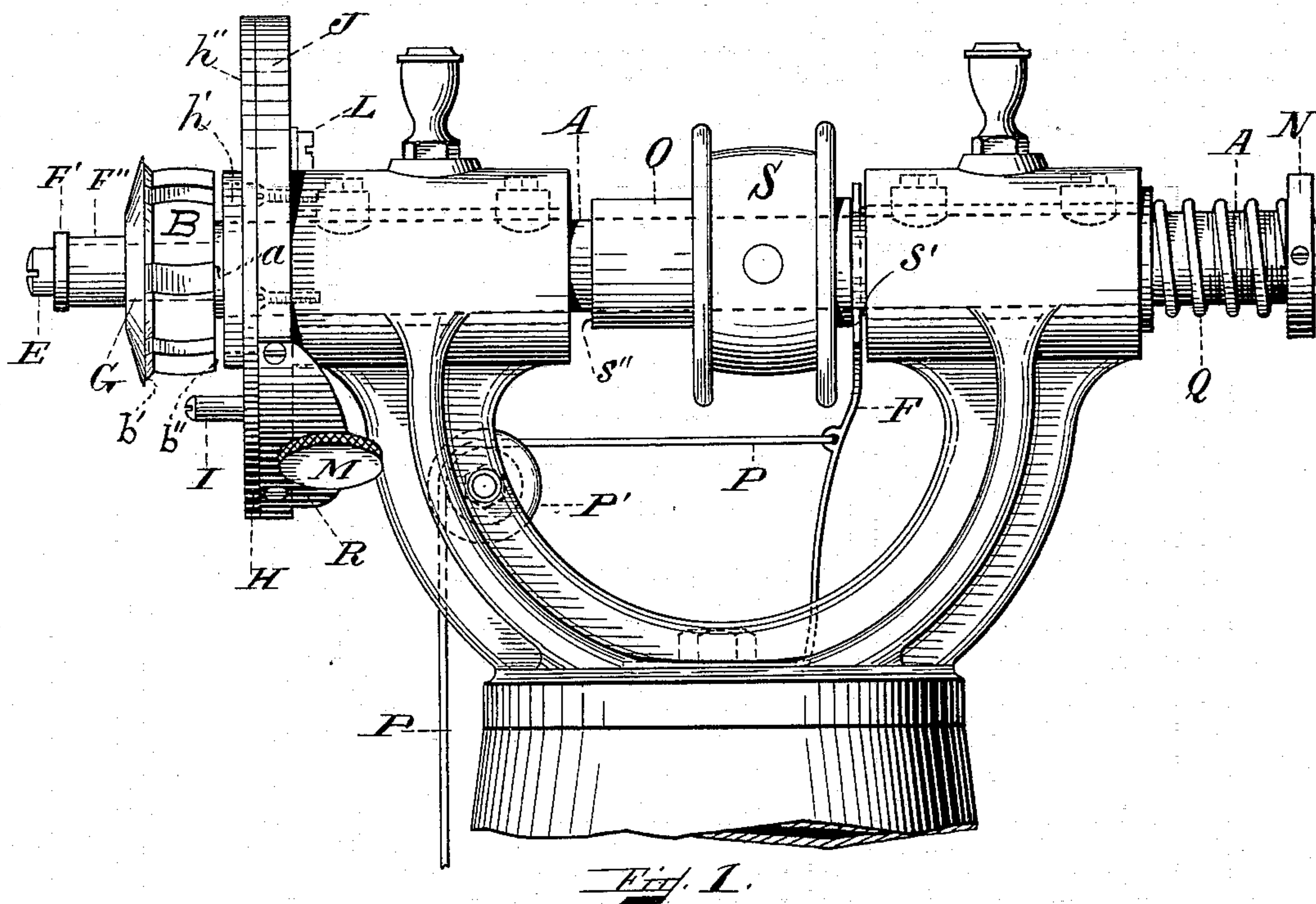
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MACHINE FOR TRIMMING SPRING HEEL SHOES.

(Application filed June 4, 1897.)

(No Model.)

2 Sheets—Sheet 1.



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Inventor:  
John G. Buzzell.  
by his Attorney  
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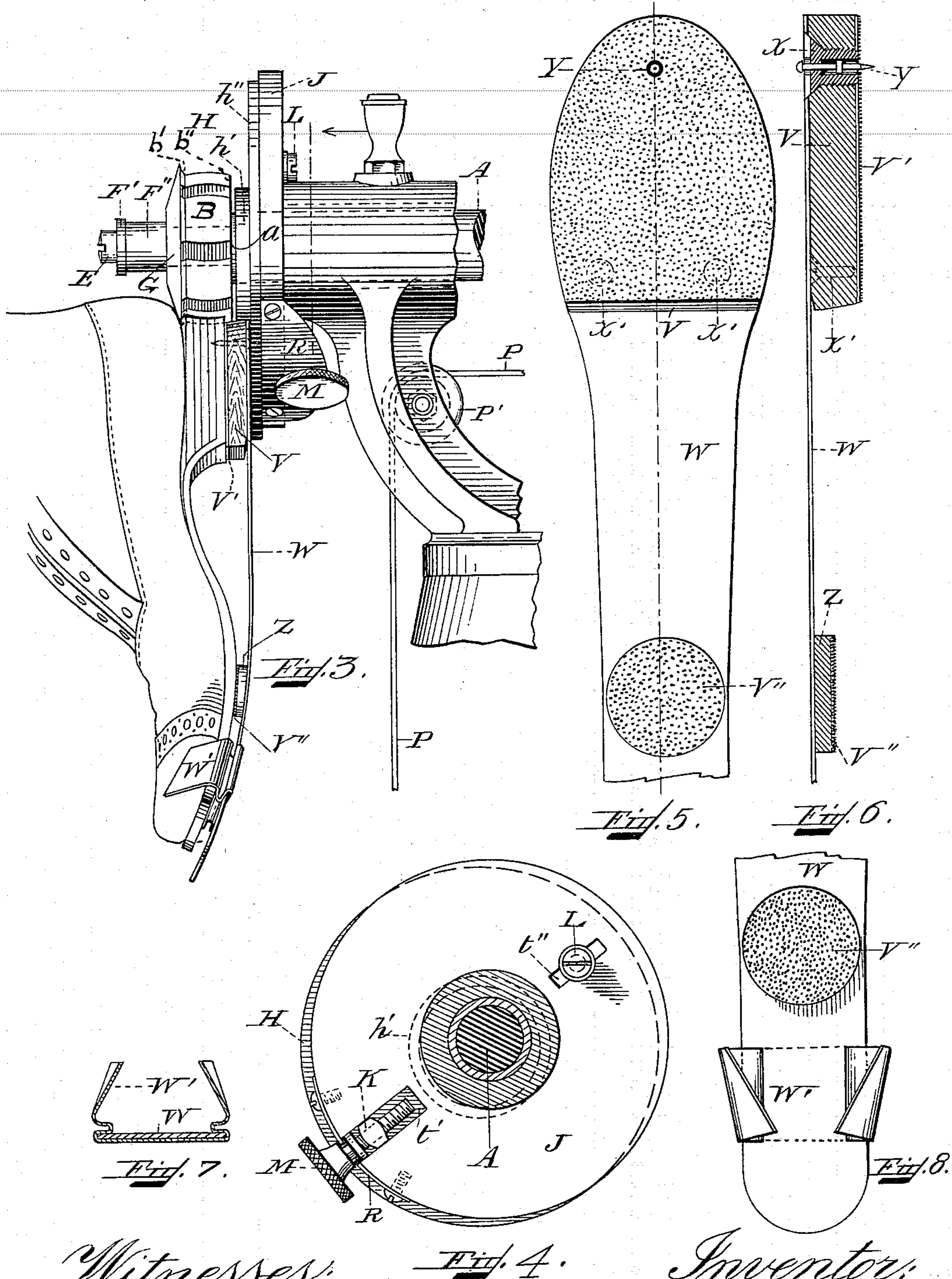
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# UNITED STATES PATENT OFFICE.

JOHN G. BUZZELL, OF LYNN, MASSACHUSETTS.

## MACHINE FOR TRIMMING SPRING-HEEL SHOES.

SPECIFICATION forming part of Letters Patent No. 612,307, dated October 11, 1898.

Application filed June 4, 1897. Serial No. 639,464. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN G. BUZZELL, a citizen of the United States, residing at Lynn, in the State of Massachusetts, have invented a new and useful Machine for Trimming the Heels of Certain Kinds of Shoes, of which the following is a specification.

My invention is a combination of mechanism adapted to so adjust the cutter in a heel-trimming machine and also to so hold and adjust the shoe that the operator can vary the cutting so as to avoid the imperfections which are often discovered during the cutting in the material of which the heel is made.

Another object of my invention is to enable the operator to easily and quickly accomplish his work without much delay in substituting one shoe for another in the machine, and, further, to produce a greater uniformity than has before been obtained in the different heels in the same lot of shoes.

My invention relates especially to the trimming of that kind of shoes called "spring-heels," although my invention is not limited to them. Before this invention most of the methods for trimming this kind of heels were unsatisfactory and crude, and the final shape of the heel depended very largely upon the eye and the skill of the workman, so that no two heels in a lot were exactly alike, and in many cases the heel was not in harmony with the rest of the shoe. Some attempts have been made to secure uniformity by jacking the shoes rigidly; but this method was objectionable on account of the impracticability of preparing the heels for the contingencies which arise during the cutting. Previous to this invention there was no known machine having a rotary cutter which was adjustable along the line of its shaft, so as to readily adapt itself to the slight variations which are found in the thickness of different heels in the same lot of shoes. The prevalent method of using a rotary scraper for trimming heels would be very expensive and less satisfactory than my method of using an adjustable cutter and heel pattern, not only because it is slower and does not trim a heel as smoothly as a cutter does, and because this method is liable to injure the leather of the heel by burning, and for other mechanical reasons, but the positive action of the machines formerly used in the trade damages many of the heels. The heel of the common

kind of shoes may be easily and cheaply removed from the shoe when damaged and another attached; but it is quite a difficult and expensive operation to repair a damaged heel in a spring-heel shoe, and the use of a positive machine has not been found acceptable on account of the many damaged heels.

I attain the objects of my invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a side view of the cutting-machine in its normal position. Fig. 2 shows the guide-plate, being a front end view of the cutting-machine. The guide-plate H is shown in one of its eccentric positions with reference to the cutter. Fig. 3 is a side view of the cutter end of the machine, showing a shoe attached to the pattern and in place against the cutter. Fig. 4 is a rear view of the base-plate, showing the screw M and stud K for moving the guide-plate H, which is shown in a position eccentric to the base-plate J, to which it is held by the set-screw L. Fig. 5 shows the heel end of the pattern, with the sandpaper surfaces V' and V'' to secure friction. Fig. 6 is a side view of the pattern, showing the leather or wood pad beneath the sandpaper and the tack Y for holding the pattern to the heel of the shoe. Fig. 7 shows the slide detached from the pattern, and Fig. 8 shows the slide on the toe end of the pattern.

Similar letters refer to like parts throughout the several views.

In the machine by which I accomplish the objects of my invention a horizontal revolving shaft A is supported upon two bearings in the ordinary manner and carries a rotary cutter B, mounted externally to the bearings, as shown in Fig. 1, and firmly held in place against the shoulder *a* by the screw E and washers F' F'' or other suitable means. The outer edge *b'* of the cutter is covered by a guard-disk G of slightly greater diameter than said edge, which serves to prevent injury to any portion of the shoe with which the said outer edge of the cutter might otherwise accidentally come in contact. Close to the inner edge *b''* of the cutter is the stationary guide-plate H, composed of the surfaces *h'* and *h''*, of which *h'* is a short cylindrical surface parallel to the shaft and of about the same diameter as the edge *b''*, and *h''* is a plane surface perpendicular to the shaft. A



short pin I is screwed into the plane surface  $h''$  below the cylinder, and to suit the convenience of different operators several holes are provided, into either of which it may go.

5 The guide-plate H is borne upon a fixed base-plate J perpendicular to the shaft and is held in place by the set-screw L and the stud K, which project from it through slots  $t'$   $t''$  in the base-plate. A thumb-screw M, the head of  
10 which is engaged and held by a raised portion R of the base-plate at the outer end of the slot  $t'$ , passes through the projecting part of the stud K, and by turning the screw the guide-plate, which is normally concentric  
15 with the shaft, may be adjusted to any desired degree of eccentricity within the limits of motion allowed by the slots where it may be fastened by the set-screw. The shaft A is movable in the direction of its axis between  
20 the limits formed by the shoulders  $s'$  and  $s''$  while rotating.

$s''$  is a shoulder on an adjustable collar O on the shaft. Normally the shaft is held back against the shoulder  $s'$  by the spiral spring Q, the tension of which may be varied by screwing  
25 the nut N in either direction. A finger F bears against the shoulder  $s'$  of the shaft and is connected by means of the cord P, which passes over the small pulley P', with a treadle  
30 on the floor within easy reach of the operator's foot, but not shown in the drawings. Depression of the foot-treadle throws forward the finger and with it the shaft, thereby carrying the rotating cutter forward and away from  
35 the stationary guide-plate H.

I insert a spring in the train of mechanism which I have just described, leading from the operator's foot to the cutter in its working position, and do this by making the finger F  
40 of thin spring metal. The same object may be accomplished by inserting a spiral spring at either end of the cord P or by making the treadle of a thin spring metal. Without this spring the upper of the shoe is liable to be  
45 damaged by the cutter or its guard; but the spring enables the cutter to adjust itself automatically to the thickness of the heel that is being trimmed, so that the guard being once placed in the space between the upper and  
50 the heel will run safely therein all around the heel no matter what variations or inaccuracies of pressure the operator may unconsciously apply to the treadle. The power is applied to the pulley S in the usual way.

55 For the purpose of controlling the degree to which the cutter shall cut into the material of the heel I use an adjustable pattern. (Shown in Figs. 3, 5, 6, 7, and 8.) It frequently happens that it is very desirable, if  
60 not necessary, to vary slightly the extent of the cutting on one side or the other of the heel to avoid an imperfection in the leather of the heel or for other causes. At one end this pattern is made substantially in the same  
65 shape as that of the desired heel. Although a number of such patterns will ordinarily be used, according to the variety and size of the

heels made in the factory, it will not be necessary to have a different pattern for every size or variety of heel, as these patterns are  
70 adjustable, as hereinafter set forth, and one can be used on two or three sizes of shoes. These patterns are inexpensive and more accurate results can be obtained by using different patterns for right and left shoes. This  
75 is a matter which every competent workman will be able to decide for himself according to the work to be done.

Each pattern is about the length of the longest shoe on which it will be used. That  
80 part of the pattern which may be called the "toe" end is made with parallel sides from the end to about the ball of the shoe. When the operator is not skilful and the material of which the heel is composed is hard, the ad-  
85 justability of the pattern is secured by using a slide  $w'$  (shown in Figs. 3, 7, and 8) at the toe end of the pattern. This slide is made to fit upon the pattern, so as to move easily and yet to have some friction, so as to be readily  
90 held in place by the operator. This can be secured without a thumb-screw or other such appliance, as the friction is ordinarily sufficient. This pattern may best be made of  
95 spring-brass or other thin spring metal and have at the heel end a piece of wood, leather, or other suitable material about a quarter of an inch thick and corresponding in size with the pattern and covered with sandpaper, rubber, or other frictional material. Near the  
100 extreme of the heel end of the pattern a steel tack Y passes through the wood and the pattern and is held in position, as shown in Fig. 6. This tack may be drawn up so that its  
105 point is flush with the sandpaper surface, thus enabling the workman to center the pattern on the heel to be trimmed more quickly and accurately than if the tack were fixed. Its upward motion is limited by a shoulder  
110 upon it, which stops against a shoulder recessed into the pattern. The metal portion of the pattern is countersunk to receive the head of the tack. The latter is not upset until the tack has been put into position. When it is desired to remove the tack for any  
115 cause, the head may be cut off with nippers and a new tack inserted.

When the pattern is about to be used, it is attached to the heel, with the sandpaper  
120 against the face of the heel, by driving the tack into the leather sufficiently to prevent any sidewise movement of the pattern in the operation of cutting. The small hole made in the leather will mostly work out during  
125 the later operations in finishing the shoe, and it may be easily concealed by any of the common devices for finishing the soles of shoes. After the pattern has been attached to the heel by the tack Y the shoe is held in the cutting-machine (see Fig. 3) with the pattern  
130 against the guide-plate H, with the edge of the pattern resting against the pin I, and the operator gradually brings the heel against the cutter until the edge of the pattern reaches



the cylindrical surface of the guide-plate *h'*. The operation of cutting may be continued by turning the shoe so as to bring all parts of the heel to the action of the cutter in the usual manner. When it is found desirable to vary the cutting from the exact form of the pattern, the pattern is swung on the tack Y. This can be easily done by an operator skilful enough to hold the pattern by means of the rough surface V" against the sole.

While a skilful operator may hold the pattern in place by means of the sandpaper, I prefer that the slide shown in Figs. 3, 7, and 8 be used. This slide is made with expanding sides, much in the shape of the sides of a shoe, so that by moving the slide the pattern can be held upon either side of the sole, or the pattern can be changed from one side of the sole to the other and held firmly in either position. By thus moving the slide and swinging the pattern quite a difference can be made in the shape of the front part of the heel, as desired. Before any cutting is done the shaft A, carrying the cutter B, is drawn forward by the operator by means of the cord P, and the guard G is inserted between the upper and the heel. The pressure of the operator's foot upon the treadle is released sufficiently to allow the spiral spring Q to force the shaft and the cutter B back as far as the heel now resting against the guide-plate H will allow; but the operator retains control of the treadle sufficiently to relieve any sudden movement of the shaft incidental to the cutting of the leather.

As the shoe while being worked upon is held only in the hands of the operator, with the adjustable pattern against the face or guide-plate H, it is easily adjusted to meet any of the contingencies which often arise during the cutting.

The face or guide plate H, against which the pattern is held, is moved to and from the shaft and cutter by the thumb-screw M. As this plate regulates the distance at which the shoe is held from the cutter, its position controls the amount of material cut away from the heel, and therefore the size of the finished heel. The operator knows whether the heel is to be trimmed in close to the upper and also whether it is to be trimmed to a size larger or smaller than the pattern, and any competent operator will know how to adjust the screw M, which moves this plate. If the operator wishes to trim a heel smaller than his pattern, he moves his plate toward the shaft A, and if he wishes to leave a heel larger than the pattern he may do so by bringing the plate away from the shaft A. In the drawings I have shown the cylindrical surface *h'* as being circular, for that is the best form now known to me; but I do not wish to be limited to a circular cylinder, as further experience may prove that some other form of cylinder is better.

I have described that part of the pattern

(marked V) which goes next to the heel of the shoe as being made of wood, leather, or similar material rather than of metal, as sometimes the cutter will touch that part of the pattern when a small heel is being operated upon.

In this specification and the drawings I have given the form, size, construction, and shape which I now think best for the different parts of the machine, pattern, and slide; but I do not intend to be limited in these particulars to the exact description given. My invention does not depend upon the form, size, construction, or shape shown or described, and these may be varied within the limits of the skill of the mechanic who constructs the mechanism, so as to secure a proper adaptation of the parts, without departing from the scope of my invention.

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

1. A pattern for controlling the trimming of spring-heeled shoes having means for attaching the heel of the shoe thereto by a pivotal connection, and means for retaining upon a pattern the sole of the shoe, such means permitting the sole to be moved from side to side of the pattern without any change in the mechanism employed, substantially as shown or described.

2. The herein-described combination of mechanism for trimming shoe-heels, consisting of a cutter and guard mounted upon a shaft arranged to rotate and slide in its bearings, a spring to move said shaft in one direction and yielding means under the control of the operator to move it in the opposite direction, substantially as shown or described.

3. In a machine for trimming spring-heeled shoes the combination of a cutter having a guard and means for an automatic elastic adjustment of the cutter along the line of its axis with a pattern having means for attaching the same to the heel of the shoe, said means permitting the adjustment of the said pattern on the sole of the shoe during the trimming operation, substantially as shown or described.

4. In a machine for trimming the heels of shoes the combination of the guard G, the cutter B, the shaft A, the spring Q, the finger F, and the guide-plate H, having means whereby it may be adjusted transversely to the axis of the cutter, substantially as shown or described.

5. In a machine for trimming heels, the combination with a rotary cutter and guard, of yielding means consisting of two separate devices for moving said cutter and guard in both directions transversely to its plane of rotation, substantially as described.

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Witnesses:

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