

(No Model.)

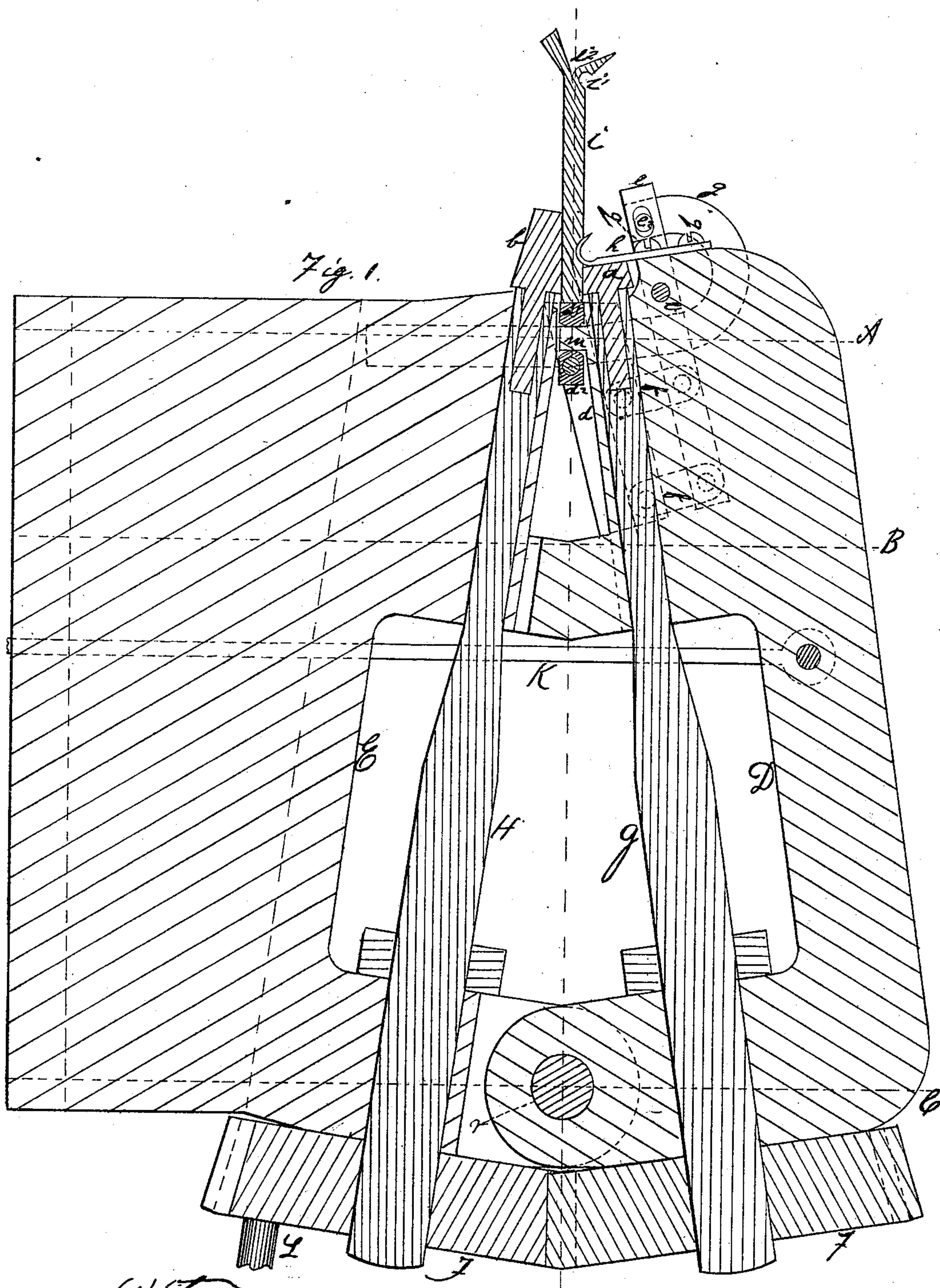
3 Sheets—Sheet 1.

W. WICKERSHAM.

MACHINE FOR SLITTING AND PREPARING SOLES FOR TURNED SHOES.

No. 342,890.

Patented June 1, 1886.



*Witness*  
*Henry J. Jennings*  
*J. E. Day*

*Inventor*  
*William Wickersham*

(No Model.)

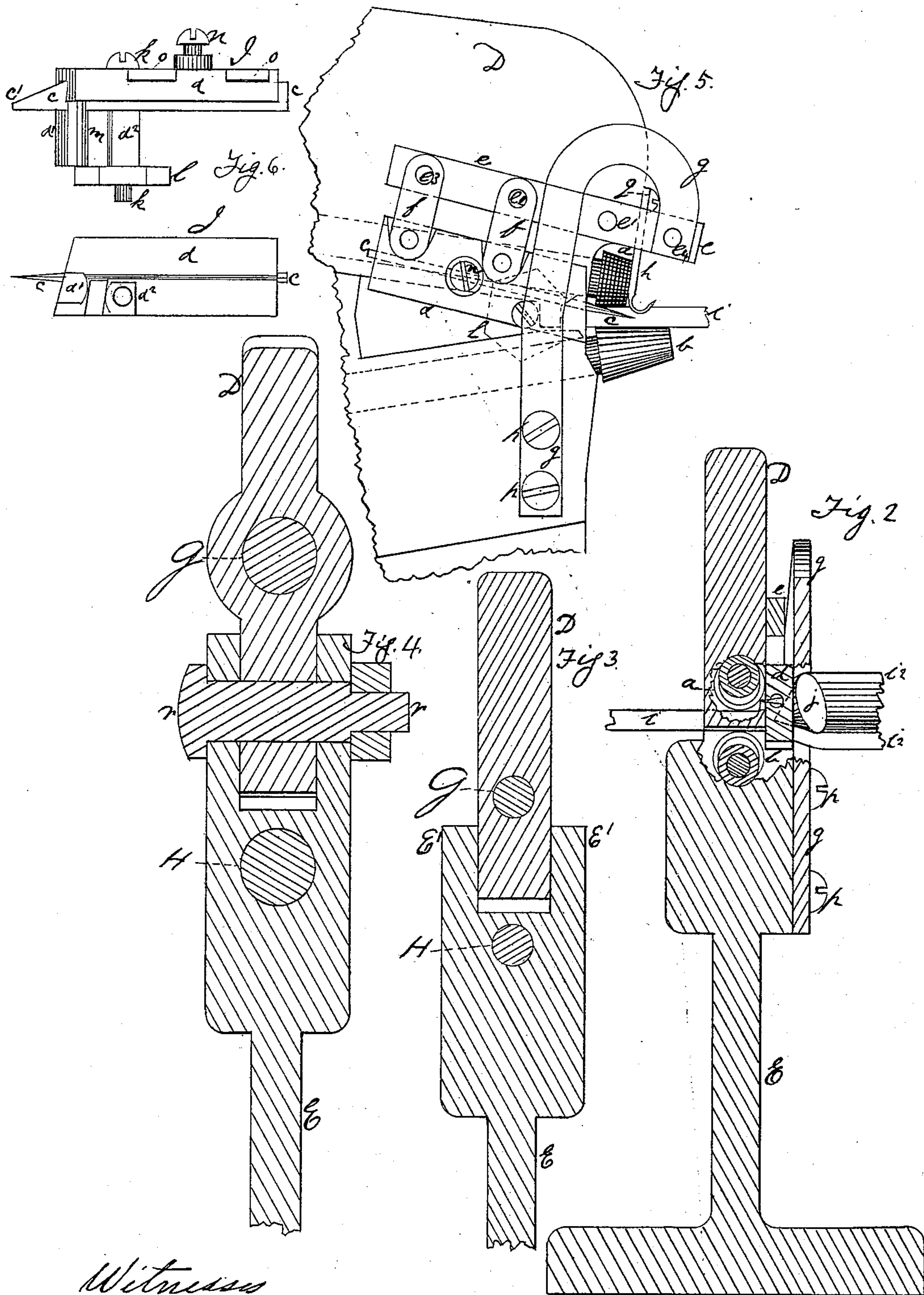
3 Sheets—Sheet 2.

W. WICKERSHAM.

MACHINE FOR SLITTING AND PREPARING SOLES FOR TURNED SHOES.

No. 342,890.

Patented June 1, 1886.



Witness  
Henry J. Jennings  
J. E. Day

Inventor  
William Wickersham



(No Model.)

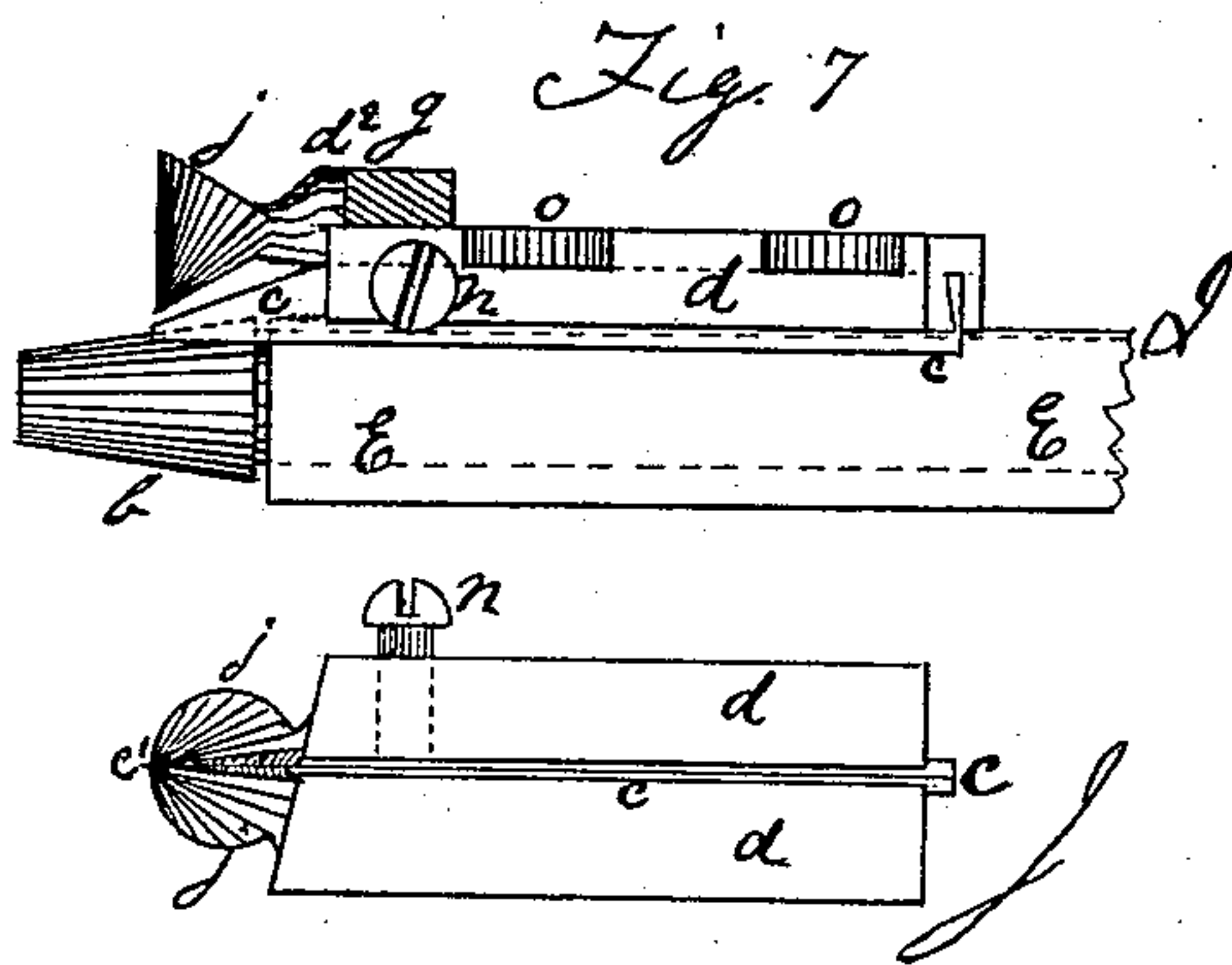
3 Sheets—Sheet 3.

W. WICKERSHAM.

MACHINE FOR SLITTING AND PREPARING SOLES FOR TURNED SHOES.

No. 342,890.

Patented June 1, 1886.



Witness  
L. P. Stone  
M. E. Stone

Inventor  
William Wickersham

# UNITED STATES PATENT OFFICE.

WILLIAM WICKERSHAM, OF WORCESTER, MASSACHUSETTS.

MACHINE FOR SLITTING AND PREPARING SOLES FOR TURNED SHOES.

SPECIFICATION forming part of Letters Patent No. 342,890, dated June 1, 1886.

Application filed November 16, 1885. Serial No. 182,911. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM WICKERSHAM, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Machinery for Slitting and Preparing Soles for Turn-Shoes, of which the following is a specification.

The first feature of my invention relates to the position of the knife while cutting a slit from the edge of the sole toward the middle; and it consists of a lever fulcrumed to the jaw which carries the upper feed-roll, and also connected by two or more links to the stock which holds the knife, and also has its outer end hinged to a bar or stand attached to the jaw which holds the lower feed-roll in such manner that when the said sole is passing toward the knife and a thinner part of the leather comes to it the two feed-rolls come nearer to each other, causing the outer end of the knife to move downward, while the point will keep its position as to elevation, thereby changing its angle to a less incline to the plane of the sole.

The second feature of my invention relates to the knife-stock; and it consists of a stock or bar with a longitudinal groove in it suitable for the knife-blade to slide in, so that when the point of the knife is worn or ground off shorter the blade can be so adjusted again and secured in the stock as to have the same length of point project beyond the end of said stock.

The third feature of my invention relates to a device for cutting a small channel on the upper side of the sole and over the inner part of the slit in the edge of the sole; and it consists of a blade attached to the upper jaw or part which holds the upper feed-roll with an edge on the lower end suitably formed, in connection with the feed or its equivalent, to cut said channel as the sole is moved forward by the feed.

The fourth feature of my invention relates to a device for opening the slit as it is cut in the edge of the sole; and it consists of a cone-shaped instrument attached to the end of the knife-stock or secured in any other equivalent way in its position just back of the knife, in such manner that as the slit is made by the

knife it will be immediately opened by the cone, in connection with the feed which moves the sole forward as the cone opens the slit.

Referring to my drawings, Figure 1 is a longitudinal and vertical section. Fig. 2 is a vertical section in the dotted line A. Fig. 3 is a vertical section in the line B. Fig. 4 is a vertical section in the line C. Fig. 5 is a side elevation of the working end of the machine on the opposite side from Fig. 1. Fig. 6 shows an inside and top view of the knife and knife-stock.

In describing the parts of my machine D is the upper jaw or part which holds the upper feed-roll.

E is the lower jaw and support of the machine.

F F are the two gears which connect and give motion to the two shafts G and H.

a is the upper and b is the lower feed-roll. c is the knife which cuts the slit in the edge of the sole.

d is the knife-stock.

e is the lever connected to the knife-stock, and f f are the two links connecting said knife-stock with the lever e. Said lever is also hinged on the fulcrum-pin e', and also connected at the outer end to the stand g by the pin e'', all in such manner that when the upper jaw, D, is pressed downward by the foot on a treadle or by a spring, and the feed-rolls are revolving, carrying a sole between them, in the edge of which a slit is being cut by the knife c, and when as it passes there comes a thinner part of the sole between the rolls, the two rolls approach nearer to each other to adapt themselves to the thinner part, the part of the lever e at e' is held in a fixed position by the stand g, attached to the lower jaw, E, and the part of the lever at e', being hinged to the jaw D, goes down with it, but the part e'' moves twice as far down as e', and the part at e''' moves three times as far down as that at e', and this lever e being connected with the knife-stock d, so as to give the knife-stock and knife a parallel motion with the lever e, so that the projecting part of the knife c will move down with the feed-roll a, the back end of said blade will move down three times as much, and in this manner bring the knife-



blade automatically nearer to a parallel to the plane of the sole, and the slot cut in its edge will not be cut at so great a diagonal to said plane, which is very desirable, as otherwise the point of the knife will cut the sole too near through at the under side; and if it is desirable to have the angle of the knife change more as the part of the sole passing through the feed becomes thinner, then the two pins  $e'$  and  $e''$  must be placed nearer to each other, and in this way any desirable angular movement of the knife may be automatically attained.

$h$  is the knife which cuts a small channel in the upper side of the sole, just above the inner part of the slit, making the upper part of the split sole more flexible than it would be otherwise, which is a very desirable thing, for if it is left its full thickness it is difficult, if not impossible, to bend it out far enough to attach it to the upper properly; but when the said channel is cut it can readily be opened, as shown at  $i''$ , Fig. 1, with the channel at  $i'$ .

At  $j$ , Fig. 2, is a conical instrument attached to the end of the knife-stock with its apex close behind the knife  $c$ , which slits the sole, and the side of the cone which opens the split is parallel to the split, or nearly so, so that the opening begins at the point of the cone and widens as the cone widens toward its base in the direction of the movement of the split edge of the sole  $i$  just back of the knife  $c$ .

An inside and top view of the knife-stock  $d$  and knife  $c$  are shown at Fig. 6, the top view at I, and the inside view at J, where the edge of the knife  $c$  is shown to pass a little outside of the stock through a narrow slot from one end to the other of the stock, and it is ground off to a point at  $c'$ , where it projects far enough to cut the slit  $i''$  in the edge of the sole. The projection  $d'$  on the inside of the stock answers for a guide for the edge of the sole as it is fed to the knife, and the projection  $d''$ , passing from one side of the jaw D to the other, and through which passes the screw  $k$ , having a nut,  $l$ , screwed on the opposite end to the stock, is a convenient device for holding the knife-stock secure in its position on the right-hand side of the jaw D, and then there is a projection downward from said jaw into the space  $m$ , so as to secure the knife and stock from moving endwise, so that when the edge of the sole  $i$  is pressed against the projection  $d'$  said projection will be a permanent guide as the sole is fed to the knife  $c$ .

The knife  $c$ , when properly adjusted, is secured in its position in the stock by the set-screw  $n$ . The spaces  $o o$ , cut in the sides of the stock  $d$ , are for the ends of the links  $f f$  to rest in, as shown at Fig. 6; also shown at Fig. 5. The stand  $g$  is attached to the lower jaw, E, by the screws  $p p$ , and is hinged to the lever  $e$  by a pin at  $e''$ . The channel-knife  $h$  is attached to the front end of the jaw D by the screws  $q q$ . The jaw D is hinged to the jaw E by the bolt  $r$ , as shown at Figs. 1 and 4. The front end of the jaw D is secured against

any lateral motion by passing between the two lips  $E' E'$ , as shown in Fig. 3. The jaw D is pressed down, giving a downward pressure to the feed-roll  $a$ , onto the sole, by a treadle through the rod K, operated by the foot.

Having described the different parts and their functions, I will explain their operation. In giving motion to the two gears F F by the crank-pin L the surfaces of the two feed-rolls  $a$  and  $b$  in contact with the sole  $i$  will move in the same direction, carrying the sole  $i$  (the edge of which is held against the guide  $d'$ ) continuously against the edge of the knife  $c$ , thereby making a split in its edge all the way round; but just as each part of the sole leaves the knife with a slit in its edge the slit enters onto the cone-shaped instrument  $j$ , by which it is opened, as shown at  $i'' i''$ , Fig. 2, and at  $i$  in section at Fig. 1, so that the slit is both made and opened ready to attach to the upper by the same movement between the feed-rolls, and also by the same movement the channel  $i'$  is cut out of the top surface of the sole by the knife  $h$ , making three operations performed by one and the same feeding movement. It will be noticed that the two shafts G and H are inclined to each other. This inclination answers two important purposes: First, it makes it possible to use very small feed-rolls, by means of which the knife  $c$ , which cuts the slit, may be very close to the rolls, so that the leather will not have a chance to bend between the rolls and the knife, but will be kept firm at the knife's edge; but with large feed-rolls this cannot be, and with parallel feed-shafts the feed-rolls must be too large to answer this desirable purpose; second, by having inclined feed-shafts the feed-rolls may be in the form of frustums of cones, which will give the greatest feeding movement at the edge of the sole and less toward its middle. This is of great advantage around the heels and toes of the sole, facilitating very much both the feeding and cutting of the slit around these parts, which are the most difficult.

Fig. 7 on Sheet 3 of my drawings illustrates more fully the cone  $j$  and its connection with the knife-stock  $d$ , and the positions of the knife  $c$ , the knife-stock  $d$ , the cone  $j$ , and the lower jaw, E, with its feed-roll  $b$ . In this drawing, at Fig. 7, I show a somewhat different construction of the knife-stock. As at Fig. 6, the knife-stock is held in its position against the side of the jaw E by the screw  $k$  and the nut  $l$ , but these are dispensed with in Fig. 7, where I use the bar  $g$  for the same purpose; also, in Fig. 6 I use the projection  $d'$ , to prevent the knife-stock from moving back or away from the sole, but at Fig. 7 I use the projection  $d''$ , which rests against the bar  $g$ , for the same purpose. I also put the screw  $n$ , which secures the knife  $c$  in the stock, in a different position, but I have made no change in the construction which will change the functions of the knife  $c$ , the knife-stock  $d$ , or the cone  $j$ , or their relation to each other.



In Fig. 7 I use the same letters for similar parts as in the other drawings.

Having described my invention, I will state my claim, as follows:

5 1. The lever *e*, fulcrumed to the jaw *D*, and connected by two or more links, *f f*, to the knife-stock *d*, in combination with the stand *g*, for the purpose of automatically changing the incline of the knife *c* to the plane of the  
10 sole as parts thicker or thinner of said sole pass through the feed, substantially as described, and for the purpose set forth.

15 2. A knife, *c*, having its incline to the plane of the sole automatically changed by the varying thickness of parts of the sole as they pass through the feed, in combination with the two feed-rolls *a* and *b*, as and for the purpose set forth.

20 3. The knife *h*, for cutting a channel, *i'*, in the side of the sole some distance from its edge and over the inner portion of the slit *i''*, in combination with the two feed-rolls *a* and *b*, substantially as described, and for the purpose set forth.

4. The knife *c*, in combination with the knife *h*, and the feed-rolls *a* and *b*, to cut the slit *i''* 25 in the edge of the sole and the channel *i'* in the side of the sole some distance from its edge and over the inner part of the slit *i''* at the same time and with one movement by the feed-rolls, 30 substantially as described, and for the purpose set forth.

5. The cone *j*, in combination with the feed-rolls, to open the slit *i''* in the edge of the sole as the feed progresses, as and for the purpose 35 set forth.

6. In sole-slitting machines, the knife *c*, the cone *j*, and the knife *h*, in combination with the feed-rolls *a* and *b*, for cutting the channel *i'*, for slitting the edge of the sole and opening 40 the same, as shown at *i''*, all at the same time and with the same feeding movement, substantially as described, as and for the purpose set forth.

WILLIAM WICKERSHAM.

Witnesses:

HENRY J. JENNINGS,  
J. E. DAY.