(No Model.)

5 Sheets—Sheet 1.

H. SCHÜRHUBER.

PEGGING MACHINE.

No. 308,203. Patented Nov. 18, 1884.

Fig. 1.

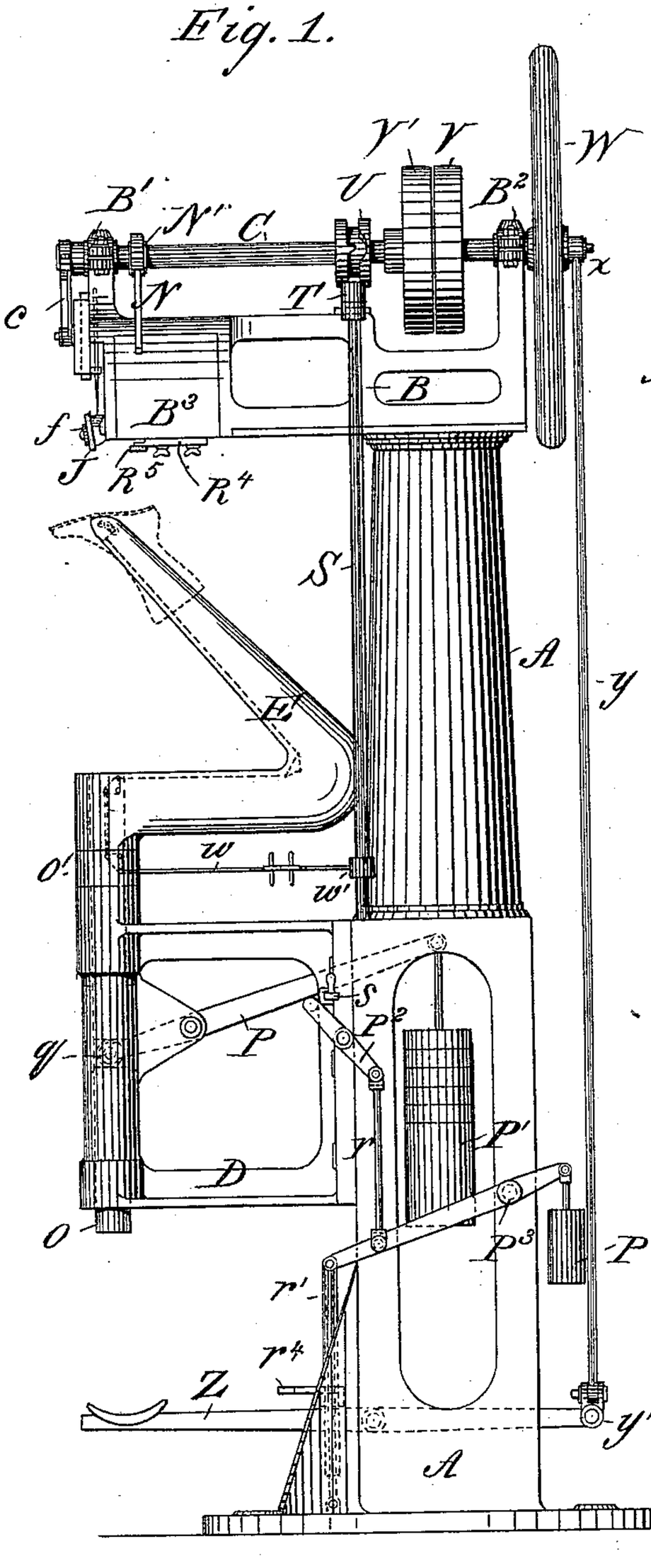
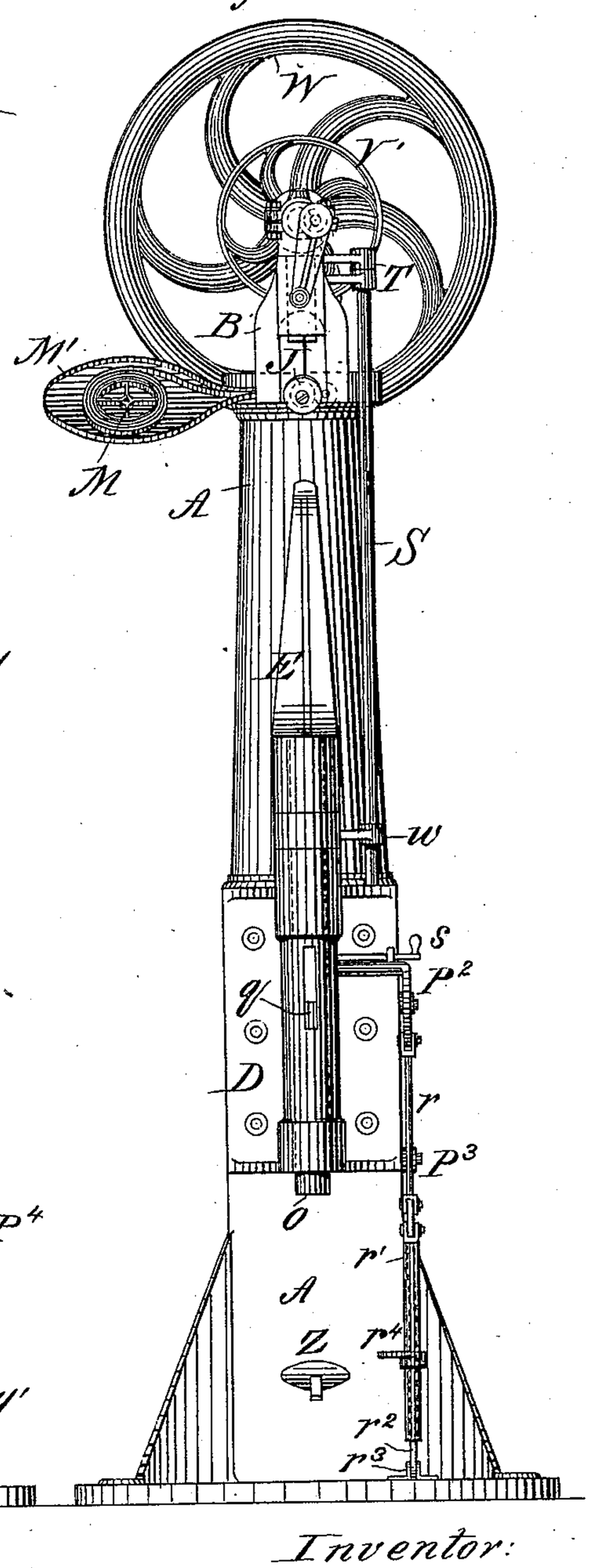


Fig. 2.



Witnesses:
C. Sedgwick
A. Lurcott

Inventor:
H. Schürhuber
By Munn & Co
Attorneys.

(No Model.) 5 Sheets—Sheet 2.

H. SCHÜRHUBER.

PEGGING MACHINE.

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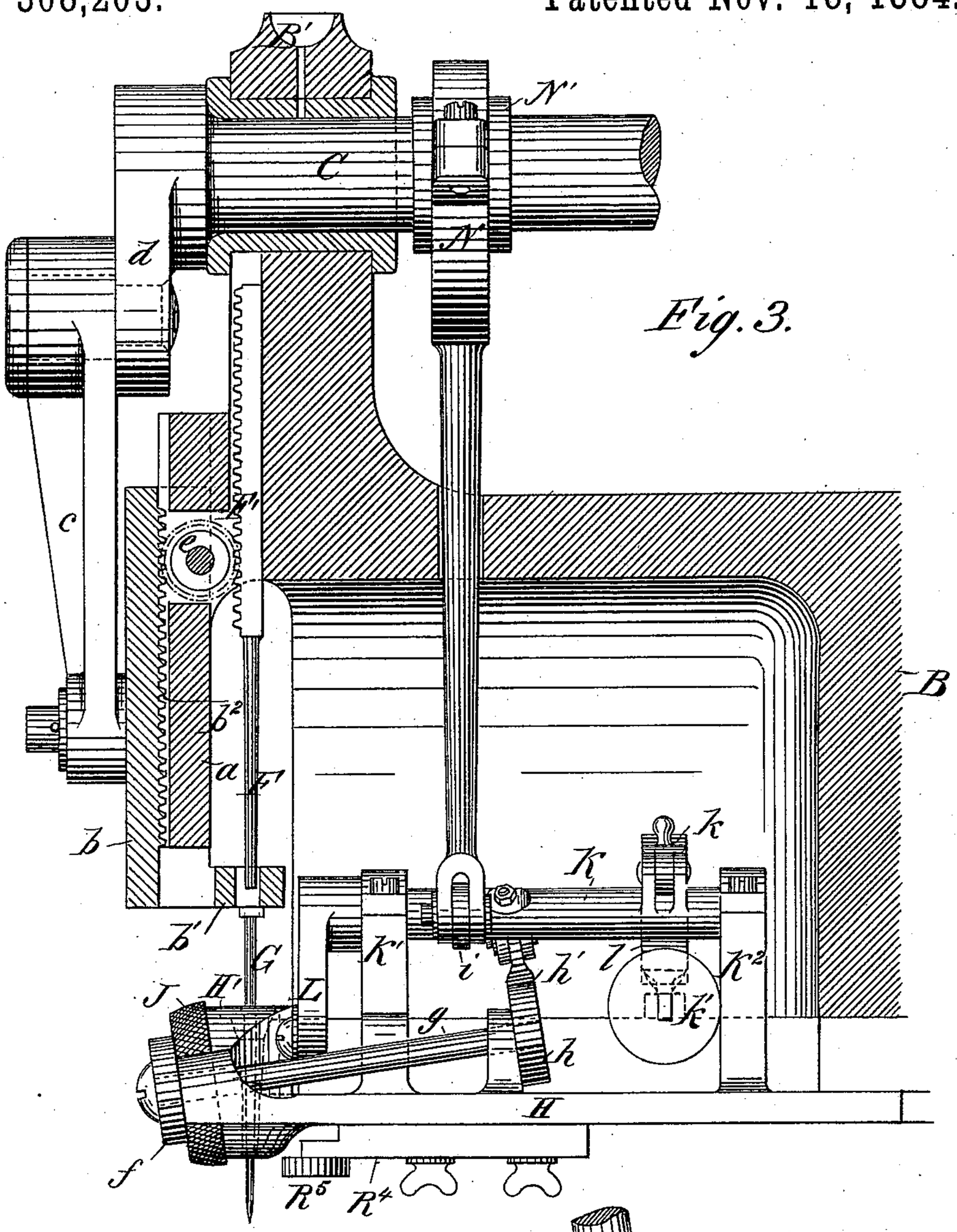

Fig. 3.

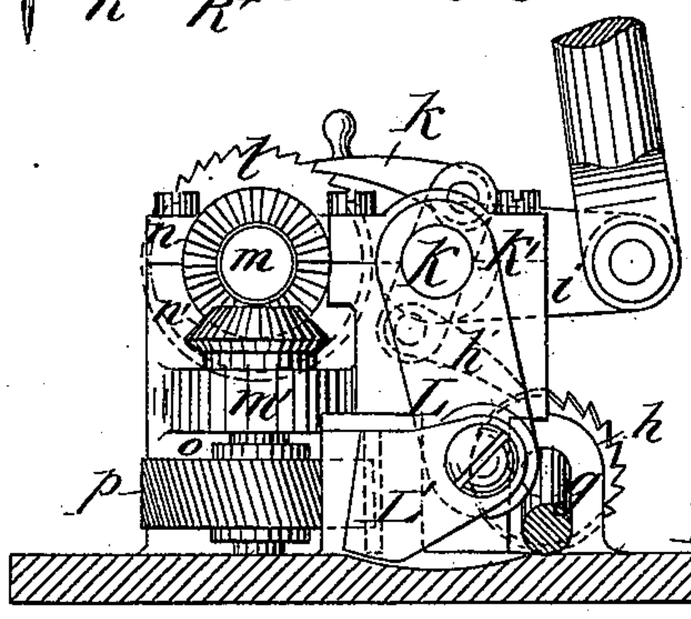

Fig. 4.

Witnesses
C. Sedgwick
A. Lurcott

Inventor:
H. Schürhuber
By Munn & Co
Attorneys.

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H. SCHÜRHUBER.

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Fig. 5.

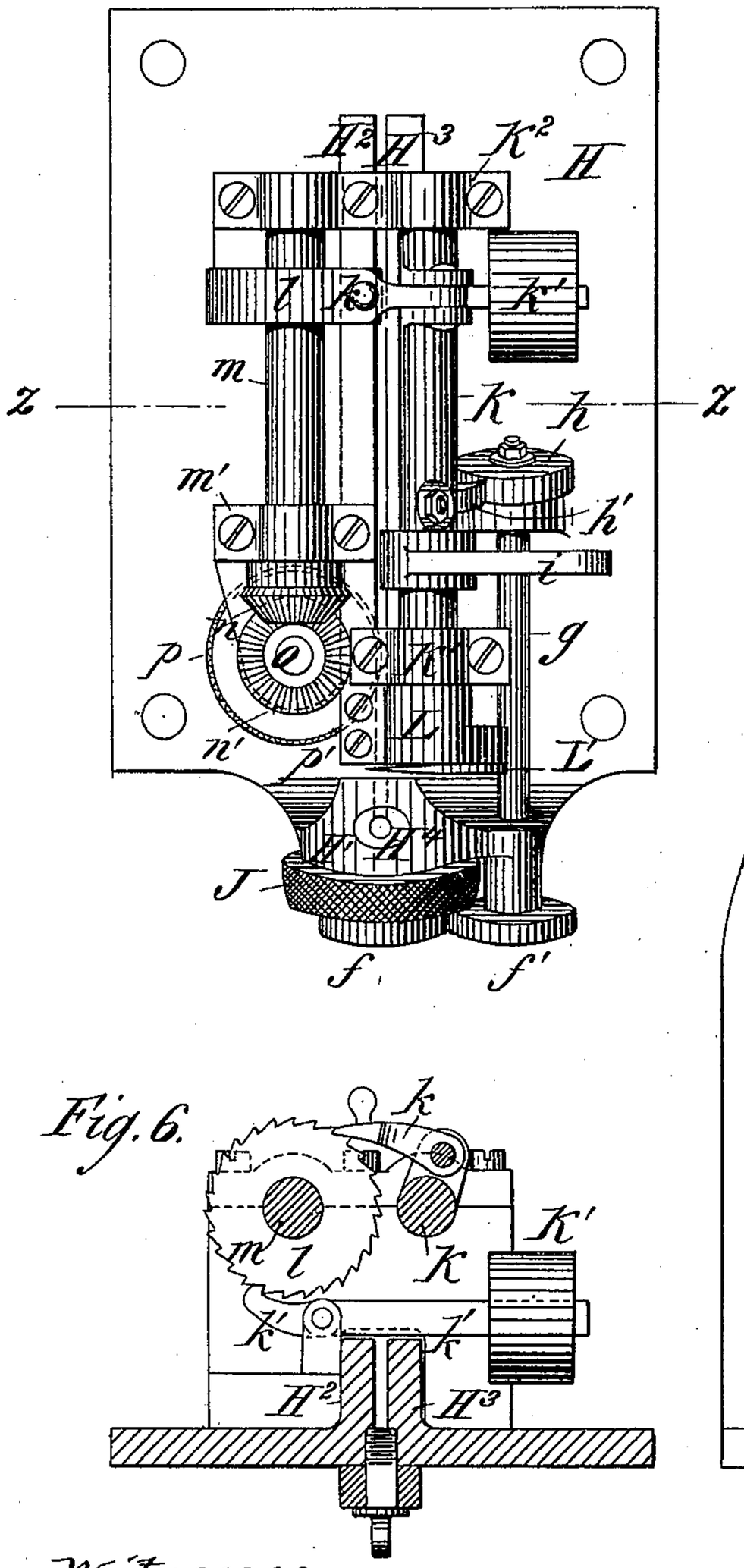

Fig. 6.

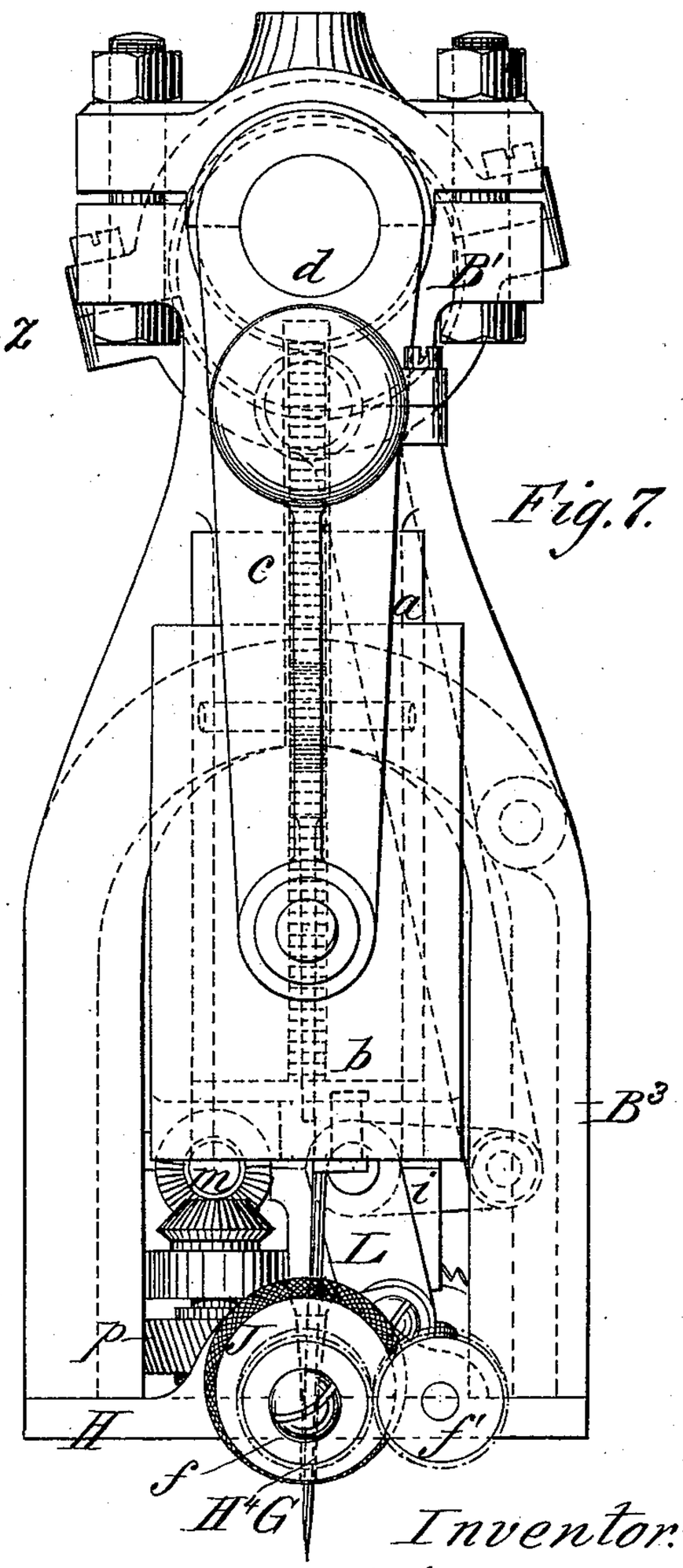

Fig. 7.

Witnesses:
C. Sedgwick
A. Lurcott

Inventor:
H. Schürhuber
By Munn & Co.
Attorneys.

(No Model.)

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H. SCHÜRHUBER.

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Fig. 8.

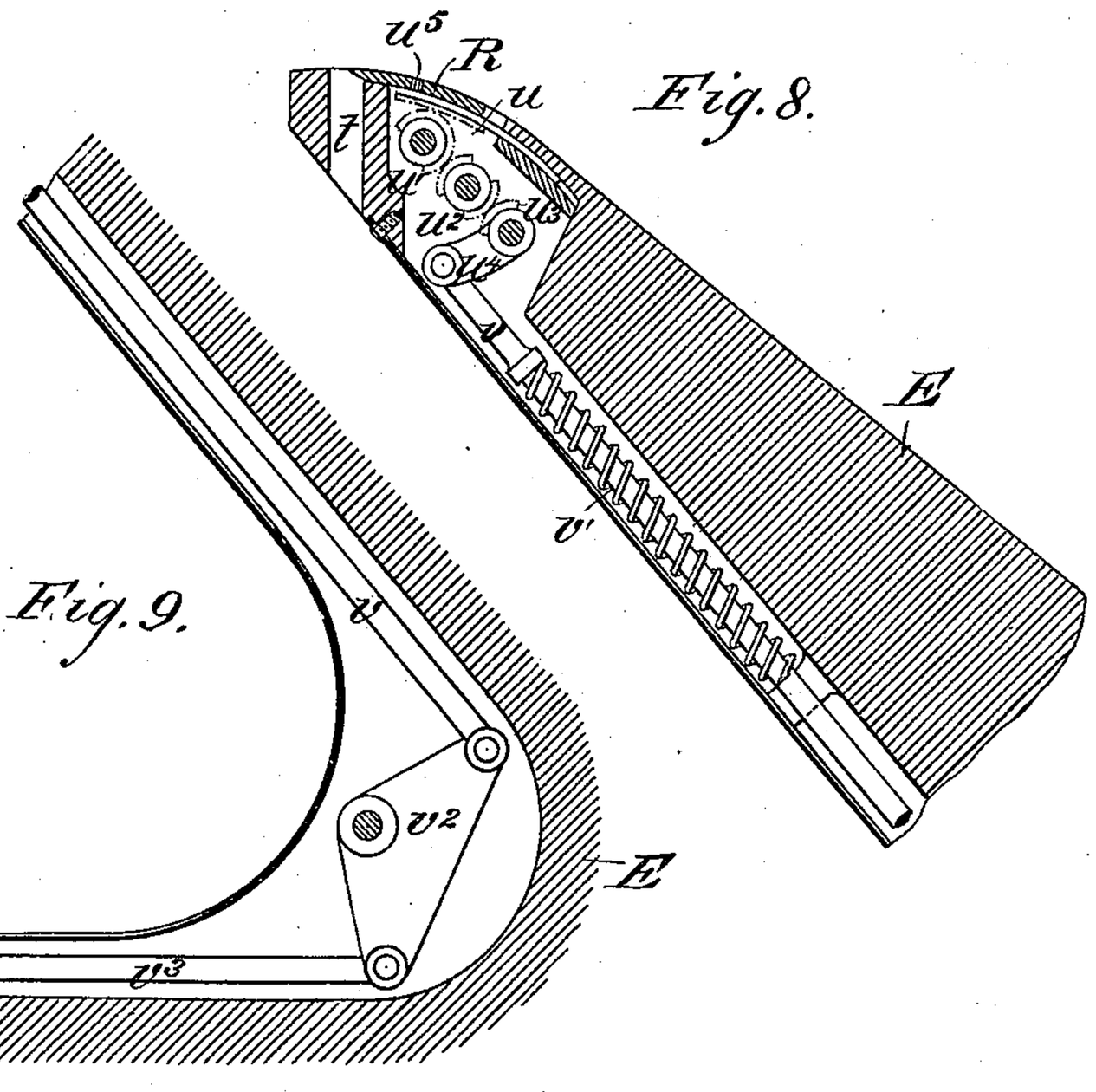
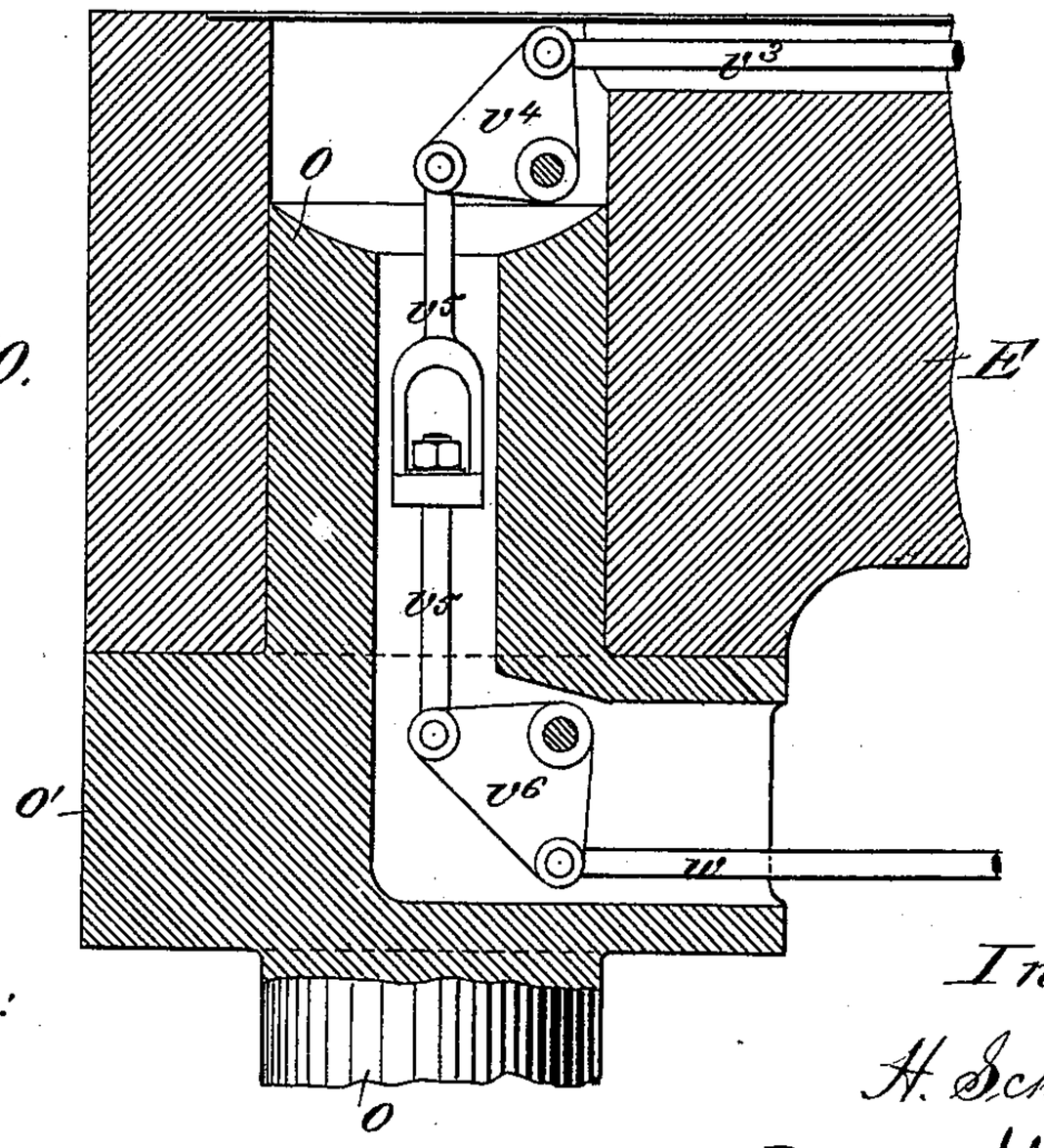


Fig. 9.

Fig. 10.



Witnesses:
C. Sedgwick
A. Lurcott

Inventor:
H. Schürhuber
By Munn & Co
Attorneys.

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H. SCHÜRHUBER.

PEGGING MACHINE.

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Fig. 11.

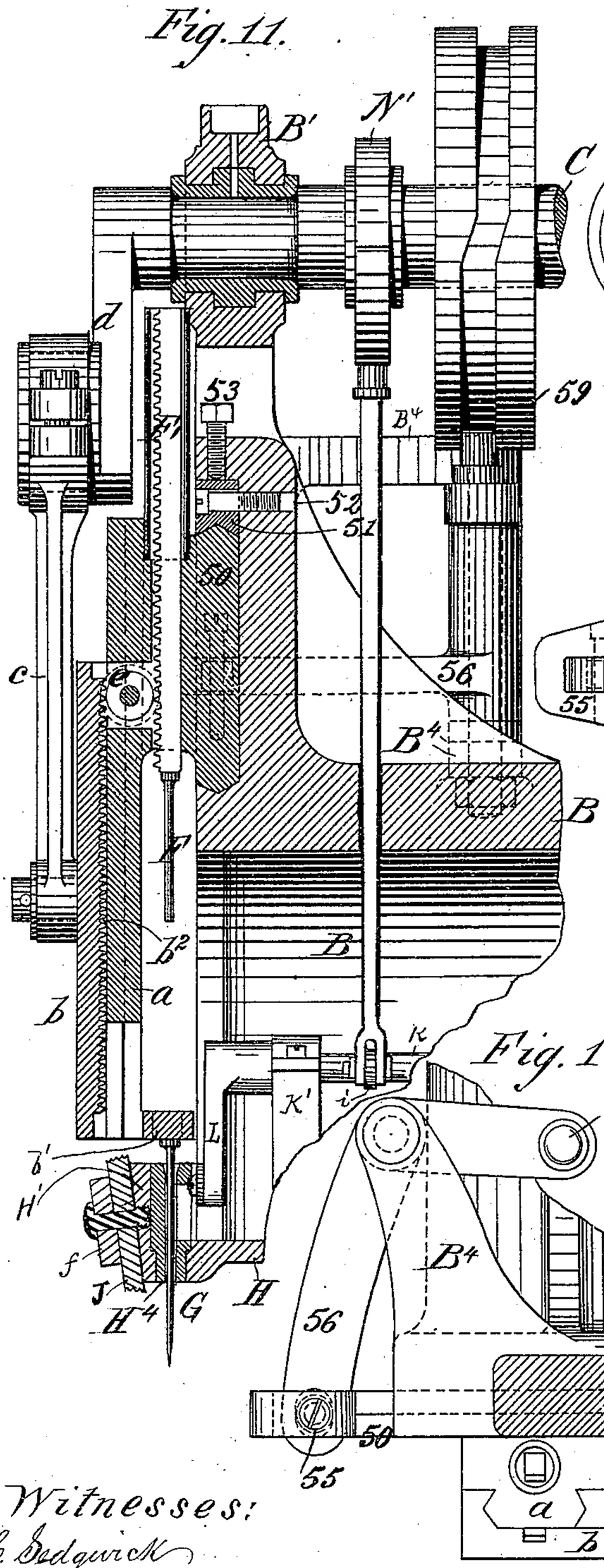

Fig. 12.

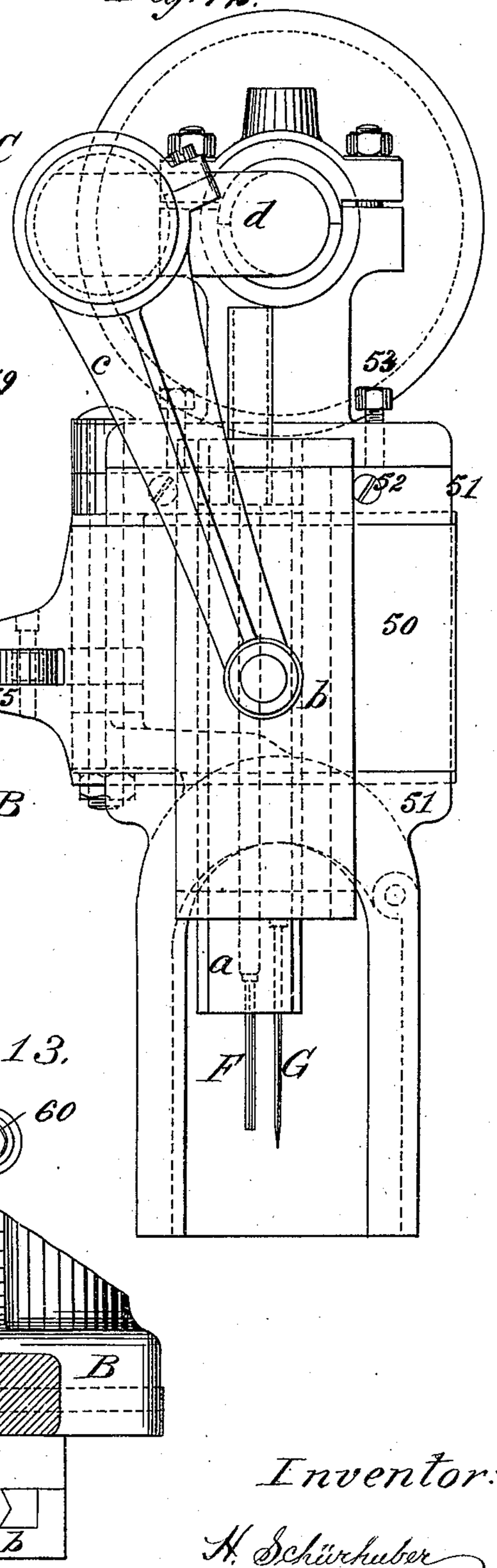

Fig. 13.

Witnesses:
C. Sedgwick
A. Lurcott.

Inventor:
H. Schürhuber
By Munn & Co
Attorneys.

UNITED STATES PATENT OFFICE.

HANS SCHÜRHUBER, OF VIENNA, AUSTRIA-HUNGARY, ASSIGNOR OF ONE-HALF TO MAX A. WOLF, OF SAME PLACE.

PEGGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 308,203, dated November 18, 1884.

Application filed August 28, 1883. (No model.) Patented in Germany October 17, 1882, No. 22,605, and in Austria-Hungary November 30, 1882, No. 35,365 and No. 48,713.

To all whom it may concern:

Be it known that I, HANS SCHÜRHUBER, a citizen of Austria-Hungary, residing at Vienna, in the Province of Nether Austria, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Shoe-Pegging Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The object of my invention is to provide a new and improved shoe-pegging machine for fastening soles to shoes of all kinds, perfectly, rapidly, and with an elegant finish.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side view of my improved shoe-pegging machine. Fig. 2 is a front view of the same. Fig. 3 is an enlarged longitudinal sectional view, showing the feeding device and the awl and pegging-rammer operating mechanism. Fig. 4 is a face view of the peg-cutting mechanism. Fig. 5 is a plan view of the feeding and peg-cutting device. Fig. 6 is a cross-sectional elevation of the same on the line *z z*, Fig. 5. Fig. 7 is an end view of the feeding device and of the casing or box containing the same, and the awl and pegging-rammer operating mechanism. Fig. 8 is a longitudinal sectional elevation of the upper end of the horn. Fig. 9 is a longitudinal sectional elevation of the same at the lower bend. Fig. 10 is a longitudinal sectional elevation of the lower end of the horn. Fig. 11 shows a longitudinal sectional elevation of a modification of the mechanism for operating the awl and pegging-rammer. Fig. 12 is an end view of the same. Fig. 13 is a sectional plan view, parts being broken out.

The top of the standard A is provided with a pillow-block or support, B, at each end of which journal boxes or bearings B′ B² are provided for the main shaft C.

To the squared base of the standard A a laterally-projecting bracket, D, is fastened, on which the horn E for receiving the shoe is held. The front part of the pillow block or support B is hollowed out to form a case, as shown in Figs. 1, 2, 6, and 7, which contains the mechanism for making the wooden pegs, and at the same time causing the regular and uniform movement of the shoe. The front surface of the support B carries a sliding carriage, *b*, adapted to slide up and down on a guide-plate, *a*, and connected with a crank, *d*, on the main driving-shaft C by a connecting-rod, *c*, so that when the main shaft is revolved the carriage *b* will slide up and down. The lower end of the carriage or slide *b* embraces the guide *a*, and is provided with an apertured extension, *b′*, through which aperture the pegging-rammer F can pass, and thus serve as a guide for the pegging-rammer. Adjoining the said guide-aperture the awl G is fastened to the bottom of the slide *b*, and projects downward. A rack, b^2, is formed on the inner surface of the slide *b*. A pinion, *e*, is journaled in the guide-plate *a*, and engages with the rack b^2 and also with a rack, F′, on which the pegging-rammer F is fastened. The rack is so arranged within a groove in the support B as to allow the pegging-rammer to move to and fro laterally a distance of about from one-sixteenth to one-eighth of an inch.

In order to avoid the inconvenience of a loose guiding of the pegging-rammer and to make the parts of the machine stronger, the machine can be constructed as shown in Figs. 11, 12, and 13. The awl, as well as the pegging-rammer, is held in fixed guiding mechanisms, and in order to obtain a precise stroke on the peg both of them work in a common guide device, the entire mechanism being movable forward and backward in a space equal to the distance between the awl and the pegging-rammer. The mechanism for cutting and pushing forward the pegs, as well as the mechanism for moving forward the shoe, remains the same as in the original construction, and are arranged in the hollow support B. On the front surface of the support a horizontally-sliding carriage, 50, is arranged on a suit-

able projection, and is held in position by the cheeks 51 and the set-screws 52 and 53. The guide-plate *a*, on which a carriage or slide, *b*, slides, constructed as described above, is held on the carriage 50. After every change of stroke of the awl and pegging-rammer the carriage 50 must be displaced laterally exactly the same distance that the awl is separated from the pegging-rammer, so that after the awl has passed through the aperture H^4 the carriage 50 will be moved such a distance that the pegging-rammer can pass through the aperture H^4. The carriage 50 is extended laterally, and the extended part is provided with a slot in which a pin or roller, 55, is held, which is embraced by the shanks of the forked end of an elbow-lever, 56, the other end of which is provided with a pin, 60, passing into the cam-groove of a disk, 59, mounted on the main shaft C. For each revolution of the shaft C the carriage 50 is displaced twice, to wit: it makes one movement in the direction from the awl to the pegging-rammer, and one movement in the reverse direction, so that for each revolution of the shaft C the awl and the pegging-rammer will be brought once over the guide-aperture H^4. The machine which serves for cutting the pegs also moves the shoe forward on the horn E. The bed-plate H of this mechanism has a sloping front surface, upon which a small roller, J, having a roughened or milled edge, is fitted to revolve, this roller being fixedly connected with a small spur-wheel, *f*, which engages with a like spur-wheel, *f'*, fitted upon a spindle, *g*, held in an inclined position. The spindle *g* carries a small ratchet-wheel, *h*, at its upper inner end, with which ratchet-wheel a pawl, *h'*, engages, which is fitted to a short lever-arm of the shaft K, journaled in the journal-box K', at its front end, and in one end of the pillow-block K^2, at its rear end. Between the two journals the shaft K is provided with an arm, *i*, and at its front end it is provided with the cutting-lever L, carrying the cutter L' for cutting the wooden pegs. The pawl *k* is pivoted to an arm of the shaft K and engages with a small ratchet-wheel, *l*, mounted rigidly on the shaft *m*, which has its rear end journaled in the other end of the pillow-block K^2, while the front end is journaled in a separate journal-box, *m'*.

On the front end of the shaft *m* a bevel cog-wheel, *n*, is mounted rigidly, which engages with a like bevel cog-wheel, *n'*, mounted rigidly on the upper end of a short vertical spindle, *o*, the lower end of which rests on the bed-plate H, and on which spindle the feeding disk or wheel *p* is mounted, which feeds the wooden band to the cutter L'. The wooden band is passed from the rear in between the guides H^2 H^3 of the bed-plate, and is caught by the inclined teeth of the feeding-wheel *p*, and is periodically shoved forward to the cutter L', so that for every partial revolution or turn of the feeder-wheel a piece of the wood corresponding to the width or thickness of a peg is pushed under the cutter and is cut off by the same.

In order to insure the proper feeding of the wooden band, the ratchet-wheel *l* is provided with an additional pawl, *k'*, for holding the ratchet-wheel in the desired position after it has been revolved the distance of one tooth by the pawl *k*. The feeding-wheel *p* not only serves to feed the wooden band, but also to hold it down to prevent it from coming out from between the guides H^2 H^3. The guide-hole H^4 is either conical—that is, its diameter decreases from the top toward the bottom—or it can be made tubular, and only have an enlargement at the upper end. The guide-hole H^4 communicates by means of a channel or duct with the space between the guides H^2 H^3, thus permitting the free passage of the peg that has just been cut off from the wooden band, the hole also serving as a guide for the peg.

The described mechanism is operated by means of an eccentric rod, N, the lower end of which is pivoted to the short arm *i* of the shaft K. The upper end of the rod N is fastened by means of a circular strap on an eccentric disk, *n'*, on the main shaft *c*, and it is evident that the revolution of the disk N' gives a vertically-reciprocating movement to the rod N. The wooden band is made of a cross-grained wooden disk cut by means of a belt-saw into a continuous uniform spiral band, which is rolled up in the form of a coil. The height of the disk corresponds with the length of the pegs. The coiled wooden band is placed upon a spool, M, so that the spool forms the core of the coil and facilitates the unwinding of it. The spool M is pivoted in a plate, M', serving as a support both to the spool M and to the wooden coil. From the plate M' the wooden band is conducted through a slot in the support to the guides H^2 H^3.

The above-described mechanism imparts a rectilinear advancing motion to the shoe on the horn E; but it must be turned on the end of the horn, so that all the pegs will be driven into the sole parallel with the edge of the same. For this purpose the bed-plate H is provided with a small stay-plate, R^4, having a roller, R^5, which slides along the edge of the sole and causes the pegs all to be inserted a certain distance from the edge of the sole. The horn E is mounted to turn in its bracket, and to allow this movement the bracket D is provided with a spindle, O, arranged to have an up-and-down movement and provided with a wide collar, O', serving as a support for the horn E. When the spindle O is at rest, the collar O' rests upon the arm of the bracket D. The horn E is placed on the top end of the spindle O above the collar and can be turned in a horizontal plane in any desired direction. As soon as the shoe is placed upon the horn and the machine is started, the horn E must be raised until the sole of the shoe touches the roughened surface of the little roller or disk J. For this pur-

pose the spindle O is provided with a notch, in which a small roller, *q*, moves, which is pivoted on the front arm of the lever P, which lever is pivoted to the side of bracket D, and has a counterbalancing-weight, P′, suspended from its inner end, which weight can be increased or decreased by adding or removing disks. The weight of the spindle O, together with the weight of the horn E, is balanced, and then some surplus weight is added, in order to give the said spindle O an upward pressure.

In order to insure an easy down movement of the horn E, a small lever, P^2, is pivoted to the side of the bracket D, one end of the same being adapted to act on the lever P and to press it upward, and the other end being pivoted to a connecting-rod, *r*, the lower end of which is pivoted to a lever, P^3, pivoted to the base of the standard. A counter-weight, P^4, hangs on the end of the lever P^3, and the other end is pivoted to a hollow rod, *r′*, sliding on a guide-rod, r^2, which guide-rod is pivoted at r^3, so that it can oscillate and can follow the movements of the hollow rod *r′*. The rod *r′* is provided with a treadle, r^4, by treading upon which the movement is transmitted to the entire above-described lever mechanism. The weight P^4 balances the dead weight of the last-described lever mechanism. On the bracket D a sliding stop-bolt, *s*, is held, which serves to lock the lever P where the counter-weight P′ has reached its highest position, and consequently the horn E in its lowest position.

In order to lift the horn from its lowest position, as shown in Figs. 1 and 2, into a higher one, and thereby to bring the shoe-sole in contact with the roughened surface of the feeding-roller J, the bolt *s* must be withdrawn, thus permitting the counter-weight P′ to pull down the rear arm of the lever P, and thereby the horn E is raised. In order to lower the horn when the shoe is pegged, the operator treads on the treadle r^4, whereby the rear arm of the lever P is raised by the lever P^2, and thus the horn is lowered. If desired, the lever mechanism can be locked in this position by pushing forward the locking-bolt *s*. The horn E not only serves to hold the shoe, but also contains mechanism for cutting off the inwardly-projecting ends of the pegs. The upper end of the horn is provided with a hole, *t*, which, when the machine is at work, corresponds exactly with the guide-hole H^4, and into this hole *t* the point of the awl and the pegging-rammer pass alternately. In the upper part of the horn is placed a cutter, R, corresponding exactly with the curve of the horn, and which is adapted to slide forward and backward. When the cutter moves forward, it cuts off the points of the pegs that have entered the hole *t*. A curved rack, *u*, is held in the horn and is provided with a pin, u^5, which extends into the cutter, so that the latter will move with the rack. The teeth of the rack engage with the teeth of a pinion-segment, *u′*, which engages with a second pinion-segment, u^2, which in turn engages with a third pinion-segment, u^3, to which is connected a short arm, u^4. The other or free end of this arm is connected with drawing-rod *v*, moving in a groove in the inner surface of the horn E. By means of a spiral spring, *v′*, one end of which bears against a lug of the horn and the other against a collar of the rod *v*, the said rod is forced upward, and this movement is transmitted by the arm u^4 and the segment-pinions u' u^2 u^3 to the rack *u*, whereby the cutter R is drawn backward and the hole *t* opened. In the angle of the horn an elbow-lever, v^2, is pivoted, which has one end connected with the rod *v* and the other end with a rod, v^3. In the upper part of the recess in the horn that receives the upper end of the spindle O, a second elbow-lever, v^4, is pivoted, which is connected by the rod v^3 with the elbow-lever v^2, and is also connected by means of a small swivel-rod, v^5, passing through an opening in the spindle O, with an elbow-lever, v^6. The rod v^5 is provided with a swivel-joint, which permits of turning the horn E on the top of the spindle O without interrupting or interfering with the connection between the cutter R and the spindle or other parts of the mechanism outside of the horn.

To the elbow-lever v^6 a connecting-rod, *w*, is pivoted, which rod is provided with screw-joints for adjusting its length. This connecting-rod *w* is pivoted to a lever, *w′*, on a spindle, S, the lower end of which spindle rests upon the top of the base of the standard A. The upper end is journaled in a projection of the support B, and is provided with a crank, T, having at its end a pin proj cting into a cam-groove of a disk, U, mounted on the shaft C. This groove has a single sudden swelling or nose, the length of which is equal to about one-fifth of the circumference of the disk. For each revolution of the shaft C, the crank T, the spindle S, the lever *w*, the several connecting-rods and elbow-levers, and the cutter R are moved only once, so that for each revolution of the shaft C the cutter R cuts off a single peg end projecting through the hole *t*.

The machine can be operated by foot or by power from a motor, and to transmit the power to the machine I have provided a loose and tight pulley, V and V′, respectively, in the shaft C.

To operate the machine by foot-power, I have provided a fly-wheel, W, having a crank, X, upon which is a connecting-rod, *y*, the lower end of which is fitted by means of a joint, *y′*, to a treadle-lever, Z, journaled to the base of the standard.

The operation is as follows: A shoe, previously fitted up in a suitable manner, is placed with its leg downward upon the top of the horn, so that the sole will be upward. Then the said stop-bolt *s* is drawn back, the counter-weight P′ goes down and lifts, by means of lever P, the spindle O, together with the horn E, till the shoe-sole touches the roughened surface of roller J. The edge of the sole is then

pushed against the roller R^5 of the stay-plate R^4, and the stay-plate R^4 is fastened in a position corresponding to the desired distance between the row of pegs and the edge of the sole. The coiled wooden band is then placed upon the spool M, and spool M is placed upon its pivot on the plate M'. The end of the wooden band is then shoved through the above-mentioned groove in the bottom of support B, between the two guides H^2 and H^3 of the bed-plate H, behind the feeding-roller *p*, till it finally reaches the cutter L' of the lever L. The continuous advancing of the wooden band is then caused by the rotation of roller *p*. As soon as the machine is operated, either by foot-power or by some mechanical power, the crank *d* of the main shaft C moves downward. Through this downward movement of the crank *d* the sliding carriage *b*, jointed to it, also does down, whereby the awl G is passed through the conical hole H^4 and driven into the leather of the sole. The further rotation of main shaft C again raises the crank, and with it the sliding carriage *b*. The awl G is withdrawn from the hole H^4 after having made a hole in the leather. Then the pegging-rammer F moves downward, enters the conical hole H^4, and is pushed somewhat lateral, so as to follow the contours of the hole H^4. At the same time the revolution of eccentric N' has thrown into gear the peg-cutting mechanism by means of the eccentric rod N. The cutter L' has separated from the end of the wooden band a single wooden peg, which, by the advancing movement of the wooden band caused by feeding-roller *p*, is pushed through the connecting canal into hole H^4. The pegging-rammer F in going down thus strikes the top of the peg, pushes it downward, and drives it into the hole previously made in the sole by the awl.

In applying the modified arrangement represented in Figs. 11, 12, and 13, the working of the described mechanism is as follows: At the lowering of crank *d* the awl G pierces a hole in the sole, whereafter it is withdrawn, and the whole mechanism receives, by means of bent lever 56 and the groove of the cam-disk 59, a lateral movement. Through this lateral movement the pegging-rammer F in coming down enters hole H^4, strikes the top of the wooden peg, and drives it down into the hole made by the awl. When the pegging-rammer is withdrawn, the whole mechanism makes a lateral movement in the opposite direction, the awl is again placed above the hole H^4, and in lowering pierces the following hole in the sole of the shoe. The end of the wooden peg projecting upon the inner surface of the shoe is then cut off by the cutter R, placed inside the top of the horn. For this purpose cam-disk U is fitted upon main shaft C in such a manner that at the very moment when crank *d* and sliding carriage *b* recommence their downward stroke and the pegging-rammer F begins to move upward the nose or swelling of the groove of cam-disk U comes into contact with the top pin of crank T and the spindle S, the lever *w'*, the rod *w*, all the described bent levers and connecting-rods disposed inside the horn, and, finally, the little pinion segments and the rack *u* are all operated, whereby the cutter R is pushed forward, so as to cut off evenly the point of the peg that has pierced the hole and projects from inside the shoe into the hole *t* of horn E. As soon as this is done the whole mechanism returns to its original position, the cutter R is drawn back, and the aperture of hole *t* is again opened. The eccentric N', fitted upon the main shaft, makes its downward movement almost simultaneously with the crank *d*. The downward movement of eccentric rod N effects, by means of lever *i*, shaft K, and pawl *h'*, fitted upon the said shaft K, the rotary movement of ratchet-wheel *h*, of its shaft *g*, of the two little spur-wheels *f* and *f'*, and consequently of the said feeding-roller J, provided with a roughened surface and touching the surface of the sole. The rotary movement of this roller J causes the shoe to advance upon the horn a distance corresponding exactly to the desired distance between each two consecutive pegs. The described movement of this mechanism and the advancing movement of the shoe must be effected before the awl has touched the leather of the sole. At the same time a new peg has been cut off from the wooden band by the cutter L', and, after the withdrawing of the awl from the hole made by it in the sole and from the hole H^4, the said peg falls down in the hole H^4 and is driven into the sole by the following downstroke of the pegging-rammer. The described manipulations are repeated in exactly the same manner until the sole is provided with a single row of pegs. Then the stay-plate R^4 is displaced and fastened again, so as to allow the driving in of a second row of pegs. When this is also terminated, the machine is stopped, and by bearing down the treadle r^4 the counter-weight P' is lifted, and consequently horn E is lowered. Then stop-bolt *s* is pushed forward under the rear arm of lever P, so as to prop it and to maintain it in its raised position. Then the pegged shoe can be taken off from the horn.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a shoe-pegging machine, the combination, with a pinion and mechanism, substantially as described, for operating it, of two racks engaging with the pinion at diametrically-opposite points, and of an awl attached to one rack and a pegging-rammer secured to the other, substantially as herein shown and described.

2. In a shoe-pegging machine, the combination, with the pinion *e* and mechanism, substantially as described, for operating the same, of the rack b^2, engaging the pinion and carrying an awl at its lower end, and a laterally-moving rack, F', carrying a pegging-rammer

at its lower end and engaging the pinion at a point diametrically opposite the rack b^2, as and for the purpose set forth.

3. In a shoe-pegging machine, the combination, with the pinion *e*, of the slides *b* and F′, provided with racks engaged with the pinion, the awl G, the pegging-rammer F, the shaft C, provided with a crank, *d*, and of the connecting-rod *c*, substantially as herein shown and described.

4. In a shoe-pegging machine, the combination, with the horn E, of the spindle O, the counter-weight P′, the lever P^2, the rod *r*, the lever P^3, the rod *r*′, the treadle r^4, and the stop-bolt *s*, substantially as herein shown and described.

5. In a shoe-pegging machine, the shaft K, provided with the lever L, carrying the cutter L′ and the arm *i*, in combination with the connecting-rod N, and the shaft C, provided with the eccentric disk N′, substantially as herein shown and described.

6. In a shoe-pegging machine, the combination, with the shaft K, provided with the cutting-arm L L′, and means for operating said shaft from drive-shaft, of the shaft *o*, provided with the feed-wheel *p*, the shaft *m*, the gear-wheels *n n*′, the ratchet-wheel *l*, and the pawls *k k*′, substantially as herein shown and described.

7. In a shoe-pegging machine, the disk J and gear *f* on the bed, and the shaft *g*, provided with the gear *f*′ and ratchet-wheel *h*, in combination with the shaft K, provided with the pawl *h*′, and means for operating said shaft from the drive-shaft, substantially as herein shown and described.

8. In a shoe-pegging machine, the shaft K, carrying the knife L′, and means for operating said shaft from the drive-shaft, of the disk J, feed-wheel *p*, and means for operating said disk and feed-wheel from the shaft K, substantially as herein shown and described.

9. In a shoe-pegging machine, the combination, with the shaft C, provided with the eccentric, the swiveled horn E, and the spindle S, provided with lever *w*′, of the knife R, the gear-wheels u' u^2 u^3, rack *u*, connecting-rods *v* v^3 v^5 *w*, spring *v*′, and bell-cranks v^2 v^4 v^6, substantially as herein shown and described.

10. In a shoe-pegging machine, the combination, with the horn E, the spindle S, provided with arm *w*′, and means for operating said spindle, of the knife R, the rack *u*, the gears u' u^2 u^3, the bell-cranks v^2 v^4 v^6, and the connecting-rods *v* v^3 v^5 *w*, the rod v^5 being swiveled, substantially as herein shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

HANS SCHÜRHUBER.

Witnesses:

CLARENCE M. HYDE.

JAMES RILEY WEAVER.