(No Model.) 2 Sheets—Sheet 1.

G. McKAY & H. P. FAIRFIELD.

PEGGING MACHINE.

No. 265,618. Patented Oct. 10, 1882.

Fig: 1.

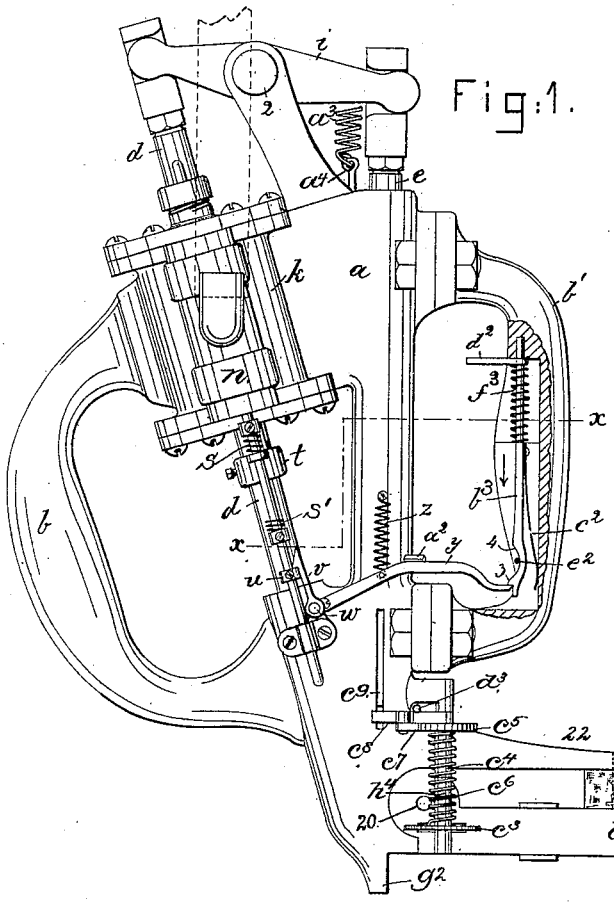


Fig: 3.

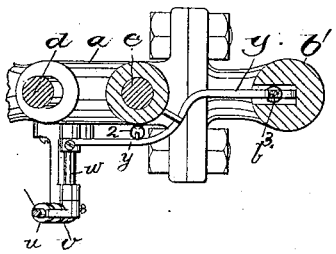
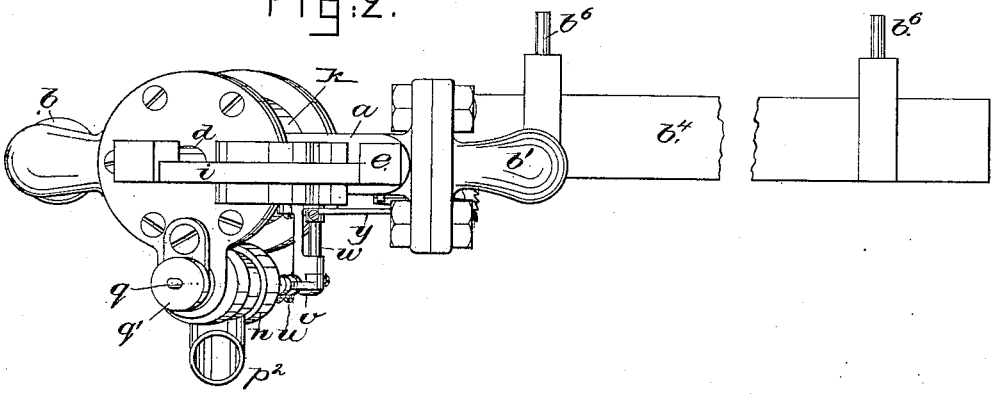


Fig: 2.



Witnesses

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(No Model.) 2 Sheets—Sheet 2.

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Fig: 4.

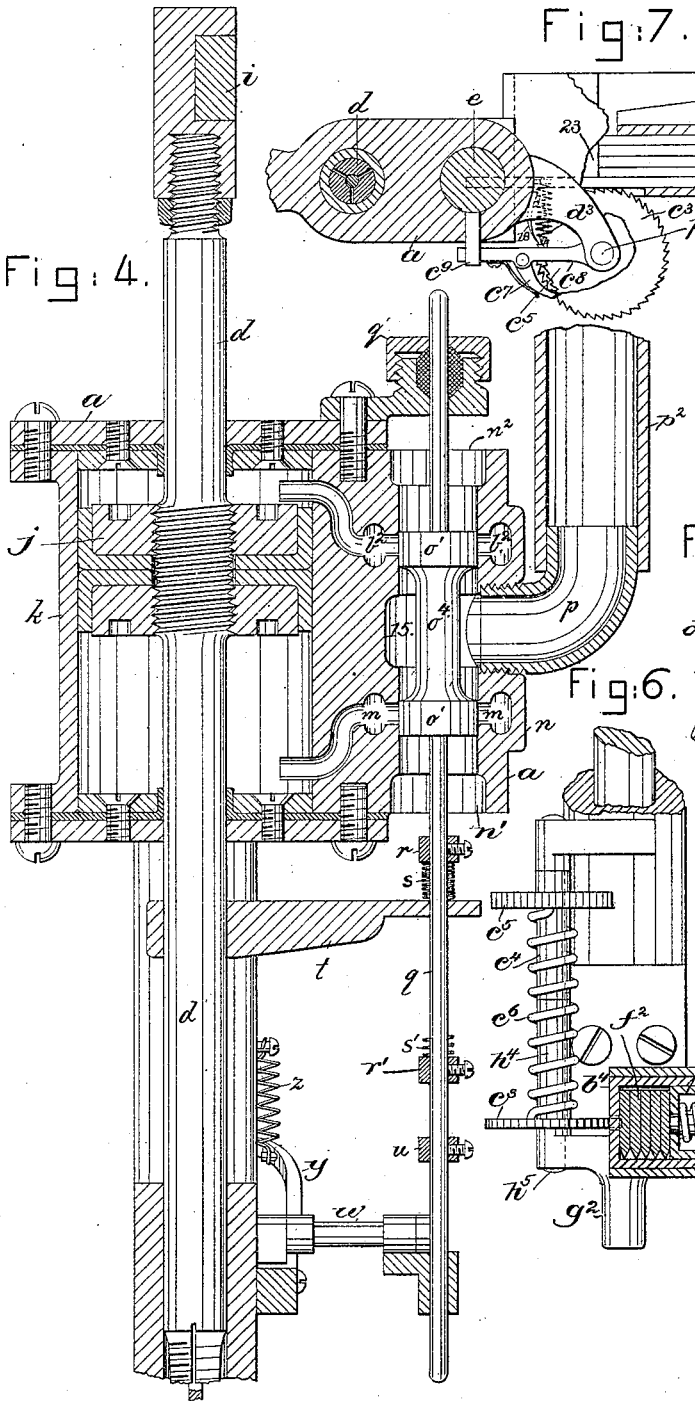

Fig: 7.

Fig: 8.

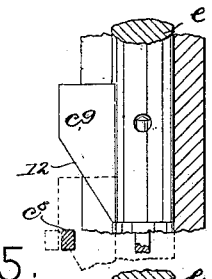

Fig: 5.

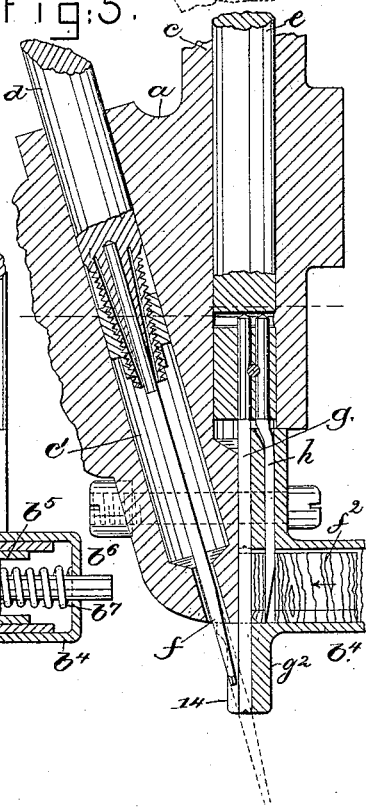

Fig: 6.

Witnesses.

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UNITED STATES PATENT OFFICE.

GORDON McKAY, OF NEWPORT, RHODE ISLAND, AND HADLEY P. FAIRFIELD, OF WEST MEDFORD, MASSACHUSETTS; SAID FAIRFIELD ASSIGNOR TO SAID McKAY.

PEGGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 265,618, dated October 10, 1882.

Application filed April 15, 1882. (No model.)

To all whom it may concern:

Be it known that we, GORDON McKAY, of Newport, county of Newport, State of Rhode Island, and HADLEY P. FAIRFIELD, of West Medford, county of Middlesex, State of Massachusetts, have invented an Improvement in Pegging-Machines, of which the following description, in connection with the accompanying drawings, is a specification.

Our invention relates to pegging-machines for boot and shoe work, and is shown embodied in an apparatus especially intended for use in connection with lasting-machines where it is desired to drive single pegs here and there, as directed by the hand of the operator.

The apparatus contains a magazine for the peg-wood and an awl, and a peg-driver and connected cutter, the said awl and peg-driver being so connected with one another as to make their strokes alternately, the awl first descending to pierce the leather and then ascending simultaneously with the descent of the peg-driver and the cutter, the driver driving a peg into the hole just left by the awl and the cutter cutting off from the continuous strip of peg-wood another peg ready to be driven at the next descent of the driver-bar, one peg being cut in advance and being placed in line with the driver by the movement of the peg-strip after the driver rises. The awl and driver-bar are actuated by compressed air or equivalent fluid-pressure acting upon a piston connected in this instance with a rod which carries the awl; and the invention consists partly in the combination, with the awl and driver and a cylinder and piston, of valve mechanism automatically operated to cause the said piston to make a single downward and upward stroke and to then stop, the driver having driven one peg into the stock at the point where the nose is placed in contact with it.

The invention also consists in the combination, with the said actuating cylinder and piston for the awl and driver and valve mechanism, of a tripping device adapted to be operated by the hand of the operator to set the said piston into action and cause it to produce a single stroke of the awl and driver sufficient to make a hole for and drive a single peg or fastening.

The invention also consists in a novel feeding mechanism by which the strip of peg-wood is carried forward to the cutter and driver, the said feeding mechanism consisting of a feeding-wheel having a toothed or roughened periphery bearing against the peg-wood and causing it to move as the said wheel rotates, the said wheel being attached to one end of and moved by a spiral spring, the latter, as herein shown, being connected at its other end with a ratchet-wheel positively actuated by a suitable pawl, so that the said feeding-wheel or device in engagement with the peg-strip moves the same forward by a force measured by the spring.

The invention further consists in a novel construction of the nose or passage through which the awl and peg-driver operate; also, in details of construction of the various parts, as will be hereinafter referred to.

Figure 1 is a side elevation of a pegging apparatus constructed in accordance with this invention; Fig. 2, a top or plan view thereof; Fig. 3, a horizontal section on the broken line *x x*, Fig. 1; Fig. 4, a longitudinal section of the actuating-piston and valve mechanism on a larger scale; Fig. 5, a longitudinal section of the apparatus, showing the awl and driver and passages in which they operate; but in this figure the hinged connection of the guide-box is omitted, as it may be if desired; but we prefer to pivot or hinge the same, as shown in Fig. 1; Fig. 6, a detail showing the peg magazine and feeding apparatus in section and elevation; Fig. 7, a detail illustrating the same parts in plan, and Fig. 8 another detail of the peg-feeding apparatus.

The main frame-work or casting *a*, which sustains the working parts, is provided with suitable handles, *b b'*, to be grasped by the operator, and with converging guide-passages *c c'* for the bars *d e*, the former of which carries the awl *f* and the latter the peg-driver bar *g* and peg-cutter *h*. The said bars *d e* are connected at their upper ends by a rocking lever, *i*, pivoted at 2 upon the frame-work in a simi-

lar manner to those of other pegging-machines heretofore in use intended to be operated by blows upon the ends of the bars *d e*, the said lever *i* causing one of the said bars to be withdrawn simultaneously with the forward movement of the other toward the material being operated upon. One of the said bars *d e*, herein shown as the one, *d*, carrying the awl, is provided with a piston, *j*, (see Fig. 4,) working in a cylinder, *k*, fixed to or forming a portion of the frame-work *a*. The said cylinder *k* is provided with ports b^2 *m*, (see Fig. 4,) leading to either end thereof in the usual manner from a valve-chest, *n*, shown as cylindrical and provided with a piston-valve, o^4, having heads *o' o'*, which accurately fit the portions of the said valve-chamber *n* in which the said ports b^2 *m* open.

The port-openings entirely surround the said valve, as shown in Fig. 4, where the valve is shown in elevation and the cylinder in section. The compressed air or other actuating-fluid is received through an inlet-pipe, *p*—the part p^2 of which is composed of india-rubber or made flexible—into the space between the head *o'* of the valve which is normally locked, as will be hereinafter described, in the position shown in Fig. 4, closing both the ports b^2 *m*.

The valve o^4 is actuated by a valve-stem, *q*, provided with tappets *r r'*, which are operated through the intervention of springs *s s'* by a tappet-arm, *t*, connected with the piston and awl-carrying rod *d* and reciprocating therewith. The valve-stem *q* is provided with a projection, *u*, which is engaged by the locking device *v*, (see Fig. 1,) to positively arrest the upward movement of the valve while the spring *s* is yet engaged by the tappet-arm *t* during its upward stroke with the piston, the said locking device acting to arrest the piston just after the valve is moved far enough to close both the ports b^2 *m*, thus cutting off the supply of air below the piston, but not until the tappet-arm *t* has compressed the spring *s*, as in Fig. 4.

The locking device *v* (see Figs. 1 and 3) consists of a hooked arm or pawl fixed upon a rock-shaft, *w*, provided with a tripping-arm, *y*, extended to the handle *b'* of the instrument and normally held by a spring, *z*, against a pin or stop, a^2, in proper position for the hook of the arm *v* to engage the projection *u*, as shown in Fig. 1. The arm *y* is controlled by a tripping device, b^3, mounted to move longitudinally in the handle *b'*, and provided with a shoulder, 3, which is normally held by the action of the spring c^2 upon the end of the arm *y*. The tripping device b^3 is also provided with a handle, d^2, adapted to be engaged by the thumb or finger of the operator, to enable it to be moved in the direction of the arrow to rock the arm *y* and connected locking device *v* upon the rock-shaft *w*, and thus disengage the projection *u*.

The end of the tripping device b^3 is provided with a guide-surface, 4, which, in co-operation with a pin, e^2, throws the shoulder 3 off from the arm *y* in the movement of the said tripping device, after the locking device *v* has been disengaged, and thus permits the said locking device and arm *y* to immediately return to their normal position under the action of the spring *z*, ready to again engage the projection *u* after the piston and valve have made their stroke, as hereinafter described. A spring, f^3, moves the tripping device b^3 back to its normal position, (shown in Fig. 1,) when the shoulder 3 is again thrown into engagement with the arm *y* by the action of the spring c^2, which yields to permit the shoulder 3 to pass in the return movement of the said tripping device b^3. When the projection *u* is disengaged from the locking device *v* by the operator depressing the handle d^2 and tripping device b^3, as just described, the spring *s*, which is under compression, as before stated, forces the valve-stem *q* and valve o^4 upward until the upper head, *o'*, passes the port b^2, permitting the actuating-fluid to pass from the chamber *n* through the said port and into the cylinder *k* above the piston *j*, the other port, *m*, being at the same time uncovered by the lower head, *o'*, and permitting the fluid to exhaust from below the piston through the said port and out of the open end, *n'*, of the valve-chamber. The piston *j* and connecting-rod *d* are thus caused to make a downstroke, at the end of which the tappet-arm *t* engages the spring *s'* and forces the valve-stem *q* and valve o^4 downward, bringing the port *m* into communication with the chamber 15 and pipe *p*, and the port b^2 into communication with the open end n^2 of the valve-chamber, into the external air, thus causing the piston and piston-rod to make its upstroke, at the end of which it engages the spring *s* and moves the valve-stem *q* and connected valve until the projection *u* is again engaged by the locking device *v*, again locking the said valve in the position shown in Fig. 4, in which it closes both ports, and thus stops the operation of the piston, with the spring *s* sufficiently compressed to cause the valve o^4 to move, as previously described, when released by the locking device *v*.

It will thus be seen that by merely depressing the handle d^2 the piston and connected parts automatically make a complete up and down stroke, and are then locked, the movement of the rods *d e* being the same as if a blow were struck on the former immediately followed by a blow on the latter, the awl *f* first piercing a hole in the leather, while the driver-bar *g* is raised above the top of the peg-wood f^2, the latter being then moved forward under the cutter, placing the loose or separate peg last cut off by the cutter under the driver-bar *g*, after which, in the upstroke of the piston, the awl *f* is withdrawn, and the driver-bar *g* forces the peg into the hole thus made by it, and the cutter at the same time cuts off another peg.

The valve-stem *q* is extended on both sides of the valve and runs in guide-passages, one of which (shown at *q'*) is made as a stuffing-box,

or is otherwise adapted to produce sufficient friction on the said stem to hold it in place until moved by the spring *s s'* and arm *t*.

Preferably the frame-work of the machine will in practice be suspended from the ceiling or otherwise by a strong spring, a^3, connected with an eye, a^4. This spring a^3 (shown in Fig. 1, but not claimed) will form the subject of another application.

The magazine or guide-box b^4 for the peg-wood f^2 has a follower, b^5, provided with guided stems b^6, acted upon by springs b^7, of sufficient strength to keep one strip of the peg-wood next that wall of the guide-box through which the feeding device c^3 (shown as a wheel) works, and as one of the several peg-strips contained in the said box is exhausted the follower b^5 moves the remaining strips of peg-wood laterally, thus automatically placing another one of the peg-strips in position to be engaged and fed forward to the driver.

The feeding device c^3, (see Fig. 7,) made as a toothed wheel, exerts a pressure against the strip of peg-wood being used, which is measured by the force of the spring b^7. The feeding device c^3, fixed on the hollow shaft h^4, (see Fig. 6,) has attached to it the lower end of a spiral spring, c^6, which drives it. The upper end of this spring is connected with the ratchet c^5, fixed to the hollow shaft c^4, these two hollow shafts being held in place or in line by a pin, h^5. The ratchet-wheel c^5 is actuated by a pawl, c^7, on a pawl-carrier, c^8, (shown only in Figs. 1, 7, and 8,) which is moved at the proper times in one direction by the inclined face 12 of a projection, c^9, carried by the driver-bar *e*, as shown in Fig. 8, the said pawl-carrier deriving its opposite movements from a spring, d^3.

By driving the feeding device c^3 through the spring c^6 rather than positively, as, if connected directly with the shaft c^4, we are enabled to cause the said feeding device to act upon the peg-wood with a spring-pressure, so that when the peg driver and cutter are elevated the feed-wheel will be able to move farther than the distance measured by one stroke of the pawl c^7, should it be necessary, or to move less than the stroke of the pawl and ratchet if the peg-wood is arrested by some imperfection which would injure the machine if the peg-wood were moved.

Heretofore in pegging-machines having a diagonally-placed awl and driver of the kind herein illustrated the nose g^2 has always been made of sufficient size to afford metal for the formation of an inclosed passage for the awl and the driver, and it has been considered necessary to support the awl near the lower end of the nail-tube. With a nose as large as usual in this class of pegging-machines as heretofore made the said machine could not be effectually used to drive pegs through holes in the jaws of the lasting-machine; so to obviate such objections we have made the nose g^2 as an open-sided tube, or a tube with an open slot, 14, into which the awl plunges diagonally, as shown in Fig. 5, the said awl, when in its highest or full-line position, Fig. 5, closing a portion of the said slot and preventing the escape of the peg therefrom laterally.

The spring c^6 may be made to exert any desirable constant pressure on the feeding-wheel c^3 by first applying power to the ratchet-wheel c^5 to wind the spring more or less before the pawl engages the ratchet, the feeding-wheel at such time being in engagement with the peg-wood or being held. The wheel c^5 has a suitable detent, 18, to prevent reverse motion.

We have described our invention as applied to a pegging-machine using wood for the sole-fastenings; but it is obvious that the awl and driver might be employed to equal advantage in a nailing-machine having suitable apparatus to present the nails to the driver. Hence by the term "pegging-machine" we mean to include a mechanism for driving metal as well as wooden fastenings.

The guide-bar b^4 for the peg-wood (see Fig. 1) is pivoted or jointed to the frame-work at 20, Fig. 1, by a rule or equivalent joint, which will limit the descent of the outer end of the guide-box, and the delivery end of the guide-box is kept down in place in a yielding manner by a spring, 21, (shown as of india-rubber,) placed between the top of the said box and a rigid arm, 22, attached to the frame-work. The guide-box is pivoted in this way to obviate its being broken off by reason of blows which it receives by quick and careless handling. The guide-box (see Fig. 7) has a shoulder, 23, against which rests the ends of the strips of peg-wood which are being fed forward by the feeding device. The face of the said shoulder against which the ends of the said strips rest is preferably a little nearer the driver than the line of center of the feeding device, so that when the rear end of the strip of peg-wood which is being used is fed past the face of the said shoulder the plunger b^5 acts to place the leading end of the next strip to be used in contact with the feeding wheel or device, thus enabling each strip of peg-wood to be automatically thrown into action until all are used up.

Preferably the wheel c^3 will be of larger diameter than the wheel c^5, so that the wheel c^3 will scratch or have a slipping action on the peg-wood, which will always keep a tension on the spring c^6, which latter always effects sufficient movement of the wheel c^3 to move the peg-wood far enough to place the separated peg at the forward end of the peg-wood in the line of the driver.

We claim—

1. In a pegging-machine, an awl-carrier and awl, driver-bar and driver, and cylinder *k*, and piston therein, combined with an independent valve and connecting means to automatically operate the said valve from the piston, to control the admission into and exit from the said cylinder of air or equivalent actuating-fluid, substantially as described.

2. In a pegging-machine, the bar *d*, its piston, the cylinder and valve-chest having ports for the admission of air or other actuating-fluid,

and a valve to control the said ports, combined with a valve-rod provided with springs which are acted upon to move the valve-rod and valve, substantially as and for the purpose set forth.

3. In a pegging-machine, an awl and awl-bar, a driver and driver-bar, a piston and a cylinder therefor, and an independent valve and connecting devices to automatically operate the said valve from the piston, to control air or other equivalent power to actuate the piston and its connected mechanism, combined with a locking mechanism to hold the valve-rod in position to close the ports leading to the said cylinder and keep the awl and driver bars at rest, substantially as described.

4. In a pegging-machine, an awl and awl-bar, a driver and driver-bar, a piston fitted to a cylinder, and a valve to control air or other fluid motor to actuate the said piston and the bar with which it is attached, combined with a locking device to hold the valve-rod, means to release the locking device from the valve-rod, and a spring to move the valve-rod after the release of the locking device therefrom, substantially as described.

5. In a pegging-machine, the piston and the valve-rod actuated thereby, and the locking device, combined with a tripping device to enable the operator to release the locking device, and valve-rod to start the mechanism, substantially as described.

6. The guide-box for the peg-wood, and the feeding-wheel c^3 and wheel c^5, combined with the spring c^6, by which the wheel c^3 is held pressed in a yielding manner against the peg-wood which it is to feed forward, substantially as described.

7. The diagonally-reciprocating awl-bar, and driver-bar, and the awl and driver respectively connected therewith, combined with the open-sided nose in which the said awl and driver work, said awl serving when at its highest point also to prevent the loss of the pegs, the awl, when at its highest position, closing a portion of the slot in the nose and retaining the peg therein, substantially as shown and described.

8. In a pegging machine, the guide-box pivoted at its peg-discharging end upon the framework to rise and fall upon its pivot, substantially as described, combined with a spring to keep the guide-box in its lowest position.

9. The guide-box provided with the shoulder 23, as described, to receive the ends of the extra strips of peg-wood, combined with the follower k^3 and feeding device to move forward the strip of peg-wood engaged by it, substantially as described.

10. The ratchet-wheel c^5 and spring c^6, combined with the feeding-wheel c^3 of larger diameter, substantially as and for the purposes set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GORDON McKAY.
HADLEY P. FAIRFIELD.

Witnesses:
G. W. GREGORY,
W. H. SIGSTON.