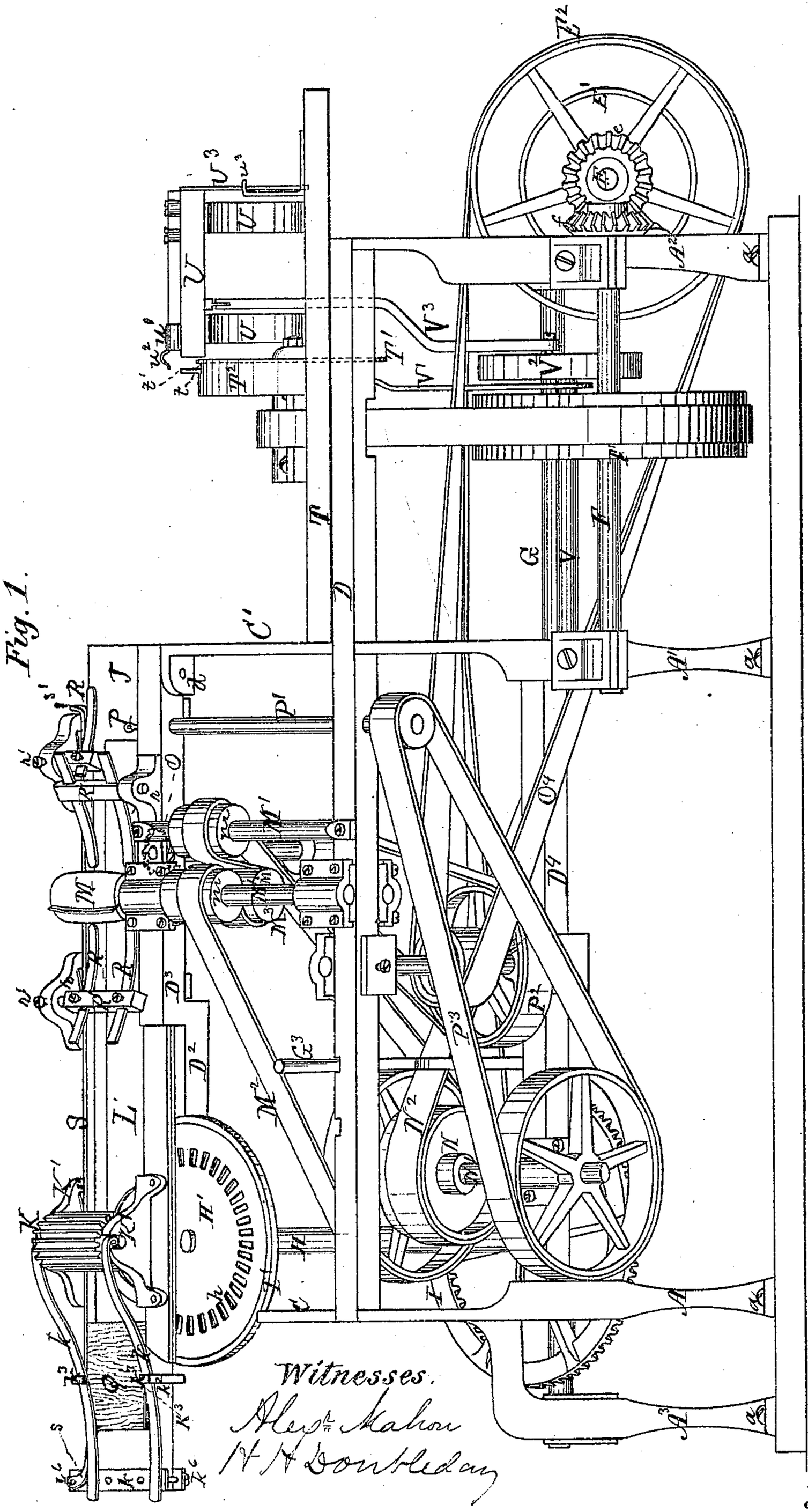
3 Sheets--Sheet 1.

S. INMAN.

Improvement in Clothes Pin Machines.

No. 124,137. Patented Feb. 27, 1872.

Fig. 1.



Witnesses.

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3 Sheets--Sheet 2.

S. INMAN.

Improvement in Clothes Pin Machines.

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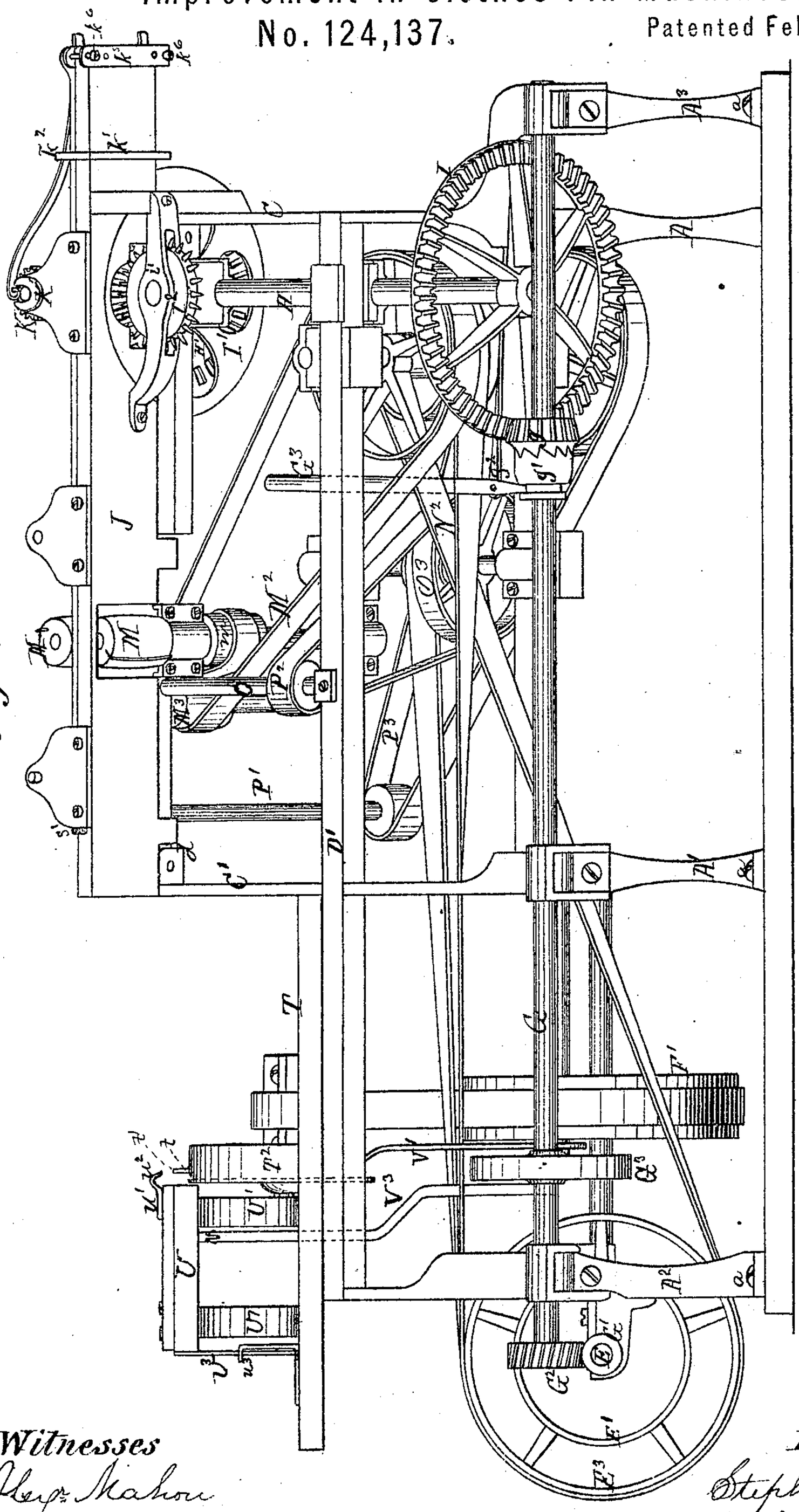
Fig. 2.



Witnesses

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Fig. 4.

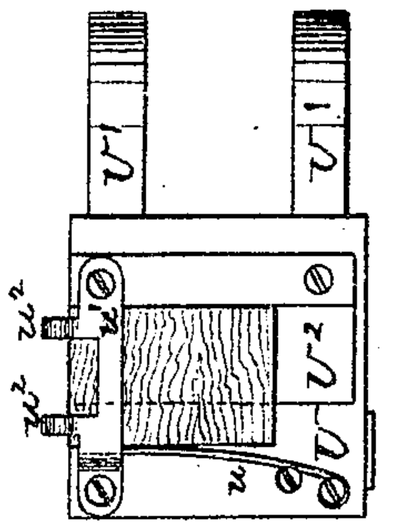


Fig. 5.

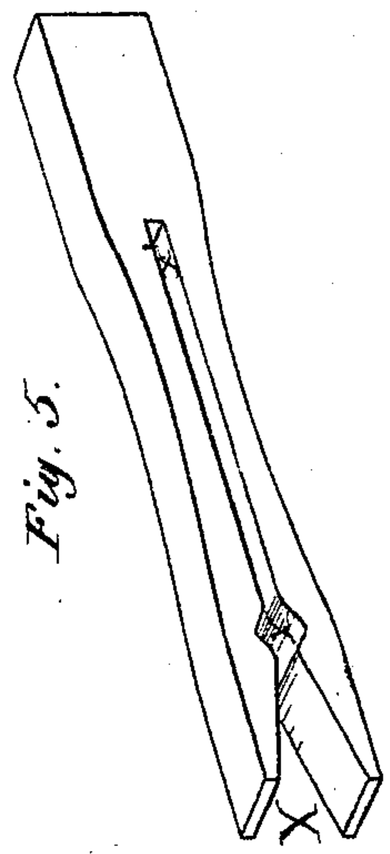


Fig. 6.

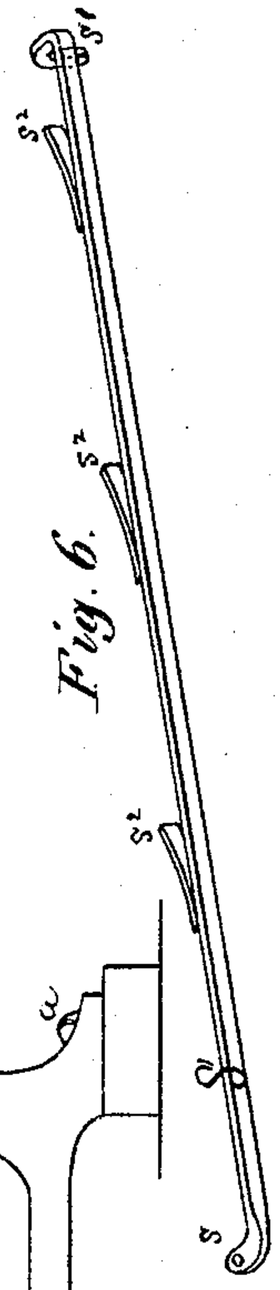
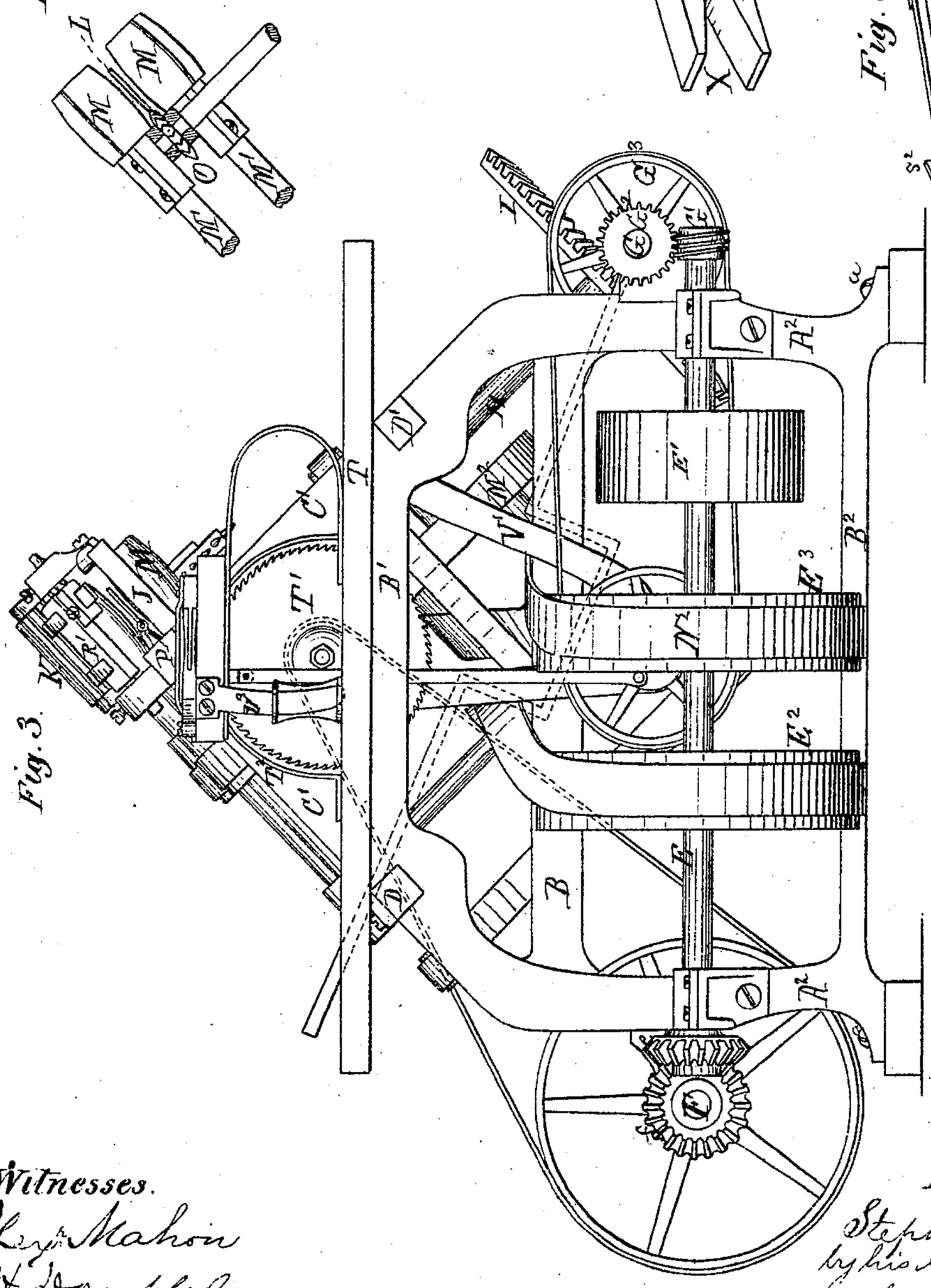


Fig. 3.



Witnesses.

Alex. Mahon

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124,137

UNITED STATES PATENT OFFICE.

STEPHEN INMAN, OF ROCKFORD, ASSIGNOR TO WILLIAM H. OVINGTON, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN CLOTHES-PIN MACHINES.

Specification forming part of Letters Patent No. 124,137, dated February 27, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, STEPHEN INMAN, of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Improvement in Clothes-Pin Machines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

Figure 1 is a side elevation of the machine taken from the right-hand side—that is, from that which is on the right hand of the operator when he is feeding it. Fig. 2 is a side elevation taken from the opposite or left-hand side. Fig. 3 is an end view taken from the end opposite to that at which the blanks are first passed into it. Fig. 4 is a detached view of some of the devices partly in section. Fig. 5 represents one of the finished pins; and Fig. 6 is a spring employed for confining the blank to the guide, as will be explained.

Similar letters of reference denote corresponding parts in all the figures.

The invention relates to that class of machines in which the lumber is fed in flat, square, or rectangular pieces, called blanks, and is delivered in complete pins; all of the various operations and manipulations being performed by the machine itself.

In the drawing, Fig. 5 represents one of the pins made by my machine, in which X is the throat; *x*, the socket adapted to receive and confine the line and the article to be secured to the line. *x'* is a slit or kerf running nearly up to the head of the pin to give the legs sufficient elasticity. A A^1 A^2 A^3 represent the feet or vertical posts upon which the machine is supported, and by means of which it may be conveniently secured to the floor by bolts *a*. B B^1 B^2 (see Fig. 3) are transverse girts. B^2 connects the lower ends of the feet or posts. A^2 and B^1, their upper ends. B extends from the upper end of post A^1 to the corresponding post on the opposite side of the machine. It will be seen that post A^3 stands some distance in front of the corresponding post A, and has an arm at its upper end extending inward to a line with post A, with which it is connected by a girt as posts A^1 are connected by girt B, but which cannot be seen, because it is located in the same horizontal plane with girt B, and is consequently hidden by it. C C′ are arched or angular brackets rising from the posts, one of them only being shown in Fig. 3, they being directly in line with each other. In practice I usually cast the brackets separately and then the supporting legs. D D^1 are longitudinal girts connecting brackets C C′ with girt B^1. D^2 D^3 is a shorter girt located at the crown or apex of the brackets, and secured to them by being bolted to lugs *d* cast upon the brackets or by any other convenient means. This girt is not straight, but has an offset near the center, so that the two ends are in parallel but different planes. D^4 is another girt supported in angular pockets from the lower side of girt B and the corresponding girt which connects posts A A^3, and which forms the base of bracket C. Girts D D^1 D^2 D^3 D^4 are all square, or at least right-angled, so that their faces are in parallel planes, and are thus adapted to receive the shafting of a system of gearing, which will now be described, the arrangement of the operating devices upon the triangular brackets C C′ securing great strength and compactness, and enabling the operator to inspect the operation of all of the parts while he is in proper position for feeding the blanks to the machine. E, Fig. 3, is the main driving-shaft, mounted upon the rear end of the machine, and driven through belt-pulley E^1 from any suitable power. E^2 E^3 are driving-belt pulleys keyed to shaft E. F, Fig. 1, is a shaft mounted upon the right-hand side of the machine, and driven from main shaft E by means of bevel-gears *e f*. G, Fig. 2, is a horizontal shaft mounted in bearings on the left side of the machine, and driven from main shaft E by a worm, G^1, and worm-wheel G^2, Figs. 2 and 3. *g* is a bevel-pinion running loosely on shaft G, except when connected with said shaft by a sliding clutch, g^1, which is operated by shipping lever G^3. Lever G^3 is pivoted to an arm, g^2, Fig. 2, projecting from the bracket C or to the girt which forms the base of this bracket. The central portion of this lever is bent, as indicated in dotted lines in Fig. 3, to avoid contact with the driving-belts to be described hereafter, its

free end resting in notches in girt D within convenient reach of the operator, as in Fig. 1. H is the feed-wheel shaft, provided at the lower end with a bevel-wheel, I, which gears with bevel-pinion *g*. H′ is the feed-wheel, keyed to the upper end of shaft H. This wheel has near its periphery a circle of radial slots, *h*. It runs upon and is partly supported by a stationary face-plate, I^1. By using this face-plate in combination with wheel H′ the wheel may be made very light, and still have sufficient strength. I^2 (see Fig. 2) is a toothed disk revolving in bearings in bracket *i*′ attached to the frame-work of the machine. Disk I^2 revolves in a plane at right angles to the plane of feed-wheel H′, and in such relation thereto that the spurs of the disk engage with the slots *h*, and, passing through said slots, project above the upper face of the wheel. J is a bed-plate located at the crown of the brackets C C′, and secured thereto in such manner as may be preferred. In practice I make the bed-plate a little longer than the girt which connects the brackets at this point and let the front end project, as shown in the drawing. It will be seen by an inspection of Fig. 2 that feed-wheel H occupies a recess cut for its reception in the bed-plate; in fact the wheel occupies the same plane with the upper face of the bed-plate, and forms a continuation of the same, with this difference: that the bed-plate is always stationary, whereas the feed-wheel, when the machine is in operation, moves forward continuously, carrying with it the blank, as will be explained.

K is a fluted roller, the journals of which are supported in open slots in flanges K′ K′, rising from bed-plate J and girt D^2 D^3, or other suitable part of the frame. *k k* are tongue-springs, their free ends resting upon the journals of roller K. Any required amount of tension may be given to these springs by means of a clamp and set-screws, shown in Figs. 1 and 2. The clamp is constructed of a bar, k^1, which lies underneath the bed-plate J, two right-angled arms, k^2, which pass on either side of said bed-plate, and two intervening lugs or ears, k^3, (see Fig. 1,) which engage with and hold down spring *k*. k^4 is a strap, placed across the upper face of the front end of bed-piece J, (see Fig. 1;) and k^5, Fig. 2, is a similar strap upon the under side of the bed-piece, these two being secured to the bed-plate by riveting. k^6 are set-screws, working in threads cut in the ends of one or both of the straps k^4 k^5. The front ends of the spring *k* are usually countersunk, so that they will engage with the projecting ends of set-screws k^6. Thus the tension of the springs may be regulated at will by means of said screws, or by moving the clamp k^1 k^2 k^3 toward or from the roller K. L is a guide-plate extending nearly or quite the entire length of the bed-plate. It is secured by one edge to girt D^2 D^3, or to the bed-plate, as may be thought best, and is so arranged relatively to the bed-plate that one leg of a pin, or of the blank after the kerf has been cut, can pass between them, and is of a width and thickness corresponding substantially to the depth and thickness of the kerf, so that when the blank is placed upon the bed-piece with the open side of the kerf toward the girt D^2 D^3, as in Fig. 1, one leg of the blank shall pass on each side of the guide, and the blank will be fed forward by the combined action of the feed-wheel H^1 and toothed disk I^2, the fluted roller K serving to press it (the blank) upon the feeding devices. M M are cutter-heads, secured to shaft M^1 M^1, which are mounted upon the frame-work, one above the bed-piece and the other below it, the axes of the cutters occupying planes parallel, or nearly so, with guide-plate L, and at such distances from it that, when a pin-blank is forced between said cutter-heads it is concaved upon both sides, as represented in the pin, Fig. 5. These cutter-heads may be constructed with knives or cutting-edges, of any approved description which are adapted to do the work required of them. Cutter-heads M are made to revolve rapidly by the following system of belts and pulleys. N is a belt-pulley, keyed to a shaft, N^1, mounted transversely of the machine, and is driven from pulley E^3 by a belt, N^2. Shaft N^1 carries with it belt-pulley N^3, from which motion is communicated to pulleys *m m* by belt M^2. M^3 is an idler or loose pulley, employed to make the belt M^2 wrap the pulleys *m m* sufficiently, and to cause them to run in opposite directions. This latter object is accomplished by the peculiar manner in which the belt is carried from one pulley to the other, as shown in Fig. 1, and which will be readily understood by all who are familiar with running machinery by belting. O is a burring or chamfering-tool, shown in dotted lines in Fig. 1, and in section lines in Fig. 4. It consists of a disk having a beveled edge, formed either with serrations or with saw-teeth, in substantially the shape shown in the sectional view, Fig. 4. Its axis of rotation is in a plane at right angles to that of the cutter-head M, and it is a little in rear of them, as shown in Fig. 1, but in the same plane with the guide-plate L; in fact this plate is cut away to receive it. The relative positions of the guide-plate, cutter-heads, and the burr, are shown clearly in detached view, Fig. 4. The burr is secured to shaft O^1, see Fig. 2, which is driven by belt P^2 from pulley O^3, this pulley being, in turn, driven by belt O^4 from pulley E^2, on the main driving-shaft. P is the socket-borer, formed on or attached to the inner end of shaft P^1, driven from a pulley on shaft N^1 by belt P^3. This borer consists of a bulb or annular cutter, provided with suitable cutting-edges, being similar in its general construction to those sometimes employed in dovetailing machines for cutting dovetailed mortises. The shank of this borer is made in the form of a cone, and is adapted to fit into and be supported by the throat or chamfer X, cut by the borer O, which insures its cutting the socket *x* exactly in the center of the pin—that is, with reference to the thickness of the

legs outside of the socket. The shafts of borer P, burr O, and cutter-heads M M may be mounted in movable bearings, so that they can be adjusted as the kind and condition of the work may require.

The operation of the devices just described is as follows: The lumber to be made into pins is first cut into strips of a width equivalent to the length of the pin, with the grain of the wood running transversely of the strip. A kerf is then cut extending nearly the entire width of the blocks or slabs. This part of the operation may be performed by means of any suitable arrangement of circular saws and guides, but which need not be particularly described, as this preparation of the blank forms no part of the invention. The blank represented at Q, Fig. 1, is placed upon bed-plate J with one leg on each side of the guide L, and pressed forward until it is brought into contact with the feed-wheel H^1 and spurred disk I^2, and by them fed along, the fluted roller K serving to keep it, the blank, firmly down in place. As each blank is about leaving the feeding devices another must be presented to them; then the second blank will push the first one along toward and past the cutters. The cutter-heads concave both sides of the blanks, the burr chamfers them, and the borer cuts out the sockets, the blanks being held down to the guide and bed-plate by the springs R, which are secured in rocking arms R^1 mounted in bearings *r*, secured to the bed-plate or frame. Arms R^1 may be rotated so as to give any desired pressure upon the blank, and when so adjusted are held in position by set-screws r^1, which impinge upon the journals of the arm.

The blanks are pressed laterally against the guide-plate by a spring-bar, S, Figs. 1 and 6, in order to insure that they shall maintain a proper relation to the cutting devices when being acted upon by them. This bar has an ear, *s*, at its front end, provided with a perforation, (see Fig. 6,) which fits over one of the bolts K^6 at the front end of the bed-plate, and has a hook, *s'*, at its rear or free end, which engages with the outer edge of the bed-plate to prevent accidental displacement while permitting sufficient freedom of movement. The lip-springs s^2 of the bar rest against a ledge or rib on the outer side of the bed-plate. When preferred, the fluted roller K may be driven from the shaft H of feed-wheel H^1, by two bevel-gear wheels, one being mounted on said shaft, and the other on a projecting journal of the roller, in which case the spurred disk I^2 might, perhaps, be dispensed with, but the present arrangement is believed to be the more effective. The blank is now ready to be cut into single pins by a series of devices, which will next be described. T is a table or floor secured to girts D, D^1, and B^1, fitting the entire space, in rear of bracket C'. T^1 is a circular-saw mounted on an arbor running in boxes on the floor T, and driven from pulley F^1 on shaft F. T^2 is a saw-guard or drum, inclosing that portion of the saw which projects above the floor T. *t*, Fig. 1, is a slot, cut in the crown of guard T^2, that portion, t^1, of the guard, which is cut out to form the slot, being turned up into a vertical position to form a stop or gauge, for a purpose which will be hereinafter explained. U is a vibrating table, supported upon two U-shaped springs U^1 U^1, in close proximity to saw T^1, the upper edge of the table being a little above the edge of the saw, as shown plainly in Figs. 1 and 2. U^2 is a guiding-plate or tongue, secured to the upper side of table U, corresponding in all respects to guide-plate L on the bed-plate, and arranged in a like relation to the face of table U. *u* is a tongue-spring, employed to keep the blank in close contact with the guide U^2. u^1 is a strap or clasp bolted to the table, leaving just sufficient room for the blank to pass between it (the clasp) and the table, when the blank is thrust forward by the operator. u^2 u^2 are curved fingers, preferably formed upon or attached to clasp u^1. The lower outer ends of these fingers are in about the same horizontal plane with the clasp, it being intended that they should be in contact with the outer edge of the blank when it has been thrust beyond the edge of the table U against the stop t^1. The form of these fingers, and their position relative to the stop and the table, is shown in Fig. 1. V is a crank-shaft mounted in girt B and a hanger V^1 depending from the floor T. V^2 is a belt and crank-wheel, driven from pulley G^3 on shaft G. (See Figs. 2 and 3.) V^3 is a pitman, connecting table U with crank-wheel V^2, to give said table a vertical vibratory movement. U^3 is a guide-bar, secured to table U, and sliding in a slotted supporting standard u^3.

The operator slides the blank Q^1 (which has been passed through the cutters) against stop t^1 while the table is at the highest point of its throw; then as the table is moved downward by pitman V^3 the saw cuts one pin off from the end of the blank, repeating the operation at each vibration of the table. The fingers n^2 n^2 serve to carry down the pin simultaneously with the blank, and thus prevent any sliver-ing as the parts are being separated. The table U may be hinged to the floor, if thought best, but I prefer to employ the U-shaped springs, as that gives a forward as well as downward motion to it as it approaches the saw, thus making a cleaner, smoother cut than can be otherwise produced. Of course, the stop t^1, must be at such distance from the saw as will make a pin of proper size, and there should be a receptacle below the saw to receive the pins after they are cut off. The cutting-off saw may be arranged at the rear end of bed-plate J, so that the blanks shall be fed to it automatically, but as this involves the necessity of so constructing the devices for operating the saw, that the saw itself shall be moved up to the blank, and shall travel with said blank during the operation of cutting off the pin, I have thought best to adopt the construction shown in the drawing.

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

1. In a machine for making clothes-pins, the herein-described frame-work, consisting of the triangular brackets c c^1, in combination with the girts D D^1 D^2 D^3 D^4 and bed-plate J, substantially as set forth.

2. In combination with the bed-plate J, the feed-wheel H^1 and spurred disk I^2, substantially as set forth.

3. The combination of bed-plate J, feed-wheel H^1, spurred disk I^2, and pressure-roller K, substantially as set forth.

4. In a machine for making clothes-pins, the combination of the guide-plate L and the bed-plate J, substantially as set forth.

5. The combination of the bed-plate J, guide-plate L, and cutter-heads M M, substantially as set forth.

6. The combination of bed-plate J, guide-plate L, and chamfering-burr O, substantially as set forth.

7. The combination of bed-plate J, guide-plate L, and socket-borer P, substantially as set forth.

8. In combination with bed-plate J, guide-plate L, and the cutting devices, the spring-bar S, arranged in the described relation to the guide-plate, substantially as set forth.

9. In combination with the bed-plate J, guide-plate L, and the cutting devices, the springs R, substantially as set forth.

10. In combination with the saw T^1, the hinged or vibrating table U, crank-wheel V^2, pitman V^3, substantially as set forth.

11. In combination with the saw T, the guard T^2, stop t^1, and vibrating table V, provided with fingers u^2 u^2.

This specification signed and witnessed this 11th day of October, 1871.

STEPHEN INMAN.

Witnesses:

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