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E. WOODWARD & M. BROCK.

Gang Pegging-Machine.

No. 216,926. Patented June 24, 1879.

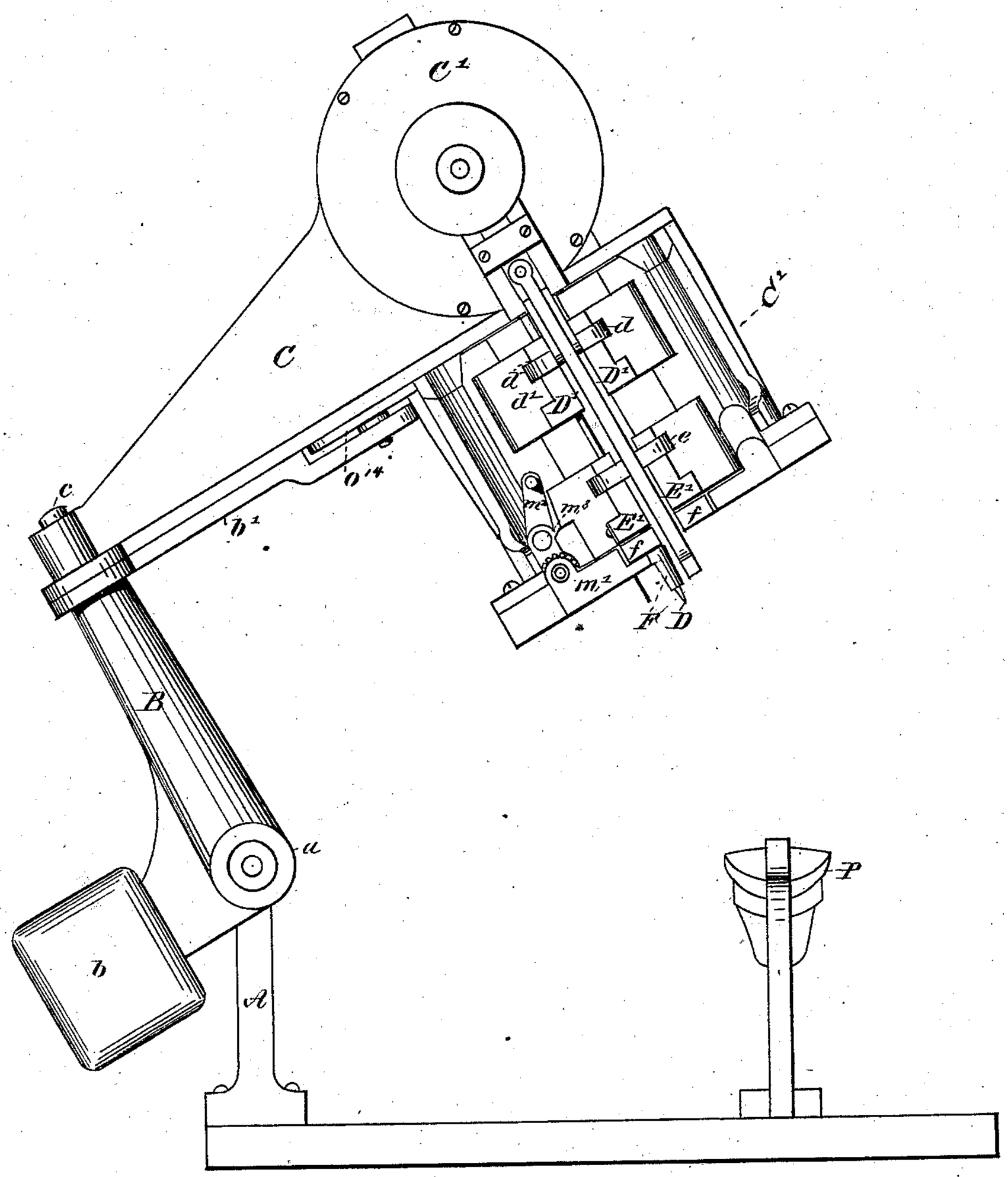

Fig. 1.

WITNESSES

Frank G. Parker.

Geo. F. Walker

INVENTORS

Easton Woodward

Matthias Brock

by their Attys.

Clarke & Raymond

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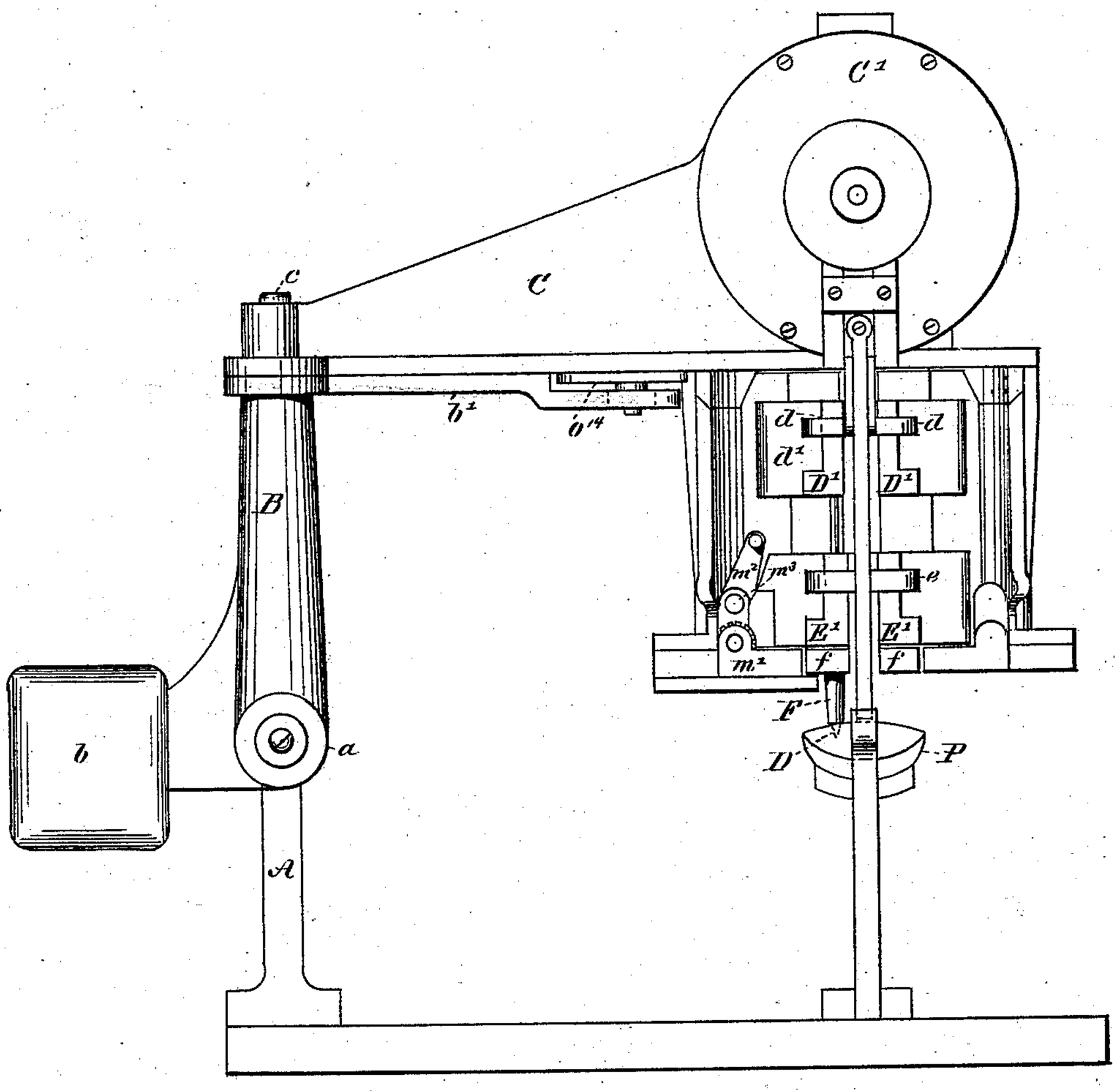

Fig. 2.

WITNESSES.

Frank G. Parker.

Geo. H. Walker

INVENTORS

Ezekiel Woodward

Matthias Brock

by their Attys

Parker & Raymond

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E. WOODWARD & M. BROCK.

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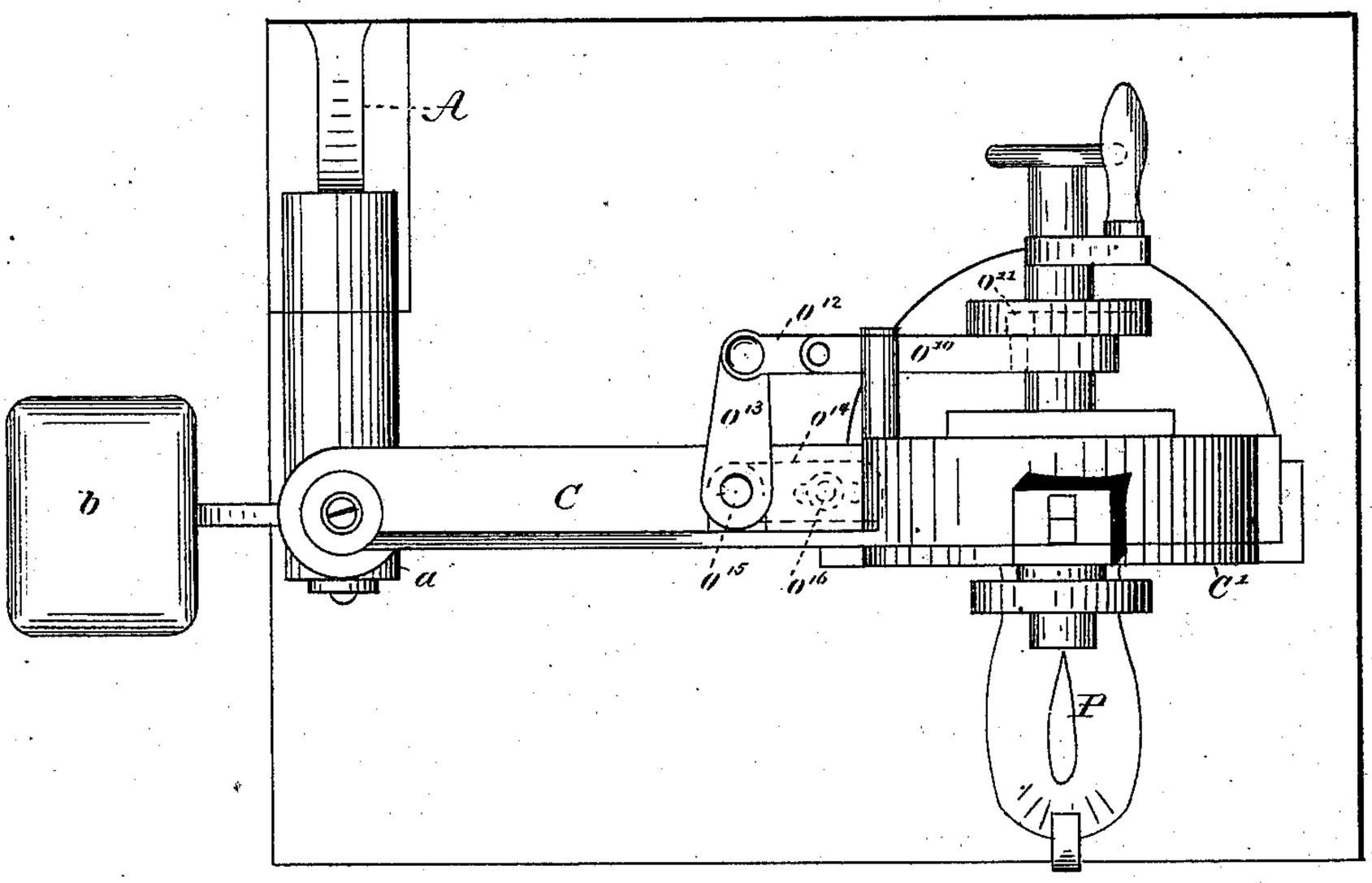


Fig-3-

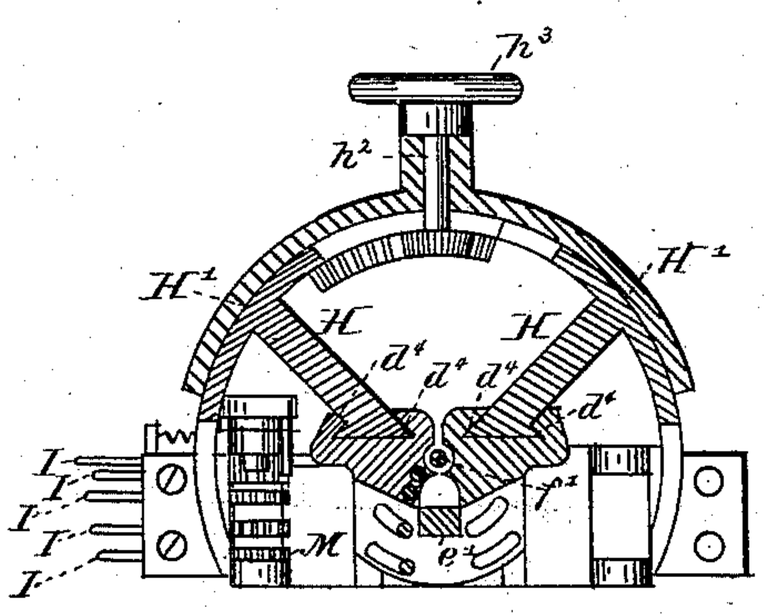
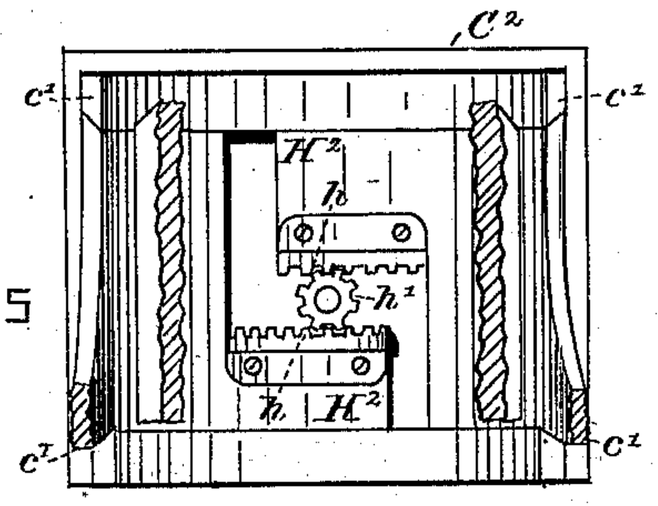


Fig-4-

Fig-5



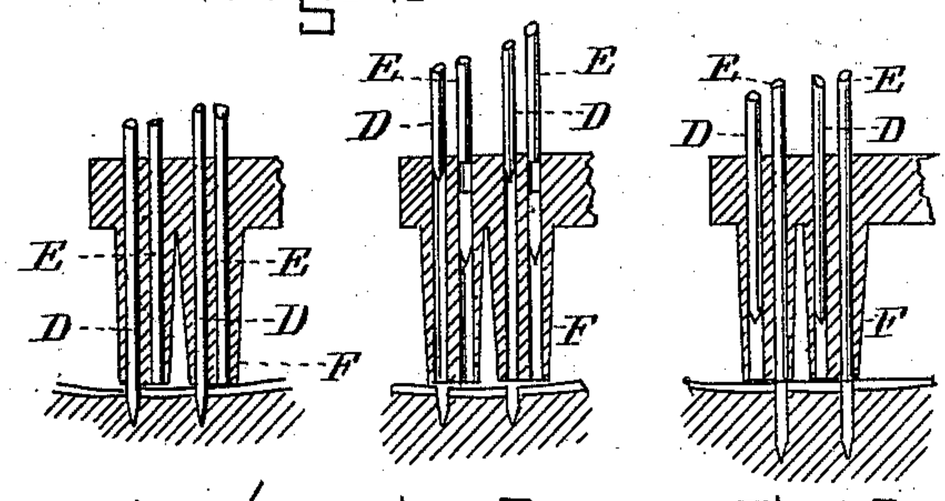
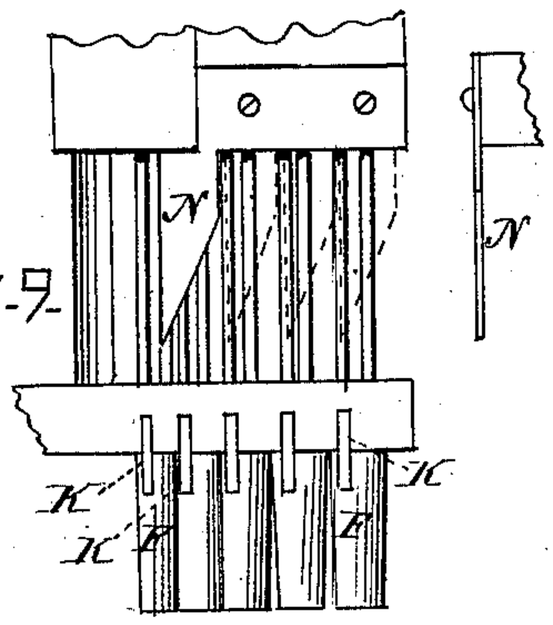


Fig 6 Fig-7- Fig 8

Fig-9-



WITNESSES
Frank G. Parker
Geo F. Walker

INVENTORS
Erastus Woodward
Matthias Brock
by their atty
Clarke & Raymond.

4 Sheets—Sheet 4.

E. WOODWARD & M. BROCK.

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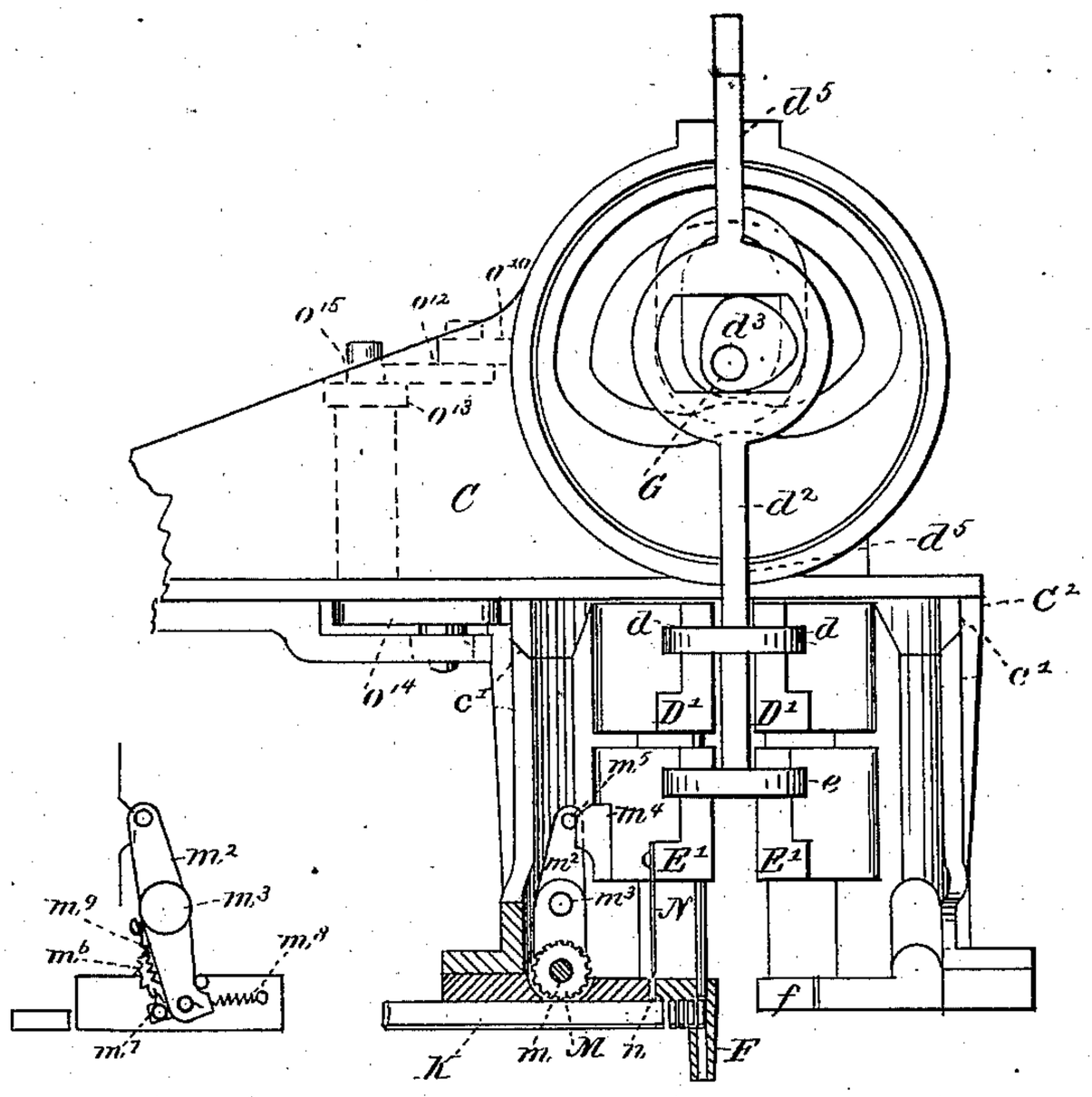

Fig. 10.

Fig. 14.

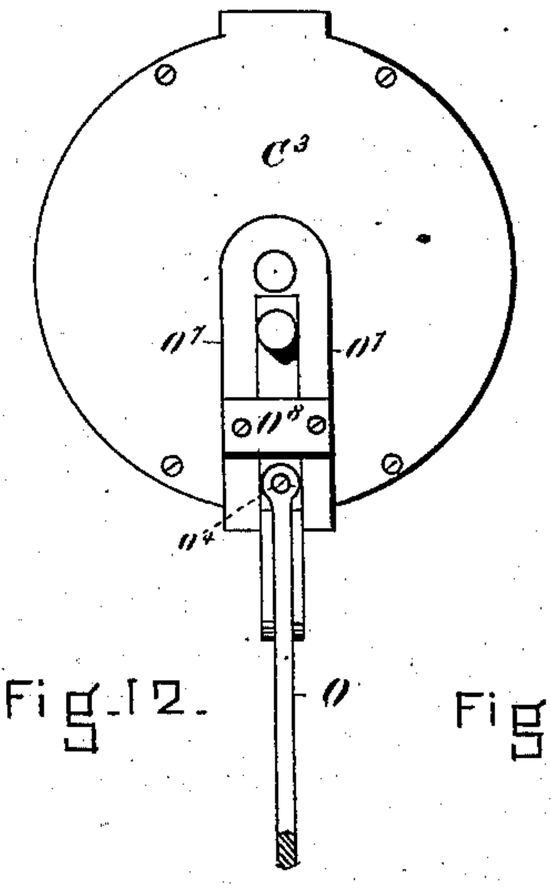

Fig. 12.

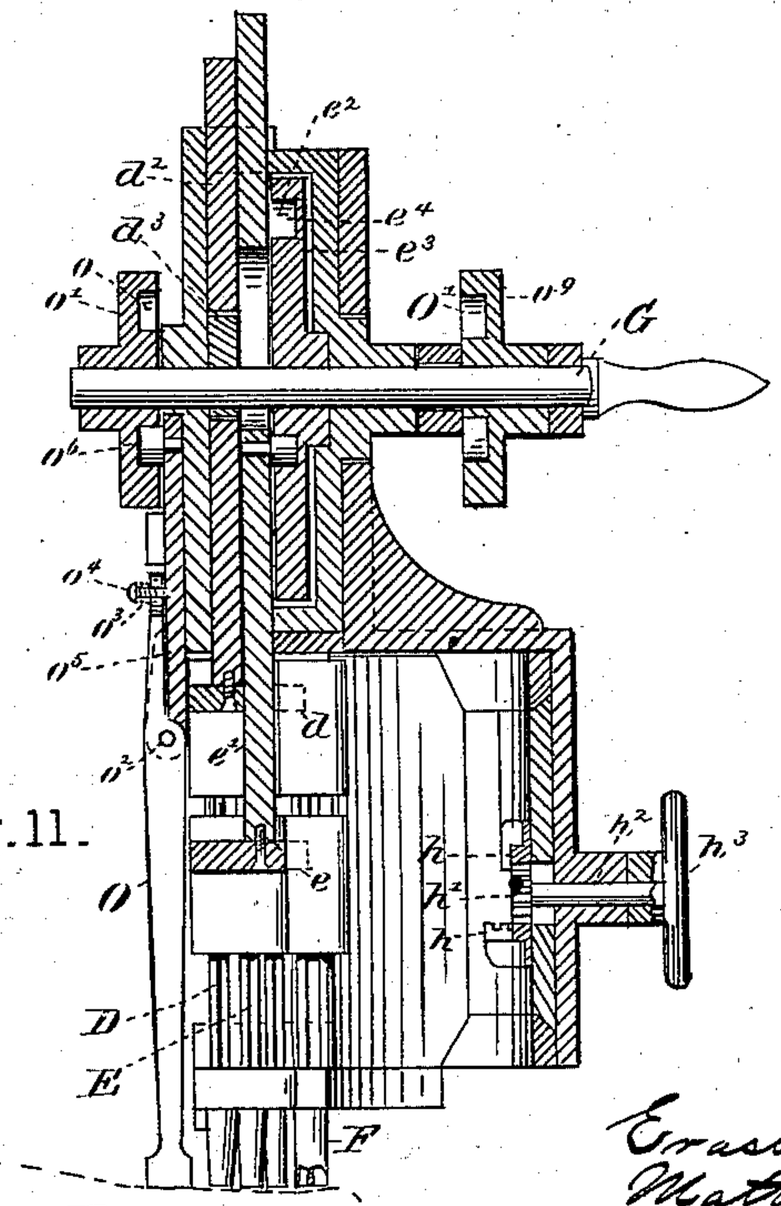

Fig. 11.

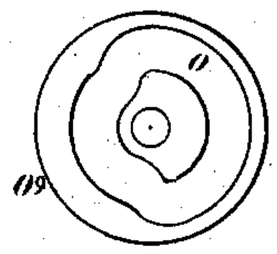

Fig. 13.

WITNESSES

Frank G. Parker

Geo. F. Walker

INVENTORS

Erastus Woodward

Matthias Brock

by their Attys

Clarke & Raymond.

UNITED STATES PATENT OFFICE.

ERASTUS WOODWARD AND MATTHIAS BROCK, OF BOSTON, MASSACHUSETTS, ASSIGNORS TO THE COPELAND LASTING MACHINE COMPANY, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN GANG PEGGING-MACHINES.

Specification forming part of Letters Patent No. **216,926,** dated June 24, 1879; application filed January 31, 1879.

To all whom it may concern:

Be it known that we, ERASTUS WOODWARD, of Boston, in the county of Suffolk and Commonwealth of Massachusetts, and MATTHIAS BROCK, of said Boston, have invented an Improvement in Gang Pegging-Machines, of which the following is a specification.

This invention relates to a class of driving devices which we term "group or gang pegging-machines."

It is important for various purposes, and especially for securing the edge of an upper to the insole in the lasting process, to drive simultaneously a group or gang of pegs without changing the position of the driving mechanism in relation to the work, or vice versa.

We have illustrated, therefore, our invention as applied to a machine for driving the pegs necessary in securing the edge of an upper to an insole at the toe and heel in the said lasting process.

It comprises, first, means for driving and withdrawing a gang of awls; second, means for operating a gang of driving-rods; third, means for feeding pegs to the gang of driving-rods; fourth, means for changing the location of the nozzles in relation to the work after the gang of awls has been operated and before the pegs have been driven; fifth, means for adjusting the nozzles horizontally; sixth, means for presenting this mechanism, or any part of it, to the work or surface in or upon which the pegs are to be driven.

In the drawings, Figure 1 represents a side elevation of our device in position for the commencement of its work. Fig. 2 is also a side elevation, representing the pegging devices upon the last. Fig. 3 is a plan with the machine upon the last. Figs. 4 and 5 are sections illustrating the means for the horizontal adjustment of the machine. Figs. 6, 7, and 8 represent the change in the position of the nozzles in relation to the surface of the work while the machine is in operation. Fig. 9 is a detail representing in elevation the feedways through which the peg-strips are fed to the feed-rolls. Fig. 10 is a side elevation, with a portion of the machine removed to show the operating mechanism. Fig. 11 is a vertical central section and elevation. Fig. 12 represents means for operating the transferring lifting-foot. Figs. 13 and 14 are detail views.

We show as one means for supporting the feeding and driving mechanism, and for presenting it to the work, the standard A, which may project from any portion of the lasting-machine proper, or from a table or bench, upon or to which, or to the arm or pin *a* projecting therefrom, is hung the frame B, having the counter-balance *b* and the bracket *b'*. This bracket supports the arm C, which is pivoted at *c* to the frame B. It carries the case C^1 and the shell C^2, within and to which the operative parts of the driving mechanism are secured.

The gang of awls D and the gang of drivers E are each provided with reciprocating movements in the nozzles F, there being a driving-rod and awl for each nozzle.

The nozzles are divided into two series, (one only of which is shown,) and are supported upon the plates *f*, the plates being hinged to each other at *f'*.

The awls are divided into two series, to correspond in number with the nozzles in which they play, and are fastened, respectively, to the blocks D', which are pivoted upon the line *f'*, to open or close with the nozzle-carrying plates.

The awl-carrying blocks slide horizontally upon the cross-head *d*, attached to the lower end of the bar d^2, and project within the horizontal recesses d^1 in said blocks. The cam d^3 on the shaft G reciprocates said cross-head. These awl-bearing blocks thus slide horizontally to and from each other, and are supported and operated by the cross-head d^1, which is itself reciprocated by the cam d^3 upon the shaft G and the bar d^2.

Each awl-carrying block is provided with guides d^4, which slide upon the ends of arms H.

The driving-rods E are carried by the blocks E', pivoted or hinged to each other, and play upon the arms H and the cross-head *e*, in a manner similar to that of awl-carrying blocks. As these driving-rod-supporting blocks are arranged upon a line with and immediately below the awl-carrying blocks, it is necessary

that the same should be provided with a series of concentric slots, through which the awls pass.

The cross-head e is fastened to the end of the bar e^1, and is reciprocated by the cam-groove e^2 in the disk e^3 and the shaft G, and in which the cam-pin e^4 upon the bar e^1 plays.

It will be observed that the driving-bar d^2 is arranged to straddle its operative cam d^3, and that it is further provided with the bearings d^5 in the upper and lower portion of the cam-carrying case. The reciprocating bar e^1 is also provided with like bearing in said case.

Each peg-strip I is fed through its respective feedway K by means of the feed-wheel M, which bears upon the upper edge of each peg-strip, and is supported upon a shaft having bearings in the bracket m^1. These feed-wheels are provided with an intermittent revolution by means of the lever m^2, pivoted at m^3 to the block m^1, operated by the cam-projection m^4, projecting from the driving-block E′ through the pin m^5, to engage with the pinion m^6 upon the end of the feed-wheel shaft m by means of the pivoted pawl m^7 and springs m^8 and m^9.

The device for severing the pegs from the peg-strips consists of the knife or knives N, fastened to the driving-rod blocks E′, to reciprocate in the slit n across the feedways K. The cut pegs are advanced from this slit through the continuation of the feedway by the feeding of the peg-strips to a position in each nozzle beneath the driving-rods, as indicated in Fig. 10.

To provide the necessary horizontal adjustment to the driving-rod and awl-carrying blocks, feeding mechanism, &c., we have caused the arms H, upon which said blocks are reciprocated, and the curved sliding plates H^1, from which said arms project, to have a movement to and from each other within the shell C^2 by means of the racks h and pinion h^1 upon the end of the spindle h^2, having a bearing, c^2, in the shell, and operated by the disk-handle h^3. These curved plates H^1 are secured to the shell C^2 by the guideways c, and are provided with projections H^2, one from the under side of one plate, and the other from the upper side of the other plate, to extend by each other to carry the operating-racks.

To effect the proper transfer by which each driving-rod and its respective portion of each nozzle is brought in line with the holes previously made by the awl, we have provided a transferring-arm, O, which is reciprocated at the proper interval by the cam-groove o in the disk o^1 on the shaft G.

The transferring-arm is pivoted at o^2 to the sliding block o^5, and has a slight longitudinal movement against the stress of the spring o^3, which surrounds the pin o^4, and preferably is somewhat rounded at its lower end.

The block o^5 is provided with a cam-pin, o^6, and is reciprocated in the ways o^7 upon the plate C^3, and is secured thereon by the cross-bar o^8.

This transferring-bar operates, in connection with the cam-groove O′ in the disk o^9, upon the shaft G through the connecting mechanism, consisting of the reciprocating bar o^{10}, with its cam-pin o^{11}. link o^{12}, and crank-lever o^{13}, which lays hold of the rod o^{15}, having a bearing in the pivoted arm C, the slotted lever o^{14}, and the adjustable pin o^{16}, to swing the arm C upon the bracket b' sufficiently to effect the carrying of the mechanism for the purpose stated.

The cam-carrying shaft G may be operated by hand or power, as desired.

To provide a suitable horizontal adjustment of the pegging-machine in relation to and alongside of its work, the supporting-arm a may be extended any requisite distance from its standard, and the frame B may have a horizontal movement thereon substantially parallel with the last.

In adjusting the nozzle upon the margin of the upper, the folding slides at the toe or heel, as the case may be, may be used in properly locating them by being advanced against them. The nozzles in that case would be arranged along the outer edge of the plate. They may, if necessary, project through holes in the lasting-plates.

The operation of this device in connection with a lasting-machine is as follows: The last, with the upper thereon, is jacked in the lasting-machine, the upper fitted to the last by the lasting appliances, and its edge folded upon the surface of the insole.

The pegging-machine having been adjusted to the curvature of the surface upon which it is to be used is then operated, and is caused to descend upon that portion of the margin of the upper which is to be secured to the insole, and may by its weight drive a gang of awls, in which case the awls must protrude from the nozzles, as shown in Fig. 1, before the machine is dropped upon its work. The awls are then withdrawn, the machine slightly raised upon the transferring-bar O, which rests upon the insole, by the cam-groove o, the nozzles lifted from the upper, and a slight horizontal movement in the direction of the transferring-bar is effected for the purpose of bringing that part of each nozzle through which the peg is driven into line with the holes made by the awls. The nozzles are then lowered upon the upper, and the pegs, which have previously been fed to the nozzles by the strip-feeding devices, are driven simultaneously by the descent of the driving-rods.

The advantage which arises from driving pegs in this manner consists in the saving in time effected over the methods now in use of driving but one peg at a time, as a number of pegs can be thus driven in about the same time that it takes to drive one in the old manner; and as the work is not adjusted to the machine or the machine to the work for each peg driven, a saving of all that time which is necessary with the single peg-driving machine for moving the work to the machine for each

peg driven is obtained, as the machine is placed but once for the entire number of pegs driven.

We do not confine ourselves in the use of our invention to gang-pegging machines in which the pegs are driven simultaneously, as, if the same are driven in rapid succession from a gang of nozzles, the same advantage, substantially, is produced.

Having thus fully described our invention, we claim and desire to secure by Letters Patent of the United States—

1. The combination, in a gang pegging-machine, of the following elements: a gang of awls, D, their supporting-block D′. a single operating-cam, and suitable connecting mechanism, whereby a group of awls are simultaneously operated; a gang of driving-rods, E, their supporting-block E′, a single operating-cam, and suitable connecting mechanism, whereby a group of drivers are simultaneously operated; and means for feeding pegs to a position in each driveway beneath the driving-rod, to be driven by its descent, all combined in an organized machine as set forth, and adapted to operate in relation to each other substantially as described.

2. In a gang pegging-machine, the combination of a gang of awls, D, their supporting-block D′, a single operating-cam, and suitable connecting devices, whereby a group of awls are simultaneously operated; a gang of driving-rods, E, their supporting-block E′, a single operating-cam, and suitable connecting mechanism, whereby a group of driving-rods are simultaneously reciprocated, a group of throats or nozzles, F, in each of which an awl and driving-rod are reciprocated, and means for feeding pegs to a position in the driveway, to be driven by the descent of the driving-rod, all combined in an organized machine, as set forth, and arranged to operate as described.

3. In a gang pegging-machine, the combination of a gang of awls, D, their supporting-block D′, a single operating-cam, and suitable connecting devices, whereby a group of awls are simultaneously operated, a gang of driving-rods, E, their supporting-block E′, a single operating-cam, and suitable connecting mechanism, whereby a group of driving-rods are simultaneously reciprocated, means for feeding pegs to a position in the driveway, to be driven by the descent of the driving-rods, and mechanism for transferring or moving the peg-driving devices, so that the gang of driving-rods are made to occupy the position of the group of awls, and are in line with the holes previously made by the awls, all combined in an organized machine, as set forth, and adapted to operate as described.

4. In a gang pegging-machine, the combination of two groups of devices for driving pegs, horizontally adjustable in relation to each other, each of which comprise a gang of reciprocating awls, a gang of reciprocating driving-rods, means for feeding the peg-strip to severing devices and a peg to a position beneath the driving-rod and said severing devices, substantially as described.

5. In a gang pegging-machine, the case C^2, carrying series of awls and driving-rods, in combination with the arm C, frame B, and counter-balance *b*, all pivoted to standard A, whereby the awls and drivers may be operated substantially in the manner and for the purpose specified.

6. In a pegging-machine, the combination of a group of awls, D, a reciprocating awl-supporting block D′, the operating-cam d^3, and suitable connecting mechanism, whereby a gang of awls is positively driven and withdrawn by the rotation of the cam, substantially as and for the purposes described.

7. In a pegging-machine, the combination of a group of awls, D, and their supporting-block D′, a group of driving-rods, E, and their supporting-block E′, with means for reciprocating said blocks in the order of movement described, for the purposes set forth.

8. In a pegging-machine, the combination of the lifting-bar O with the cam *o* and suitable connecting mechanism, whereby the peg-driving devices, with their case, are lifted from the work after the awls have operated, substantially as and for the purposes described.

9. In a pegging-machine, the combination of the bracket *b′*, the arm C, carrying the peg-driving mechanism, and pivoted to the frame B, with the cam O′, and a train of connecting mechanism laying hold of the end of said bracket *b′*, all arranged to provide a slight horizontal movement of the peg-driving mechanism, supported by the arm C, substantially as described.

10. In a pegging-machine, the combination of the curved plates H^1, each of which is provided with the arm H, which carry the awl and driving-rod supporting blocks, with means for moving said curved plates to and from each other for the purposes of adjustment, substantially as described.

11. The combination, in a pegging-machine, of the curved plates H^1, each of which is provided with the rack *h* upon the projection h^2, and each of which has suitable bearings within the case C^2, with the pinion h^1, adapted to engage with said racks, and means for operating the same, substantially as described.

12. In a gang pegging-machine, the combination of the horizontally-adjustable arms H, with the awl-supporting blocks D′ and the driving-rod-supporting blocks E′, provided with reciprocating movements thereon, all substantially as described.

13. In a pegging-machine, the combination of a cross-head, secured to a reciprocating bar, with the adjustable awl-carrying and the adjustable driving-rod-carrying block, supported by said cross-head, and provided with a horizontal movement by means of the arm H and suitable connecting mechanism, substantially as described.

14. In a pegging-machine, the combination of a series of feedways, each opening into a

driveway, with the feed-wheel N, arranged over the feedways to engage with the top edge of the peg-strips and to advance them a given distance for each descent of the driving-rods, and a severing device, N, operated by the reciprocating driving-rod-supporting block E′, substantially as described.

15. In combination with the feed-wheels M, the pinion m^1, operating-lever m^2, carrying the pawl m^7, springs m^8 m^9, and the operating-cam m^4, all arranged to operate substantially as described.

16. In a gang pegging-machine, the combination of the intermittently-revolving feed-wheel M, the reciprocating severing devices N, the feedways K, each opening into a separate driveway in each nozzle, arranged and combined as described, whereby the feeding devices shall simultaneously advance the peg-strips to the severing mechanism and the pegs to positions under the driving-rods, substantially as and for the purpose described.

17. In a pegging-machine, the combination of a gang of awls, a gang of driving-rods, mechanism for lifting and transferring the peg-driving devices and for feeding and severing the peg-strip, with the awl operating, lifting, transferring, and driving-rod-actuating cams, all supported upon and rotated by the shaft G and suitable connecting mechanism, substantially as and for the purposes described.

18. In a pegging-machine, the combination of a stationary jack or work-support with a gang of awls, supported by a head carrying the driving mechanism, having vertical or substantially vertical adjustment in relation to said jack or work-support, and adapted to be driven by the descent or dropping of said head upon the work-support, as described.

19. In a pegging-machine, the combination of the lifting-foot O, pivoted to the reciprocating block o^5, and the spring o^3, and the pin o^4, all arranged in relation to each other, to operate substantially as described.

20. In a gang pegging-machine, the combination of a gang of nozzles, a gang of reciprocating awls, a gang of reciprocating driving-rods, and feeding mechanism for feeding the peg-strip, all horizontally adjustable, substantially in the manner and for the purpose specified.

ERASTUS WOODWARD.
MATTHIAS BROCK.

Witnesses:
F. F. RAYMOND, 2d,
GEO. F. WALKER.