

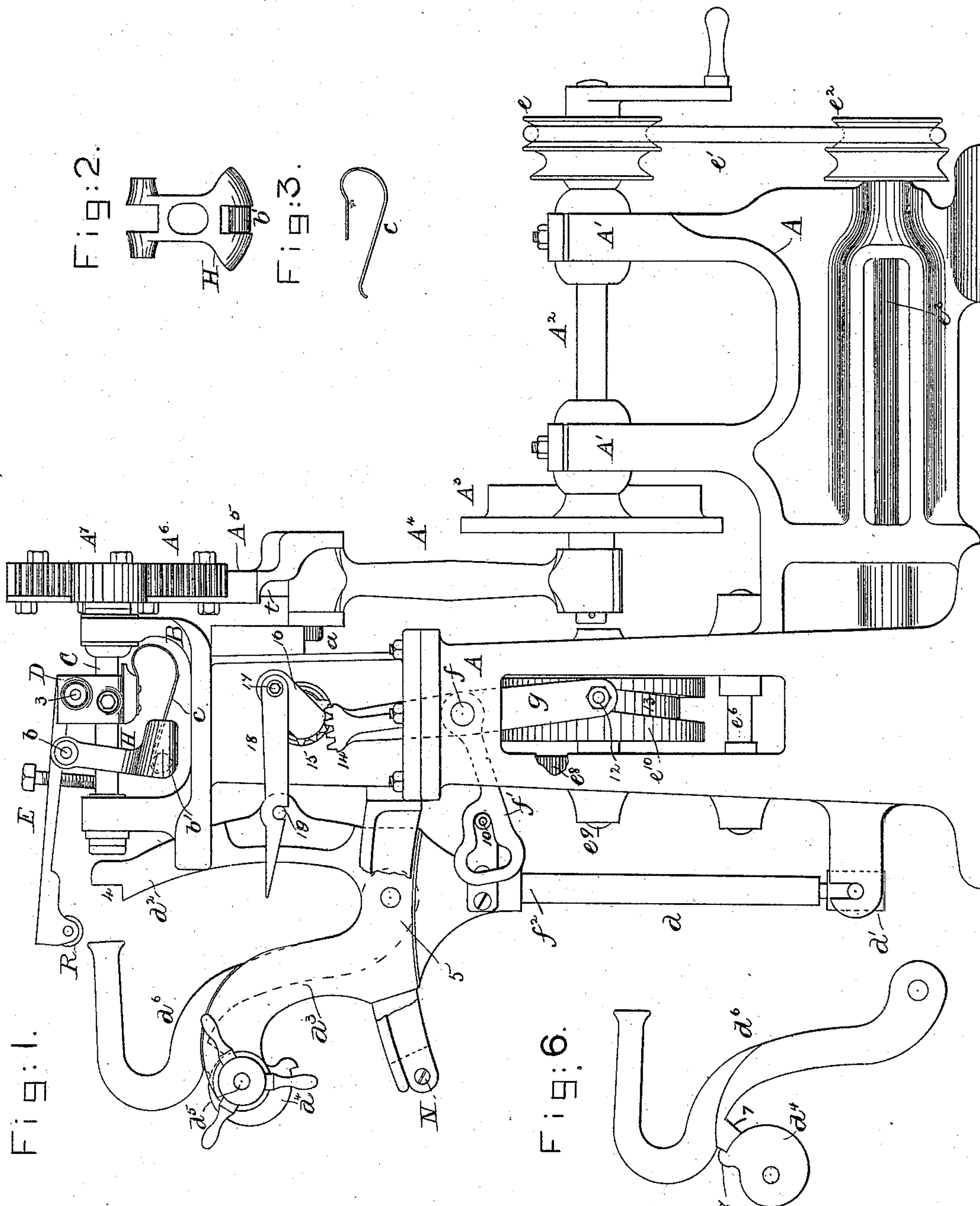
(No Model.)

2 Sheets—Sheet 1.

C. J. ADDY.  
HEEL BURNISHER.

No. 385,291.

Patented June 26, 1888.



Witnesses.  
Edgar A. Goddard.  
Francis H. Emery.

Inventor.  
Charles J. Addy.  
by Leroy & Gregory.  
Atty.

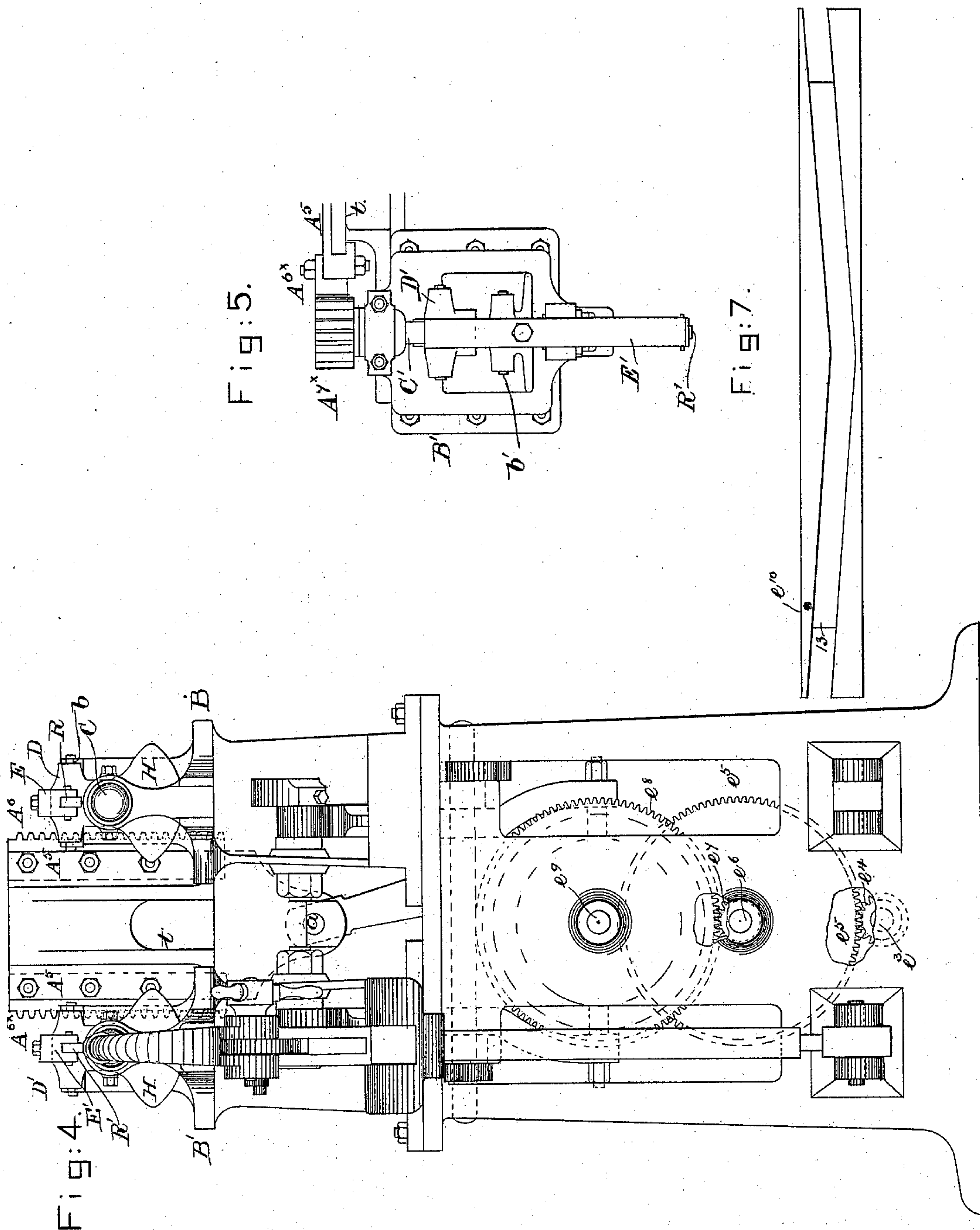
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HEEL BURNISHER.

No. 385,291.

Patented June 26, 1888.



Witnesses:

Edgar A. Goddard.

Howard F. Eaton.

Inventor.

Charles J. Addy.

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# UNITED STATES PATENT OFFICE.

CHARLES J. ADDY, OF MALDEN, MASSACHUSETTS, ASSIGNOR TO THE  
TAPLEY MACHINE COMPANY, OF PORTLAND, MAINE.

## HEEL-BURNISHER.

SPECIFICATION forming part of Letters Patent No. 385,291, dated June 26, 1888.

Application filed February 27, 1888. Serial No. 265,360. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES J. ADDY, of Malden, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Burnishers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My present invention consists in improvements upon that class of machines for burnishing the heels of boots and shoes of which the so-called "Tapley machine" is the exponent, and is in the line of the inventions to me patented on the 9th day of June, A. D. 1874, and numbered 151,819, and also on the 7th day of December, 1880, and numbered 235,115.

The machine described in the Patent No. 235,115 contains an oscillating shaft having fixed to it a swing block or collar having secured to it a spring, and the said swing block or collar has jointed to it a burnishing arm or holder provided with a burnishing tool, the said arm having fixed to it a counterbalance-block provided with a roll on which bears the free end of the said spring, the roll of the said counterbalance-block approaching the free end of the spring as the burnishing-tool is forced upon the larger parts of the heel, the counterbalance-block being rigidly attached to the said burnishing-arm and moving in unison with it while the roll referred to is traveling in the arc of a circle described from the pivotal point of the burnisher-arm.

In a machine of the class referred to it is essential for the rapid burnishing of heels that the tool respond very quickly to the varying curvature and size of the heel under it, or else all parts of the heel are not uniformly burnished, and in practice the equalizing pressure devices referred to have been found objectionable when the parts are not properly oiled, for then the friction and wear between the said spring attached to the swing-block and the roll of the counterbalance-block are such as to bind the one upon the other, so that the tool does not maintain uniform contact with the heel during the rapid movements of the machine. To overcome this difficulty and enable the machine to work properly at speed notwithstanding

the neglect of the operator to oil the same, I have pivoted the counterbalance-block to the burnisher-arm, and so shaped the free end of the spring, which spring is attached to the swing block or collar, as to enable it to be hooked over a roll or other stud carried by the counterbalance-block, and in this way the counterbalance-block, instead of moving in unison with the burnishing arm and as a rigid part thereof, is free to follow the movement of the burnisher-arm, and that without change of position of the free end of the spring as to the roll or stud of the counterbalance-block as the tool rises on the larger radius of the heel.

By pivoting the counterbalance-block as described, the spring in engagement with the roll or stud of the counterbalance-block retains the inner end of the said block, and as a result thereof the distance between the tool and the roll or stud acted upon by the said spring is sufficiently increased to compensate for any increase in the strength of the said spring due to its compression through the rising of the burnishing-arm.

Another feature of my invention consists of a new method of throwing the burnisher-heads. In the so-called "twin machine," patented by me May 19, 1885, and numbered 318,340, the two heads were thrown by segment-gears in the same direction at the same time.

In the present device I have substituted for the segment-gears shown in said patent a slide or plate with two perpendicular racks by which to drive the pinions and oscillate the shafts carrying the burnisher-heads. By these perpendicular racks I am enabled to simultaneously throw the burnisher-heads in opposite instead of in the same direction, thus greatly reducing vibration of the machine and other strains due to high speed and momentum.

Another feature of my invention relates to a novel jack, it containing a goose-neck hinged or jointed at its lower end to the jack-frame at a point practically below the center of the heel to be burnished, the said goose-neck having co-operating with it a cam by which to actuate it to hold firmly in place the shoe the heel of which is to be burnished.



Another feature of my invention consists in a novel and simple means for operating the mechanism which automatically moves the jacks in and out under the action of the tool and for raising and lowering said jacks during such movement in and out. For this purpose I mount in the frame of the machine below the crank-shaft a secondary shaft driven by a pulley and belt from the said crank-shaft, the said secondary shaft through suitable gears operating a cam-cylinder inside the column of the machine, and above this cam is a cross-rod at right angles to the cam-shaft, and upon the cross-rod are mounted two segment-levers provided each at its lower end with a roller or other stud to enter the groove of the cam-cylinder, the teeth of the upper end of each of the said levers engaging a pinion suitably journaled above the said lever, and having attached to it an arm and hook by which to move the jack in and out. These levers have arms extended out to the front of the machine, which arms serve to raise and lower the jacks at the proper time in connection with the in-and-out movement of the jacks under the tools. The outwardly-extended arms referred to will preferably be slotted irregularly to form a cam-slot for the reception of a roller or other stud attached to the jack, so that the jack can be positively raised and lowered instead of being raised positively and lowered by its own weight. This I consider on some classes of work a very desirable feature. The groove in the cam-cylinder is of such shape as to cause the jacks to simultaneously travel in and out in reverse directions. This feature adds to the convenience of operating the machine.

Figure 1 in side elevation represents a burnishing-machine embodying my invention, the yoke in which the jack moves being partially broken out; Fig. 2, a detail representing a counterbalancing-block detached from the burnishing arm. Fig. 3 shows detached the spring which co-operates with it. Fig. 4 is a front or left-hand end elevation of the machine shown in Fig. 1, the frame-work being partially broken out to show some of the working parts, one of the jacks—namely, that at the right-hand side of the machine—being omitted. Fig. 5 is a top view of that one of the heads and shaft and burnisher-arms at the left-hand side of the machine and not shown in Fig. 1. Fig. 6 is a detail of the jack and cam co operating with it, and Fig. 7 shows the curve of the cam-cylinder laid out.

The machine herein represented contains two burnishing-heads and two jacks, and each head and jack being alike I need not particularly describe but one head and jack in order that my invention may be clearly understood.

The frame-work A, of suitable shape to contain the working parts, has bearings A', in which is mounted the crank-shaft A<sup>2</sup>, having fixed to it the crank-plate A<sup>3</sup>, provided with a crank-pin upon which is placed a link or pitman, A<sup>4</sup>, the upper end of which, as at a,

(see Fig. 4,) is joined to a slide-frame, A<sup>5</sup>, provided at its opposite edges with rack-teeth A<sup>6</sup> A<sup>6x</sup>, which engage like pinions A<sup>7</sup> A<sup>7x</sup>, fast on and to oscillate the shafts of the burnishing-heads. The like top plates, B B', having usual yokes or upright-bearing portions, the shafts C C', mounted therein, the swing blocks or collars D D', the burnisher-carrying arms E E', to the forward ends of which are attached suitable burnishing-tools, R, are and may be all substantially as in United States Patent No. 235,115.

By reference to the drawings it will be seen that the like racks A<sup>6</sup> A<sup>6x</sup> engage the like pinions A<sup>7</sup> A<sup>7x</sup>, connected to the respective shafts C C' at opposite sides of the said shafts, so that as the slide A<sup>5</sup> is reciprocated the said shafts and their attached parts are moved simultaneously in opposite directions, this being done to equally distribute the strain due to high speed and momentum, thus avoiding shock.

Each burnisher-carrying arm has pivoted to it, as at b, a counterbalance-block, H, provided with a roll or stud, b', with which is connected the free end of a pressure-spring, c, suitably attached at its other end by bolts or screws to the swing block or collar D or D', as it may be.

As herein shown, the free end of the spring c is hook-shaped and partially encircles the said roll or stud, so that the engagement of one with the other is always insured in like manner, notwithstanding variations in the position of the burnisher-carrying arms due to varying size or diameter or curvature of the heel being burnished.

Usually the burnishing-tool first acts upon the heel at its small or top-lift end and gradually follows up the heel to its heel-seat end, and in so doing the burnisher-carrying arm is turned about its connection or pivot 3 with the swing block or collar D or D', the burnishing-tool moving in the arc of a circle about such pivot; but at this time the counterbalance-block engaged by the free end of the spring c is so held that the distance between the point of connection of the spring with the counterbalance-block and the burnishing-tool is increased sufficiently to compensate for the increasing strength of the spring due to its compression, for it will be understood that the counterbalance-block follows the burnisher-carrying arm; but the said block moves in a substantially straight line rather than in the arc of a circle, as in the Patent No. 235,115, referred to.

By pivoting the counterbalance-block, as described, and connecting the spring to it the omission of the operator to oil the roll or stud and spring will not result in any harm.

Each jack has a like post, as d, the lower end of which enters loosely a pivoted step, as d', a rigid upper arm, as d<sup>2</sup>, of the jack, having a shouldered seat, 4, for the reception of the top-lift end of the heel, and, as herein shown, a second arm, as d<sup>3</sup>, of the jack, also a rigid



arm, is provided with a cam, as  $d^4$ , on a shaft or stud,  $d^5$ , provided with a suitable handle.

Each jack has pivoted upon it at 5 (see Fig. 1) a goose-neck,  $d^6$ , the free end of which enters the shoe, and co-operating with the shouldered seat 4, serves as a firm clamp by which to hold in place the shoe the heel of which is to be burnished. The cam  $d^4$  acts upon a lug or projection, 7, (see Fig. 6,) of the goose-neck and moves the same to clamp the shoe, a projection, as 8, on the said cam coming in contact with the projection 7 and serving as a stop to determine the extreme throw of the goose-neck.

Each jack is made movable in a slotted guide or N, common to my Patent No. 318,340. The crank-shaft  $A^2$  has fast upon it a suitable pulley,  $e$ , which drives a belt,  $e'$ , extended over a pulley,  $e^2$ , on a supplemental shaft,  $e^3$ , which at its forward end (see Fig. 4) has attached to it a pinion,  $e^4$ , which engages and rotates a toothed gear,  $e^5$ , fast to a short shaft,  $e^6$ , provided in turn with a pinion,  $e^7$ , which in turn engages and rotates a toothed gear,  $e^8$ , fast upon a shaft,  $e^9$ . This shaft  $e^9$  has fast upon it a cam-cylinder,  $e^{10}$ , provided with an irregular cam groove shaped substantially as in Fig. 7, where the said cam is shown as laid out straight. The frame-work of the machine immediately above the cam-cylinder  $e^{10}$  has mounted in it a stationary rod,  $f$ , having mounted loosely upon it a sector-lever, as  $g$ , the said sector-lever having attached to or moving with it a forwardly-extended arm,  $f'$ , having a cam-slot,  $f^2$ , there being one such lever and arm for each jack, the cam-slot referred to receiving in it a roller or other stud, as 10, attached to or forming part of a jack, so that as the lever  $f'$  rises and falls it will positively lift and then positively depress the jack rather than to let the jack descend by gravity, as heretofore.

Each sector-lever  $g$ , there being one such lever for each jack employed, has at its lower end a roller or other stud, as 12, which enters the cam-groove 13 of the cam-cylinder, the upper end of each lever having teeth, as 14, which engage a pinion, 15, attached to or forming part of an arm or crank, as 16, mounted on a suitable stud and having pivoted to it at 17 a hooked arm, as 18, which engages loosely and detachably a pin or stud, as 19, forming part of or attached to one of the rigid arms  $d^2$  of the jack, the said hooked arm 18, moved by the sector-lever and crank 16, acting to positively move the jack in and out during the operation of burnishing the heel from its top-lift toward its heel-seat end, and as the jack is moved in it is also, through the action of the lever  $f'$ , moved up and down positively. The shape of the cam slot in the said lever is made to conform to the particular curvature of the heel, the cam portions of the said levers being in practice made detachable in suitable manner.

The shape of the cam-groove 13 in the cam-cylinder is such that it will move the sector-

levers  $g$  simultaneously in opposite directions, so that when the machine is in operation and two heels of two shoes are burnished the jacks will move in opposite directions.

As described in the Patent No. 318,340, heretofore granted to me, the two jacks and the equalizing-heads may be so handled that as the heel of one shoe is being burnished the operator may apply a shoe to or remove a shoe from the other jack.

My improved machine is well adapted for burnishing or finishing heels in wax and other usual ingredients. The slide or plate  $A^5$  is mortised out at its inner side to move upon a guideway,  $t$ , forming a rigid part of the frame.

I claim—

1. In a burnishing-machine, the following elements, viz: a burnisher-carrying arm and a rock-shaft to actuate the said arm, a counterbalance-block pivoted to the said burnisher-carrying arm, and a spring to engage the said block and retain it while the burnisher-arm moves outwardly under the action of the varying shape of the heel being treated, substantially as described.

2. The combination, with the arms  $d^2$   $d^3$  of the jack, of the pivoted goose-neck and the cam for actuating the goose-neck, substantially as described.

3. The jack having a stud or pin, the hook 18, crank 16, and gear 15, combined with the sector-lever and cam to operate it, substantially as described.

4. The jack having an attached roll or stud, as 10, combined with a vibrating arm, as  $f'$ , having a cam-slot,  $f^2$ , to receive the said roll or stud and raise and lower the jack, substantially as described.

5. The jack having two studs or projections, as 19 and 10, the hook-arm 18, crank 16, pinion 15, and sector-lever 14, having the cam-slotted arm  $f'$ , combined with a cam to actuate the said sector-lever, substantially as described.

6. In a burnishing-machine, a jack to hold a boot or shoe the heel of which is to be burnished, combined with the cam  $e^{10}$ , a lever actuated thereby to raise the jack and permit it to descend at the established time, and intermediate connections between the said lever and jack, whereby the jack is moved automatically in and out, substantially as described.

7. In a burnishing-machine, two shoe-holding jacks and two levers and intermediate connections between them and the said jacks, combined with a cam-wheel to actuate both the said levers simultaneously in opposite directions, each lever and its connections moving each jack independently of the other both in and out under the burnishing-tool and up and down, substantially as described.

8. The combination, with the jacks, of the driving-shaft, the supplemental shaft  $e^3$ , the gears, the cam, and the levers, and intermediate connecting devices between the said levers and jacks to throw the jacks in and out, substantially as described.



9. In combination, the two jacks, the cam-  
wheel, the two levers, and connecting mech-  
anism between them and the two jacks, where-  
by the jacks are thrown in and out from the  
5 machine at different times instead of together,  
substantially as described.

In testimony whereof I have signed my name

to this specification in the presence of two sub-  
scribing witnesses.

CHARLES J. ADDY.

Witnesses:

G. W. GREGORY,  
J. C. SEARS.