(No Model.)

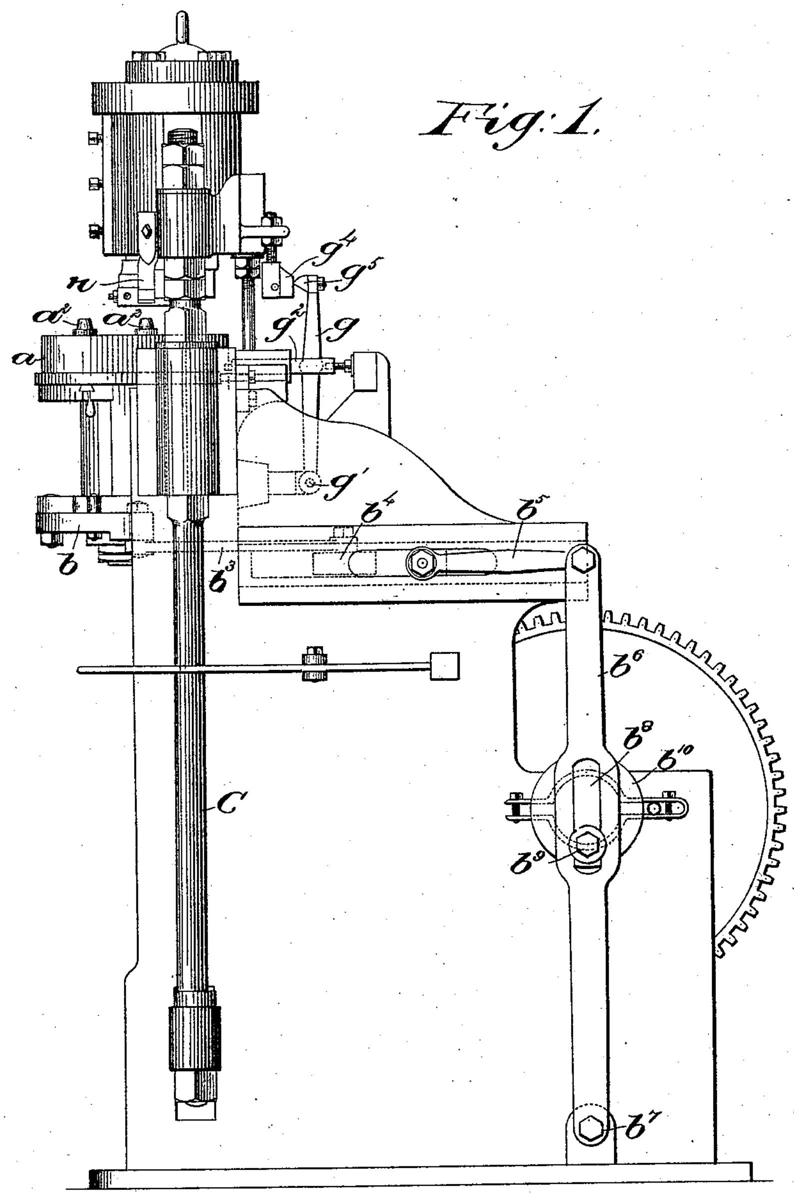
3 Sheets—Sheet 1.

C. T. GRILLEY.

MACHINE FOR FORMING WASHERS.

No. 455,793. Patented July 14, 1891.

Fig: 1.



Witnesses.
Fred S. Greenleaf.
Frederick L. Emery

Inventor.
Charles T. Grilley,
by Crosby & Gregory attys

(No Model.) 3 Sheets—Sheet 2.

C. T. GRILLEY.

MACHINE FOR FORMING WASHERS.

No. 455,793. Patented July 14, 1891.

Fig: 2.

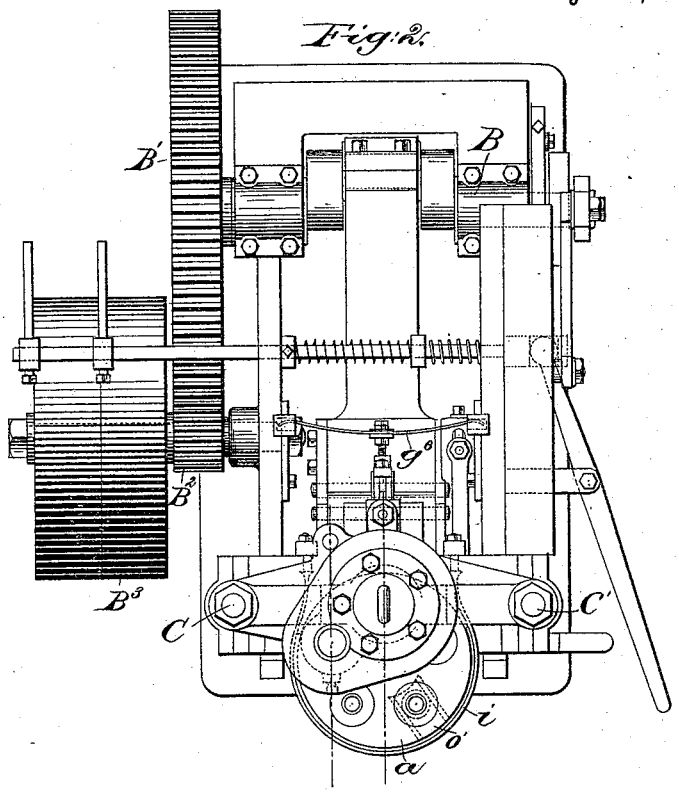
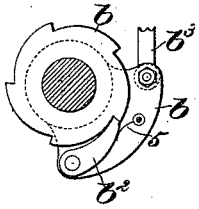


Fig: 3.



Witnesses.
Fred S. Gunnell.
Frederick L. Emery.

Inventor.
Charles T. Grilley,
by Lemby & Gregory Attys.

(No Model.) 3 Sheets—Sheet 3.

C. T. GRILLEY.

MACHINE FOR FORMING WASHERS.

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Fig. 4.

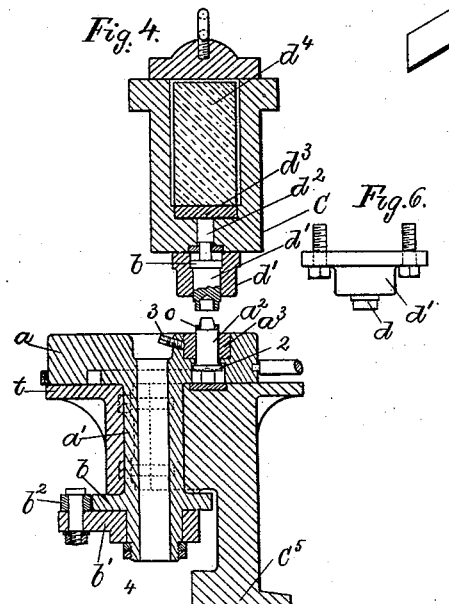

Fig. 6.

Fig. 5.

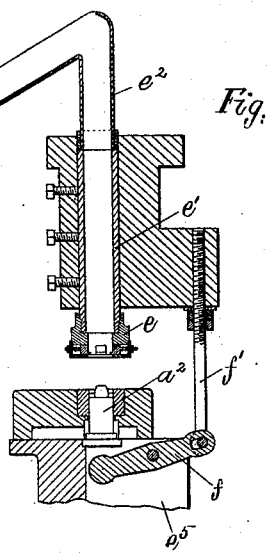

Fig. 7.

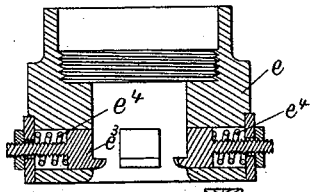

Fig. 9.

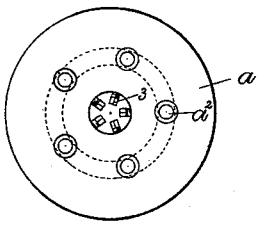

Fig. 8.

Witnesses.
Fred S. Greenleaf.
Frederick L. Emery.

Inventor.
Charles T. Grilley,
by Crosby & Gregory Attys.

UNITED STATES PATENT OFFICE.

CHARLES T. GRILLEY, OF BOSTON, MASSACHUSETTS.

MACHINE FOR FORMING WASHERS.

SPECIFICATION forming part of Letters Patent No. 455,793, dated July 14, 1891.

Application filed January 13, 1891. Serial No. 377,625. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. GRILLEY, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Machines for Forming and Finishing Leather Washers, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention has for its object to construct a machine for forming and finishing leather washers, whereby accidents which now occasionally happen may be avoided and by which the product of the machine can be largely increased.

Heretofore a machine for forming and finishing leather washers has been made comprising a nipple on which the washer is placed, a ring, and a former or plunger. By this machine the process of making the washers was slow and dangerous, owing to the fact that it was necessary to place the washer onto the nipple by hand and remove it while the machine was in operation, the said nipple being directly beneath the plunger. In accordance with this invention the leather washers, cut out in any usual or suitable manner, are placed on nipples arranged in a turret. The turret is revolved to bring the nipples successively beneath the former or plunger, which presses the washer onto the nipple and against a flange thereon, to thereby give it a suitable finish by compression and also to form it truly circular. A suitable pick-off mechanism is provided, which picks the finished washers off the nipples and conveys them to a suitable receptacle. The turret is revolved intermittingly, and as it is very heavy suitable means are provided for overcoming the inertia and stopping the turret at regular intervals to bring one of the nipples into position to be correctly acted upon by the plunger.

Figure 1 shows in side elevation a machine for compressing and finishing leather washers embodying this invention; Fig. 2, a plan view of the machine shown in Fig. 1; Fig. 3, a detail of the feeding mechanism of the turret, to be referred to; Fig. 4, a vertical section of the turret and cross-head and means for moving it, showing one of the nipples and the plunger or former in elevation; Fig. 5, a vertical section of the pick-off mechanism; Fig. 6, a detail of the cap which holds the plunger; Figs. 7 and 8, enlarged details of the pick-off tool, to be referred to; and Fig. 9, a plan view of the turret.

The turret a (shown as a flat disk or plate) has a shank portion a', which constitutes a bearing-spindle for the turret, said spindle having its bearings in the main frame-work. The turret a has holes through it from face to face, which receive nipples a^2, five being herein shown. The nipples a^2 are flanged at their lower ends, as at 2, and are held in position by suitable rings a^3, which are placed in the holes in the turret and secured therein by set-screws 3. The nipples a^2 thereby rest on the top surface of a bed-plate t, upon which the turret revolves. A ratchet-toothed portion b is formed on the shank a', at or near its lower end, and a pawl-carrying plate b' is arranged to be freely turned on said shank a' as a pivot, said pawl-carrying plate being supported on suitable washers or nuts 4, screwed onto the shank. The pawl-carrying plate has pivoted on it a pawl b^2, which is held pressed into engagement with the ratchet-toothed plate b by means of a spring 5. A bar or link b^3 (see dotted lines, Fig. 1) is attached at one end to a pawl-carrying plate b' and at the other end to a slide-block b^4, moving in a suitable guideway on the main frame-work. A bar or link b^5 connects said block b^4 with the upper end of a bar b^6, pivoted at its lower end at b^7 and slotted at a point intermediate its length, as at b^8, which slot receives a pin or stud b^9, attached to a crank b^{10}, secured to a drive-shaft B, having its bearings in the frame-work and carrying a toothed wheel B', which is engaged by a pinion B^2 on a shaft B^3, which carries the driving-pawls. As the shaft B revolves the bar b^6 is vibrated and the pawl-carrying plate moved a distance equal to one tooth of the ratchet-toothed plate b, causing the turret a to rotate, as herein represented, one-fifth of a complete revolution. A plunger or former d, having on it a flange 6, is held in a cap or receiver d', secured by suitable screws or otherwise (see Figs. 4 and 6) to the under side of a cross-head C, which is attached at each end to a rod or bar C' C', having bearings in the frame-work at each side thereof, said rods or bars C' C' being connected at their lower ends by a cross-bar C^2. The cross-

head C, guide-rods C′ C′, and cross-bar C^2 constitute a rectangular frame.

Between the cross-bar C^2 and the main frame—as at C^5, for instance—toggle-levers C^3 C^4, are placed, one of which, as C^4, is connected to a bar C^6, which is arranged loosely on a cranked portion of the shaft B, so that as the said shaft B revolves the toggles C^3 C^4 will be moved to depress the cross-bar C^2, and thereby depress the cross-head C and force the plunger d down onto that nipple a^2 which is beneath it. The plunger d bears against a short pin d^2, attached to a plate d^3, which bears against a yielding cushion d^4, of rubber or equivalent material, placed in the cross-head, said cushion yielding for different thicknesses of material. Thus it will be seen that the plunger d has a vertical movement, while the turret has an intermittingly-rotatable movement to bring one or another nipple into proper position beneath the plunger. The leather washer o, placed on the nipple, is thus pressed and finished by compression, and it is next desired to remove it from the nipple. This is performed by a pick-off mechanism, herein represented as a block e, having a hole through it and secured to a tube e', which is held in place in the cross-head C by suitable set-screws, and from said tube e' a suitable raceway e^2 leads. The block e has within it several sharp-pointed latches e^3, (see Fig. 7,) which are beveled at their under side to allow the washer to be moved upwardly, but which prevent the washer from being removed from said pick-off block. These sharpened latches are held in engaging position by a spring e^4.

At a point beneath the pick-off block e the bed-plate t, on which the turret revolves, is slotted, as at e^5, (see Fig. 5,) and in this narrow slot a lever f is pivoted, one end of said lever being attached to the cross-head C by a rod f, and the other end being arranged to strike the under side of that nipple which may be over the slot and to lift said nipple up into the pick-off block e. When the nipple is thus raised, the washer on it will be engaged by the spring-actuated latches e^3, and as the cross-head rises said washer will be removed from or pulled off of the nipple, after which the nipple will resume its normal position by gravity. As the next washer is forced into the block e and engaged by the spring-actuated latches, the one ahead of it is moved upward, and so on until they enter the raceway and are thereby conveyed to a suitable receptacle. The slot e^5 is made much narrower than the diameter of the nipple a^2, so as to prevent said nipple passing down through said slot.

At one part of the bed-plate on which the turret a revolves a recess is made, in which a plate o' (see dotted lines, Fig. 2) is placed, so that said plate may be withdrawn and the under side of the said turret exposed to enable the flanged nipples a^2 to be placed in the holes in the turret which receive them. A friction-band i surrounds the turret a to assist in overcoming its inertia, it being adapted to be tightened in any usual or suitable manner.

A locking device is also provided to insure stopping and holding the turret at the proper place, and, as herein shown, this locking device consists of an arm g, pivoted at g' to the frame-work and having a pin or projection g^2 on it, which is adapted to enter one or another hole or socket formed in the side of the turret a, there being five such holes provided, as represented in Fig. 1. The upper end of the arm g has on it a projection g^5, which co-operates with a bevel-faced block g^4, adjustably secured to the cross-head C, so that as the said cross-head rises and falls the arm g will be moved back and forth on its pivot. A strong spring g^6 bears against said arm, which acts in opposition to the bevel-faced block g^4. In lieu of this form of locking device, any other suitable form may be employed.

I have secured to the cross-head a stud n, which projects over one of the nipples, so that if one of said nipples should be retained in its elevated position after the washer has been removed from it it may be positively depressed.

By the machine herein shown and described the leather washers, cut in any usual or suitable manner, are placed on the nipples in the turret, after which they are subjected to the action of a plunger and pick-off mechanism, so that no harm can come to the operator while placing the washers on the nipples, yet at the same time the washers may be pressed and finished very rapidly.

I claim—

1. In a machine for pressing leather washers, an intermittingly-movable turret having a shank portion to constitute a bearing therefor, holes through the turret from face to face, a bed-plate on which it moves, and a series of nipples in said holes resting upon the top of the bed-plate, combined with a vertically-movable plunger, a ratchet-toothed portion on the lower end of said shank, a pawl and pawl-carrying plate rotatable on the shank, and mechanism, substantially as described, to actuate the pawl to rotate the turret automatically, substantially as described.

2. In a machine for pressing washers, an intermittingly-movable turret and a bed-plate on which it moves, having a removable plate o', combined with a series of removable nipples mounted in and carried by the turret and a plunger, substantially as described.

3. In a machine for pressing washers, an intermittingly-movable turret, a bed-plate on which it revolves, slotted as at e^5, a lever movable in said slot, a series of nipples carried by said turret in openings therethrough and means for raising them at regular intervals by said lever, a plunger, and a pick-off mechanism to grasp the washers, substantially as described.

4. In a machine for pressing washers, an

intermittingly-movable turret and a series of nipples carried by it, combined with a plunger, a yielding cushion against which it bears, and a vertically-movable cross-head carrying said plunger, and a pick-off block having bevel-ended latches therein to grasp the washers, and a discharge-tube leading from said block, substantially as described.

5. In a machine for pressing washers, an intermittingly-movable turret, a series of nipples carried by it and movable therewith, and a vertically-movable plunger, combined with pick-off mechanism comprising a series of spring-controlled latches to grasp the washers and means to lift the nipple into engagement with the pick-off, substantially as and for the purpose set forth.

6. In a machine for pressing washers, an intermittingly-movable turret, a series of nipples carried by it, a plunger, and a cross-head carrying it, combined with a locking device for said turret, consisting of a pivoted arm, a locking-pin at one end, and a projection at its other end to co-operate with a cam-block carried by said cross-head, substantially as described.

7. In a machine for pressing washers, a nipple and plunger, a pick-off mechanism consisting of a pick-off block e, having spring-actuated engaging-latches e^3, and means for forcing the nipple up into said pick-off block e, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES T. GRILLEY.

Witnesses:
BERNICE J. NOYES,
EDWARD F. ALLEN.