(No Model.) 4 Sheets—Sheet 1.

F. F. RAYMOND, 2d.

HEEL COMPRESSING MACHINE.

No. 598,256. Patented Feb. 1, 1898.

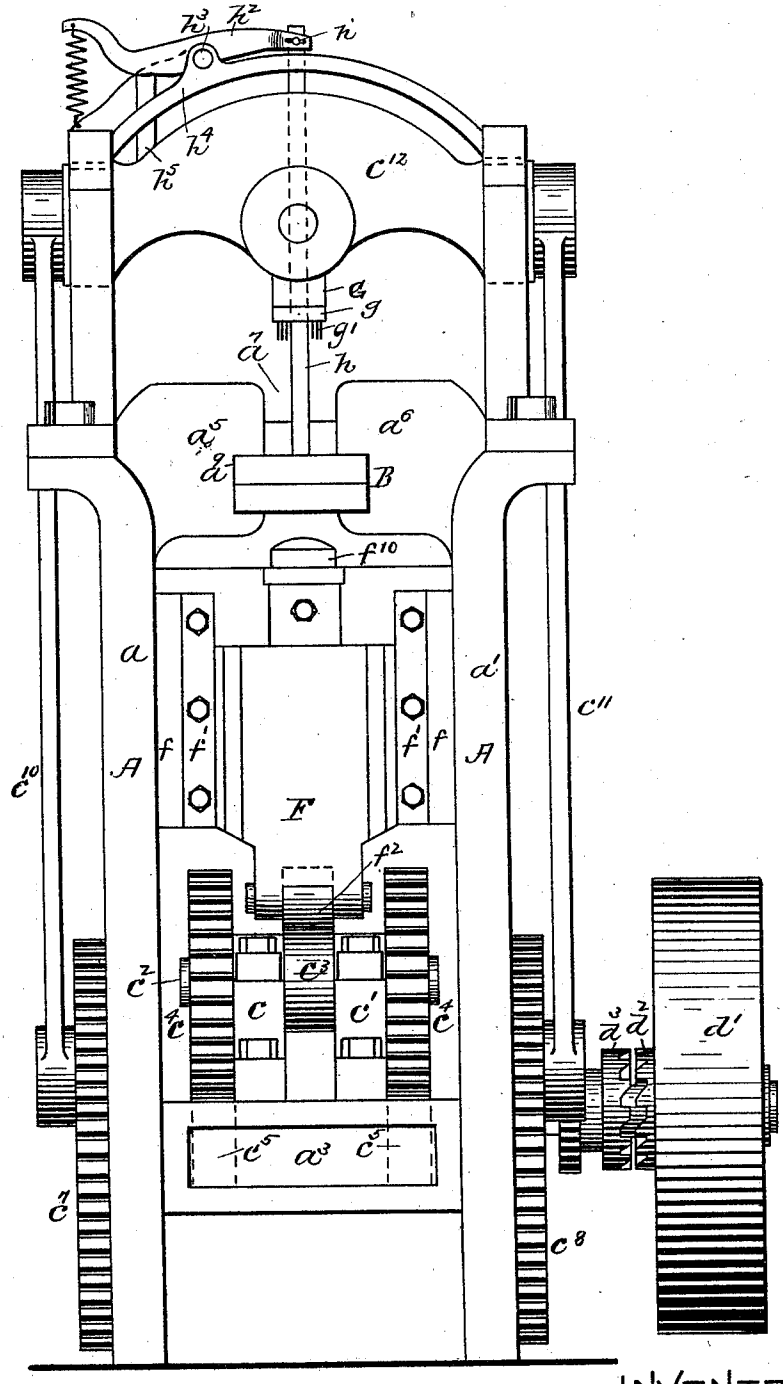


Fig. 1.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 4 Sheets—Sheet 2.

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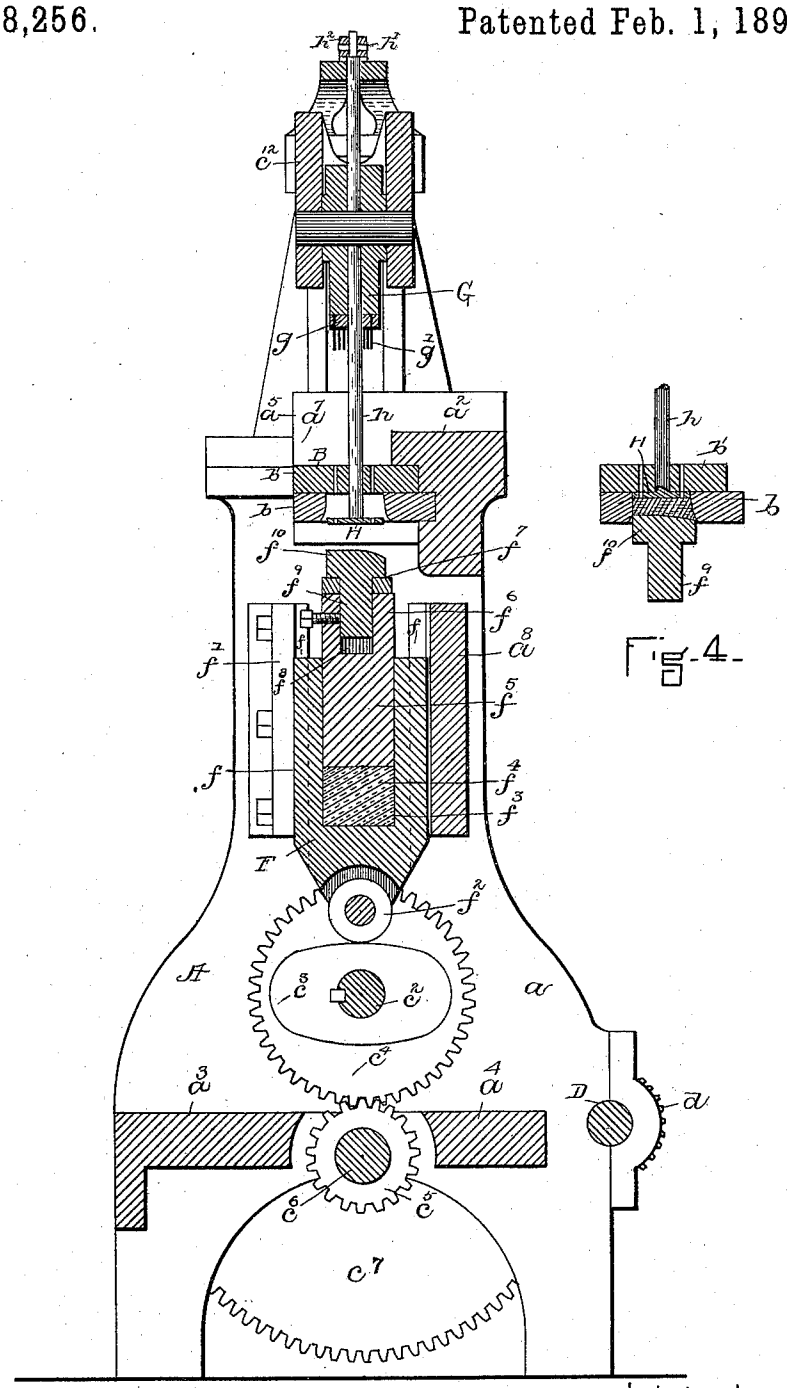


Fig. 2.

Fig. 4.

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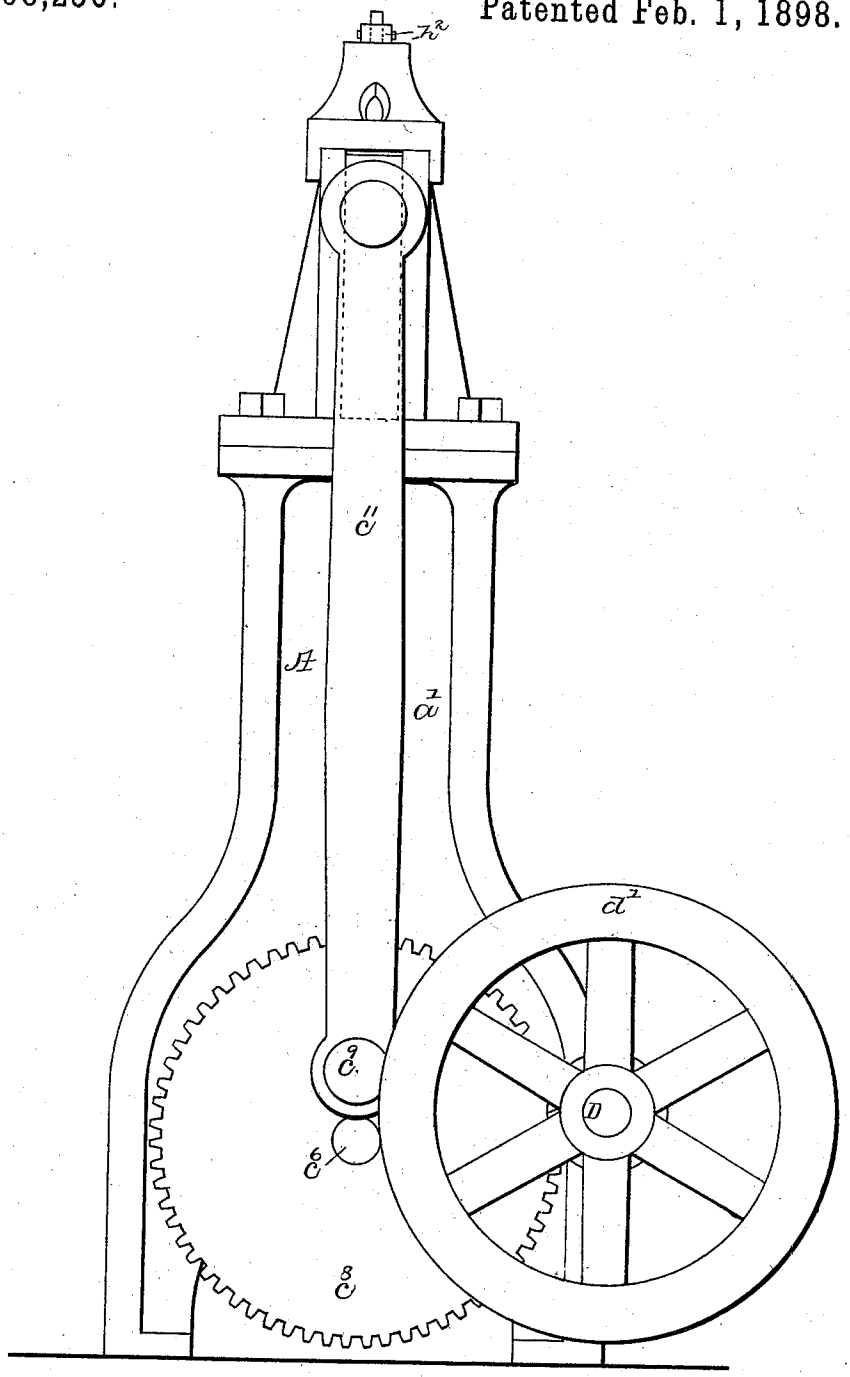
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4 Sheets—Sheet 3.

F. F. RAYMOND, 2d.

HEEL COMPRESSING MACHINE.

No. 598,256. Patented Feb. 1, 1898.



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Fig. 3.

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F. F. RAYMOND, 2d.

HEEL COMPRESSING MACHINE.

No. 598,256. Patented Feb. 1, 1898.

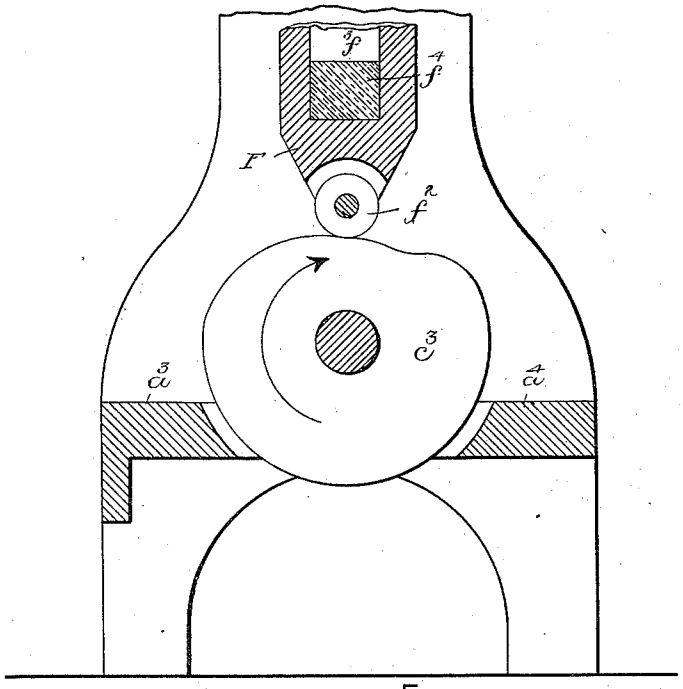


Fig. 5.

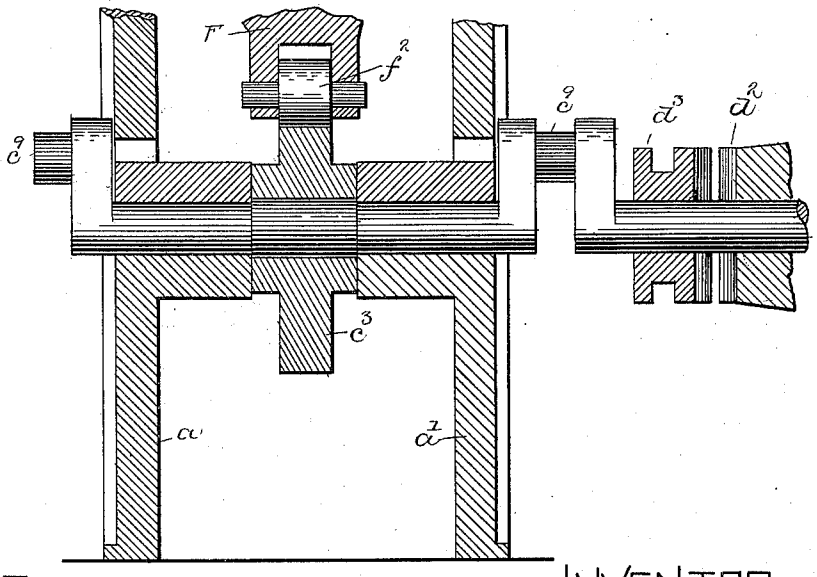


Fig. 6.

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UNITED STATES PATENT OFFICE.

FREEBORN F. RAYMOND, 2D, OF NEWTON, MASSACHUSETTS, ASSIGNOR TO JAMES W. BROOKS, OF PETERSHAM, AND JOHN BROOKS, OF CAMBRIDGE, MASSACHUSETTS, TRUSTEES.

HEEL-COMPRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 598,256, dated February 1, 1898.

Application filed September 24, 1889. Serial No. 324,917. (No model.)

To all whom it may concern:

Be it known that I, FREEBORN F. RAYMOND, 2d, a citizen of the United States, and a resident of Newton, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Heel-Compressing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to a heel-compressing machine having the following organization and adapted to practically simultaneously compress and prick the heel-blank.

Referring to the drawings, Figure 1 is a view in front elevation of a machine having the features of my invention. Fig. 2 is a view in vertical central section thereof, taken from front to back. Fig. 3 is a view in side elevation of the machine. Fig. 4 is a detail view, to which reference is hereinafter made. Figs. 5 and 6 are also detail views, in section, representing the pressure-cam as upon the driving-shaft of the machine instead of upon a secondary shaft geared to the driving-shaft, as represented in Fig. 1.

A is the frame of the machine. It comprises the sides a a', which are connected at their upper ends by the back tie a^2 and at their lower ends by the heavy cross-bars a^3 a^4. The frame also has near its top the heavy cheeks or extensions a^5 a^6, which provide a space a^7, and the central cross-tie a^8. These parts are all integral or in one casting. The cheeks a^5 a^6 are provided with side recesses a^9 for the reception of the solid die-block and templet B. The cross-bars a^3 a^4 support pillow-blocks c c', which carry a cam-shaft c^2, upon which the pressure-cam c^3 is mounted. This cam-shaft is connected with gears c^4 by pinions c^5 on the crank-shaft c^6 below the cam-shaft, and the crank-shaft c^6 has at each end gear-cranks c^7 c^8, the crank-pins c^9 of which are connected by connecting-bars c^{10} c^{11} with the cross-head c^{12}. The crank-shaft c^6 is connected with the driving-shaft D by means of pinions or small gears d on said shaft, which mesh with the crank-gears c^7 c^8. The driving-shaft carries the large pulley d', which is shaped to provide one member d^2 of a friction-clutch. The other member d^3 of the clutch is moved into and out of engagement with the pulley member by means of any suitable mechanism.

The cross-tie a^8 is shaped and provided with bearings f for a sliding block F, which is secured to the bearings by cap-plates f'. This block F carries at its lower end an antifriction-roll f^2, which bears on the pressure-cam. It has a circular cavity f^3, which holds a large block f^4 of rubber, upon which is arranged a circular block f^5, of metal, having an upwardly-extending standard f^6, provided with a flat surface f^7 and a hole f^8, extending downward from said surface to receive the spindle f^9 of the heel-seat-forming block f^{10}. The cross-head has an arm G, carrying a block g, supporting a gang or group of awls g'. The solid die B and templet are preferably made in two parts, the block b, having the die-cavity open at its top and flaring from its top opening downward, as desired, and the block b', which is a templet-block, having the holes arranged therein in the order in which it is desired to form holes in the heel-blank. There is arranged in the upper part of the die an ejector-plate H. This plate is mounted upon a rod h, extending through the templet-block and through the awl-holder block g and arm G to a position above the same, and is connected at its upper end by the pin h' or in any other suitable way with the actuating-lever h^2, pivoted at h^3 to a stationary bracket h^4. This lever is bent and has a downward-extending arm h^5 in the path of the reciprocation of the cross-head.

The operation of this device is as follows: Upon the placing of the heel upon the former the said plate is at the mouth of the die, its under surface being a trifle below the mouth of the die. Upon the lifting of the former the heel-blank is pressed into the die and the plate lifted to the top of the die. This movement is permitted because the cross-head begins to descend immediately upon the lifting of the heel-seat former. The heel-seat former, however, comes to rest before the awls enter

the heel-blank and remains practically stationary while the awls are continuing their movement into the heel-blank, and at the end of their vertical movement it begins to descend. The cross-head then lifts, and as it approaches the end of its upward movement it comes in contact with the arm h^5 of the lever h^2, causing it to move the rod h', and therefore the plate H, downward from the top of the die and to eject the heel from the die, the plate being moved downward sufficiently to bring the heel below the mouth of the die and remaining in that position until another heel-blank to be molded is placed in the machine. The pressure-cam, as above stated, is timed to lift the heel-seat former and cause the heel-blank to be compressed immediately in advance of the entering of the awls into the heel-blank, so that by one full reciprocation of the cross-head the heel-blank is both compressed and pricked. Where a cam of the construction shown in Fig. 2 is used, or having two operating sections, only one of which, however, is used for the compression of a heel-blank at a time, the machine is provided with stop-motion mechanism to stop it after each half of a rotation of the cam-shaft. Instead of having the cam constructed in this way and geared to the crank-shaft the cam may be arranged directly upon the crank-shaft, as represented in Fig. 5, when it will make a full revolution before the operation of the stop-motion mechanism, and for simply compressing and pricking heel-blanks I prefer this form of organization.

The advantage of the invention arises from the rapidity with which the machine may be operated, its great capacity, and its strength and freedom from liability of accident from heels lodging in the die and not being removed therefrom at the completion of the operation of the machine.

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

1. In a heel compressing and pricking machine, the combination of the frame having the sides a, a', connected together substantially as specified, and provided with the cheeks a^5, a^6, the solid die-block carried by the cheeks a^5, a^6, the said die-block comprising the die b, and the independent templet b', a reciprocating gang of awls to enter the holes of the templet and the die-cavity, a movable former, and a cam for actuating the same, substantially as described.

2. In a heel pricking and compressing machine, the frame having the sides a, a', connected together substantially as specified, and provided with the cheeks a^5, a^6, the plates b, b' supported by said cheeks, the slide-block supports a^8, the slide-block movable in said supports, and having a roll to bear on the pressure-cam and supporting a heel-seat former, and a pressure-cam and means for rotating it, substantially as described.

3. The combination of a die b, the ejector-plate H movable therein, its operating-rod h, a reciprocating head carrying a gang of awls and connected with said rod to move the ejector-plate H downward or toward the mouth of the die during the upward movement of the head, substantially as described.

4. In a heel compressing and pricking machine, the combination of the independent solid die-block and independent templet-block arranged in relation to each other and held substantially as specified, with a reciprocating gang of awls to enter the holes of the templet and the die-cavity, a vertically-movable former below the die-cavity, and a cam for moving the same upwardly.

FREEBORN F. RAYMOND, 2D.

In presence of—
J. M. DOLAN,
A. P. PORTER.