J. W. DODGE.

Heel-Trimming Machine.

No. 220,966. Patented Oct. 28, 1879.

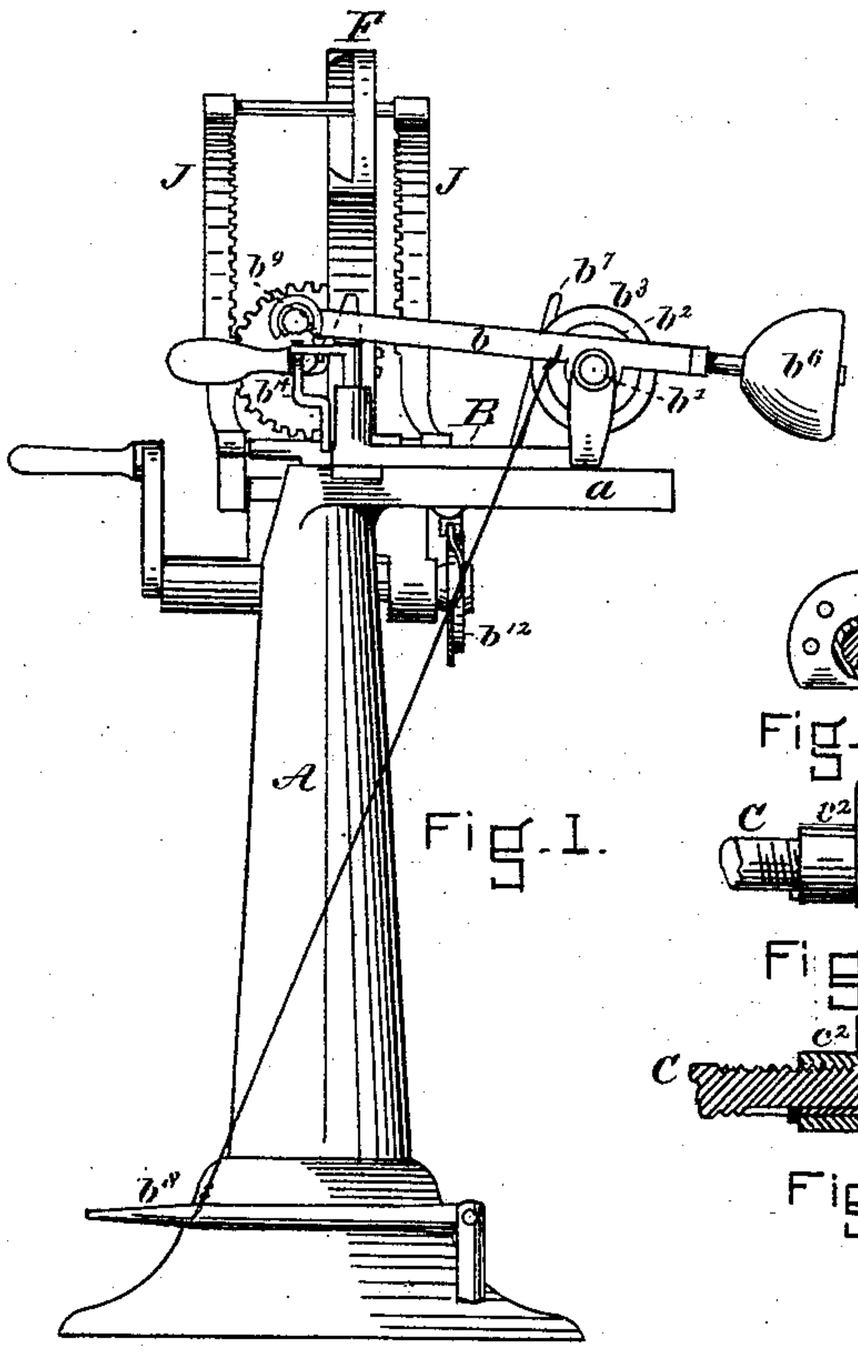

Fig. 1.

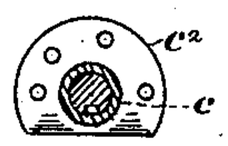

Fig. 5.

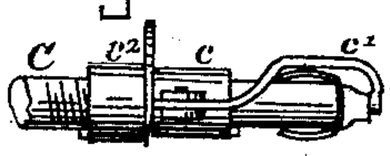

Fig. 6.

Fig. 7.

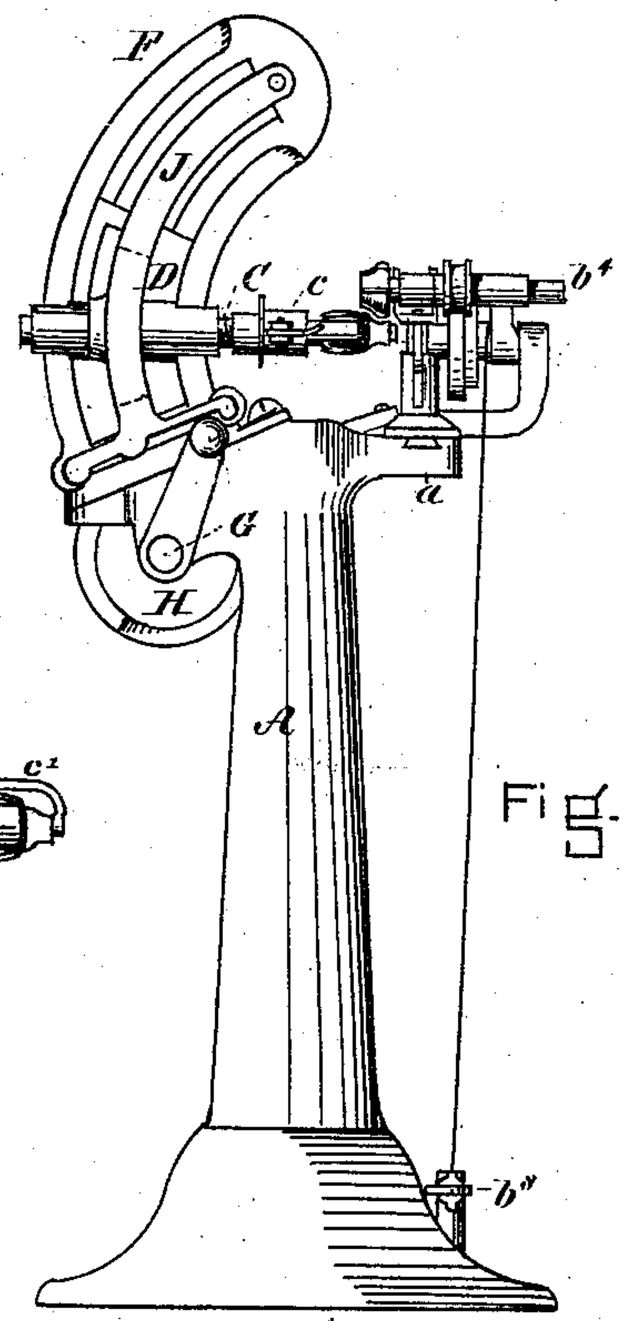

Fig. 2.

Fig. 8.

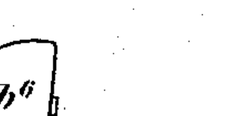

Fig. 9

Fig. 10.

Fig 11.

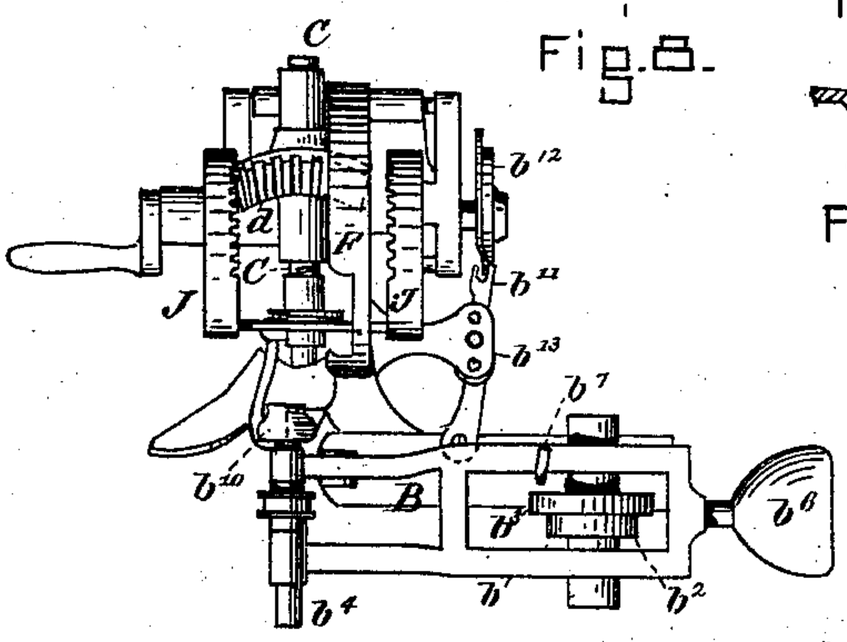

Fig. 3.

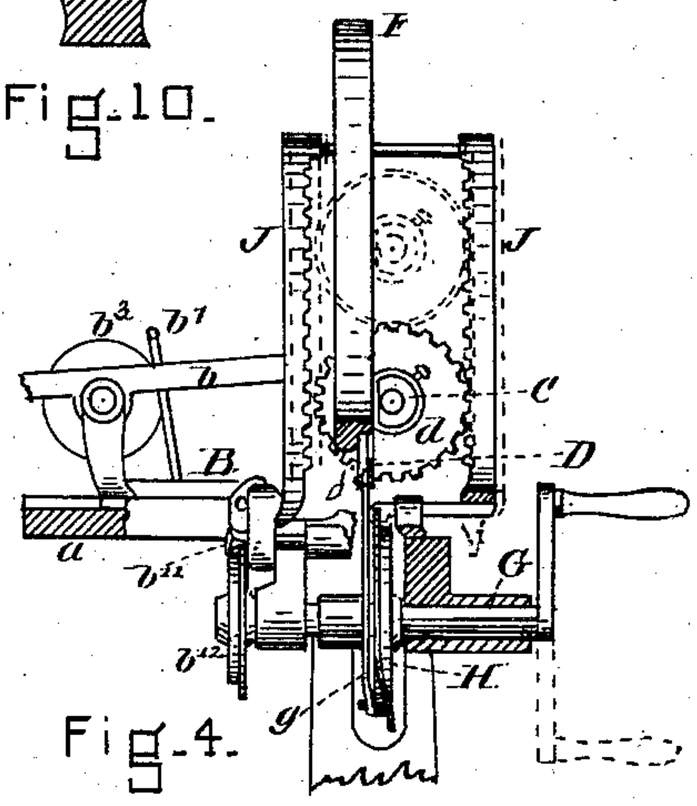

Fig. 4.

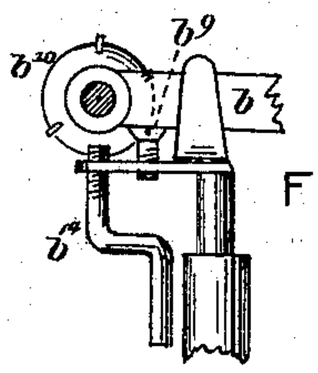

Fig. 12.

Witnesses

G. B. Maynadier

C. H. Slade.

Inventor:

J. Wesley Dodge

by Maynadier Hoan

attys.

UNITED STATES PATENT OFFICE.

J. WESLEY DODGE, OF MALDEN, MASSACHUSETTS.

IMPROVEMENT IN HEEL-TRIMMING MACHINES.

Specification forming part of Letters Patent No. **220,966,** dated October 28, 1879; application filed February 1, 1879.

To all whom it may concern:

Be it known that I, J. WESLEY DODGE, of Malden, in the county of Middlesex and State of Massachusetts, have invented an Improved Machine for Trimming Heels, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, making a part hereof.

The main object of my invention is to provide a simple and efficient automatic mechanism, by means of which the axis of the heel is gradually tilted with relation to the axis of the cutter as the heel is turned from breast to back, and gradually restored to its initial relation with the axis of the cutter as the heel is trimmed from back to breast—that is, the axis of the cutter and of the heel are substantially parallel when the trimming commences at the breast; but as the trimming proceeds this automatic mechanism gradually inclines these axes relatively each to the other until the back of the heel is trimmed, when the inclination is at its maximum. In the further trimming of the heel from back to breast the maximum inclination gradually decreases until the axes are again brought substantially parallel.

Another important feature of my invention, essential for the best work, consists in automatic mechanism, which shall gradually vary the plane in which the axes of the heel and cutter lie, while the eccentric part of the heel is trimmed—that is, taking the machine as shown in the drawings, the plane in which the axes of the heel and cutter lie at the start, or when the cutter begins to turn, at the corner of the heel, is several degrees from the vertical; but by means of this mechanism this plane is made vertical as soon as the cutter has finished trimming the eccentric part of the heel on one side, and remains vertical during the trimming of the concentric part of the heel, when by this mechanism it is restored to its initial position, the change from its initial position to the vertical taking place gradually as the eccentric part of the heel on one side is trimmed, and the change from its vertical position to its initial position taking place gradually as the eccentric part of the heel on the other side is trimmed.

In the drawings, Figures 1, 2, and 4 are elevations, and Fig. 3 is a plan of a machine embodying my invention in its preferred form. Figs. 8, 9, 10, and 11 are plan and three sections of a French heel, so called. The other figures show details of my machine, and will be referred to below.

A is the pedestal, upon which are mounted the working parts of the machine. B is a slide mounted upon the arm *a* of pedestal A, and carrying the cutter-frame *b*. This cutter-frame is journaled upon B, so that its axis is coincident with that of shaft b', which carries the pulleys b^2 b^3, through which motion is imparted to the cutter-shaft b^4.

When not in use the counter-balance b^6 holds the cutter away from the work, the bent arm b^7 preventing the cutter-frame *b* from rising too far.

The cutter-frame is drawn down by the treadle b^2, and is prevented from being drawn down too far by the adjustable stop b^9. The cutter-shaft b^4 carries the cutter b^{10}, or any other tool suitable for the work to be done.

The pulley b^2 should be so belted as not to prevent the slight motion given to the slide B by means of the lever b^{11} and the cam b^{12}. This lever b^{11} is fulcrumed in the forked projection b^{13}, and its fulcrum is adjustable for different sizes of heels.

The jack is attached to the shaft C so that the axis of that shaft is coincident with the axis of the heel. The jack shown is of my invention, and is the most convenient known to me for use in my machine.

The end of shaft C enters the shoe and bears against the inner heel part of the sole. On shaft C is a sleeve, *c*, and to this sleeve is attached the arm c', which carries at its outer end the heel-plate, which rests upon the tread of the heel.

The sleeve *c* can be moved lengthwise on shaft C by means of the nut c^2, and thus clamp the heel firmly between the end of shaft C and the heel-plate or arm c', all as clearly shown in detail in Figs. 5, 6, and 7.

When the nut c^2 is turned in one direction it unclamps the heel, when the arm c' can be readily swung back, the shoe taken off, and another shoe put on, when the arm c' is swung back and nut c^2 turned in the other direction to clamp the heel.

The shaft C is journaled on the slide D, and has attached to it a gear, *d*. The slide D moves in ways formed in the casting F, which is supported by the pedestal A. This slide D derives its motion from shaft G by means of the connecting-rod *g*, (best seen in Fig. 4,) that rod being connected to slide D and wheel H on shaft G, so that when shaft G is turned the slide D is moved up and then down.

A double rack-frame, J, is mounted on the casting F, so that it can be moved in a direction across shaft C, so as to bring first one and then the other of its two racks in gear with the gear *d*, in order that the gear *d* and its shaft C shall turn in the same direction during the whole operation of trimming the heel. The outside motion of the double rack-frame J is imparted by the cam on the periphery of wheel H, which takes in a fork on the arm *j* attached to frame J. (Best seen in Fig. 4.)

The operation is as follows: The shoe having been jacked, the cutter is brought to place by the treadle, and commences to trim the heel at the breast. The shaft G is then turned by hand, and with it the wheels H, and b^{12} b^{12}, during the first part of its motion, acts upon lever b^{11}, and thereby pulls the cutter over the edge of the heel from the breast rearward, thus changing the plane in which the axes of the heel and cutter lie several degrees, (depending upon the shape of the heel) from a vertical plane to a vertical plane. H actuates the slide D by means of the connecting-rod *g*, and, as slide D moves upward, the gear *d*, meshing with the rack on the right of Fig. 4, revolves slowly, and thus revolves the heel on the axis of shaft C. When the heel has thus been revolved half-way, the rack-frame J is shifted, (by cam on wheel H and arm *j*,) so as to bring the other rack in mesh with gear *d*, the slide then commencing to move downward, and during its downward motion the gear *d* and shaft C continue to revolve slowly in the same direction as before. When the cutter commences to act upon the eccentric part of the side of the heel, the slide B is again moved by the cam b^{12} and lever b^{11}. This completes the operation.

The auxiliary stop b^{14} is used when the untrimmed heel is rough—that is, it is set so that it will hold the cutter a little farther from the heel-edge than the stop b^9 would hold it—and the heel is then trimmed, thus bringing it to near the desired shape; after which the auxiliary stop b^{14} is turned down out of the way, and the heel again trimmed, the position of the cutter being determined by the stop b^9, and the heel being brought to the exact shape and size desired. This auxiliary stop b^{14} is desirable for the reason that the cutter leaves a smoother surface when the amount removed by it is nearly the same along the edge than when the amount removed varies a good deal, as it does in the rough heels. The arrangement of these stops will be readily understood by reference to Fig. 12.

In practice the two racks are connected together adjustably, so that they can be adjusted nearer together or farther apart, in order that a small or large gear, *d*, can be used to suit the different shapes of heels, the connecting-rod *g* being, of course, shortened or lengthened to correspond with the size of gear used.

What I claim as my invention is—

1. In combination, the jack, the cutter, the automatic mechanism, substantially such as is above described, for gradually varying the relative inclination of the axes of the heel and cutter, and the automatic mechanism, substantially such as is above described, for gradually varying the direction of the plane on which the axes of the heel and cutter lie while the eccentric part of the heel is trimmed, substantially as specified.

2. In combination, the shaft C, sleeve *c*, arm *c'*, and nut c^2, substantially as described.

3. In combination, the double rack-frame J, slide D, gear *d*, shaft C, and jack, substantially as described.

4. In combination, the slide B, frame *b*, lever b^{11}, and cam b^{12}, substantially as described.

J. WESLEY DODGE.

Witnesses:
GEORGE O. G. COALE,
J. E. MAYNADIER.