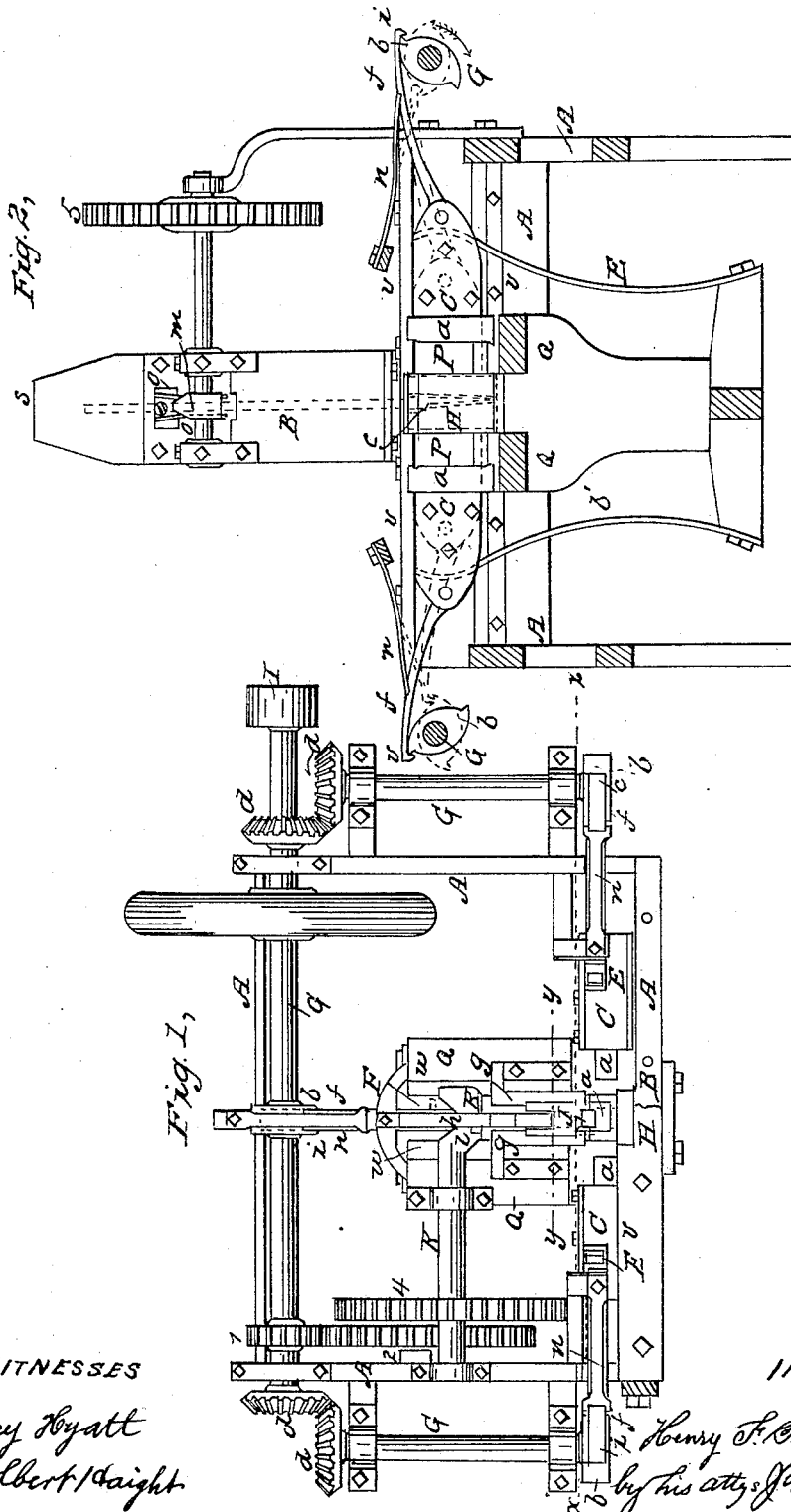


H. F. SEHNDERS.  
Horseshoe Nail Machine.

No. 49,657.

Patented Aug. 29, 1865.



WITNESSES

Jay Hyatt  
Albert Daight

INVENTOR

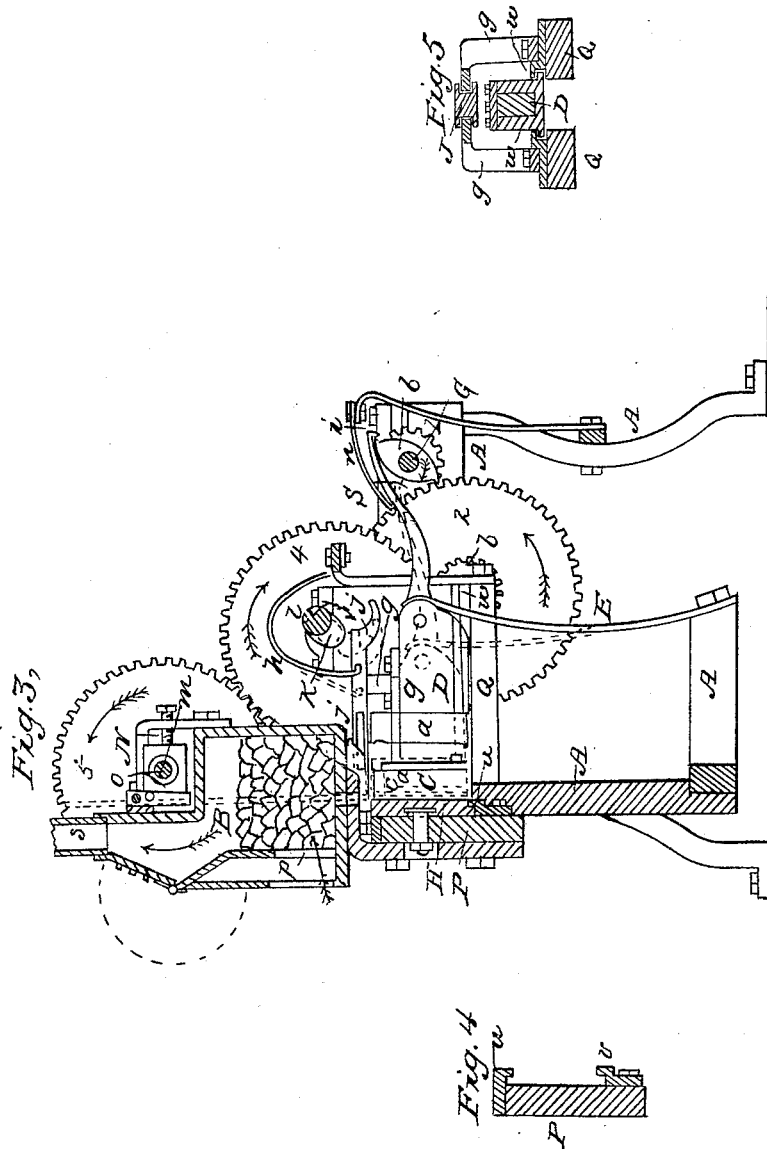
Henry F. Sehnders  
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WITNESSES:

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Albert Haight

INVENTOR

Henry F. Seinders  
by his Attorneys Waser & Co

# UNITED STATES PATENT OFFICE.

HENRY F. SEHNDERS, OF BUFFALO, NEW YORK.

## HORSESHOE-NAIL MACHINE.

Specification forming part of Letters Patent No. 49,657, dated August 29, 1865.

*To all whom it may concern:*

Be it known that I, HENRY F. SEHNDERS, of the city of Buffalo, in the county of Erie and State of New York, have invented a new and Improved Machine for Making Wrought or Hammered Horseshoe-Nails; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of the top of my machine, with the forge B removed to exhibit the hammers C C and chisel J. Fig. 2 is a vertical longitudinal section on the line *x x* of Fig. 1, showing the forge B in elevation. Fig. 3 is a central transverse vertical section. Fig. 4 is a cross-section of that part of the frame and ways which support and guide the hammers C C. Fig. 5 is a vertical transverse section of the chisel J and hammer-stock D on the line *y y* of Fig. 1.

Like letters of reference indicate corresponding parts in all the figures.

By my invention the nails are wrought by a series of blows from percussion-hammers having dies upon their faces, which give shape to the nail and which act upon the nail-rod as it comes heated from the forge, and when complete the nail is cut from the rod by a chisel acting automatically, the whole being comprised in a single machine and driven by one power, as hereinafter described.

As represented in the drawings, A A A represent a quadrangular iron frame, which supports the working parts of the machine, consisting, essentially, of the forge B and hammers C C and D, with their actuating parts. These hammers are operated by the force of the springs E E and F, giving the blows when drawn back by the beaked cams *b b b* on the shafts G G G. Two of the hammers, C C, move in the same line from opposite directions, percussing against each other, while D moves in the same horizontal plane, but at right angles with the other two, and strikes against a stationary die, H. The stroke of this hammer alternates between the blows of the hammers C C, which strike simultaneously. The nail-rod is fed from above, passing vertically downward through the fire of the forge B, the heated end resting against the die H, where it is formed into a nail by a rapid succession of strokes from the hammers, which are provided

with face-dies *a*, which have the form of the nail, which is shown in red lines at *c*, most clearly in Figs. 2 and 3.

The three shafts or axes G are geared together by the bevel-pinions *d d d*, and the driving-power being applied to the pulley I, the cams *b* revolve with the same velocity, their beaks engaging with the hooks *i i i* on the end of the rods *f f f*, which have a jointed connection with the hammers, which are thereby drawn back, bending the springs E E F until the revolution of the cams has advanced to a point which releases the hooks, when the recoil of the springs gives the percussive power to the hammers. The hammers C C rest and move in ways *v v*, secured respectively to the side and top of the bar P of the frame, as shown in Fig. 4, while the hammer D is supported on the bars Q Q and guided in its movement by the ways *w w*, as shown most clearly in Fig. 5. The cams are double-beaked, so that each revolution produces two blows of the hammer, and at thirty-two blows of each hammer a nail is completed, and then cut off by the forward movement of the chisel J. This chisel lies in a horizontal position immediately over the hammer D, supported by and sliding on the arched frame *g g*. It is held back by the spring *h* so as not to come in contact with the nail-rod or interfere with the action of the hammer. A cam, *l*, on the crank or elbow of the shaft K, which makes one revolution to sixteen of the cam-shafts G G G, engages with its notch *k* with the heel of the chisel-stock *j* and forces it forward against the fixed die H, cutting off the finished nail, which drops into a receptacle below. Simultaneously with the withdrawal of the chisel after this act the nail-rod is moved downward between the dies far enough to form another nail. This movement is effected by a revolving finger or pointed cam, *m*, on the shaft N. The rod is held while the nail is being wrought by the two side springs, *o o*. The cam *m* is wedge-shaped at its sides, and in revolving first expands the springs *o o*, releasing the rod, then moves it downward the required distance. The movement of this cam occurs at equal intervals and just following that of the eccentric *l*, which causes the chisel to cut off the finished nail. The regular performance of these acts is accomplished by the simple chain of gearing, commencing with the

pinion 1 on the driving-shaft G, which gears with wheel 2, on the shaft of which a small pinion, 3, gears again with large wheel 4 for reducing the velocity of the hammers from thirty-two strokes to one revolution to every finished nail. No. 5, which drives the device which feeds the rod to the hammers, is of the same dimensions as 4, the same speed being required, as their offices occur at corresponding intervals of time.

The forge-chamber is provided with a side grate, *p*, for the admission of air to support combustion, also a drop-door, *r*, for supplying the fuel, and is to be connected at *s* with a suitable smoke-pipe for the escape of the products of combustion. Pressure-springs *n n n* are applied above the arms *f f f* to insure their connection with the beaks of the cams.

The advantages which my machine possesses are its simplicity, regularity, and certainty of operation, the parts being so constructed that they are not liable to fail from any cause but that of ordinary wear. It subjects every nail to ninety-six blows from the hammers, rendering it as malleable and tough as the best hand-made horse-nails, and it may be run at a velocity that makes the manufacture exceedingly rapid.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the triple hammers C

C D, the first two having a simultaneous stroke against each other and the latter an alternate stroke against the fixed die H, arranged and operating substantially as set forth.

2. The doubled-beaked cams *b*, in combination with the jointed arms *f f* and pressure-springs *n n* for actuating the hammers, substantially as set forth.

3. The combination of the triple-hammers C C D, springs E E F, cams *b*, with gear-shafts G G, chisel J, and eccentric *l*, all arranged and operating substantially as and for the purposes described.

4. In combination with the triple hammers C C D and the actuating parts therewith connected, the forge B for heating the rod for each successive nail, arranged substantially as set forth.

5. The springs *o o* and feeding-cam *m* on the shaft N, so arranged as to hold the nail-rod in position while the nail is being wrought and to feed it forward to the hammers as each nail is finished, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HENRY F. SEHNDERS.

Witnesses:

JAY HYATT,

ALBERT HAIGHT.