S. HARRIS.

MACHINES FOR DRIVING NAILS IN BOOTS AND SHOES.

No. 178,768. Patented June 13, 1876.

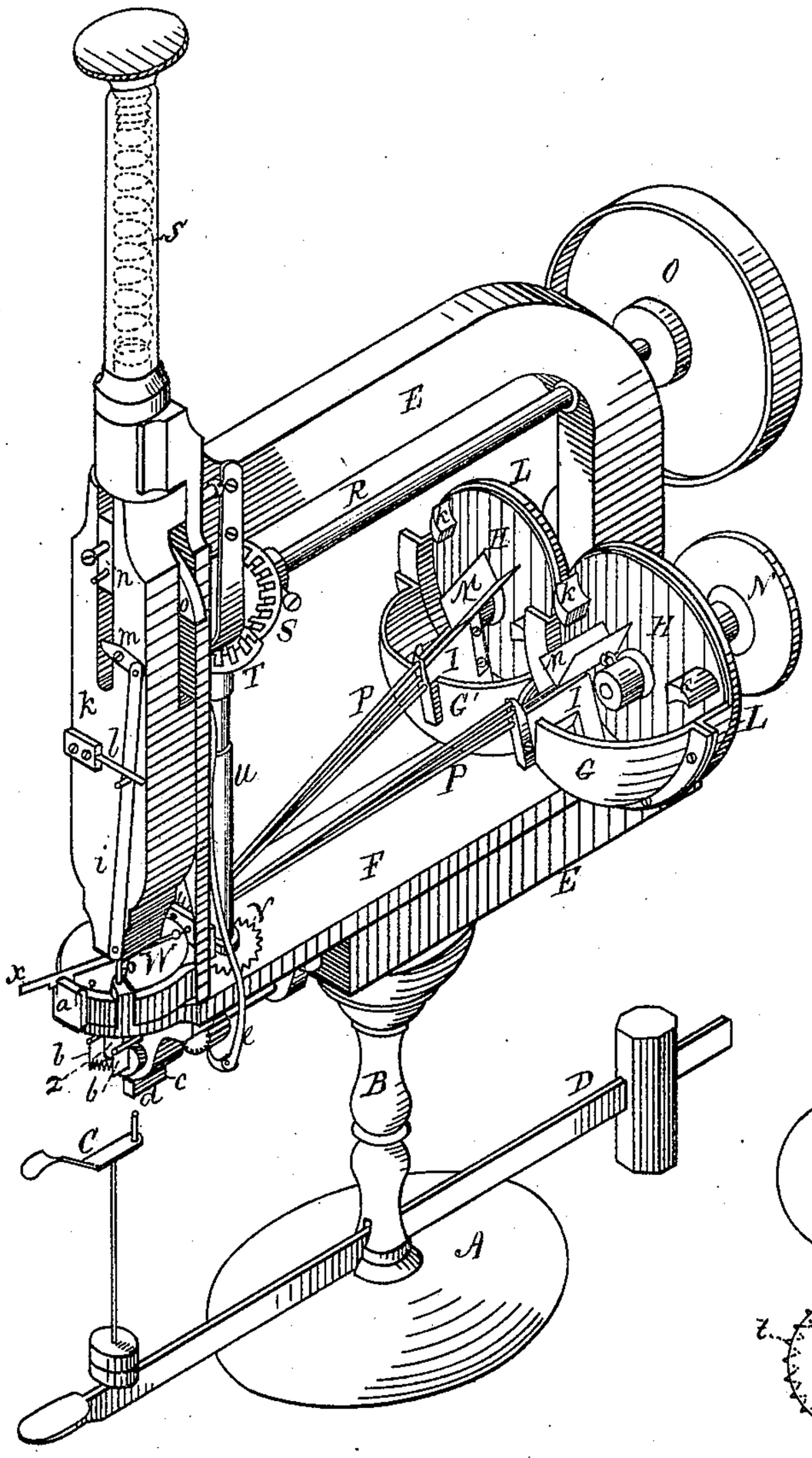

Fig. 1.

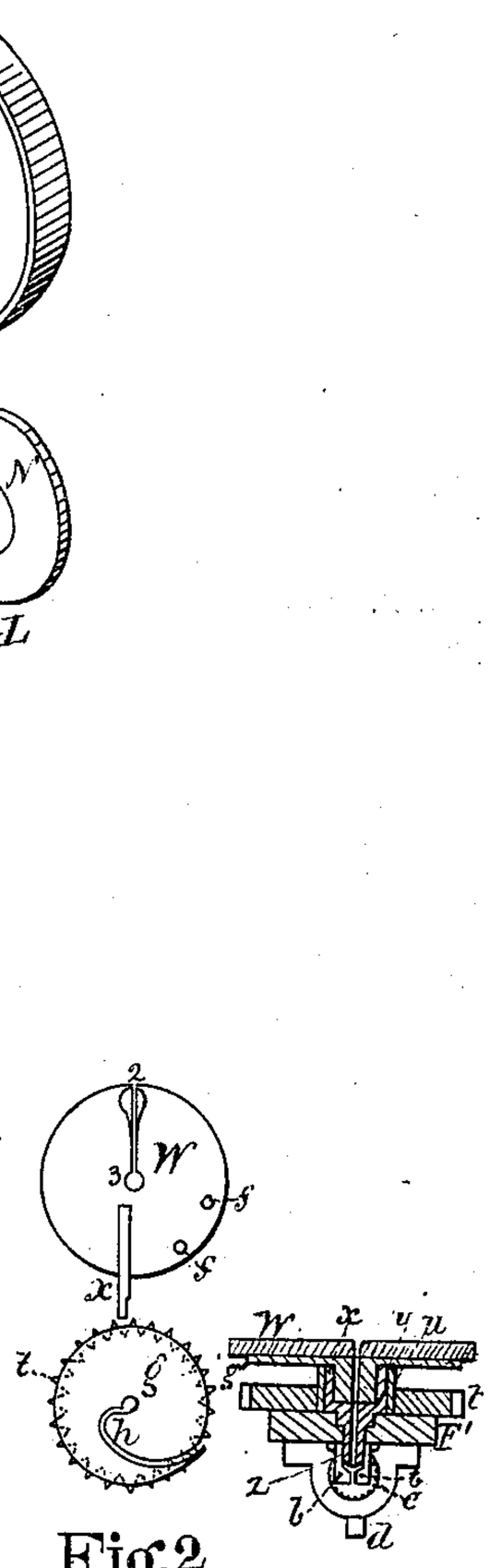

Fig. 2.

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UNITED STATES PATENT OFFICE.

SAMUEL HARRIS, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO S. B. KNOWLTON, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR DRIVING NAILS IN BOOTS AND SHOES.

Specification forming part of Letters Patent No. **178,768**, dated June 13, 1876; application filed April 15, 1876.

To all whom it may concern:

Be it known that I, SAMUEL HARRIS, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Machine for Driving Nails in Boots and Shoes, of which the following is a specification:

My invention relates to an improvement in machines for driving nails in the soles of boots and shoes, with more particular reference to a machine described in Patent No. 170,085, and issued on November 16, 1875. In this machine it was found, in practice, that the nails were liable to catch between the projections for picking them up and the bridge, and thus clog the machine. In my present improvement this difficulty is obviated by a new method of delivering the nails from the hopper to the raceway, and from the raceway to the receiving-plate, by which the operation of presenting the nails of different sizes to the action of the driver is more rapidly and efficiently performed, and without liability to clog.

My invention also consists of an interchangeable receiving-plate, so constructed and arranged as to form a continuation of the raceway to conduct the nails of a larger or smaller size, at the will of the operator, to the point of entrance of the driver.

Further improvements in detail are described hereinafter.

Referring to the drawings, Figure 1 represents a perspective view of a machine embodying my invention. Fig. 2 represents detail views of the receiving-plate and rotary die.

E E represent the main portion of the frame, supported upon a stand, A B. F is a bed-plate resting upon the lower portion of the frame E. At the rear part of the frame are secured two hoppers or receivers, G G′, in which are arranged the rotating disks H H, provided with projections K K, having their faces of concave form, so as to act as scoops for carrying the nails up from the hoppers to the raceway. At a point near the center of each hopper is arranged a chute, M, so as to readily receive the nails which are carried up by the scoops K, and are delivered upon the portion of the raceway I within the hopper. From the raceway I the nails pass to the raceway P, which is composed of three wires, as shown in Patent No. 170,085. The front ends of wire raceway connect with openings or slots in a bar, 4, that extends across the inner side of the front part of the frame. W represents a movable circular plate, having a slot extending from the circumference to the center, and forming a continuation of the raceway, so as to conduct the nails to the point to be operated upon by the driver. The outer end of the slot communicates with one or the other of the openings or slots 4 in the bar 4, as required for the passage of a larger or smaller nail from the raceways P. When the slot in plate W corresponds with one of the openings in the bar 4, the other opening in said bar is closed, so that only one set of nails can pass from the raceway to the receiving-plate W at a time. The receiving-plate is held in position for the slot to correspond with either raceway by means of a bar, *x*, which catches in notches in the rim *a*. The plate is also held so as to prevent its moving when the driver is acting on the nail by means of a pin, *p*, on the lower end of a bar, *i*, that extends upward, and is attached at its upper end to a short bar, *m*, pivoted to the front part of a frame *k*, as shown. The free end of the bar *m* is operated by means of a pin on the sliding-block *n*, so as to raise the pin *p* from the holes in the plate W at the proper time. The bar *i*, to which the detaining-pin *p* is attached, is held down by means of a spring, *l*, as shown. The slotted receiving-plate W rests upon the feeding-plate or rotating die *g*, in which is the curved feeding-slot *h*, as shown in Fig. 2. The feeding-plate *g* is attached to the gear-wheel *t* by means of a collar or sleeve, *u*, which latter surrounds a stationary sleeve, *v*, secured to the extension of the frame F. The sleeve *v* has a slot in one side corresponding with the slotted guide *x* that fits within the stationary sleeve *v*. Projecting downward below the frame F′, and forming a part of the stationary sleeve, *v*, is the guide *z*, which conducts the nail to the sole, where it is driven in. The guide *z*, which is stationary, forms a continuation of the rotating guide *x*, which constitutes a part of the

rotating die *g*. By this construction the nail is carried with certainty and directness to its position, to be acted on by the driver without liability of the point flying out. Motion is imparted to the rotary die from the gear-wheel V on the shaft U. At each side of, and passing underneath, the extension-guide *z*, are arranged the yielding holders *b b*, which serve to receive the points of the nails, and are caused to separate to allow the head of the nail to pass through when the driver descends to act upon it. Just at the rear of the yielding holders *b b* is arranged a feed-wheel, *c*, the shaft of which extends backward to a ratchet-wheel, to which an intermittent motion is imparted by means of a pawl on the rod *e*, which is operated by means of a cam on the main shaft R. Under the lower projecting portion of the frame in front is arranged a guide, *d*, which may be made to slide in bearings longitudinally, against which the edge of shoe-sole bears while the nails are being driven. The boot or shoe is supported upon the rest C, attached by a ball-and-socket joint to the weighted lever D. The up-and-down motion of the driver is effected by means of the cam *o* on the shaft R and the spring *s*.

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

1. The elevated chute M arranged within the hopper, as shown, the rotating disk H, provided with the lifters K, and the raceway I, all constructed and arranged to operate substantially in the manner and for the purpose set forth.

2. The interchangeable receiving raceway-plate W, in combination with the nail-conductors, substantially as and for the purpose described.

3. The combination of the receiving-plate W and the rotary die *g*, substantially as set forth.

4. The stationary slotted sleeve *v*, combined with the rotary die, essentially as specified.

5. The combination of the rotary die *g*, the extension-guide *z*, and the yielding-holders *b b*, as and for the purpose set forth.

6. The rotary feed-wheel *c*, in combination with the rotary die and extension-guide *z*, substantially as described.

7. The combination, with the receiving-plate W, of the detent-pin *p*, actuated by means of the up-and-down motion of the driver-holder, as described.

8. The adjustable slotted raceway-plate W, as and for the purpose set forth.

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

SAMUEL HARRIS.

Witnesses:

J. H. ADAMS,

DAVID MURRAY.