Hoard & Searle,

Making Cut Nails,

No. 21,198. Patented Aug. 17, 1858.

Fig. 1.

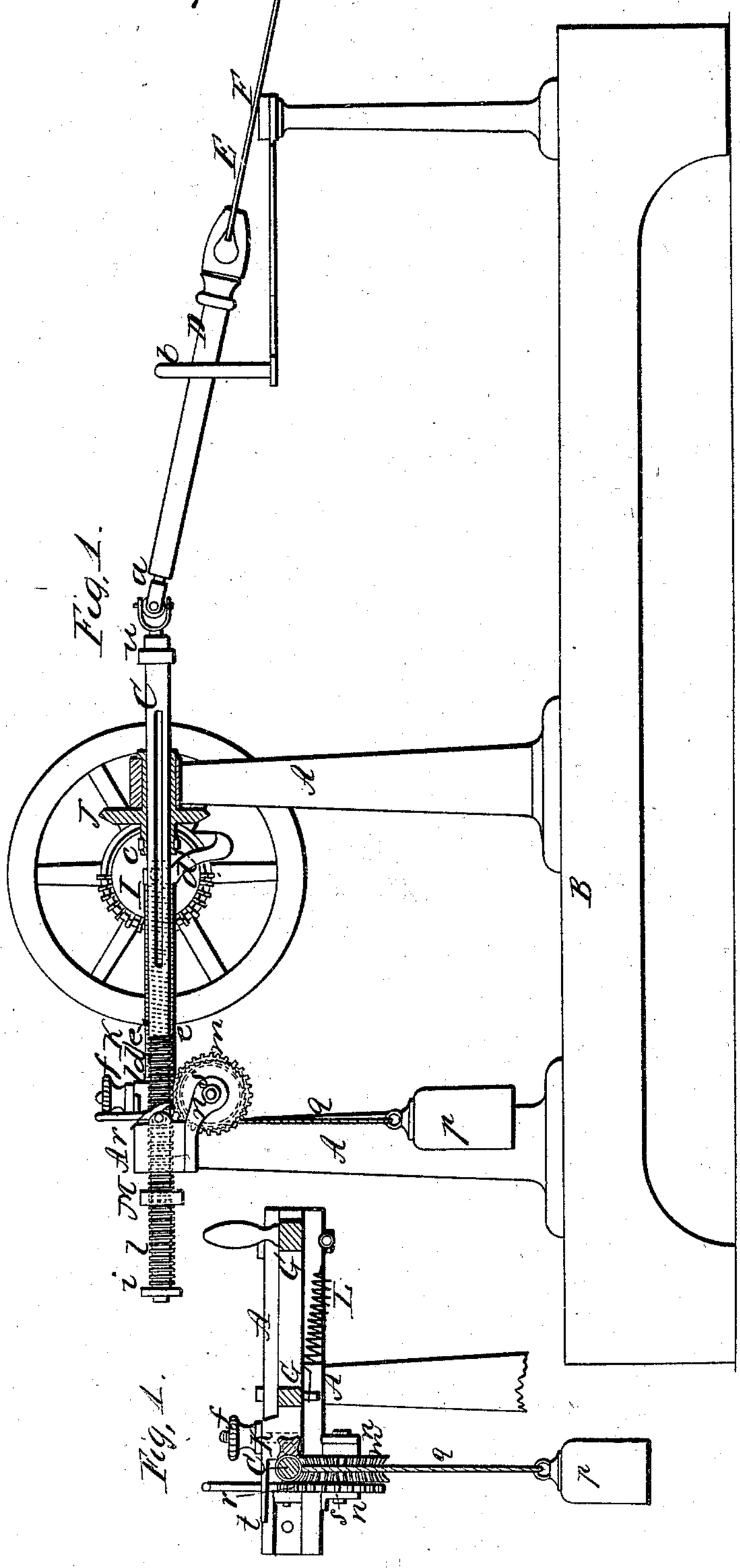
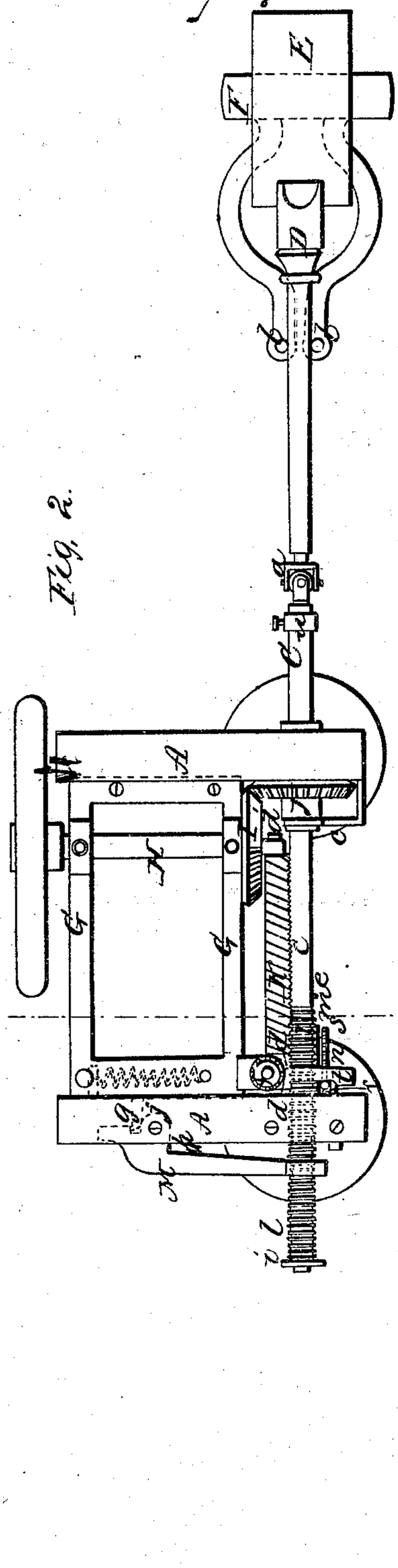


Fig. 2.



UNITED STATES PATENT OFFICE.

JOHN W. HOARD AND THOMAS A. SEARLE, OF PROVIDENCE, RHODE ISLAND.

NAIL-PLATE FEEDER.

Specification of Letters Patent No. 21,198, dated August 17, 1858.

To all whom it may concern:

Be it known that we, JOHN W. HOARD and THOMAS A. SEARLE, both of the city of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Nail-Plate Feeders; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side view of a nail plate feeder constructed according to our invention. Fig. 2 is a plan of the same. Fig. 3 is a transverse vertical section of the same.

Similar letters of reference indicate like parts in the several figures.

This invention consists in a certain contrivance for varying the distance of the feeding movement to cut nails of different widths or thicknesses.

It also consists in a certain arrangement of parts for stopping both the forward and the rotary motion of, and causing the running back of the plate-holder when the plate is all cut up.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

A, A, are two T-shaped standards constituting with the bed-plate B, the stationary framing of the machine, and containing the bearings for the horizontal feeding shaft C, to which the plate-holder D is attached by a universal joint *a*.

E, is a nail-plate in the holder D.

F is the anvil; and *b*, *b*, are two guides to guide the plate-holder.

G, is a horizontal frame, fitted to slide in ways in the heads of the standards A, A, at right angles to the feeding shaft. The frame contains the bearings for a horizontal shaft H, which occupies a position at right angles to the feeding shaft and which has firmly attached to it a bevel gear I, to gear with a bevel gear J, of similar size, into which the feeding shaft is fitted with a feather and groove so as to be permitted to move longitudinally while said gear J is confined between one of the standards A, and a stop-piece *c*, and only permitted to rotate. The gear I is only toothed half way around and hence although the shaft H, which is the driver, rotates continuously, the feeding shaft C receives an intermittent rotary motion making only half a revolution at a time, for the purpose of turning the plate over between the successive operations of the cutter. The frame G, also contains a bar K, which is represented as having four sides, but may have more or less, each side being made concave to fit snugly against the feeding shaft C. This bar K, has pivots at its ends which are received in boxes *d*, *d'*, secured to the frame G, and it occupies a position parallel with the feeding shaft. The surface of each concave side of said bar occupies the same relation to the center of the bar, which permits said bar to be turned to bring either of its sides to a position to fit close up to said shaft when the sliding frame G is in a position to permit the gears I and J to gear properly together. Each side of the bar K contains a series of oblique grooves equidistant from each other, in which grooves work two small pins *e*, *e*, projecting from opposite points of the shaft, each groove terminating in one edge of the bar opposite the termination of the next one in the opposite edge, and hence causing each pin as it comes around to the bar to enter a groove. The obliquity of the grooves causes the feed shaft to derive a forward movement every time either of its pins *e*, *e*, passes the bar K, and this occurs during every half revolution of the bar, thus causing the nail-plate holder D, which is attached to the feeding shaft to feed the plate forward while it is being turned over. The several concave sides of the bar K, have their grooves of different degrees of obliquity and at distances apart to correspond, so that the end of each groove is always opposite the opposite end of the next one; and hence by turning the bar K, to present a new side to the feeding shaft, the length of the feed movement is varied, and each of the feeders is capable of feeding the plates to cut nails of as many sizes as there are sides to the bar K. Two or more bars K may however be provided for each feeder to obtain an increased variation in the feed. The bar is secured in the proper position with either side opposite to the feed shaft by means of a set screw *f*, applied to one of its pivots.

The frame G has applied to it a spring L, which tends to draw it away from the feeding shaft and hence to draw the bevel gear I, and the feed bar K, out of gear with the gear J, and pins *e*, *e;* but a latch lever M is provided to hold up the frame toward the feeding shaft and keep the above parts in

gear, said latch lever working on a pin *j*, in a slot in one of the standards and engaging with a projection *g*, on one side of the frame and having a spring *h*, applied to keep it engaged with the said projection till it is desired to liberate the frame G, and leave the feeding shaft out of gear. The latch lever is caused to liberate the frame when the plate is all cut up by means of a collar *i*, on the rear end of the feeding shaft C, which collar coming in contact with and pushing forward the long arm of the latch lever moves back the other arm sufficiently to disengage the frame and leave it free to be drawn away from the driving shaft by the spring L. The feeding-shaft works in an eye in the longer arm of the latch lever so that the collar *i*, cannot fail to strike the lever.

On the rear portion of the feeding shaft there are turned a number of grooves *l*, *l*, which constitute a toothed rack to gear with a pinion *m*, whose axle works in fixed bearings in brackets *n*, *n*, secured to one of the standards and this pinion is grooved to make it constitute a pulley to which a weight *p*, is attached by a cord *q*, in such a manner that the said weight is raised by the winding of the cord on the pulley as the latter is turned by the action of the rack *l*, *l*, on the pinion *m*, as the feeding shaft feeds the plate forward, and this weight serves to turn back the pulley and pinion and by the action of the latter on the rack *l*, *l*, to draw back the feeding shaft as soon as the frame G, is liberated. The weight is prevented drawing the feeding shaft back by means of a pawl *r*, engaging with a ratchet wheel *s*, attached to the pinion and pulley; but as the said frame G moves away from the shaft C, when liberated, the pawl is disengaged from the ratchet by the action upon it of a plate *t*, having an inclined edge, attached to the frame, and this plate holds the pawl out of gear till the frame is moved up to bring the feeding shaft in gear again with the shaft H, and feed bar K, when the pawl is thrown into gear with the ratchet by a spring applied to it for that purpose. The feeding shaft is stopped in its return movement by a collar *u*, secured to it near its front end coming in contact with the front standard A.

Having described the operations of the individual parts of the machine, I will proceed to describe briefly the operation in regular order in feeding a plate. The collar *u*, is adjusted at a distance from the end of the shaft C, according to the length of the nail plates; so that when the shaft is drawn back by the weight, the front end of the plate will be presented on the anvil, in a position for the operation of the cutter to commence. The proper side of the feed bar K, having been set toward the feeding shaft C, and the nail plate having been secured in the holder, the frame G, is pushed by hand up toward the shaft C, and is locked by the latch lever M. Care must be taken, however, that when the shaft C, is out of gear, the nail plate lies flat across the anvil and that the frame G, is pushed up while that part of the gear I, on which there are no teeth is next the gear J, and as the shaft H revolves continuously, not stopping when the shaft C, is out of gear, we propose to use means of preventing the frame being moved up at any other time. When the frame has been pushed up and secured by the latch lever, the moving forward and turning of the plate in the manner already described proceeds and the cutters operate during the intermissions in the movement of the feeding shaft. The feeding and turning of the plate is continued till the collar *i*, strikes the lever M, and throws the machine out of gear, which always occurs just as the extremities of the holder arrive close to the cutters and no more nails can be cut from the plate.

What we claim as our invention, and desire to secure by Letters Patent, is:—

1. The polygonal, concave-sided, and oblique-grooved feed bar K, applied in combination with the pins *e*, *e*, on the feeding shaft, substantially as set forth, to produce the feed movement of said shaft by its own revolution and to provide for variation in the feed.

2. The arrangement of the feed bar K, the driving shaft H, and driving gear I, and the plate *t*, for throwing out the stop pawl of the running-back mechanism in the same movable frame, which is liberated by a latch lever actuated by the feeding shaft, and thus permitted to be operated upon by a spring L, or its equivalent, the whole operating substantially as herein set forth.

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Witnesses:
HENRY MARTIN,
ALBERT M. HEWITT.