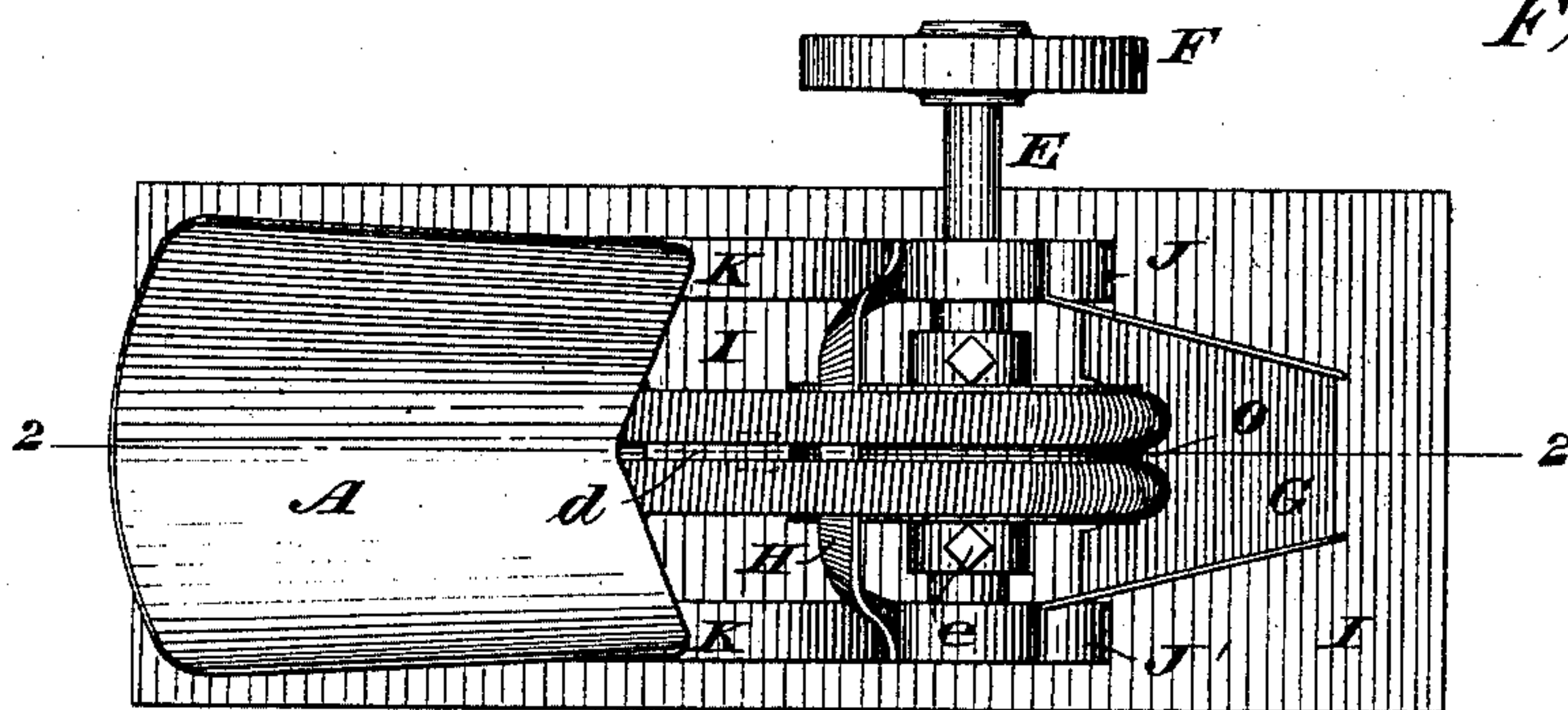


E. C. TAYLOR.  
Nail-Picker.

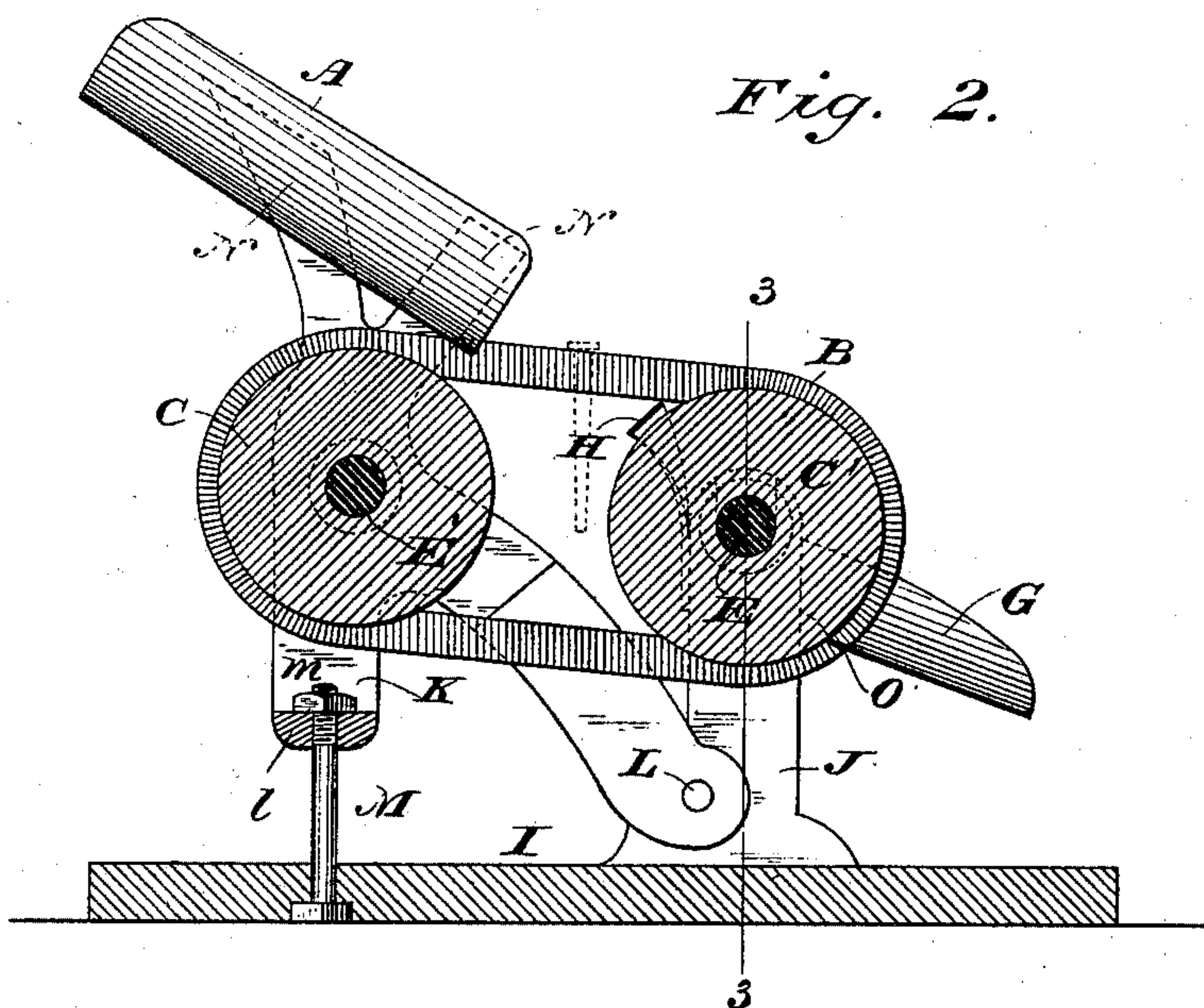
No. 223,410.

Patented Jan. 6, 1880.

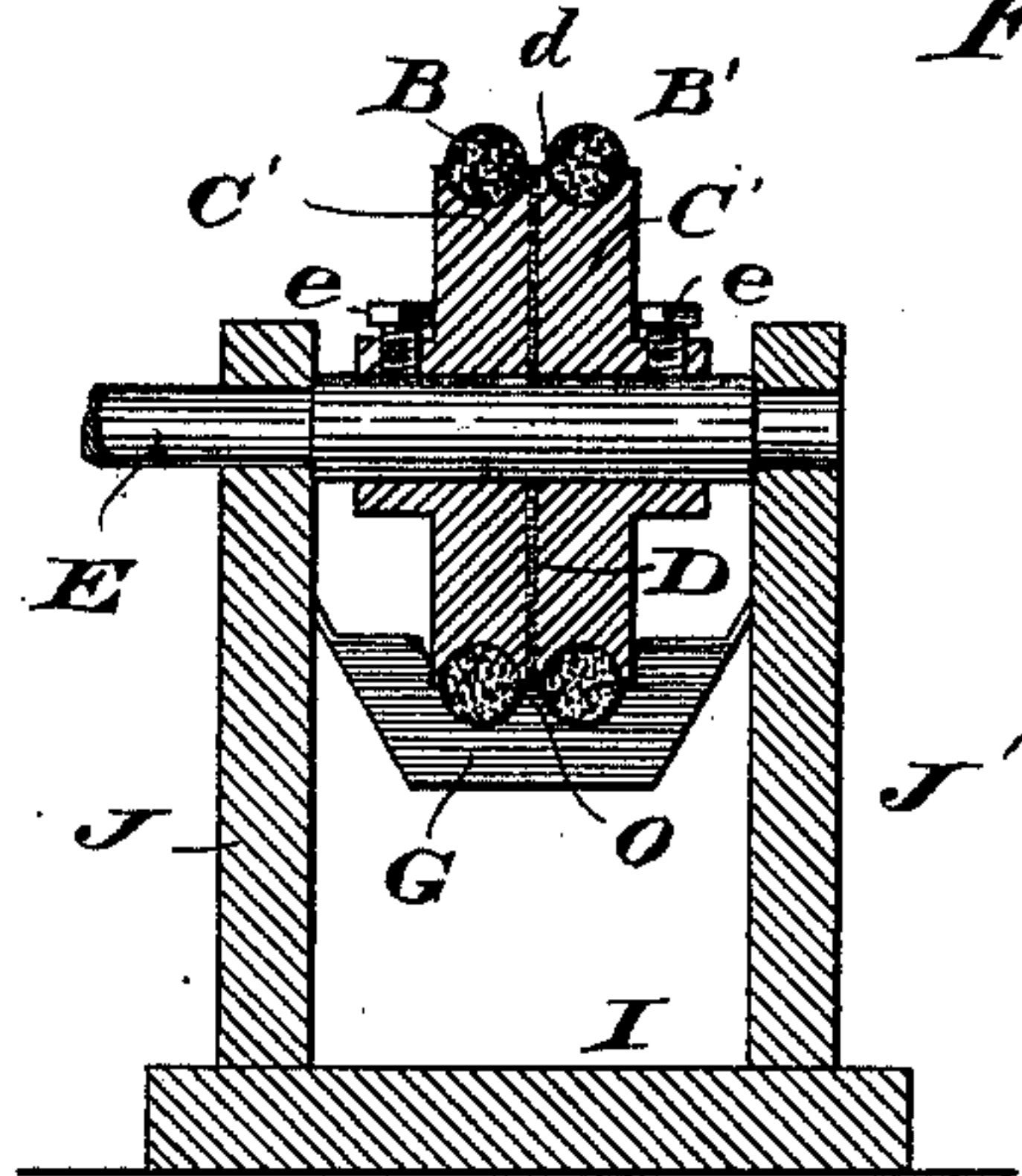
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES

*Wm. A. Skinkley*  
*Wm. F. Kilgore*

INVENTOR

*Elbert C. Taylor.*

By his Attorneys

*Baldwin, Hopkins & Taylor*



# UNITED STATES PATENT OFFICE.

ELBERT C. TAYLOR, OF KNOXVILLE, TENNESSEE, ASSIGNOR OF ONE-HALF  
OF HIS RIGHT TO WILLIAM W. WOODRUFF, OF SAME PLACE.

## NAIL-PICKER.

SPECIFICATION forming part of Letters Patent No. 223,410, dated January 6, 1880.

Application filed October 22, 1879.

*To all whom it may concern :*

Be it known that I, ELBERT C. TAYLOR, of Knoxville, in the county of Knox and State of Tennessee, have invented certain new and useful Improvements in Nail-Pickers, of which the following is a specification.

My invention relates to improvements in apparatus for assorting nails of the class in which the headless and imperfectly-headed nails are separated from those with heads, which are picked out and delivered by themselves.

My object is to provide a simply-constructed, inexpensive, and efficient nail-picking machine, suitable either for attachment to or use in connection with ordinary cut-nail machines, so as to receive the nails as cut by and delivered from the nail-machine, or for use independently of or separately from such machines to remove the headless nails and accumulate the headed ones.

My improvements consist, mainly, in the combination of an inclined supply-spout or feed-chute, down which the nails slide, two sets or pairs of pulleys, and two traveling endless belts, ropes, &c., passing round said pulleys and slightly separated from each other, so as to leave a space to which the nails are delivered from the lower end of the chute, and through which they pass, if headless, while good nails engage the ropes at each side of the space by their heads, are held suspended, points down, are carried along by the belts, and finally discharged.

My improvements also consist in the combination, with the traveling ropes and pulleys, of a guard beneath the top or forwardly-moving parts of the ropes, inside of and close to the pulleys at the discharge end of the belts, which guard prevents the clamping of the nails between the belts and pulleys, and insures their proper passage along between the belts and their discharge from the machine.

Finally, my improvements relate to a novel organization of parts and to certain combinations of devices which, together with the above-defined improvements, will hereinafter first fully be described, and then designated by the claims.

The accompanying drawings show so much of my nail-picker as is deemed necessary, in

connection with a description thereof, to explain my invention.

Figure 1 is a plan or top view; Fig. 2, a vertical longitudinal section on the line 2 2 of Fig. 1, and Fig. 3 a vertical transverse section on the line 3 3 of Fig. 2.

A supplying-spout or feed-chute, A, delivers the nails one after another to the separating or assorting mechanism proper, which consists of two endless traveling bands or belts, B B', (round and spirally-wrapped rope answering well,) which pass round two pairs or sets of grooved pulleys, C C and C' C'. One only of the pulleys C is shown by the drawings.

The belts are arranged parallel with each other, at a slight distance apart, and on a level at their top or forwardly-moving surfaces. The width of the space *d* between the belts may be varied to suit differences in the size of nails by spacing up between the pulleys (both sets) by disks.

A thin disk, *d*, is shown between the pulleys C' C' in Fig. 3. By putting in thicker disks the machine is suited for operating upon larger nails, and by employing thinner disks smaller nails may be assorted, as will presently be understood. Each pulley is fastened to the shaft E or E' by a set-screw, *e*, to admit of changing the spacing-disks in an obvious way.

A band-pulley, F, a gear-wheel, hand-crank, &c., on the driving-shaft E serve to drive the machine by rotating the pulleys C' C', the belts, and the driven-shaft E' and its pulleys.

A discharge-spout, G, receives the nails as delivered by the ropes, &c., and may conduct them into any suitable receptacle.

A guard, H, close to the pulleys at the discharge end of the belts and crossing these pulleys from side to side beneath the top sections of the belts, prevents clogging of the machine by guarding against the possibility of engagement of the nails by the bands and pulleys or between them. This guard is an important feature. Without it or its equivalent the nails would pass into one or the other of the grooves of the pulleys and be clamped and carried round, thus not only resulting in failure to properly deliver the good nails, but rendering the breaking of the parts and cutting or abrading



ing of the ropes, or their equivalents, most likely.

The belts, pulley-shafts, supplying-spout, and discharge-spout are mounted, in suitable manner, in proper relative positions. In this instance I provide a base-plate or foundation-frame, I, upon which two posts or upright arms, J J', are mounted. The shaft E turns in suitable bearings in the upper ends of these arms, and the discharge-spout G is properly secured to them. Two-part or cap bearings should be provided to facilitate adjusting the spacing-disks. A vertically-adjustable frame or rocking support, K, for the driven shaft E' and supply-chute is hinged by its arms, as at L, to the fixed uprights J J', and an adjusting-bolt, M, and its nut *m* serve to hold this adjusting-frame to the base in the desired position. In this way the bands may readily be tightened or loosened simply by manipulating the nut above the cross-bar *l* of the frame.

Forked supports N at each side of and extending from the adjusting-frame above the driven pulleys C C hold the chute or supply-spout at the proper inclination to cause the nails to slide down by gravity to the belts.

In operation, the nails successively pass down the chute to the belts, and by reason of the central depression of the chute they are delivered over and into the space between the belts. The nails, whether presented head or point first, quickly pass into the space *d*, points downward, and if headless they drop entirely through the space or down between the belts and upon any suitable device, such as an inclined plane, endless apron, &c., which carries them away, so as not to fall upon the belts beneath, or otherwise clog the machine. Perfect nails are stopped by their heads, (see Fig. 2,) and thus prevented from leaving the belts, by which they are carried forward and delivered over the pulleys C' C' into the discharge-spout, the bow or guard-piece over the pulleys preventing entanglement of the nails between the pulleys and belts, as before explained.

The spout G, it should be observed, is grooved for the belts and pulleys, and the central projection or teat, O, serves to free or force out (as will readily appear) from between the belts any nail which might otherwise possibly be carried around by the belts and be clamped between them and the pulleys.

Obviously my improvements may be modified in various ways without departing from my invention—as, for instance, by employing suitable chains, flat belts, unwrapped ropes, &c., in lieu of the ropes covered by the spiral wrapping of cord or wire, as shown, though I deem such covered ropes preferable, especially

when wire-covered, as a wire wrapping wears well, and a sufficiently rough surface is presented to the nails to carry them along, if headed, by frictional contact. Any proper belt-tightening devices may be employed instead of the swinging frame to keep the belts sufficiently taut to insure their being kept properly separated. The space between them should always occupy the proper position relatively to the supply-chute, and somewhat exceed in width the width or thickness just below the head of a perfect nail of the size being operated on, so as not to clamp the nail, but simply hold it suspended by its head.

I am well aware that endless feeding-belts in two or more parts are not new, and that endless belts for separating are old, and I do not, therefore, broadly claim either sectional feed-belts or belts for separating; but I am not aware of any nail-picker or analogous improvement prior to my invention embracing the subject-matter hereinafter claimed.

I claim as of my own invention—

1. The combination, in a nail-picker, of the pulleys, the spaced endless traveling ropes or belts, and the centrally-depressed inclined chute, these members being and operating substantially as hereinbefore set forth.

2. The combination, substantially as hereinbefore set forth, of the pulleys, the spaced endless traveling belts, and the guard to prevent entanglement of the nails between the belts and pulleys.

3. The combination, substantially as hereinbefore set forth, of the driving-shaft, the pair of spaced pulleys thereon, the driven shaft, the spaced pulleys thereon, the two endless belts, the guard, and the discharge-spout.

4. The combination, substantially as hereinbefore set forth, of the fixedly-supported pulleys, the adjusting-frame, the pulleys mounted in the adjusting-frame, the spaced endless belts, and the supply-chute mounted on the adjusting-frame and delivering the nails properly to the belts, as described.

5. The combination, substantially as hereinbefore set forth, of the frame-base, the pulleys C' C', mounted in posts on the base, the rocking frame, the pulleys C C mounted therein, the belts passing round the pulleys, and the adjusting-bolt, whereby the belts are kept properly spaced, for the purpose described.

In testimony whereof I have hereunto subscribed my name.

ELBERT C. TAYLOR.

Witnesses:

W. T. JONES,  
P. H. TOOMY.