2 Sheets—Sheet 1.

M. A. WILLIAMS.

Nail-Picker and Separating-Machine.

No. 216,713. **Patented June 17, 1879.**

Fig. 1.

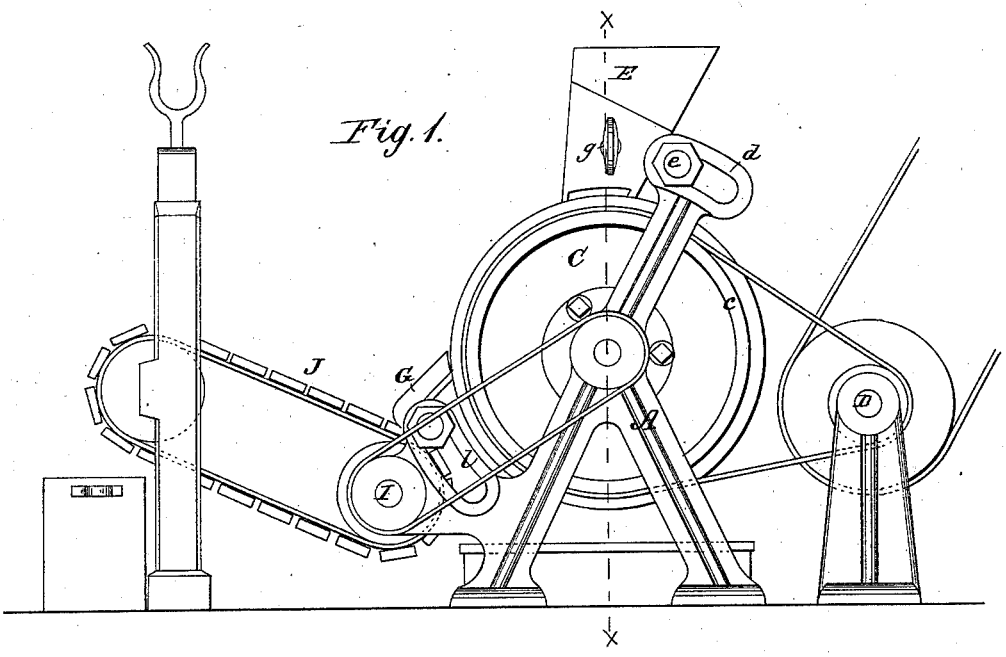
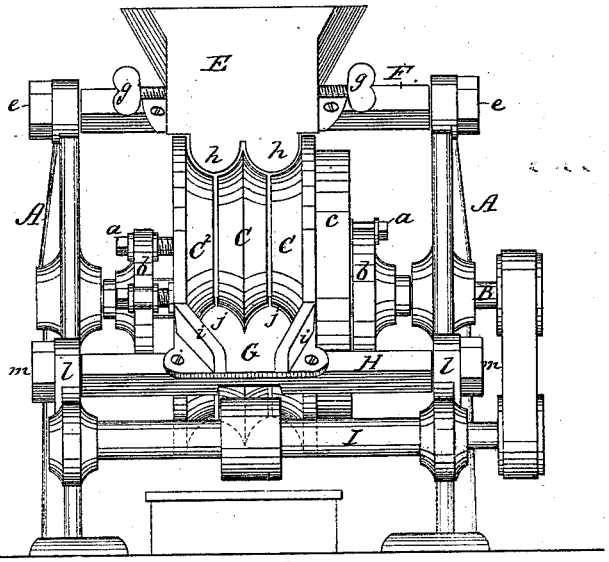
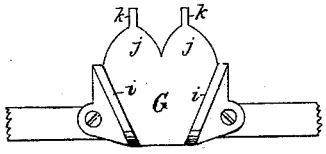


Fig. 2.





WITNESSES:

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Edwin W. Byrn.

INVENTOR:

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BY Munn & Co

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2 Sheets—Sheet 2.

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Fig. 3.

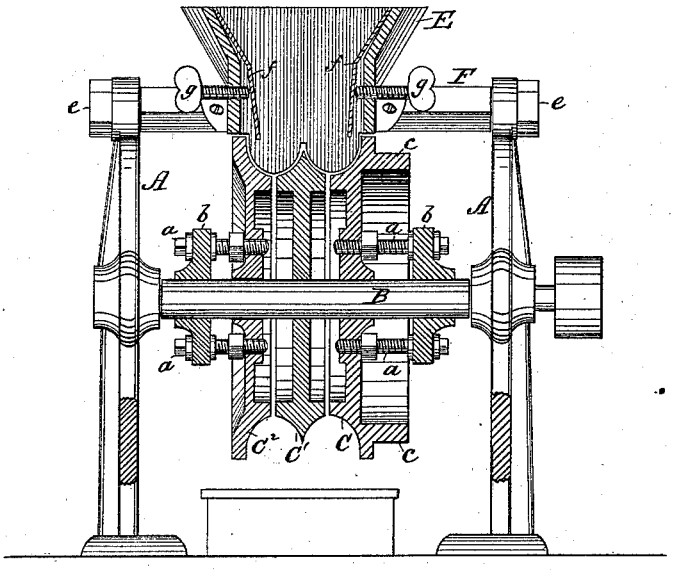
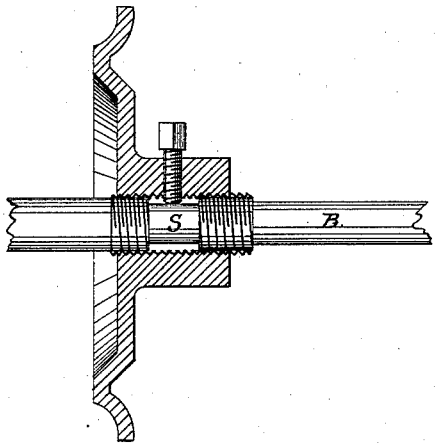


Fig. 4.



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UNITED STATES PATENT OFFICE.

MOSES A. WILLIAMS, OF KNOXVILLE, TENNESSEE.

IMPROVEMENT IN NAIL PICKER AND SEPARATING MACHINES.

Specification forming part of Letters Patent No. **216,713**, dated June 17, 1879; application filed April 2, 1879.

To all whom it may concern:

Be it known that I, MOSES A. WILLIAMS, of Knoxville, in the county of Knox and State of Tennessee, have invented a new and Improved Nail Picker and Separating Machine; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation. Fig. 2 is a front elevation with the carrier-belt removed. Fig. 3 is a vertical section through the line *x x* of Fig. 1. Fig. 4 is a sectional detail view of a modified means for adjusting the disks.

The object of my invention is to provide a novel construction of machine for separating the perfect nails from the headless nails, slivers, and dirt which are discharged together from a nail-machine; and to this end the invention consists in one or more pairs of rotary disks or wheels having curved or beveled peripheries, so that two disks when placed together form a peripheral trough, the said disks being located such a distance apart that the headless nails, slivers, &c., drop between and entirely through the disks, while the perfect nails hang between the disks, upon the curved edges of the same, by their heads, and are carried in the rotation of the disks to a clearing-plate, by which they are removed from the disks and delivered to a carrier or receptacle for receiving them.

In the drawings, A A represent cast-iron frames, in which, in suitable bearings, is journaled a horizontal shaft, B.

Upon the shaft are arranged two or more disks, C C^1 C^2. These disks have their peripheries curved or beveled, so that the adjacent edges of two disks form a peripheral trough. As shown, three of these disks are employed, so as to make two troughs; but this number may be reduced to two, or may be multiplied to form a greater number of troughs than shown. The form of the periphery of these disks may also be made to conform to any curve or inclination which gives a trough-shaped space between the disks. Said disks are set at a distance apart from each other just far enough to allow the stems or body parts of the nails to pass through, but not far enough to allow the heads of the nails to pass through. This relation of the disks to each other is made adjustable through a set of screws, *a*, which swivel in collars *b b* on the main shaft, and give longitudinal movement to the disks on the shaft, so as to increase or diminish the distance between said disks. This, it will be seen, adapts the machine to operate upon different sizes of nails.

For rotating the shaft B, one of the disks C is made with a pulley-face, *c*, around which a belt passes, and to which motion is transmitted through the belt from a counter-shaft, D, which latter is in turn rotated by a belt from the nail-machine.

For receiving the nails from the nail-machine and feeding them to the assorting or separating machine, a hopper, E, is employed. This hopper is bolted to a bar, F, which is adjustably secured in curved slots *d*, formed in the upper portion of the frame A, by means of nuts *e*. The curvature of these slots corresponds to the curve of the periphery of the disks, and the adjustment of the bar and hopper throughout said slots permits the nails, &c., to be delivered upon different points on the periphery of said disks, to give a greater or less time for the nail and refuse matter to become separated. This hopper is made of sheet or cast iron, and is provided upon its inner sides with steel plates *f f*, which are made adjustable through thumb-screws *g g*, to govern the delivery of the nails to the two troughs, or cause the proper amount to be delivered into each trough.

The front and rear of the hopper are formed with two projections, *h h*, which extend down between the disks into the troughs. These projections cause the nails to adjust themselves to the spaces between the disk, and prevent the nails from feeding too rapidly over the periphery of the disks.

As the nails, the slivers, headless nails, scraps, &c., pass from the nail-machine, they enter the hopper of the separator. Here the slivers, headless nails, and scraps pass down through the spaces between the disks at the bottom of the trough, while the perfect nails become suspended in such space by their heads. In the rotation of the disks such perfect nails are carried along the periphery of the disks in

their suspended position until removed by the clearing-plate. G is this clearing-plate, which is made of metal, and has inclined raised sides *i i*, that form a converging chute to direct the nails into any convenient receptacle. This clearing-plate is arranged at an incline and below a horizontal line passing through the center of the disks. Its edge next to the disks is formed with projections *j j*, that enter and fill the trough-shaped spaces, which projections are also further prolonged in the shape of tongues *k k*, that enter the spaces between the disks. Such nails as fail to slide off the periphery of the disks into the clearing-plate from gravity strike with their lower ends against these tongues, and are thereby dislodged.

The clearing-plate, like the hopper, is made adjustable over the arc of the periphery of the disks, and for this purpose it is mounted upon a transverse bar, H, arranged in curved slots formed in offsets *l l* from the frame A, the bar and clearing-plate being fixed in its adjustment by means of nuts *m m*.

For receiving the nails from the chute or clearing-plate, any receptacle may be employed; but, if found desirable, a carrier-belt, J, with buckets, may be employed, as shown in the drawings, the said carrier being driven by a pulley on a counter-shaft, I, which latter is driven by a belt running from a pulley on the main shaft.

In making use of my invention, I do not confine it to assorting, picking, or separating nails, but may use it as a feeder for pins and screw-blanks or other similar purpose.

Instead, also, of using solid disks for forming the trough, I may employ open wheels with beveled or curved peripheries to secure the same result.

I am aware of the fact that an inclined trough with a slot in the bottom has been employed for feeding pins, screw-blanks, &c., by suspending them by their heads; but I do not know that such trough has been made of a peripheral form and arranged to rotate so as to form a positive feed.

As a modified means for adjusting the disk, I may employ the plan shown in Fig. 4, in which the shaft has a thread cut upon the same, and a corresponding female thread is cut in the hub, a small space or seat, *s*, being left on the shaft to give binding room for a screw, which space is of sufficient width for the greatest scope of adjustment. With this arrangement the disk is adjusted by being turned axially and its position fixed by the binding of the screw.

What I claim is—

1. As a means for feeding or separating nails or analogous articles, two or more rotary disks or wheels having beveled or curved peripheries combined with and arranged adjacent to each other, as described, so as to form a peripheral trough with an open space in the center, substantially as specified.

2. The combination, with a non-adjustable rotary disk or wheel having a curved or inclined periphery, of a second movable disk or wheel having a curved or inclined periphery, forming with the first a peripheral trough with a central opening, and a set of adjusting-screws for moving one disk farther from or closer to the other, as described.

3. The hopper E, combined with the rotary disks and the adjustable bar F, substantially as and for the purpose described.

4. The clearing-plate G, having tongues *k k*, combined with the rotary disks, with said tongues projecting between the same, as and for the purpose described.

5. The clearing-plate G, combined with the rotary disks and the adjustable bar H, substantially as and for the purpose described.

MOSES AUGUSTUS WILLIAMS.

Witnesses:

W. R. TUTTLE,

WM. S. MEAD.