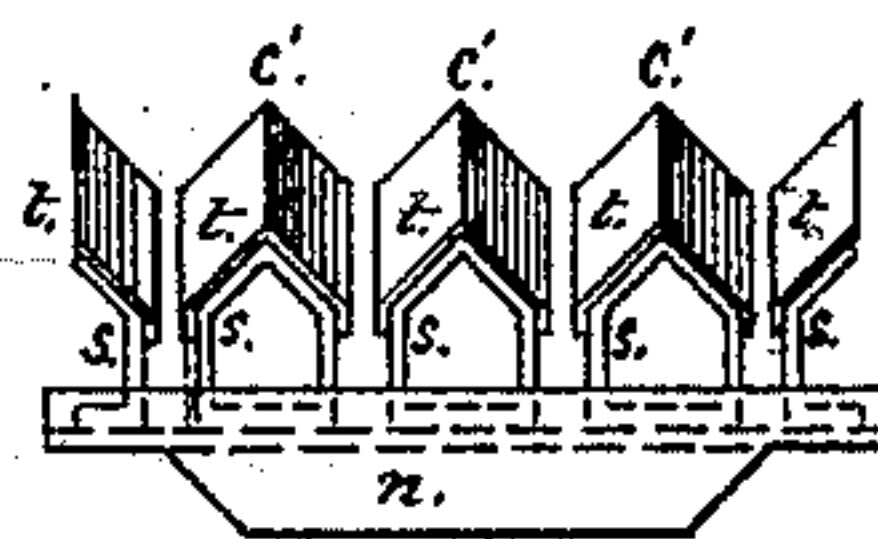
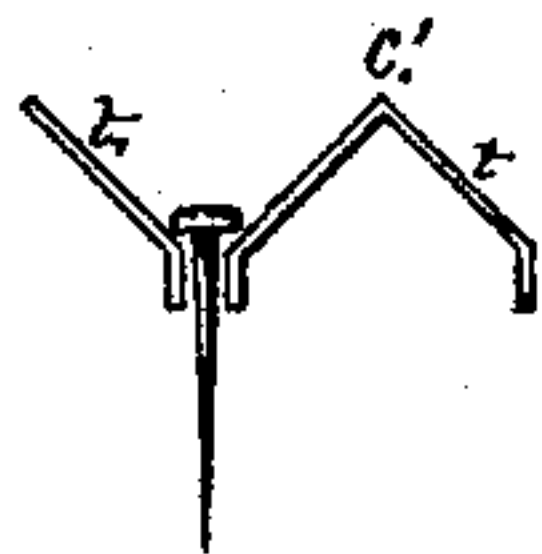
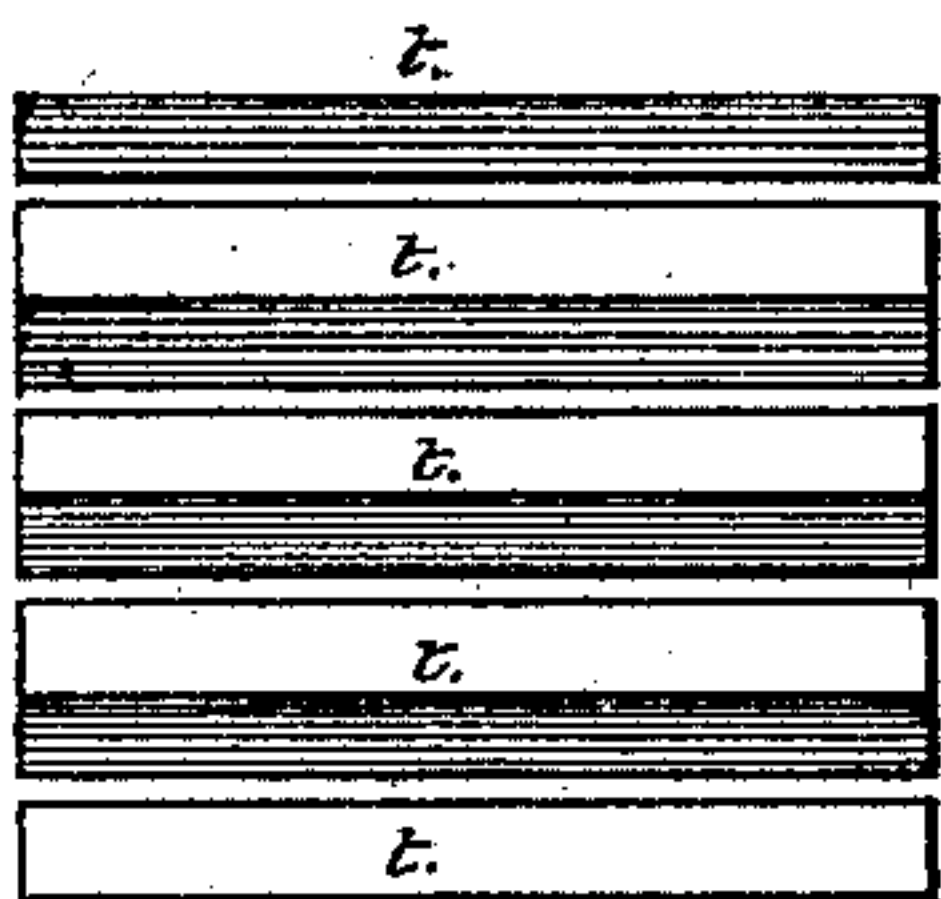
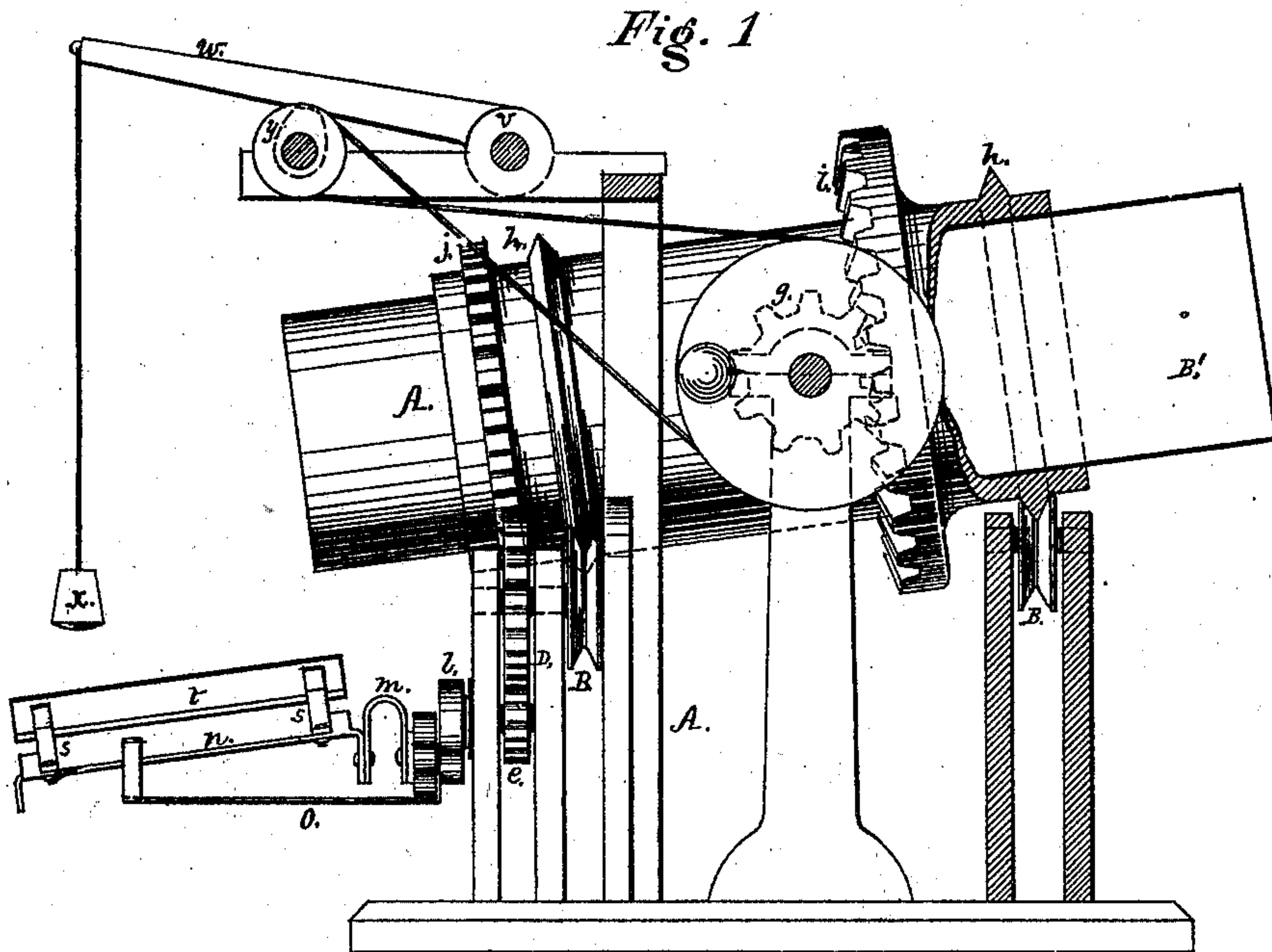


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NAIL-SEPARATOR.

No. 171,213.

Patented Dec. 21, 1875.



WITNESS

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Fig. 5

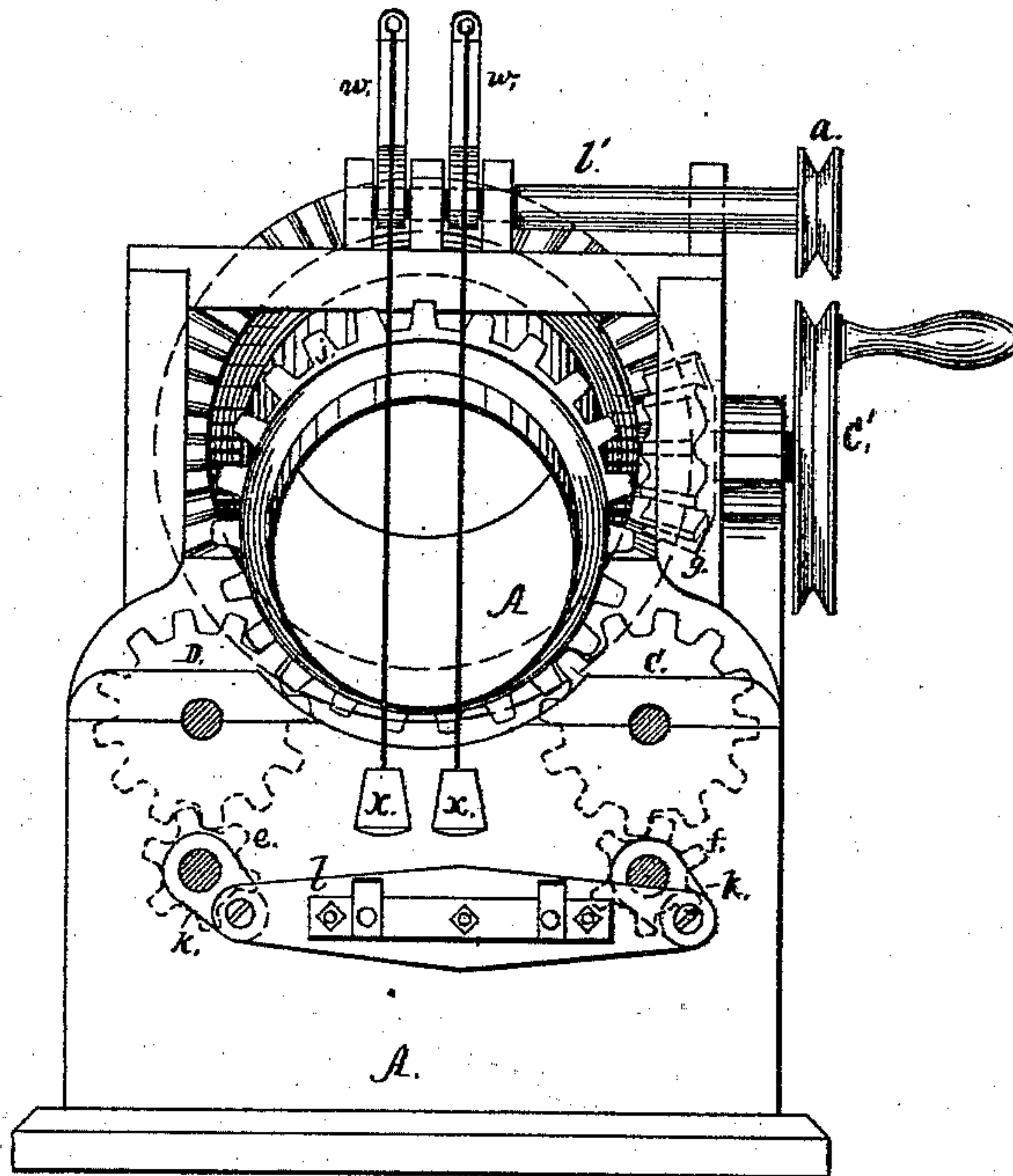


Fig. 6

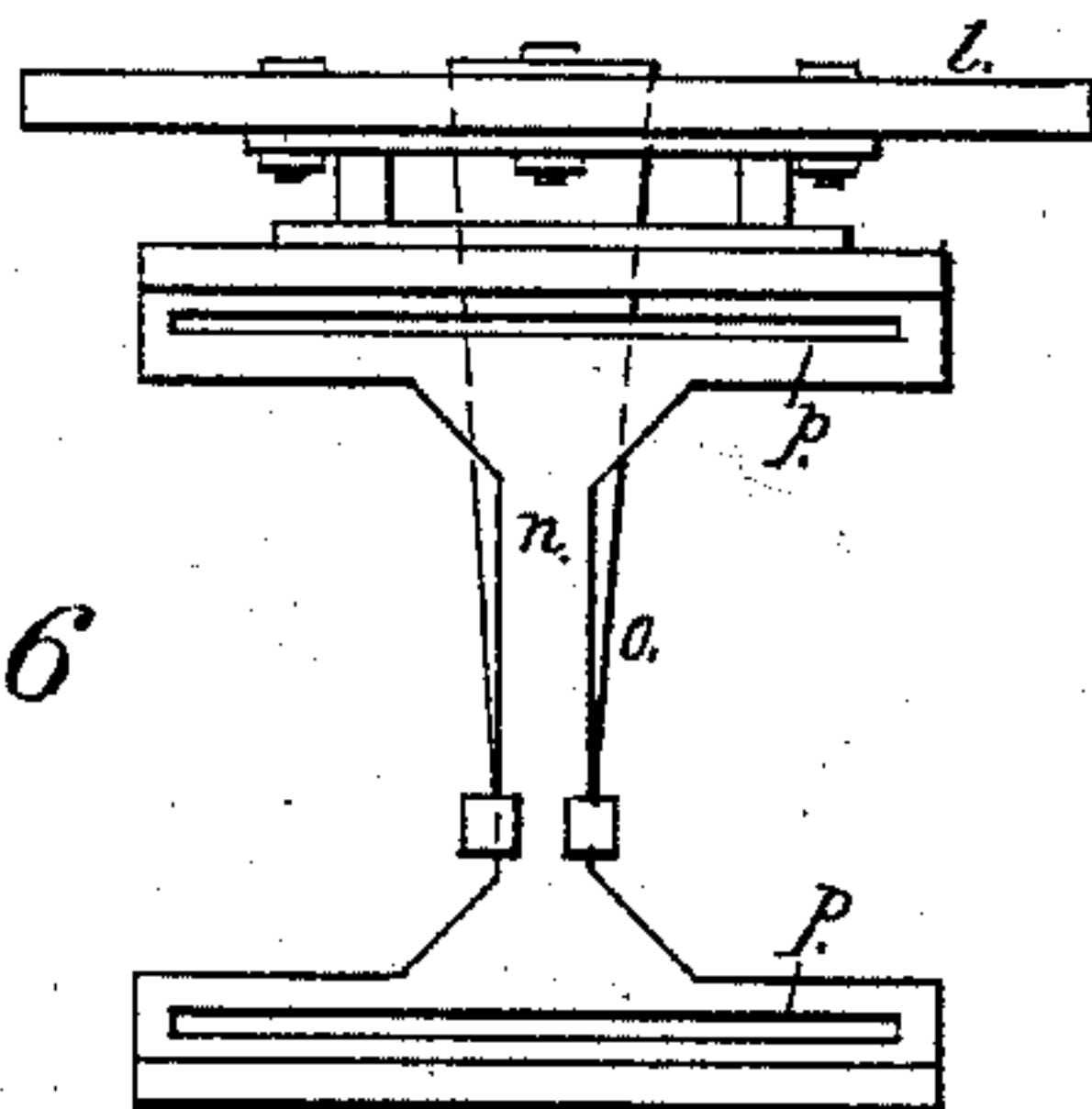
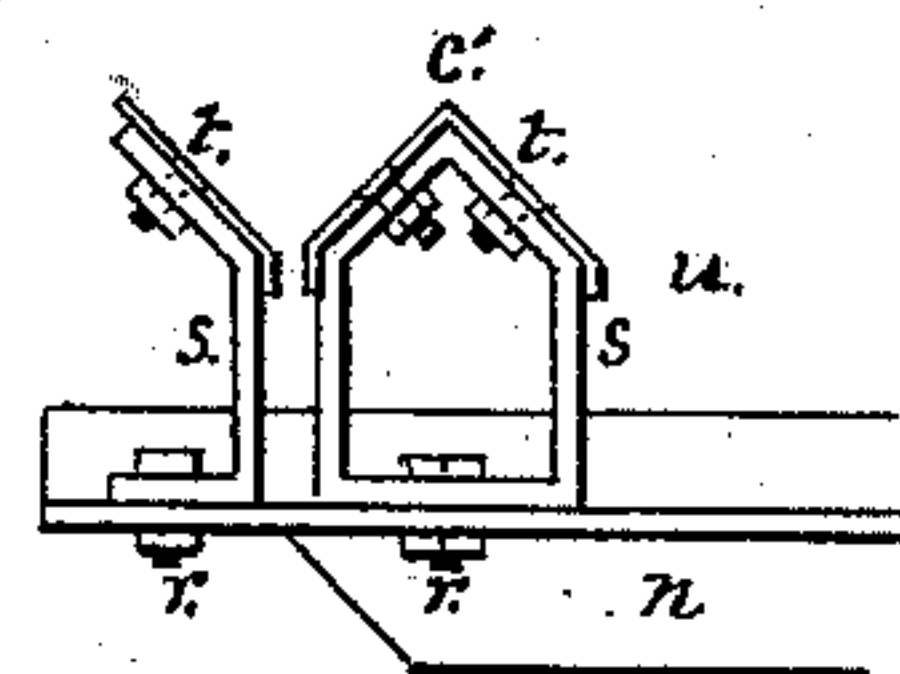


Fig. 7



WITNESS

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UNITED STATES PATENT OFFICE.

ISAAC N. BUMBAUGH, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN NAIL-SEPARATORS.

Specification forming part of Letters Patent No. **171,213**, dated December 21, 1875; application filed October 18, 1875.

To all whom it may concern:

Be it known that I, ISAAC N. BUMBAUGH, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Nail-Separating Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to an improvement in nail-separating machines; and consists of a revolving cylinder, in combination with a separating device, consisting of adjustable frames provided with plates arranged with relation to each other so as to form a series of V-shaped grooves, said frames and plates being suspended by a spring to a connecting-piece pivoted to two cranks, whereby a vertical and lateral movement is imparted to the separator, so that the nails are allowed to fall in the different grooves of the separator, and a shaking and agitating motion imparted to the separator through the medium of said spring, connecting-piece, cranks, and two agitating-weights, suspended to arms which are operated by means of cams, the whole being so arranged that the nails passing through the cylinder, and from it falling upon the separator, the imperfect nails are allowed to drop through the opening in the V-shaped grooves, and the perfect nails carried along the groove and deposited into a receptacle.

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

In the accompanying drawings, which form part of my specification, Figure 1 is a side elevation of my improved nail-separating machine. Fig. 2 is an end view, in perspective, of the separating device. Fig. 3 is a top view of the separating device. Fig. 4 represents a detached view of the plates used for forming the V-shaped grooves, and represents the position of a perfect nail in its travel through the groove. Fig. 5 is an end view, in perspective, of the nail-separating machine with separating device removed from the connecting-piece. Fig. 6 represents the base or support for the adjustable frame which supports the plates that

form the V-shaped grooves. Fig. 7 represents a section of the nail-separator.

In the drawings, A represents the framework of the machine, in which are pivoted four grooved pulleys, B, and four gear-wheels, C D e f, and a beveled wheel, g. In the grooves of the pulleys B are placed the V-shaped flanges h on the periphery of the cylinder A', which is also provided with gear-teeth i and j. The teeth i mesh into the teeth of the wheel g, and the teeth j mesh into the teeth of the wheels C and D, which mesh into the teeth of the wheels e f, on the axis of which are cranks k, to which is pivoted the connecting-piece l, to which is attached, by means of a spring, m, the frame n and a check-piece, o. The frame n is provided with slots p, for receiving the bolts r, used for the purpose of holding the adjustable frames s in position on the frame n. By having the frames s adjustable, the openings in the bottom of the V-shaped grooves formed by the plates t may be increased or diminished at pleasure, for the purpose of adapting the separator to the different sizes of nails. To the frames s are attached, by means of bolts or screws, plates t, having flange u, which flange imparts stiffness and strength to the plates, and prevents them from warping, and also holds the nails in a vertical line in their travel through the V-shaped grooves. To the frame A, at v, are pivoted arms w, to the outer end of which are suspended, by means of chains or cords, weights x. The arms w are elevated by means of cams y on the shaft l', on the outer end of which is a pulley, a, for rotating the shaft l'. The arms w and weights x are depressed by their own gravity. The check o is used for the purpose of preventing too great a vibration of the separator. B' represents the ordinary and well-known "bluing-cylinder," which may be used in connection with the nail-separating machine hereinbefore described.

As the skillful mechanic will readily understand the construction of the several parts of the machine, and the relation that said parts bear to each other, I will, therefore, proceed to describe its operation, which is as follows: Power being applied to the driving-pulley e', it will rotate the wheel g, which, meshing into

the teeth *i*, will rotate the cylinder *A'*, and the teeth *j*, meshing into the teeth of the wheels *C* and *D*, will rotate them, and they will rotate the wheels *e* and *f*, which will revolve the cranks *k*, which will give to the connecting-piece *l* a vertical and lateral motion, which will give like motion to the separator, (consisting of the base-frame *n*, adjustable frames *s*, and plates *t*.) bringing the several **V**-shaped grooves in close proximity to the axis of the cylinder *A'*, and in its vertical movement will come in contact with the suspended weights *x*, which weights are descending as the separator is being elevated in its vertical movement, by which, in connection with the check *o* and curved spring *m*, a jarring, shaking, and agitating action is imparted to the separator, whereby the nails are forced to assume their proper position in the **V**-shaped grooves, which position is clearly indicated in Fig. 4. The point of junction of the plates, at *c'*, forms a sharp ridge, which tends to divide the nails as they fall from the revolving cylinder, causing them to be distributed in the several grooves. The nails are placed in the bluing-cylinder *B'*, to which heat is applied to blue them; which cylinder being inclined, as represented in the accompanying drawings, the revolving of the cylinder will cause the nails to pass into the cylinder *A'*, through which they are carried in such manner by the revolving of the cylinder that the lengthway of the nail will be about on a line with the longitudinal axis of the cylinder, so that the nails are discharged from the cylinder point foremost, and, dropping on the separator, pass into the several **V**-shaped grooves of it, the heads of the perfect nails catching, in the manner indicated in Fig. 4, and the imperfect nails passing down through the opening in the **V**-shaped grooves. The perfect nails, passing along the **V**-shaped grooves, will be deposited at the end of the separator into a suitable receptacle.

The machine hereinbefore described may be applied to nail-machines for the purpose of separating the perfect from the imperfect nails, and depositing them in bins or boxes. The separating device consisting of the frame *n*

and plates *t*, check *o*, and spring *m* may be used in connection with nail-machines, the shaking and agitating motion being imparted to the separator as a whole by means of a connecting device attached to the heading-lever or other moving part of the nail-cutting machine.

Having thus described the nature, construction, and operation of my improvement, what I claim as of my invention is—

1. A nail-separating machine consisting of a revolving cylinder, *A'*, and a separator provided with **V**-shaped grooves, said separator having a shaking and agitating motion, substantially as herein described, and for the purpose set forth.

2. A nail-separator consisting of a revolving cylinder and a separating device provided with **V**-shaped grooves, and having a shaking and agitating motion, in combination with a nail-bluing device or cylinder, substantially as described, and for the purpose set forth.

3. The nail-separator consisting of the frame *n*, adjustable frames *s*, plates *t*, and check *o*, substantially as herein described, and for the purpose set forth.

4. In a nail-separator, the separating device described, suspended by the spring *m*, substantially as herein described, and for the purpose set forth.

5. A nail-separating device having **V**-shaped grooves, suspended to operative mechanism, which will impart to it a vertical and lateral movement, substantially as herein described, and for the purpose set forth.

6. A nail-separating device having **V**-shaped grooves, to which is imparted a vertical and lateral motion, in combination with moving weights or other checking and jarring device, substantially as herein described, and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 4th day of September, 1874.

ISAAC N. BUMBAUGH.

Witnesses:

A. C. JOHNSTON,

JAMES J. JOHNSTON.