

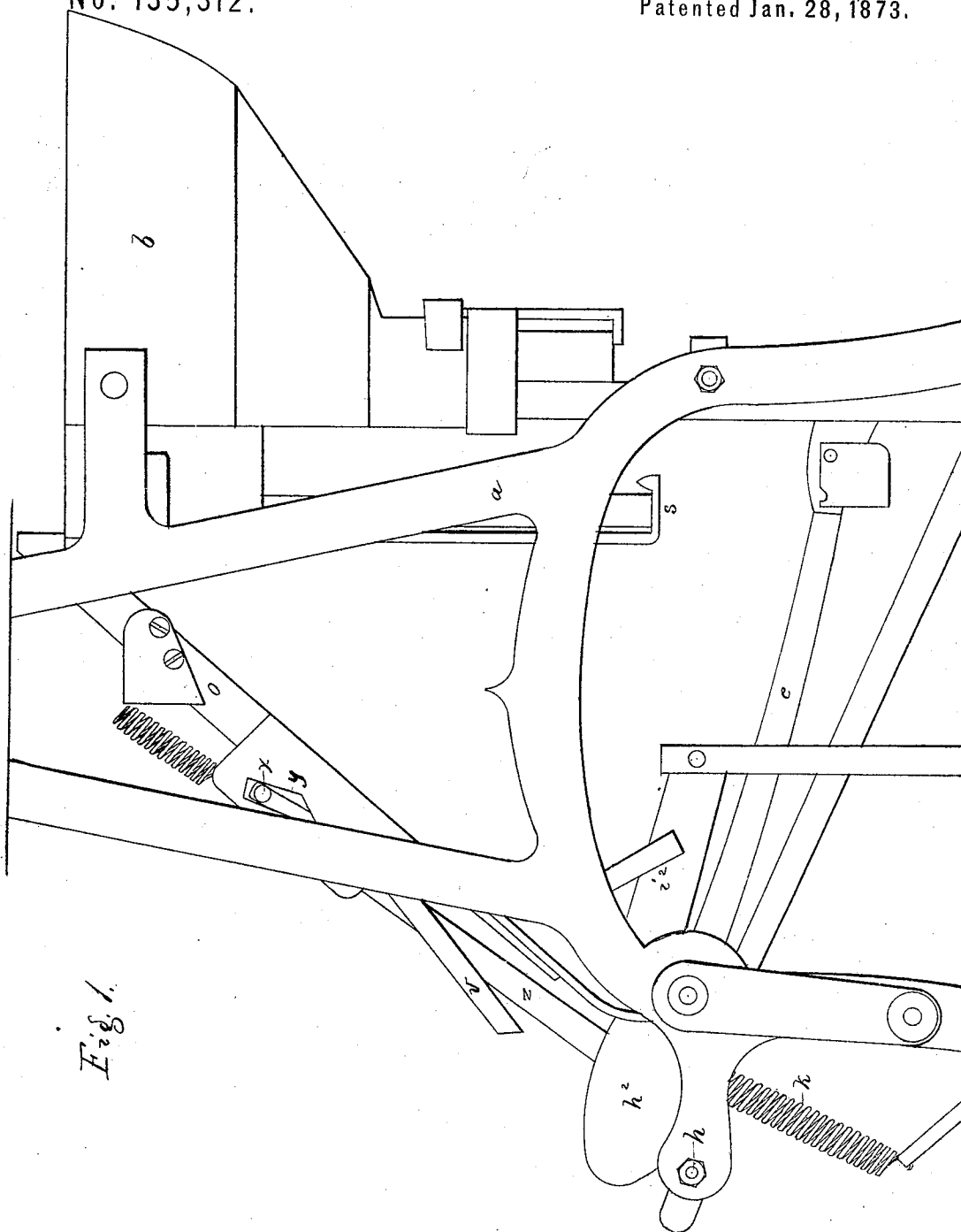
3 Sheets--Sheet 1.

B. BEVELANDER.

Nail Separating-Machines.

No. 135,312.

Patented Jan. 28, 1873.



1827

Witnesses.

M. W. Frothingham.

214 Latimer,

Invention

Benjamin Bevelander,

By his Attys.

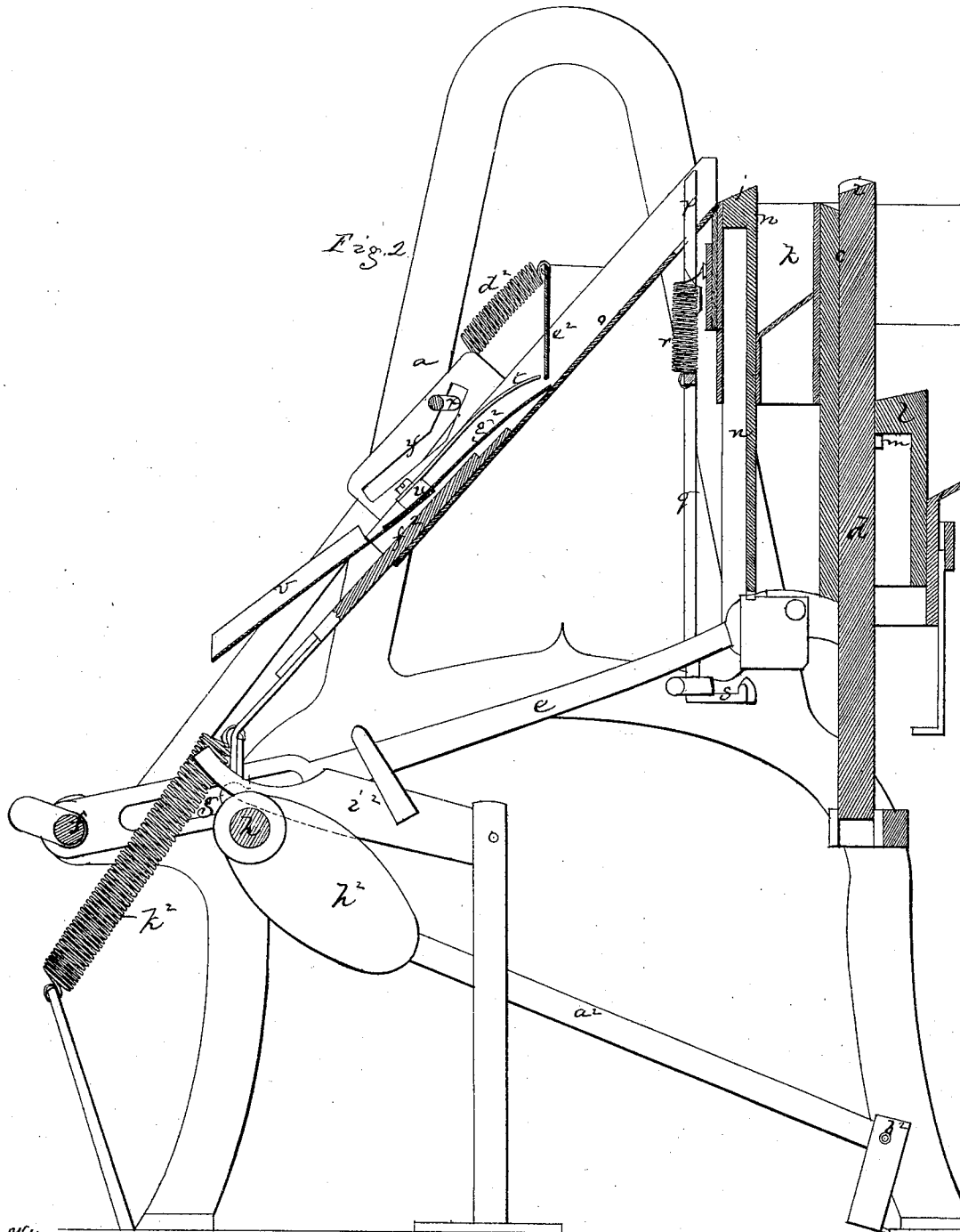
Crosby & Gould

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W. T. Geesey.
M. W. Birmingham.
L. M. Calmer.

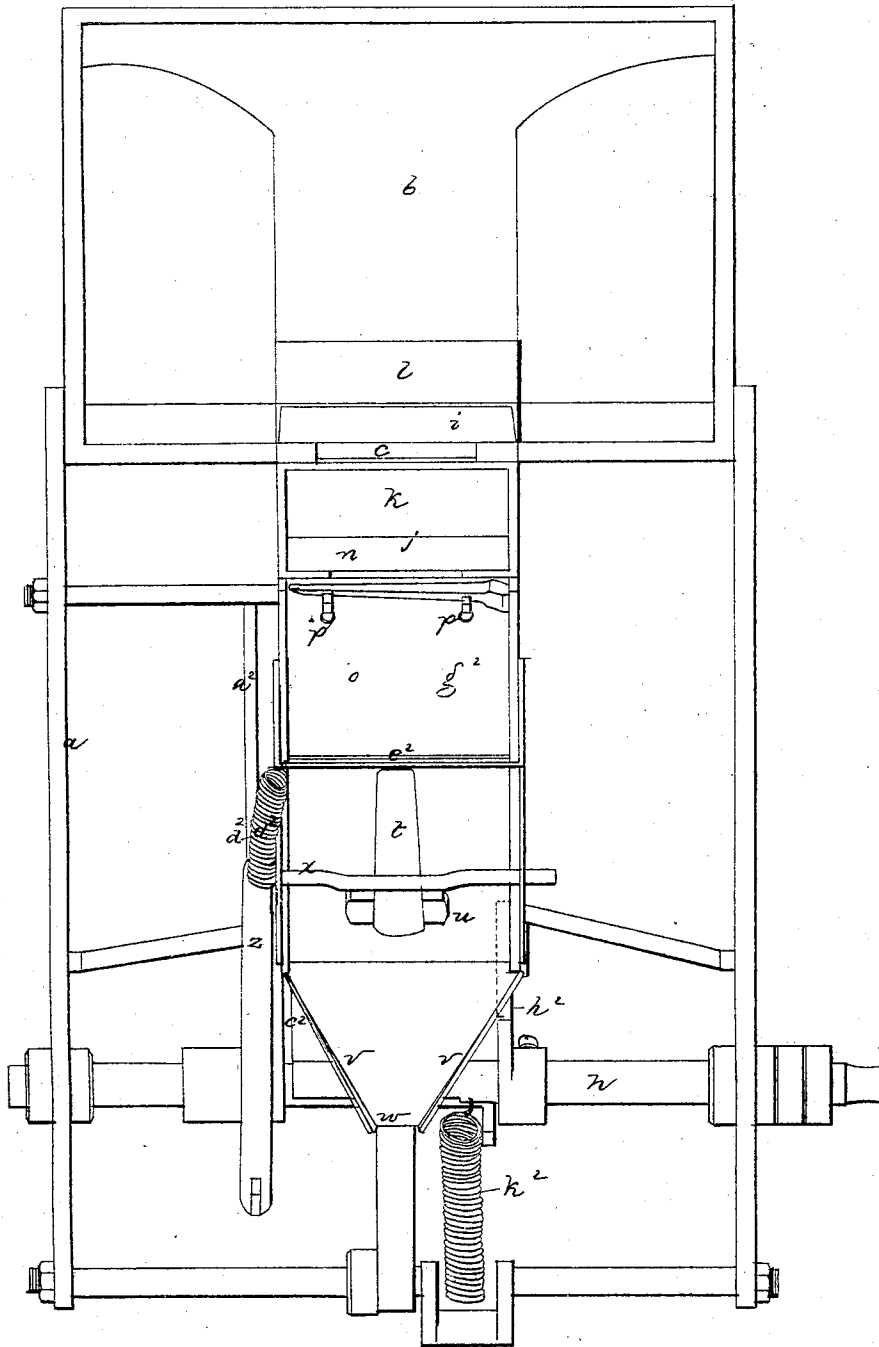
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Fig. 3.

Patented Jan. 28, 1873.



Witnesses.
Mr. W. Frothingham.
Le. H. Ostermer.

Inventor,
Benjamin Bevelander,
By his Atty.
Crosby & Gould

UNITED STATES PATENT OFFICE.

BENJAMIN BEVELANDER, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN NAIL-SEPARATING MACHINES.

Specification forming part of Letters Patent No. 135,312, dated January 28, 1873.

To all whom it may concern:

Be it known that I, BENJAMIN BEVELANDER, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Nail-Separating Machine; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

The invention relates particularly to the construction and organization of a mechanism by which horseshoe-nail blanks are selected one by one from a loose assemblage, and delivered head first to a rolling-machine, or to any other mechanism, or to any receptacle designed to receive them, successively, in head-presented and face-up position. In my machine I throw the blanks loosely into a reservoir or hopper inclining downward on three sides toward the fourth side, where there is a vertically-reciprocating slide that takes up as it rises one or more blanks, the top of this slide inclining, so that when the slide reaches its highest position the blank will slide from its top over into another compartment having an inclined bottom, at the front side of which is another vertical slide that lifts a blank as it rises, this slide also having an inclined top, from which the blank slides into an inclined chute, and down through the chute against a center-piece or stop, which causes the nail to turn or to tend to turn head down, sliding past the stop in this position or condition, there being preferably a device which will stop the blank if it drops into the chute upon its edge or upon its head-projecting face, and another device that will "right" the blank, and there being also, preferably, another device that will slide against the head of each blank detained by the center-piece, to start it down. It is in this general organization that my invention primarily consists.

The drawing represents a machine embodying my invention.

Figure 1 shows the machine in side elevation. Fig. 2 is a sectional elevation. Fig. 3 is a plan.

a denotes a frame, at one end of which is a box or hopper, *b*, having three inclined sides extending inward and toward the front wall *c*, which is vertical. Extending up into the

bottom of the hopper against the wall *c*, and forming part of the bottom of the hopper when at its lowest position, is a vertical slide or lifter, *d*, jointed by a link or lever, *e*, to a cross-rod, *f*, said link being raised and lowered to reciprocate the slide or lifter by a crank on a driving-shaft, *h*, the lifter sliding in suitable guides. The lifter has an inclined top face, *i*, and when the lifter is at its highest position the face *i* stands just back of the mouth of a compartment or vertical chamber, *k*. The hopper *b* being filled or partially filled with blanks, part of the blanks will fall over to the front part of the hopper and will pile upon the top of the lifter *d*, so that as the lifter rises one or more nails will lodge upon the face *i* and be carried up on top of the lifter. When the face *i* is at its highest position the blank or blanks on its top will slide by gravity over into the chamber *k*. To agitate the blanks and tend to insure the lodgment of one or more upon the lifter *d*, a second slide, *l*, may be located just back of the lifter *d*, the slide *l* being raised by a pin, *m*, extending from the lifter *d*, when the lifter has risen some distance, and falling by gravity or by the stress of a suitable spring when the lifter descends. The slide *l* is preferably operated so as to start up after the lifter has partially risen, and so as to reach its lowest position before the lifter *d* has reached the bottom of the hopper; and its top face being inclined to meet the face *i* of the lifter *d*, such inclination and the movement of the agitator-slide *l* will almost always insure the lodgment of one or more blanks upon the lifter. The bottom of the chamber *k* is also inclined, and its front portion is formed by the top surface of another lifter, *n*, upon which but one blank will generally lodge. This lifter may be raised by the link *e* when, in its rise, it meets the bottom of the lifter, and may descend by gravity or by the stress of a suitable spring. At its full height its face *j* is brought into position for the blank lodged upon it to slide forward by gravity onto a downwardly-inclined chute, *o*. When the blank slides over upon the chute it lodges against two pins, *p*, where it stops until the blank in advance of it has been discharged. These pins extend from a rod, *q*, the pins passing through guide-slots in the chute, and being drawn up by a suitable spring, *r*,

an arm, *s*, extending from the rod, being struck by the lifter *n* when it descends, drawing down the pins and leaving the blank free to slide down the chute. If the blank is then in proper position to slide down, or with its flat face against the chute, it will drop until (passing under a piece, *t*,) it strikes a stop-bar, *u*, placed midway of the chute, and under its momentum the head of the nail-blank, in whichever direction it may be presented, will tip over the adjacent end of the bar, inclining the blank to slide down head first, it being kept in this position by the narrowing side flanges *v*, and discharged at the opening *w*. Usually, however, the blank will not tip sufficiently to cause it to slide down from the bar, and to start it down or dislodge it a rod or bar, *x*, extends across the chute, the ends of this bar passing through guide-slots *y*, and the bar having a reciprocating movement in these slots, the bar being fixed to and extending from a link, *z*, which is jointed at its lower end to a lever, *a*², pivoted at *b*², a cam, *c*², on the driving-shaft striking the lever to draw down the link *z* and bar *x*, and a spring, *d*², drawing up the link and bar. The upper ends of the slots *y* are inclined upward and raise the bar so that the nail-head cannot strike either end part of the bar; but as the bar slides down, the end adjacent to which the head of the blank may lie will strike such head and start the blank downward, the blank then sliding forward and through the opening *w*. It is desirable to deliver the blanks upon their flat faces or uniformly as to their face, as well as head first, and this is effected as follows: As the blank slides down the chute it comes to a gage-plate, *e*², which plate will allow the blank to slide under it if its flat side is against the surface of the chute, but will act as a detainer and stop the blank if such side is not against the chute-surface. To right the blank, a slide-plate, *f*², slides up under the gage-plate after each descent of the pins *p*, that let the blank down the chute. This slide passes under a plate, *g*², that forms part of the chute-surface, and is raised by a cam, *h*², that strikes a lever, *i*², and presses it against the slide, a spring, *k*², drawing down the plate when the cam *h*²

passes the lever. As the front or upper edge of the slide advances against the blank, it overturns the blank and brings it upon its flat side, when it will slip under the gage-plate and slide down to the stop-bar. The plate *g*² is formed as a spring, its front end being made thin or brought to an edge, so that when pressed down its surface will be nearly flush with the chute-surface above it, its spring permitting it to rise for the slide to pass under it, the plate springing down when the slide moves back. By these means the blanks are selected or separated and delivered one by one, head foremost and right face up.

The specific devices and the details of construction and arrangement may, of course, be varied without departure from the essence of the invention.

I claim—

1. In combination with the box or hopper *b*, the vertical lifter *d*, having the inclined top for lifting and discharging the blanks, and the agitator *l* operated by it, substantially as shown and described.

2. In combination with the box or hopper *b* and lifter *d*, the chamber *k* and lifter *n*, substantially as shown and described.

3. In combination with a chamber for entering and a lifter for raising the blanks one by one and discharging them, the inclined chute and the bar *u*, against which it next strikes.

4. In combination with the chute *o* and bar *u*, the starter-bar *x*, operating substantially as described.

5. In combination with the chute *o*, the gage-plate *e*² and slide *f*², operating substantially as shown and described.

6. The combination of a blank-containing box or receptacle, mechanism for lifting, agitating, and for discharging blanks therefrom one by one, and mechanism for insuring the delivery of the blanks one by one, right face up, and head first, all substantially as shown and described.

BENJAMIN BEVELANDER.

Witnesses:

FRANCIS GOULD,
S. B. KIDDER.