

(Model.)

3 Sheets—Sheet 1.

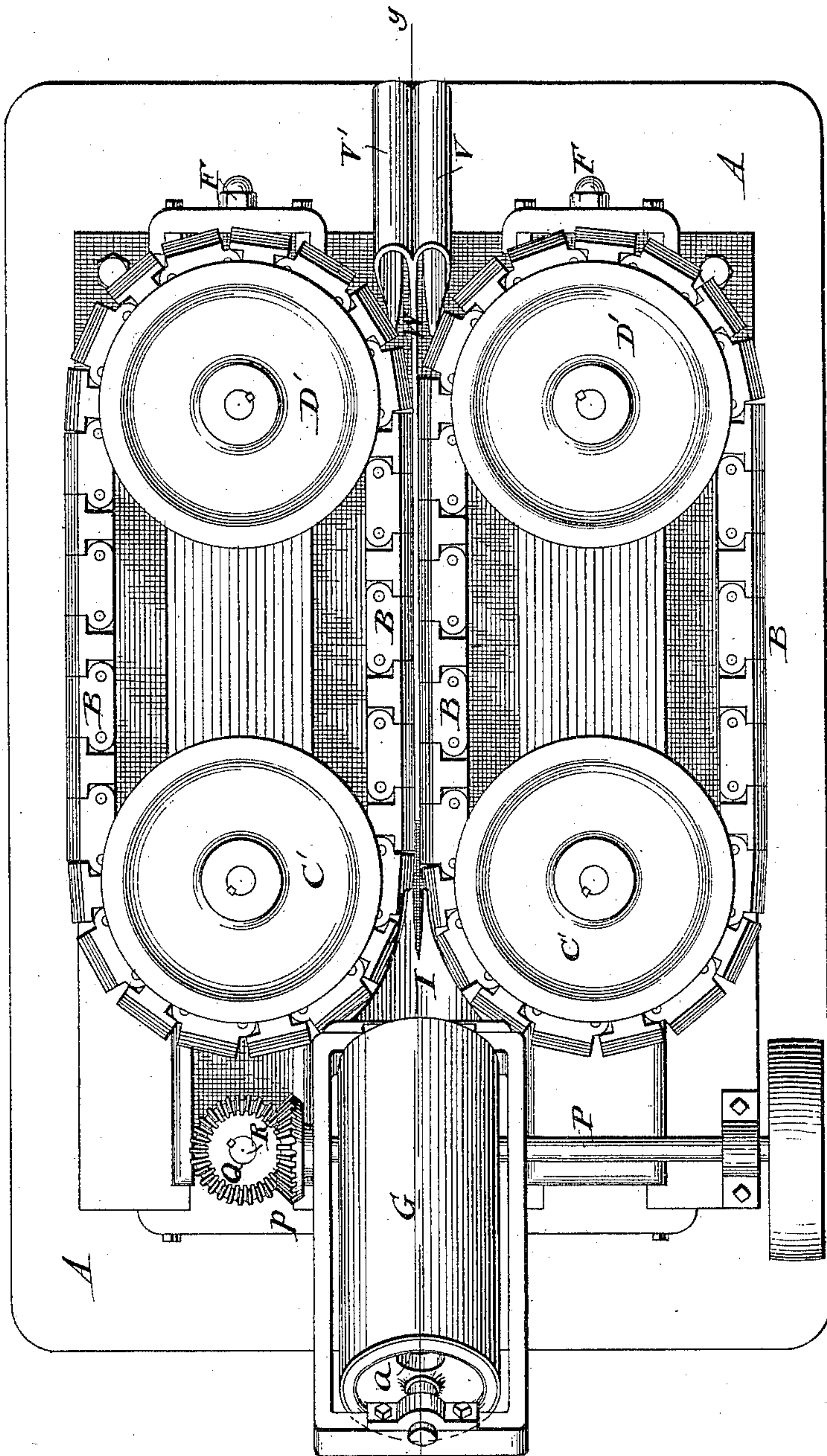
J. B. HUSTED.

MACHINE FOR ASSORTING HORSESHOE NAILS.

No. 277,488.

Patented May 15, 1883.

Fig. 1.



Attest.

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By his Attorney  
*Philip T. Dodge.*

(Model.)

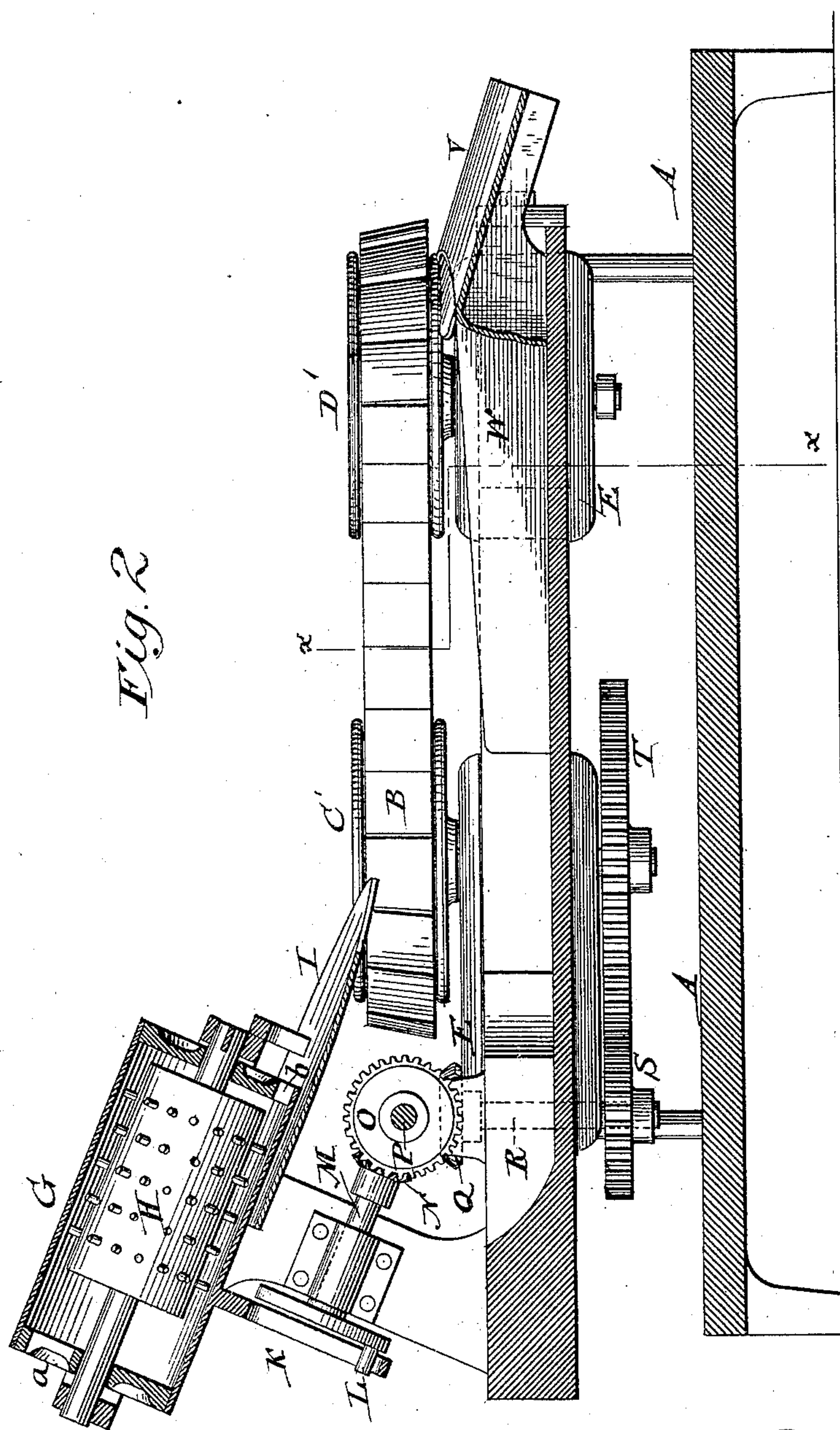
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*By his attorney,*  
*Philip T. Dodge.*







# UNITED STATES PATENT OFFICE.

JETHRO B. HUSTED, OF VERGENNES, VERMONT.

## MACHINE FOR ASSORTING HORSESHOE-NAILS.

SPECIFICATION forming part of Letters Patent No. 277,488, dated May 15, 1883.

Application filed December 7, 1882. (Model.)

*To all whom it may concern:*

Be it known that I, JETHRO B. HUSTED, of Vergennes, in the county of Addison and State of Vermont, have invented certain new and  
5 useful Improvements in Machines for Assorting Horseshoe-Nails; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable  
10 others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

The object of this invention is to provide a machine for assorting or separating horseshoe-  
15 nails and presenting the same with their heads or faces lying in one and the same direction, in order that they may be properly delivered to pointing-machines or other mechanism.

To this end the invention consists, essentially, in the combination of two conveying  
20 belts or surfaces moving parallel with each other, and serving as a means of suspending the nails by their heads, the surface of one belt being inclined vertically in respect to the other.

Owing to the fact that the heads of horseshoe-nails are beveled or extended outward on  
25 one side only, it follows that when the nails are suspended by their heads between the two belts the heads, seating themselves snugly  
30 between the belts, will cause the points to be thrown to the right or left, according to the direction in which the nail faces. In this manner the nails which face to the right and those which face to the left have their lower ends  
35 thrown widely out of line with each other, so that upon arriving at the end of the belt or carrier they may be readily delivered into separate guides, one receiving the nails which face in one direction, while its companion re-  
40 ceives those which face in the other.

Referring to the accompanying drawings, Figure 1 represents a top plan view of my machine. Fig. 2 is a longitudinal vertical section  
45 of the same on the line *y y*, Figs. 1 and 3. Fig. 3 is a cross-section of the machine on the line *x x*, Fig. 2. Figs. 4 and 5 are diagrams illustrating the manner in which the position of the nails is determined according to the direction in which their heads are faced. Fig. 6 is  
50 a diagram illustrating a modified construction of the chains.

A represents a bed plate or frame designed

to sustain the working parts, which bed-plate may be of any suitable form and sustained in any suitable manner. 55

B B represent two horizontal endless chains or belts consisting of metallic links jointed together at their ends in the manner shown, the construction being such that the straight portions of the chain will present a smooth, un-  
60 broken surface. Each of these belts is sustained at its opposite ends at a considerable distance above the bed-plate by means of horizontal pulleys or wheels C' and D', sustained by vertical shafts, and flanged at the periph-  
65 eries to prevent the belts from slipping out of position. The pulleys are so disposed upon the frame as to cause the belts to travel parallel with each other at their adjacent sides, and the belts are made of such form that their  
70 contiguous faces are inclined from the vertical approaching each other toward the lower edge, at which point they are separated from each other a sufficient distance to permit the shank or body of the nail to pass from between them,  
75 while the heads will be retained between the surfaces of the two belts, as plainly indicated in Figs. 4 and 5.

Owing to the fact before mentioned that the horseshoe-nails have their heads beveled on one  
80 side only, the opposite side being in line with the body, it follows that each nail which enters between the belts with its head facing the left will have its lower end thrown to the left, as indicated in Fig. 4, while those nails which  
85 pass between the belts with their heads facing the right will have their points thrown in the same direction, as represented in Fig. 5. In this manner the series of nails entering between the belts will have their points ranged  
90 in two widely-separated lines, those which face in the same direction being all ranged in one line.

The essential feature of my invention consists in the combination of two belts or equivalent sustaining-faces the surfaces of which  
95 converge toward the lower edge. The construction of the links forming the chain and the arrangement of devices for supporting and carrying the chains may be modified to any extent desired, provided the feature above named  
100 is retained.

For the purpose of permitting the chains or belts to be maintained at the required tension,



and to compensate for wear, I mount the journals of the wheels C' and D' in sliding boxes E, arranged to slide horizontally in the main frame and connected with screws F, whereby they may be adjusted horizontally.

While it is preferred to employ belts both of which have their surfaces inclined from the vertical, it is manifest that one belt may have a vertical face and the other a face inclined thereto.

In connection with the chains devices of any suitable character may be employed for delivering the nails thereto and for receiving them therefrom. I prefer to employ as a feeding mechanism the arrangement represented in the drawings, consisting of an inclined oscillating drum, G, provided with a feed-opening, *a*, at the upper end and a delivery-opening, *b*, at the lower end. Within this drum I locate a stationary agitator, H, made of cylindrical or other suitable form, and provided with radial studs or teeth to agitate the nails and cause them to slide endwise from the hopper. At the lower end of the hopper I place an inclined stationary chute or trough, I, the lower end of which is provided with a central slot, through which the nails are delivered directly between the faces of the carrying-belts. Being thus delivered, the body of each nail falls through between the belts and is suspended by the head, as before explained.

For the purpose of imparting the oscillatory motion to the hopper, I provide it with a depending slotted arm, K, which engages with a crank-pin, L, as clearly shown in Fig. 2. The crank-shaft M is provided with a bevel-gear, N, actuated by a corresponding gear, O, on the end of the main driving-shaft P, located horizontally in the frame. The main shaft is also provided, as shown in Figs. 1 and 3, with a bevel-pinion, *p*, which drives a pinion, Q, on the upper end of a vertical shaft, R. This shaft is provided on the lower end with a small pinion, S, which engages in a large gear-wheel, T, attached to the shaft of one of the belt-carrying wheels, C'. Through the connection described motion is communicated from the main shaft to one of the belts, and to the second belt by means of a gear-wheel, U, engaging with the large gear-wheel and secured upon the shaft of the driving-wheel C' of the second belt. The two gears T and U will be of equal size, in that the two nail-carrying belts may be driven at equal surface speeds.

For the purpose of rendering the machine adjustable as to the space between the two chains, in order to adapt the same to nails of different sizes, as well as to sustain the chains, I sustain the same, when desired, between the carrying-wheels, by means of horizontally-adjustable guide-rails, as shown in Fig. 5. These rails *a*, which sustain the lower and outer faces of the chains or belts, are seated upon rigid supports *b* and adjusted by means of screws *c*. They may be adjusted by other suitable devices. After the nails have been ranged in two rows or lines by the belts, as before ex-

plained, it is desirable that they shall be thus delivered from the machine. For this purpose I provide at the lower end of the machine two corresponding guides, V and V', having their lower sides slotted to receive the shanks or bodies of the nails, which will hang suspended by their heads therefrom. The upper ends of these guides are extended close beneath the rear ends of the carrying-chains. Between the two guides, and extending backward beneath the chains, I locate a central rib or guide, W, as plainly represented in Figs. 1, 2, and 3. The two rows of nails moved forward by the belts will have their points carried on opposite sides of the central rib, and consequently as they pass from between the belts the nails will slide downward into the guides V and V', those nails which stand in one row with their heads facing the left passing into the guide V, while those which stand in the other row with their heads to the right pass into the guide V'. In the event of the belts being constructed, as before described, one with a vertical and the other with an inclined face, the nails facing in one direction will hang vertically, while those facing in the opposite direction will hang in an inclined position. In such case the rib or guard W will be arranged in such position as to stand between the points of the vertical and inclined nails, and the guides B and B' will be arranged in corresponding positions to receive the nails.

The present invention is restricted to those matters and things which are hereinafter claimed, and as to all matters which may be described or shown, but which are not claimed, the right is reserved to make the same the subject of a separate patent.

Having thus described my invention, what I claim is—

1. In a machine for sorting horseshoe-nails, the combination, substantially as described, of two co-operating surfaces adapted to suspend the nails by their heads, one of said surfaces being inclined with respect to the other, whereby nails facing in opposite directions have their points thrown out of line with each other.

2. In a machine for sorting horseshoe-nails, the combination of two endless carrying-belts having their faces arranged to travel in parallel or substantially parallel lines and having their adjacent surfaces inclined vertically in respect to each other.

3. In combination with the sustaining-wheels, the two parallel jointed belts having inclined surfaces, as described and shown.

4. In combination with the two belts or carriers having inclined surfaces, a feed mechanism to deliver the nails between said surfaces, substantially as described and shown.

5. In combination with the two endless belts having surfaces inclined with respect to each other, the two receiving-guides V and V', substantially as described.

6. In a nail-sorting machine, the combination of two belts operating substantially as described, the two guides at the rear ends of said



belts, and the central rail or guard whereby the points of the nails are directed into the respective guides.

5 7. In combination with the two belts or carriers operating substantially as described, the feeding spout or chute located at the forward ends of said belts and provided with the central slit or opening, substantially as described and shown.

10 8. In a nail-sorting machine, an agitating and feeding device consisting of the inclined hopper G, having a rotary oscillation, and the fixed internal agitator, H, having a series of teeth or projections therein, as described,  
15 whereby the surface upon which the nails are

supported is caused to vibrate beneath the nails and beneath the agitator.

9. In a machine for sorting horseshoe-nails, the combination of two parallel belts or chains, one or both having inclined faces, with means, 20 substantially as described, for changing the distance between them.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JETHRO B. HUSTED.

Witnesses:

JOEL H. LUCIA,  
ELECTA S. SMITH.