J. CAVANAGH, JR.

MACHINE FOR OPERATING UPON FASTENINGS.

APPLICATION FILED OCT. 23, 1908.

1,109,662.

Patented Sept. 8, 1914.

2 SHEETS—SHEET 1.

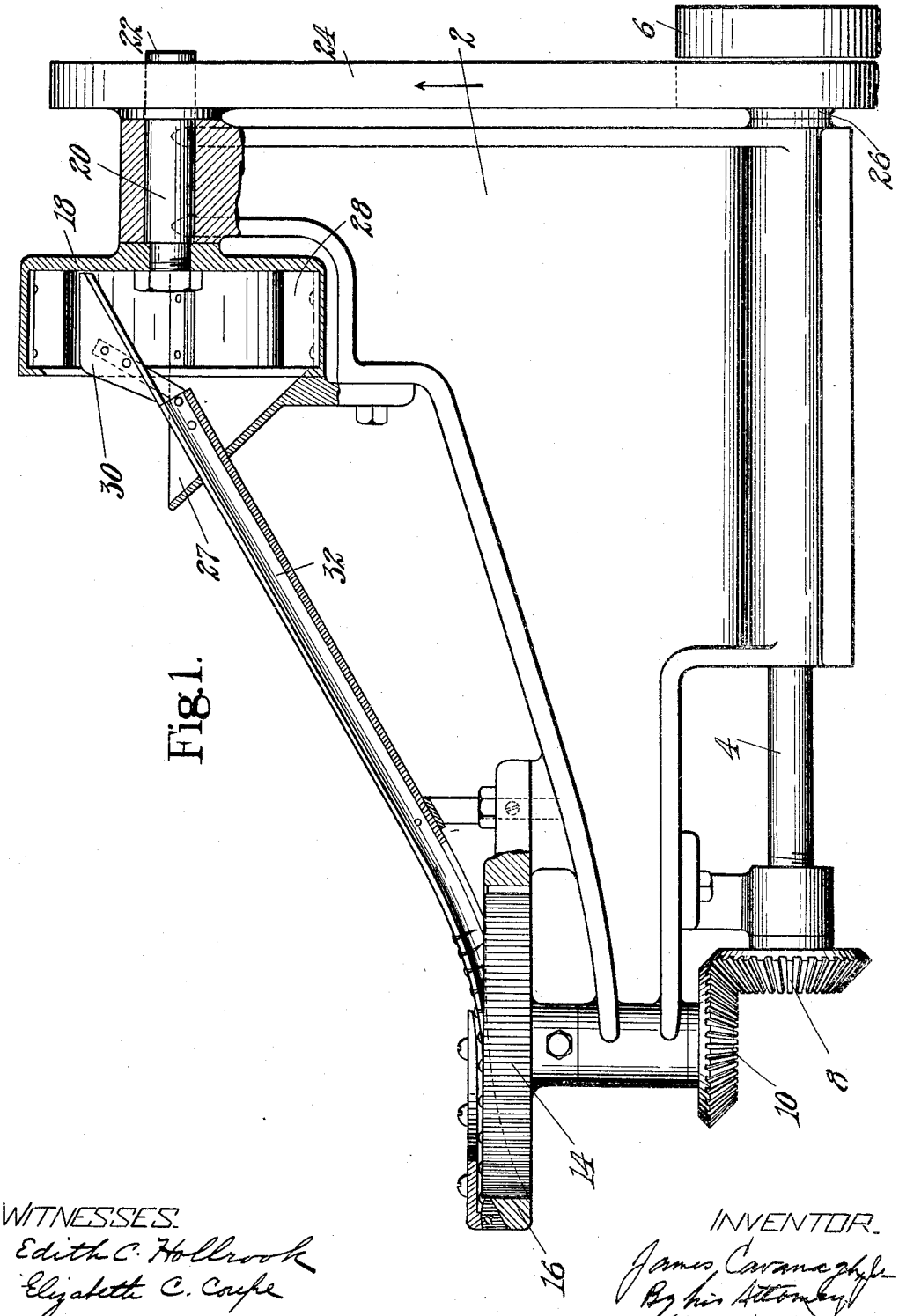


Fig. 1.

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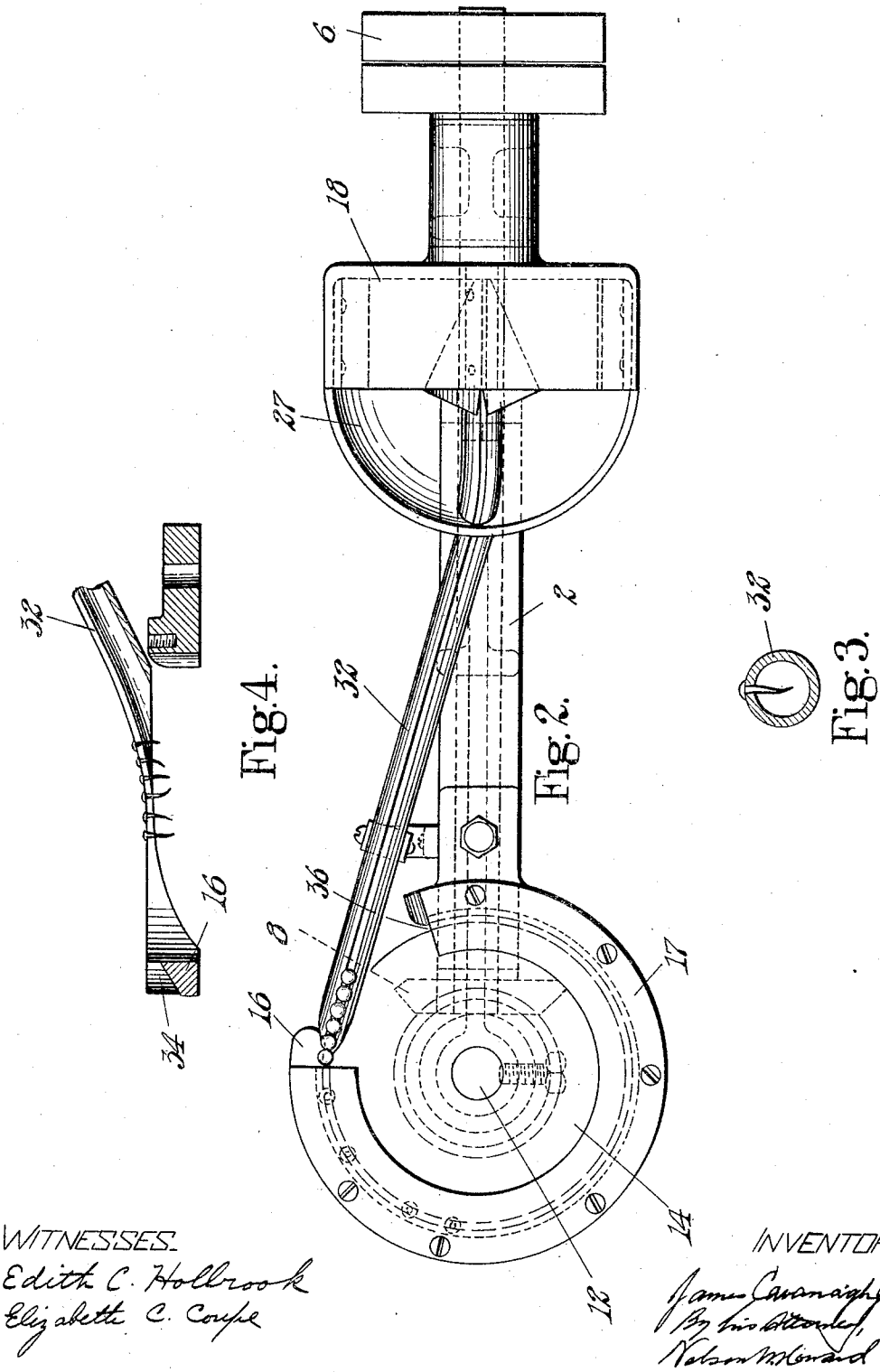


Fig. 2.

Fig. 4.

Fig. 3.

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UNITED STATES PATENT OFFICE.

JAMES CAVANAGH, JR., OF BOSTON, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR OPERATING UPON FASTENINGS.

1,109,662. Specification of Letters Patent. Patented Sept. 8, 1914.

Application filed October 23, 1908. Serial No. 459,187.

To all whom it may concern:

Be it known that I, JAMES CAVANAGH, JR., a citizen of the United States, residing at Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain Improvements in Machines for Operating upon Fastenings, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

The invention herein set forth relates to machines for reclaiming fastenings.

In particular, the invention relates to a machine for reclaiming fastenings which have become distorted in shape, either in manufacture or in use.

The invention as illustrated herein is embodied in a machine for reclaiming tacks, especially tacks of the type used in lasting boots and shoes.

In the manufacture of boots and shoes, and particularly in the manufacture of the better grades of boots and shoes, the upper is drawn over a last and secured thereon by tacks some of which are driven through the upper and insole and clenched upon the inside of the insole to form a portion of the permanent fastenings and others of which are left with their heads projecting whereby they may be readily removed to permit the succeeding operations upon the shoe to be performed more conveniently. These tacks which are removed are usually thrown away although many of them are in condition to be used again, and others of them are only slightly bent or distorted. The number of tacks thus wasted constitutes a very considerable item in the cost of manufacture of boots and shoes and an object of the present invention is to provide means for reclaiming such tacks and thus reducing the waste to a minimum. To this end the present invention comprises novel means for straightening tacks or other fastenings which have become distorted, either in manufacture or in use, preferably in combination with means for automatically delivering the tacks or other fastenings to be straightened to the straightening means. Preferably the invention comprises also means for separating from the straight and straightened tacks which come from said straightening means those tacks or other fastenings which are imperfect in other respects; for example those which are broken.

An important feature of the invention is a novel raceway which is so constructed that it is especially useful in a machine of this kind.

In the operation of the machine constituting the preferred embodiment of this invention there is employed a novel method of straightening tacks which constitutes an especially important feature of the invention. According to this method the tacks, both the perfect and the imperfect ones, are delivered to a straightening means which is arranged to roll them between opposed surfaces whereby the shapes of those tacks which are perfect are not altered, but the shapes of those which are bent or otherwise distorted are changed and brought into conformity with the shapes of the perfect tacks.

As hereinabove suggested the invention comprises preferably the combination with tack straightening means of tack assorting means whereby the imperfect tacks are separated from the perfect tacks, and in the illustrated preferred embodiment of the invention the said assorting means is preferably formed as a part of the straightening means.

In the accompanying drawings, Figure 1 is a side elevation partly in section of a machine embodying the invention of this application; Fig. 2 is a plan view of the machine illustrated in Fig. 1; Fig. 3 is a detail section through the raceway; and Fig. 4 is a detail section through the tack straightening mechanism showing also the opening through which the imperfect tacks are discharged.

Mounted in bearings in the frame 2 of the machine is a main driving shaft 4 carrying at one end a driving pulley 6 which may be connected to any suitable source of power, said shaft being geared at its other end by beveled gears 8 and 10 to a vertical shaft 12 upon which is mounted a horizontally rotating disk 14. Extending part way around the periphery of the disk 14 and spaced therefrom a distance slightly greater than the diameter of the shanks of the tacks to be straightened is a stationary ring 16 mounted upon, or integral with the frame 2.

A cap plate 17 attached to the ring 16 extends over the space between said ring and the disk 14.

The mass of tacks to be operated upon by the machine, which will comprise usually perfect, bent, and broken tacks mixed together, is placed in a rotating hopper 18 which is attached to a shaft 20 having at its outer end a pulley 22 connected by a belt 24 to a second pulley 26 upon the main shaft 4 whereby the hopper is constantly rotated when the machine is in operation.

The hopper 18 is open at its front and adjacent to the said opening is a stationary inclined tack receptacle 27 into which the mass of tacks to be operated upon is poured. Paddles or blades 28 are provided upon the inside of the hopper by which the tacks are lifted as the hopper rotates. As each of the paddles or blades 28 comes into position over a V-shaped shelf or guide 30 the tacks are discharged upon said guide and by it directed into the tack-guiding slot in an inclined raceway 32 by which they are conveyed in line to the tack straightening mechanism.

The raceway 32, as shown in Fig. 3, is preferably substantially circular in cross-section and the tack-guiding slot is of a width equal to or slightly greater than the diameter of the shanks of the tacks. The material of which the raceway is made is not very thick so that the bent portion of the tack may conveniently lie within the cylindrical cavity within the raceway.

The ring 16 at the point where the raceway conducts the tacks into the space between said ring and the disk 14 is preferably reduced in its vertical dimension whereby the bent tacks may more readily enter the said space and come into the field of operation of the disk 14. The vertical dimension of the ring 16 increases gradually from the point where the tacks enter the straightening mechanism until it exceeds the length of the tacks to be operated upon, whereby the whole shank of each tack gradually comes between the opposed surfaces of the ring and disk and is thus straightened by being rolled between the said surfaces. The ring 16 is provided with an inclined discharge opening at 34 so arranged that any of the tacks which have their points broken off or which have been doubled upon themselves in such manner that the machine cannot straighten them will be discharged at one part of the said ring, while the good tacks are carried around and discharged at the end 36 of the ring.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. Mechanism for straightening nails and similar headed fastenings comprising a rotating disk, a member lying in the plane of rotation of said disk, said member having a surface concentric to and adjacent to the periphery of said disk between which and said periphery the shanks of said fastenings to be straightened are rolled while suspended by the heads of the fastenings, and means for delivering fastenings in succession to said straightening mechanism.

2. A machine of the class described, having in combination, fastening straightening means, comprising two relatively movable members between the adjacent surfaces of which the fastenings to be straightened are rolled, and means for delivering fastenings to said straightening means, one of said surfaces being reduced in that dimension along which the shank of the fastenings to be straightened extends at the point where the fastenings are delivered to said straightening means.

3. A machine of the class described, having in combination, fastening straightening mechanism, comprising relatively movable members between the adjacent surfaces of which the fastenings to be straightened are rolled, means for delivering fastenings to said straightening mechanism, one of said relatively movable members being so constructed that the vertical dimension of its rolling surface increases from a measurement less than the length of the fastenings to be straightened near the point where the fastenings are delivered to said mechanism to a measurement equal to, or greater than, the length of said fastenings at a distance from the point at which the fastenings are delivered to said mechanism.

4. In a machine of the class described, fastening delivering means comprising an inclined, cylindrical tube slotted in its upper face, means for guiding the shanks of the fastenings into the upper end of the slot in said tube with the heads of the fastenings overlying the sides of the slot, and straightening mechanism for the shanks of nails and similar fastenings operatively connected with the lower end of the slot in said tube.

5. Mechanism for straightening fastenings, having, in combination, a fastening raceway comprising an inclined, slotted tube bent toward a horizontal plane at its lower end and so reduced at said end that the shanks of the fastenings lie outside the tube, a hopper for fastenings to be straightened and fastening straightening means arranged to act upon the shank of the fastening to be straightened first near the head of said fastening, said tube operating to convey fastenings from said hopper and feed them successively to said straightening means.

6. Mechanism for straightening fastenings, having, in combination, a receptacle for fastenings, straightening means, and means for transferring successively the fas-

tenings by gravity from said receptacle to said straightening means, said straightening means being constructed and arranged to discharge broken fastenings before the straightening operation.

7. Mechanism for straightening headed fastenings, having, in combination, a receptacle for fastenings, straightening means, consisting of oppositely disposed relatively movable surfaces, and means providing for the passage, by gravity, of successive fastenings from said receptacle to said straightening means, in such manner that the fastenings will be suspended by their heads and their shanks will be extended into the field of operation of the straightening means.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES CAVANAGH, Jr.

Witnesses:
H. Dorsey Spencer,
Frederick L. Edmands.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."