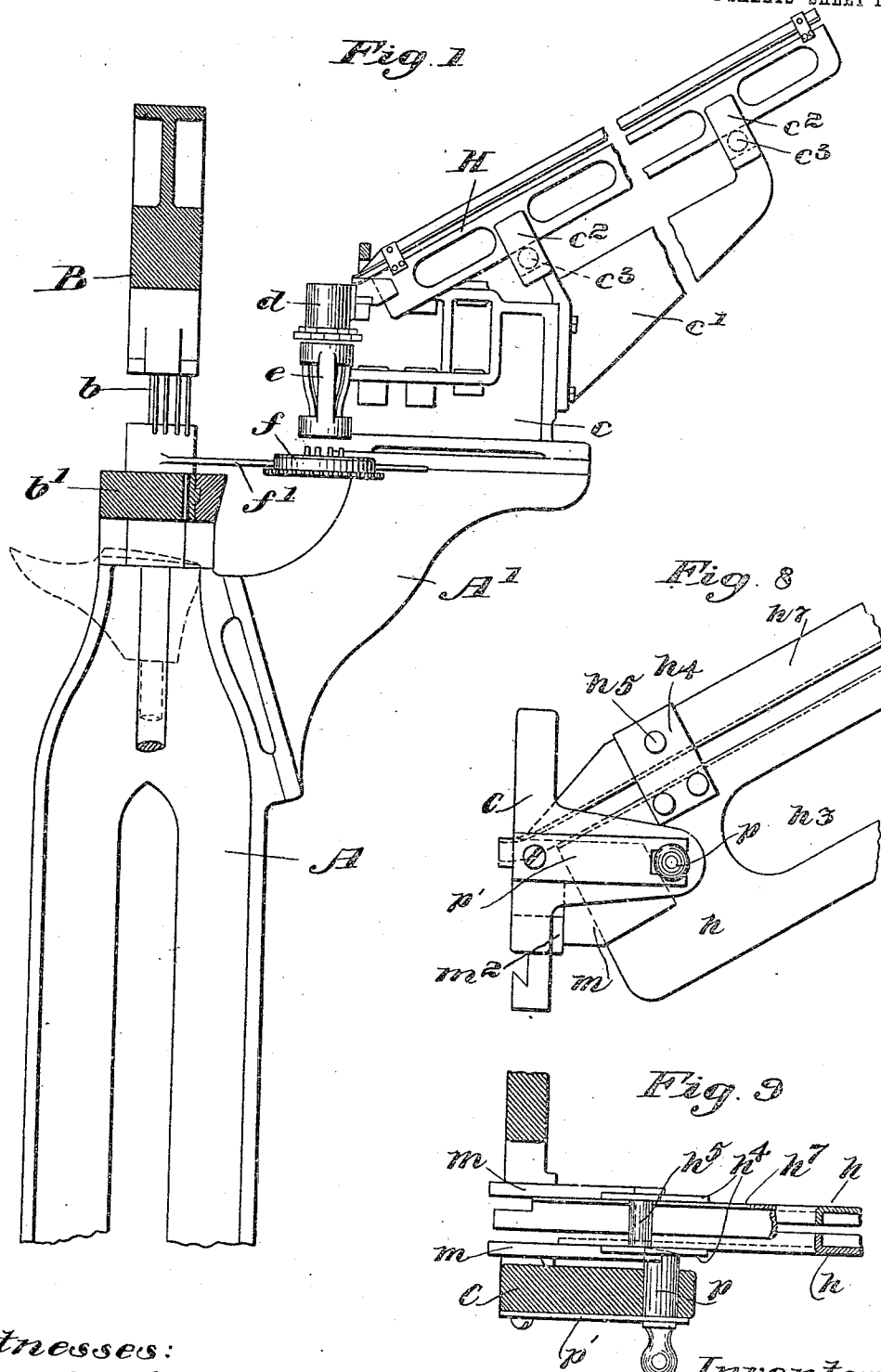


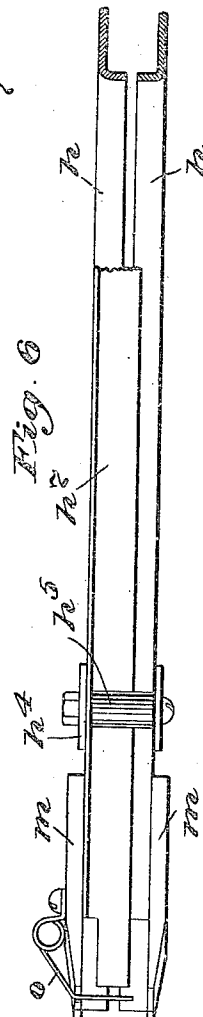


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APPLICATION FILED APR. 5, 1906. RENEWED NOV. 22, 1909.

Patented May 17, 1910.



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UNITED STATES PATENT OFFICE.

ERASTUS WOODWARD, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THOMAS G. PLANT, OF BOSTON, MASSACHUSETTS.

HEEL-NAILING MACHINE.

958,058.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed April 5, 1906, Serial No. 310,007. Renewed November 22, 1909. Serial No. 529,296.

To all whom it may concern:

Be it known that I, ERASTUS WOODWARD, a citizen of the United States, residing at Somerville, in the county of Middlesex, State of Massachusetts, have invented an Improvement in Heel-Nailing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to machines for nailing the heels of boots and shoes and the invention relates more particularly to means for supplying nails to the nail driving means. Prior to my invention it has been customary in machines of this type to employ nail supplying means, taking the nails from a hopper where they are contained in bulk and sorting, arranging and feeding the same by suitable mechanism to the nail carrying and driving means. Mechanism for this purpose obviously must be complicated and delicate and must and does require constant attention and care; in fact, experience has shown that no part of the machine is so frequently out of order and requires so much careful adjustment and oversight as the mechanism for supplying the nails. In view of the above the fewer loading mechanisms employed and the more concentrated they be, the better, and my invention contemplates removing the nail loading mechanisms of prevailing type from the heel nailing machines themselves, and concentrating them, for example, in the basement of a factory and there loading the raceways for all nailing machines in the factory, these loaded raceways to be taken to the machines as required, so that the operatives at the machines will never suffer any interruptions in their work, such as are now frequent because of difficulty with the complicated and delicate loading mechanisms.

My invention will be best understood from a description of one embodiment thereof shown in the accompanying drawings, wherein,—

Figure 1, in side elevation, shows a sufficient portion of a typical heel nailing machine equipped with a device illustrating my invention to enable the same to be understood; Fig. 2 is a detail in side elevation of a preferred form of removable raceway; Fig. 3, a top or plan view of Fig. 2; Fig. 4, an enlarged detail in side elevation showing

the attaching end of the raceway; Fig. 5, a left-hand view of Fig. 4; Fig. 6, a top or plan view of Figs. 4 and 5; Fig. 7, a transverse section on the dotted line 7—7, Fig. 4; Fig. 8, a detail showing in side elevation the attaching means for the raceway; and, Fig. 9, a plan view and partial section of the parts shown in Fig. 8.

In the embodiment of my invention selected for the present illustration and shown in the drawings, referring first to Fig. 1, the nailing machine employed may be of any suitable or desired type or construction, I having herein shown a part of the frame A and the driving head B of a "National" type of machine heretofore well-known in the art. The head B carries usual drivers *b*, adapted to drive the nails through and out from a usual nail block *b'* into a heel mounted upon a jack positioned below the nail block and indicated by dotted lines, Fig. 1. Rearwardly extended from the frame A is a bracket support A', upon which is mounted a cradle *c*, constructed at its front end to constitute bearings for a cylindrical or other feed barrel *d*, adapted to be rotated step by step and receive singly at each step movement a nail from the raceway to be described. When this feeding barrel is loaded its nails are deposited in any suitable manner through the tubes of the distributor *e*, to a nail carrier *f*, pivotally supported upon an arm *f'* and adapted to be swung to convey the nails received from the distributor into position over and for depositing them in the holes therefor in the nail block. All this mechanism may be of desired type or construction, the illustration thereof merely typifying the same.

The cradle has secured to its rear side a forwardly inclined arm or bracket *c'*, carrying two separated forks or yokes *c''* in the bottoms of which are preferably mounted rollers *c'''*. These yokes constitute bearings to receive and support a raceway H, adapted to be brought to the machine and to be filled to desired extent with nails to be used in the nailing of any particular lot of shoes. This raceway (see Fig. 2 *et seq.*) for lightness, is preferably built up from sheet metal shaped to present two sides *h*, *h*, spaced at intervals along their lower edges by thimbles *h'*, through which pass rivets or the connections *h''*, the spaces between the said thimbles being left open; and also, the

side walls are provided with openings h^3 , all for lightness, accessibility and escape of dust and dirt. Secured at intervals along the upper intumed edges of the raceway sides are clips or ears h^4 . These clips are likewise properly spaced across the raceway by interposed thimbles h^5 (see Fig. 7), between which at one of their ends and the adjacent clips is secured the upturned flange of a raceway cover h^7 . At its upper end said raceway is preferably left open, although, if desired, a suitable spring actuated gate h^8 , may be used, which will maintain said end normally closed to escape of the nails, but which, by reason of the beveled end thereof, will readily move aside when the raceway is presented to a suitable loader for renewing the nail supply in the raceway. At its lower end said raceway is provided as shown, at its opposite side, with two supporting plates m , notched to provide shoulders m' , adapted to rest against a supporting wall m^2 , on the cradle c , and also with a horizontal supporting wall m^{2x} , to rest upon a correspondingly positioned wall of said cradle, the body of the raceway being received in the yoke supports c^2 of the cradle arm, where it rests upon the rollers c^3 , therein referred to.

Closing the lower end of the raceway is a yielding gate or stop o , preferably a spring wire, such that it will retard the heads of nails gravitating downward in said raceway, thereby to cause the lower or point end of the endmost nail to swing forward away from the body of nails behind and above it to enable it to be more readily picked off and delivered to the feeding barrel. For the best results the lower end of said raceway should be curved somewhat, to facilitate the delivering or discharge of nails from the raceway to the feeding barrel.

In practice, the loaded raceways will be brought in desired number to a heel nailing machine, and the operative or his assistant will take a raceway containing the desired length or size of nails, and will drop it in the yoke supports c^2 , upon the rollers at the bottoms thereof, on which said raceway will gravitate downward and forward into a firm seat at its delivery end, in the cradle, as described. The arm c' between the said yoke support c^2 , is off-set sufficiently to enable one or both the operative's hands to pass up to the support of the raceway while dropping it in position, as stated. A locking latch pin p (see Fig. 9), controlled by a spring p' , in the cradle, serves to lock the raceway in its operative position as soon as it has gravitated thereto. This pin may be disengaged readily for removal of the raceway when necessary, but during the use of the raceway, serves to retain the latter firmly in position. The operative is now free to operate his machine, the nails gravitating downward in, and being taken from the said

raceway first to fill the said feeding barrel, from which they are discharged in number requisite for any single heel, into and through the distributing tubes, from which they are discharged into the carrier. This carrier is swung at desired times in position over and to deliver its nails to the nail block, from which they are driven into and through the heel, in usual manner.

The advantages of this construction are manifold and obvious. There is rarely any interruption from the feeding of nails of any size or style down a raceway; consequently, the liability of interruption of operation of heeling shoes at the highest speed of which the machine is capable, is reduced to a minimum.

In nailing heels upon shoes, it is frequently necessary to change the nails, because of the different styles of shoes as they come to the machine to be heeled. These shoes are ordinarily arranged upon racks that hold thirty-six pair lots, and it is now customary to sort out these racks, so as to allot, so far as possible, successive racks carrying similar shoes requiring similar nails to one operative. Notwithstanding this, inconvenient and very frequent changes are necessary, and, whenever a change is made with machines as at present equipped with individual loading mechanisms, all the nails in the hopper of the mechanism must be removed and new ones deposited in place thereof. This is obviated by the arrangement described, because in the basement or elsewhere, one loading machine may be employed constantly in loading nails of a given size, and raceways containing such nails will be carried in stock, so that the operative receives only as many raceways filled with the desired kind of nails as he thinks he will need, and, if he is required to change before they are exhausted, the unexhausted raceways are returned again with the exhausted ones to the loading center, where they are renewed and again filled. Much of the operative's time is therefore economized in this manner, as well as from the elimination of delays caused by the clogging of the loading mechanism itself. Loading machines will by this arrangement be concentrated at one spot where a competent attendant will supervise them, and much fewer machines will do the work when so concentrated than is possible when scattered over a long line of individual machines in the heeling room.

In practice the raceways used will preferably be from three to four feet in length, and, while I prefer to employ straight raceways because of their simplicity and cheapness, and because without excessive weight and space, they will receive as many nails as will ordinarily be required for expeditious work, yet my invention is not limited

in this respect, for said raceways may be of any desired length, shape or formation to carry the largest possible quantity of nails in the smallest practicable space.

5 Having described one embodiment of my invention, what I claim and desire to secure by Letters Patent is,—

1. The combination with a heel nailing machine of a detachable loading and nail
10 supplying raceway therefor, carrying loose nails in a single uninterrupted series and means abutting against the delivery end of said raceway to receive the nails singly and to deliver the same in groups to said nailing
15 machine.

2. The combination with a heel nailing machine and nail transferring means of a detachable raceway and a gravity support therefor down which said raceway may
20 gravitate into nail delivering position.

3. The combination with a heel nailing machine and nail transferring means of a detachable raceway and a gravity support therefor provided with raceway supporting
25 rollers.

4. The combination with a heeling machine of a detachable nail supplying raceway therefor, and means carried on the delivery end of said raceway to engage the nail heads
30 and control the delivery of nails therefrom.

5. The combination with a heeling machine of a detachable nail supplying raceway therefor and means at both ends of said raceway to prevent normal escape of nails therefrom when the raceway is detached, 35 said means at the delivery end being constructed and arranged to facilitate separation of the nails singly from the raceway when attached to the heeling machine.

6. In a heel nailing machine the combination of a readily removable raceway, and rotary nail removing means immediately adjacent the end of the raceway to receive a series of nails therefrom and retain said
40 nails for delivery as a gang.

7. The combination with a heel nailing machine, of an independent removable raceway having its delivery end constructed to coöperate with nail receiving means on the machine, and its other end constructed to
45 coöperate with an automatic loading mechanism separate from the machine.

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

ERASTUS WOODWARD.

Witnesses:

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