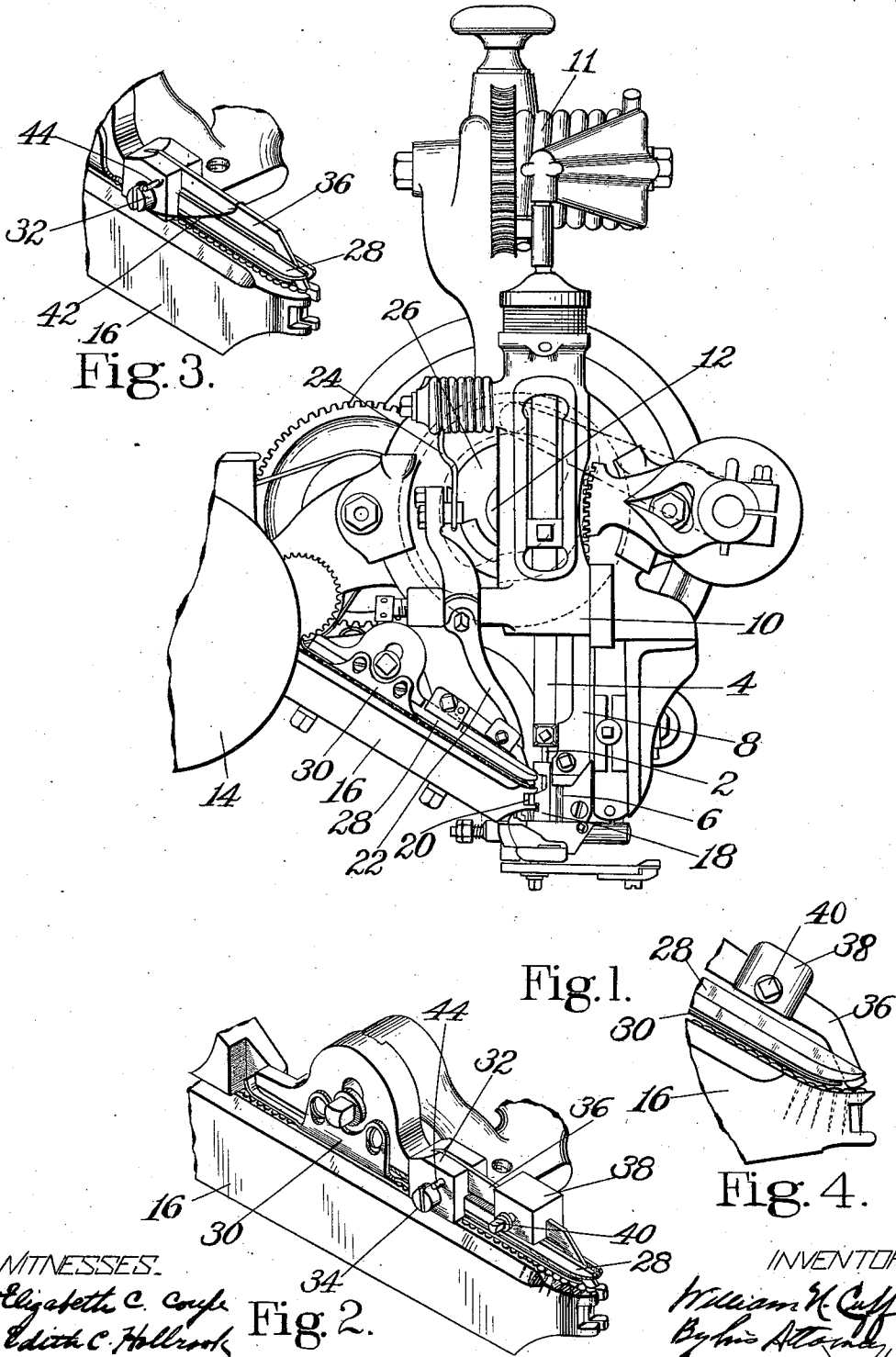


W. H. CUFF.
MACHINE FOR INSERTING FASTENINGS.
APPLICATION FILED OCT 9, 1908.

1,000,998.

Patented Aug. 22, 1911.



WITNESSES.

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Fig. 2.

INVENTOR.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR INSERTING FASTENINGS.

1,000,998.

Specification of Letters Patent. Patented Aug. 22, 1911.

Application filed October 9, 1908. Serial No. 456,912.

To all whom it may concern:

Be it known that I, WILLIAM H. CUFF, a citizen of the United States, residing at South Braintree, in the county of Norfolk and Commonwealth of Massachusetts, have invented certain Improvements in Machines for Inserting 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.

This invention relates to machines for inserting fastenings which are designed to handle previously formed fastenings. Machines of this type in general use comprise usually means for driving fastenings, a raceway for conducting the fastenings in line from a source of supply to a point at which the endmost fastening is separated from the line to be delivered to the driving means, and means for separating said endmost fastening at said point. Inasmuch as machines of this type are most commonly used for driving fastenings of the type known as "loose nails", the fastenings handled by the machine herein described will hereinafter be referred to as nails, and the machine itself will hereinafter be referred to as a loose nailing machine. The nails most commonly employed in machines of this type are provided with heads and the raceways for conducting the nails from the source of supply to the point at which the endmost nail is separated from the others are usually so constructed that the nails are supported by their heads which overlap the sides of a groove into which the shanks extend and by which they are guided. The raceways are usually inclined for the greater part of their length so that the nails slide down them under the action of gravity, but in several of the most successful machines a level portion is provided at the lower end of the raceway upon which rests the head of the nail to be separated from the line, and, if desired, the head or heads of one or more nails immediately following the one to be separated. Preferably the endmost nail is separated from the others in the line by a blade-like separator which enters between the shanks of the endmost two nails. With such separators, however, difficulty has sometimes been experienced when the nails are not uniform in construction, especially when the heads differ somewhat in shape

and size, in separating always a single nail from the others in the line. This difficulty is frequently due to the fact that the head of the second nail from the end is riding upon the head of the endmost nail in the line. In such case the separator instead of entering between the shanks of the endmost two nails in the line may frequently enter between the shanks of the second and third nails, and thus start to move two nails at a time into the driver passage. Such imperfect operation of the separating means frequently causes clogging of the driver passage, breaking of the driver or breaking of the separator, and therefore interference with the continuous operation of the machine. Attempts have been made heretofore to provide means for insuring a spacing apart of the shanks of the endmost two nails so that the separator can enter readily between them, but these attempts have comprised usually the provision of intermittently actuated means for pressing down upon the heads of the nails. Such constructions have not been found entirely satisfactory in practice since they depend for their successful operation upon substantially uniform feeding of the nails down the raceway into the nail separating position.

It will be seen from a consideration of the principles of operation of the constructions just described that their successful operation, in view of the fact that they operate periodically, depends as suggested upon the previous movement into separating position of the two nails which are to be positioned relatively to each other and upon one or both of which the positioning device is to operate. If the two nails have not come into the proper position when the positioning device operates, then its operation instead of aiding the operation of the separator will interfere with it.

The present invention aims, therefore, to provide means for positioning the endmost two nails in the raceway in such manner as to facilitate the operation of the separator and insure the separation of a single nail, which will operate only when the nails are in proper position to be operated upon, which cannot be operated in such manner as to cause it to interfere with the action of the separator, and which may readily be adjusted to nails of varying sizes, shapes and weights.

The invention aims further to provide means for the purpose specified, which will be inexpensive to manufacture and which can be readily applied to machines in commercial use whereby such machines may readily be adapted to handle successfully nails of an inferior grade.

With the foregoing and other objects in view, the invention is herein shown as embodied in a loose nailing machine of the type disclosed in U. S. Letters Patent, No. 490,624, to Louis Goddu, granted Jan. 24, 1893, for a nailing machine, to which reference may be had for a detailed description of parts herein illustrated but not specifically described.

In the accompanying drawings—Figure 1 is a front elevation partly broken away of the head of the nailing machine disclosed in the said Letters Patent, having the invention of this application applied thereto; Fig. 2 is a perspective view of a portion of the raceway and its support, showing the invention upon a larger scale; Fig. 3 is a perspective view of a modification of the construction shown in Fig. 2; Fig. 4 is a detail view of the end of the raceway, showing the shank separating action of the positioning means.

The machine herein illustrated which, as above stated, is substantially the same as that disclosed in the patent above cited, comprises a nail driver 2, a driver bar 4, an awl 6 and an awl-carrying bar 8, all mounted to reciprocate in a swinging head 10 pivoted upon the machine frame and arranged to swing while the awl is in the work to feed the work over a work support, not shown. The lifting of the driver against the tension of its spring 11, the reciprocation of the awl and the swinging of the head are effected by connections with suitable cams carried upon the main driving shaft 12.

The nails to be driven by the machine are carried in a rotating hopper 14, driven by suitable connections with the main shaft 12, and are conducted by a raceway 16 to a point adjacent to the driver passage in the nose 18 at which point the endmost nail is acted upon at the proper time by a separator 20 carried upon a separator bar 22, said bar being pressed normally forward by a spring 24 and being moved rearwardly to withdraw the separator by a face cam upon the cam disk 26 carried by the main shaft 12. The raceway 16 is provided with a cap 28 having mounted thereon an adjustable spring member 30 arranged to keep the nails from riding upon one another as they slide down the raceway. At its lower end adjacent to the nose 18 the raceway is provided with a level portion upon which rests the head of the endmost nail of the line at the time the separator acts, and when the machine is operating upon nails having heads of ordi-

nary size the head of the second nail from the end of the line usually rests also upon this level portion.

The parts of the machine hereinabove described are substantially the same as those disclosed in the patent above referred to, except that in the machine of the patent above referred to the spring member 30 is preferably made to extend more nearly to the end of the line of nails in the raceway and except further that the raceway cap, in the machine of the patent, is not slotted at its end.

The means for positioning the endmost two nails of the line of nails in the raceway which embodies the invention of this application comprises preferably a block 32, grooved at its under side to fit on the raceway cap, and carrying a set screw 34 by which it may be clamped upon said cap and a finger 36 pivoted within a slot in the block. The finger 36 is bent down at its forward end and extends at this end through a slot in the lower end of the raceway cap into proximity to, or contact with, the end of the line of nails in the raceway. The end of the finger is so shaped and positioned that when the separator is withdrawn and the nails slide down so far as they are permitted to go the said end of the finger will bear upon the adjacent sides of the heads of the endmost two nails of the line and cause the shanks of the nails to be tipped apart. The sliding of the nails down the raceway may be caused either by gravity or by both gravity and the jarring of the raceway during the operation of the machine. In the preferred form of the invention, the finger 36 is pressed down upon the endmost two nails of the line of nails in the raceway to position these nails for the action of the separator by a weight 38, slotted at its under side to straddle said finger, and clamped upon said finger by a set screw 40, whereby it may be readily adjusted longitudinally of said finger to vary the amount of pressure exerted by the finger upon the heads of the said two nails.

In Fig. 3 is shown a modification of the invention in which a light spring 42 is employed to cause the finger 36 to bear down upon the endmost two nails of the line of nails in the raceway, said spring being bent at its forward end to fit over the top of the finger and being coiled around the set screw 32 and held under tension by a pin 44 against which its other end bears. The operation of the finger 36 is illustrated in Fig. 4.

It will be noted that the positioning means hereinabove described has the advantage over those before known that it is constantly operative and that, therefore, it will be sure to effect a positioning of the endmost two nails of the line of nails in the raceway

when the said nails come into its field of operation. This is obviously not true of intermittently operated positioning devices since they depend for their successful operation upon the proper timing of the movements of the nails. It will be noted further that the pressure exerted upon the heads of the nails by the positioning means herein illustrated is comparatively light, only a light pressure being needed for the purposes for which this means is provided and that therefore the said means cannot interfere with the movement of the nails into separating position. It will be noted also that the provision of adjustable means for bringing pressure to bear upon the heads of the nails at the end of the line in the raceway permits the ready adaptation of the illustrated construction to different weights of nails and to different conditions of operation and that the provision of positioning means which may be bodily adjusted longitudinally of the raceway permits the ready adaptation of the illustrated construction to use with nails having different sizes of heads.

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

1. A machine of the class described, having in combination, a nail raceway and means normally engaging one or more nails and operated by the line of nails in said raceway for separating the shanks of the endmost two nails of the line.

2. A machine of the class described, having in combination, a nail raceway, a nail separator and means operated by the line of nails in said raceway for effecting a relative positioning of the endmost two nails of the line for the action of said separator.

3. A machine of the class described, having in combination, a nail raceway, a nail separator, and means operated by the line of nails in said raceway for positioning the endmost two nails of said line for the action of said separator, said means being adjustable to nails of varying sizes, shapes and weights.

4. A machine of the class described, having in combination, a nail raceway, a nail separator and means arranged to operate upon the heads of the endmost two nails of the line of nails in said raceway for positioning said nails for the action of said separator, said means being operated by said line of nails.

5. A machine of the class described, hav-

ing in combination, a nail raceway provided with a cap, a nail separator, and means mounted upon said raceway cap and operated by the line of nails in said raceway for positioning the endmost two nails of said line for the action of said separator.

6. A machine of the class described, having in combination, a nail raceway, a nail separator, and means adjustable longitudinally of said raceway and operated by the line of nails in said raceway for positioning the endmost two nails of said line for the action of said separator.

7. In a machine of the class described, the combination with a nail raceway, having a nail cap slotted at its end and a nail separator, of means mounted upon said cap, extending through said slot and operated by the line of nails in the raceway for positioning the endmost two nails of said line for the action of said separator.

8. A machine of the class described, having in combination, a nail raceway provided with a cap slotted at one end, a nail separator, and means for positioning the endmost two nails of the line of nails in said raceway for the action of said separator comprising a finger pivoted upon said cap and extending through said slot into contact with the heads of said two nails, and adjustable means for yieldingly pressing said finger normally toward the line of nails.

9. In a machine of the class described, the combination with a nail raceway, having a nail cap, of a block clamped upon said cap, a finger pivoted upon said block and extending into proximity to the end of the line of nails in said raceway, and means for pressing the end of said finger down upon the heads of the endmost two nails of said line.

10. In a machine of the class described, the combination with a nail raceway having a nail cap, of a block clamped upon said cap, a finger pivoted upon said block and extending into proximity to the end of the line of nails in said raceway, and means comprising a weight mounted upon said finger and adjustable lengthwise thereof for pressing the end of said finger down upon the heads of the endmost two nails of said line.

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

WILLIAM H. CUFF.

Witnesses:

H. DORSEY SPENCER,
FREDERICK L. EDMANDS.