

1,171,685.

H. W. YORK.
NAILING MACHINE.
APPLICATION FILED SEPT. 14, 1914.

Patented Feb. 15, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

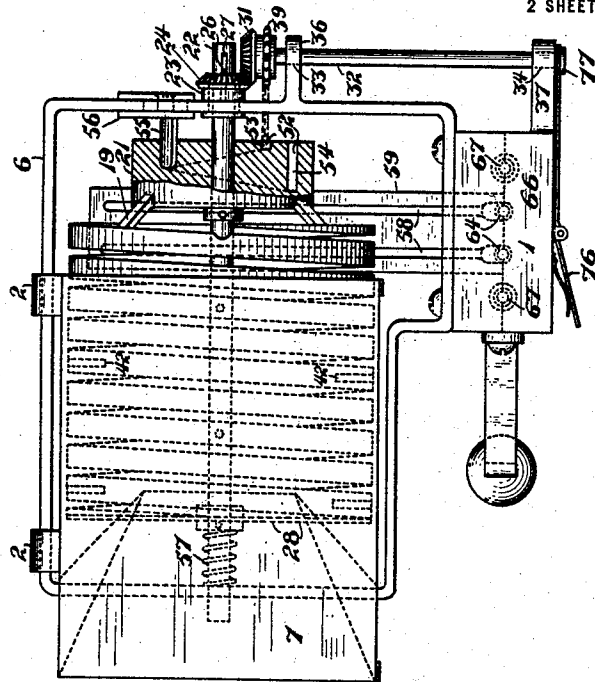
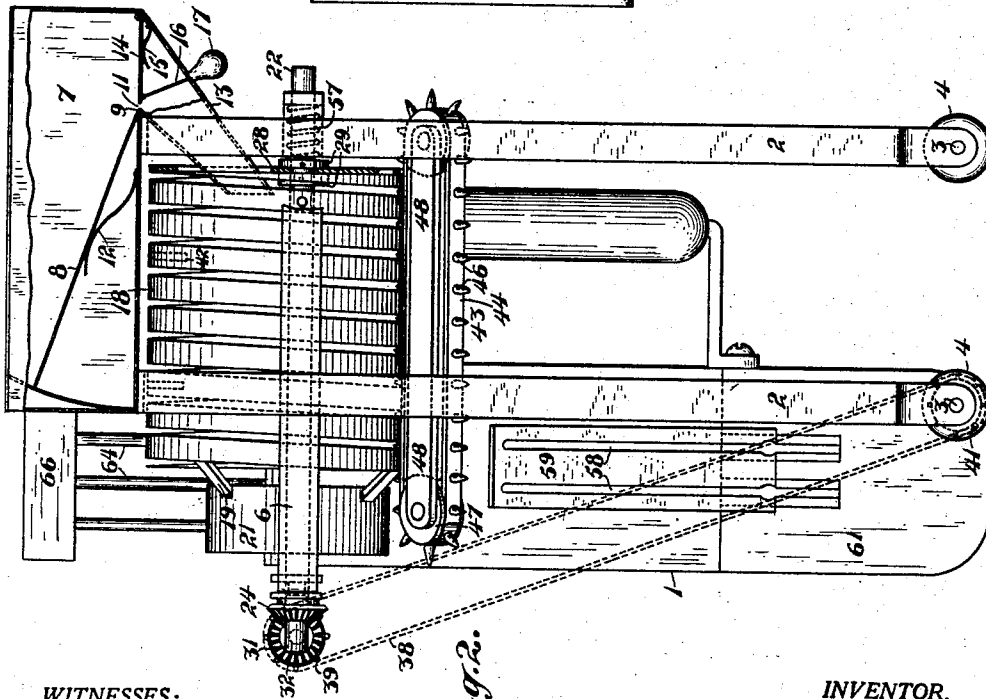


Fig. 2.

WITNESSES:

E. C. Kiedner
J. M. Ball.

INVENTOR,
Henry W. York
BY *Francis M. Wright,*
ATTORNEY.

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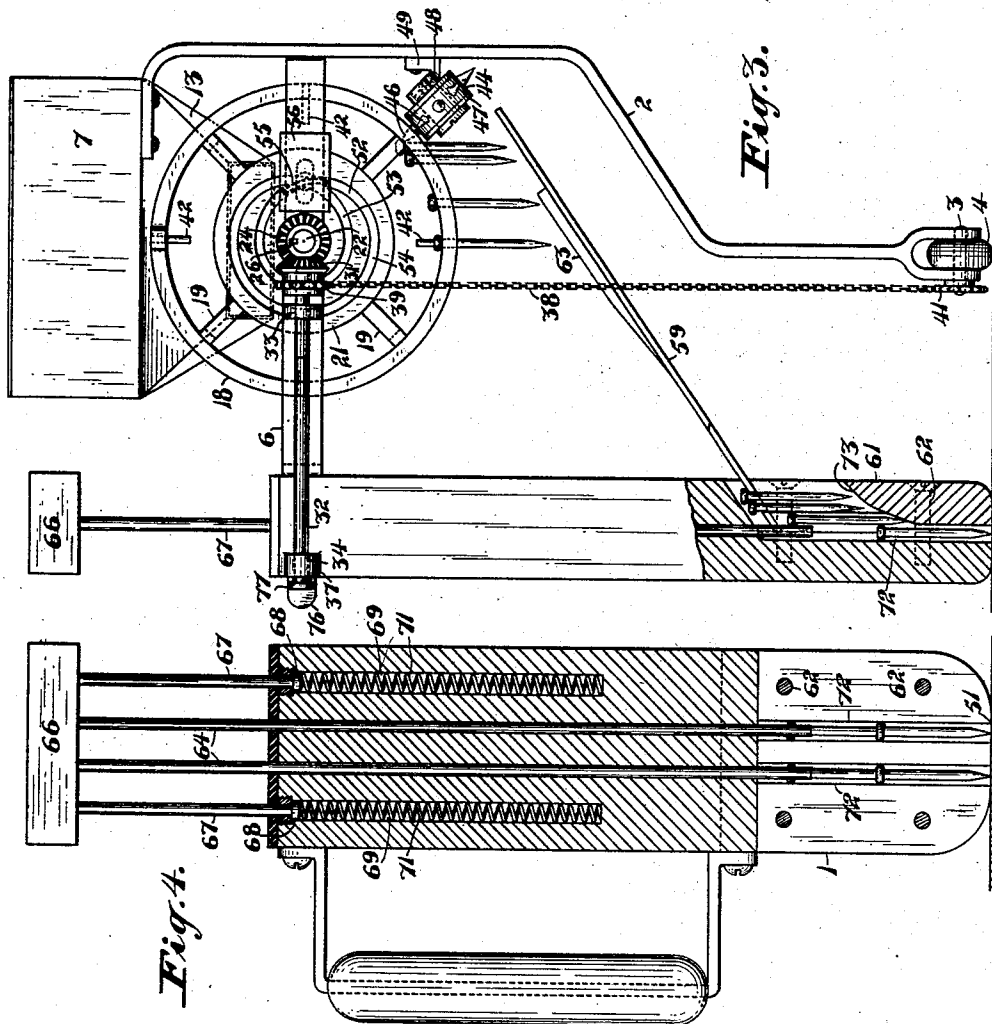


Fig. 3.

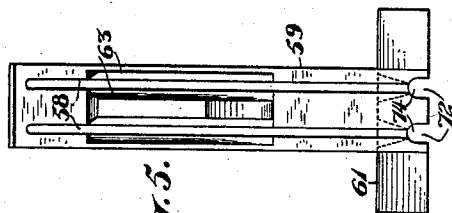


Fig. 4.

WITNESSES:

H. C. Kiedner
L. M. Ball

INVENTOR,
Henry W. York

BY *Francis M. Wright,*
ATTORNEY.

UNITED STATES PATENT OFFICE.

HENRY W. YORK, OF SAN FRANCISCO, CALIFORNIA.

NAILING-MACHINE.

1,171,685.

Specification of Letters Patent.

Patented Feb. 15, 1916.

Application filed September 14, 1914. Serial No. 861,518.

To all whom it may concern:

Be it known that I, HENRY W. YORK, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Nailing-Machines, of which the following is a specification.

The present invention relates to a nailing machine, the object of the invention being to provide a machine by which nails can be automatically set in position and maintained therein while the necessary force is applied thereto to drive them into the wood.

The invention has been specially designed for the purpose of nailing hard wood floors, but it is capable of other uses.

In the accompanying drawings, Figure 1 is a broken plan view of the machine; Fig. 2 is a side view thereof; Fig. 3 is a broken front view thereof; Fig. 4 is a sectional view of the nailing guide detached; Fig. 5 is a plan view of the nail guide detached.

Referring to the drawings, 1 indicates a nailing guide the lower end of which is supported upon the floor, and 2 indicates standards the lower ends of which are forked and rest upon shafts 3 of rollers 4. Said standards and nailing guide are secured to, and support, a rectangular skeleton frame 6, and said standards are extended upwardly above said frame to support a magazine 7, for containing nails. Said magazine has a movable inclined support 8, pivoted at 9 to the bottom of the magazine, adjacent to an opening 11 therein, and raised from said bottom by a spring 12. Through said opening 11 the nails can pass into a chute 13 when a door 14, pressed upwardly by a strong spring 15, is withdrawn by a link 16, connected, below said chute, to a handle 17. By means of said chute the nails are discharged into the interior of a helix 18 of comparatively large rectangular wire, the coils of which are spaced apart from one another a sufficient distance only to permit the nails, but not their heads, to pass therethrough. Said helix 18 is secured at the front end to arms 19 extending outwardly from a disk 21 secured to a shaft 22, of which one end passes through the hub 23 of a bevel gear 24, rotatable in a bearing in the frame 6, said shaft 22 being rotatable with, but slidable in, said bevel gear by reason of a feather 26 on

the hub 23 engaging a keyway 27 in the shaft 22. The other end of the shaft is slidably mounted in said frame 6.

The nails are prevented from dropping out of the rear end of the helix by an end wall 28, through an opening in which the chute 13 extends, said end wall being secured between two collars 29 secured on the shaft. Said helix is rotated by reason of the bevel gear 24 meshing with a bevel gear 31 on a shaft 32 slidable and rotatable in bearings 33, 34, respectively in arms 36, 37 extending from the frame 6 and the nailing guide 1 respectively. Said bevel gear 31 is rotated by means of a sprocket chain 38 meshing with a sprocket wheel 39 on the shaft of said bevel gear and also with the sprocket wheel 41 on the rear roller shaft 3. By reason of the rotation of said helix the nails are caused to advance longitudinally therein, their heads being within the helix and their stems hanging downwardly therefrom. Some of the nails, however, when discharged from the chute into the helix, lie against the inner surface of the helix without projecting between the coils thereof.

In order to insure that all nails will so project between the coils before arriving at the farther end of the helix, there are provided at suitable intervals inwardly extending bars 42 secured to the helix, which bars are each adapted to impinge upon a part only of a nail lying longitudinally within the helix, and, in the further movement of the helix, to carry said part of the nail forwardly therewith while the other part of the nail drops by gravity and thus to cause the nail to assume a direction transverse to the helix and finally to drop between its coils. There is also provided a dislodger 43, consisting of a belt 44 carrying projecting prongs 46, which extend between said coils, said belt traveling around wheels 47, the shafts of which rotate in bearings in plates 48 supported by arms 49 extending from the standards 2. Said nails, as they are carried forward by the bars 42, strike against the prongs and are turned into a position transverse to the helix, in which position they can drop between its coils.

Since it is the practice in nailing hard wood floors to drive two nails close together on opposite sides of the adjoining edges of the boards, as shown at 51 in Fig. 4, it is

desirable in a machine of this character that the nails should be advanced along two paths or channels side by side. In order to deliver the nails into said channels from the helix I provide the following mechanism:

5 In the rear face of the disk 21 is formed a cam groove 52 in the shape of a closed curve having two complete turns, or loops, said loops crossing each other, one loop 53 being much smaller than, and within, the other loop 54. The smaller loop 53 decreases in its depth from its juncture with the larger loop, while the larger loop 54 increases in depth. In said cam groove is a key 55 (see Figs. 1 and 3) which is secured to a holder 56 secured on the frame 6. As the helix and the hub connected thereto rotate, said key travels first in one loop of the groove and then in the other. A spring 57, compressed between the rear end of the helix and the frame 6, presses said helix forwardly so as to cause the key to always engage the bottom of the groove. When it engages the smaller and shallower loop of the groove, the helix is pushed rearwardly against the pressure of the spring, and when it engages the larger and deeper loop of the groove, the helix can advance forward as far as permitted by the engagement of the key. The groove is so arranged with reference to the coil of the helix that nails drop from said helix only when the key is at the deepest or at the shallowest part of the groove, and at such points the nails are then immediately over one or the other of two slots 58 in a plate 59 (see Figs. 1, 3 and 5) secured to a guideway 61 attached, by means of screws 62, to the nailing guide 1. Said plate 59 has on each side of each guide-way raised portions 63, which insure the nails entering said slots 58, and being suspended therefrom, the heads of the nails being too large to pass through the slots. In said nailing guide are vertical rods 64, which are reciprocable vertically in holes in the nailing guide, and are secured at their upper ends to a head 66 adapted to receive the blow of a hammer, said head being also secured to the upper ends of rods 67 having heads 68 reciprocable in vertical sockets 69 in the nailing guide, springs 71 in said sockets normally raising said rods 67. The upper surface of the nailing guide is covered with india rubber or other yielding material to receive the impact of the head.

The lower portion in the guide-way 61 forms with the nailing guide vertical channels 72 of just sufficient width to receive the head of a nail, and the upper portion of the guide is formed with curved upper surfaces 73 adapted to guide the pointed ends of the nails as the nails approach the lower end of the slots and fall through enlargements 74 in said lower ends, the heads of said nails,

after they have thus fallen through, abutting against the extreme lower portions of the rods 64, while the lower portions of the succeeding nails abut against the heads of the nails which are in the position to be driven on the next stroke of the hammer. As each pair of nails is driven into the wood, and the rods 64 return under the pressure of the springs, the pointed ends of the next succeeding pair of nails first slide down into the vertical channels 72, until their heads are below the rods 64, whereupon they assume a vertical position beneath said rods ready to be driven into the wood upon the next succeeding blow of the hammer.

In case the nailer finds that the nails are being advanced too rapidly by the helix, he presses with his thumb upon one end of a spring pressed lever 76 fulcrumed upon the nailing guide, the other end of which lever engages a head 77 on the shaft 32 of the bevel gear 31, thus withdrawing said bevel gear from the bevel gear 24, so that the helix no longer rotates.

I claim:—

1. In a nailing machine, a rotatable helix for arranging the nails and having coils spaced apart sufficiently to permit the nails, but not their heads, to pass therebetween, and means for feeding nails into the interior of the helix, said interior being free from obstructions which would prevent the nails so fed from lying within said helix and in contact therewith.

2. In a nailing machine, a rotatable helix for arranging the nails, and having coils spaced apart sufficiently to permit the nails, but not their heads, to pass therebetween, means for feeding nails into the interior of the helix, and narrow members within the helix each adapted in the rotary movement of the helix to impinge upon a nail lying lengthwise therein to turn said nail in a direction extending transversely of the helix.

3. In a nailing machine, a rotatable helix for feeding the nails, the coils of the helix being spaced apart sufficiently to permit the nails, but not their heads, to pass therebetween, and projections extending inwardly at suitable intervals from the helix to agitate the nails therein.

4. In a nailing machine, a rotatable helix for feeding the nails, and a dislodger outside the helix and having prongs extending between the coils of the helix.

5. In a nailing machine, a rotatable helix for feeding the nails, and a dislodger outside the helix consisting of a movable suitably-supported endless belt and having prongs extending between the coils of the helix.

6. In a nail feeding and separating mechanism, a pair of channels or raceways, a magazine for the nails, an automatically operated separating and feeding device to which said nails are delivered from the

magazine, and means for feeding the nails from said device alternately into said channels.

7. In a nail feeding and separating mechanism, a pair of channels or raceways, a magazine for the nails, means for feeding the nails from said magazine alternately into said channels comprising a helix the coils of which are spaced apart sufficiently to permit the nails, but not their heads, to pass therebetween, and means for imparting a reciprocating motion to said helix.

8. In a machine for feeding nails and for driving them into a floor, a pair of channels or raceways, a magazine for the nails, means for feeding the nails from said magazine alternately into said channels comprising a

helix the coils of which are spaced apart sufficiently to permit the nails, but not their heads, to pass therebetween, and means for imparting a reciprocating motion to said helix, a roller carried on the magazine frame and adapted to roll upon the floor, an operative connection between said roller and last named means, and means for breaking said operative connection.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HENRY W. YORK.

Witnesses:

F. M. WRIGHT,
D. B. RICHARDS.

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