

HEELING MACHINE.

Patented Jan. 28, 1913.

3 SHEETS—SHEET 1.

1,051,820.



Witnesses;
H. B. Davis,
J. L. O'Neill

Inventor;
Geo. M. Pettengill
by Royce Hamman
Attys.

APPLICATION FILED JULY 17, 1911.

3 SHEETS—SHEET 2.

H. B. Davis.
J. L. O'Neill

Geo. M. Pettengill
by Lloyd L. Hamman
Attys

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3 SHEETS—SHEET 3.

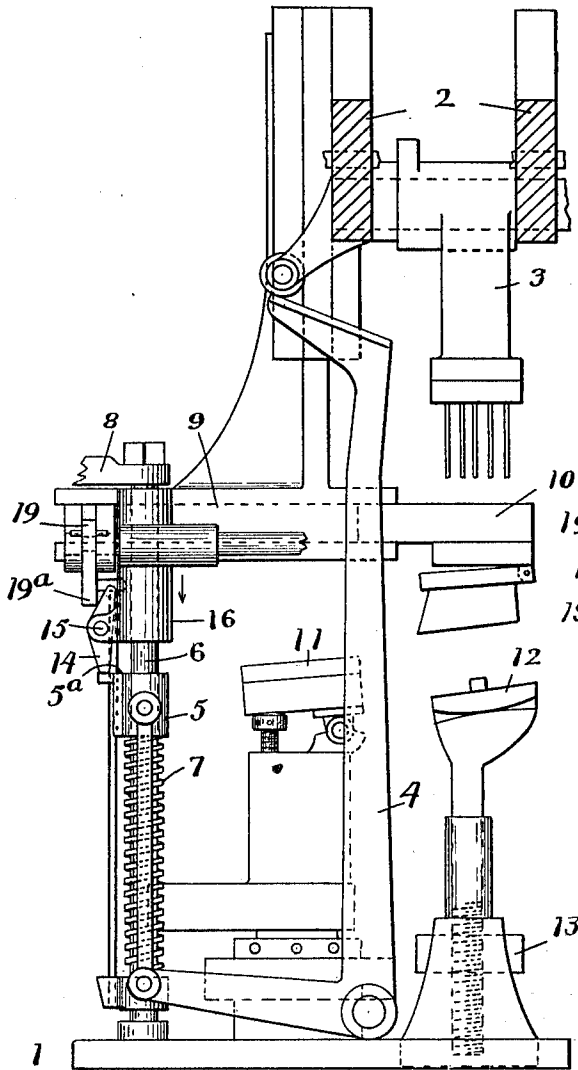


Fig. 3

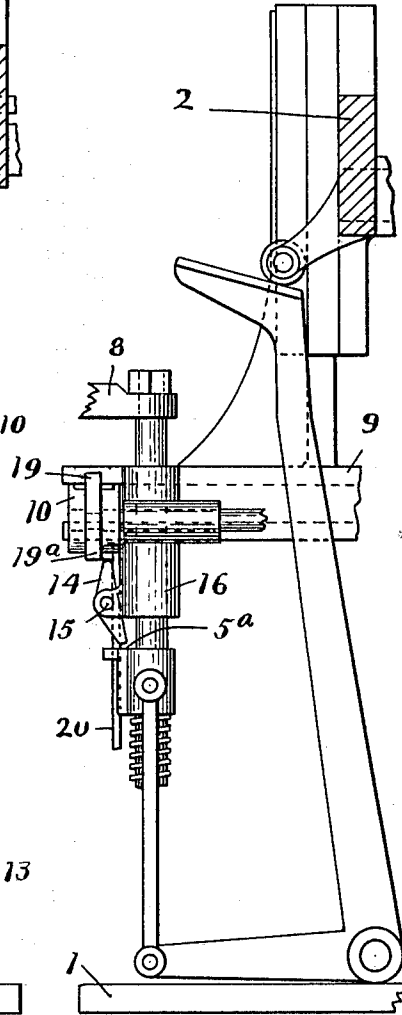


Fig. 4

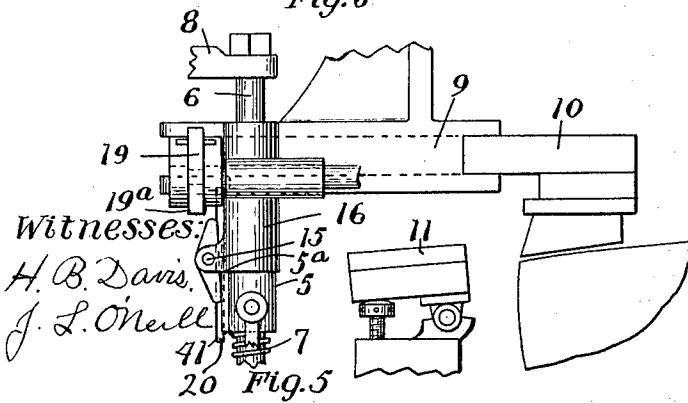


Fig. 5

Witnesses:
H. B. Davis.
J. L. O'Neill.

Inventor:
Geo. M. Pettengill
By Roy A. Hamman
Att'y

UNITED STATES PATENT OFFICE.

GEORGE M. PETTENGILL, OF HAVERHILL, MASSACHUSETTS, ASSIGNOR TO HAVERHILL SHOE MACHINERY COMPANY, OF HAVERHILL, MASSACHUSETTS, A CORPORATION OF MAINE.

HEELING-MACHINE.

1,051,820.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE M. PETTENGILL, a citizen of the United States, residing at Haverhill, in the county of Essex and State of Massachusetts, have invented an Improvement in Heeling-Machines, of which the following is a specification.

This invention relates to certain improvements in heel-nailing machines of the vertically reciprocating cross-head type, which are primarily, though not necessarily intended for use in connection with heeling machines of the type shown in my prior Patent #861,051.

In heeling a shoe while on a wooden last, one of the greatest difficulties encountered is to adjust the jack properly, so that, when the cross-head descends, the pressure will be sufficient to drive the nails, so as to attach the heel securely, and yet will not be so great as to crush, or otherwise damage the last.

The necessity for accurate adjustment of the jack is much greater in nailing a low heel than a high heel, on account of the range permitted for compression with a high heel, which is not permitted with a low heel. That is, as the movement of the cross-head is positive, if, in nailing a low heel, the jack is adjusted even slightly too high, as the extent which such a heel may be compressed is small, the last is likely to be damaged, an occurrence which would not be likely to occur with a high heel. However, if the jack is accurately adjusted the heel may be attached without appreciable injury to the last.

The back portion of a wooden last occasionally becomes more or less yielding by continued use in heeling shoes thereon, so that it is difficult for the operator to tell just how much the last will yield, when the nails are driven, and for this reason the operator is unable to adjust the jack perfectly by merely adjusting it with relation to some part of the machine, particularly as the nail-plate is usually supported, in machines of this type, about one inch above the position to which it is forced at the end of the nail-driving operation, in order that the shoe may be placed conveniently on the jack, and for other reasons. It is also somewhat difficult, for this reason, for the operator to determine the exact position in which the heel will be attached.

The object of my invention is to provide a heeling machine, of the type above referred to, with means whereby the nail-plate may be lowered into driving position previous to the driving operation, so that the jack may be accurately adjusted by adjusting it so that the heel to be nailed is clamped therebetween with a predetermined pressure, whereby the cross-head may be caused always to compress the heel and last with the same force, and also the operator is enabled to position the heel accurately upon the heel-seat before the driving operation is performed. I accomplish this object by the means shown in the accompanying drawing, in which,

Figure 1 is a rear elevation of the head portion of a heeling machine provided with my invention. Fig. 2 is a side elevation thereof, partly in section. Figs. 3, 4 and 5 are similar views showing the parts in different positions. Fig. 6 is a detail view, showing the releasing operation of the operating-clip.

In the drawings, and in the following description, only those portions of the machine which necessarily coöperate with the present invention, which constitutes the subject-matter of this application, are shown and described.

As shown in the drawing, the frame 1 of the machine is provided with the usual vertically reciprocating cross-head 2, on which the turret 3 is mounted. A bell-crank lever 4 is pivoted on the bed of the machine and connected to sleeves 5, slidably mounted on the upright guide-rods 6, above the supporting springs 7, which encircle said rods, so that when the cross-head descends, said sleeves 5 will be drawn downwardly and said springs compressed. The nail-receiver plate 8 is rigidly mounted on the upper end of the guide-rods 6, and the nail-plate slide holder 9 is mounted to move vertically on said guide-rods, and carries the nail-plate slide 10, which is adapted to be moved horizontally from the nail-receiving position shown in Fig. 2, to the intermediate pricking position over the heel holder 11, and to the nail-driving position over the jack 12.

The jack 12 shown is of a form commonly used in heeling on the last, and, for the purpose of this invention, may be of any well-known form of last support, which is provided with adjusting means, such as the

nut 13, which is threaded on the lower end of the post of the jack, and which enables the support to be adjusted vertically.

According to my invention, I provide a pair of vertically disposed dogs 14, which are rigidly mounted, at the middle portion thereof, on a shaft 15, said shaft being rotatably mounted in ears formed on the rear side of a pair of sleeves 16, which depend from the under side of the nail-plate holder, and through which the guide-rods 6 pass, said sleeves being integrally, or otherwise connected with the holder. A spring 18 on the shaft 15 constantly tends to throw the lower ends of the dogs 14 forwardly, or toward the rods 6. A shoulder 5^a is formed on the upper side of each sleeve 5, and, under normal conditions, the lower ends of the dogs 14 rest on said shoulders and support the nail-plate, and its holder, in raised position, as shown in Fig. 2. A clip 19 is movably mounted on the rear end of the nail-plate slide, and has a depending portion 19^a arranged in position to engage the upper end of one of the dogs 14, when the slide is moved forwardly, as will hereafter be described. An upright post 20 is mounted on the frame in position to engage clip 19, under conditions to be explained. The operation of a heeling machine of the type described in my prior patent, when provided with the above described apparatus, is as follows:—After a heel has been nailed, the operator will move back the nail-plate slide to the pricking position, and the next heel will be pricked, and the top lift spanked onto the heel just nailed, and then the slide will be moved back to nail-receiving position, the parts then being in the position indicated in Fig. 2. The nails are then permitted to fall into the nail-plate, and the nail-plate slide is moved forwardly into nailing position over the jack. As the slide finishes its forward movement, the portion 19^a of clip 19 engages the upper end of the dog 14, in line therewith, pushing the same forwardly, and throwing the lower ends of both dogs 14 rearwardly out of engagement with the shoulders 5^a, so that the nail-plate and the nail-plate holder will no longer be supported thereon, but will be moved by gravity to nail-driving position, as shown in Fig. 5, permitting the sleeves 16 to support the nail-plate by resting on the sleeves 5. As the heel has already been attached to the nail-plate during the pricking operation, it will be held suspended from the plate, so that the operator will then place the last on the jack, and will adjust the jack upwardly until the heel-seat of the shoe thereon is pressed against the heel, suspended from the nail-plate, with sufficient force to cause the whole weight of the nail-plate, and its holder, to be supported on the jack, without raising the plate to a material extent. The

weight of these parts is sufficient to cause the last to be pressed against its jack with sufficient force to determine the extent which the last and heel will yield, the amount of pressure which is placed on the heel, previous to nailing, thus being the same under all conditions. In practice the heel will usually be compressed approximately $\frac{1}{8}$ of an inch during the last part of the nail-driving operation, so that, when the jack has been adjusted, as above described, the driver block will engage the upper side of the nail-plate, when it has completed all of its downward movement but $\frac{1}{8}$ of an inch, and force it downwardly to this extent. As the cross-head descends, the bell-crank lever 4 will be pushed rearwardly, causing the sleeves 5 to be drawn downwardly, so that their shoulders 5^a are carried below the level of the lower ends of the dogs 14, as shown in Fig. 4. When the clip 19 engages the dogs 14 in line therewith, moving both dogs 14 out of engagement with the shoulders 5^a, it will hold said dogs in this position until released by said clip. To permit the clip to release the dogs without moving back the nail-plate, the stop post 20 is provided, and the clip 19 is mounted so that it may be moved upwardly with relation to the slide to a slight extent. The arrangement is such that, during the last portion of the downward movement of the nail-plate, the upper end of the post 20 is engaged by the clip 19, and the latter is caused to be lifted sufficiently to disengage it from the dogs 14, permitting the lower ends thereof to swing forward above the shoulders 5^a, in position to be engaged thereby, so that when the cross-head is again raised, permitting the springs 7 to expand, the shoulder 5^a will engage the dogs 14, and lift the holder and nail-plate to their initial positions. The nail-driving operation is then complete, and the top lift is then spanked on, and the next heel pricked, the above described operation being then repeated.

From the foregoing description it will be seen that the jack may always be accurately and uniformly adjusted according to conditions, and danger of crushing the last may be avoided with absolute certainty, while sufficient pressure will always be applied to nail the heel properly. Also the operator may see exactly how the heel is positioned on the heel-seat before the nails are driven.

If it is desired to use the machine in such a manner as to render the dogs 14 inoperative, so that, when the nail-plate slide is pushed forward over the jack, it will still be held in its upper position, and will not be lowered into nailing position until the machine is started, it is merely necessary to remove the clip 19. When this is done the plate will be lowered into nailing position, as the cross-head moves down, so that the

heel rests on the shoe before the drivers strike the nails.

The means whereby the nail-plate, and the parts which carry the same, are automatically lowered, by their gravity, to nailing position, when the machine is started, which occurs when the clip 19 is not used, constitutes no part of my present invention and is not claimed herein, but is claimed in another application previously filed by me.

I claim:—

1. In a heeling machine having a vertically adjustable jack, a head vertically movable over said jack, a vertically movable nail-plate, horizontally movable into a position over the jack, and sustaining means for holding the plate in a raised position relative to the jack, movable to permit the plate to be lowered by gravity into a predetermined position, while the head is held stationary, substantially as described.

2. In a heeling machine having a vertically adjustable jack, a vertically movable nail-plate, horizontally movable from a position at one side of the jack to a position thereover, sustaining means for holding the plate in an elevated position with relation to the jack, and means, actuated by the plate when it is moved into position over the jack, for moving said sustaining means to permit the plate to be lowered into nail-driving position, substantially as described.

3. In a heeling machine having a vertically adjustable jack, a head, actuating means for vertically reciprocating said head over said jack, a vertically movable nail-plate, horizontally movable from a position at one side of the jack to a position thereover, sustaining means for holding the plate in an elevated position with relation to the jack movable independently of the head and its actuating means to permit the plate to fall by its gravity to nail-driving position, substantially as described.

4. In a heeling machine having a vertically adjustable jack, a head, actuating means for vertically reciprocating said head over said jack, a vertically movable nail-plate horizontally movable from a position at one side of the jack to a position thereover, sustaining means for holding the plate in an elevated position with relation to the jack, movable, while the head is held stationary, to permit the plate to be lowered to a predetermined position, and means for automatically lifting the plate during the return movement of the head, substantially as described.

5. In a heeling machine having a vertically adjustable jack, a head, actuating means for vertically reciprocating said head over said jack, a vertically movable nail-plate, horizontally movable from a position at one side of the jack to a position thereover, sustaining means for holding the plate

in an elevated position with relation to the jack, and means, actuated by the plate when it is moved into position over the jack, for moving said sustaining means to permit the plate to be lowered to a predetermined position, and means for automatically lifting the plate on the return movement of the head, substantially as described.

6. In a heeling machine having a vertically adjustable jack, a head, actuating means for vertically reciprocating said head over said jack, a vertically movable nail-plate, horizontally movable from a position at one side of the jack to a position thereover, sustaining means for holding the plate in an elevated position with relation to the jack, movable to permit the plate to be lowered to a predetermined position, while the head is held stationary, a lifting-spring, means operated by said actuating means, for compressing said spring on the operative movement of the head and means for causing engagement of said plate by said spring to lift the plate on the return movement of the head, substantially as described.

7. In a heeling machine having a vertically adjustable jack, a head, actuating means for vertically reciprocating said head over said jack, a vertically movable nail-plate, horizontally movable from a position at one side of the jack to a position thereover, a dog for sustaining said plate in raised position, movable to permit the plate to fall by its gravity into nail-driving position, a spring-actuated lifting device, means operated by said actuating means for setting said lifting device on the operative movement of the head, and means for releasing said lifting device to cause said plate to be lifted on the return movement of the head, substantially as described.

8. In a heeling machine having a vertically adjustable jack, a head, actuating means for vertically reciprocating said head over said jack, a vertically movable nail-plate, horizontally movable from a position at one side of the jack to a position thereover, a dog for sustaining said plate in raised position, disposed to be engaged by the plate, as it is moved into position over the jack, and movable to permit the plate to be lowered to a predetermined position, means, operated by said actuating means, when the head is lifted, for lifting the plate, and means for returning the dog to sustaining position, substantially as described.

9. In a heeling machine having a vertically adjustable jack, a head having actuating means for vertically moving the same over the jack, a vertically movable nail-plate, horizontally movable into a position over the jack, means permitting the plate to be automatically lowered when it is moved into position over the jack, while the head is held stationary, and means for automatically rais-

ing it when the head is lifted, substantially as described.

10. In a heeling machine having a vertically adjustable jack, a head having actuating means for vertically moving the same over the jack, a vertically movable nail-plate, horizontally movable into a position over the jack, means for lowering the plate to a predetermined position when the plate is moved into nailing position in advance of

the operation of the head, and means for lifting the plate on the return movement of the head, substantially as described.

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

GEORGE M. PETTENGILL.

Witnesses:

L. H. HARRIMAN,

H. B. DAVIS.

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