Nov. 4, 1947. E. P. ANSTETT 2,430,322

NAILING MACHINE

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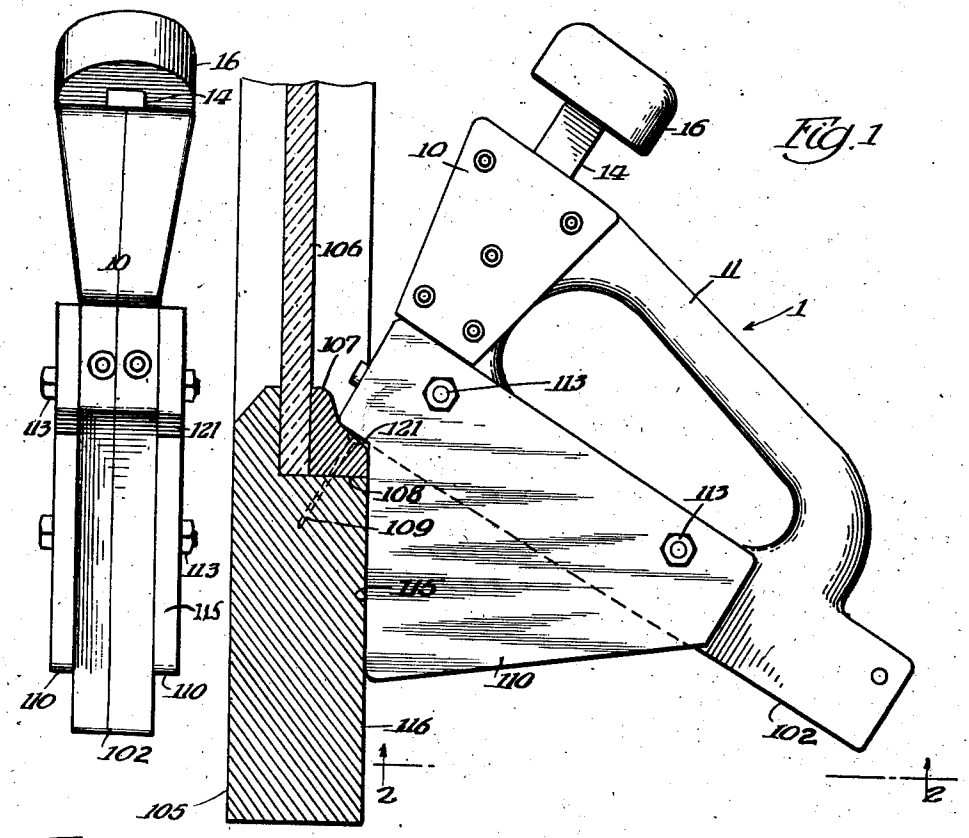
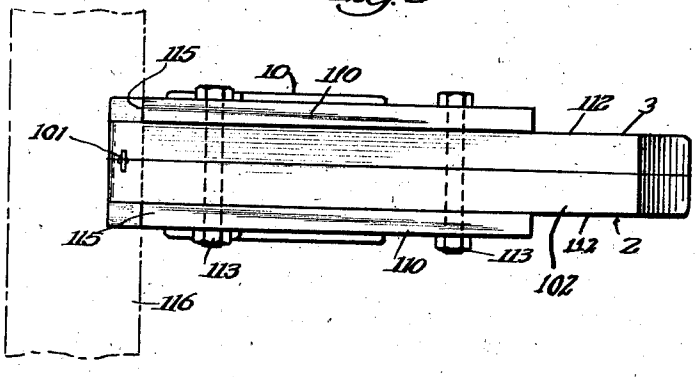


Fig. 1

Fig. 3

Fig. 2



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NAILING MACHINE

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7 Claims. (Cl. 1—46)

1

This invention relates to the art of nailing or stapling by means of portable machines, particularly machines of the type which are carried to the work to be nailed, as distinguished from nailing machines of the type wherein the work to be operated upon is brought to the machine.

Nailing or stapling machines of the type with which the present invention is concerned generally consist of a magazine for receiving a stick or stack of nails, and a reciprocable plunger which is actuated by a blow imparted thereto by a hammer (or pneumatically) to drive the first nail of the stack into the object, the succeeding nails being then advanced progressively as each nail is driven home. Nailing machines of the above type generally include a flat base which is adapted to be placed upon the object to be nailed, and the nail is then driven at right angles to the base to enter the object to be nailed in a direction at right angles to that surface of the object upon which the nailing machine is brought to rest. It frequently happens that it is desirable to drive a nail at a fixed angle (other than a right angle) to the surface of the object being nailed, or at a fixed inclination to the surface supporting and taking the thrust of the nailing machine. It is one of the objects of the present invention to provide means applicable to nailing machines of the type that drive the nail at right angles to the machine-supporting surface and which will adapt the machine for driving nails at a fixed angle other than a right angle to said surface. In view of the fact that the nailing machine always projects its nail in a direction at right angles to the base of the machine, it is obvious that if a nail is to be driven at an inclination to the nail-receiving surface, then the base of the nailing machine must be held at a corresponding angle to said surface. It is a further object of the present invention to provide means for positively holding the nailing machine at any desired fixed angle to the surface where the nail is to be driven.

In accordance with one embodiment of the present invention the objects above set forth are attained by providing two similar templates which are releasably but rigidly secured one on each side of the nailing machine. The templates project below the base on opposite sides of the machine and have work-engaging surfaces at the desired angle to the base of the machine. In view of the fact that the templates are on opposite sides of the machine they will hold the machine against skewing or tilting in a direction sideways of the machine. The templates extend substantially below the base of the machine and engage the work

2

along a surface spaced substantially below the machine and thus hold the machine against being tilted in a direction at right angles to the sideways direction. As a result of the use of the two templates of the present invention the machine can be brought into engagement with a corner where nailing operations are to be performed and held to drive the nails into the corner at fixed predetermined angles. Different templates may be provided for holding the nailing machine in different fixed angular inclinations to the work.

It is a further object of the present invention to provide templates that can be readily made from scrap pieces of wood which are generally available in places where nailing operations are to be performed. As a result the owner of a nailing machine may quickly form templates to suit a particular job and quickly and easily secure such templates to a machine, and may readily change the templates when a change is necessary.

In nailing machines the construction is generally such that when a nail is driven home to its ultimate position the head of the nail is at a fixed distance from the base of the machine. Where a template is to be made by the owner of a machine for fixing the angle of inclination of the machine it is important that that template shall not alter the spacing of the nail-ejecting opening in the machine from the work. If the template should increase the distance of the nail-ejecting opening of the machine from the work the nail will not be driven into the work a sufficient distance. Conversely, if the template were to decrease the distance from the nail-ejecting opening to the work then the nail would be driven too far into the work. It is one of the objects of the present invention to provide an arrangement of one or more templates on a nailing machine wherein the thickness of the template or templates has no bearing whatsoever on the amount of space between the nail-ejecting opening on the machine and the work. As a result, if the template is made under inaccurate conditions, such as might prevail in the shop of the user of the machine, variations in template thickness will not affect the nailing action. The templates merely fix the angle of inclination of the machine with respect to the work.

The attainment of the above and further objects of the present invention will be apparent from the following specification taken in conjunction with the accompanying drawing forming a part thereof.

In the drawing:

Figure 1 is a side view of a nailing machine

embodying a pair of templates of the present invention, said machine being shown in the position in which it is used;

Figure 2 is a bottom view of the nailing machine, said view being taken along the line 2—2 of Figure 1; and

Figure 3 is a front view of the nailing machine.

Reference may now be had more particularly to the drawing. A nailing machine is indicated in general by the reference numeral 1. This machine may be of any desired construction, the preferred construction being one such as shown in my pending application Serial No. 512,673, filed December 1, 1943, to which reference may be had for a more complete description. The machine comprises two similar castings 2 and 3 secured together in face to face relationship. The bottoms of the castings 2 and 3 are perfectly flat. At the forward end of the machine each casting 2 and 3 has an enlarged head 10 which is an integral part of the casting. The handle part 11 extends from the head to the base of the casting and provides means for gripping the machine. A rectangular driving plunger 14 having a driving head 16 is reciprocable in the head 10 in a direction at right angles to the base. The plunger drives the nails one at a time upon each downward movement of the plunger. Each nail is driven below the bottom plates of the machine into the wood to be nailed in place, which constitutes the work. To that effect the two castings of the nailing machine have at the base thereof aligned openings which constitute a nail-ejection opening 101, all as shown and described in my above identified application.

The nails are driven in a direction at right angles to the base 102 of the machine. Ordinarily the base 102 of the machine rests upon the object being nailed so that the nails are being driven at right angles to the surface upon which the nailing machine rests. At times it is necessary to drive a nail in such a direction or at such an inclination that because of the shape of the work it is not possible to position the nailing machine with its base 102 resting on the work in a plane at right angles to the desired direction of drive of the nail. This is illustrated, for instance, in the case of a frame of a window or showcase wherein the frame portion 105 is adapted to hold a glass pane 106, the pane being held in place by an angle or corner strip 107 of wood which rests on a ledge 108 on the frame part 105. The nail 109 is to be driven at an angle such as is indicated in Figure 1. There is only a limited amount of permissible leeway in the angle of inclination of the nail. If the nail is driven at an angle deviating too much in one direction from the position shown, then it is liable to strike the glass with resulting damage. If the inclination deviates too much in the opposite direction then the nail is liable to cause cracking of the front exposed surface of the frame 105.

In accordance with the present invention means is provided for holding the nailing machine 1 at the proper angle of inclination with respect to the frame 105 so that the nail will be driven in the proper direction. To that effect there are provided two templates 110—110 of identical shape which act as guide members or adapters for facilitating such action. Each template consists of a flat wooden board cut to the desired shape. The two templates embraces the opposite sides 112—112 of the machine and are bolted in place by bolts 113—113 that extend through holes in the two templates and through corresponding holes in the machine. Each template bears against a large portion of the side surface area of the machine so that the templates are rigid with respect to the machine. The transverse edge surface 115 of each template is adapted to bear against the surface 116 of the frame 105 and thus hold the base 102 of the nailing machine at a proper angle to the surface 116 so that a nail driven at right angles to the surface 102 enters the work at the proper angle of inclination. At its front surface 120 each template terminates flush with the corresponding front surface of the nailing machine or may terminate at any point rearwardly thereof. Adjacent the front of each template the template is cut out along a line 121 which coincides with or is above the base plane 102 of the nailing machine so that the template in no way increases the vertical spacing of the nailing machine from the curved surface 122 of the corner 107 that is being nailed in place.

As may be seen from Figures 2 and 3, the templates 110—110 are on opposite sides of the nailing machine and thus hold the nailing machine against tilting sideways, that is, in a direction in the plane of the paper as seen in Figure 2. Also, it is to be noted that the surface 115 of each template extends an appreciable distance below the surface 102 of the nailing machine. This holds the nailing machine against tilting in either direction in the plane of the paper as seen in Figure 1. It is thus apparent that because of these two templates it is very simple for an operator to hold the nailing machine against the work 105 at the proper angle, as illustrated in Figure 1, and then by imparting a hammer blow against the head 16 to drive a nail 109 into the work at exactly the proper angle. For different types of work or for different corner constructions different templates may be used wherein the surface 115 of the template is at a different angle to the base 102. Likewise, that surface of the template which engages the work may be either above or below the surface 102, depending upon the nature of the work. For instance, if a corner 107 is to be nailed to a floor at the base of the floor where a vertical wall rises from the floor, then the surface 115 of the template would be projected upwardly rather than downwardly, to engage the vertical wall corresponding to the wall 106, rather than to engage the wall 116.

In compliance with the requirements of the patent statutes I have here shown and described a preferred embodiment of my invention. It is, however, to be understood that the invention is not limited to the precise construction here shown, the same being merely illustrative of the principles of the invention.

What is considered new and desired to be secured by Letters Patent is:

1. In combination with a nailing machine having a base and means for driving nails past the base, a pair of plates releasably secured to the machine in fixed positions thereon on opposite sides of the base with the base lying between the plates, each plate including a work-engaging surface projecting beyond the machine at an inclination to the plane of the base, said two work-engaging surfaces projecting a considerable distance from the machine and by bearing against the work facilitating holding of the machine at an inclination to the work determined by the inclination of the work-engaging surfaces with respect to the plane of the base.

2. In combination with a nailing machine hav-

ing a base and means for driving nails past the base at a fixed angle thereto, a pair of plates, means removably securing the plates to opposite side face of the machine, said plates projecting a substantial distance beyond the machine, the inner surfaces of the plates lying in planes parallel to the sides of the machine, edges of the plates beyond the machine being at a substantial angle to the plane of the base of the machine and constituting work-engaging guide surfaces for holding the machine at a fixed angle to the work.

3. In combination with a nailing machine having a base and means for driving nails past the base at a fixed angle thereto, the bottom of the machine being adapted normally to rest along the surface into which a rail is to be driven in one use of the machine, means for adapting said machine for nailing operations in which the bottom of the machine can not rest along the surface into which the nail is to be driven, said means comprising a guide member, and means for releasably securing said member to the machine, said member projecting from the body thereof at a substantial angle to the base of the machine and terminating in a work-engaging surface at a substantial angle to the plane of the base of the machine.

4. In combination with a nailing machine having a base and means for driving nails past the base at a fixed angle thereto, means for adapting said machine for nailing operations in which the bottom of the machine can not rest on the surface being nailed, said means comprising a guide member secured to the machine and projecting from the body thereof at a substantial angle to the base of the machine and terminating in a work-engaging surface at a substantial angle to the plane of the base of the machine, the base of the machine having a nail-ejection opening adjacent the forward end thereof, and the guide member terminating short of the forward end of the base to permit said end to be positioned on a piece of work to be nailed which work extends transversely of the machine.

5. In combination with a nailing machine having a base and means for driving nails past the forward end of the base and at a fixed angle thereto, the base of the machine being normally adapted to rest on the surface into which the nail is being driven during one use of the machine thereby determining the angle of drive of the nail in the work, means for adapting the machine to drive nails at a different angle to the work, said means comprising an adapter, means releasably securing the adapter to the machine, the adapter extending along a side of the machine past the machine and terminating in a work-engaging edge which extends a substantial distance from the machine and is at a substantial angle to the plane of the base, the adapter being spaced from the forward end of the base to permit the forward end of the base to rest on a surface being nailed which extends transversely of the machine, so that the adapter and the forward end of the base maintain the machine at the required inclination to the work.

6. In combination with a nailing machine having a base and means extending at right angles to the base for driving nails past the forward end of the base and at a fixed angle thereto, the forward end of the base of the machine being adapted to rest on a surface into which the nail is to be driven in one use of the machine, and guiding means releasably secured to the machine and projecting from the body of the machine at a substantial angle to the plane of the base for engaging a portion of the work that is at a substantial angle to the portion where the nail is being driven, thereby holding the machine at the required angle to the surface being nailed during nailing operations in which a portion of the base only rests along the surface into which the nail is being driven.

7. In combination with a nailing machine having a base and means for driving nails past the forward end of the base and at a fixed angle thereto, the base of the machine being adapted to rest along the surface being nailed in one type of use of the machine thereby determining the angle of drive of the nail in the work, means for adapting the machine to drive nails at a different angle to the surface of the work where the nails are to be driven, said means comprising an adapter, means releasably securing the adapter to the machine, the adapter being located on a side of the machine and extending along and below the base of the machine and terminating in a work-engaging edge which extends a substantial distance below the base of the machine and is at a substantial angle to the plane of the base, the work-engaging edge of the adapter being spaced rearwardly from the forward end of the base to permit the forward end of the base to rest on a surface being nailed which extends transversely of the machine, so that the adapter and the forward end of the base maintain the machine at the required inclination to the work.

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