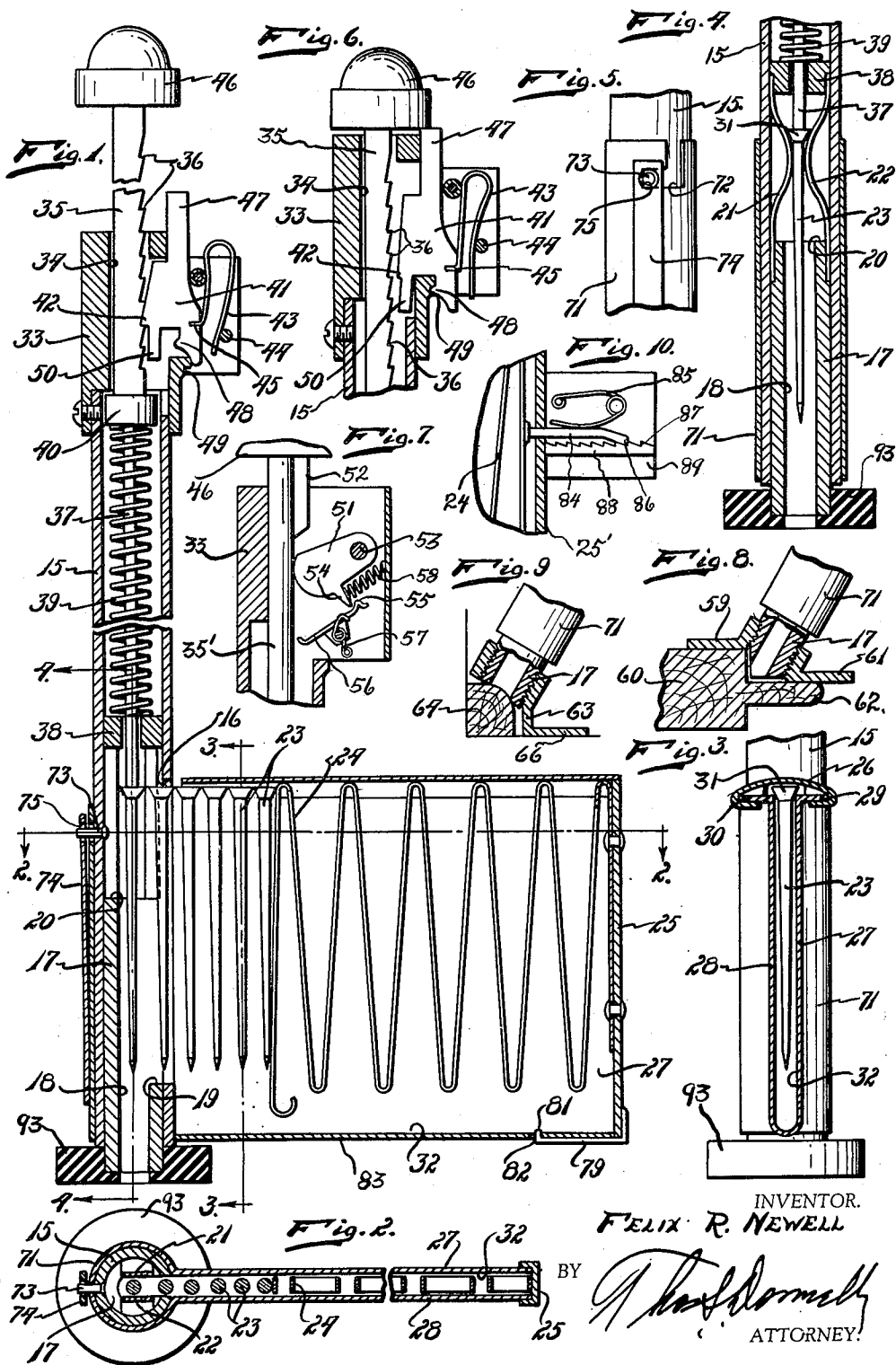


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# NAILING MACHINE

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## NAILING MACHINE

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## 1 Claim. (Cl. 1—46)

My invention relates to a new and useful improvement in a nail driving machine, adapted for use in holding a nail while it is being driven into wood or other suitable bodies.

It is an object of the present invention to provide in a nail driving machine of a driving element or plunger so arranged and constructed that it will serve to drive the nail into a body into which it is intended to be driven and will also, in its last movement, serve to counter-sink the nail.

Another object of the invention is the provision in a nail driving machine of this class of means for gripping and securely holding the nail as it is fed into the driving chamber prior to contact therewith by the driving plunger.

Another object of the invention is the provision in a nail driving machine of this class of a feeding machine in which the nails may be placed and from which they will be fed individually into the driving chamber.

Another object of the invention is the provision in a machine of this class of a driving plunger so constructed and arranged that, as it is driven downwardly for effecting a driving of the nail into the body intended to receive the same, the driving plunger will be automatically locked in its various positions so that a rear movement of the same will be prevented.

Another object of the invention is the provision of means for releasing the locking mechanism as the driving plunger reaches the end of its movement so that the plunger may be freely returned to initial position.

Another object of the invention is the provision in a nail driving machine of this class of an engaging foot carried by the end of the driving chamber so that the machine will be maintained firm and at the proper angle, for driving nails into certain materials such as flooring, molding, and the like.

Another object of the invention is the provision of a machine of this class which will be simple in structure, economical of manufacture, durable, compact, light and highly efficient in use.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by a reference to the accompanying drawing which forms a part of this specification, and in which,

Fig. 1 is a central, vertical, sectional view of the invention.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1.

Fig. 5 is a fragmentary side elevational view of a part of the invention.

Fig. 6 is a fragmentary sectional view showing the latch dog in released position.

Fig. 7 is a fragmentary sectional view showing a modified form of latch dog.

Fig. 8 is a fragmentary side elevational view showing a certain type of foot used on the driving chamber.

Fig. 9 is a fragmentary view of a further modified form of engagement foot.

Fig. 10 is a fragmentary sectional view illustrating means for adjusting the tension of the follower spring.

The invention embodies a tubular supporting body or handle forming member 15 having in one side, adjacent at one of its ends, the elongated slot 16. Inserted into the tube 15 from the lower end is an elongated body 17 which may be termed a driving chamber. This body has formed through it the central bore 18. Formed at one side of the body 17 so as to register with the slot 16, is a feeding slot 19. This body 17 is also cut away as at 20 on its opposite sides and spanning this cut away portion 20 are retaining springs 21 and 22 which, in the present form, are formed bow-shaped and secured at the opposite ends, but which need not be bow-shaped. These springs are merely adapted as retainers for gripping and retaining a nail 23 in position. These nails are fed through the opening 16 by means of the spring follower 24 which is mounted on the back 25 of the covering shell 26 which serves to embrace the feeding magazine. This feeding magazine embodies the oppositely disposed walls 27 and 28 each of which is provided at its upper edge with the outwardly turned flange 29 and 30 respectively, this flange being engaged by the top 26 of the spring retainer. The walls 27 and 28 are spaced apart so that the nail head 31 will support the nail in the space 32 between the walls 27 and 28. The spring presser member 24 lies in this space 32 and serves to engage the end-most of the nails so as to press these nails forwardly into position between the retaining springs 21 and 22, the nails passing therewith into individually. The back plate 25 is secured at its upper end to the cover 26 by welding or in any similar suitable manner.

Mounted on the upper end of the tube 15 is a head 33 having an opening 34 formed therein through which extends the bar 35 having ratchet teeth 36 formed on one face. Projecting from the lower end of the bar 35 is a driving plunger 37 which extends through the end 38 of the driving chamber 17. Engaging at one end against the end 38 is a spring 39 the opposite end of which engages the collar 40 mounted on the end of the bar 35. The construction is such that as the bar 35 is driven downwardly the end of the driving plunger 37 will engage the nail which is suspended between the springs 21 and 22 and will force the same downwardly through the open end of the member 17. As this bar 35 is forced downwardly the ratchet dog 41 will serve to function to prevent the upward movement of the bar 35. This dog is provided with a latch nose 42 which is normally maintained in engagement with the face on which the teeth 36 are formed. It is so retained by means of the spring 43, one end of which is loose and engages against the stud 44, and the other end of which is angularly turned as at 45 and embedded in member 41. Fixedly mounted on the upper end of the bar 35, to provide a driving head, is a knob 46 which, when the nail is driven nearly to its termination, will serve to strike the upper end of the projection 47 of the dog 41 and as the last blow is struck on the head 46 the dog 41 will be moved downwardly into the position shown in Fig. 6 with the locking nose 48 engaging behind the shoulder 49 so that the ratchet dog 41 will be held in inoperative position as shown in Fig. 6. At the same time the end of the plunger 47 will project beyond the end of the member 17 and serve to counter-sink the nail. The spring 39 will then effect a return of the bar 35 to its upward position and in this movement the collar 40 will strike the projection 50 and serve to force the dog 41 upwardly into the position shown in Fig. 1. When the plunger 37 moves to its upward position another nail will be forced inwardly into the driving chamber so that a nail will again be suspended between the springs 21 and 22 in position to be driven.

In Fig. 7 I have shown a slightly modified form of locking dog. In this form the bar 35' is formed without the teeth 36 and engaging against one face of this bar is a cam plate 51 which is swingably mounted and normally maintained in engagement with the face of the bar 35' so that any return movement of the bar 35 tends to move the cam 51 towards center and thus the bar 35 is locked against return movement. As the bar 35 is driven downwardly the projection 52, which projects downwardly from the head 46, will engage the cam 51 and rock it on its pivot 53 so that a locking finger 54 engages behind the nose 55 of a pivotally mounted locking arm 56 which is normally maintained by the spring 57 in locking position. When the bar 35 moves upwardly, the members 54 and 55 will be disengaged through the operation of the collar 40 striking the end of the arm 56. The spring 58 serves to force the cam 51 toward operative position.

In Fig. 8 I have shown a foot formation mounted on the lower end of the member 17. This foot embodies a Z-shaped plate which may be threaded onto the member 17, one portion 59 of which would engage the upper surface of a floor board 60 and the other portion 61 of which would engage the tongue 62 at the proper angle for driving a nail into the board.

In Fig. 9 I have shown another form of foot 63 which is threaded onto the end of the driving chamber 17 and adapted to engage one face of a quarter round molding 64 and also engage the floor by means of the angle plate 66 to retain the driving chamber at the proper angle.

In use, the driving chamber 17 may be removed and replaced with other types or sizes, as these driving chambers are merely thrust, as a press fit, into the tube 18. The magazines may be fastened on the tube 15 in any desired manner. In the form shown (see Fig. 5) the feeding end of the magazine is provided with a tube portion 71 having a bayonet slot 72 cut therein and in which engages the pin 73 projecting outwardly from the tube 15. A spring arm 74 is secured at one end to the tubular sleeve and provided with an opening 75 in which the pin 73 may engage so as to thus lock the device in position.

The follower is secured in position on the magazine by means of the spring shoe 79 which has the up-turned end 81 engaging in an opening 82 formed in the bottom 83 of the magazine. This shoe 79 is formed from spring metal.

In Fig. 10 I have shown a means for adjusting the tension of the follower or spring 24. Projecting through the back 25' is an arm 84 which is normally pressed downwardly by the spring 85 so that the curved end 86 will engage the teeth 87 formed on the bar 38 mounted on the housing wall 89 which is secured to the back plate 25'. By raising the member 84 the follower 24 may be thrust inwardly so as to increase its tension, the inner end of the bar 84 being attached to the end of the spring follower 24.

A rubber foot or plate 93 is mounted on the end of the driving chamber 17 to prevent the end of the chamber 17 marring the body into which the nail is to be driven.

While I have illustrated and described the preferred form of structure of my invention, I do not wish to limit myself to the precise details of structure shown, but desire to avail myself of such variations and modifications as may come within the scope of the appended claim.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

In a nail driving machine of the class described, a tubular handle member; a head mounted on one end of said tubular member and having a passage formed therethrough in alignment with the bore of said tubular member; a driving plunger slidably mounted in said tubular member and projecting through said passage; a spring for normally retaining the driving end of said plunger retracted toward the head bearing end of said tubular member; means for locking said plunger in its various positions of movement, upon movement of the same toward one end of said tubular member; a knob carried by said plunger engageable with said locking means upon movement of said plunger to a pre-determined distance relatively to said tubular member for moving said locking means into unlocking position; a shoulder on said head; a locking nose on said locking member movable into position behind said shoulder; and a collar on said plunger engageable with said locking member upon retraction of said plunger within said tubular member for engaging said locking member and releasing the same for movement to locking position.

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