Jan. 22, 1929. 1,699,519

A. BROWN

NAILING ATTACHMENT FOR MECHANICAL HAMMERS

Filed Jan. 24, 1927

Fig. 1.

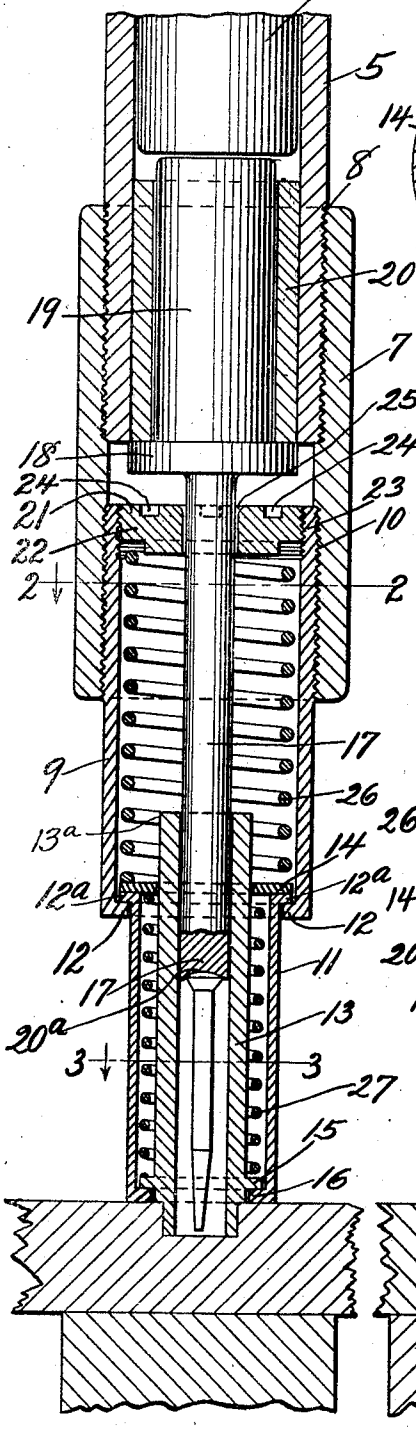


Fig. 2.

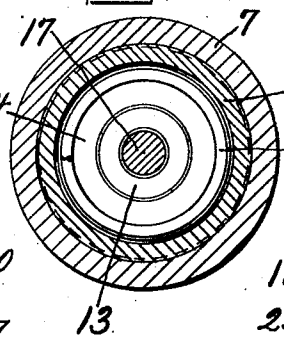


Fig. 3.

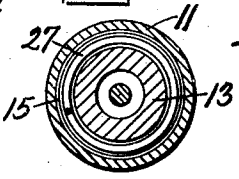


Fig. 4.

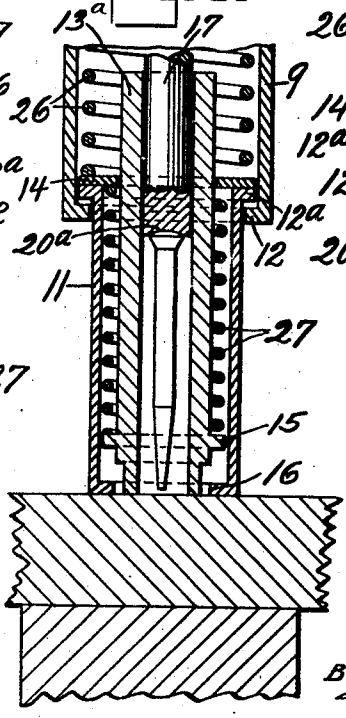
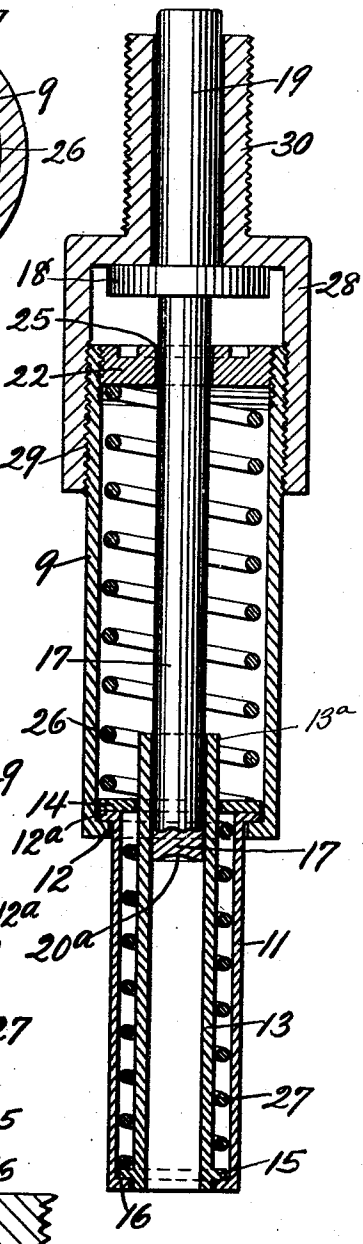


Fig. 5.



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UNITED STATES PATENT OFFICE.

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NAILING ATTACHMENT FOR MECHANICAL HAMMERS.

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Reference is had to the accompanying drawings which illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof within the scope of the claims will occur to persons skilled in the art.

In the drawings:

Fig. 1 is a vertical sectional view of my nailing attachment associated with a pneumatic hammer, and illustrating the same in position for setting a nail in a counter-bored surface;

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

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

Fig. 4 is a fragmentary vertical sectional view of the attachment in a position to set a nail in a flush surface; and

Fig. 5 is a vertical sectional view of a modification of the invention, the latter being adapted for association with an electric hammer.

My invention relates to mechanical hammers, and more particularly to a nailing attachment therefor.

It is well known in the art to provide pneumatic or power driven hammers for the purpose of driving nails or the like into suitable planking, but in the use of the ordinary and usual power hammer, it is necessary to inset the nail heads by an independent operation; usually an operator would employ a separate nail set and manually inset the nails. It will be apparent that by such a method the nails are not uniformly inset and to eliminate the double operation just mentioned, as well as to provide for uniformly insetting the nails, the present invention has been devised, and one object of the present invention therefore contemplates a single tool which will drive a nail or the like to the desired depth, or in other words, to a depth such that the head is inset, in a single operation. This is in contradistinction to the before-mentioned double operation which requires the separate and independent manual insetting of the nails.

Further, the invention contemplates a magnetized nail set or plunger for holding the nail at a desired angle to the surface in which it is being driven, and thereby reduce bending of the nails to a minimum.

Still another object of this invention is to provide a reciprocating hammer nailing attachment wherein vibration is reduced to a minimum.

Another object resides in the provision of a nailing attachment that may be associated with any conventional pneumatic or electric reciprocating hammer, and which embodies a plurality of resiliently cushioned telescopic members serving to permit the full length of the nail to be driven into an object, to exert pressure against the object, and to eliminate vibration incident to the operation of the reciprocating hammer.

Referring to the invention in detail, a conventional pneumatic hammer barrel is designated at 5, while the hammer therefor is indicated at 6.

This attachment comprises a sleeve 7, having one end threadedly engaged with the lower end of the barrel 5 as shown at 8. This sleeve 7 has secured thereto a casing formed of cushioned telescopic tubular sections 9 and 11, the tube 9 being of smaller diameter than the sleeve 7 and being secured to the sleeve 7 as shown at 10. The tubular section 11 is of smaller diameter than the tubular section 9, and the adjacent ends of the sections 9 and 11 are provided with co-acting stop flanges 12 and 12^a respectively; these stop flanges functioning to limit the outward movement of the tube 11.

A nail guide 13 is provided for guiding the nail while being set into the plank or other object. This nail guide 13 is of cylindrical formation and is arranged concentrically within the tube 11, and the upper end of the nail guide 13 extends into the tube 9 a substantial distance; said upper end forming an abutment designated at 13^a for a purpose to be hereafter described. To support the nail guide within the tubes a centering washer 14 rests upon the flange 12^a of the tube 11, and through which the upper end of the guide 13 extends. An annular flange 15 is formed upon the nail guide ad-

jacent its lower end, which flange normally abuts an inwardly directed annular flange 16 formed upon the lower end of the tube 11.

Arranged concentrically in the sleeve 7 and tubes 9 and 11 is a magnetic nail set or driving element 17 provided with a circular stop collar 18 at its upper end, and formed with this stop collar 18 is a plunger 19 which projects into the barrel 5 and is arranged to be engaged by the hammer element 6. The nail set or striking element is circular in cross section, and projects into the nail guide for reciprocatory movement therein and is formed with a nail head seat 20^a upon its lower or striking end, and when a nail is placed in the nail guide it will be drawn against the nail head seat 20^a by the magnetic attraction of the nailing element. A bushing 20 is tightly received in the lower end of the barrel 5, and receives the plunger 19. As illustrated in Fig. 1, the stop collar 18 is disposed below the bushing 20 and abuts the same upon the return movement of the nail set, to limit the movement of the latter in one direction.

As heretofore mentioned, this invention contemplates means for governing the depth into which the nail is inset in a plank or the like, and to this end an adjustable stop 21 is provided. This stop 21 is in the form of an exteriorly threaded bushing 22 capable of longitudinal adjustment in the threaded end 23 of the tube 9. Recesses 24 are provided in the upper face of this bushing, arranged to be engaged by a suitable tool for the purpose of adjusting the bushing towards or away from the stop 18. A central opening 25 is provided in the bushing, through which the nailing element or set slidably extends. As hereinafter described it can be seen that the depth to which the nail is inset, is governed by the adjustment of the bushing 22 towards or away from the stop 18.

Arranged in each of the tubes 9 and 11 is a coil spring 26 and 27, the former encircling the nail set 17 and bearing against the underface of the bushing 22 at one end and having its other end engaged with the washer 14. The coil spring 27 encircles the cylindrical guide 13, and has one end engaging the underface of the washer 14 and its opposite end bearing against the flange 15. As disclosed in Fig. 1, these expansible coil springs operate to normally urge the tube 11 and nail guide 13 to extended position, and at the same time serve to cushion the device during operation thereof and thereby reduce vibration to a minimum degree. In this connection, it is pointed out that the elimination of vibration is quite advantageous, as it is well known this causes operators of these hand mechanical hammers in time to develop a certain form of paralysis. Also these springs function to normally project the lower end of the nailing element or set from the lower end of the tube 11 to engage a counter-bored plank, as shown in Fig. 1. In using the device on a flush surface sufficient pressure is exerted against the tool to dispose the nail guide within the tube 11 and allow the lower end of the latter to bear upon the surface.

A modification of the invention is illustrated in Fig. 5. This embodiment involves the application of the nailing attachment to an electric hammer. In this instance the sleeve 7 is eliminated, and in lieu thereof I provide a thimble 28 which has one end threadedly engaged with the upper end of the tube 9 as at 29. A reduced exteriorly threaded nipple 30 is formed with the outer end of the thimble and is concentric to the opening 25 in the bushing 22. The plunger 19 of the nail striking element or set is reciprocable in the nipple 30, and has its upper end normally projecting above the upper end of this nipple. Thus upon threading the nipple into the barrel of the electric hammer, the plunger will be brought into operative relation with the hammer element of the device. It will be observed that in this form of the invention the bushing 20 is dispensed with, as the upper end of the thimble 28 constitutes a stop to limit the upward movement of the nailing element.

It is believed that the operation of the device will be fully apparent to those skilled in the art, but a brief résumé thereof is given herewith. With the parts assembled as shown in Fig. 1, with a nail in the nail guide, the power hammer is operated to drive the hammer element 6 and deliver successive blows to the plunger 19. While this is being done the device, more particularly the casing, is placed against the work, as clearly shown in the drawings, and it will be apparent that the sections 9 and 11 will be telescoped one within the other. The stop collar 21 may be so positioned within the casing 9 that the lower end 12 of the casing 9 may contact with the work into which the nail is to be driven, in which event the nail will be driven to its extreme limit as will be apparent. The drawings show the hammer element 6 as almost at its lowest position, that is, just about at the position to deliver a blow to the plunger 19. It is desirable in the construction of the device to so arrange the upper edge of the bushing 20 that it will not be contacted with the hammer element 6, or, if contacted at all by said element, to so arrange the bushing 20 that the upper end thereof does not receive the full force of the blow from said hammer element. This is merely for the purpose of preventing excess shock to the bushing 20 to preserve the life of the device. The stop 21 limits the travel of the plunger 19 and, consequently, the nail set 17. Continued and successive blows of the element 6 will drive the nail into the planking as will be apparent. As mentioned heretofore in this specification,

the invention contemplates the provision of means whereby the nail may be inset a predetermined depth. This is accomplished by adjusting the stop 21 so as to vary the distance between the upper end of the abutment 13ª and the lower surface of the stop 21. By moving the stop 21 downwardly in the casing 9 it will be obvious that the distance between the upper edge or face of the abutment 13ª and the lower surface of the stop 21 is lessened and the maximum telescoping of the sections 9 and 11 is thus varied and therefore the section 9 will not contact with the work and the throw of the plunger 19 and the nail set 17 with respect to the work will be correspondingly varied. It will be apparent that the depths to which nails may be driven in any desired work may be varied to suit the particular "job."

What is claimed is:

1. A vibratory hammer attachment comprising a plurality of telescopic elements, means for connecting one of the telescopic elements to the barrel of a vibratory hammer in coaxial relation thereto, resilient means normally projecting the telescopic elements and constituting shock absorbing means, and a reciprocable nail set operated by the vibratory hammer and guided by one of the telescopic elements and arranged to strike a nail positioned in said element.

2. An impact device comprising a plurality of telescopic members, expansible coil springs housed in certain of the telescopic members to urge the latter to extended position, means for connecting one of the telescopic members to a stock, an impact element passing longitudinally through the telescopic members and movable in the smaller one of the latter, and means for applying impacts to the impact member.

3. In a device of the character described, a casing including a yieldable casing section, means for attaching the casing to a vibratory hammer, a longitudinally adjustable stop bushing engaged with the casing, and a concentrically arranged impact transmitting element in the casing operable by the vibratory hammer and movable through the stop bushing and limited in its impact delivering movement thereby.

4. In an impact hammer attachment, a plurality of telescopic tubes, a coupling for connecting one of the tubes to an impact hammer casing in concentric relation thereto, a tubular nail receiving guide extending centrally within the telescopic tubes, co-acting stop flanges between the lower end of the nail guide and outermost tubular member, a washer received on the upper end of the nail guide for centralizing the latter, and a coil spring in each tubular member, and having their adjacent ends engaged with the washer.

5. In combination with a power hammer, a nail driving attachment therefor comprising spring pressed telescopic members connected to said hammer, and a nail set mounted in said telescopic members and operable by said hammer.

6. In combination with a power hammer, a nail driving attachment therefor comprising telescopic members connected to the hammer, a guide resiliently supported in one of said members, and a nail set working in said telescopic members and guided by said guide.

7. A device of the kind described comprising a casing for engaging work into which a nail is to be driven and formed of telescopic sections, a nail set working in the sections, and adjustable means for varying the maximum telescoping of the sections whereby the travel of the nail set with respect to the work is correspondingly varied.

8. A device of the kind described comprising a casing for engaging work into which a nail is to be driven and formed of telescopic sections, a nail set working in the sections, an abutment supported by one section, and means in the other section adapted to contact with said abutment for limiting the telescoping of said sections, said means being adjustable to vary the maximum telescoping of the sections whereby the travel of the nail set with respect to the work is correspondingly varied.

9. A device of the kind described comprising a casing for engaging work into which a nail is to be driven and formed of telescopic sections, a nail set working in said sections, an abutment in one section, and means in the other section for limiting the travel of the nail set therein, said means being adapted to contact with the abutment to limit the telescoping of the sections and being adjustable to vary the maximum telescoping of the sections whereby the travel of the nail set with respect to the work is correspondingly varied.

10. A nail driving attachment for a power hammer comprising telescopic sections secured to said hammer, a nail set working through said sections, and means for varying the telescoping of said sections with respect to the work with which the device is used whereby to vary the distance to which a nail is inset.

11. A nail driving attachment for a power hammer comprising upper and lower telescopic sections secured to the hammer, an abutment in the upper section, a nail set working through said abutment, and an adjustable stop member in the upper section adapted to contact with the abutment at maximum telescoping of the sections whereby to limit the position of the upper section with respect to the work with which the attachment is used and to limit the throw of the nail set with respect to said work.

12. In combination with a power hammer, means for driving a nail to a predetermined depth comprising a casing secured to the

hammer and formed of cushioned telescopic members, a nail guide in one member extending into the other member to define an abutment, a nail set working in said guide, and means in said other member adapted to contact with the aforesaid abutment to limit the maximum telescoping of said members, said means being adjustable whereby to vary said maximum telescoping and to vary the movement of the nail set with respect to the work with which the device is used.

In witness whereof I have hereunto set my hand.

AMOS BROWN.