J. C. BREHM.

MACHINE FOR DRIVING NAILS AND THE LIKE.

APPLICATION FILED APR. 30, 1918.

1,283,647.

Patented Nov. 5, 1918.

2 SHEETS—SHEET 1

FIG. 1.

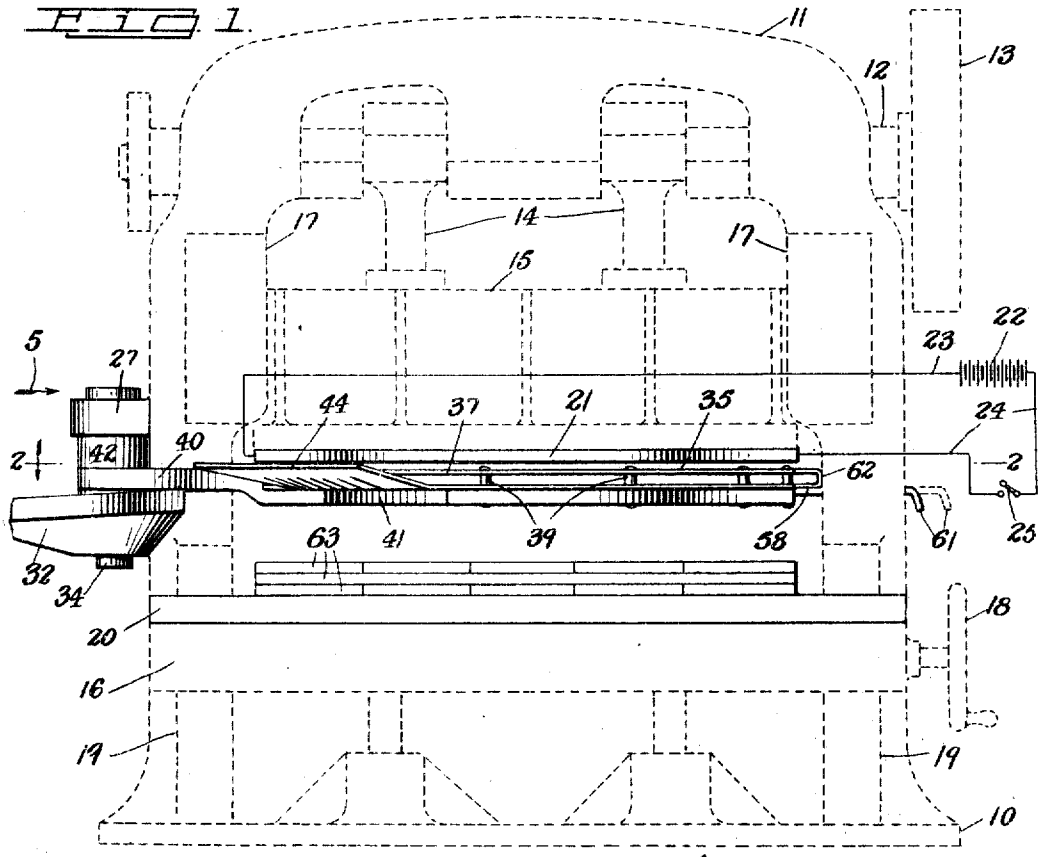
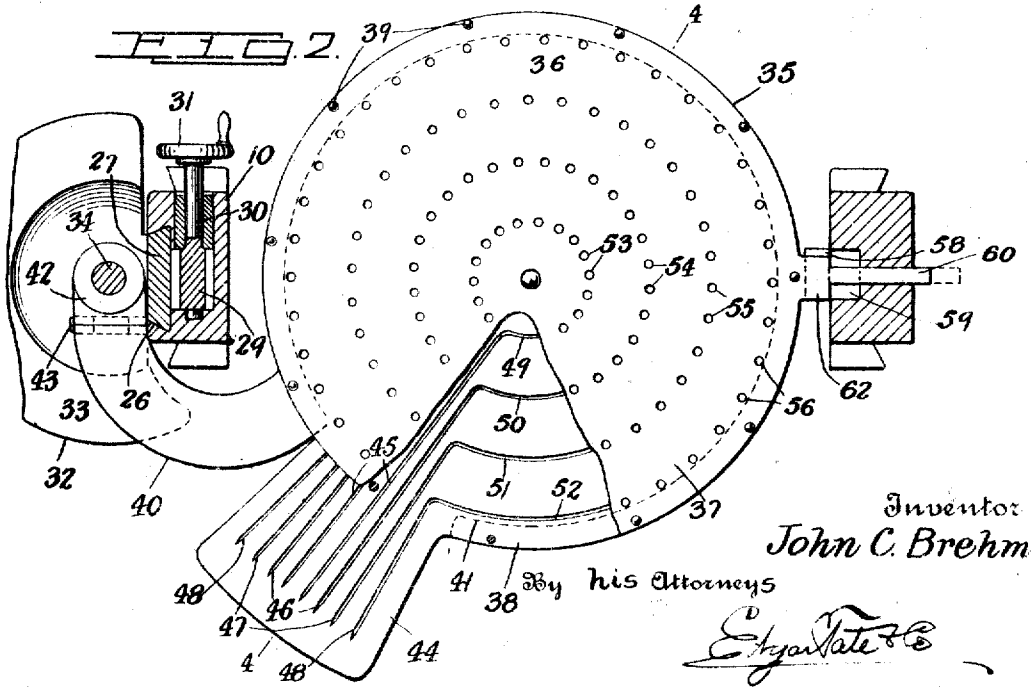


FIG. 2.



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2 SHEETS—SHEET 2.

FIG. 3.

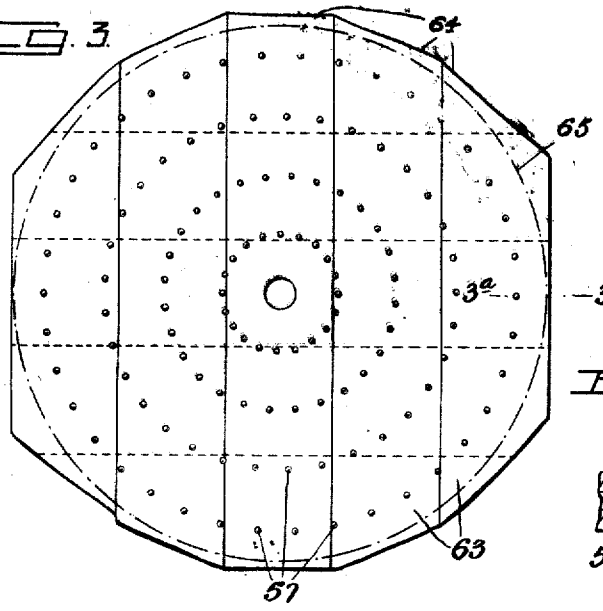


FIG. 3a.

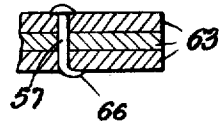


FIG. 4.

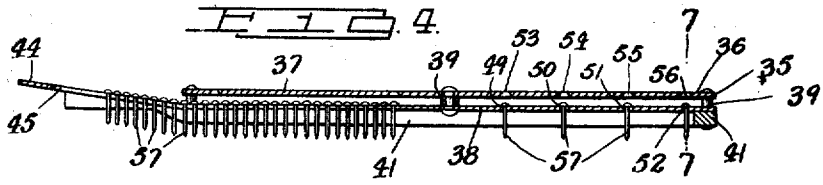


FIG. 5.

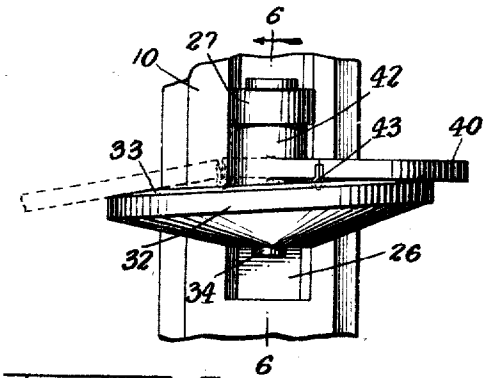


FIG. 6.

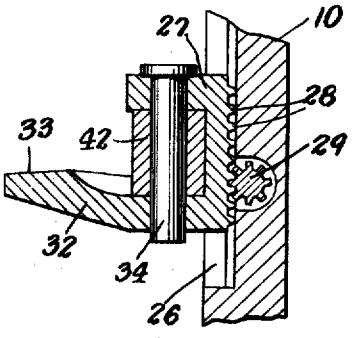
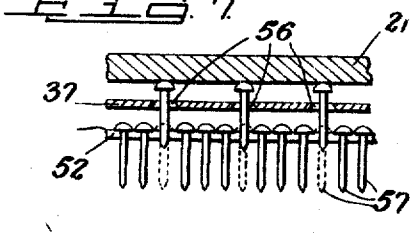


FIG. 7.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR DRIVING NAILS AND THE LIKE.

1,283,647. Specification of Letters Patent. Patented Nov. 5, 1918.

Application filed April 30, 1918. Serial No. 231,626.

To all whom it may concern:

Be it known that I, JOHN C. BREHM, a citizen of the United States, and residing at Bayonne, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Machines for Driving Nails and the like, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to machines for driving nails, spikes, tacks or the like and the object thereof is to provide a machine of this character constructed in such manner as to drive a large number of nails and the like into a suitable work-piece at one time; a further object being to provide a machine designed particularly for use in making large spools for electric cables or cable conduits, or the opposite disk-shaped members of said spools; and a further object of the invention is to provide a machine of the class specified, which is simple in construction and operation and efficient in use.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:—

Figure 1 is a front view of a power press of common construction and showing my improvement applied thereto;

Fig. 2 a partial transverse section on the line 2—2 of Fig. 1;

Fig. 3 a plan view of one of the side members of a spool showing the separate parts thereof secured together by nails driven thereinto by my improved machine;

Fig. 3ª a detail sectional view on the line 3ª—3ª of Fig. 3 and on an enlarged scale;

Fig. 4 a section on the line 4—4 of Fig. 2 but showing parts not shown in Fig. 2;

Fig. 5 a view looking in the direction of the arrow 5 of Fig. 1;

Fig. 6 a partial section on the line 6—6 of Fig. 5; and,

Fig. 7 a partial section on the line 7—7 of Fig. 4 and on an enlarged scale.

In Fig. 1 of the drawing, I have indicated in dotted lines a front view of a double crank power press comprising a frame 10 having a top cross head 11 in which is mounted a power shaft 12, one end of which is provided with the usual fly-wheel 13, and the shaft 12 is provided with two cranks 14, which move the plunger 15 vertically toward and from the table 16 in slides or guides 17 in the opposite sides of the frame. The table 16 is vertically adjusted by a hand wheel 18 on slides 19 in the usual manner.

In the practice of my invention, I place on and secure to the top of the table 16 a tool steel plate 20 which is circular or approximately circular in form, and secured to the bottom face of the plunger 15 is a steel plate 21 which is also circular in form. The plate 21 is provided with means for electrically magnetizing it, said means consisting of a source of electrical supply 22 having wires 23 and 24 which connect with opposite sides of the plate 21 and placed in the wire 24 is a switch device 25 for making and breaking the circuit in said wire, and it will be understood that the specific means for electrically magnetizing the plate 21 is not shown for reason that it forms no part of my invention and any of such means now in use may be employed.

One of the side members of the frame 10 is provided in the outer face thereof with a vertical recess 26 in which is mounted a yoke-shaped bracket 27, the inner face of which is provided with a rack construction 28 in connection with which a gear 29 operates. The gear 29 is mounted in said side member of the frame and is provided with a shaft 30 which extends out through the rear end thereof and is provided with a hand wheel 31, whereby the gear 29 may be rotated to move the bracket 27 vertically in the recess 26.

The bottom 32 of the bracket 27 is enlarged and of arc-shaped construction as shown in Figs. 2, 5 and 6, and the top thereof is provided with a beveled bearing face 33. A pin 34 is passed downwardly through the yoke-shaped bracket 27 and mounted on said pin between the top and bottom members of the bracket is a nail feeding and carrying member 35, comprising a circular body 36 composed of a top disk or sheet 37 and a bottom disk or sheet 38 secured together and spaced from each other by rivet pins 39. The circular body 36 is supported by an arm

40 having a circular band 41 which passes around the bottom disk or sheet 38 at the periphery thereof, as indicated in dotted lines in Fig. 2 and shown in full lines and in section in Fig. 4, and the rivet pins 39 aid in securing said circular portion 41 to the bottom disk or sheet 38.

The other end of the arm 40 is hinged or otherwise loosely connected with a bearing sleeve 42 mounted on the pin 34 as shown at 43, and the arm 40 is adapted to bear on the beveled face 33 of the arc-shaped bottom portion 32 of the bracket 27 when swung on the pin 34 from the position shown in Fig. 2 and indicated in Fig. 5 to the position shown in dotted lines in Fig. 5, and it will be noted that said bottom arc-shaped portion 32 of the bracket is inclined downwardly and backwardly to give the nail feeding and carrying member a slight inclination.

The bottom disk or sheet 38 is provided at one side with an extension 44, having a plurality of apertures 45, 46, 47 and 48 arranged in pairs, and said apertures extend inwardly and communicate with circular apertures 49, 50, 51 and 52 respectively, as clearly shown in Fig. 2 of the drawing, and with this construction the nails fed into the apertures 45 to 48 inclusive will be fed into the circular apertures 49 to 52 inclusive from two different sides, or from each aperture in the pairs of apertures 45 to 48 inclusive, and by tilting the feeding and carrying member 35 slightly when in its inoperative position, and by oscillating the same said nails may be worked around through the apertures 49 to 52 inclusive, as will be readily understood. In Fig. 4 of the drawing, I have shown a plurality of nails in one of the apertures 45 and indicating one nail in each of the apertures 49 to 52 inclusive.

The top disk or sheet 37 is provided with four series of small apertures arranged in a circular path as shown at 53, 54, 55 and 56, in Fig. 2 of the drawing, and these apertures are arranged directly over the apertures 49 to 52 inclusive in the manner shown in said figure, and the walls of said apertures are preferably beveled as clearly shown in Fig. 7, or the bottom of said apertures is made larger than the top thereof to provide a free passage of the heads of the nails therethrough.

In Fig. 7 of the drawing I have shown on an enlarged scale a number of headed nails 57 supported in the outer circular aperture 52 in the bottom disk or sheet 38, and have shown the magnetic plate 21 in its operative position, or having drawn three of the nails 57 upwardly through the apertures 56, in the top disk or sheet 37 directly over the aperture 52, and it must be understood that the top disk or sheet 37 is composed of non-magnetic metal or other material and the extent of the magnetism in the plate 21 will not be greater than to suspend one nail from any point on the bottom face thereof or, in other words, will not be strong enough to cause the nail suspended to pick up one of the nails adjacent thereto in the groove 52 referring to Fig. 7 of the drawing.

I also employ a stop device for the nail feeding and carrying member 35 which consists of an L-shaped plate 58 movable inwardly and outwardly through the opposite side of the frame to which said member is pivoted, or into a recess 59 in said frame and the plate 58 is provided with a bar 60 which extends through the side of the frame and is bent downwardly to form a hand piece 61, whereby the same may be operated and the nail feeding and carrying member 35 is provided with a projection 62 which operates in connection with the stop plate 58 as clearly shown in Fig. 2, and this construction serves to center the member 35 in the machine.

The operation will be readily understood from the foregoing description when taken in connection with the accompanying drawing and the following statement thereof. As previously stated the nail feeding and carrying member 35 or the apertures 49 to 52 therein are filled up with nails when the same is in its inoperative position, or the position indicated in dotted lines in Fig. 5 of the drawing, and a plurality of boards 63 are placed side to side and one upon another in the manner shown in Figs. 1 and 3 of the drawing, and the top and bottom layers of boards are directed forwardly and backwardly while the intermediate layer of boards are placed at right angles to the other boards and the same are roughly cut out as indicated at 64 in Fig. 3, but are capable of being finished to a circular disk as indicated by the dot and dash line 65 in said figure.

After the boards have been placed in position in the manner above described and centrally of the table 16, said table is adjusted vertically to bring the face of the top board 63 at a predetermined distance from the bottom face of the magnetic plate 21 when at the limit of its upward movement, after which the nail feeding and carrying member 35 is swung inwardly into the position shown in Figs. 1 and 2, and moved upwardly by operating the hand wheel 31 to move the bracket 27 vertically in the recess 26 to bring the member 35 into the position shown in Fig. 1, after which the circuit in the wires 23 and 24 is closed by operating the switch 25 to magnetize the plate 21, and this operation will raise the nails 57 in the apertures 49 to 52 inclusive, directly below the series of apertures 53 to 56 inclusive, through said last named apertures in the manner shown in Fig. 7 of the drawing, after which the feeding and carrying member 35 is moved downwardly by the hand

wheel 31 in the manner above set out until the top disk or sheet 37 clears the bottom of the nails suspended from the magnetic plate 21, after which said member is swung back into the inoperative position. The power press is then tripped or operated in the usual manner to move the plunger 15 downwardly and also carrying the magnetic plate 21 with the nails 57 suspended therefrom with it in such movement, and said nails will be driven into the boards 63 in the manner shown in Fig. 3 of the drawing and the pointed ends thereof may be clenched over as shown at 66 in Fig. 3ª of the drawing, but this latter operation depends upon the length of the nails used.

The machine may be operated to drive the nails 57 into the boards 63 in one operation of the plunger 15 but if desired the table 16 may be adjusted into such position as to drive the nails only partially into the boards 63 on the first operation of the plunger, after which the table may be raised slightly to drive the nails still farther into said board, and the desired result may be accomplished by two, three, or four strokes of the plunger, as will be readily understood, but in this last method of operation it will be necessary to support the boards 63 against lateral displacement in the operation of the plunger, but this has not been shown for the reason that it forms no part of my invention.

It is understood, of course, that the power press shown or used for the purpose specified will be a one revolution or one stroke machine, or a machine that must be tripped to perform each complete stroke thereof, but if a plurality of blows are required to drive the nails into the workpiece an automatic means may be employed for moving the table vertically to perform the plurality of strokes of the plunger with one operation of the treadle usually employed. While I have shown and described an apparatus for making a certain article of manufacture in which nails are employed, it will be evident that spikes, tacks and similar devices may be employed for the purpose of connecting certain parts of other articles of manufacture; and various other changes in and modifications of the details of construction herein shown and described may be made, within the scope of the appended claims, without departing from the spirit of my invention or sacrificing its advantages.

It will be evident that my invention is not necessarily limited to the use of a power press for operating the magnetic plate 21 and the various other parts of my improvement and the apparatus herein shown, or a similar apparatus may be employed in connection with other power mediums such as air hammers, steam hammers and the like, the power press being only indicated to show one means of operating the plate 21 or a means of accomplishing the desired result.

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

1. In a machine of the class described, a nail carrying member, a magnetic plate and a workpiece supporting table, means for moving the magnetic plate toward and from the workpiece supporting table, and means for moving the nail carrying member into operative position between the magnetic plate and the workpiece supporting table.

2. In a machine of the class described, a nail carrying member, a magnetic plate and a workpiece supporting table, means for moving the magnetic plate toward and from the workpiece supporting table, means for moving the nail carrying member into operative position between the magnetic plate and the workpiece supporting table, and means for moving the nail carrying member vertically.

3. In a machine of the class described, a nail carrying member, a magnetic plate and a workpiece supporting table, means for moving the magnetic plate toward and from the workpiece supporting table, means for moving the nail carrying member into operative position between the magnetic plate and the workpiece supporting table, means for moving the nail carrying member vertically, and means for inclining said member when in its inoperative position.

4. In a machine of the class described, a frame, a workpiece supporting table adjustably mounted in said frame, a plunger movable toward and from the workpiece supporting table, an electro-magnetic plate secured to the bottom face of the plunger, means for controlling the magnetism of said plate, a nail carrying member pivoted at one side of the frame and supported in its inoperative position in an inclined plane, and means for moving the carrying member toward and from the electro-magnetic plate when in its operative position.

5. In a machine of the class described, a frame, a workpiece supporting table adjustably mounted in said frame, a plunger movable toward and from the workpiece supporting table, an electro-magnetic plate secured to the bottom face of the plunger, means for controlling the magnetism of said plate, a nail carrying member pivoted at one side of the frame and supported in its inoperative position in an inclined plane, means for moving the carrying member toward and from the electro-magnetic plate when in its operative position, said nail carrying member being provided with a plurality of circular apertures adapted to receive the nails employed and said member being provided with a series of apertures arranged in a circular path directly above the

first named apertures and through which the nails may be drawn by said electro-magnetic plate.

6. In a machine of the class described, a nail feeding and carrying member comprising top and bottom sheets, the bottom sheet being provided with a plurality of approximately circular apertures and the top sheet being provided with a plurality of spaced apertures arranged directly over the apertures in the bottom sheet, and means for feeding nails into the apertures in the bottom sheet.

7. In a machine of the class described, a nail feeding and carrying member comprising top and bottom sheets, the bottom sheet being provided with a plurality of approximately circular apertures and the top sheet being provided with a plurality of spaced apertures arranged directly over the apertures in the bottom sheet, means for feeding nails into the apertures in the bottom sheet, means for supporting said nail feeding and carrying member, and means for moving said member vertically.

8. In a machine of the class described, a nail feeding and carrying member comprising top and bottom sheets, the bottom sheet being provided with a plurality of approximately circular apertures and the top sheet being provided with a plurality of spaced apertures arranged directly over the apertures in the bottom sheet, means for feeding nails in the apertures in the bottom sheet, means for supporting said nail feeding and carrying member, means for moving said member vertically, and means for supporting said member in one position thereof in an inclined plane.

9. In a machine of the class described, a nail feeding and carrying member comprising top and bottom sheets, the bottom sheet being provided with a plurality of approximately circular apertures and the top sheet being provided with a plurality of spaced apertures arranged directly over the apertures in the bottom sheet, means for feeding nails in the apertures in the bottom sheet, means for supporting said nail feeding and carrying member, means for moving said member vertically, means for supporting said member in one position thereof in an inclined plane, and means for centering said member in the machine.

10. In a machine of the class described, a nail feeding and carrying member comprising top and bottom sheets, the bottom sheet being provided with a plurality of approximately circular apertures and the top sheet being provided with a plurality of spaced apertures arranged directly over the apertures in the bottom sheet, means for feeding nails into the apertures in the bottom sheet, a magnetic plate carried by the plunger, a workpiece supporting table, means for supporting said nail feeding and carrying member, and means for moving said member vertically.

11. In a machine of the class described, a nail feeding and carrying member comprising top and bottom sheets, the bottom sheet being provided with a plurality of approximately circular apertures and the top sheet being provided with a plurality of spaced apertures arranged directly over the apertures in the bottom sheet, means for feeding nails into the apertures in the bottom sheet, a magnetic plate carried by the plunger, a workpiece supporting table, means for supporting said nail feeding and carrying member, means for moving said member vertically, and means for supporting said member in its inoperative position and in an inclined plane.

12. In a machine of the class described, a nail feeding and carrying member comprising top and bottom sheets, means for supporting a plurality of nails in the bottom sheet, means in the top sheet for permitting the withdrawal of a part of the nails in the bottom sheet, and means for feeding the nails to the bottom sheet.

13. In a machine of the class described, the combination with a vertically movable plate, and means for magnetizing the same, of means for supporting a plurality of nails beneath said plate, and means comprising a plate containing holes circularly arranged and situated above said last named means for permitting the withdrawal of a plurality of the nails supported thereby, by said plate when magnetized.

14. In a machine of the class described, the combination with a vertically movable plate, and means for magnetizing the same, of means for supporting a plurality of nails beneath said plate, means comprising a plate containing holes circularly arranged and situated above said last named means for permitting the withdrawal of a plurality of the nails supported thereby, by said plate when magnetized, and means for moving said nail supporting means toward and from said plate.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 27th day of April, 1918.

JOHN C. BREHM.

Witnesses:
C. E. MULREANY,
H. E. THOMPSON.