(No Model.)

# D. B. NYE & G. W. COPELAND.

## TACK DRIVING MACHINE.

No. 464,200. Patented Dec. 1, 1891.

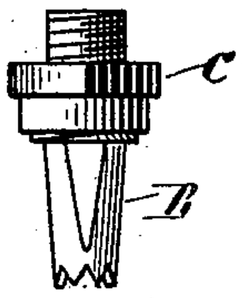


Fig. 1.

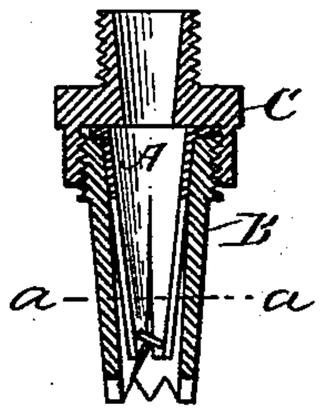


Fig. 3.

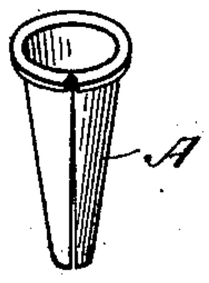


Fig. 2.

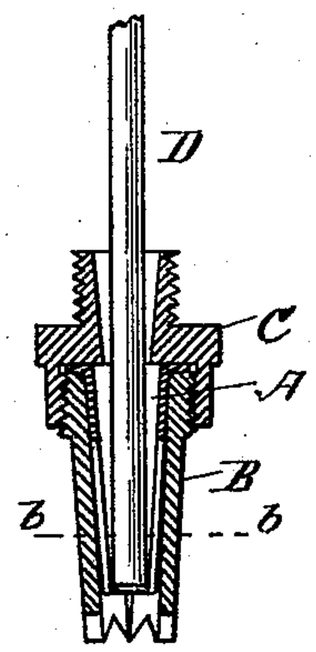


Fig. 4.

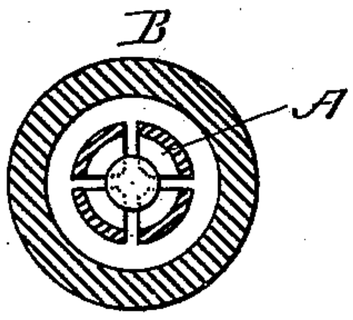


Fig. 5

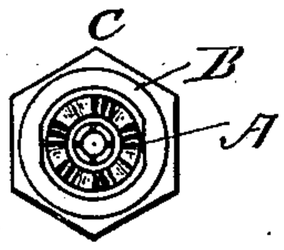


Fig. 7.

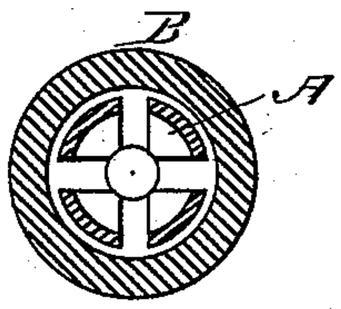


Fig. 6.

WITNESSES

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# UNITED STATES PATENT OFFICE.

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## TACK-DRIVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 464,200, dated December 1, 1891.

Application filed February 16, 1891. Serial No. 381,651. (No model.)

*To all whom it may concern:*

Be it known that we, DAVID B. NYE, of Cambridge, and GEORGE W. COPELAND, of Malden, in the county of Middlesex, State of Massachusetts, have invented certain new and useful Improvements in Tack-Driving Machines; and we do declare the following, with the accompanying drawings, to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improvement in the nozzle or delivery-tube of tack-driving machines, and is particularly adapted to the guiding and straightening of very short tacks—*i. e.*, tacks whose shanks are not more than twice the diameter of their heads in length.

Heretofore the various devices used to direct tacks when mechanically driven have mostly, if not all, been designed to act as guides for the points of the tacks close to the work, and would so enlarge the end of the nozzle that it would be comparatively useless where it is desired to drive tacks close to a projecting edge of any kind.

This invention is an improvement in the art of driving tacks from the nozzle of tack-driving machines, whereby their free points are centered in the driveway before striking the material into which they are to be driven; and it consists in using a conical elastic guide-tube, which subjects the edges of the tack-heads to slight frictional action as they are forced through it by the driving-bar. This frictional action causes the upper surfaces of the tack-heads to square themselves against the working face of the driving-bar and bring the tack-shanks parallel with said driving-bar and substantially with the points central in the driveway.

This invention further consists in supporting the conical elastic guide-tube within an external conical rigid shield-tube in such a manner that the delivery end of the elastic guide-tube is held the length of the tack-shanks above the work, so that the shanks can always swing or be swung parallel with the body of the driver before their points strike the work.

This invention also consists in making the tapered interior of the shield-tube of correct form to contract with the sections of the conical elastic guide-tube when said elastic tube is expanded by the passage of the largest of the tack-heads used, in order to prevent injury thereto from over-expansion or from the clogging of tacks therein.

In the drawings, Figure 1 is an elevation of the exterior or shield tube. Fig. 2 is an enlarged perspective view of the interior conical elastic guide-tube. Fig. 3 is an enlarged vertical cross-section of the combined device, showing a tack therein before being subjected to the action of the driving-bar. Fig. 4 is the same as Fig. 3, showing the tack centered therein ready for driving by the combined action of the driving-bar, tack-head, and elastic conical tube. Fig. 5 is a horizontal cross-section on line *a a*, Fig. 3, enlarged. Fig. 6 is a horizontal cross-section on line *b b*, Fig. 4, enlarged. Fig. 7 is a lower end elevation of the combined device enlarged.

The conical elastic guide-tube A, Fig. 2, is made from very thin sheet metal, with its lower part split, as shown, nearly to the top into any number of sections more than three, Figs. 5 and 6, and the upper end is flanged as a preferable means of securing it rigidly in position in the exterior shield-tube. These guide-tubes are made of correct lengths for the tacks they are to operate upon, and when set in position the head of the tack separates from the guide-tube as the point enters the work. The exterior tube B is composed of two parts B and C, secured together by a screw, as shown, Figs. 3 and 4, and by the action of this screw the flange of the guide-tube is firmly held. The upper part of the shield B is fitted to the taper of the guide-tube A down to the point where said shield-tube is split into sections, Fig. 3. Below said point the lower part of the shield-tube is formed to a taper which will coincide with the exterior of the guide-tube A when a tack-head is just passing from its lower end, Fig. 4, and this part is made of such size that the larger tack-heads will cause contact between the opposing sides of the tubes. This construction is of great advantage, for it enables the guide-tube A to resist any strain that might be brought upon it by the clogging of the tacks

or their removal after being so clogged, all the labor of resistance being brought upon the strong shield-tube, as will be understood without further explanation. The upper end of the part C is provided with the usual screw-thread to attach the nozzle to the tack-driving machine in the usual manner. In lieu of making the conical elastic guide-tube A, as shown by Fig. 2, as a partially-split flanged frustum of a cone, the same may be made from a number of identical sections stamped out, and which, when once placed in position with the two parts of the exterior shield-tube screwed firmly together, would act as though made integral. The guide and shield tubes are tempered in the usual manner, and, if desired, the working face of the driver may be formed slightly concave, so that it will always engage with the outer edge of the top of the tack-heads and avoid contact with the center of said heads, which are sometimes a little convex, due to the wear of the tools of the tack-making machines.

The body of the driving-bar is made of a little less diameter than the smallest tack-heads used, and the lower end of the conical elastic guide-tube is made enough smaller to retain said tacks by the edges of their heads at least one-half the diameter of their heads above the end of said tube for the action of the driver.

The action of the device is as follows: In Fig. 3 the tack is shown hanging in the guide-tube by its head and in angular position. As the driving-bar B descends its working face touches and moves down the higher part of the tack-head, while the elastic tube A retains the opposite side in position by the friction exerted upon the edge thereof until the upper part of the tack-head rests fairly against the face of the driver, and by the time the tack-head has reached the position shown by Fig. 4 the tack-shank is straightened and centered by the combined action of guide-tube, tack-head, and driver, and is ready to enter the work as its head goes out of the lower end of the guide-tube. Should the end of the guide-tube be extended down to the end of the shield-tube, there would be danger of getting the fiber of the material into which the tacks were being driven between the ends of its sections and impairing its operation.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A nozzle or delivery-tube for tack-driving machines, composed of an external shield or tube and an internal split or elastic conical guide-tube constructed as much shorter than the external tube as the length of the shanks of the tacks to be driven, so that the same will be forced into a vertical position before driving, substantially as shown and described.

2. A nozzle or delivery-tube for tack-driving machines, composed of an external shield or tube with inside conical walls and an external split or elastic tube of corresponding conical form, so that the elastic section is expanded uniformly against the inner sides of the external tube in the act of driving a tack therefrom, substantially as described, and for the purpose set forth.

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Witnesses:
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H. N. WHITNEY.