(No Model.)

R. BOEKLEN.

MAGNETIC NAIL DRIVER.

No. 510,467. Patented Dec. 12, 1893.

FIG. 1. FIG. 2. FIG. 4. FIG. 3.

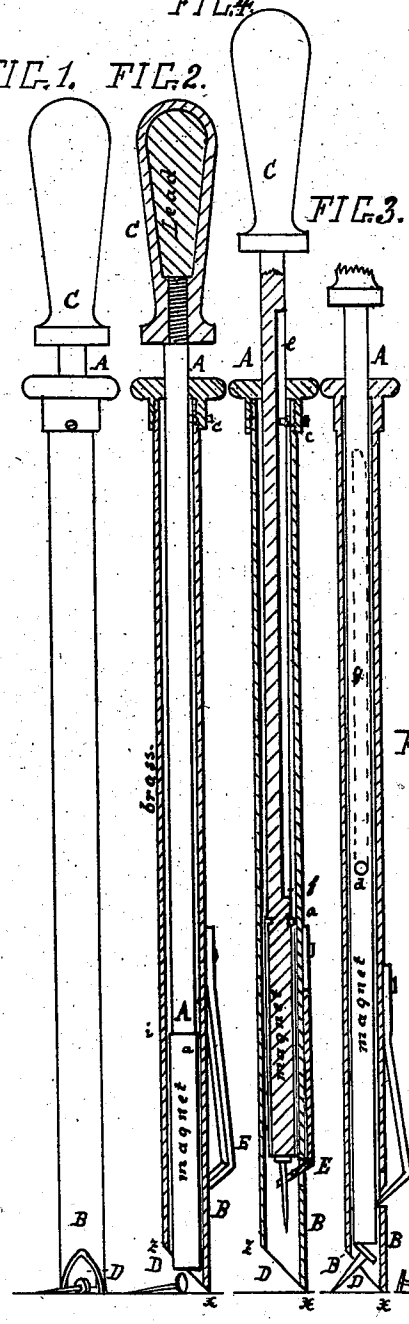

FIG. 8. FIG. 9.

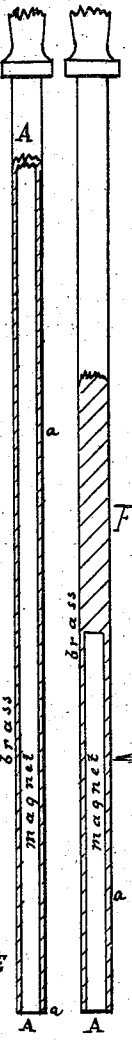

FIG. 5.

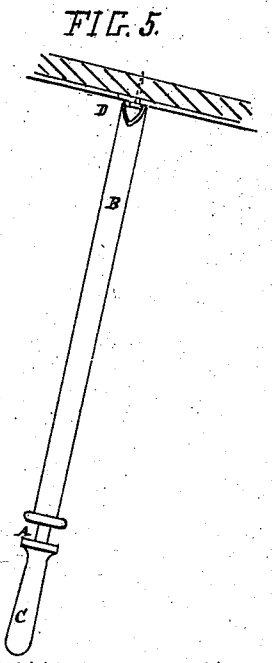

FIG. 6. FIG. 7.

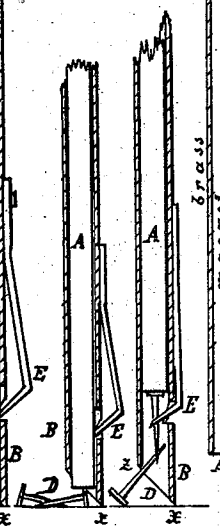

FIG. 11. FIG. 12. FIG. 13.

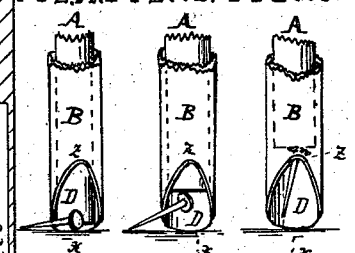

FIG. 10.

Witnesses
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REINHOLD BOEKLEN, OF BROOKLYN, NEW YORK.

MAGNETIC NAIL-DRIVER.

SPECIFICATION forming part of Letters Patent No. 510,467, dated December 12, 1893.

Application filed March 11, 1893. Serial No. 465,616. (No model.)

To all whom it may concern:

Be it known that I, REINHOLD BOEKLEN, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Hammers and Nail-Drivers, of which the following is a specification.

This invention has reference to the class of magnetic hammers or nail drivers for which I obtained Letters Patent August 28, 1860, No. 29,760.

The essential features of the invention relate to a vertical bar magnetic hammer and the combination with a magnetic hammer or nail driver of a nail guide, and of a nail take-off fork, for the purposes of guiding the nail in picking it up and placing the same to the spot to be driven and in picking up the nail to expel other surplus from it.

Other features relate to details fully set forth in the specification and claims.

In the annexed drawings: Figure 1, represents a front elevation of my improved magnetic hammer with its guide and nail entrance in front. Fig. 2, is a vertical central section of the same, showing the position of the hammer before having attracted a nail but placed to rest near its head. Fig. 3, is a similar view, showing the nail attracted and rising with the hammer. Fig. 4, is a similar view, showing the nail entirely picked up with its shank passing the nail take-off fork. Fig. 5, is a front view of the same on a smaller scale, the nail driver placed for and driving home a nail into overhead work. Fig. 6, is a vertical section of the lower portion of the hammer and guide, placed liable to pick up several nails together. Fig. 7, is a similar view, showing the position of the hammer having picked up a surplus nail and just before the surplus nail being expelled. Fig. 8, is a detached sectional side view of the magnetic hammer and rod when entirely covered with a poor conducting material. Fig. 9, is a similar view of the same, its construction modified; the hammer made with a rod of poor conducting material, and containing in its lower portion a magnetized hammer. Fig. 10, is a lateral horizontal section of the bottom portion of the hammer guide showing a nail in tangential position with the guide before attracted in full lines and in dotted lines, the position after attraction and having entered into the guide. Figs. 11, 12 and 13, are similar face views of the bottom part of the hammer guide, showing its nail entrance, and showing the successive positions of the nail first in a tangential position and as soon as attracted and rising with the hammer, changing its position to a radial line by contact of its shank with the side of the nail entrance, and thereby finally being placed nearly central and vertical against the face of the hammer within its guide.

The letter of reference A indicates the magnetic bar-hammer and rod of the nail driver and B the nail guide which passes over it readily. Said hammer may be made of one rod of steel, either only the lower portion or the whole hardened steel and wrought iron upper portion. It is magnetized to attract suitably the size of nail to operate upon. In some cases said hammer may be made with only a short magnetized portion on the lower end, and may be of hard cast iron and inclosed in an outside brass tube, or other poor magnetic conductor and said tube jointed to a brass rod for the remainder portion of the hammer as shown in Fig. 9. Said hammer may not have any insulator or poor conductor over any portion thereof, or it may have only a short covering *a* over the sides of the lower end, which covering may be of rubber or brass or other poor conductor, or the covering *a* may cover considerable of the lower portion or the whole length of the bar or rod as shown in Fig. 8. Generally the top end of the hammer is furnished with a handle C which is made weighty and is solidly secured to the top end of the hammer; it may be solid of one metal or may be of an outside suitable metal and made weighty by filling the inner portion with lead as shown in Fig. 2.

The nail guide B is preferably of tubular form; it allows the hammer to slide readily therein; its top end is preferred to have a projection or button on it to provide it for a stop against dropping from the hand of the operator. It is preferred to be made of brass tubing or other poor magnetic conductor and may be the whole length of the same dimension or may be partly of another diameter as shown in Fig. 6.

It is preferred that the hammer have a stop

from dropping but little with its bottom end below the bottom end of the guide B, and that a stop be provided to prevent the hammer to withdraw entirely from the guide B. To provide the stop for the hammer going down unduly, it is made as shown in Figs. 1, 2 and 3, by the bottom end of the handle C coming in contact with the top of the guide B., and to provide and stop the hammer from withdrawing entirely from the guide B, there may be an inward projecting screw *c*, at the upper end of the guide, and a shoulder *i* formed on the lower portion of the hammer as shown in Fig. 2, or the hammer rod may have a longitudinal groove *e* with a shoulder *f* to stop against the screw *c*, or both stops may be provided by means of a projection *d* of the hammer, engaging in a slot *g* made in the side of the guide B as shown in Fig. 4. The bottom end of the guide B has on one or more sides of it the tack or nail entrance D, the base of which commences at the bottom end of the guide B and terminates at a certain height, closing with a point. Its dimension in width depends upon the size of the head of the nail operated upon and is made always a little larger than said head; the height of the opening or entrance D is made to suit the length of the nail to allow it to rise and pass within the guide readily. On the opposite side of the lower portion of the guide to the entrance D, and a little above it, is provided the take-off fork E, which is formed of a vertical flat spring secured to the outside of the guide B, and its bottom end enters through an opening into the guide and terminates with two prongs *t*, one to each side of the nail shank, when raised by the magnetized hammer end, as shown in Fig. 9, so that by the progress of raising the nail to be driven with the hammer a secondary nail or surplus having attracted to the shank of the first will come in contact with its head with the take-off fork and is caused to drop down, or is expelled; or if the nail is picked up by the point it is expelled by the take-off E. As soon as the hammer comes down just before picking up a new nail, said take-off fork is forced outward out of the way by contact with the hammer, as shown in Fig. 8. Said take-off fork may be modified, more than one may be employed and its movements may be to always in time come inward for taking off the surplus nail, but may move outward immediately after and may at all times stay outward away from the passage of the nail, except at the moment the nail shank passes it for expelling any surplus nail.

For carpet or other floor nailing the hammer is made nearly the length of a cane. By this means the person nailing need not bend to the floor but can nail in almost direct position. The extreme bottom portion *x* of the guide B serves the purpose of locating and resting the guide in picking up the nail, as well as in placing the hammer to the spot for the nail to be driven.

In placing the implement for picking up a nail, no care nor time is required to locate the nail entrance centrally or in line with the shank of the nail, or that the face of the head of the nail be in line with the entrance D. A nail with any part of its head toward the entrance D, will enter said opening and right itself nearly radially and centrally into the guide by beveled side of the entrance and the motion and attraction of the magnetized hammer.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In nail drivers and hammers the combination with the magnetized hammer of a nail guide B and a take-off device E, substantially as and for the purpose herein set forth.

2. In nail drivers and hammers, the combination with the magnetized hammer of a nail guide B, cut away obliquely at its lower end forming the nail entrance D and take off fork E, substantially as and for the purpose herein set forth.

3. In a nail driver, the combination with the magnetized hammer of a nail guide B cut away obliquely at its lower end forming the nail entrance with stops for undue descent or ascent therein of the hammer, and a nail entrance D, and take-off fork E, substantially as and for the purpose herein set forth.

Signed at Brooklyn, in the county of Kings and State of New York, this 8th day of March, A. D. 1893.

REINHOLD BOEKLEN.

Witnesses:
DAVID MUELLER,
JOHN PARKER.