A. ANGST.

SCREWS FOR BOOTS AND SHOES AND APPARATUS FOR DRIVING THE SAME.

No. 181,126. Patented Aug. 15, 1876.

Fig. 1.

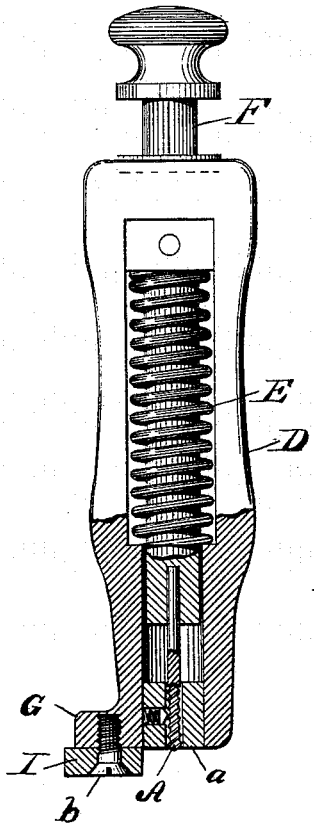


Fig. 2.

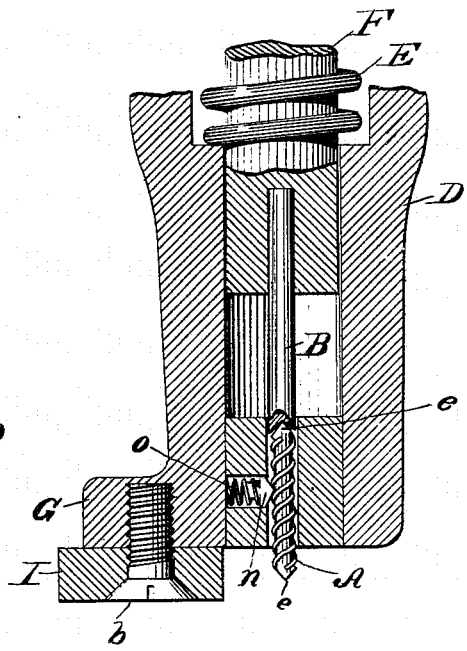
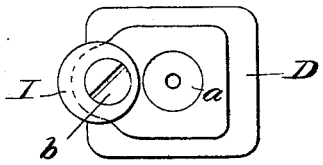


Fig. 4.

Fig. 3.



Witnesses:
Donn S. Twitchell.
Will A. Dodge.

Inventor:
Adolph Angst.
by Dodge & Son.
Attys.

UNITED STATES PATENT OFFICE.

ADOLPF ANGST, OF ZURICH, SWITZERLAND.

IMPROVEMENT IN SCREWS FOR BOOTS AND SHOES AND APPARATUS FOR DRIVING THE SAME.

Specification forming part of Letters Patent No. **181,126**, dated August 15, 1876; application filed May 27, 1876

To all whom it may concern:

Be it known that I, ADOLPF ANGST, of Zurich, in the Republic of Switzerland, have invented certain Improvements in Screws for Shoes and Tools for Driving the Same, of which the following is a specification:

My invention consists in a screw for boots and shoes having its ends made pointed or conical, and a driver for the same, so constructed that when the screw is driven into the leather it shall rotate, and thus be screwed in by the mere act of driving, all as hereinafter more fully described.

Figure 1 is a side elevation, partly in section, of the driver with the screw in position for use. Fig. 2 is a sectional view of a portion of the same, enlarged to more clearly illustrate the construction and operation of the same. Fig. 3 is a bottom-plan view, and Fig. 4 is a side elevation of the screw enlarged.

Wire screws have been heretofore made from a continuous wire, and cut off by the machine as used, and they have also been made and cut off before being used, in which latter case they are used by being driven into the leather, the same as an ordinary peg or nail; and it is to this latter class of screws that my improvement relates.

The ordinary wire screw used in the boot and shoe business is made with blunt ends, and when driven into the leather it does not rotate or screw in, but is forced bodily in, the same as a nail or peg; and it is obvious that the thread of the screw in such a case simply ruptures or tears the leather as it is forced into it, instead of forming a clean spiral path for itself, and in which it would be embedded if screwed in.

The object of my invention is to so construct these screws that they may be driven in, and at the same time rotate, the same as a screw does when forced in with a screw-driver.

To accomplish this I make the screw A, as shown in Fig. 4, with both ends pointed or conical. When thus made, the terminating points of the rib or raised portion of the threads form sharp lips, which, when the point enters the leather, cut channels for the thread, which causes the screw to rotate and be screwed in.

In order that these screws may be inserted rapidly, as well as to make them enter more readily, their ends, as before stated, are made conical or pointed, so that when a tool is applied to them to force them into the leather, the plunger or portion of the tool that bears on the end of the screw shall have contact with, and bear on, the central conical point only, thereby greatly lessening the friction that there otherwise would be between the tool and the end of the screw; and just in proportion as this friction is lessened, just in that proportion is the certainty of the rotation of the screw increased.

To drive this screw in the manner described, I use a tool such as shown in Fig. 1, and which consists of a slotted tubular handle, D, having a piston, F, working loosely therein, with a spiral spring, E, arranged to hold the piston elevated. To the lower end of the piston is secured a small rod, B, which works through a hole in the bottom piece *a*, as shown in Figs. 1 and 2, and which rod B has its lower end made concave, as shown in Fig. 2, so that when it rests on the end of the screw it will cause the latter to assume a central position, as shown.

It will be observed by examining Fig. 2 that the cavity in the end of the rod B is such that the screw shall only bear at its extreme point, thus reducing the amount of surface in contact, and consequently the friction between the rod and the screw, to the least possible amount, by which means the screw is left free to turn with ease.

To prevent the screw from dropping out, a recess or hole is formed horizontally in the side of the bottom piece *a*, in which is inserted a spiral spring, *o*, and a small beveled piece, *n*, which, being forced in by the spring, creates sufficient friction against the side of the screw to prevent it from falling out, as shown Fig. 2.

The screw being thus inserted in the tool, it is placed in position on the sole of the boot or shoe, when a blow from a mallet or hammer upon the piston F serves to force the screw into the leather, the screw rotating as it enters, thus screwing itself into position, and this being effected by a blow, the same as though it were driven in like a nail or peg.

In order to regulate the distance that row of screws shall be from the edge of the sole, I secure to the lower end of the handle D an

eccentric plate, I, which is fastened by a screw, *b*, so it can be adjusted, as may be desired, by simply loosening the screw and turning it.

It will thus be seen that I am enabled to insert these screws by a single blow, and that in so doing they are screwed into place without rupturing and tearing the leather, as is the case with the ordinary driven screw.

By this method of inserting them, the screws hold much more firmly, and are far less liable to work in or out, as the rib thereon is fitted in a thread formed in the solid leather its entire length.

In large establishments, where the work is to be performed by machinery, a driving-tool will be used with an attachment for automatically placing or feeding the screws under the rod *b*, the tool here shown being intended for hand use in small establishments. These screws are applicable to all kinds of leather-work, they being made of various lengths, to correspond with the thickness of the leather used.

Having thus described my invention, what I claim is—

1. The screw A, having a body of uniform diameter, with a conical point at each end, substantially as shown and described.

2. The driver for said screws, constructed, as shown and described, with the plunger or rod B, having the conical recess *e* in its end, as set forth.

3. The beveled piece *n*, with the spring *o*, arranged in the side of the tool, as shown, for the purpose of holding the screw A from dropping out, as herein described.

ADOLPF ANGST.

Witnesses:
S. H. M. BYERS,
P. G. YETTER.