

(No Model.)

H. E. HOLMES.

TWIST DRILL.

No. 390,672.

Patented Oct. 9, 1888.

Fig. 1.

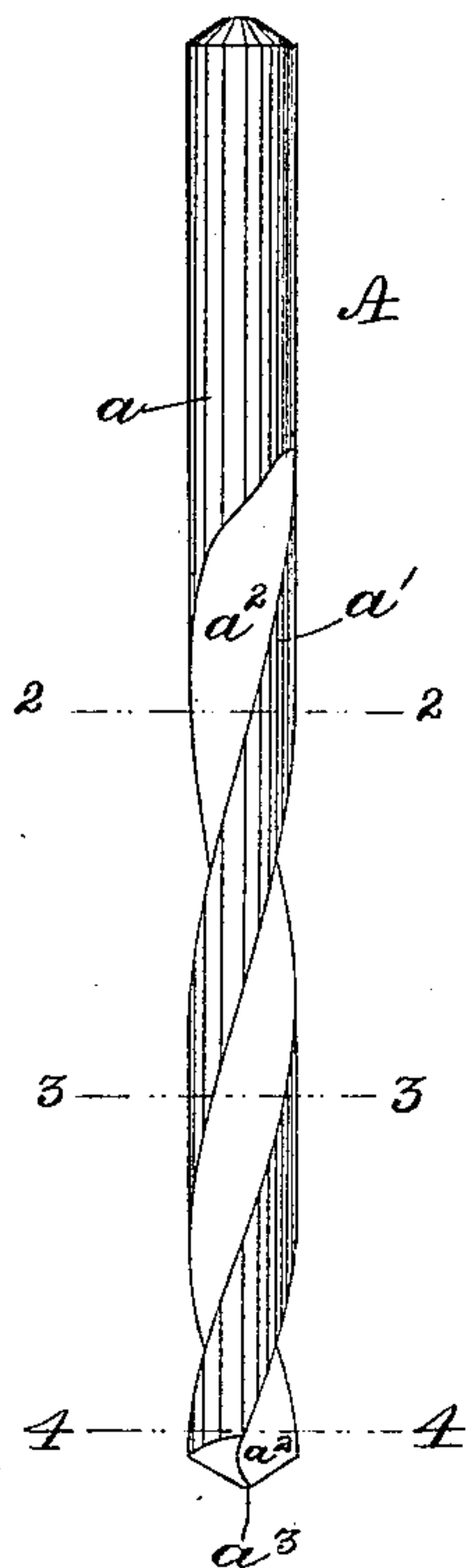


Fig. 2.



Fig. 5.



Fig: 4.



Witnesses.

Edward S. Beach.

John R. Snow.

Inventor:

Henry E. Holmes

by J. H. Maynard
Atty

UNITED STATES PATENT OFFICE.

HENRY E. HOLMES, OF BOSTON, MASSACHUSETTS.

TWIST-DRILL.

SPECIFICATION forming part of Letters Patent No. 390,672, dated October 9, 1888.

Application filed September 3, 1887. Serial No. 248,741. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. HOLMES, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Twist-Drills, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 shows a drill embodying my invention; and Figs. 2, 3, and 4 are cross sections of the same on lines 2 2, 3 3, and 4 4, respectively, of Fig. 1.

My invention is a twist drill having a groove which increases in size from the pointed end toward the shank, or, stated in other words, in a twist-drill successive cross-sections of the body of which diminish in area from the pointed end toward the shank.

In the drawings, which show my invention embodied in a twist-drill, A is the drill; a , its shank; a' , its body, and a^2 the groove, which increases in cross-sectional capacity from the pointed end a^3 toward the shank a , as will be plain from Figs. 2, 3, and 4, which are successive cross sections of the drill and illustrate the increasing cross-sectional capacity of groove a^2 from point a^3 toward the shank a . The purpose of making the groove of increasing size or cross-sectional capacity from the pointed end of the drill toward its shank is to get a better clearance than has heretofore been obtained.

I am aware that twist-drills have been made with grooves increasing in width from the pointed end toward the shank; but the grooves in these drills decrease in depth from the pointed end toward the shank, so that there is no increase in the cross-sectional capacity of the grooves from the pointed end of the drills toward the shanks, the common opinion being that an increase of metal in the body of the

drill from the pointed end toward the shank is essential in order to make the drill strong enough to withstand the strain brought upon it when it is driven far into material operated upon—that is, in common phrase, the drill must increase in strength from its point toward its shank. In my drills there is a decrease of metal from the point toward the shank—that is, successive cross-sections (see Figs. 2, 3, and 4) of the body a' are of constantly diminishing area from the point toward the shank, owing to grooves increasing in cross-sectional capacity—and this radical departure from the rule now governing persons skilled in this art is based upon my discovery that it is not essential that there should be an increase of metal from the point toward the shank, the fact being that the increase in clearance from the point toward the shank so much more than compensates for the decrease in cross-sectional strength from the point toward the shank that a twist-drill embodying my invention is a far better drill than any twist-drill heretofore made.

I am aware of Söderstrom's patent, No. 321,144, dated June 30, 1885, and disclaim all that is shown in it.

I am also aware of Morse's patent, No. 38,119, dated April 7, 1863, and disclaim all that is shown in it.

What I claim is—

The improved twist-drill hereinbefore described, having a groove which increases in cross-sectional capacity from the point of the drill toward the shank, substantially as and for the purpose set forth.

HENRY E. HOLMES.

Witnesses:

A. M. SMALL,
EDWARD S. BEACH.