(No Model.)

J. C. CRABBS.

DRILL CHUCK.

No. 386,185. Patented July 17, 1888.

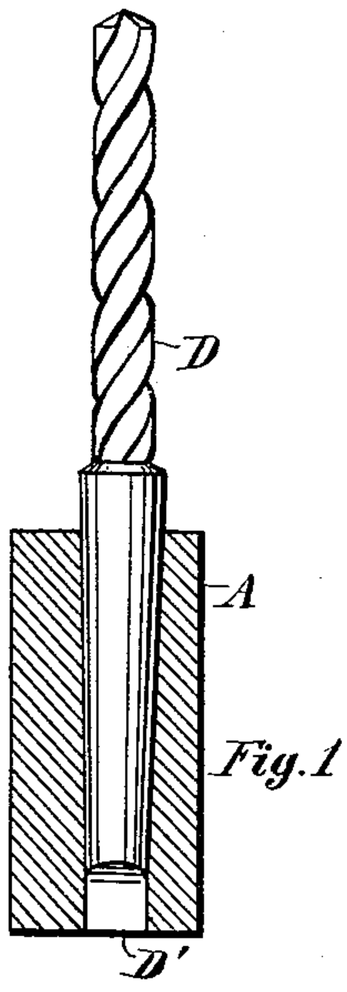

Fig. 1

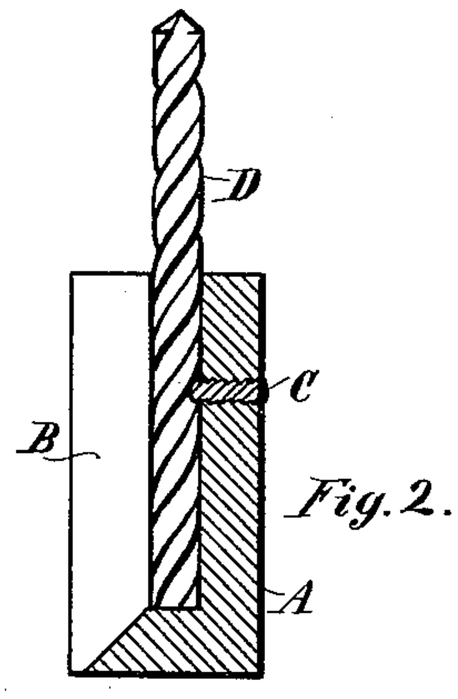

Fig. 2.

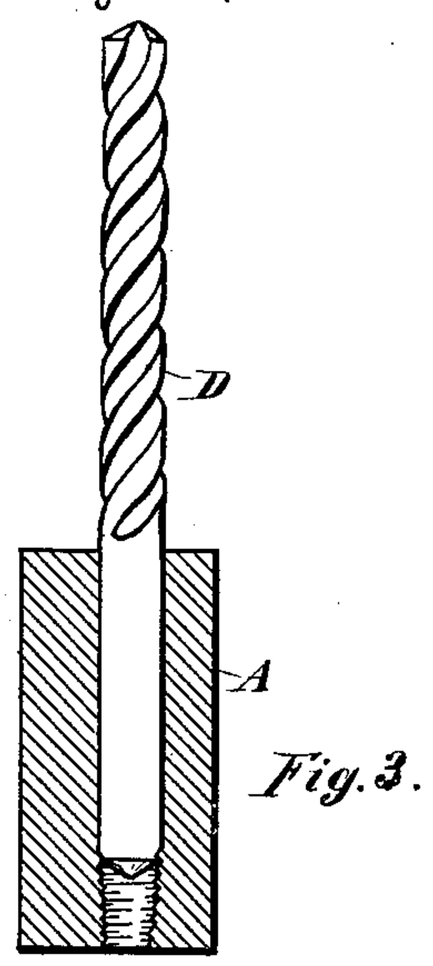

Fig. 3.

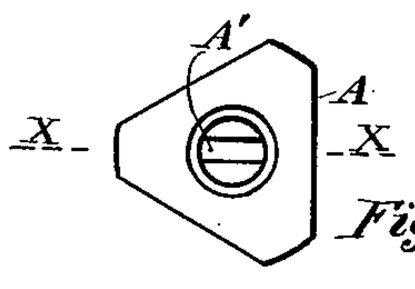

Fig. 4.

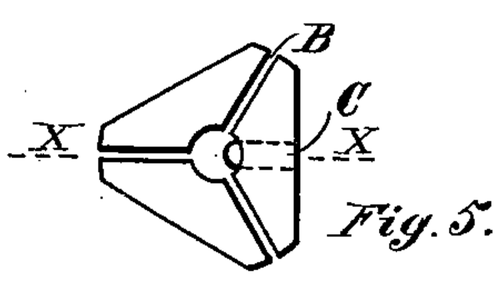

Fig. 5.

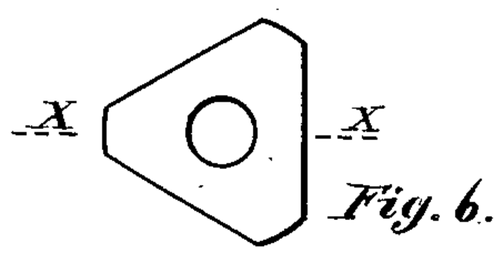

Fig. 6.

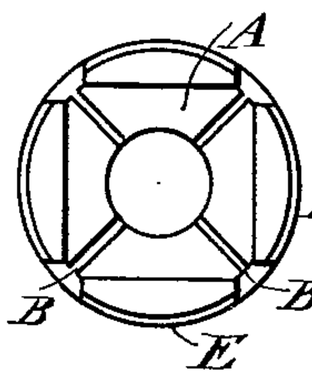

Fig. 9.

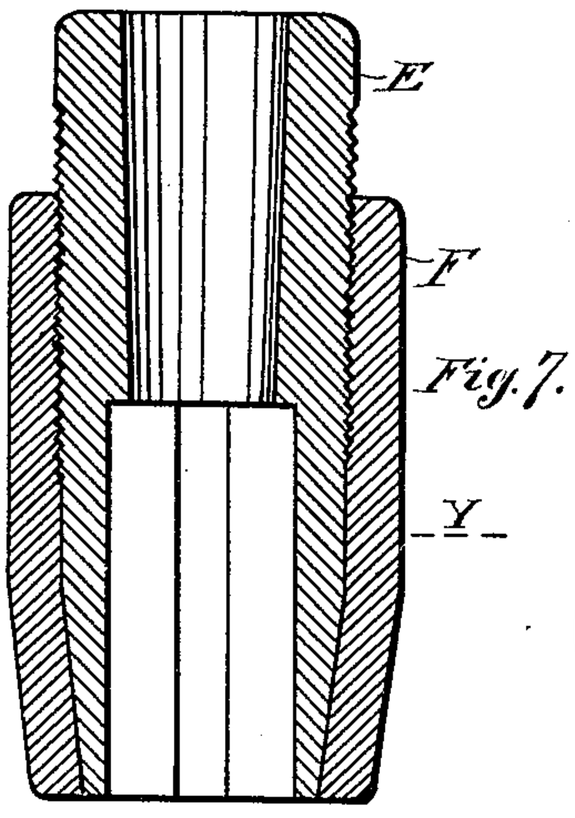

Fig. 7.

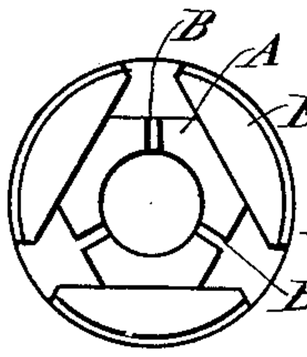

Fig. 11.

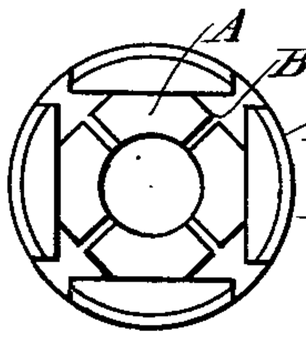

Fig. 10.

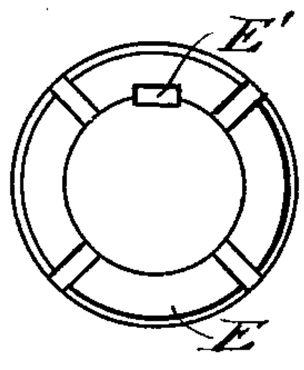

Fig. 12.

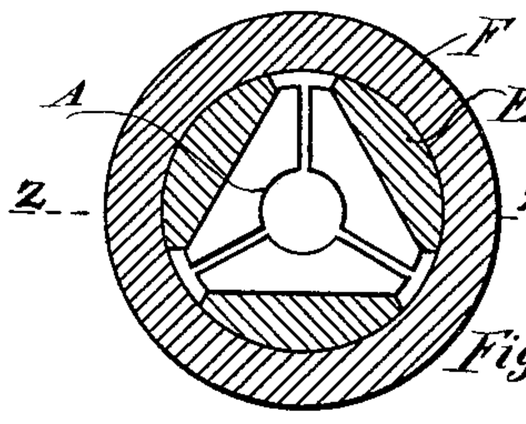

Fig. 8.

Witnesses.

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Inventor.

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By William Webster.

Attorney.

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UNITED STATES PATENT OFFICE.

JOHN C. CRABBS, OF AUBURNDALE, OHIO.

DRILL-CHUCK.

SPECIFICATION forming part of Letters Patent No. 386,185, dated July 17, 1888.

Application filed April 16, 1888. Serial No. 270,749. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. CRABBS, a citizen of the United States, residing at Auburndale, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in a Drill-Chuck and Interchangeable Drill-Holders for Holding Broken, Taper, or Straight Shank Drills; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to a drill-chuck and interchangeable drill-holders for holding broken, taper, or straight shank drills, and has for its object to provide a chuck into which a series of drill-holders may be inserted and securely fastened, that shall be adapted to grasp and firmly hold drills with different formations of shank, as well as the twist end of the drill when broken from the shank, thereby rendering it possible to employ drills having shanks of different forms in the same chuck, as well as to utilize that portion of the drill heretofore considered worthless.

In the drawings are illustrated a drill-chuck formed to receive and firmly hold a series of drill-holders of sockets for the reception of drill-shanks of different forms, as well as the end portion of a twist-drill.

Figures 1, 2, and 3 represent longitudinal vertical sectional views on lines *x x*, Figs. 4, 5, and 6, of holders for the reception of a taper shank, an end of a twist-drill, and a straight-shank drill, respectively. Figs. 4, 5, and 6 are plan views of Figs. 1, 2, and 3, respectively, cut on lines 1 1, respectively, with the upper portion of the holder removed. Fig. 7 is a longitudinal vertical sectional view of a drill-chuck on lines *z z*, Fig. 8. Fig. 8 is a plan view of the chuck shown in Fig. 7, with the top portion removed. Figs. 9, 10, and 11 are plan views, respectively, of chucks and holders of modified form, the upper portion of each being omitted. Fig. 12 is a plan view of a chuck and holder with the compression-nut omitted, this view being also drawn on lines *y y*, Fig. 7.

A designates the holder generally, and may be constructed in any preferred exterior form in cross-section, either triangular, as shown in Figs. 1 to 6, and also in Figs. 8 and 11, rectangular, as shown in Fig. 9, octagonal, as shown in Fig. 10, round, as shown in Fig. 12, or in any regular or irregular shape. The interior may be also formed to receive a drill of any preferred shape, taper, as shown in Fig. 1, the broken end of a twist-drill, as shown in Fig. 2, the straight-shank drill, as shown in Fig. 3, or any of the several forms of shanks or drill necessary in the branch of the art to which my invention belongs.

In Fig. 1 is shown a holder for a taper drill-shank formed with a central tapered hole terminating at the base in a rectangular opening, A′, for the reception of the rectangular portion D′ of the shank of drill D.

In Fig. 2 holder A is formed with a circular perforation extending to near the base of the socket, into which the twisted portion of a drill, when broken from the shank, is inserted, and held from turning, when seated upon the bottom of the perforation, by one or more studs, C, tapped into the side of the holder and extending into the perforation a sufficient distance to seat into the twist of the drill; or any key may be used to lock the drill from turning. In this construction the holder is preferably divided into two or more parts for a portion of its length by slitting the holder longitudinally, as at B, the required distance, thereby forming clamping-jaws that impinge upon the drill.

In Fig. 3 the holder is formed with a straight perforation of a regular diameter to near the base thereof, from which point it is contracted with a true taper and threaded.

The drill-chuck E is formed with the lower portion recessed centrally to a depth and of a shape to correspond to the length and form of the holder, either triangular, as shown in Figs. 1, 2, 3, 8, and 11, rectangular, as shown in Figs. 9 and 10, circular, as shown in Fig. 12, or in any other shape in which the holder may be formed, and is divided into parts by slitting the sides at the lower portion to form clamping-jaws E, tapered at the lowest portion thereof, and adapted to be compressed upon the holder by means of a threaded compression-ring, F, moved upon the threaded pe-

riphery of chuck E, formed with a taper corresponding to the taper of chuck E.

When the chuck is formed with a circular perforation, as shown in Fig. 12, there is formed a keyway, into which a portion of key E′ is seated, with a corresponding keyway in the drill-shank, into which a portion of the key seats, to hold the shank from turning therein.

In operation compression-ring F is run off the chuck a sufficient distance to allow the jaws to open to permit the insertion of the holder. The drill-shank is inserted, (if a drill with taper shank is used,) the holder is fixed in position by screwing ring F upon the chuck-stem to compress the jaws and hold the drill-holder in place, the shank is inserted with the rectangular portion passing into the rectangular slot A′, and the sides frictionally engaged with the sides of the perforation in the drill-holder to hold the drill in position. Should it be desired to utilize the twist end of a broken drill, the drill-holder in which the sides are slitted to allow contraction of the end is inserted. The drill is run into the perforation by turning the same, stud C running in the twist of the drill, and when the drill has reached the bottom of the perforation it is fixed from turning by reason of the stud. The compression-nut F is run upon the chuck sufficiently to compress the jaws upon the drill-holder, and the jaws of the drill-holder upon the drill. If a straight-shank drill is used, the shank (which is untempered and therefore soft) is inserted into the perforation in the drill-holder (which has been previously fixed in the chuck by compression of the jaws) and the lower portion seated in the threaded tapered part of the perforation. Whenever the drill is pressed upon metal for the purpose of drilling, the shank is screwed into the taper with sufficient friction to hold the drill from turning when in operation.

It will be seen that any number or shape of drill may be used in the same chuck by varying the clamping portion of the drill-holder to the form of the drill-shank, thereby requiring but one chuck to the various shapes of drill-shanks.

While I have described the device as applied to a drill, it is equally well adapted to bits for boring or any tool requiring to be held firmly when being turned.

Having described my invention, what I claim is—

1. In a drill, in combination with a bifurcated chuck-body, insertible drill-holders held within the chuck body by the frictional engagement of the same, as and for the purpose set forth.

2. In a drill provided with a contractible chuck-body, the combination of interchangeable drill-holders formed with an irregular exterior in cross-section and a central aperture for holding a portion of drill, as and for the purpose set forth.

3. In a drill, a threaded chuck-body formed with tapered jaws having a circular exterior in cross section and forming a central aperture of irregular form in cross-section, and a threaded ring embracing the chuck-body, adapted to compress the same, in combination with interchangeable drill-holders of corresponding exterior to the central aperture, as and for the purpose set forth.

4. In a drill, a chuck-body formed with a central aperture inclosed by yielding jaws contracted by the movement of a compression-ring, in combination with a drill-holder having a contractible end, as and for the purpose set forth.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

JOHN C. CRABBS.

Witnesses:
CARROLL J. WEBSTER,
H. S. BASSETT.