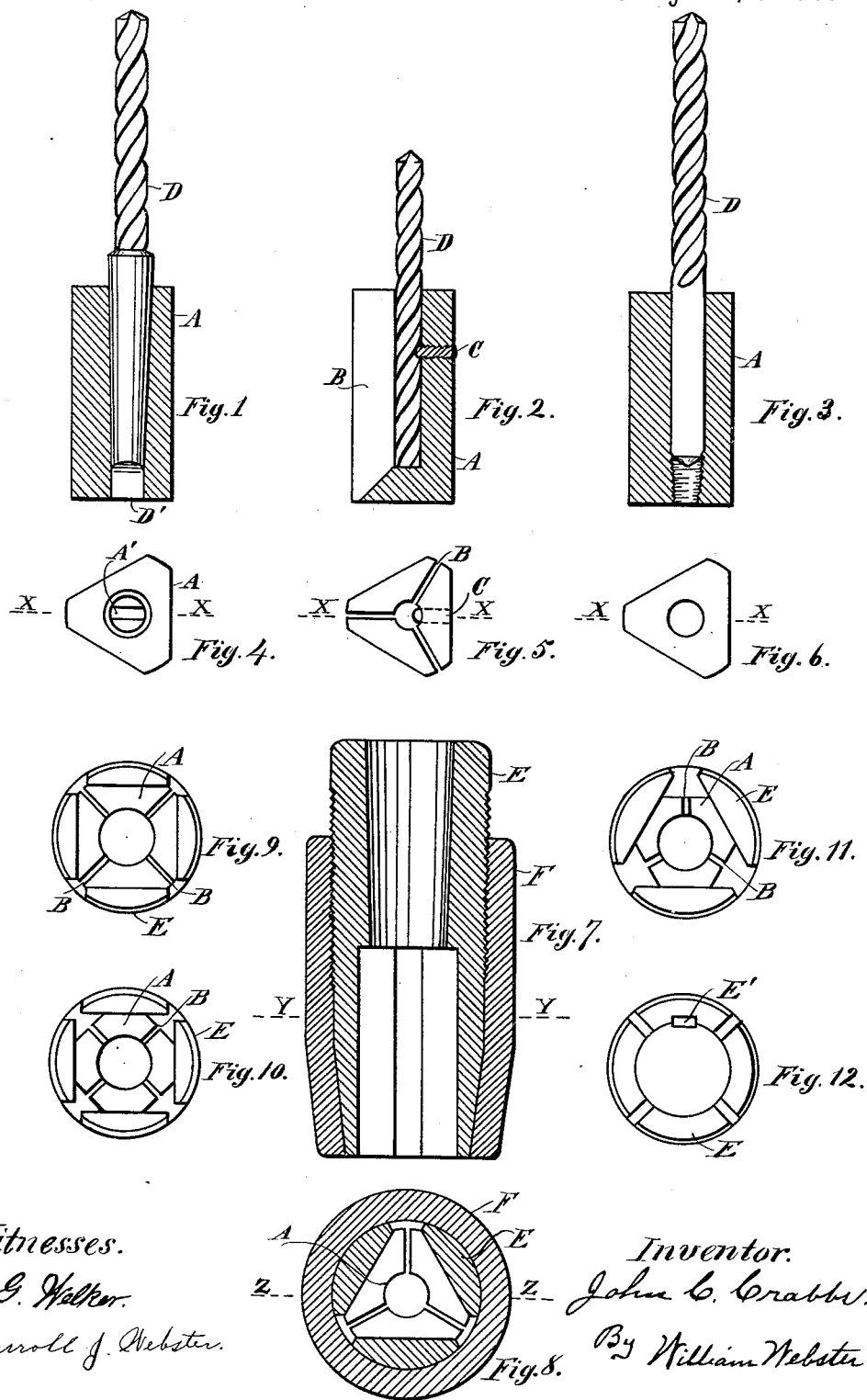


(No Model.)

J. C. CRABBS.
DRILL CHUCK.

No. 386,185.

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Witnesses.
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UNITED STATES PATENT OFFICE.

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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 Auburn-
dale, in the county of Lucas and State of Ohio,
have invented certain new and useful Improve-
ments 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 de-
scription of the invention, which will enable
others skilled in the art to which it apper-
tains to make and use the same, reference be-
ing 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 in-
serted 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 em-
ploy drills having shanks of different forms in
the same chuck, as well as to utilize that por-
tion of the drill heretofore considered worth-
less.

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 *xx*, 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, respec-
tively, 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 *zz*, 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 *yy*, 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, rect-
angular, 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 in-
terior 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 ter-
minating at the base in a rectangular opening,
A', for the reception of the rectangular por-
tion 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 bot-
tom of the perforation, by one or more studs,
C, tapped into the side of the holder and ex-
tending into the perforation a sufficient dis-
tance to seat into the twist of the drill; or any
key may be used to lock the drill from turn-
ing. In this construction the holder is pref-
erably divided into two or more parts for a
portion of its length by slitting the holder lon-
gitudinally, 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 clamp-
ing-jaws E, tapered at the lowest portion
thereof, and adapted to be compressed upon
the holder by means of a threaded compres-
sion-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
5 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
10 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-
15 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
20 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
25 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-
30 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
35 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
40 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 vary-

ing the clamping portion of the drill-holder to
45 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
50 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
55 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
60 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
65 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
70 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
75 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
80 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.