

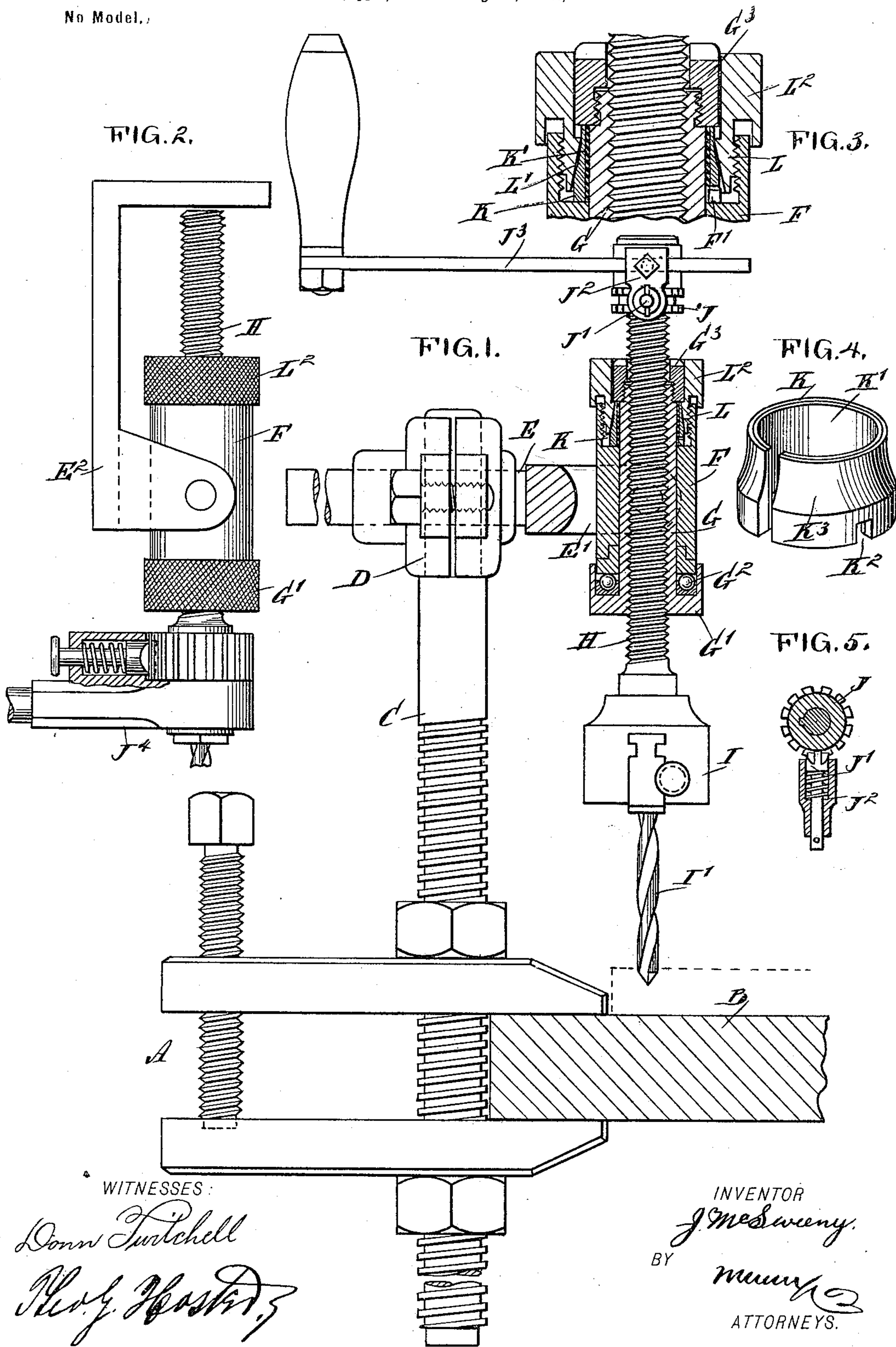
No. 610,455.

Patented Sept. 6, 1898.

J. McSWEENEY.
HAND DRILL.

(Application filed Aug. 10, 1897.)

No Model.,



WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES MCSWEENEY, OF PITTSFIELD, MASSACHUSETTS, ASSIGNOR TO THE
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HAND-DRILL.

SPECIFICATION forming part of Letters Patent No. 610,455, dated September 6, 1898.

Application filed August 10, 1897. Serial No. 647,703. (No model.)

To all whom it may concern:

Be it known that I, JAMES MCSWEENEY, of
Pittsfield, in the county of Berkshire and State
of Massachusetts, have invented a new and
Improved Hand-Drill, of which the following
is a full, clear, and exact description.

The invention relates to hand-drills such
as shown and described in the Letters Patent
of the United States, No. 573,231, granted to
me on December 15, 1896.

The object of the present invention is to
provide a new and improved hand-drill de-
signed for use either as a clamp or as a ratchet-
drill and arranged to permit the operator to
regulate the feed with great accuracy in a
very simple manner to prevent breaking of
the drills; especially when boring or breaking
through the material.

The invention consists of certain parts and
details and combinations of the same, as will
be fully described hereinafter and then point-
ed out in the claims.

Reference is to be had to the accompanying
drawings, forming a part of this specification,
in which similar characters of reference indi-
cate corresponding parts in all the figures.

Figure 1 is a side elevation of the improve-
ment arranged as a clamping-drill and with
parts shown in section. Fig. 2 is a side ele-
vation of the improvement arranged as a
ratchet-drill and with parts in section. Fig.
3 is an enlarged sectional side elevation of
the holding device for the spindle-nut. Fig.
4 is a perspective view of the clamping-col-
lar of the holding device, and Fig. 5 is a sec-
tional plan view of the device for turning the
spindle in either direction.

When the device is used as a clamp-drill, as
shown in Fig. 1, I provide a suitably-con-
structed clamp A for fastening the tool to a
table B or other support, and in the said clamp
A is held vertically adjustable a threaded
post C, carrying at its upper end a head D,
in which is adjustably held a supporting-rod
E. The supporting-rod E is provided at one
end with a fork E', in which is hung on trun-
nions (shown in dotted lines in Fig. 1) a cas-
ing F, containing a nut G for a threaded spin-
dle H, carrying a chuck I, containing a drill I'.
On the upper end of the spindle H is keyed
or otherwise fastened a toothed wheel J, en-

gaged by a spring-pressed pawl J', held in a
casing J², mounted to rotate loosely on the
upper end of the spindle and engaged by a
handle J³, under the control of the operator,
for turning the spindle in either direction.
This device is more fully shown and described
in the patent above referred to, so that fur-
ther description thereof is not deemed nec-
essary.

The upper end of the nut G within the cas-
ing F is engaged by the lining K' of a split
clamping-collar K, formed at its lower edge
with a slot K², engaged by a lug F' in the re-
cessed upper end of the casing F, as is plainly
indicated in Figs. 1 and 3, so that the collar
is prevented from turning. The lining K' is
made of fibrous wood, leather, or other suit-
able material to properly clamp the nut G,
so as to hold the latter in place when the
split collar is closed. For this purpose I make
part of the outer face of the collar K conical.
as at K³, and this face is engaged by a simi-
larly-shaped inner surface L' of a nut L,
screwing in the upper end of the casing F,
with the head L² of the nut extending above
the casing, so as to be readily taken hold of
by the operator for screwing the nut down
or up in the casing and clamping the collar
K against the nut G to hold the same in place
or for allowing the nut G to turn loosely in
the casing F with the spindle H.

The lower end of the nut G is formed with
a head G', containing a ball-bearing G², en-
gaging the lower end of the casing F, the said
head extending to the outside of the casing
to be conveniently taken hold of by the oper-
ator for turning the nut G and the spindle H
whenever desired. On the upper end of the
nut G screws a retaining-collar G³, the lower
edge of which rests on the upper end of the
collar K, so as to hold the several parts in
place within the casing F.

When the nut L is screwed upward to re-
lease the collar K from the nut G, then the
latter is free to turn with the spindle H in
case the drill I' meets with unusual resist-
ance, such as is frequently met with when
boring through the material. It is evident
that when the nut G turns with the spindle
H no feed takes place at the time, and the
operator, upon turning the nut by taking hold

of the head G', can sufficiently feed the spindle H downward to insure an easy boring through the material without danger to the drill. When the nut L, however, is screwed downward, then the split collar K is tightly closed upon the nut G, and as the said collar K is held in place in the casing F it is evident that the nut G is locked in position within the casing, and consequently the spindle H when turned screws in the nut and correspondingly feeds the drill I' in the material. If the resistance to the drill, however, is greater than the clamping power of the collar K on the nut G, then the latter will turn with the spindle, so that the feeding is stopped or partly so, to prevent breaking of the drill. This is very essential, especially in drilling steel and other hard metals, as the drill of ordinary machines is liable to be caught and injured when breaking through the material. With the improvement described the friction-feed can be instantly thrown off at the time the point breaks through, and the remainder of the hole can be bored by the operator turning the nut G' by hand with greater or less rapidity, as the case requires.

By hanging the casing F on trunnions in the fork E' of the rod E the drill I' and spindle H remain in the same position when at work drilling a hole whether the feed is applied to the spindle lightly or heavily.

When using a small-sized drill in soft metal and the feed is applied lightly, the threaded spindle C and the supporting-rod E will slightly spring, and when using a large-sized drill boring through hard steel the friction would have to be applied heavily to force the drill into the steel, which would cause the threaded post C and the supporting-rod E to spring, so that the spindle H and drill I' would be thrown back out of position and the spindle H would bind in the nut G, and the nut G would therefore bind in the casing F, which would make it almost impossible to work the drilling-machine. Therefore the machine would not work if the casing F did not hang on trunnions, as the binding of the nut G in the casing F would cause friction so great that the nut G would remain stationary in the casing F, and therefore the threaded spindle H would advance to its work as fast as the

thread on said spindle would allow, which would of course wreck the drilling-machine provided power enough could be applied to drive said machine.

When the device is used as a ratchet-drill, as shown in Fig. 2, then the casing F is hung on trunnions on a suitable frame E², and the lower end of the spindle H is provided with the usual ratchet-lever J⁴ for turning the spindle. The operation, so far as the feeding is concerned, is exactly the same as that above described in reference to Fig. 1.

I do not limit myself to the particular friction device shown and described, as it is evident that other similar devices can be constructed to accomplish the same purpose.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A hand-drill comprising a casing, a nut mounted to turn in the said casing, a threaded spindle screwing in the said nut, a split clamping-collar held stationary in the said casing and engaging the said nut, and a second nut in the said casing and engaging the said clamping-collar, to close or open the same, substantially as shown and described.

2. A hand-drill comprising a casing, a nut mounted to turn in the said casing, a threaded spindle screwing in the said nut, a split clamping-collar held stationary in the said casing and engaging the said nut, a second nut in the said casing and engaging the said clamping-collar, to close or open the same, and a retaining-collar held on the upper end of the spindle-nut, and resting on the clamping-collar, substantially as shown and described.

3. A hand-drill provided with a casing, a spindle-nut mounted to turn in the said casing, a split clamping-collar held stationary in the casing, and having a lining engaging the said nut, the outer face of the nut being made conical, and a conical nut screwing in the said casing, and engaging the said clamping-collar, to close the same upon the spindle-nut, substantially as shown and described.

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Witnesses:

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