No. 773,962. PATENTED NOV. 1, 1904.

E. McCRAY & F. A. WISER.

DRILL AND UNDERREAMER.

APPLICATION FILED MAY 31, 1904.

NO MODEL.

Fig. 1

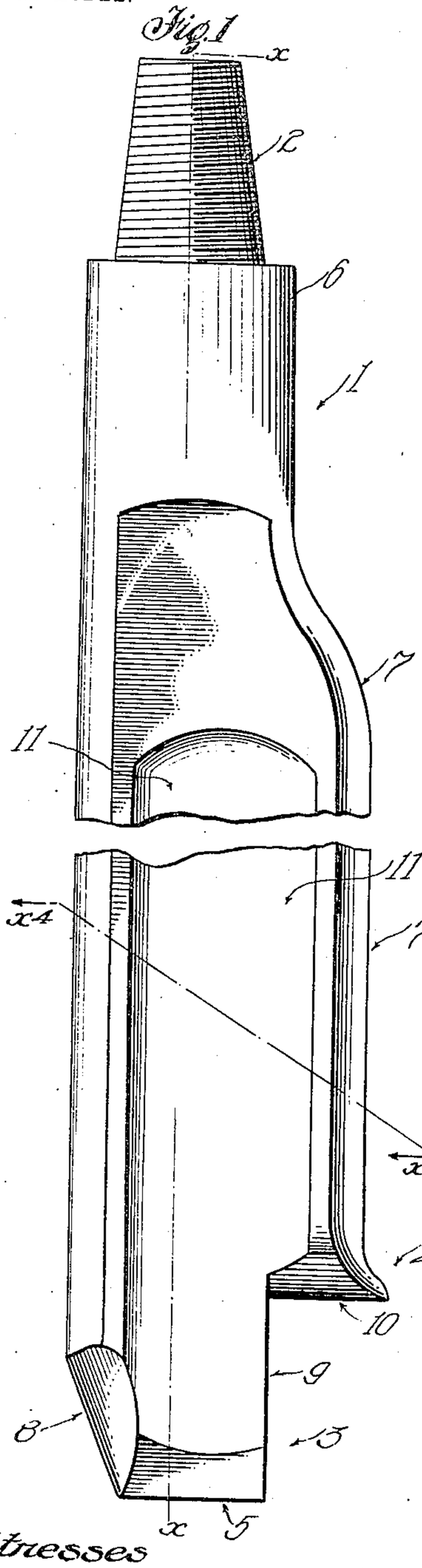

Fig. 2

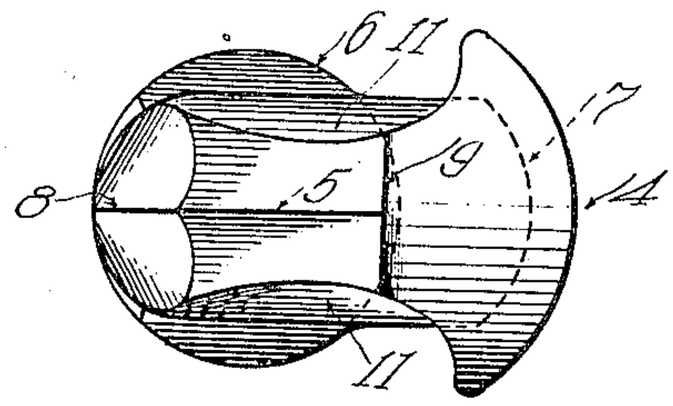

Fig. 3

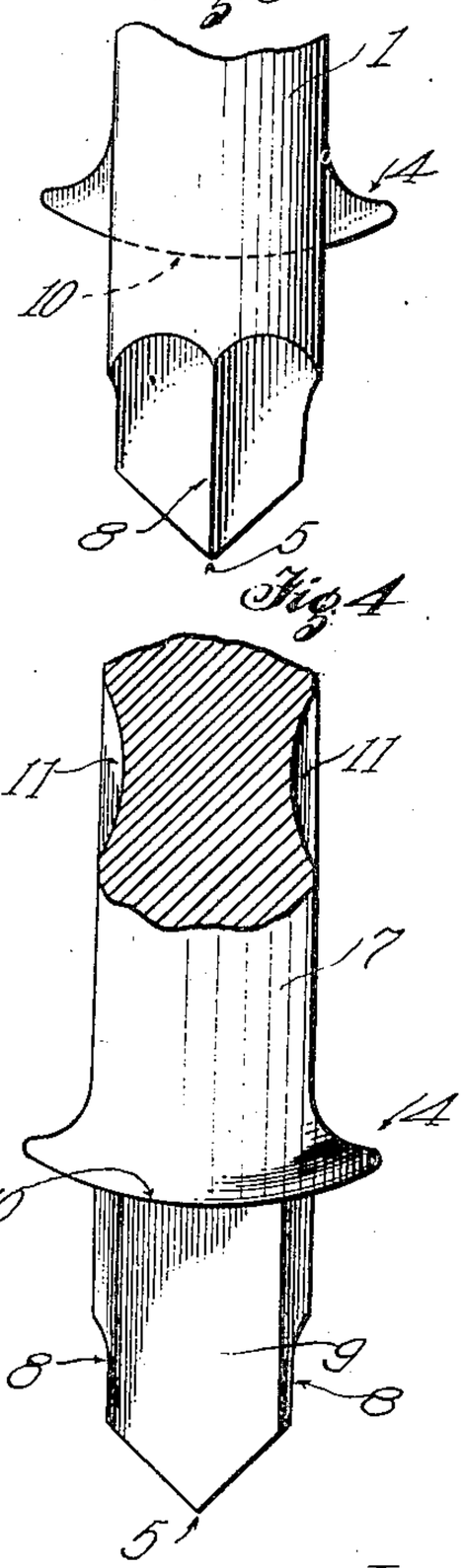

Fig. 4

Witnesses
H. Mansfield
A. P. Knight

Inventors
Edward McCray
Frank A. Wiser
by Townsend Bros
His attys

No. 773,962. Patented November 1, 1904.

UNITED STATES PATENT OFFICE.

EDWARD McCRAY AND FRANK A. WISER, OF LOS ANGELES, CALIFORNIA.

DRILL AND UNDERREAMER.

SPECIFICATION forming part of Letters Patent No. 773,962, dated November 1, 1904.

Application filed May 31, 1904. Serial No. 210,391. (No model.)

To all whom it may concern:

Be it known that we, EDWARD McCRAY and FRANK A. WISER, citizens of the United States, residing at Los Angeles, county of Los Angeles, and State of California, have invented new and useful Improvements in Drills and Underreamers, of which the following is a specification.

The primary object of this invention is to provide an enlarging or underreaming bit or drill that will hold to center or alinement with the casing.

A further object of the invention is to provide the drill part with means whereby it will tend to hold the underreaming-bit out to its work.

The invention comprises a drill with an underreaming-bit in proximity to its drill part and with the drill-point formed to act by its impingement on the material at the bottom of the hole to hold the underreaming-bit over against its work and keep the tool as a whole in alinement with the casing in opposition to the side thrust of the underreaming-bit.

The accompanying drawings illustrate the invention.

Figure 1 is a side elevation of the drill and underreamer with part of its length broken away. Fig. 2 is an inverted plan. Fig. 3 is an edge view looking toward the right in Fig. 1. Fig. 4 is an edge view on the opposite side to Fig. 3, the drill being broken or sectioned on the line x^4 x^4, Fig. 1.

1 represents a drill-body provided with the usual attachment-shank or screw means 2 and at its lower end with the drill-bit 3 and with the underreaming-bit 4, the latter located in proximity to but somewhat above the drill-bit. The drill-body is desirably flattened—that is, it is wider in one direction than in the other. The cutting edge 5 of the drill-bit extends in the direction of the greater dimension or width of the bit and is located substantially in line with the central or working axis of the drill proper, said axis (indicated at x x) being central with respect to the drill-shank. The upper end 6 of the drill-body is concentric with this axis; but the main body of the tool from the upper end down is flattened, as stated, and extends outwardly to one side of this axis more than to the other side, the outward extension (indicated at 7) being formed at its lower end with the underreaming-bit 4.

At one end of the cutting edge 5 the drill-body has a beveled or inclined portion 8 extending downwardly and inwardly, and at the other end of the cutting edge, below the underreamer-bit, the drill has a flat edge or face 9. The cutting edge 5 is desirably formed as a chisel-edge extending in the plane of the width of the bit, and the underreamer-bit 4 extends transversely to this plane, with its bottom face 10 rounded or formed as a segment of a cylinder. The underreamer edge projects laterally beyond body of the tool. Incline 8 may also be formed as a chisel-edge.

On each side or face the drill-body 1 is formed with a channel or groove 11 to enable the escape or passage of the drilled material.

The tool is used as follows: The drill-body, including the lateral extension 7, is of such width that it can be slipped down within the tubular casing. In passing through the casing the body as a whole will be concentric therewith, but the working axis and bit will be a little to one side of the center of the casing; but when the drill-bit passes beyond the casing and reaches the end of the hole it will be centered thereby, the incline 8 bringing it to center by engagement in the end of the hole, and by this action the underreamer-bit 4 will be caused to project beneath the bottom of the casing. On reciprocating the drill vertically in the usual manner and partially turning the same from time to time or at each stroke the hole will be deepened in alinement with the axis of the casing and will be simultaneously enlarged to enable the casing to be lowered. At each downward stroke the incline 8 will force or hold the drill-bit over to drive or keep the underreamer-bit against the side of the hole.

The construction of the bit may be variously modified without departing from our invention.

What we claim is—

1. In a drill and underreamer, a drill-body having a drill-bit at its end in alinement with the working axis of the drill, an underreamer-

bit at one side of said axis, and an incline at the other side of said axis to hold the underreamer to its work.

2. In a drill and underreamer, a drill-body having a drill-bit at its end in alinement with the working axis of the drill, an underreamer-bit at one side of said axis, and an incline at the other side of said axis to hold the underreamer to its work, said incline being adjacent to the drill-bit and said underreamer being in proximity to but above the drill-bit.

3. In a drill and underreamer, a drill-body having a drill-bit at its end in alinement with the working axis of the drill, an underreamer-bit at one side of said axis, and an incline at the other side of said axis to hold the underreamer to its work, said drill and underreamer-bit extending transversely to one another.

4. A flattened drill-body having a drill-bit at its end in line with its working axis, an extension along one side of said body provided at its lower end with an underreamer-bit, above but in proximity to the drill-bit, said drill-bit having its edge in the direction of the width of the drill-body, and the drill-body having an incline on the end of the drill-bit opposite the underreamer.

5. A flattened drill-body having a drill-bit at its end in line with its working axis, an extension along one side of said body provided at its lower end with an underreamer-bit, above but in proximity to the drill-bit, said reamer-bit, above but in proximity to the drill-bit, said drill-bit having its edge in the direction of the width of the drill-body, and the drill-body having an incline on the end of the drill-bit opposite the underreamer, and said drill-body being channeled on each side.

6. A flattened drill-body having a drill-bit at its end in line with its working axis, an extension along one side of said body provided at its lower end with an underreamer-bit, above and in proximity to the drill-bit, said drill having its edge in the direction of the width of the drill-body, said underreamer-bit extending transversely to the drill-bit, and the drill-body having an incline on the end of the drill-bit opposite to the underreamer.

7. A flattened drill-body having a drill-bit at its end in line with its working axis, an extension along one side of said body provided at its lower end with an underreamer-bit, above and in proximity to the drill-bit, said drill-bit having its edge in the direction of the width of the drill-body, said underreamer-bit extending transverse to the underreamer-bit and projecting laterally from the drill-body and having a rounded lower face and the drill-body having an incline on the end of the drill-bit opposite to the underreamer.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, at Los Angeles, county of Los Angeles, and State of California, this 24th day of May, 1904.

EDWARD McCRAY.
FRANK A. WISER.

Witnesses:
ARTHUR P. KNIGHT,
FREDERICK S. LYON.