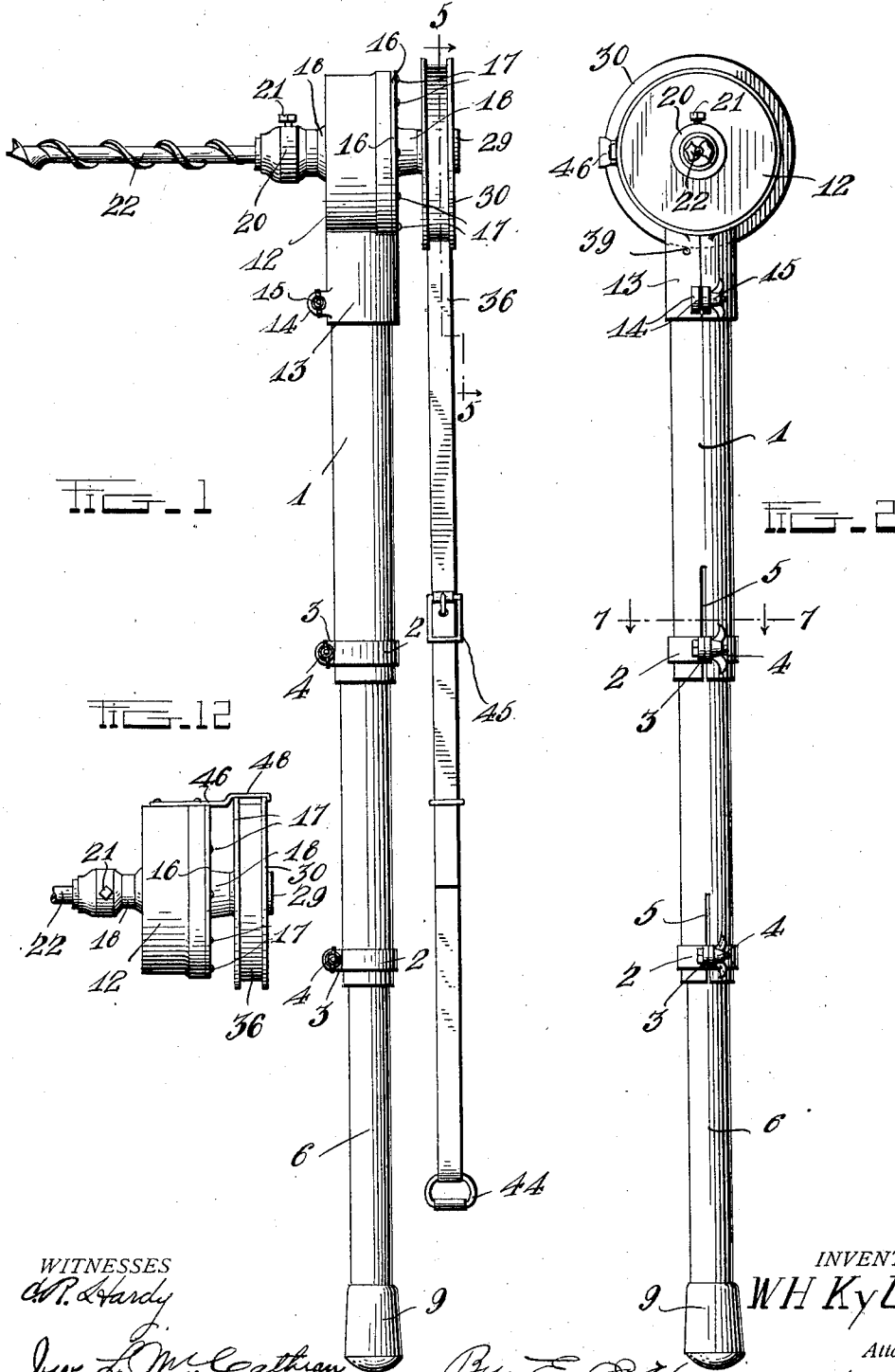


W. H. KYLE.
 DRILLING DEVICE.
 APPLICATION FILED DEC. 30, 1911.

1,053,185.

Patented Feb. 18, 1913.

3 SHEETS—SHEET 1.



WITNESSES
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J. W. L. McLeathran

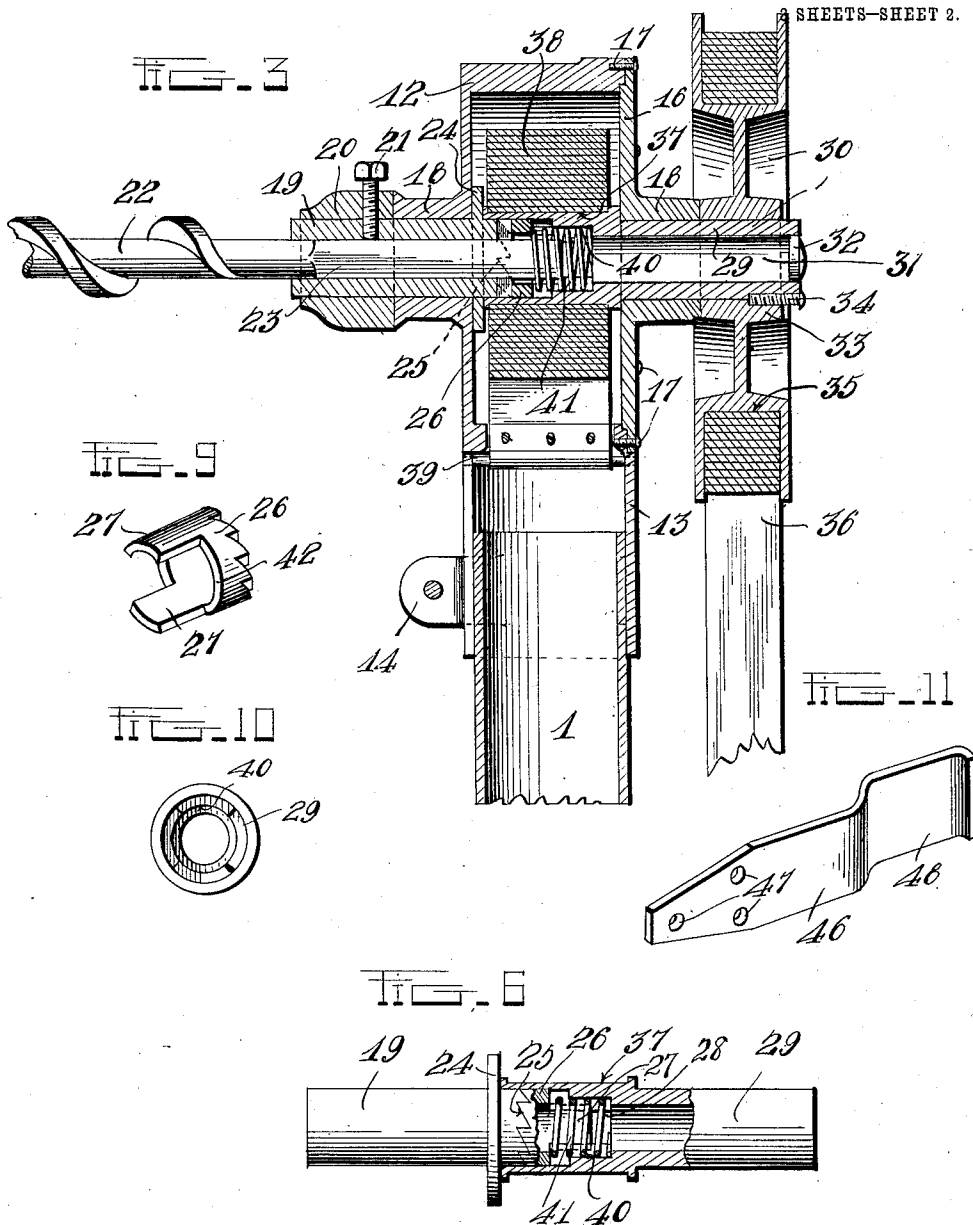
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SHEETS-SHEET 2.



WITNESSES

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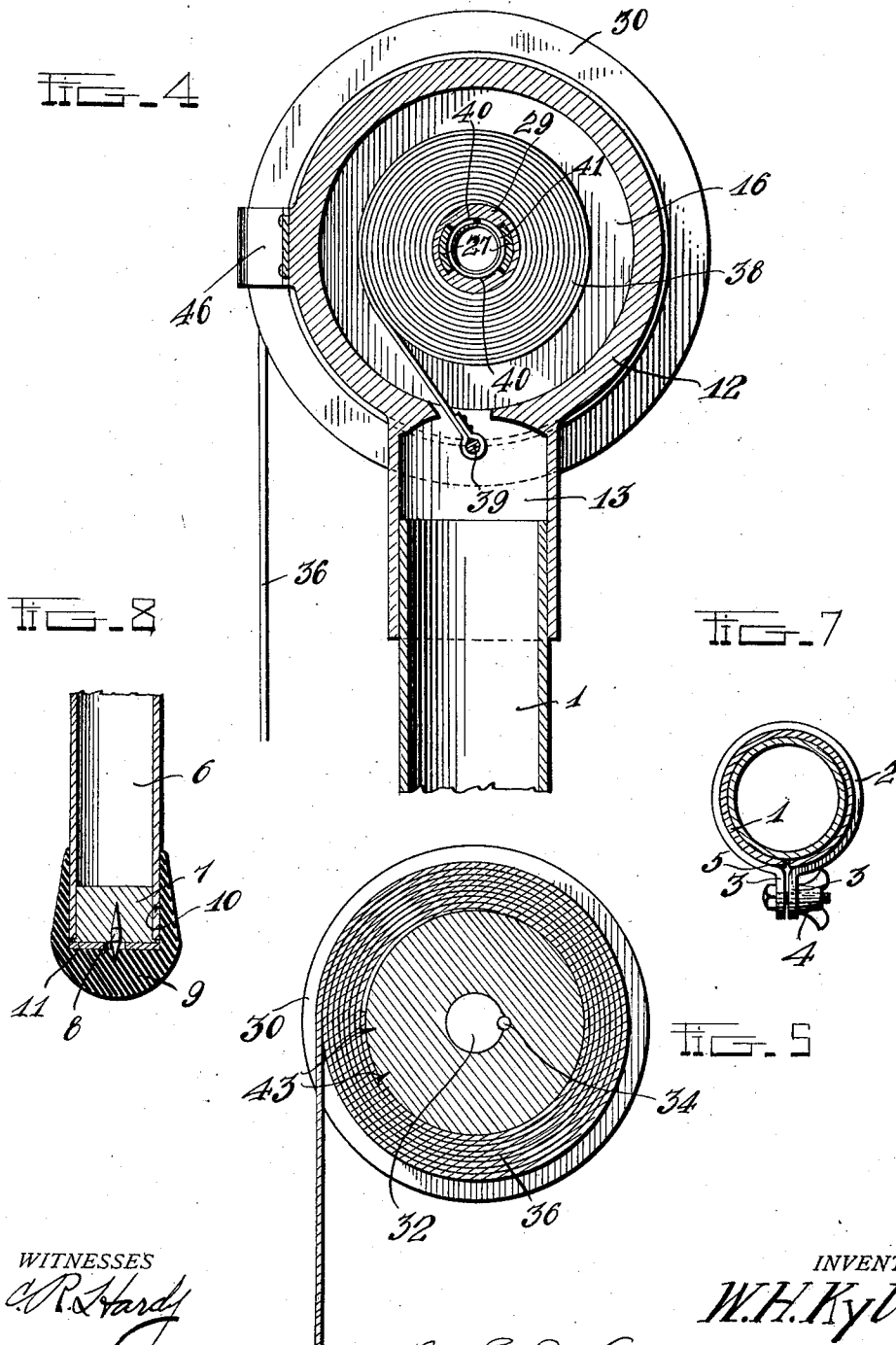
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3 SHEETS—SHEET 3.



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WILLIAM H. KYLE, OF AKRON, OHIO.

DRILLING DEVICE.

1,053,185.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed December 30, 1911. Serial No. 668,693.

To all whom it may concern:

Be it known that I, WILLIAM H. KYLE, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Drilling Devices, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to drills, and has for its object the production of an efficient drill which is positive in its action, and which may be operated by merely pulling an operating member whereby the drill may
15 be driven into an object, and the operating means may be returned to its normal position, without withdrawing the drill so that the drill may be at each stroke, driven farther into the object to be bored.

20 Another object of this invention is the production of an efficient drill mechanism, which is simple in construction, and efficient in operation.

With these and other objects in view this invention consists of certain novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the drawings:—Figure 1 is a side elevation of the drill. Fig. 2 is a front view thereof. Fig. 3 is a section through the bit driving mechanism. Fig. 4 is a central section through the spring casing. Fig. 5 is a transverse section through the drive pulley
30 taken on line 5—5 of Fig. 1. Fig. 6 is a side elevation partly in section of the clutch mechanism for the bit driving shaft. Fig. 7 is a section taken on the line 7—7 of Fig. 2. Fig. 8 is a vertical section on the lower end
40 of one of the expansion drill supporters. Fig. 9 is a detail perspective view of the clutch collar. Fig. 10 is an end view of the shaft which supports the drive pulley, and which constitutes an oil reservoir. Fig. 11
45 is a detail perspective of the bracket which overhangs the drive pulley for holding the operating belt thereon. Fig. 12 is a top plan view of the drill.

Referring to the drawings by numerals 1
50 designates the supporting stock or standard which consists of a plurality of tubular sections being held or clamped in their extended positions by means of clamps 2. These
55 clamps 2 are provided with laterally extending ears 3 being connected together by means of a thumb nut and bolt 4. Of course, the

sections of the standard 1 are split at their lower ends as at 5 to allow the expansion and contraction of the sections while being firmly clamped together. The lower section
60 6 of the standard 1 carries a detachable cap 7, which cap is provided with a pin 8 being adapted to firmly engage or penetrate the rubber cap 9. This cap 9 is provided with
65 a socket 10 into which is adapted to fit the lower end of the lower section 6 of the standard 1. A protector plate 11 is carried in the bottom of the socket 10 of the cap 9 upon
70 which rests the plug 7 for preventing the cutting of the cap 9 by means of the side edges of the tube 6. Of course, it should be understood that any number of these ex-
pansible sections may be used without departing from the spirit of the invention.

A clutch casing 12 is supported by the upper section of the standard 1 and comprises
75 a tubular portion 13, which tubular portion 13 is provided with a pair of laterally extending ears 14 having a thumb nut 15 passing therethrough for firmly clamping the
80 tubular portion 13 upon the upper section of the standard 1. The casing 12 is provided with a closure plate 16 which is secured to the casing 12 by means of screws 17. The
85 plate 16, as well as the casing 12 is provided with a laterally extending collar portion 18. A bit socket 19 is positioned within the collar portion 18 carried by the casing 12, and
90 to this bit socket 19 is secured a collar 20 by means of a bolt 21. The bit 22 is placed within the bit socket 19 and this bit 22 may be provided with a flattened portion 23 to
95 be engaged by means of the set screw 21 for holding the same against independent rotation relative to the bit socket 19. The bit socket 19 is provided at its inner end with a
100 flange 24 which limits the outward movement of the socket 19 relative to the casing 12. The inner end of the bit socket 19 is provided with a plurality of clutch teeth 25
105 which clutch teeth are adapted to engage the clutch teeth formed upon the clutch 26. This clutch 26 comprises a collar member having rearwardly extending semicircular
110 fingers 27 which fingers are adapted to fit within the slots 28 formed in the sleeve 29 which supports the winding drum 30. This sleeve 29 is provided with a hollow portion 31 and this hollow portion is normally closed
by means of a cap 32. The sleeve 29 is keyed to the winding drum 33 which is carried thereby by means of a locking screw 34.

The winding drum 33 is provided with a channel rim 35 within which the winding strap 36 is wound. Of course, it should be understood that this strap 36 may be replaced by a chain or any other suitable means, whereby the desired function may be obtained.

The inner end of the sleeve 29 is provided upon its outer face, with a pocket portion 37 within which is seated a winding spring 38. The opposite end of the winding spring 38 is secured to a transversely extending pin 39 which pin is fixedly secured to the sleeve portion 13 of the casing 12. The winding spring 38, of course, may be secured to the sleeve 29 in any desired manner.

The sleeve 29 is provided with an internal socket 40 within which is mounted a coil spring 41 which coil spring bears against the side edges 42 of the clutch 26, and holds the same normally in engagement with the clutch teeth 25 of the bit socket 19. It will, therefore, be obvious that as the clutch 26 is rotated, through the medium of the sleeve 29, in one direction, the bit 22 will in turn be rotated, but as the sleeve 29 rotates in the opposite direction, or counter-clockwise, the ratchet teeth of the clutch 26 will ride over the ratchet teeth of the bit socket 19, thereby preventing the rotation of the bit in a counter clockwise direction.

The drum rotating the strap or member 36 is secured to the drum 30 by means of pins 43, and as this strap 36 is pulled, rotary movement will be imparted to the drum 30, thereby causing the bit 22 to be rotated through the medium of the clutch just described, and as pressure is released from the strap operating member 36, the coil spring 38 will cause the strap or operating member 36 to be rewound upon the drum 30 and cause the clutch 26 to ride over the toothed inner end of the bit socket 19. By repeating this operation, it will be obvious that the bit 22 may be easily driven into an object. The handle 44 is carried by the lower end of the strap or operating member 36, and this strap or operating member may be adjustable by means of the buckle connection 45 as illustrated in Fig. 1.

A guiding bracket 46 is secured to the outside of the casing 12 by means of bolts passing through the apertures 47 formed therein, and this bracket 46 is provided with a substantially U-shaped pocket 48 which overhangs the edge of the drive pulley 30 as illustrated in Fig. 12. By means of this bracket 46, it will be obvious that there will be no tendency of the strap or operating member 36 from being so wound upon the truck as to cause the strap to fly thereover.

Of course, it should be understood that the present invention may be modified as to its detail mechanical construction without departing from the spirit of the invention.

It will be obvious that in view of the fact that the fingers 27 fit in the grooves 28 formed in the drum supporting sleeve 29 that the clutch member 26 will be rotated with the sleeve portion 29. In view of the fact that these notches or slots 28 are much longer than the fingers 27, the clutch member 26 may be reciprocated within the sleeve 29, thereby allowing the clutch member to easily ride over the teeth formed upon the inner end of the bit socket 19.

What is claimed is:—

1. A drill of the class described comprising a casing, a plate closing one side of said casing, a bit socket rotatably carried by said casing, a bit carried by said socket, a flange formed upon said socket and limiting the movement of said socket in one direction upon said casing, a drum carrying sleeve carried by said plate, a drum carried by said drum carrying sleeve, a clutch member carried by said drum carrying sleeve, means wound upon said drum for imparting rotary movement thereto in one direction, and a spring engaging said drum carrying sleeve and secured to said casing for imparting rotary movement thereto in an opposite direction.

2. A drill of the class described comprising a casing, a bit socket rotatably carried thereby, a drum supporting sleeve carried by said casing, said drum carrying sleeve being provided with a socket formed therein, said sleeve being provided with longitudinally extending slots upon the side walls of said socket, a spring carried within said socket and engaging said clutch member for normally exerting an outward pressure upon said clutch member and holding the same in engagement with said bit socket, a drum carried by said drum supporting sleeve, means for imparting rotary movement thereto, and means for returning said drum to its normal position.

3. A drill of the character described, comprising a housing, a bit socket rotatably carried by said housing and provided with a clutch at its inner end, a clutch sleeve carried by said housing and having its inner end formed into a clutch adapted to engage the clutch carried by said bit socket, means for imparting a rotary motion to said clutch sleeve in one direction whereby said bit socket will be rotated, and means for returning said clutch sleeve to its normal position after being rotated by said rotating means without said bit socket being rotated.

4. A drill of the character described, comprising a housing, a bit socket rotatably carried by said housing and having its inner end provided with clutch teeth, a clutch carrying sleeve carried by said housing and having its inner end provided with longitudinally extending slots, a clutch provided with arms mounted in said slots and having

its teeth adapted to engage the clutch teeth
of said bit socket, a spring carried by said
clutch carrying sleeve and normally holding
said clutch in engagement with the teeth of
5 said bit socket, means carried by said clutch
carrying sleeve for imparting rotary motion
thereto, whereby said bit socket may be ro-
tated, and means carried by said clutch car-
rying sleeve and connected with said hous-
10 ing whereby said clutch carrying sleeve will

be returned to its normal position after being
rotated by said rotary means carried by said
clutch carrying sleeve.

In testimony whereof I hereunto affix my
signature in presence of two witnesses.

WILLIAM H. KYLE.

Witnesses:

W. T. VAUGHAN,
ETHEL SIRDEFIELD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."