

No. 728,188.

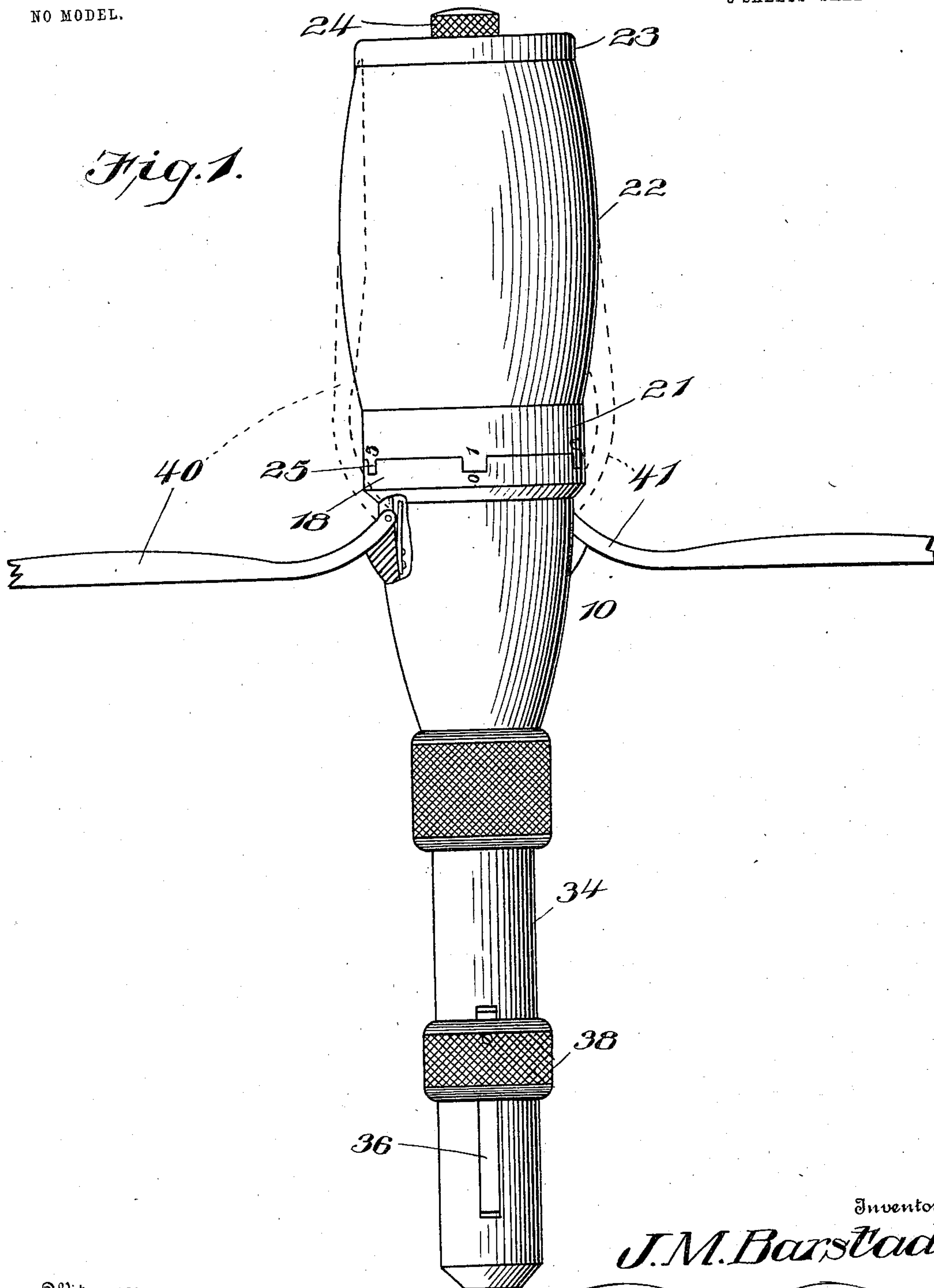
PATENTED MAY 19, 1903.

J. M. BARSTAD.
MAGAZINE TOOL.

APPLICATION FILED SEPT. 13, 1902.

3 SHEETS—SHEET 1.

NO MODEL.



Witnesses

T. P. Brett
Hampden Chandler

By

Inventor
J. M. Barstad

Charles Chandler

Attorneys

No. 728,188.

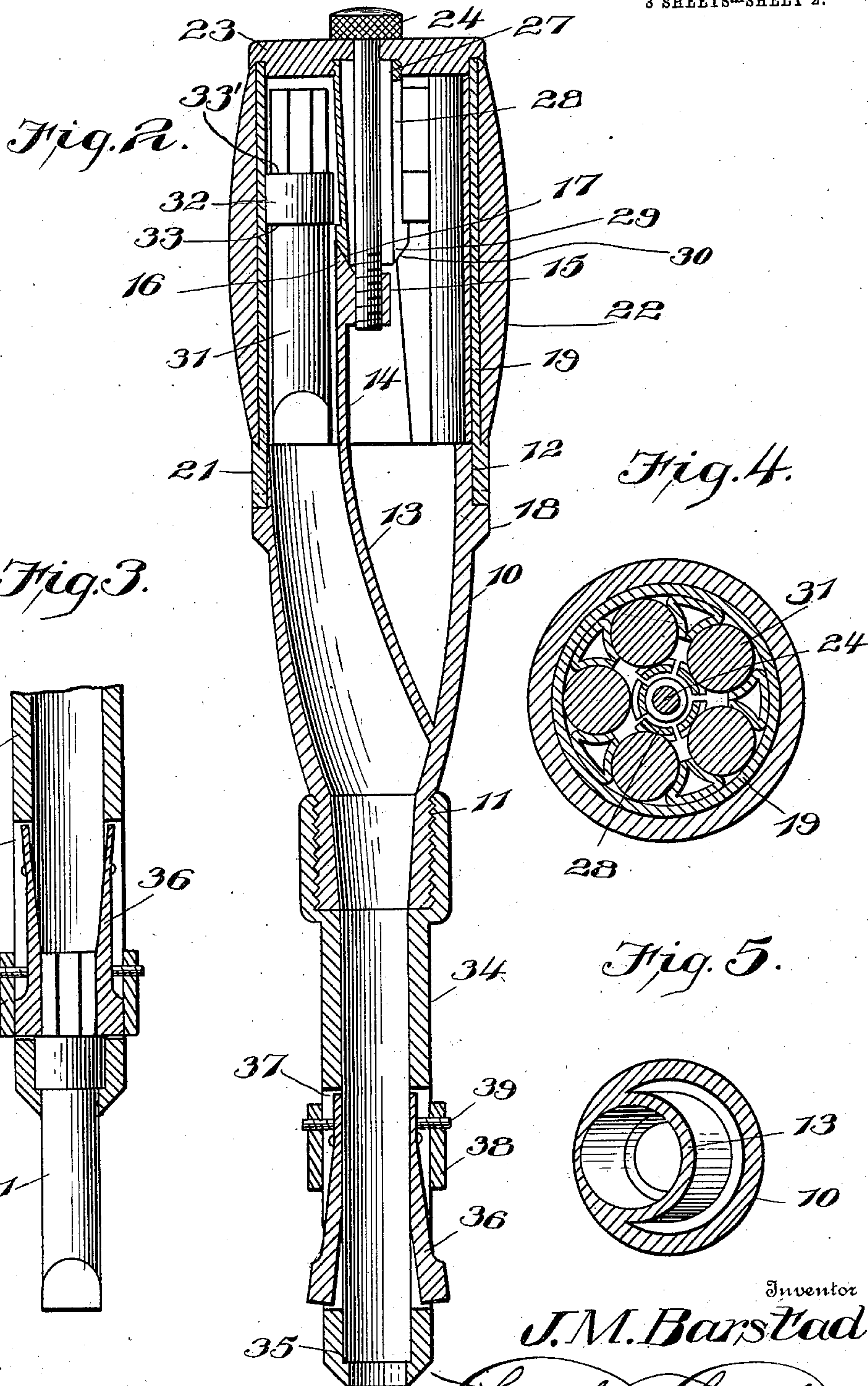
PATENTED MAY 19, 1903.

J. M. BARSTAD.
MAGAZINE TOOL.

APPLICATION FILED SEPT. 13, 1902.

NO MODEL.

3 SHEETS—SHEET 2.



Witnesses

T. P. Brett
Wm. F. Schmalzer

By

Inventor
J. M. Barstad
Chambers Chambers
Attorneys

No. 728,188.

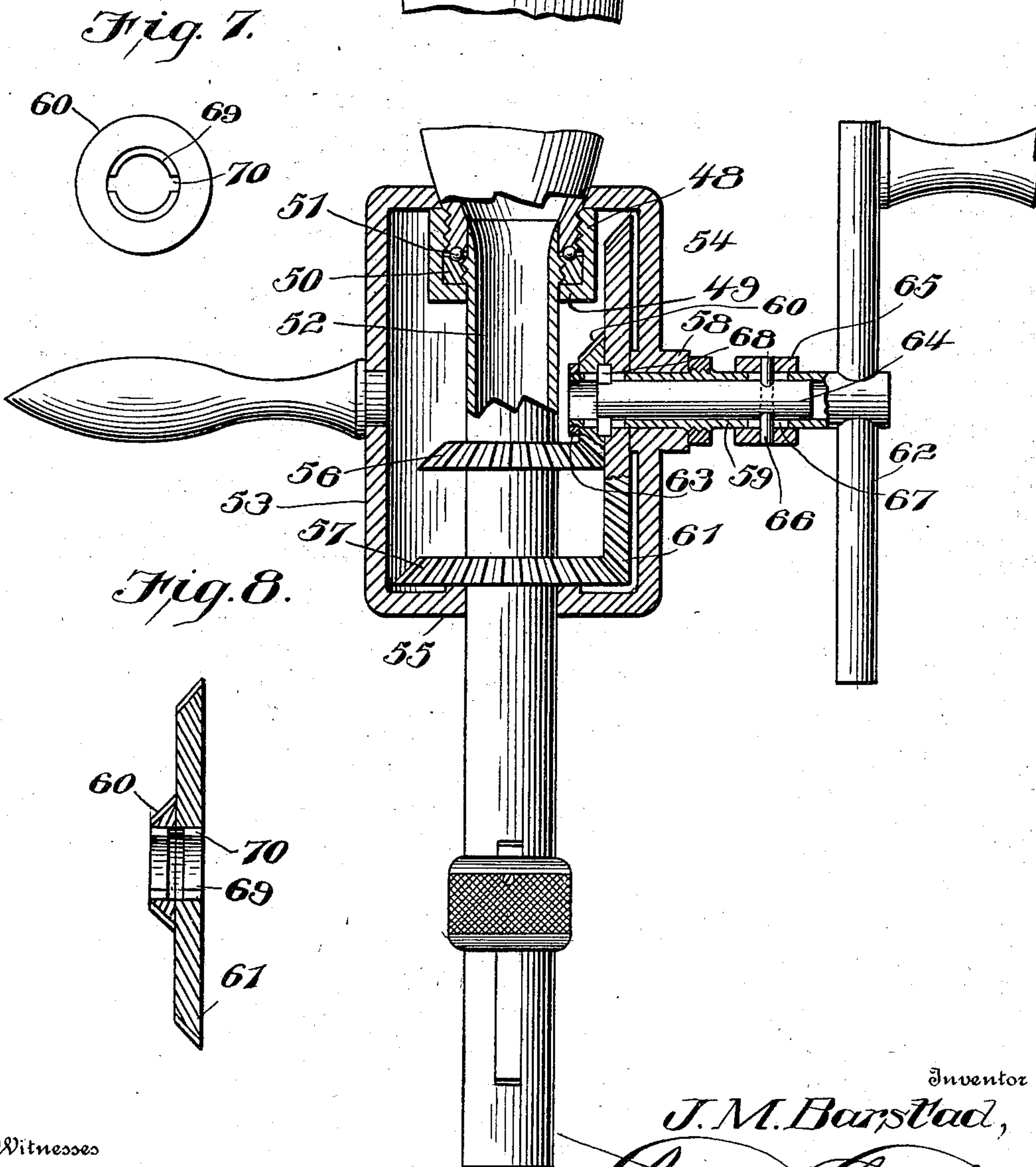
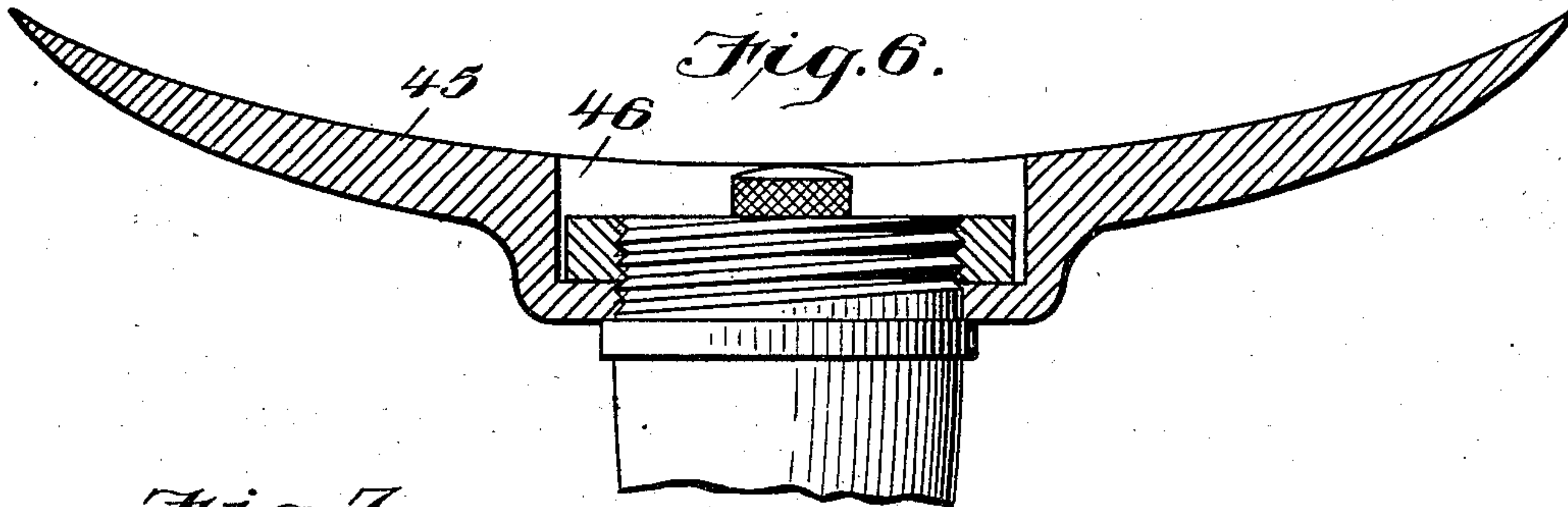
PATENTED MAY 19, 1903.

J. M. BARSTAD.
MAGAZINE TOOL.

APPLICATION FILED SEPT. 13, 1902.

NO MODEL.

3 SHEETS—SHEET 3.



Witnesses

T. P. Britte
Wm. E. L. Chandler

By

Inventor
J. M. Barstad,

Chandler & Chandler

Attorneys

UNITED STATES PATENT OFFICE.

JOHAN M. BARSTAD, OF PROVIDENCE, RHODE ISLAND.

MAGAZINE-TOOL.

SPECIFICATION forming part of Letters Patent No. 728,188, dated May 19, 1903.

Application filed September 13, 1902. Serial No. 123,326. (No model.)

To all whom it may concern:

Be it known that I, JOHAN M. BARSTAD, a subject of the King of Sweden and Norway, residing at Providence, in the county of Providence, State of Rhode Island, have invented certain new and useful Improvements in Magazine-Tools; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to magazine-tools in general; and it has for its object to provide a construction which may be embodied in a hand-tool, breast-drill, or other specific tools and in which the different bits may be brought into active positions interchangeably and returned to their magazine.

A further object of the invention is to provide a construction of screw-driver having supplemental handles which may be moved into and out of operative position and which will facilitate operation of the tool when there is difficulty in turning it.

A further object of the invention is to provide a magazine breast-drill embodying features of the screw-driver and including simple and efficient mechanism for changing the gear of the rotating parts when desired.

Other objects and advantages of the invention will be understood from the following description.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is an elevation showing a screw-driver embodying the present invention, the supplemental handles being in unfolded position. Fig. 2 is a longitudinal section through the screw-driver with the supplemental handles folded and the magazine adjusted to discharge a bit to the stem. Fig. 3 is a detail sectional view of a portion of the stem and showing a bit clamped therein. Fig. 4 is a transverse section through the magazine and including the carrier. Fig. 5 is a transverse section through the handle above the carrier. Fig. 6 is a vertical section through a chest-drill embodying the present invention. Fig. 7 is an elevation of one of the gears on the crank-shaft shown in Fig. 6. Fig. 8 is a section taken through the gears

on the crank-shaft of the structure shown in Fig. 6, said section being diametrically of the gears.

Referring now to the drawings and more particularly to Figs. 1 to 5, inclusive, there is shown a screw-driver comprising a handle portion and a stem portion. The handle portion of the screw-driver consists of a shell 10, having cylindrical end portions 11 and 12 of different diameters and a tapered intermediate portion, while from the interior of the shell at a point near to the end portion 11 there extends in the direction of the major end of the shell a web 13, which is of such form that in connection with the adjacent side wall of the shell there is formed a tube which communicates at its inner end and leads to the minor end of the shell, while its opposite end terminates flush with the major end of the casing. From said major end of the casing the web is continued in the form of an extension 14, having a laterally-directed lug 15, which is perforated coaxially with the shell. Beyond the lug or sleeve 15 is a projection 16, having a cam-face 17 for a purpose that will be presently explained.

On the exterior face of the portion 12 of the shell is a circumscribing flange 18, which is set back slightly from the edge of the shell, and upon the portion 12 beyond this flange is rotatably mounted the magazine.

The magazine comprises a hollow cylindrical body portion 19, having a cut-under flange 21 at that end which is engaged with the shell 10, and over the body portion and having one end engaged in the cut-under portion is a wooden covering 22. The free or opposite end of the body of the magazine is provided with a cap 23, which has a reduced portion fitted within the body and through which cap is passed a thumb-screw 24, which is engaged with the threaded sleeve 15 to hold the cap with the magazine upon the casing 10. The cap may be screwed into the magazine. To hold the magazine normally against rotation, the flange 21 is provided with a series of lugs 25, which engage corresponding recesses in the flange 18; but when the thumb-screw 24 is loosened the magazine may be drawn rearwardly to disengage the lugs from the recesses, and the magazine may be then rotated.

The perforation in the cap of the magazine

through which the thumb-screw is passed is countersunk on the inner face of the cap, and in this countersink is screwed a metallic cylinder 27, which is slotted longitudinally to form a series of fingers 28, having barbs 29 on their outer faces, the extremities of the fingers being beveled on their outer sides, as shown at 30, to correspond to the cam-face 17, so that when the magazine is rotated to align a finger with the lug or extension 16 and is then moved longitudinally said bevel of the finger will engage the cam-face, and further longitudinal movement of the magazine will cause the cam to press the finger rearwardly, as will be understood.

The magazine between the body portion and the central cylinder is divided into compartments, of which in the present instance there are five, and the fingers correspond in number to these compartments and normally lie with their barbs projecting thereinto beyond the face of the extension 14. In each of the compartments is disposed a bit 31, having a circumscribing flange 32, forming shoulders 33 and 33', the shoulders 33 being in position for normal engagement by the barbs of the fingers to hold the bits against forward movement from their compartments. If the magazine be moved longitudinally to engage the lugs 25 with the recesses in the flange 18, a finger will engage the cam-face 17 and the corresponding bit will be released, the position of the cam-face being such that the bit released will be directed into the tubular portion of the web 13, which will act as a guide therefor and direct it into the stem 34 of the screw-driver, the bit continuing in its movement through the stem until its shoulder 33 strikes the interior flange 35 at the extremity of the stem. To hold the bit against the flange 35, spring-fingers 36 are mounted in longitudinal slots 37 in the sides of the stem, and upon the stem is slidably mounted a collar 38, with which are engaged screws 39, which enter said slots and engage the fingers, said fingers having their outer faces at such angles that when the collar is slid in one direction the screws will press the spring-fingers into the stem and when moved in the opposite direction will release the fingers. When the fingers are pressed into the stem, the ends thereof engage behind the flange 33' and prevent return movement of the bit. In this position of the bit the free end of its blade projects from the end of the stem and may be operated for the purpose designed.

Upon the flange of the magazine are marked numbers, as shown, indicating the different bits, and upon the adjacent flange of the shell 10 is marked a zero-point, as shown, and when a bit is to be used the thumb-screw is loosened, the magazine is drawn rearwardly and then rotated to bring the proper number to the zero-point, and the magazine is then slid forwardly to engage the proper finger with the cam-face and release the desired bit. By holding the screw-driver with the

stem downwardly the bit then discharges into the stem in the manner above described.

In connection with the handle of the screw-driver formed by the shell 10 and the magazine there are shown supplemental handles 40 and 41, which are hinged at their lower ends to the shell 10, while their opposite ends are reduced and engaged in recesses in the cap of the magazine. When the magazine is drawn rearwardly, the cap releases the ends of the wings, and the latter may be swung outwardly, as indicated in dotted lines, and may be moved to project at right angles to the shell. They may then be grasped, and great force may be applied to rotate the tool when required.

In Fig. 6 of the drawings there is shown a construction of a chest-drill embodying the present invention wherein the magazine and handle have substantially the same construction as that just described, the magazine, however, having a chest-plate 45, having a central opening 46, in which the magazine is received and through which it projects, the thumb-screw for securing the magazine against rotation lying below the upper surface of the plate. The reduced end of the shell 10 in this construction is externally threaded, and engaged therewith is a threaded sleeve 48, having an inwardly-directed flange 49 at its free end, against which is disposed an annular race-plate 50, between which and the end of the shell 10 are arranged bearing-balls 51. The race-plate is screwed onto or may be formed integral with the hollow or tubular stem 52 of the drill, which is disposed with its upper end in the lower end of the shell 10 to receive from the guide-tube therein.

Secured to the shell 10 is a frame comprising spaced sides 53 and 54 and a lower connecting web portion 55, in which latter is a bearing through which the tubular stem of the drill is passed. On the stem and within the inclosure of the frame are keyed two bevel-gears 56 and 57. The side 54 of the frame has a laterally-extending sleeve-bearing 58, in which is journaled a tubular shaft 59, having mounted loosely thereon bevel-gears 60 and 61, which engage the gears 56 and 57, respectively. At the outer end of the tubular shaft is a crank 62, by means of which the shaft may be rotated to actuate the drill-shaft in the manner hereinafter described. The gear-wheels 60 and 61 are held upon the shaft 59 by means of a nut 63, engaged with the inner end of the shaft, so that the shaft cannot be withdrawn from the gears and from the bearing in the sleeve 58.

Within the tubular shaft 59 is a clutch-rod 64, which may be slid longitudinally within the shaft by means of the collar 65, which is slidably disposed upon the shaft and has a pin 66 passed therethrough and through the clutch-rod, said pin lying in the slot 67, formed transversely through the sleeve. The pin conveys motion from the sleeve to the

clutch-rod and prevents rotation of the rod within the shaft 59, while permitting of limited longitudinal movement thereof. At the inner end of the clutch-rod is a transverse spline or feather 68, the length of which longitudinally of the rod is less than the thickness of either of the gears 60 and 61, and the mutually-adjacent faces of these gears are recessed, as shown at 69, so that the spline may be positioned, as shown, to lie in both recesses and out of engagement with both gears. Longitudinally through the hubs of both gears are formed slots 70, so positioned that when the clutch-rod is shifted longitudinally in one direction its spline will engage the slot 70 of one of the bevel-gears to clutch it to the shaft 59, and when the rod is shifted in the opposite direction the spline will engage the slot of the other bevel-gear after leaving the slot of the first gear. Thus by moving the clutch-rod either gear 60 or 61 may be secured to the shaft 59 and a corresponding low or high speed given to the drill-shaft.

It will be understood that in practice other modifications of the general structure may be made and that any suitable materials and proportions may be used without departing from the spirit of the invention.

What is claimed is—

1. In a magazine-tool, the combination with a tubular stem having means for holding a bit therein, of a shell connected to the stem and having a guideway leading to the latter, a magazine mounted upon the shell for rotary and longitudinal movement, said magazine comprising bit-holding compartments, a spring-finger for each compartment adapted for engagement with a bit to hold it therein, and means in the path of longitudinal movement of the fingers for removing them to release the bits.

2. In a magazine-tool, the combination with a tubular stem having means for holding a bit therein, of a shell connected to the stem and having a guideway leading to the latter, a magazine mounted upon the shell for rotary and longitudinal movement and comprising

bit-receiving compartments, a latch for each compartment to hold the bit therein, and means disposed for engagement by a single latch when the magazine is moved longitudinally, to move the latch to release its bit.

3. In a magazine-tool, the combination with a tubular stem having means for holding a bit therein, of a shell connected to the stem and having a guideway leading thereto, a magazine rotatably and longitudinally movable upon the shell, said shell having a recessed flange, lugs upon the magazine for engagement with the recesses to hold the magazine against rotation, said shell having an extension provided with a threaded sleeve and an adjacent cam-face, a thumb-screw passed through the end of the magazine and engaged with the sleeve to hold the magazine with its lugs engaged with the recesses of the flange, said magazine having a plurality of bit-receiving compartments, and a series of barbed spring-fingers in the magazine disposed to project with their barbs into corresponding compartments to engage and hold the bits therein, said fingers having beveled ends disposed for successive engagement with the cam-face to repress them and release their respective bits.

4. In a magazine-tool, the combination with a magazine of a tubular shaft rotatably engaged therein and communicating therewith, said shaft having a chuck at its free end to hold bits, a frame carried by the magazine and in which the shaft has a bearing, a crank-shaft journaled in the frame, a plurality of gears of different diameters fixed upon the drill-shaft, a plurality of gears of different diameters mounted loosely upon the crank-shaft and engaging the first-named gears respectively, and a clutch mechanism for clutching the crank-shaft gears to said shaft interchangeably.

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

JOHAN M. BARSTAD.

Witnesses:

JOHN W. McLAUGHLIN,
FRED. M. BATCHELOR.