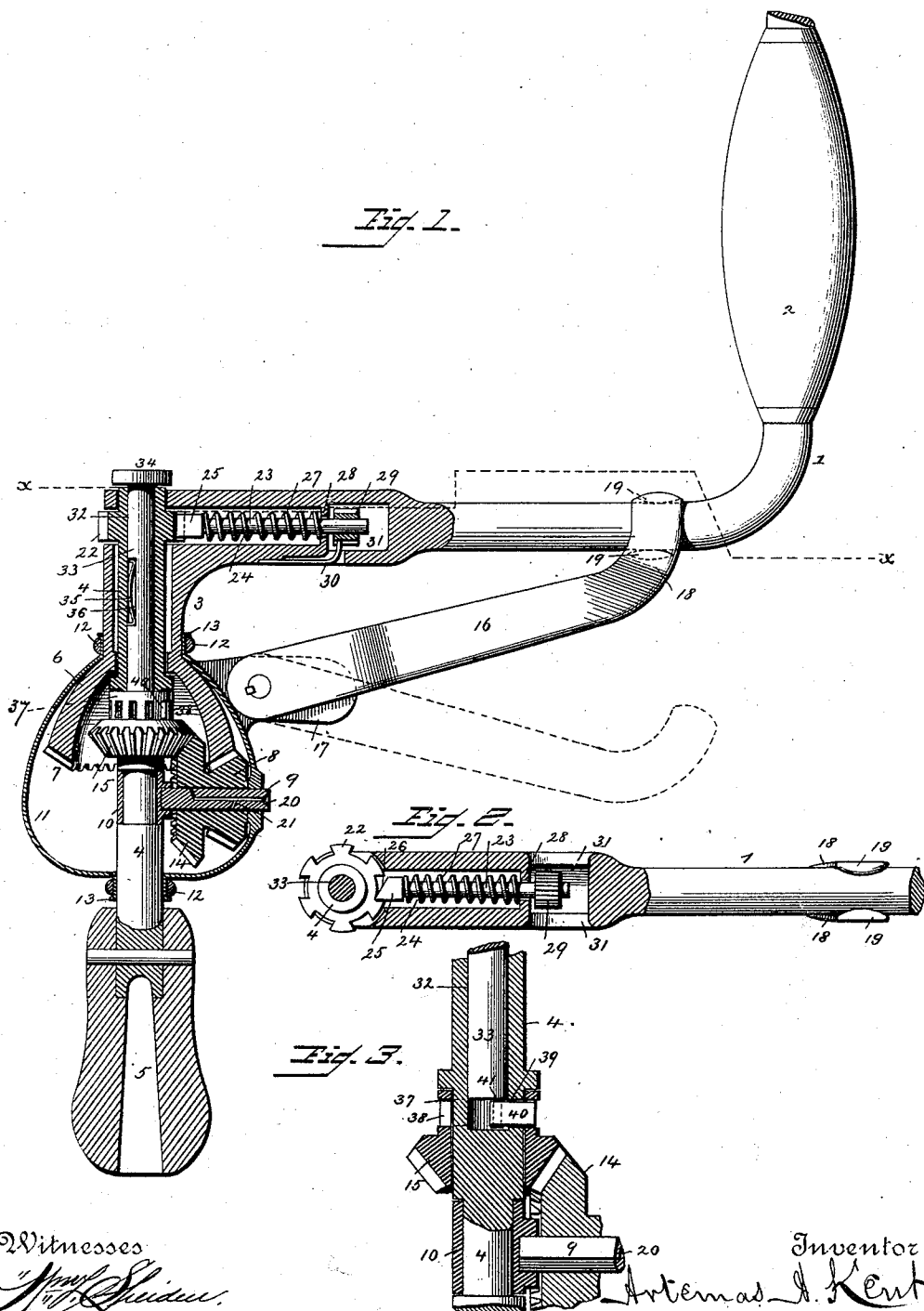


(No Model.)

A. A. KENT.
BIT STOCK.

No. 417,564.

Patented Dec. 17, 1889.



Witnesses

Philip F. Lerner.

Inventor

Artemas A. Kent

By his Attorneys

Johnson

UNITED STATES PATENT OFFICE.

ARTEMAS A. KENT, OF SAN JOSÉ, CALIFORNIA, ASSIGNOR OF ONE-HALF TO
HERMAN C. PFISTER AND JAMES D. STEWART, BOTH OF SAME PLACE.

BIT-STOCK.

SPECIFICATION forming part of Letters Patent No. 417,564, dated December 17, 1889.

Application filed July 27, 1889. Serial No. 318,938. (No model.)

To all whom it may concern:

Be it known that I, ARTEMAS A. KENT, a citizen of the United States, residing at San José, in the county of Santa Clara, and State of California, have invented new and useful Improvements in Bit-Stocks, of which the following is a specification.

My invention relates to bit stocks or braces, and more particularly to bit-stocks of that class having gearing for changing the relative speed of the brace-crank and bit; and it consists in the improved construction and arrangement or combination of parts herein-after fully disclosed in the description, drawings, and claims.

The objects of my invention are to provide improved means for increasing the speed of the bit over or beyond the speed of the crank; to provide improved means for connecting the gearing of the bit to the crank, so as to cause the bit and crank to revolve with the same speed; to provide improved means for incasing and holding said gearing; to provide an improved ratchet mechanism to the bit-stock, and to provide improved means for disconnecting the intermediate gearing, for increasing the speed of the bit, from the bit when said ratchet mechanism is to be employed. These objects are attained in the bit stock or brace illustrated in the accompanying drawings, forming part of this specification, in which the same reference-numerals indicate the same parts, and in which—

Figure 1 represents a longitudinal section of my improved bit-stock; Fig. 2, a transverse section on the line xx , Fig. 1; and Fig. 3, an enlarged longitudinal section of the bit-shaft and intermediate gearing and of the surrounding portion of the bit-stock.

In the drawings, the numeral 1 indicates the crank, which has the usual freely-revolving handle 2 upon it, and which has a bearing 3 at one end. The shaft 4, which is provided with a clamp or socket 5 for the bit, is journaled in the said bearing 3 with its inner or upper end. The lower end 6 of said bearing 3 is flared outward and has a beveled cogged gear 7 formed upon its outer edge, which meshes with a beveled pinion 8, secured to revolve upon a short stud or shaft 9. Said stud or shaft is supported at its inner end

upon the bit-shaft 4, having a vertical bearing 10 for the same upon its end, and the outer end of the stud or shaft is supported in a two-part shell or casing 11, which is held together and secured upon the vertical bearing 3 and upon the bit-shaft by means of clamping-rings 12 at its ends clamping, respectively, a short neck 13 around said bearing and a similar neck 13 around said shaft. The beveled pinion 8 is secured to a larger pinion 14, which meshes with a bevel-pinion 15 upon the bit-shaft. An arm 16 is pivoted with its inner forked end upon a lip or lug 17, which projects from the two-part casing 11, and the outer end of said arm is forked to form two spring-jaws 18, which may straddle or clamp the lower arm of the crank 1 and engage the same between rounded lugs 19 upon the inner faces of said jaws. The short stud or shaft 9 has an axial bore 20, having branches 21, which extend to the surface of the stud or shaft, and a lubricant may be poured into said axial bore and may be distributed to the surface of the stud or shaft, lubricating the bearings of the bevel-pinions 8 and 14 upon the same.

The bit-shaft 4 is provided with a ratchet-wheel 22, which is engaged by a sliding bolt or pawl 23, which slides in a chamber or recess 24 in the lower arm of the crank. The inner end or head 25 of said bolt or pawl has a beveled outer face 26, which admits of the ratchet-wheel sliding by the pawl when revolved toward said beveled face. Said bolt or pawl is forced toward the ratchet-wheel by a coiled spring 27, which bears with its inner end against the head 25 of the bolt or pawl, is wrapped around the same, and bears with its outer end against a shoulder or offset 28 in the outer end of the chamber or recess 24. The outer end of the bolt or pawl has a milled or notched head 29, the ribs or notches of which may be engaged by the inwardly-bent end of a spring 30, secured in said chamber or recess. Said head and spring may be reached through openings 31 in the sides of said chamber or recess. The upper portion of the upper bit-shaft 4 has an axial bore 32, within which a rod 33 may turn. The upper end of said rod has a head 34, by which it may be turned, and an out-

wardly-bulged flat spring 35 is secured in a recess 36 in the side of said rod and bears against the side of the axial bore of the bit-shaft and holds said rod in the position to which it may be turned in the same.

The bevel-pinion 15 upon the bit-shaft is fitted to turn upon the same and has a sleeve portion 37 projecting from its upper face and formed with radial slots or openings 38. Said slots or openings register with a similar slot or opening 39, which extends from the lower end of the axial bore 32 in the bit-shaft, and a bolt or small block 40, which is pivoted with its inner end upon an eccentric-pin 41 upon the end of the rod 33, slides in said slot or opening 39, and may enter either one of the slots or openings 38 with which it may register at the time when the rod 33 is turned to force it out, the eccentric-pin 41 forcing said bolt out or drawing it in when the rod is turned and the pin is brought nearer to or farther from the slot in the bit-shaft.

In practice, when it is desired to use the stock with the bit revolving at the same speed as the crank, the arm 16 upon the shell or casing is tilted to engage the crank, and the stock is operated in the usual manner. When it is desired to revolve the bit with a greater speed than the crank, the arm 16 is disengaged from the crank, and the shell or casing 11 is held either directly or by the arm while the crank is revolved. The cogged gear upon the bearing 3 of the crank will drive the bevel-pinions on the short stud or arm 9, and the larger bevel-pinion 14 will drive the smaller pinion 15 and the bit-shaft and bit with the greater speed than the speed at which the crank is revolved.

When the stock is constructed with the pawl and ratchet-wheel, which may be dispensed with, said mechanism may be used for revolving the bit in either direction by turning the pawl so as to bring the inclined or beveled face of its head to face in the direction opposite to the direction in which the bit is to be turned. The openings 31 in the arm of the crank and the milled or ribbed head 29 and spring 30 will admit of the pawl being turned and adjusted in its desired position.

When the ratchet-and-pawl mechanism is not to be used, the pawl is raised out of engagement with the ratchet-wheel and held in its raised position by the inwardly-bent end of the spring 30. When the pawl is turned to bring the inclined or beveled face to face either upward or down, the head or pawl will hold the bit-shaft stationary in its bearing.

When the pawl mechanism is in use, the speed-accelerating mechanism is detached from the bit-shaft by turning the rod 33 so as to bring the bolt or block 40 out of engagement with the slot in the sleeve portion of the pinion 15 upon the bit-shaft, so that said shaft may be revolved within said pinion

without revolving the pinions and gear with said speed-accelerating mechanism.

An important feature of my invention resides in the means for changing the relative speed of the brace-crank and the bit or for causing them to revolve with the same speed, and it is obvious that the construction provided for this purpose will render the device complete for use, and that the reversing ratchet device and the means for connecting and disconnecting the ratchet device to and from the drill-shaft may be dispensed with and the bit-stock constructed with the accelerating means only. When, however, these reversing ratchet devices are provided with the accelerating devices, such devices may be used together in the bit or independent of each other, as may be desired.

Having thus fully described the construction and arrangement or combination of the several parts of my improved bit-stock, its operation and advantages, what I claim as new is—

1. In the bit-stock, the combination of a crank having a bearing at one end formed with a cogged gear, a bit-shaft in said bearing and provided with a bevel-pinion, a stud or shaft having a bearing at one end for said bit-shaft and means for holding it at its other end, and two bevel-pinions upon said stud or shaft and connected to each other, and meshing with the gear upon the bearing of said crank and with the bevel-pinion upon the drill-shaft, substantially as described.

2. In a bit-stock, the combination of a crank having a vertical bearing at one end formed with a cogged gear, a bit-shaft in said bearing and provided with a bevel-pinion, a shell or casing inclosing said cogged gear and shaft, a short stud or shaft supported at right angles to said bit-shaft by said shell or casing, and bevel-pinions upon said stud or shaft and meshing with said gear and pinion, substantially as described.

3. In a bit-stock, the combination of a crank having a vertical bearing at one end formed with a cogged gear, a bit-shaft journaled in said bearing and provided with a bevel-pinion, a shell or casing inclosing said cogged gear and shaft and formed with bearings for the vertical bearing of the crank and for the bit-shaft, a short stud or shaft supported by said shell or casing, bevel-pinions upon said stud or shaft and meshing with said gear and pinion, and an arm pivoted to said shell or casing and formed with a clamp for engaging the crank, substantially as described.

4. In a bit-stock, the combination of a crank 1, having the bearing 3, formed with the flaring lower end 6, having the gear 7, the bit-shaft 4, journaled in said bearing and having the bevel-pinion 15, the two-part shell or casing having the necks 13, the clamping-rings 12 for said necks, the stud or shaft 9, having the bearing 10 for the bit-shaft, the pinions 8 and 14 upon said stud or shaft, and the arm 16, pivoted upon said

shell or casing and having the spring-jaws 18 for engaging the crank, substantially as described.

5 In a bit-stock, the combination of a crank having a vertical bearing formed with a cogged gear upon its end, a bit-shaft in said bearing and formed with a ratchet-wheel at its upper end, a pawl engaging said ratchet-wheel, a pinion upon said bit-shaft, intermediate accelerating gearing between said pinion and the gear upon said vertical bearing, a shell or casing inclosing said gearing and supporting the same, and an arm pivoted upon said shell or casing and detachably engaging 15 the crank, substantially as described.

6. In a bit-stock, the combination of a crank having a vertical bearing in one arm and a recess in said arm and formed with a shoulder or offset and openings in its outer end, a bit-shaft in said bearing provided with a ratchet-wheel, intermediate speed-accelerating gearing between said bearing and bit-shaft and provided with means for detachably locking it to the crank, a bolt or pawl in the recess 25 of the crank-arm and formed with a beveled head and with a milled head at its outer end, a coiled spring upon said bolt or pawl and between said beveled head and shoulder or offset, and a spring in the recess of the crank-arm at the openings in the same and formed with an inwardly-bent end engaging the

milled head of said bolt or pawl, substantially as described.

7. In a bit-stock, the combination of a crank formed with a vertical bearing in one arm and with a cogged gear upon said bearing, a bit-shaft in said bearing having a ratchet-wheel at its upper end and an axial bore formed with a radial slot at its inner end, a bevel-pinion upon said shaft and formed with a central sleeve portion having radial slots registering with the slot of the bit-shaft, a pawl engaging the ratchet-wheel upon the bit-shaft, intermediate speed-accelerating gearing between the bevel-pinion upon the bit-shaft and the gear upon the vertical bearing and provided with means for detachably connecting it with the crank, a rod in the axial bore of the bit-shaft and formed with a head upon its outer end, an eccentric-pin upon its inner end, and a recess in its side, a bulged spring in said recess, and a bolt or block pivoted upon said eccentric-pin and sliding in the slot of the bit-shaft and the sleeve portion of the pinion upon the same, substantially as described. 55

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ARTEMAS A. KENT.

Witnesses:

C. M. WOOSTER,
CHAS. F. HOLCOMB.