M. HARDSOCG.

BIT CHUCK AND BIT.

APPLICATION FILED JAN. 30, 1909.

945,735.

Patented Jan. 4, 1910.

Fig. 1.

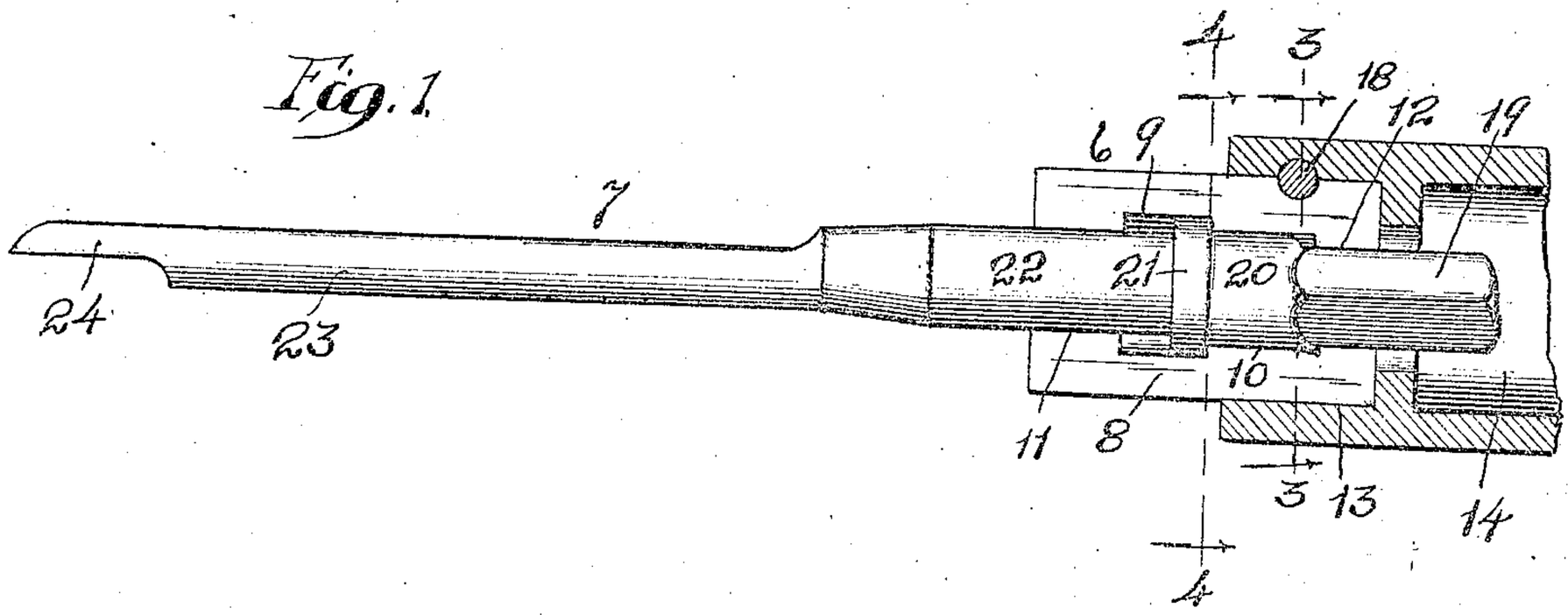


Fig. 2.

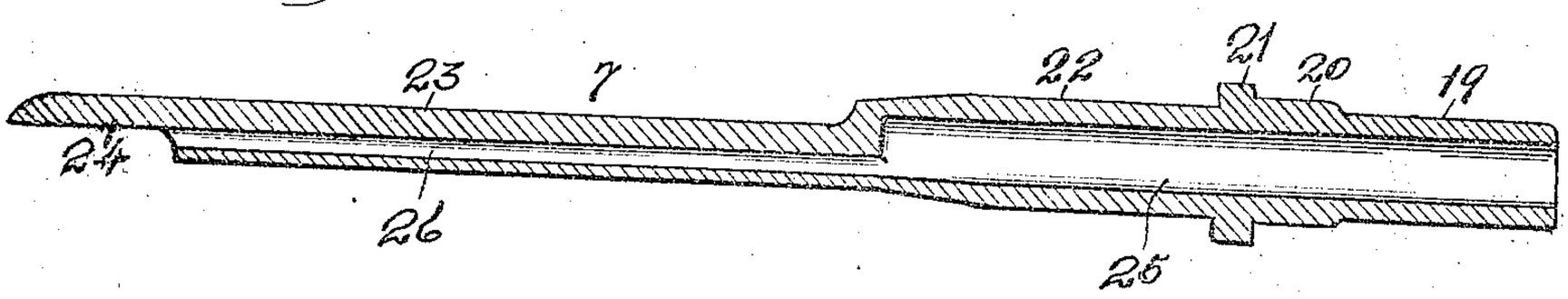


Fig. 3.

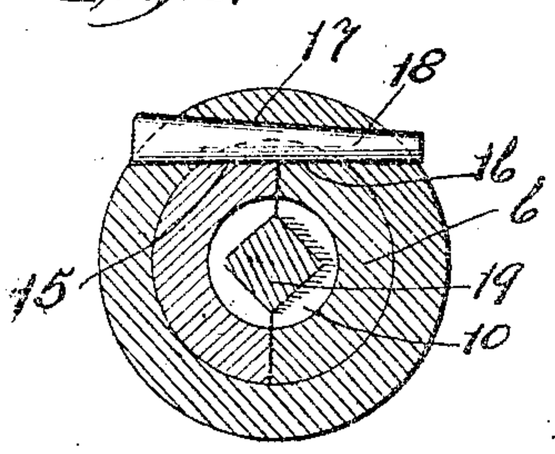


Fig. 4.

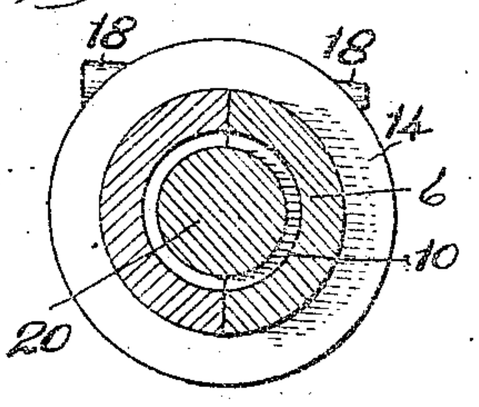
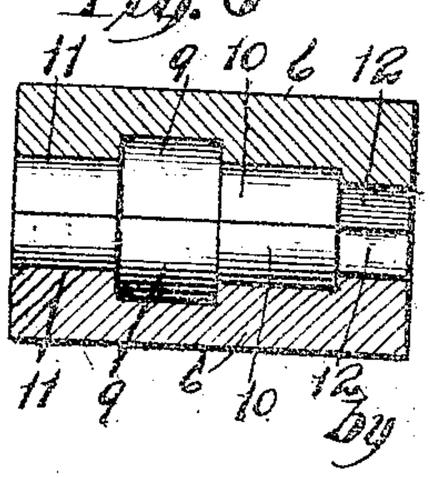


Fig. 5



Witnesses:
Wm. P. Bond
Pierson W. Banning.

Inventor:
Martin Hardsocg
Banning & Banning
Attys.

UNITED STATES PATENT OFFICE.

MARTIN HARDSOCG, OF OTTUMWA, IOWA.

BIT-CHUCK AND BIT.

945,735. Specification of Letters Patent. **Patented Jan. 4, 1910.**

Application filed January 30, 1909. Serial No. 475,279.

To all whom it may concern:

Be it known that I, MARTIN HARDSOCG, a citizen of the United States, residing at Ottumwa, in the county of Wapello and State of Iowa, have invented certain new and useful Improvements in Bit-Chucks and Bits, of which the following is a specification.

This invention relates to a bit chuck and bit adapted for use therein, more particularly as applied to pneumatic drills and hammers, although the chuck might be employed in other connections.

The object of the invention is to provide a chuck which can be readily clamped onto a bit of the proper formation, and thereafter inserted and locked in position in the end of a pneumatic tool or similar implement in such manner as to prevent the bit from dropping out of the tool or implement, and at the same time afford a space for the reciprocation of the bit when actuated by a pneumatic hammer.

Further objects of the invention are to provide a construction which will be simple and easy of application and removal, and which will be inexpensive and at the same time strong and durable.

Further objects will appear from the detailed description of the invention, which consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a longitudinal elevation of the bit and one section of the chuck, showing the end of the pneumatic hammer casing in elevation; Fig. 2 a longitudinal sectional elevation of the bit; Fig. 3 a cross sectional view, taken on line 3—3 of Fig. 1; Fig. 4 a similar view, taken on line 4—4 of Fig. 1; and Fig. 5 a longitudinal sectional view of the two chuck sections in clamping position.

The chuck comprises two sections 6, each having a semi-cylindrical external contour, which sections are adapted to fit together to inclose a bit 7, and when fitted to assume the external formation of a complete cylinder. Each of the sections is provided with a flat inner face 8, having formed therein a half cylindrical outer chamber 9 which merges into a half cylindrical inner chamber 10 of lesser diameter than the outer chamber. The outer chamber, at its outer end, merges into a semi-cylindrical groove or channel 11, and the inner chamber, at its inner end, merges into a V-shaped inner groove or channel 12. It will be understood that the terms "inner" and "outer" refer to the position occupied by the parts when the chuck is inserted in the cylindrical recessed end 13 of the barrel of a pneumatic hammer or other implement 14. The two sections of the chuck, when registered face to face, afford truly cylindrical inner and outer chambers, a squared inner groove or channel, and a cylindrical outer groove or channel. The abutting chuck sections have formed, in their exterior faces, tapered channels or grooves 15 and 16, the one being a continuation of the other, which channels or grooves coöperate with a tapered bore 17 which extends transversely through the walls of the recessed end of the casing 14, so that when the parts are all in register a tapered pin 18 may be driven through the bore and through the channels, thereby uniting the two chuck sections together and holding them, as an integral structure, firmly and rigidly within the chambered end of the casing.

The chuck coöperates with a bit 7 which, in the form shown, is provided with a square head 19 slidably entered between the square channels 12 in the two chuck sections, which arrangement prevents rotation of the bit and at the same time permits the reciprocation thereof. The square head merges into a cylindrical portion 20 of suitable size to lie within the cylindrical inner chamber 10, and the portion 20 merges into an enlarged cylindrical flange portion 21, which is adapted to reciprocate within the outer chamber afforded by the half cylindrical recesses 9, and serves as a stop or abutment to limit the reciprocation of the bit. The flange portion 21 connects with and merges into a cylindrical shank 22 which fits within the recesses 11, and said shank portion terminates in a stem 23 of reduced diameter, having a cutting end 24. The inner or enlarged end of the bit is provided with a central bore 25 which terminates in a reduced air passage 26 adapted to discharge air under pressure near the cutting end of the bit, as shown in Fig. 2. Obviously, the cutting portion and interior arrangement of the bit might be substantially changed or modified without affecting the operation of the chuck members.

In inserting the bit, the chuck sections are positioned in register with one another and with the bit lying between the sections. Thereafter, the chuck as a whole, with the

bit, is inserted into the end of the casing of the pneumatic tool, after which the tapered pin can be driven to place to clamp the parts together. It is desirable that the tapered pin have a length to cause its reduced end to project entirely through the wall of the casing when the pin is inserted, so that it can be easily driven out of the tapered bore to release the parts when desired. In operation, the bit can freely move back and forth through a limited space, but will be held against accidental displacement by the flange 21, which is of a size to prevent the accidental discharge of the bit.

The construction is an extremely simple one, and at the same time affords strength, rigidity and durability, which are essential in the art to which the present invention relates.

What I regard as new and desire to secure by Letters Patent is:

In combination with a tool casing having a recess in its end and a pin hole in its side wall, a chuck comprising two halves or sections recessed to form a chamber of enlarged diameter merging into channels of reduced diameter, and each having a pin groove, the two grooves being in register, a bit of a size to project inwardly and outwardly through the channels, and provided with an enlarged portion adapted to reciprocate within the chamber, and a pin entered through the pin hole in the wall of the tool casing and through the pin grooves in the sections or halves of the chuck for holding the sections or halves of the chuck together, and holding the chuck as a whole in inserted position within the tool casing, substantially as described.

MARTIN HARDSOCG.

Witnesses:
H. D. ZOLLARS,
EMMET A. WORK.