

C. PAULI.
DRILL.

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1,106,966.

Patented Aug. 11, 1914.

Fig. 1.

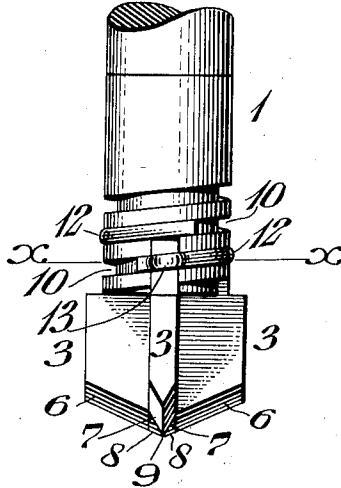


Fig. 3.

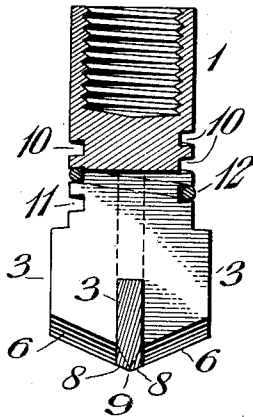


Fig. 2.

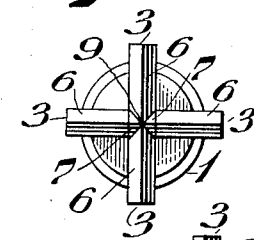


Fig. 4.

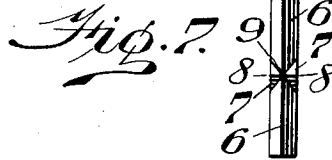
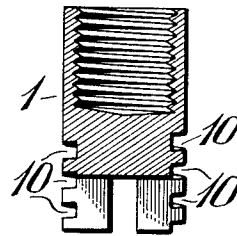


Fig. 6.

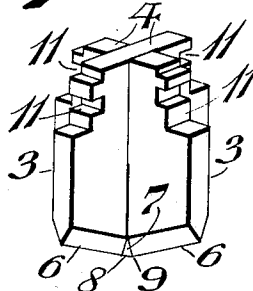


Fig. 8.

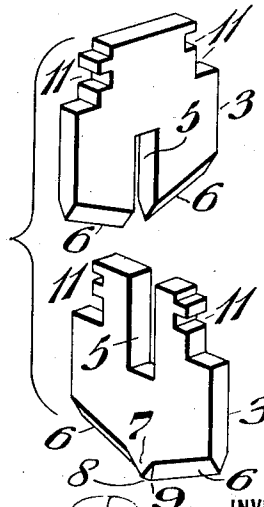
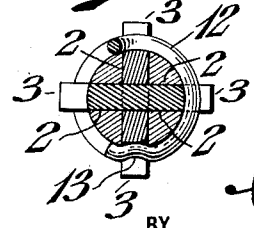


Fig. 5.



WITNESSES

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DRILL.

1,106,966.

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To all whom it may concern:

Be it known that I, CARL PAULI, a citizen of the United States, residing at Roselle Park, in the county of Union, State of New Jersey, have invented a new and useful Drill, of which the following is a specification.

My invention consists of improvements in drills, more particularly for stone, brick, cement and the like, the same embodying crossed bits whose cutting edges are adapted to be continuous in their respective directions, thus avoiding a gap at the central point of the drill.

It consists also of novel means for securing the bits to the drill head, the same being simple, inexpensive and practical in their nature, as will be hereinafter referred to.

The invention is satisfactorily illustrated in the accompanying drawing, but the important instrumentalities thereof may be varied, and so it is to be understood that the invention is not limited to the specific details shown and described.

Figure 1 represents a side elevation of a drill embodying my invention. Fig. 2 represents a bottom plan view thereof. Fig. 3 represents a longitudinal section thereof. Fig. 4 represents a similar section, the bits having been removed. Fig. 5 represents a transverse section on line $x-x$ Fig. 1. Fig. 6 represents a perspective view of the bits removed from the head of the device. Fig. 7 represents an edge view of one of the bits. Fig. 8 represents a perspective view of the bits in separated condition.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings:—1 designates a head the same having on an end thereof, the longitudinally extending recesses or grooves 2, 2, which extend therein in diametrically opposite directions so as to cross each other.

3, 3, designate boring or drill bits whose shanks 4 are adapted to be fitted in said grooves 2, each being provided with a throat 5, one extending into the body of the bit from the cutting edge, and the other throat extending into the body in the shank thereof, so that the throat of one bit receives the throat of the other bit, the bits thus crossing each other and presenting a plurality of cutting edges 6, which likewise cross each other, and so extend in diametrically opposite di-

rections to the work of boring or drilling to be accomplished. On the center portion of the sides of the cutting edge of one of the bits are outwardly or laterally projecting fillets 7, each of which extend from the side of the shank of the bit in V-shape toward said cutting edge, and has a cutting edge 8, the cutting edges 8 of the two sides of the bit converging to the center of the cutting edge 6 of the bit, it being noticed that said cutting edges 8 are at a right angle or transverse to the cutting edge 6, and consequently in a right line with the cutting edge 6 of the other bit, and continuities of the latter named edge, whereby the two crossed cutting edges of the two bits begin at the central point 9 of the bits and continue unbroken therefrom to the outer side terminals of the cutting edges, and thus there is no gap at the center of the cutting edges of the bits, whereby the drilling or boring may be accomplished by the entire lengths of said cutting edges positively from the center of the same to the side terminals thereof.

The side of the end portion of the head where the shank of the bits are fitted therein is grooved forming comparatively the screw-threads 10, and the side edges of the shanks 4 of the bits are similarly grooved forming comparatively the screw-threads 11, which when said bits are in position in the head harmonize with the screw threads 10 of the head, thus producing screw-threads in the bits and head, continuities of each other, as shown in Fig. 1. In said screw threads is fitted the rotatable collar 12, which is formed preferably of a band of suitable metal or piece of wire shaped into a helical coil so as to occupy said threads and capable of being rotated after the manner of a screw nut, its convolutions entering the threads of the head and shanks of the bit, thus connecting the bits with the head and retaining the former firmly in the latter, said coil collar occupying the threads of the shanks of the bit and head, comparatively flush with said head and shanks. In order to prevent improper rotation of the collar, a terminal thereof is deflected inwardly forming the offset 13 which is adapted as a shoulder to enter the portion of the depression of the convolution of the screw thread with which it is contiguous and be seated frictionally thereagainst providing a lock for the collar thus preventing unscrew-

ing of the collar and consequent disconnection of the bits from the head, as most apparent on reference to Fig. 5. It is evident that when the offset or shoulder 13 is drawn out of the depression that it occupies, the collar may be rotated or unscrewed when it leaves the shanks of the bits, and thus the latter are no longer controlled in the head, and so may be removed therefrom, and separated from each other, a feature of importance for sharpening, repairs, etc., after which bits may be re-assembled and located in the head and secured by the collar when the drill is ready again for operation.

The collar 12 is preferably formed of a coil of resilient metal, such as steel wire, as a skeleton nut, the end thereof having the offset thereon being particularly resilient so that said offset may spring into the depression that it occupies and retain its seat therein, so as to prevent improper motion of the collar. It will be noticed also that the cutting edges of the cross bits are tapering in their nature so that the center of the combined cutting edge is in advance of the remainder of said edges, and that owing to the fillets, the cross cutting edges have comparatively a common center which begins the work of boring or drilling, and as the several cutting edges extend unbroken from said center to their outward terminals, said work may be continued in a manner effective in its results.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is:—

1. In a drill, a head having on the end thereof longitudinally-extending recesses in diametrically opposite directions, a plurality of bits adapted to be fitted together crossing each other and having their shanks adapted to occupy said recesses, the sides of said shanks and corresponding portion of the side of said head having registering screw threads thereon, a collar of the form of a screw coil adapted to engage simultaneously said threads of the shanks and head.

2. In a drill, a head having on the end thereof longitudinally-extending recesses in diametrically opposite directions, a plurality of bits adapted to be fitted together crossing each other and having their shanks adapted to occupy said recesses, the sides of said shanks and corresponding portion of the side of said head having registering screw threads thereon, a collar of the form of a screw coil adapted to engage simultaneously said threads of the shanks and head, said collar having an intumed shoulder

which is adapted to be seated frictionally in the portion of the convolution of the screw thread with which it is contiguous.

3. In a drill, a head, a bit, and a collar, said bit having its shank adapted to occupy said head, the sides of said bit and head having corresponding screw threads thereon, said collar being of the form of a screw coil which is adapted to occupy simultaneously the threads of said head and shanks.

4. In a drill, bits adapted to be fitted to each other cross-wise, one of said bits having thereon about the center of its cutting edge outward projecting fillets, said fillets having cutting edges adapted to form continuities of the cutting edge of the other bit.

5. In a drill, bits formed with slots adapting said bits to be fitted to each other cross-wise, fillets on the sides of one of said bits about the center of the cutting edge thereof, said fillets having cutting edges adapted to form continuities of the cutting edge of the other bit.

6. In a drill, bits formed with slots adapting said bits to be fitted to each other cross-wise, fillets on the sides of one of said bits about the center of the cutting edge thereof, said fillets having cutting edges which extend transversely to the cutting edge of the other bit and adapted to form continuities thereof.

7. In a drill, bits formed with throats one of which is adapted to be occupied by the other, connecting said bits cross-wise, one of said bits having thereon about the center of the cutting edge thereof fillets which project outwardly from said cutting edge and have their cutting edges adapted to form continuities of the cutting edge of the other bit, the walls of the throat of the other bit being adapted to contact with the sides of said fillets.

8. In a drill, bits formed with throats one of which is adapted to be occupied by the other, connecting said bits cross-wise, one of said bits having thereon about the center of the cutting edge thereof fillets which project outwardly from said cutting edge, the walls of the throat of the other bit being adapted to contact with the sides of said fillets, said fillets having cutting edges which are adapted to extend continuously from the cutting edges of the other bit at the throat thereof to the center of the cutting edge of the bit which carries said fillets.

CARL PAULI.

Witnesses:

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CLARICE HUNTE.