

No. 779,517.

PATENTED JAN. 10, 1905.

K. AUERBACH.
DEVICE FOR BORING SQUARE HOLES.
APPLICATION FILED FEB. 21, 1903.

2 SHEETS—SHEET 1.

Fig. 1.

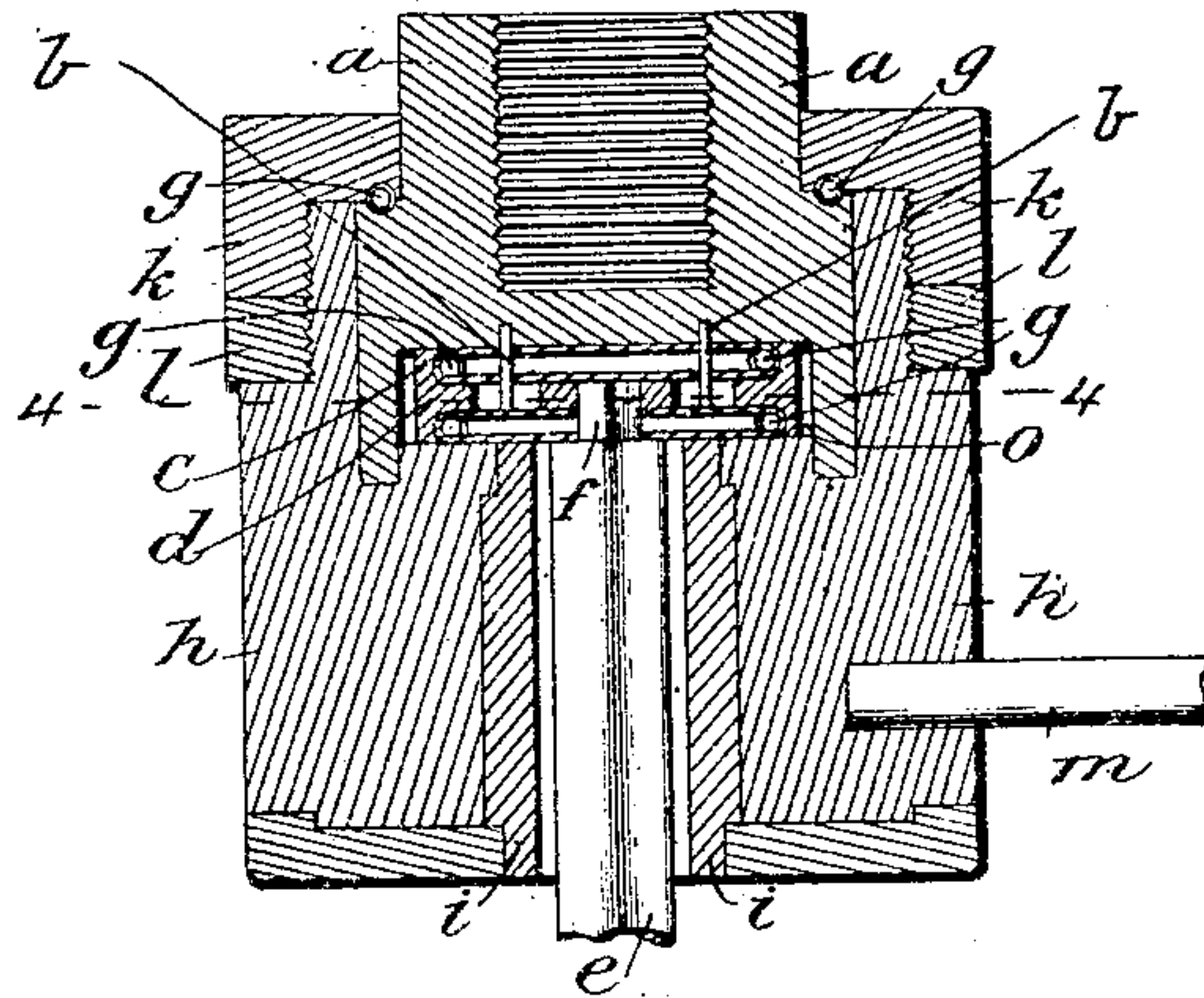


Fig. 2.



Fig. 3.

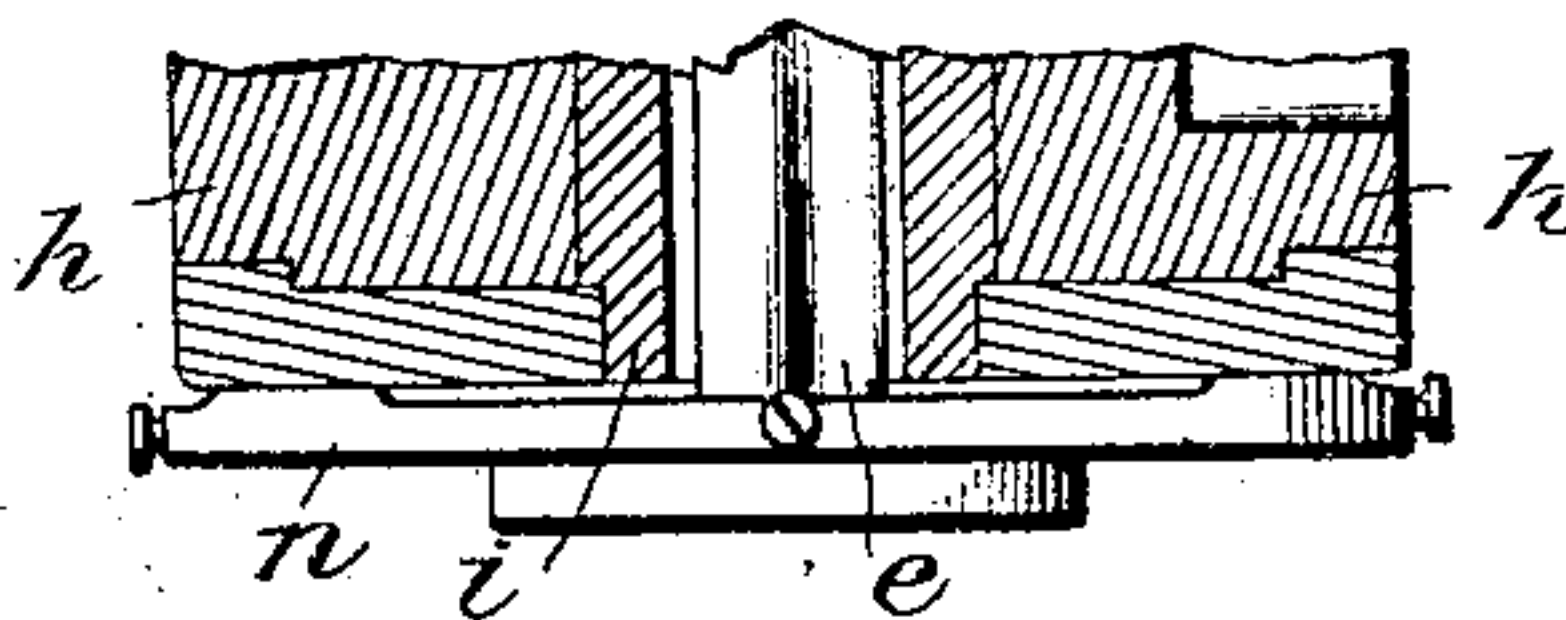
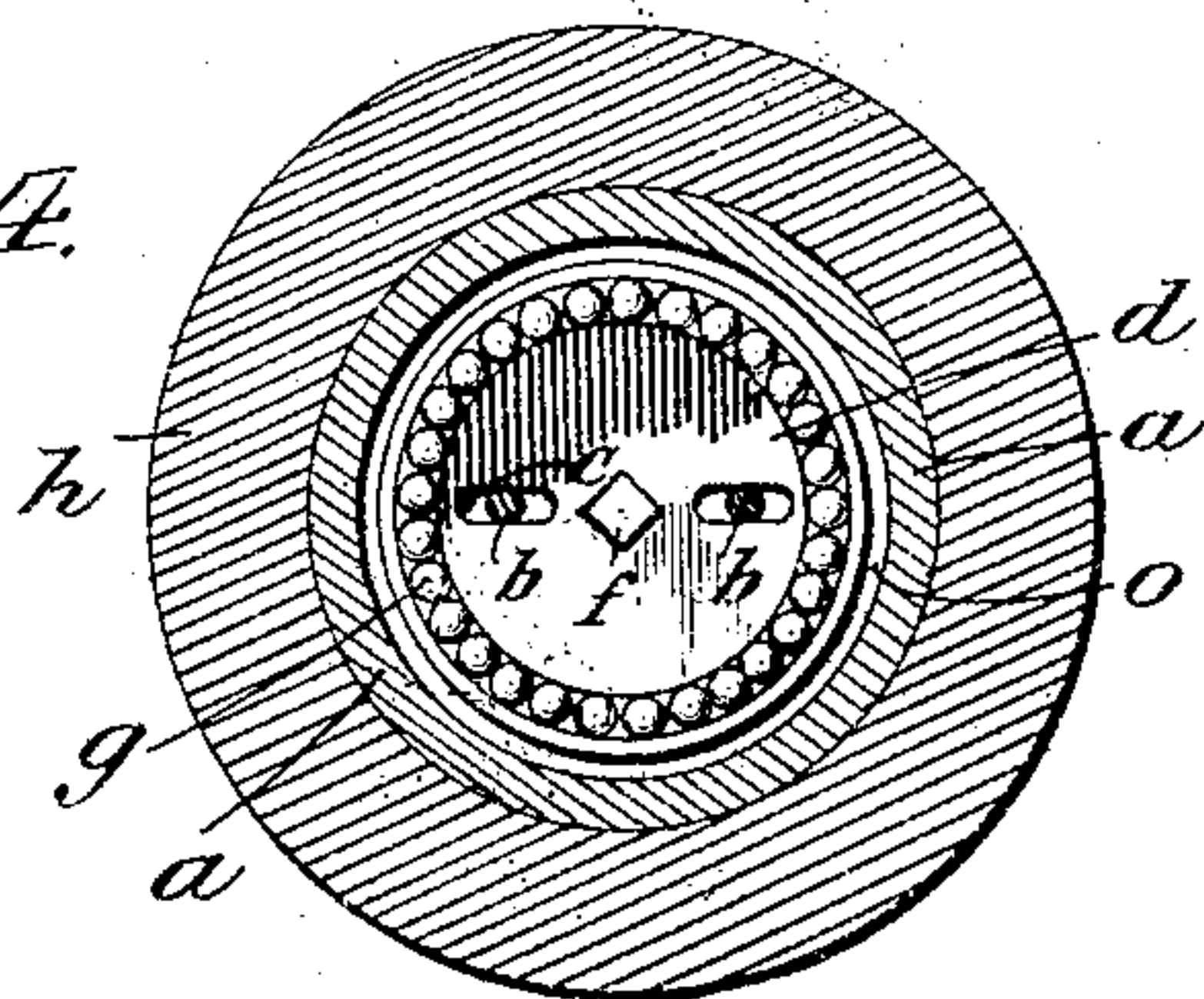


Fig. 4.



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2 SHEETS—SHEET 2.

FIG. 5.

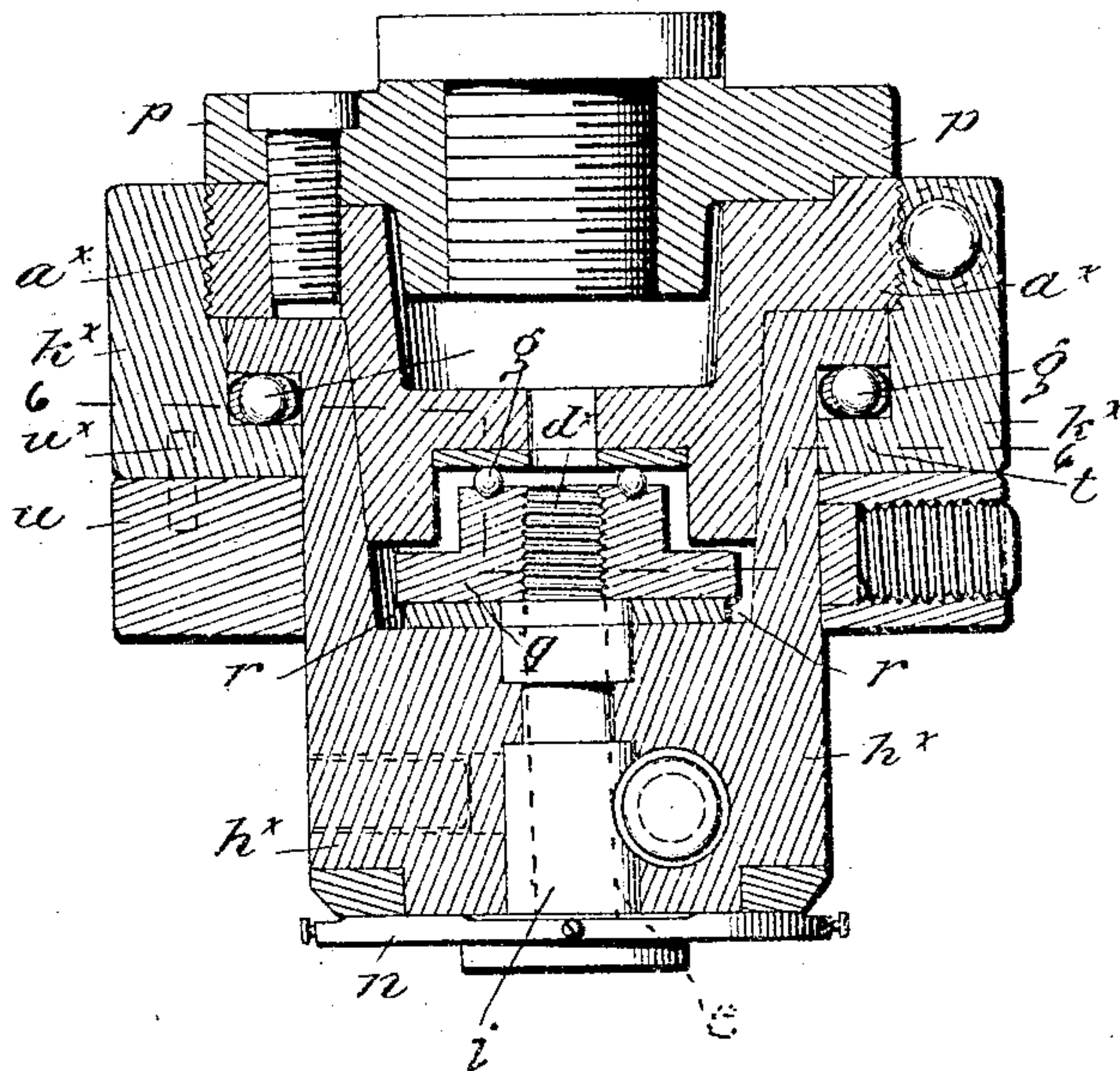
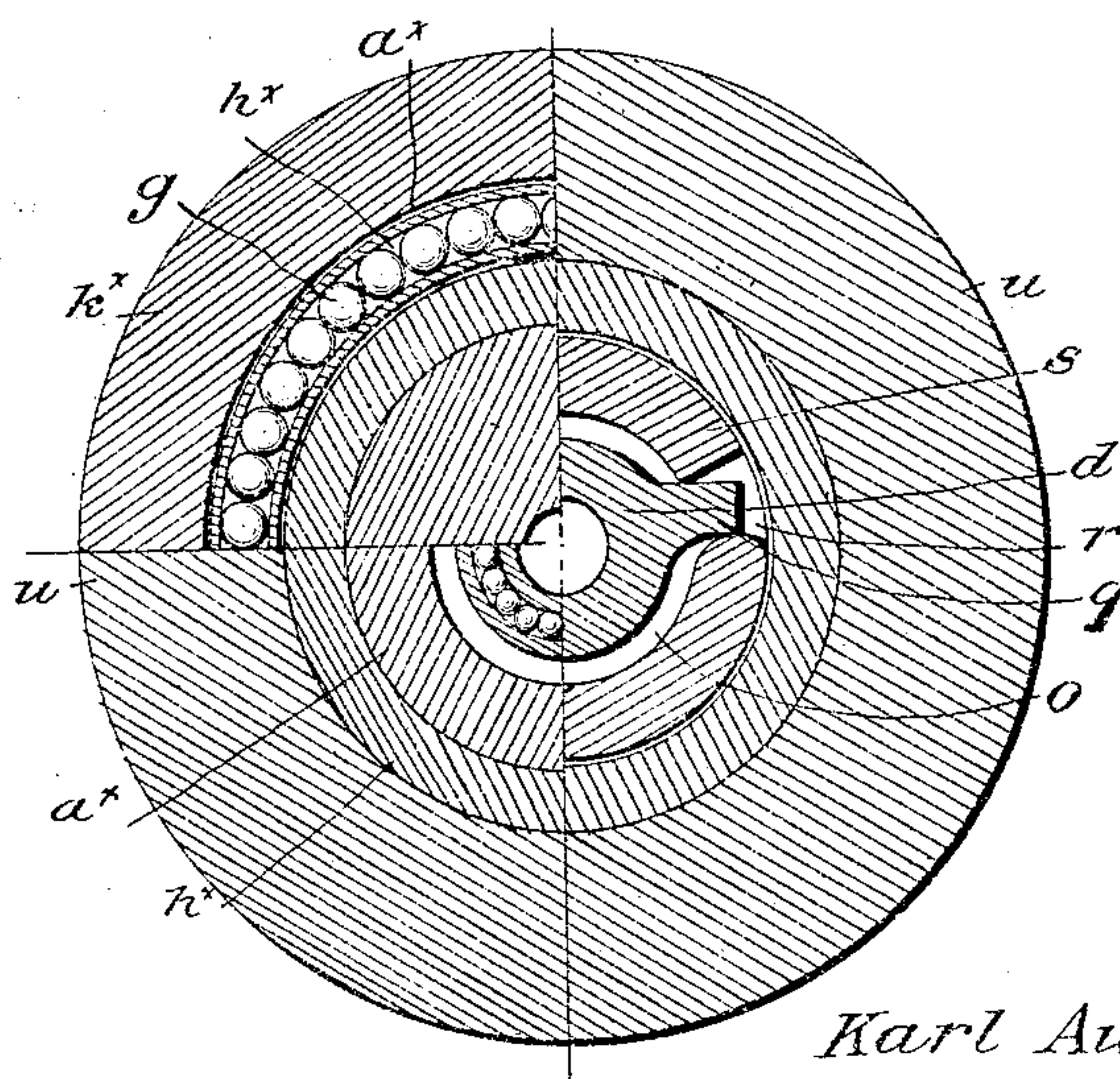


FIG. 6.



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KARL AUERBACH, OF DRESDEN-PIESCHEN, GERMANY.

DEVICE FOR BORING SQUARE HOLES.

SPECIFICATION forming part of Letter: Patent No. 779,517, dated January 10, 1905.

Application filed February 21, 1903. Serial No. 144,516.

To all whom it may concern:

Be it known that I, KARL AUERBACH, residing at Dresden-Pieschen, Empire of Germany, have invented certain new and useful Improvements in Devices for Boring Square Holes; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

In boring square holes the proper mounting and guidance of the drill is always a matter of much difficulty by reason of its oscillating motion in the pattern, whereby a continued demand is made upon fresh friction-surfaces of the drilling-spindle. Attempts have been made to overcome this difficulty by securing the pattern to the work, or by employing a second pattern secured to the frame of the machine, or by arranging the apparatus to engage in the work, or by employing a drill sliding in a suitably-formed flange-ring or the like running in the pattern. None of these methods, however, have been able to insure any really satisfactory guidance, especially in the case of badly-mounted spindles. This before all is due to the drill still being arranged to descend in the pattern and to new friction-surfaces of the spindle always being acted upon, so that certain mounting and guidance of the drill is greatly interfered with. At the same time the method of securing the pattern to the work is attended with the great disadvantage that the play of the drill cannot easily be seen.

The subject of my invention is a device for attaching to the spindle of drilling-machines, lathes, and the like for the purpose of boring square holes. The apparatus constitutes a self-contained tool in which the spindle and pattern always coöperate at the same part without motion relatively to each other—that is, instead of the drill sliding up and down in the pattern the latter, with the complete tool, shares the downward motion of the drill. For this purpose the casing containing the fixed or adjustable pattern is arranged rotatably on a member adapted to be secured to the spindle, and between the two, in a recess on the under

surface of the inner member, is a disk, bridge-piece, or the like device carrying the drill, which device is guided with oscillating motion by means secured stationarily in the inner member. If the external casing is stopped while the inner member is in rotation, so that the latter carries with it the disk which supports the drill, the latter runs in the pattern in well-known manner without there being any motion, however, in the direction of the longitudinal axis. The descent of the drill into the work is effected solely by the spindle in advancing carrying the whole apparatus with it. Owing to this arrangement, the mounting and guidance of the drill is the simplest possible, and the latter can always be exactly observed in its motion. Further advantages attaching to this arrangement are, first, that as soon as the outer casing is released and is therefore in rotation the oscillatory motion of the drill at once ceases, so that instead of square holes round ones are drilled; second, that the shaft running in the pattern instead of having a drill-point can be secured in a flat disk or the like for holding the work. The latter thus shares the rotary oscillating motion, so that work can be carried out with a cutter or the like fixed in a holder.

The invention is illustrated by the annexed drawings, in which—

Figure 1 is a vertical section of my new device. Fig. 2 is a horizontal section of the drill-shank. Fig. 3 is a vertical section of the lower portion of my device, in which the spindle is provided with a disk to hold the work. Fig. 4 is a horizontal section through Fig. 1 on the line 4 4 thereof. Fig. 5 is a vertical section, and Fig. 6 a horizontal section, both drawn to a larger scale, of a modified construction of my device, the section being taken on the dotted line 6 6 of Fig. 5.

Referring more particularly to the construction shown in Figs. 1, 2, and 4, *a* is the inner member, adapted to be attached to a spindle or the like and provided with two pins *b*. The latter engage in slots *c*, cut in a sliding disk *d*, fitting into the space *e*. The square pin *f* of the drill *e* engages in an aperture in the said disk *d*. *g* represents ball-rings. *h* is the outer casing, in which is contained the

stationary or adjustable pattern, and k is a collar connecting the casing h with the inner member a . The collar can be adjusted by means of the counter-ring l . m is a handle for the purpose of stopping the casing. When this occurs and the spindle rotates with the member a , the pins b cause the disk d to revolve with the drill e , which now runs in the pattern without motion in the direction of its longitudinal axis. i is a hollow bushing or tube held in the casing h and receiving the spindle. This is the pattern.

Fig. 3 shows the spindle e provided with a disk n (instead of a drill-point) for holding the work so as to enable an ordinary cutter to be employed.

Referring now to the modified construction of my apparatus, (shown in Figs. 5 and 6,) the member a^x is screwed to the spindle in well-known manner by means of a ring p , attached by screws, whereby the device can be more readily applied to any desired spindle. Instead of pins b , provided in the member a^x and engaging in slots c of the disk d , two fingers q are provided on a cross-piece d^x , a member corresponding to said disk d , these fingers engaging in spaces r in the flanges s , provided below the member a^x , so that the cross-piece d^x is rotated with the drill. The counter-ring l is dispensed with, and the ring k^x , connecting the member a^x with the casing h^x , instead of being screwed to the latter is screwed to the member a^x and tightened up by a screw. It is provided with an angular rim t , on which rests the casing on a ball-ring. The casing h^x is further provided with a ring u , which may be secured by pins u^x or the like to the collar k^x for the purpose of rigidly connecting casing and member a^x , so as to insure proper guidance of the drill in boring circular holes. The ring u serves to bind the two bodies a^x and h^x fast together when pushed upon the apparatus.

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

1. In a device for attachment to the rotating spindle of square-hole-drilling machines,

the combination of an inner member rotating with the spindle, an outer casing for the pattern, the pattern in said casing, a spindle entering the casing, a device secured to said spindle and located in a space between said inner member and outer casing, and means for causing rotation of the said device with the inner member and allowing it to partake of the oscillating motion of the spindle in the pattern, all substantially as described.

2. In a device for attachment to the rotating spindle of square-hole-drilling machines, the combination of an inner member rotating with the spindle, an outer casing for the pattern, the pattern in said casing, a spindle entering the casing, a device secured to said spindle and located in a space between said inner member and outer casing, means for carrying the work attached to said spindle, and means for causing rotation of the said device with the inner member and allowing it to partake of the oscillating motion of the spindle in the pattern, all substantially as described.

3. In a device for attachment to the rotating spindle of square-hole-drilling machines, the combination of an inner member rotating with the spindle, an outer casing for the pattern, the pattern in said casing, a spindle entering the casing, a device secured to said spindle and located in a space between said inner member and outer casing, means for carrying the work attached to said spindle, means for causing rotation of the said device with the inner member and allowing it to partake of the oscillating motion of the spindle in the pattern, and means for rigidly attaching said inner member to said casing for the purpose of adapting the apparatus for boring circular holes, all substantially as described.

In witness whereof I have hereunto signed my name, this 29th day of January, 1903, in the presence of two subscribing witnesses.

KARL AUERBACH.

Witnesses:

PAUL E. SCHILLING

PAUL ARRAS.