

No. 815,844.

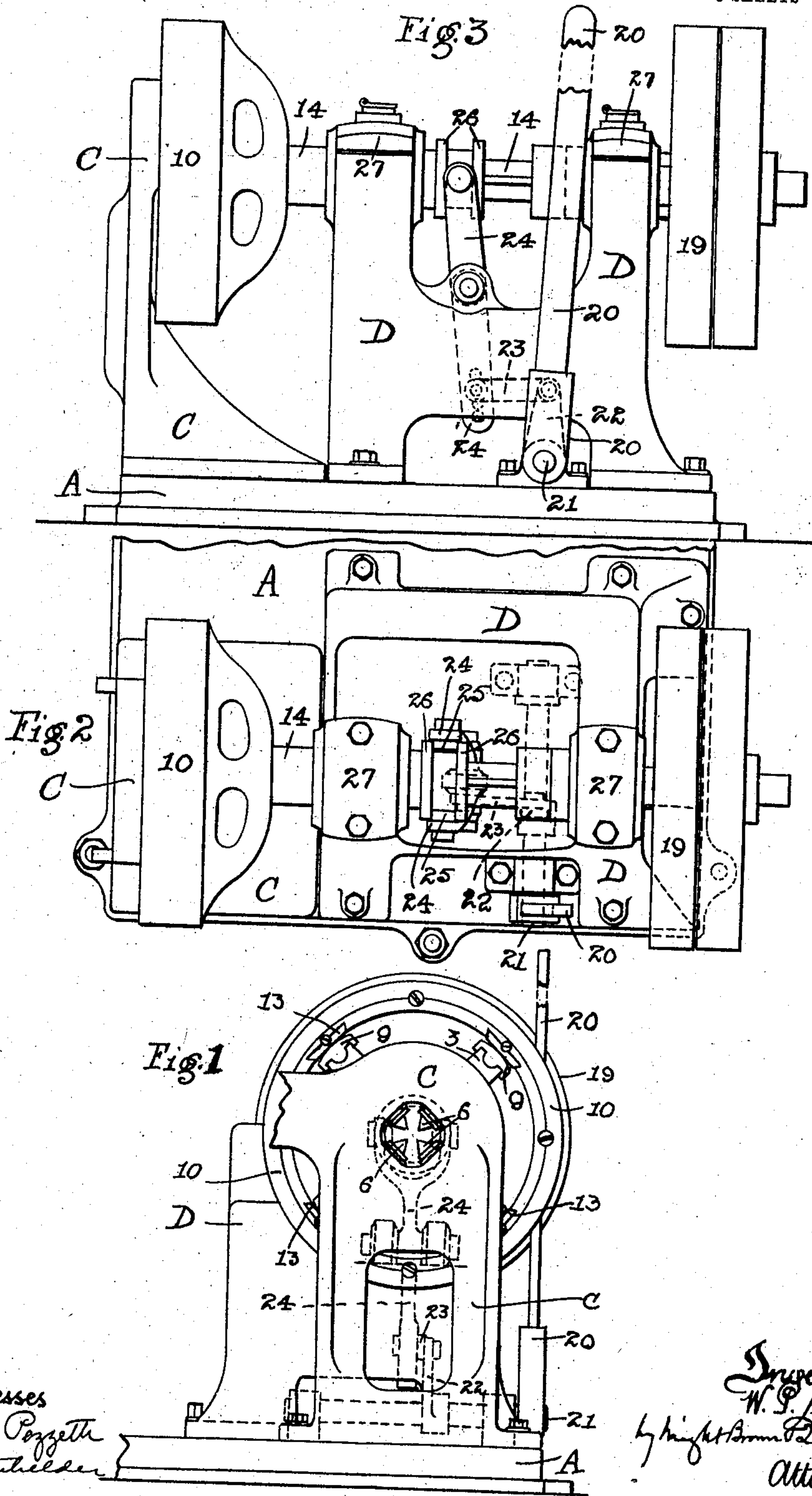
PATENTED MAR. 20, 1906.

W. P. LIGHTBODY.

MECHANISM FOR SHAPING AND SWAGING ROCK DRILLS.

APPLICATION FILED JULY 2, 1904.

3 SHEETS—SHEET 1.



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Fig. 4

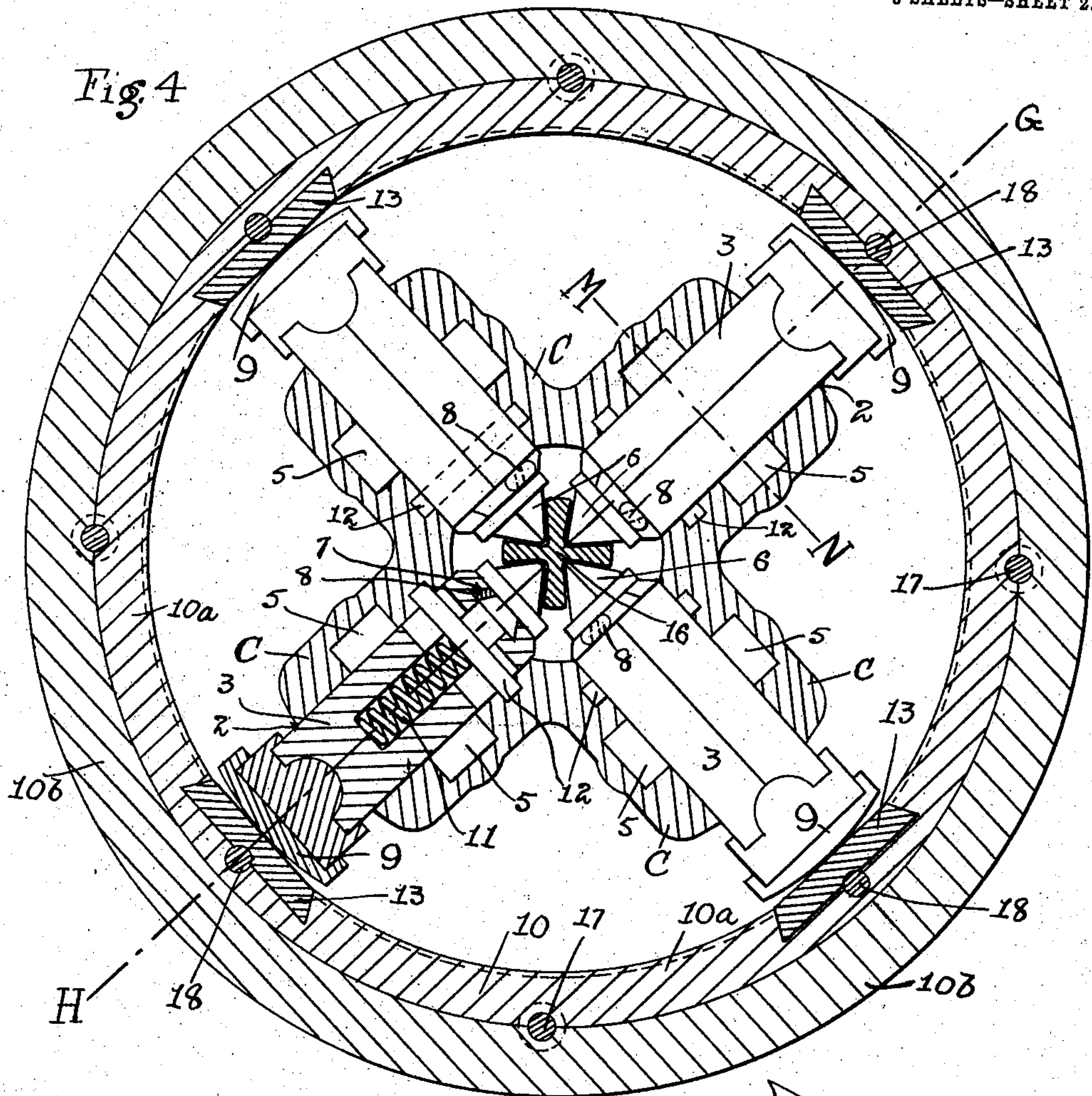


Fig. 6

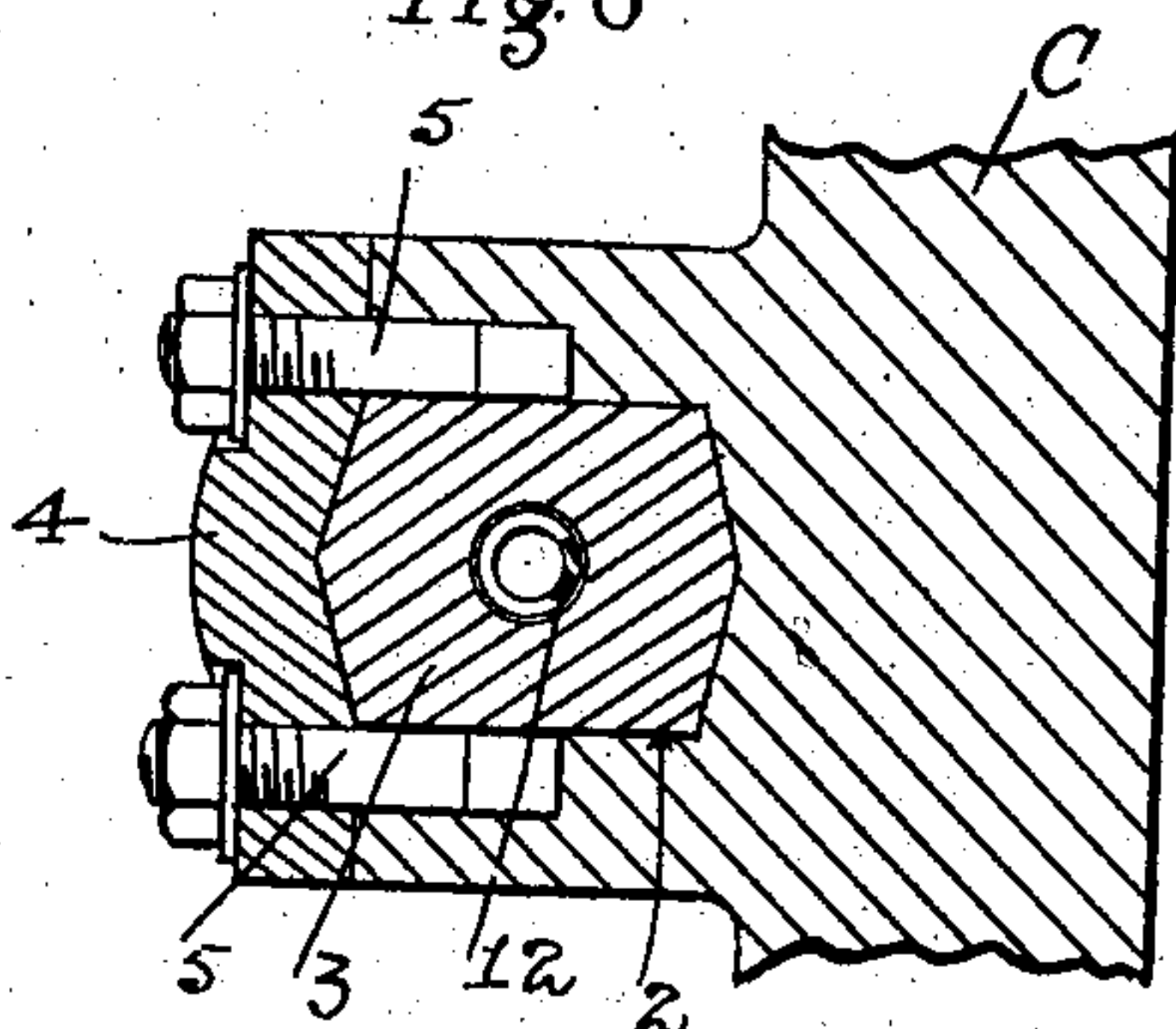
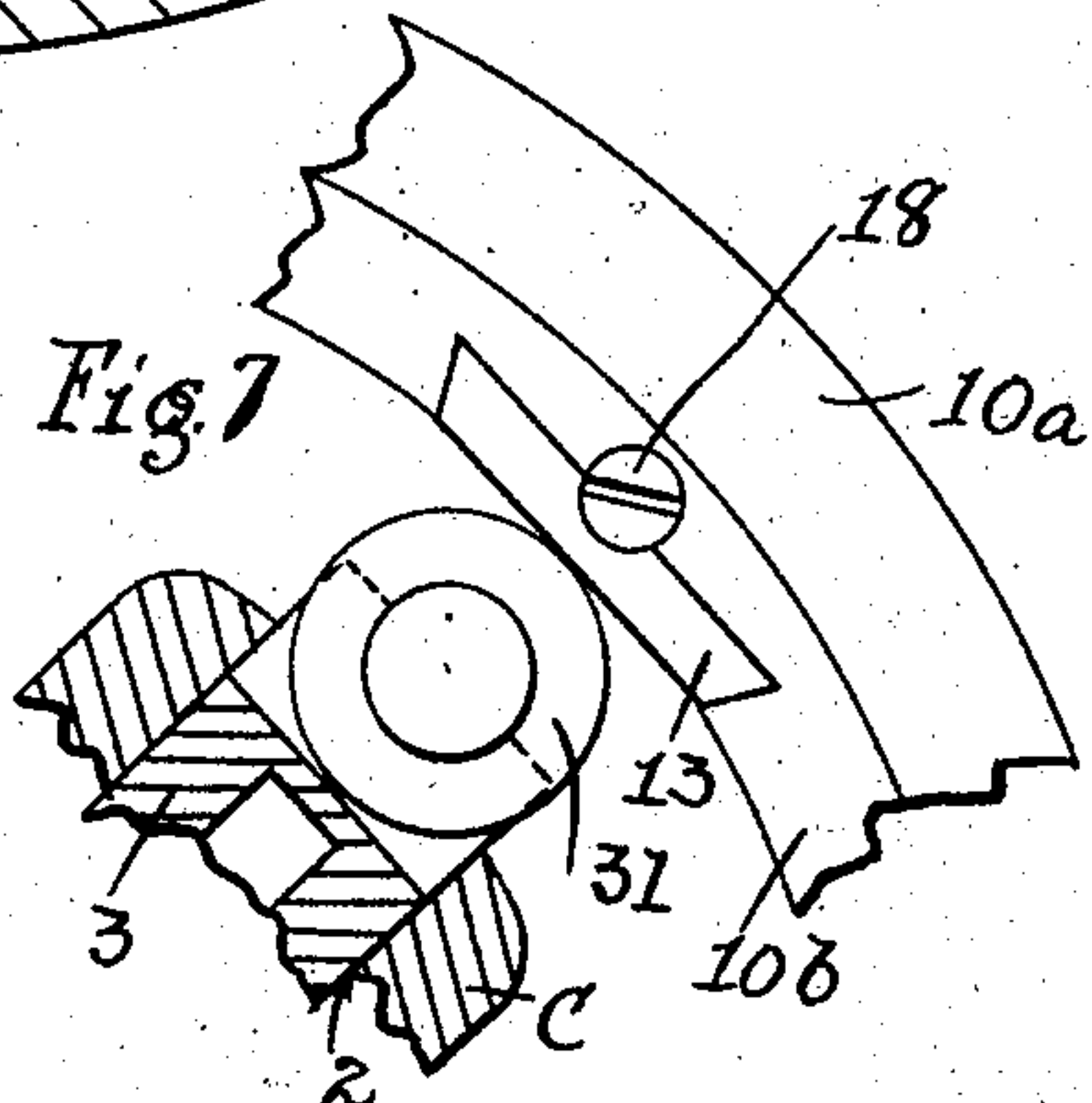


Fig. 7



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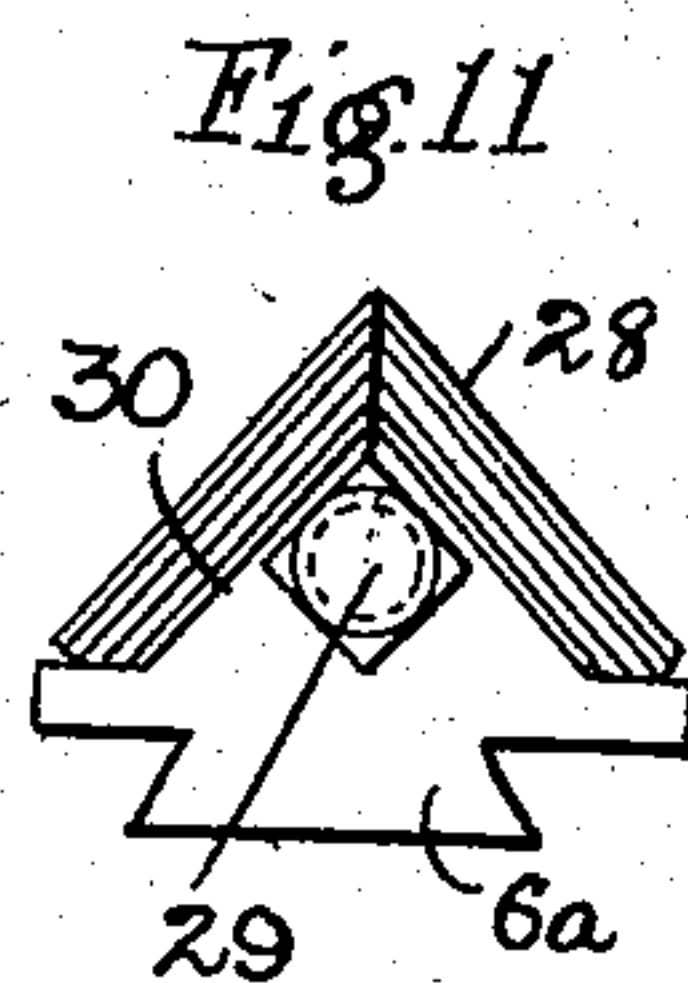
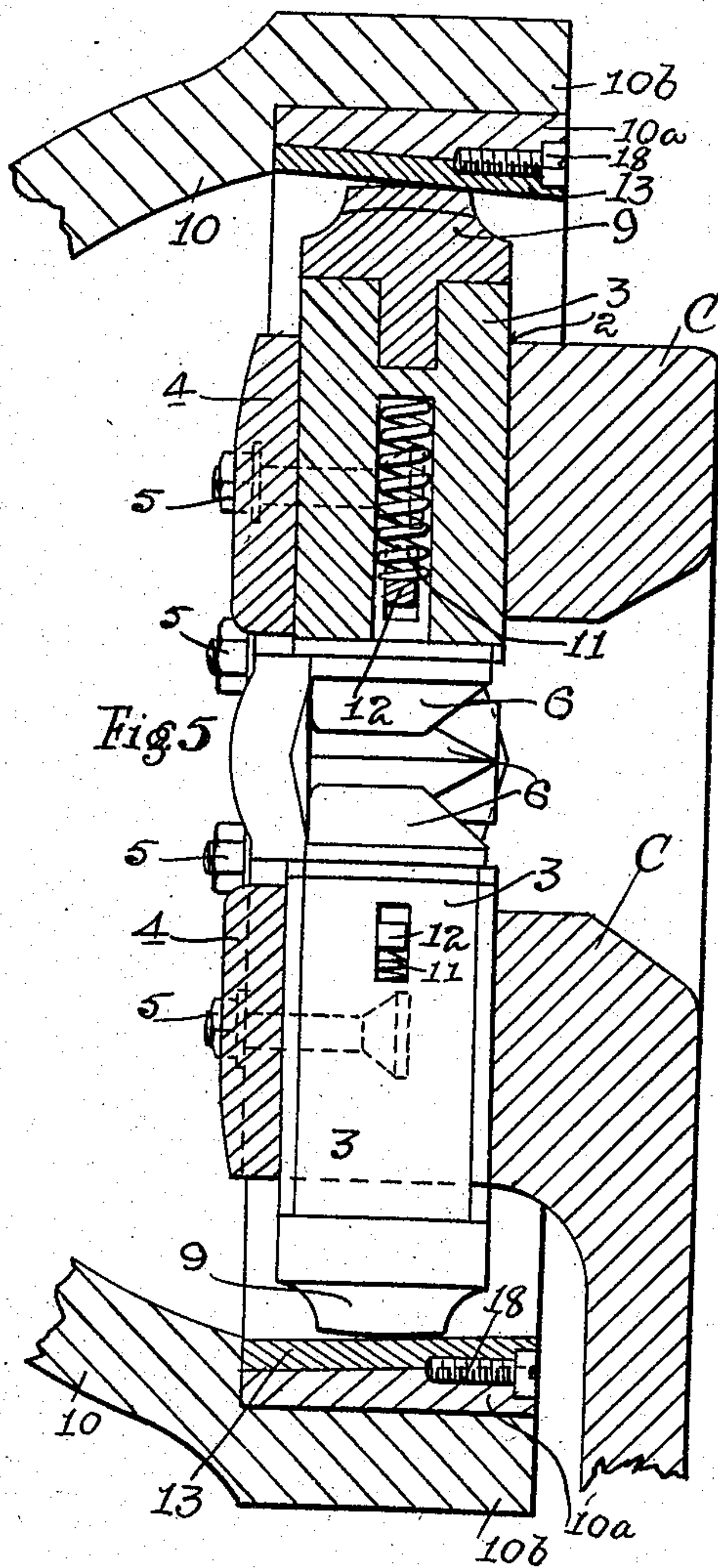
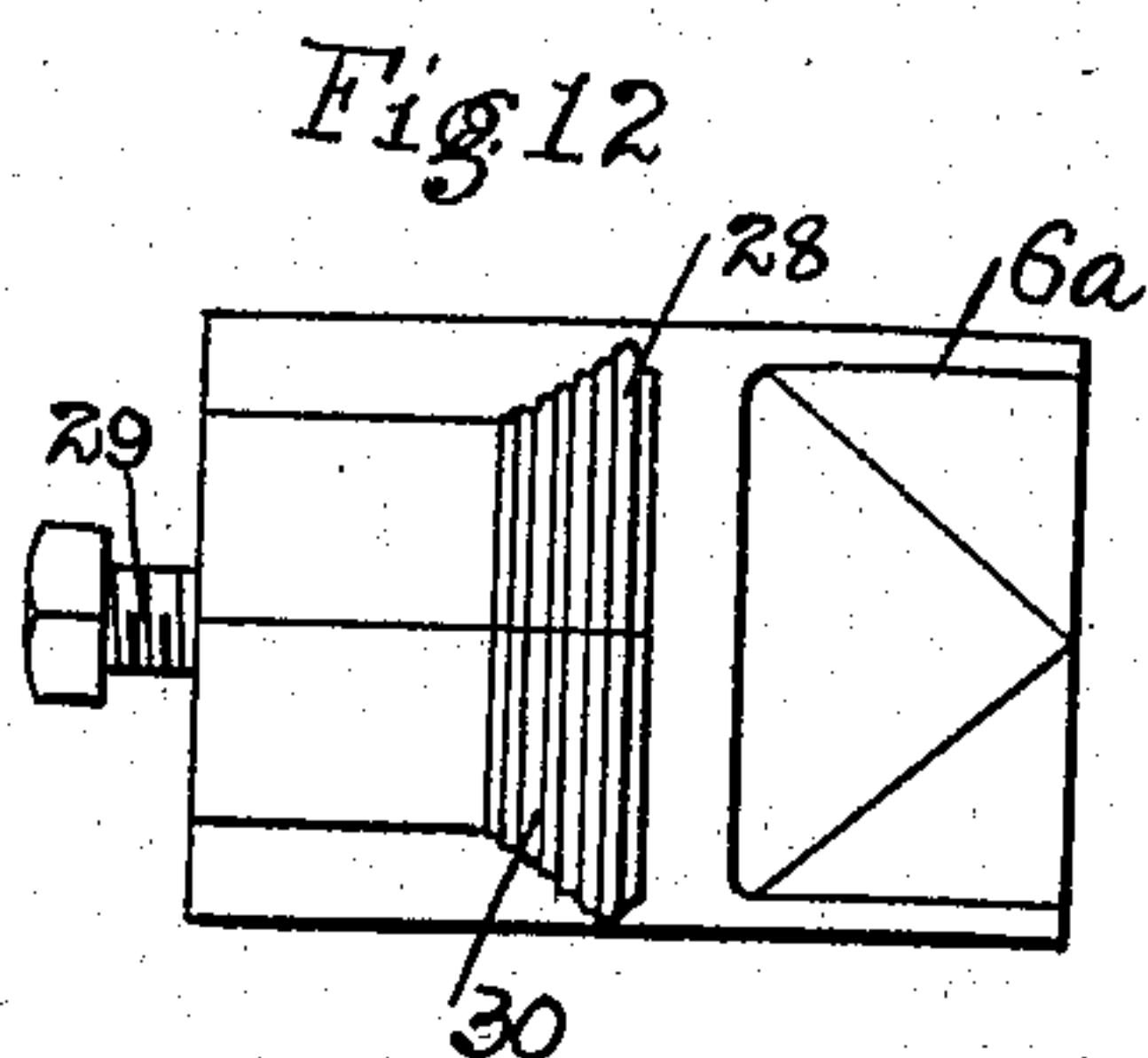
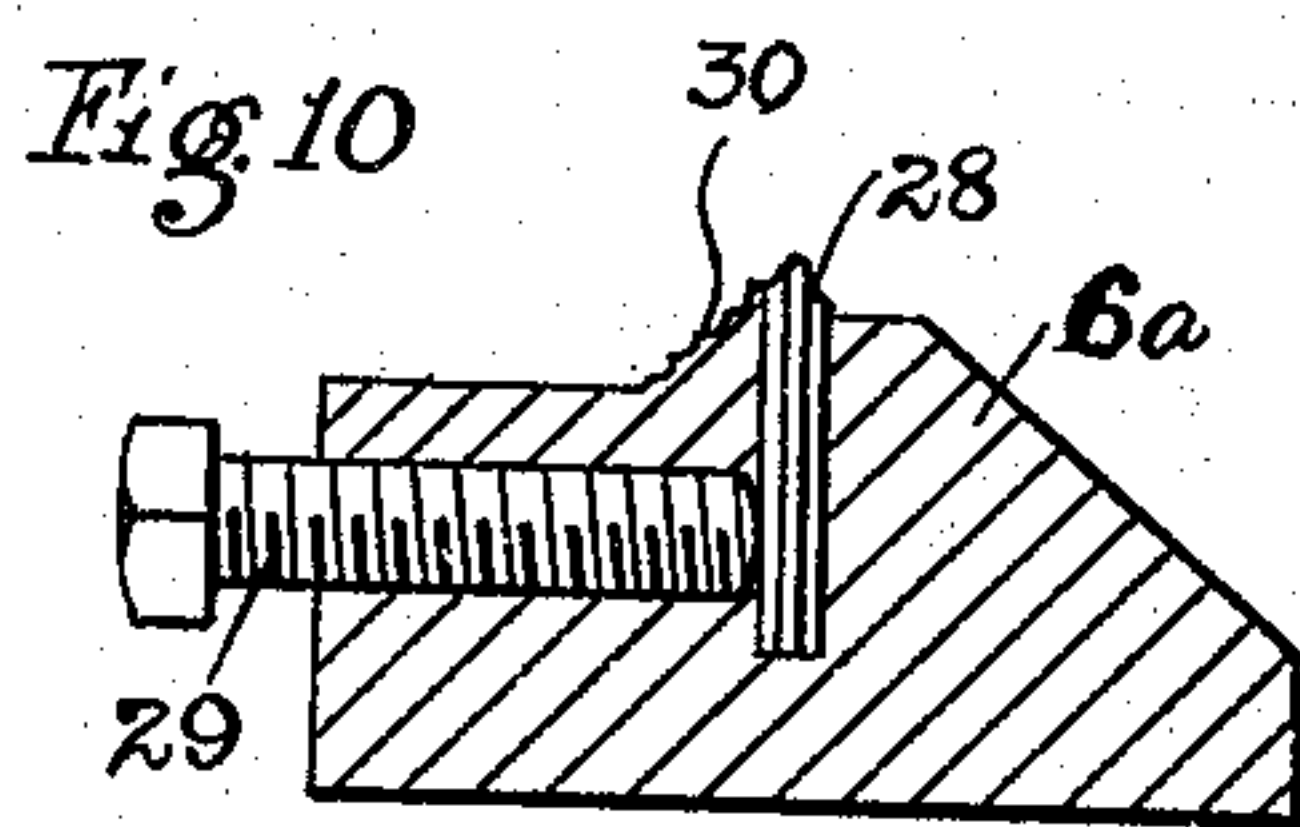
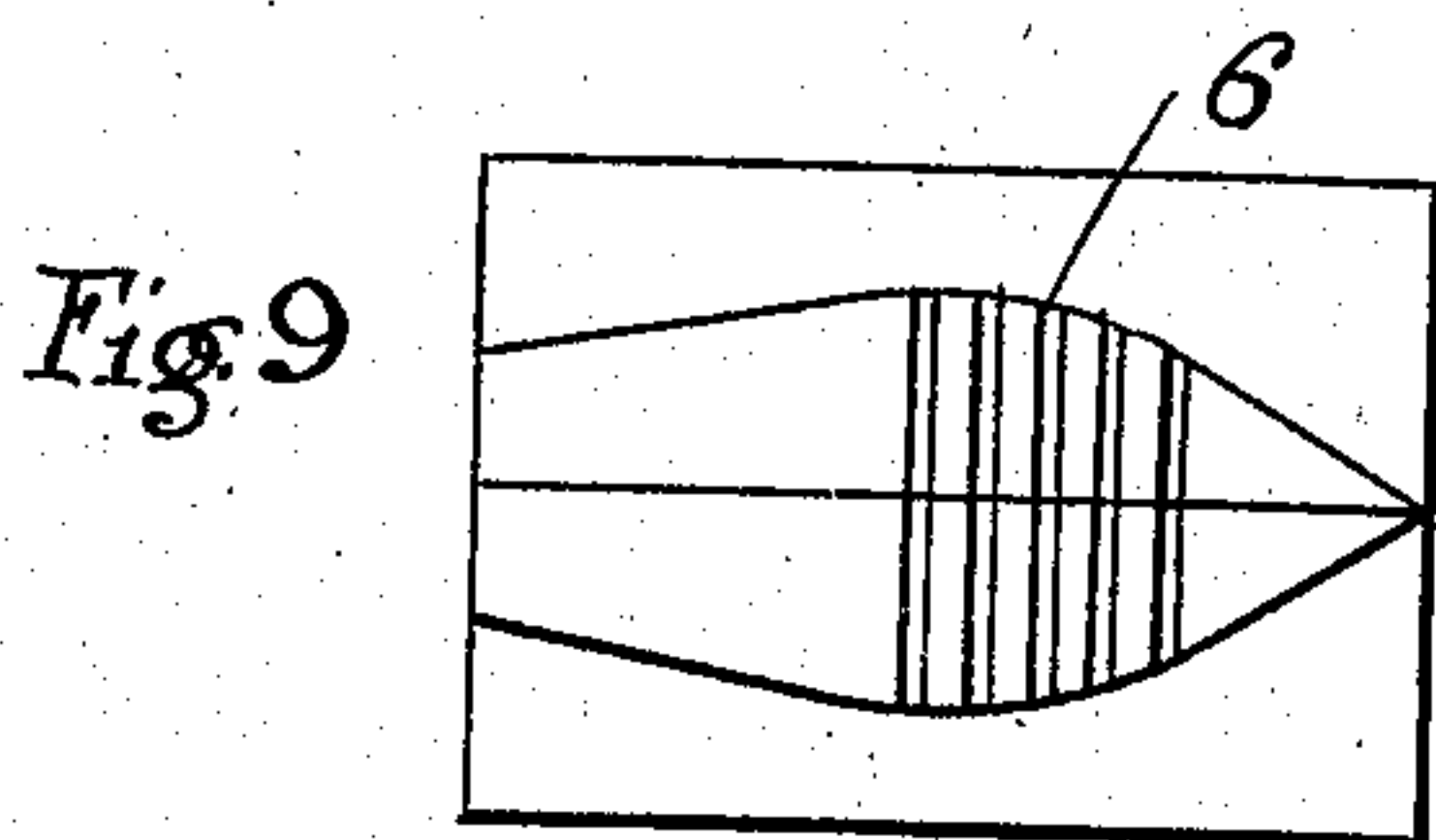
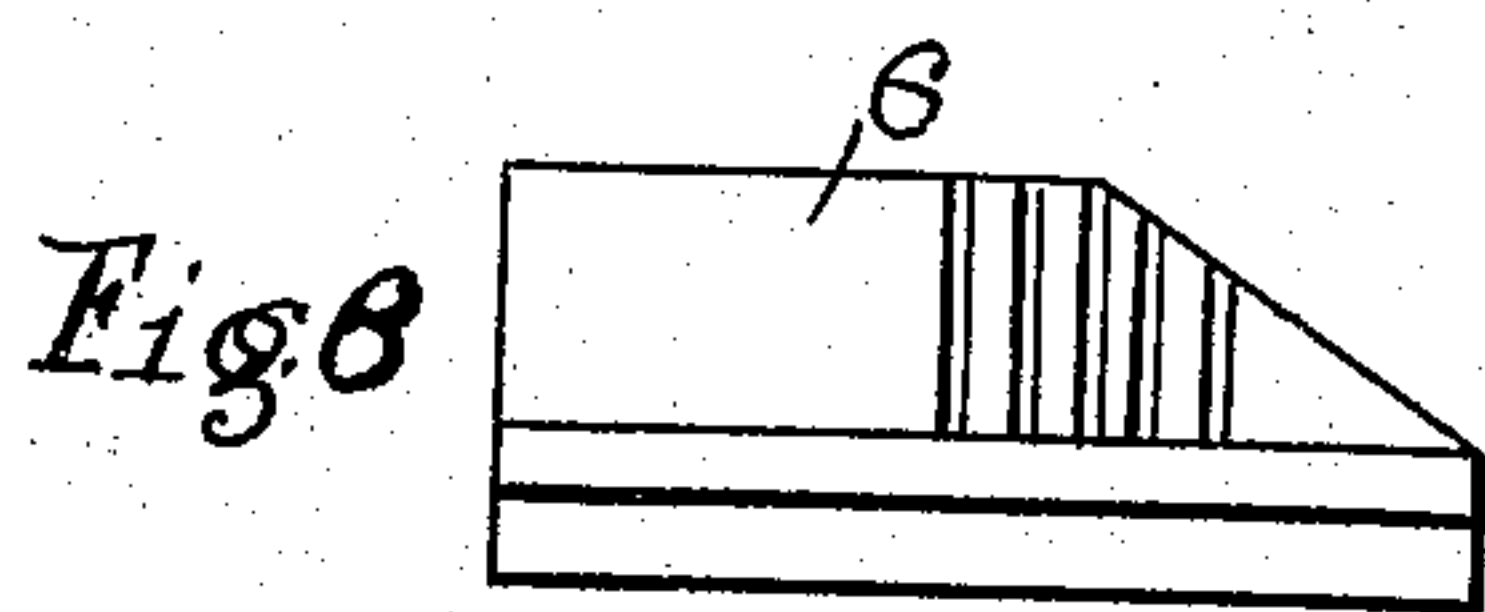
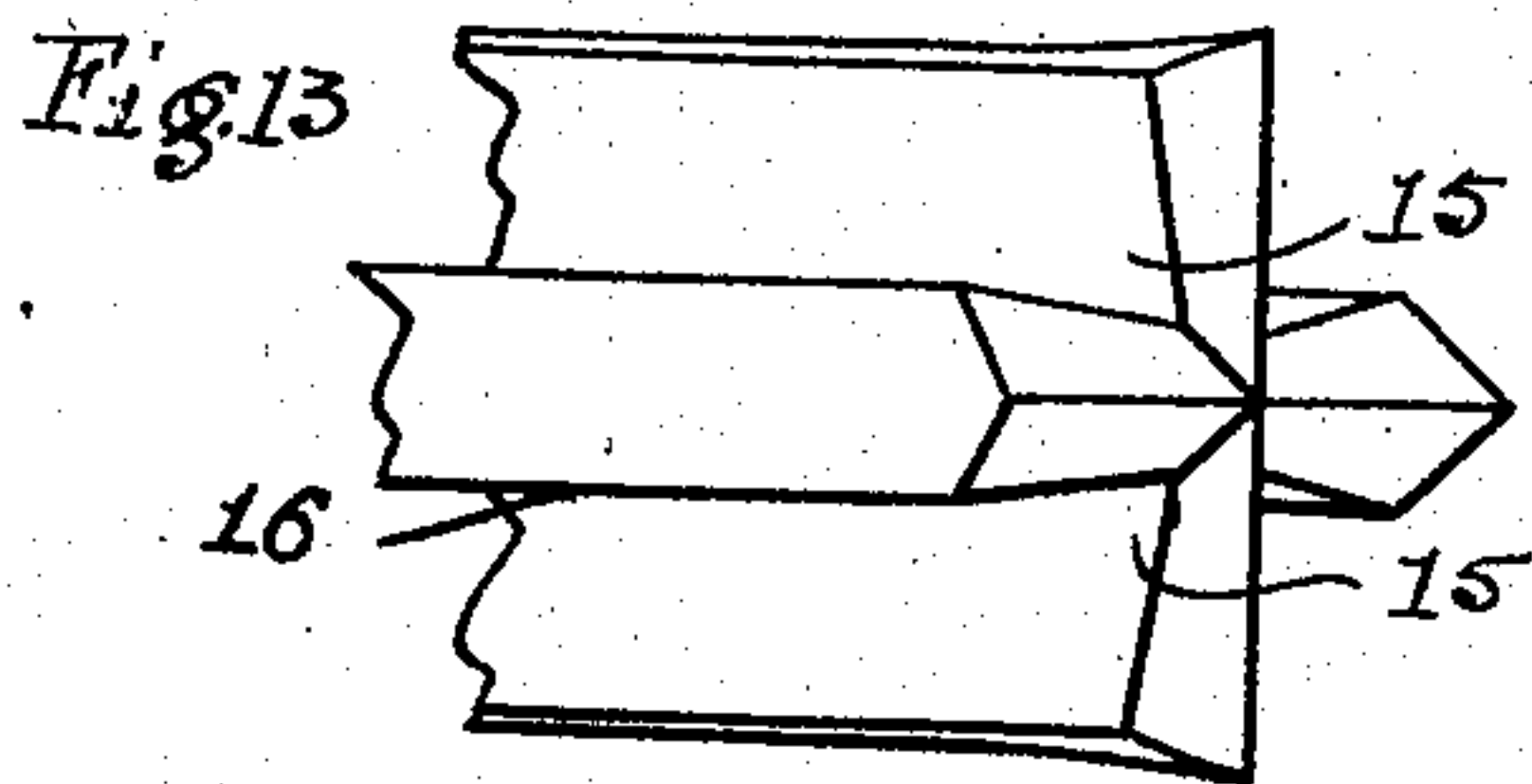
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UNITED STATES PATENT OFFICE.

WILLIAM PARR LIGHTBODY, OF JOHANNESBURG, TRANSVAAL.

MECHANISM FOR SHAPING AND SWAGING ROCK-DRILLS.

No. 815,844.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed July 2, 1904. Serial No. 215,141.

To all whom it may concern:

Be it known that I, WILLIAM PARR LIGHTBODY, a subject of the King of Great Britain, and a resident of Langlaagte Deep, (Box 1056,) Johannesburg, Transvaal, but at present of Beehive Works, Bolton, in the county of Lancaster, England, have invented certain new and useful Improvements in Mechanism for Swaging or Shaping Rock-Drills, of which the following description, together with the accompanying sheets of drawings, is a specification.

My invention relates to improvements in mechanism for sharpening rock-drills of the class wherein the cutting edges converge, so that they form a kind of star or cross, the bar of metal out of which they are formed having three or four ribs; and my said invention more particularly relates to that part of said mechanism which is for swaging or acting upon the sides of the wings or ribs of the drill so as to bring them to their proper and desired shape, ready for being subjected to other parts of the drill-sharpening process.

In the accompanying drawings, Figure 1 is a front elevation of my improved swaging mechanism. Figs. 2 and 3 are plan and side elevation, respectively, of said mechanism. Fig. 4 is sectional front elevation, drawn to an enlarged scale, showing the series of swages and devices for operating same. Fig. 5 is sectional side elevation on line G H of Fig. 4. Fig. 6 is a cross-sectional view on line M N of Fig. 4. Fig. 7 is a similar view to a portion of Fig. 4, but shows a modification thereof. Figs. 8 and 9 are side elevation and plan, respectively, of one form of swage employed in my improved mechanism. Figs. 10, 11, and 12 are sectional side elevation, end elevation, and plan, respectively, illustrating another form of swage as employed in making new drills, as hereinafter described. Fig. 13 is a detail drawing showing the form of rock-drill for the sharpening of which my improvements are especially applicable.

A indicates the base-plate of the machine. Upon this base-plate I mount the framework C, within which are formed grooves 2 for the reception of sliding blocks 3, (four in number,) which are held in position by the caps 4, connected to the framework C by bolts 5. At the converging ends of the blocks 3 are mounted swages 6, these being fixed in position within grooves 7, formed in said blocks 3, by pins or cotters 8. The outer ends of the blocks 3 are provided with caps or shoes 9,

which are held in contact with the inner surface of the ring or annular piece 10 by springs 11, contained in said blocks 3 and which bear against pins 12, mounted in the framework C. The cams 13 are formed of flat plates embedded in the surface of ring 10, the exposed faces of said plates forming chords of the circle defined by the contour of said ring, whereby the latter as it is rotated by its driving-shaft 14 causes the blocks 3 to reciprocate radially to cause the swages 6 to act upon the wings 15 and central part of the drill 16. The cam-ring 10 may be formed in two parts, 10^a and 10^b, fixed together by screws 17, and the cam parts 13 may further be formed separately and be fixed to the part 10^a by screws 18, this method rendering the several parts easier for renewal or repair. The inner surface of the cam-ring 10 is further formed of incline shape in an axial direction, so that by moving it longitudinally or axially over the caps 9 the swages 6 may be caused to operate nearer to or farther from the center of said ring 10, so as to treat drills of different sizes.

The shaft 14 is mounted in bearings 27 on the framework D and is connected to its driving wheel or pulley 19 by keyways and feathers to permit its longitudinal movements, and these latter may be performed by the hand-lever 20, (shown in full lines, Fig. 3,) mounted on the shaft 21 and connected to the shaft 14 through the lever 22, link 23, and lever 24, bowls 25 on which take between collars 26, fixed upon said shaft 14.

The swages 6 (illustrated in detail by Figs. 8 and 9) are used when sharpening worn drills and for forming the wings 15 of the drills from octagonal bars, while in the manufacture of new drills direct from a bar 16 of steel, the end of which is flat, I employ the swages 6^a, (shown by Figs. 10, 11, and 12,) in which a cutter 28 is fixed therein by the set-screw 29. The end of the bar is first acted upon by the inclined parts 30 of the swages, so as to commence the shaping of such outer end, after which the bar is fed farther forward, so that the cutters 28 may cut said outer end in order to bring the cutting edges of the drill nearer completion, said drill being afterward treated by other devices employed in the complete drill-sharpening process to finish or bring said cutting edges to the exact shape desired.

Instead of the caps 9 above described rollers or bowls 31, as shown by Fig. 7, may be employed for contact with the cam-ring 10.

The devices hereinbefore described are used for operating upon drills having four wings or ribs. However, it will readily be seen that by employing three sliding blocks 3 and 5 swages 6 or 6^a and mounting them in proper relative positions I may perform the functions desired upon drills having three wings or ribs.

Having thus described the nature and object of my said invention, what I claim is—

1. A machine of the character described comprising a stationary support, a plurality of radially-arranged swaging devices carried thereby, a rotary shaft, a cam-ring carried thereby and encircling said swaging devices, said ring being provided with longitudinally-inclined cam-plates, means for holding the outer ends of said swaging devices normally in contact with said ring, means for reciprocating said shaft and ring, and means for rotating said shaft and ring, whereby said swaging devices are operated.

2. A machine of the character described comprising a stationary support, a plurality of radially-arranged swaging devices carried thereby, a rotary shaft, a cam-ring carried thereby and encircling said swaging devices, said ring being provided with cam-plates,

means for holding the outer ends of said swaging devices normally in contact with said ring, a lever connected to said shaft, means for operating said lever, whereby said shaft and ring are reciprocated, and means for rotating said shaft and ring, whereby said swaging devices are operated.

3. A machine of the character described comprising a stationary support, a plurality of radially-arranged swaging devices carried thereby, a rotary shaft, a cam-ring carried thereby and encircling said swaging devices, said ring being provided with cam-plates, means for holding the outer ends of said swaging devices normally in contact with said ring, a lever connected to said shaft, a rock-shaft, connections between said lever and rock-shaft, an operating-lever for said rock-shaft, and means for rotating said shaft and ring, whereby said swaging devices are operated.

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

WILLIAM PARR LIGHTBODY.

Witnesses:

SAMUEL HEY,

JAMES HENRY ELLISON.