

No. 671,180.

Patented Apr. 2, 1901.

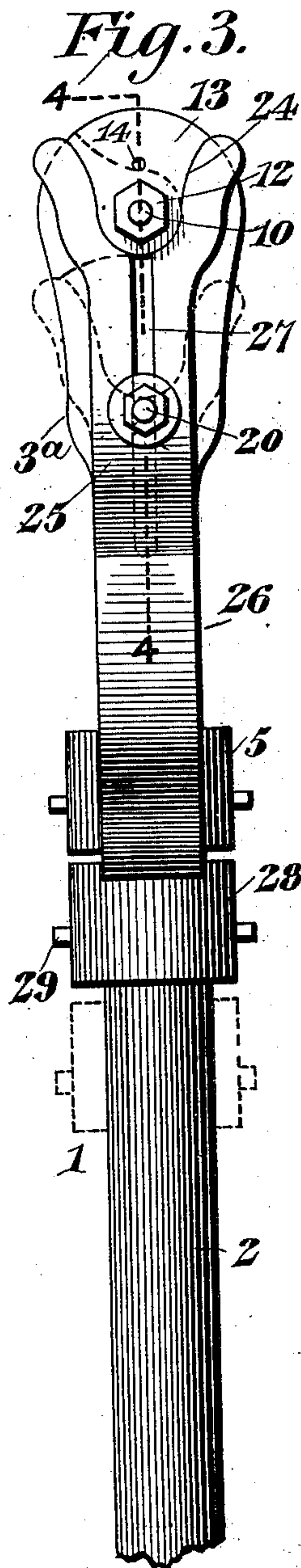
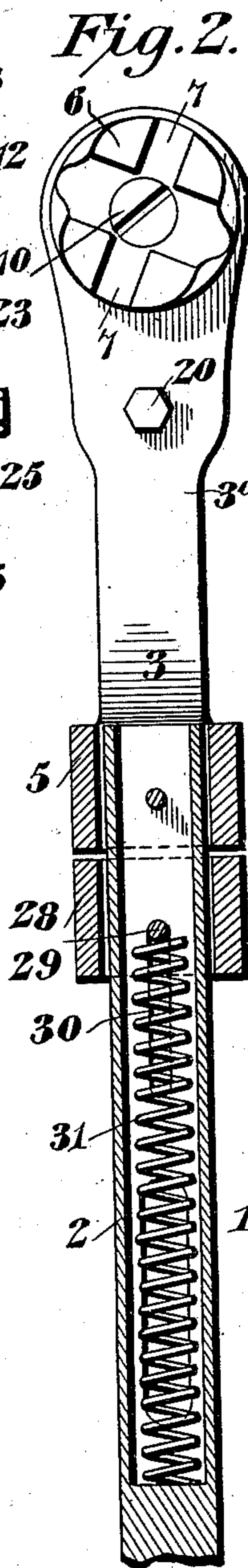
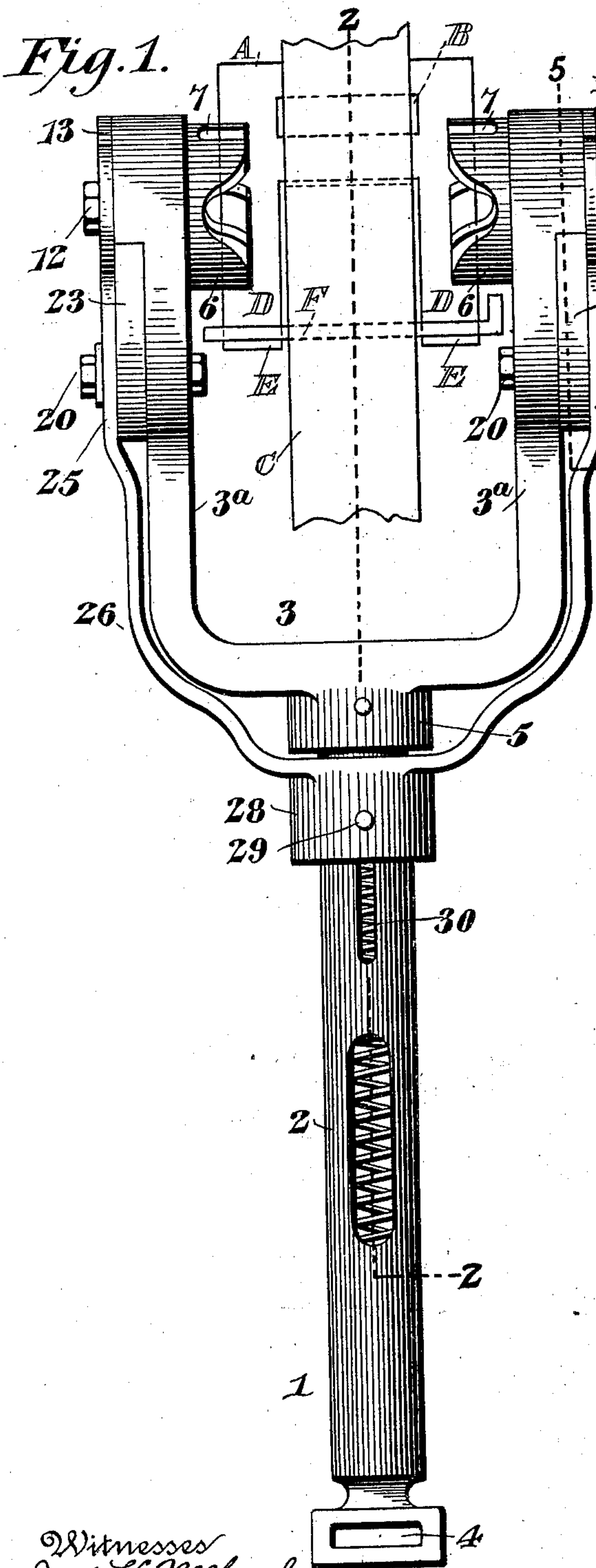
D. M. CAMPBELL.

TURNING TOOL FOR BALE BAND FASTENERS.

(Application filed Aug. 3, 1900.)

(No. Model.)

2 Sheets—Sheet 1.



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Fig. 4.

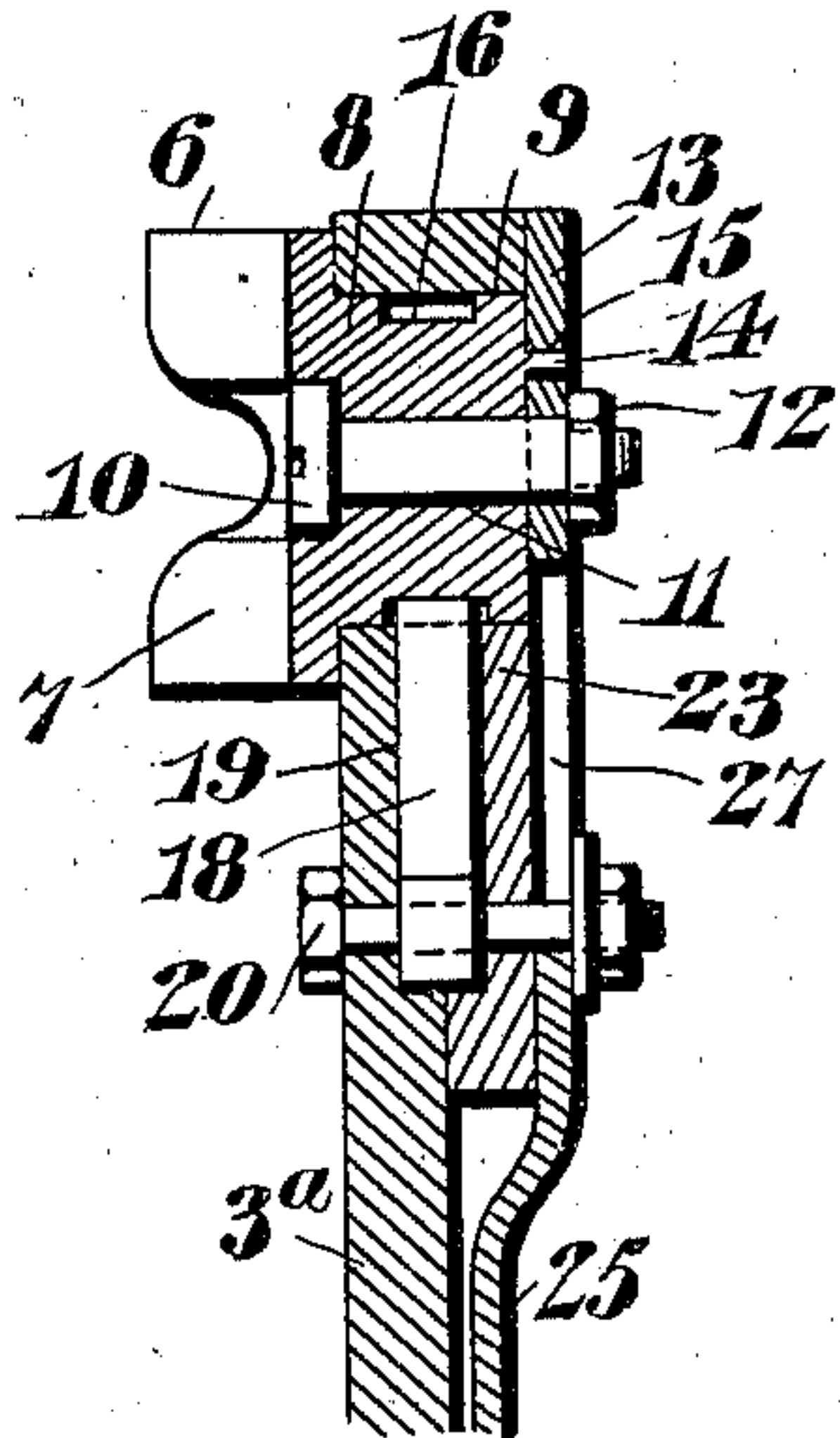


Fig. 5.

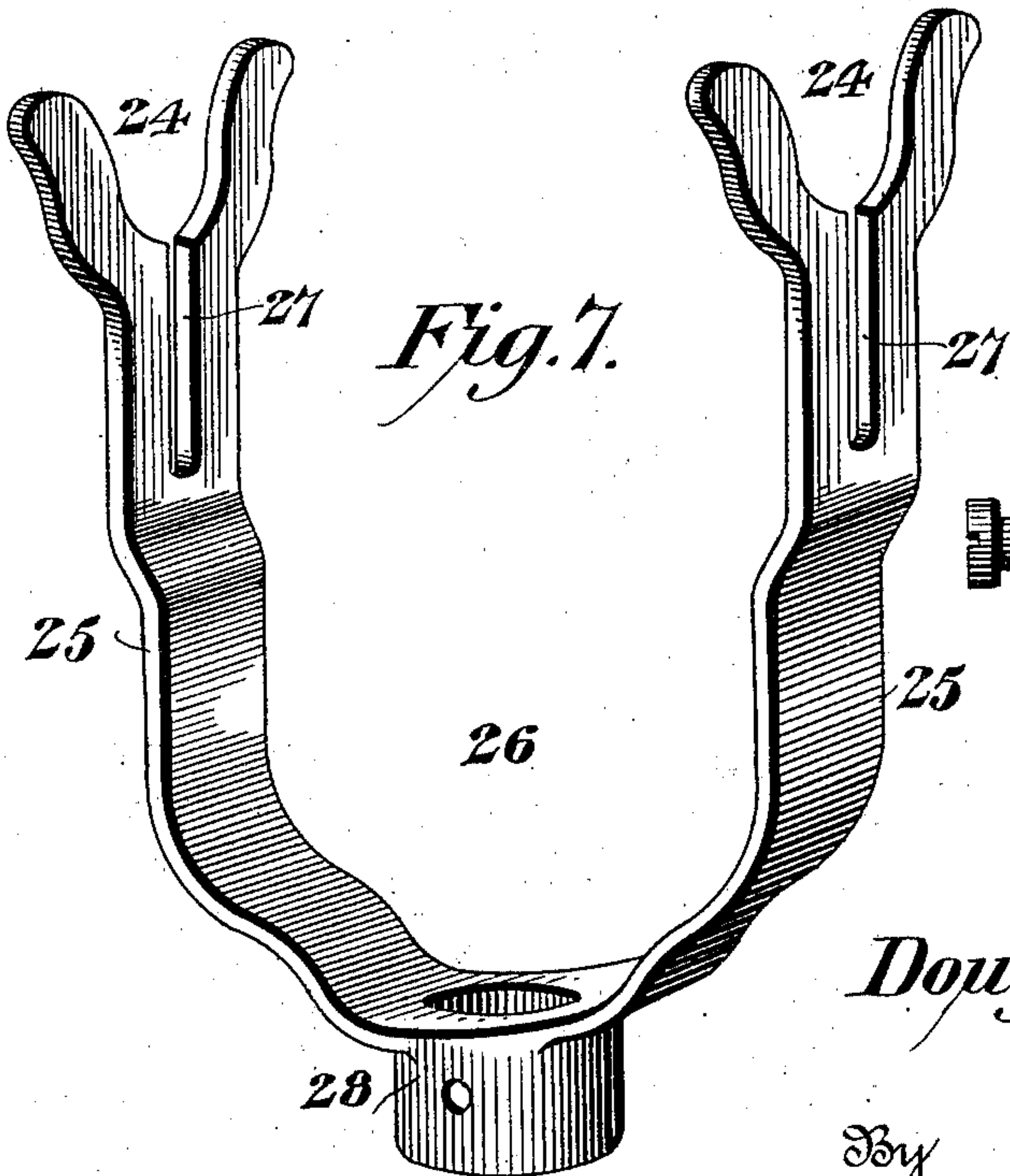
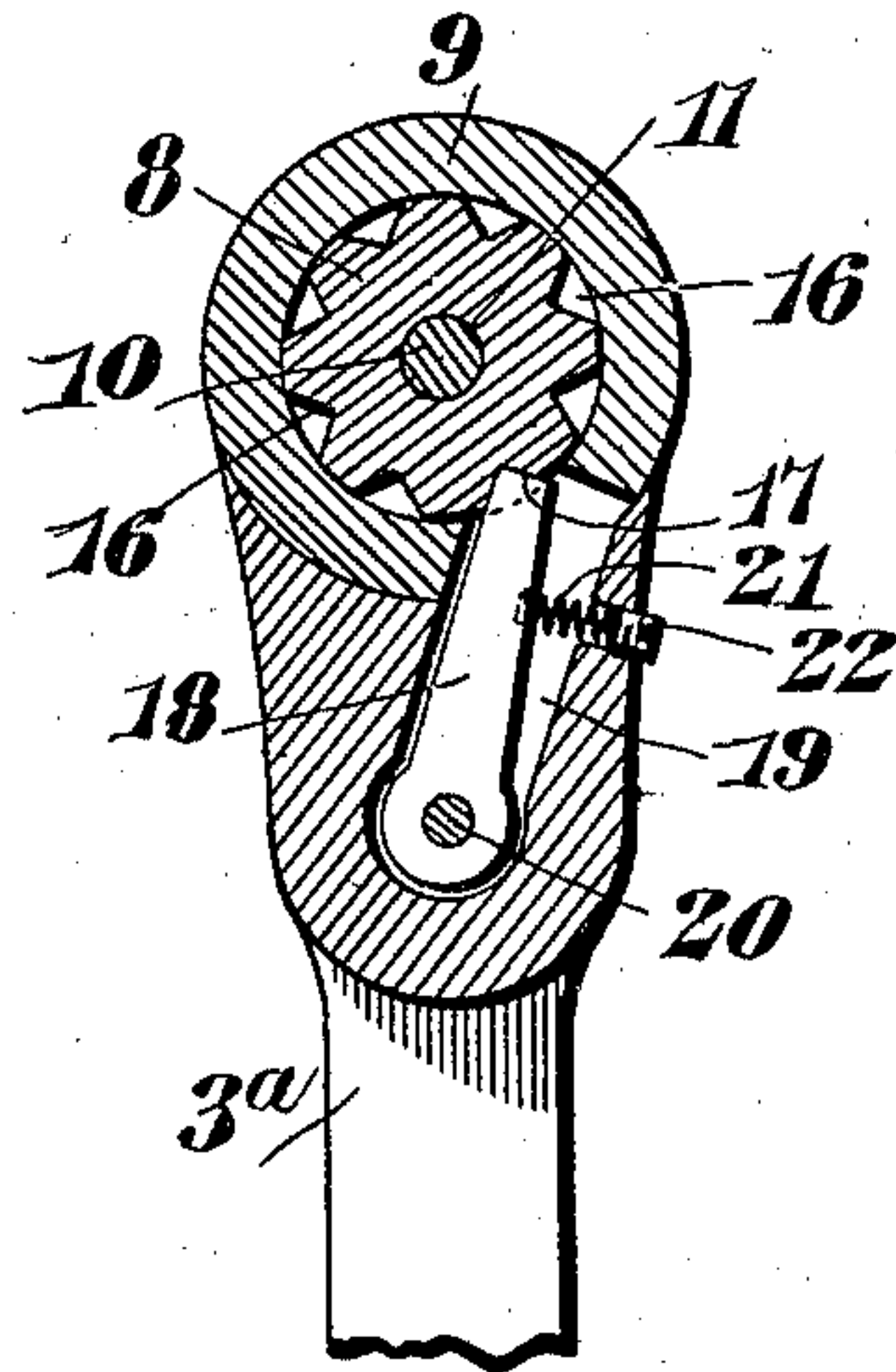
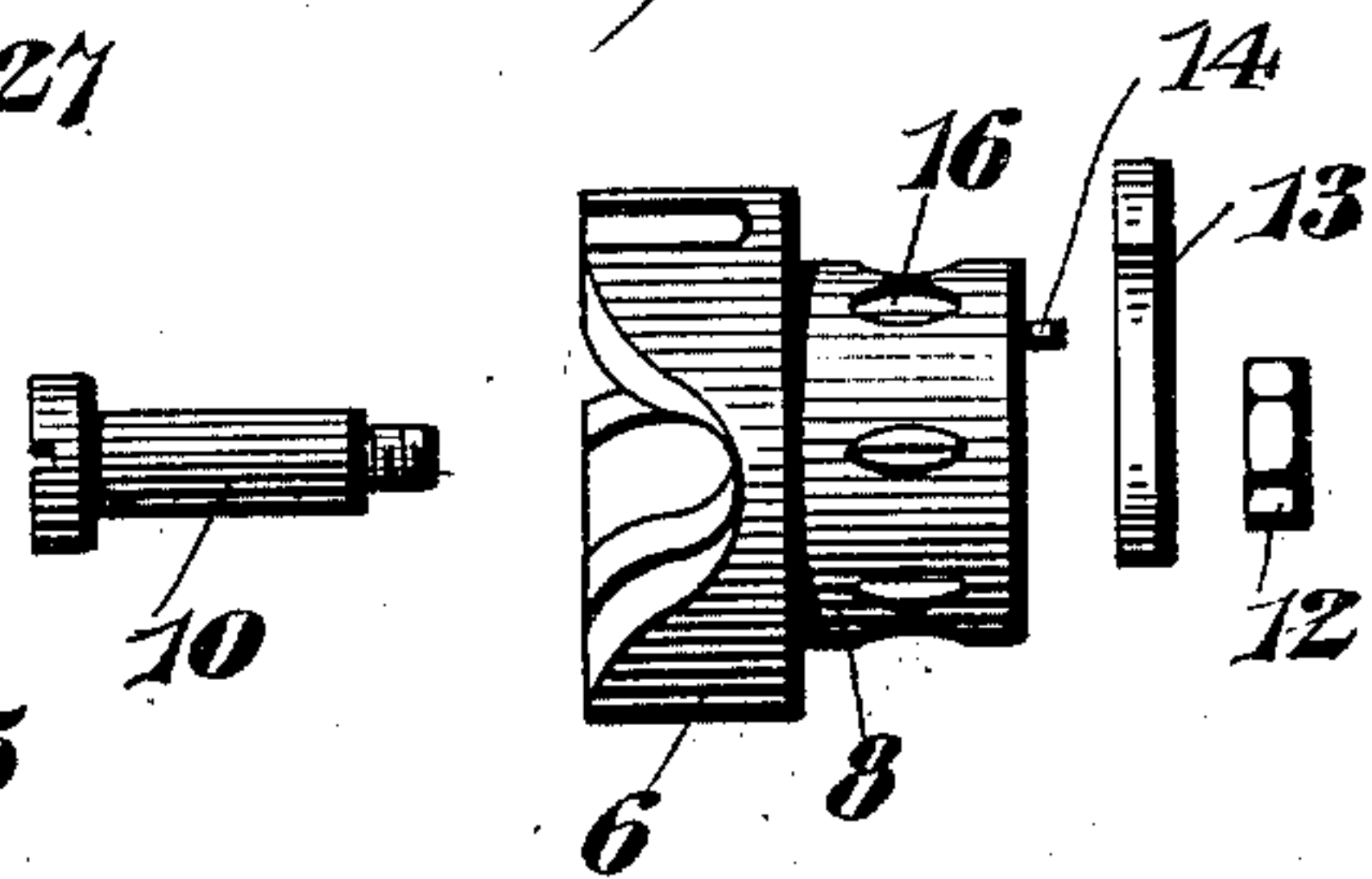


Fig. 6.



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UNITED STATES PATENT OFFICE.

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TURNING-TOOL FOR BALE-BAND FASTENERS.

SPECIFICATION forming part of Letters Patent No. 671,180, dated April 2, 1901.

Application filed August 3, 1900. Serial No. 25,826. (No model.)

To all whom it may concern:

Be it known that I, DOUGLAS M. CAMPBELL, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented a new and useful Turning-Tool for Bale-Band Fasteners, of which the following is a specification.

This invention relates to that type of tools which are employed in connection with bale-band fasteners involving the use of an element adapted to have the slack of the band wound thereon.

The primary object of the invention is to provide a novel construction of turning-tool for bale-band fasteners which can be readily applied to and removed from the fastener, while at the same time providing positive means for exerting a powerful leverage upon the turning or winding element of the fastener to insure the taking up of a maximum amount of slack in a bale-band with a minimum movement.

The invention also has in view a construction of tool which is never removed from the bale-band fastener until the work of fastening is complete, besides being always ready for use and easily engaged with and disengaged from the buckle or winding element of the fastener.

A further object of the invention is to provide a novel construction and arrangement of parts whereby both sides or edges of the rotatable buckle-plate or winding element of the fastener may be engaged to insure the distribution of the leverage or turning strain uniformly throughout the entire plate or winding element, and the construction contemplated by the present application also provides means whereby the bale can be tied or fastened from both sides of the press at the same time, thus greatly increasing the rapidity of the work of tying the bale as compared to the system of tying on one side of the press only, which is the method now in vogue.

Another object of the invention is to provide an improved construction of turning-tool which can be manipulated by a comparatively slight movement of the hand through

an arc much less than that through which the buckle-plate or winding element of the fastener turns in taking up the slack of the band.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

The essential features of the invention, to provide for carrying out the special objects thereof, are necessarily susceptible to a variety of modifications without departing from the spirit or scope of the invention; but the preferred embodiment of the improvement is shown in the accompanying drawings, in which—

Figure 1 is a front elevation of the preferred embodiment of the tool, illustrating the form of a bale-band fastener with which the same is especially useful, said fastener being illustrated in its turned and locked position. Fig. 2 is a longitudinal sectional view of the tool on the line 2 2 of Fig. 1. Fig. 3 is a side elevation of the tool, illustrating by full and dotted lines the different positions assumed by the members of the resetting device for the tool. Fig. 4 is an enlarged sectional view on the line 4 4 of Fig. 3. Fig. 5 is a detail sectional view on the line 5 5 of Fig. 1. Fig. 6 is a detail view of one of the turning-heads and the retaining-bolt and resetting-cam associated therewith, the view illustrating the parts when unassembled. Fig. 7 is a detail in perspective of the holding-clutch or clutch-frame constituting a part of the resetting device for the turning-heads of the tool.

Like characters of reference designate corresponding parts in the several figures of the drawings.

The turning-tool embodying the present invention is capable of general application to that type of bale-band fasteners involving a flat winding element about which the lapped bale ends are wound, although the tool is specially designed for use as an indispensable auxiliary to that class of rotatable bale-band

buckles of the type shown in my former patents, Nos. 639,695 and 653,337. The latter of said patents—namely, No. 653,337—discloses a very simple and effective type of bale-band fastener, essentially consisting of a rotatable buckle. So for illustrative purposes, to show the action and function of the tool, this type of fastener is indicated in the drawings. The said fastener essentially comprises a flat buckle-plate A, adapted to turn bodily upon one edge as a fulcrum and provided with a band-receiving eye or opening B, which receives the lapped ends of the bale-band C, said plate being further provided with a pair of holding-arm extensions D, having terminal hooks E. These terminal hooks E of the buckle-plate 1 cooperate with a locking-key F, adapted to be passed transversely beneath the band after the plate has been turned bodily upon itself and the hooks E thereof forced beneath the plane of the inner side of the band. This general form of bale-band fastening can be manipulated with great facility by the turning-tool forming the subject-matter of the present application, and particular reference will now be made to this tool.

The tool as an entirety is in the form of a lever carrying suitable elements or members providing for the bodily turning of the flat buckle-plate or winding element A of the fastener, and this lever, which is designated by the reference-numeral 1, essentially comprises a straight handle portion 2 and a carrying-yoke 3, which provides a support for the operative members of the tool having direct cooperative engagement with the buckle-plate or winding element of the fastener. The straight handle portion 2 of the lever is preferably of a hollow or tubular construction, for the purpose hereinafter explained, and is preferably provided at one end with a loop 4, which affords convenient means whereby the tool may be suspended from a suitable hanger, if desired. From a structural standpoint it is of course unimportant how the lever 1 is constructed—whether integrally or of separate parts—but a preferable construction is shown in the drawings and resides in having the carrying-yoke of a separate piece and provided at the closed side or end thereof with a collar 5, within which is received and rigidly fastened the end of the handle 2, opposite the hanger-loop 4. The carrying-yoke 3 of the lever is preferably of a U form, so that the same will stride the buckle-plate or winding element A of the fastener to provide for the proper positioning of the oppositely-arranged turning-heads 6, which are supported by and carried with the yoke 3. The said turning-heads 6 are arranged in diametrically opposite relation and in transverse alinement, the same being respectively located at the inner sides of the opposite side arms 3^a of the carrying-yoke 3 and contiguous to the terminals or extremities of said side arms, as plainly shown in Fig. 1 of the drawings. The diametrically opposite rela-

tion and transverse alinement of the pair of turning-heads 6 provides for such arrangement of these heads as will permit of the same being engaged with opposite side edges of the rotatable buckle-plate or winding element of the fastener, and thus insure the distributing of the leverage or turning strain uniformly throughout the said plate or winding element.

The precise configuration and form of the turning-heads 6 may be materially varied in the practical carrying out of the invention, as it is only necessary that each of said heads be provided with means whereby the same may be detachably interlocked with the buckle-plate or winding element of the fastener. A simple mechanical expedient for providing this connection resides in constructing each of the turning-heads 6 with a transverse engaging slot or groove 7, extending transversely across the inner face thereof and of a sufficient width to receive therein the edge of the buckle-plate or winding element.

Each of the turning-heads 6 is designed to be positively rotated by a swinging movement of the lever 1 to insure the bodily turning of the buckle-plate or winding element. To secure this result, it is necessary to rotatably support the heads 6 and provide means for imparting a positive rotation thereto. The preferred construction is shown in the drawings and involves forming each turning-head 6 with a bearing-hub 8, projecting from the outer side thereof and loosely journaled in a bearing collar or opening 9, formed in the terminal or end portion of the adjacent side arm 3^a of the carrying-yoke, and to prevent displacement of the bearing-hub of each turning-head from the bearing therefor there is employed a retaining or pivot bolt 10, passing through the bolt-opening 11, formed in the turning-head 6 and its hub, and receiving upon the outer threaded extremity thereof the binding-nut 12, which binding-nut also serves to hold in place the resetting-cam 13, which constitutes a member of the complete resetting device hereinafter more fully described. It may be observed, however, at this point that the resetting-cam 13, associated with each turning-head, also acts in the capacity of a guard-plate, cooperating with the bolt 10 to prevent displacement of the turning-head from its hub, and inasmuch as in the operation of the tool it is necessary for the resetting-cam for each head to turn with the head an interlocking connection between these parts must be provided. The preferred form of interlocking connection consists of a retaining pin or stud 14, projecting from the outer side of the bearing-hub of each turning-head and detachably engaging in an opening 15, formed in the cam 13, fitting against said outer side of the bearing-hub upon the outer side of the side arm 3^a receiving the same.

To provide for propelling or actuating the turning heads, the bearing-hubs 8 thereof,

working within the bearing collars or openings 9 of the yoke, are provided with a circumferential or peripheral series of ratchet teeth or notches 16, with which cooperate the beveled points 17 of pivotal actuating-pawls 18, seated within pawl-recesses 19, formed in the outer faces of the yoke side arms 3^a and pivotally mounted at one end upon pivot-bolts 20, passing transversely through the said side arms, as plainly shown in the drawings. The points 17 of the pawls 18 are normally and yieldingly held in operative relation to the ratchet-faced hubs 8 of the turning-heads by means of coil-springs 21, arranged in the pawl-recesses 19 and bearing at one end against one side of the pawls and at their other ends against the tension-screws 22, mounted in threaded openings in the edges of the yoke-arms 3^a and serving to regulate the tension of the springs 21, while at the same time facilitating the removal and replacing thereof. The pawls 18, which are respectively arranged in the recesses of the opposite yoke-arms 3^a, are properly retained within their recesses by the cover or guard-plates 23, fitted upon the outer sides of the arms 3^a over the pawl-recesses 19 and also receiving the bolts 20, which constitute the pivots for the pawls.

Each of the turning-heads has fitted thereto in the manner explained a resetting-cam 13, and each of said cams is preferably of an approximate U shape and is adapted to normally register within a corresponding complementary approximately U-shaped bearing-fork 24, formed at the upper extremity of one of the side slide members 25 of the holding-clutch 26. Each slide member 25 of the holding-clutch 26 is also provided contiguous to the terminal bearing 24 thereof with a longitudinally-disposed guiding-slot 27, which slidably receives the outer extremity of the adjacent pivot-bolt 20, which therefore serves to positively guide the clutch in its sliding or reciprocatory movement. The holding-clutch 26, which, with the pair of cams 13, constitutes a complete resetting device for the tool, is preferably in the form of a U-shaped frame conforming substantially to the exterior contour of the U-shaped carrying-yoke 3 of the lever, so that the slide members 25 of the clutch or clutch-frame will be arranged upon the outer sides of the yoke lever-arms 3^a and will have a sliding movement with reference thereto. The slide members 25 of the clutch constitute the side portions of the complete clutch-frame, and they are joined rigidly with a sleeve 28 at the closed end of the clutch-frame, said sleeve slidably fitting upon the straight handle 2 of the lever contiguous to the connection of the lever-handle with the carrying-yoke and receiving a transverse guide-pin 29, working through a longitudinally-disposed guiding-slot 30, formed in the lever-handle 2, and having exerted thereagainst the pressure of the pressure-spring 31, housed within the tubular lever-handle 2. The pressure of the

spring 31 is normally exerted in a direction to move the clutch-frame outward upon the carrying-yoke of the lever, and thus normally hold the terminal bearing-forks of the clutch-frame in registered interlocking engagement with the resetting-cams for the turning-heads, thus holding the said turning-heads in normal positions for being slipped upon the buckle-plate or winding element A of the bale-band fastener.

In using the tool it is simply necessary to bring the engaging slots of the grooves 7 of the turning-heads into register with the opposite side edges of the buckle-plate or winding element A and then to slide said turning-heads upon the said plate or element to an intermediate position thereon. Then by a slight back-and-forth swinging movement of the lever-handle the actuating-pawls 18 will be worked over the ratchet-faced hubs 8 of the turning-heads, thus causing said heads to rotate upon their axes and serving to bodily turn the buckle-plate or winding element of the fastener. This motion is continued until the buckle-plate or winding element has been completely turned and the locking-key inserted in place to secure the fastener, after which the turning-heads may be slid off of the buckle-plate.

In connection with the resetting device, consisting of the clutch-frame and the rotatable cams 13, it should be observed that as the turning-heads 6 are rotated the cams 13, which work therewith, are also turned and caused to have their side portions bear upon the sides of the terminal bearing-forks 24 of the clutch-frame, thus causing this frame to be pressed outward toward the swinging end of the lever and against the tension of the pressure-spring 31. In this action of the cams 13 the U-shaped portions thereof turn entirely out of the forks 24; but immediately upon disengaging the turning-heads from the buckle-plate or winding element the spring 31 comes into action and forces the clutch-frame 26 in a direction toward the turning-heads, thus causing the terminal bearing-forks 24 to bear against the cams 13 and turn the same back upon their axes and into position for receiving thereover the complete forks 24, thereby returning all parts of the tool to normal positions, as will be readily understood from the foregoing description.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described turning-tool will be readily apparent to those skilled in the art without further description, and it will be understood that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. A turning-tool of the class described com-

prising a lever having a pair of rotatable turning-heads arranged in opposite spaced relation to admit of the bale-fastening member in the interval therebetween, substantially as set forth.

2. A turning-tool of the class described comprising a lever, and a pair of ratchet-rotated turning-heads carried by the lever and arranged in opposite disconnected and spaced relation to admit of the bale-fastening member in the interval therebetween, substantially as set forth.

3. A turning-tool of the class described comprising a lever, and a pair of transversely-aligned rotatable turning-heads carried by the lever, said heads being disconnected and arranged in diametrically opposite relation, to admit of the bale-fastening member in the interval therebetween, substantially as set forth.

4. A turning-tool of the class described, comprising a lever, a pair of disconnected turning-heads arranged in opposite spaced relation to admit of the bale-fastening member in the interval therebetween, said heads being provided in their opposing faces with engaging means for the bale-fastening member, and means for causing a relative movement of the lever and said heads, to provide for the turning of the member, engaged by the latter, substantially as set forth.

5. A turning-tool of the class described, comprising a lever, a pair of duplicate transversely-aligned turning-heads disconnected from each other and arranged in diametrically opposite spaced relation, to admit of the bale-fastening member in the interval therebetween, and ratchet means for rotating the said heads by the movement of the lever, substantially as set forth.

6. A turning-tool of the class described comprising a lever, and a pair of rotatable turning-heads carried by the lever and arranged in opposite spaced relation, said heads being provided in their opposing faces with engaging means for engagement with an element of the bale-band fastener, substantially as set forth.

7. A turning-tool of the class described comprising a lever, a pair of rotatable turning-heads carried by said lever and arranged in opposite spaced relation to admit of the bale-fastening member in the interval therebetween, said turning-heads being provided in their opposing faces with transverse engaging slots or grooves, substantially as set forth.

8. A turning-tool of the class described comprising a lever having a carrying-yoke, and a pair of rotatable turning-heads arranged contiguous to the terminals of the yoke respectively at the inner sides of the opposite side arms thereof, substantially as set forth.

9. A turning-tool of the class described comprising a lever having a carrying-yoke, rotatable turning-heads carried by the said arms of the yoke and arranged in transversely-aligned opposite relation, and means, carried

by the lever-yoke, for actuating the turning-heads, substantially as set forth.

10. A turning-tool of the class described comprising a lever having a carrying-yoke provided at the terminals of its side arms with bearings, oppositely-arranged duplicate turning-heads provided upon their outer sides with ratchet-faced hubs journaled in said bearings, and actuating-pawls pivotally supported upon the side arms of the yoke, and cooperating with said ratchet-faced hubs, substantially as set forth.

11. A turning-tool of the class described comprising a lever, a rotatable turning-head carried by the lever, and a resetting device also carried by the lever and comprising means for automatically returning the turning-head to its initial position, substantially as set forth.

12. A turning-tool of the class described comprising a lever, a rotatable turning-head carried by the lever, and a resetting device also carried by the lever and comprising means for automatically returning the turning-head to an initial position and also for holding it in said position, substantially as set forth.

13. A turning-tool of the class described comprising a lever having a carrying-yoke, a pair of diametrically opposite turning-heads carried by said yoke, and a resetting device having elements cooperating with both of the turning-heads, and comprising means for automatically returning the said heads to initial positions after releasement from the winding element of the bale-band fastener, substantially as set forth.

14. A turning-tool of the class described, comprising a lever, a rotatable turning-head supported by the lever and carrying a resetting-cam, and a movable clutch also carried by the lever and cooperating with said cam to provide for automatically resetting the turning-head, substantially as set forth.

15. A turning-tool of the class described comprising a lever-handle having a carrying-yoke provided with bearings, oppositely-arranged rotatable turning-heads journaled in said bearings, approximately U-shaped resetting-cams fitted to and carried with the said rotatable heads, a sliding clutch-frame slidably supported upon the lever-handle and having slide members arranged at one side of the yoke-arms and provided with terminal approximately U-shaped bearing-forks engaging and cooperating with the said cams, and a spring supported by the lever-handle and normally exerting a tension against the clutch-frame, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

DOUGLAS M. CAMPBELL.

Witnesses:

FRANK B. KING,
JAMES H. COX.