

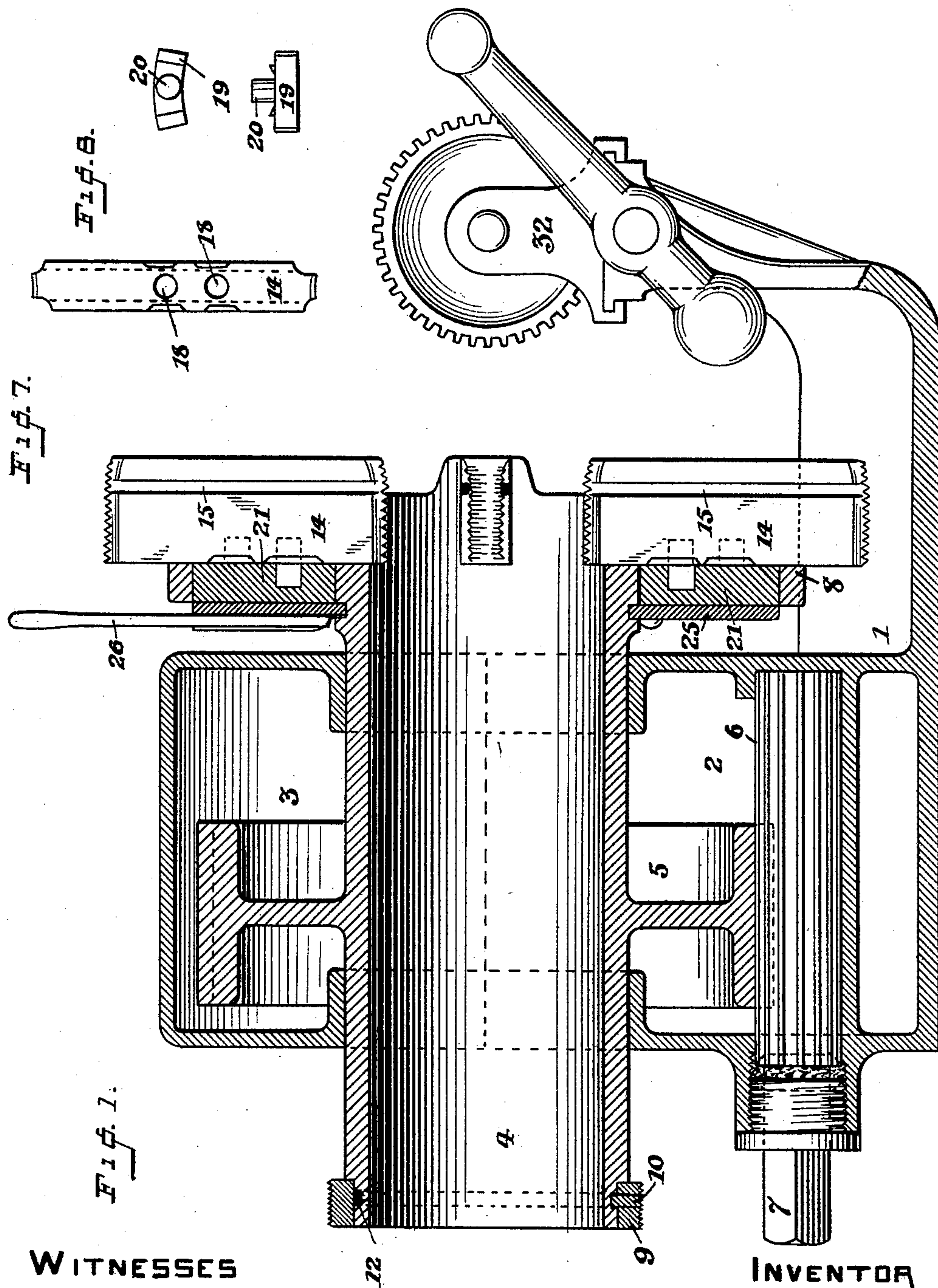
(No Model.)

3 Sheets—Sheet 1.

A. W. CASH.  
PIPE THREADING MACHINE.

No. 482,296.

Patented Sept. 6, 1892.



WITNESSES

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A. J. Tanner.

INVENTOR

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by his atty D. H. Hubbard.

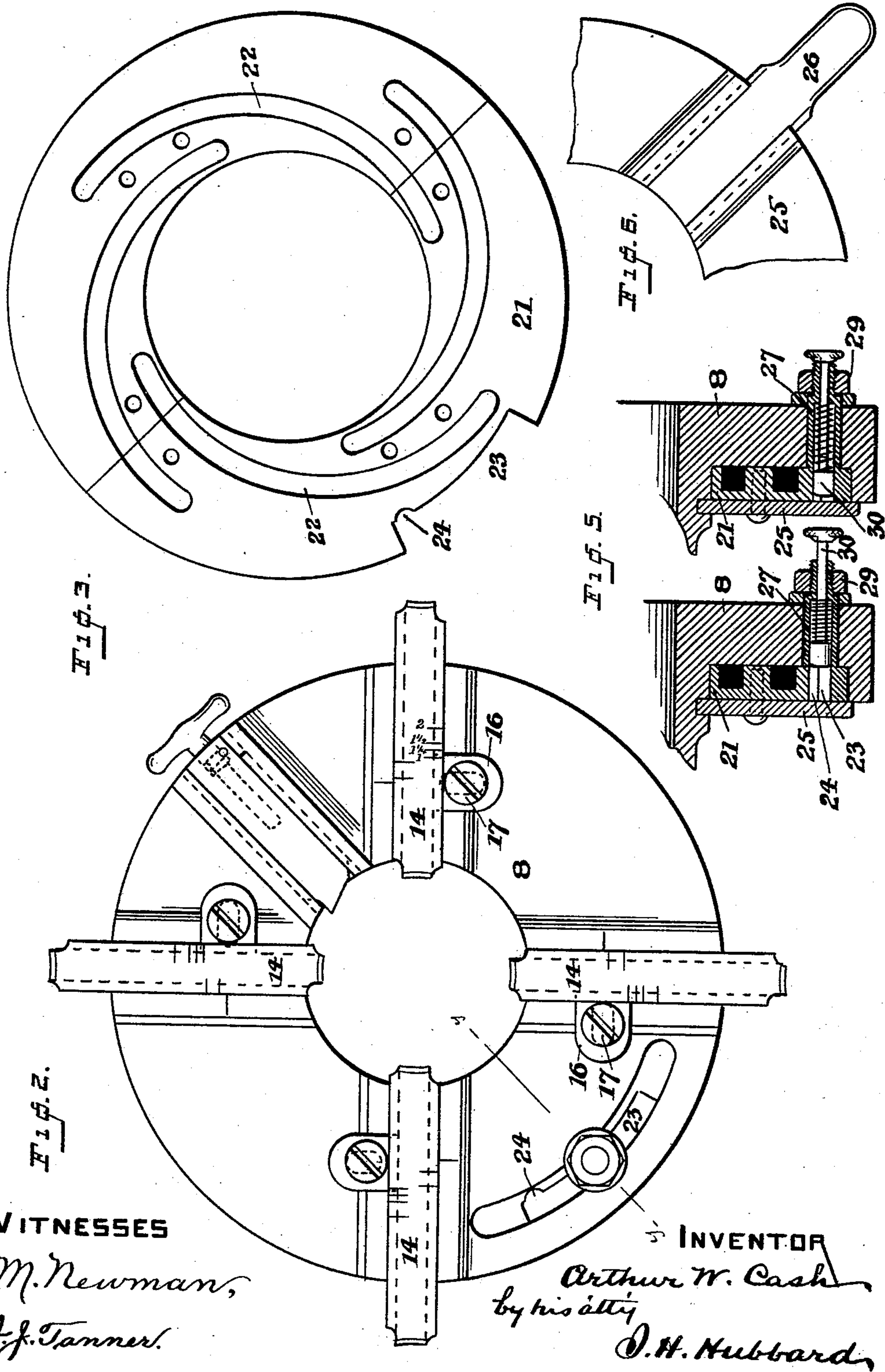
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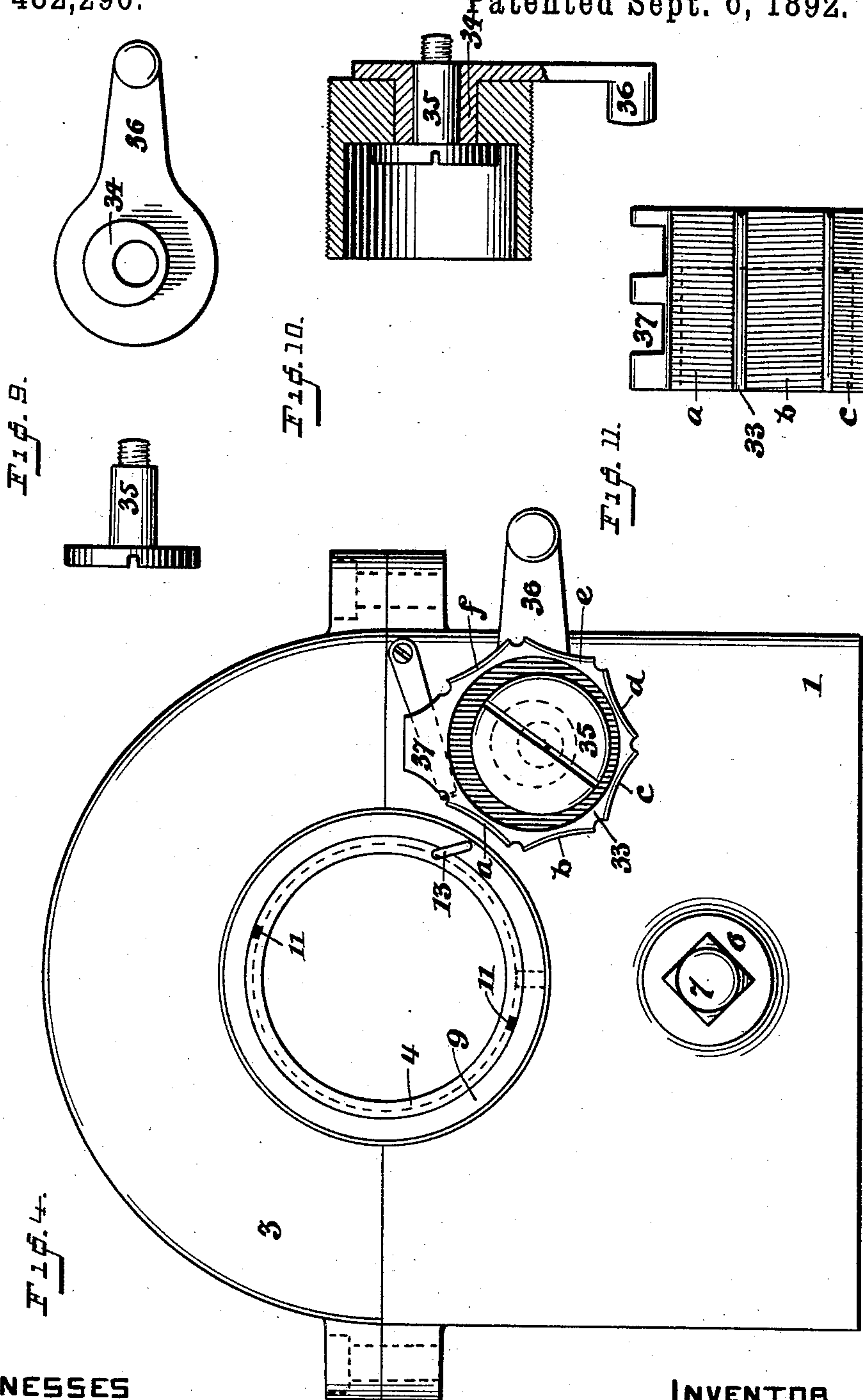
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# UNITED STATES PATENT OFFICE.

ARTHUR W. CASH, OF BRIDGEPORT, CONNECTICUT.

## PIPE-THREADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 482,296, dated September 6, 1892.

Application filed November 27, 1891. Serial No. 413,225. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR W. CASH, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Pipe-Threading Machines; 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 appertains to make and use the same.

This invention relates to certain new and useful improvements in machines for threading and cutting off pipe or rods, and has for its object to provide a machine capable of ready and rapid change to operate upon work of different sizes and to cut thereon threads of different pitch; and with these ends in view my invention consists in the construction and combination of elements hereinafter fully explained, and then recited in the claims.

In order that those skilled in the art to which my invention appertains may fully understand its construction and operation, I will describe it in detail, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a longitudinal vertical section with certain parts in elevation; Fig. 2, a front elevation of the head; Fig. 3, a plan view of the die-operating plate; Fig. 4, a rear end elevation; Fig. 5, two detail sections substantially on line *y y* of Fig. 2, one showing the parts as free and the other showing them as locked; Fig. 6, a detail showing the means for attaching the handle. Fig. 7 is a detail bottom plan view of one of the threading-dies; Fig. 8, a plan and edge view of one of the die-operating shoes. Fig. 9 shows the screw and cranked handle whereby the leader-nut is attached. Fig. 10 is a central section through the leader-nut. Fig. 11 is a side elevation of said nut.

The same numerals and letters denote the same parts in each of the figures.

The several parts of my machine are mounted upon a base 1, preferably of cast-iron, which may be arranged to stand upon a bench or may be supported upon legs. The lower part of the base, as seen at 2, is hollow and is designed to contain oil for the constant and thorough lubrication of the main

gear and pinion. A cover 3 incloses the main gear, and in the top of the base and lower side of the cover are formed bearings, in which a hollow shaft 4 is mounted and adapted to rotate. This shaft bears the main gear 5, and said gear is driven by means of a long pinion 6, seated below it and provided with an outwardly-projecting key 7 or other means for applying power thereto.

The forward end of the hollow shaft carries a head 8, and the rear end is designed to support leader-rings, of which one (designated by 9) is shown at Figs. 1 and 4. The rings are supported for ready attachment and detachment by two pins 10, which slide inward through ways 11 in the end of the shaft. (See Fig. 4.) The ring slips over the end of the shaft until said pins enter a groove 12, (see Fig. 1,) which is cut around the outer surface of said shaft. The ring is then turned slightly to carry the pins out of coincidence with the ways, and is there secured as against rotation by a staple or bifurcated key 13, one leg of which enters a socket in the shaft and the other a similar socket in the head. The fastening is a variation of the common and well-known bayonet-lock joint. The head 8 has four equidistant seats in its outer face for the accommodation of threading-dies 14, one of which is shown in detail at Fig. 8. Each die has two cutting-faces and is grooved on each side, as at 15, Fig. 1. A plate 16, having a nose adapted to the groove and an elongated screw-hole, is attached by a screw 17 or other fastening to the face of the head and serves to hold the die in its seat, while permitting to it radial movement relative to the head. The bottom of each die has two sockets 18, (see Fig. 7,) one for each cutting-face, and the dies are held in position and controlled by means of shoes 19, each shoe having a stud 20 for engagement with one of the sockets in the die. Behind the head a scroll-plate 21, formed in two parts for convenience of attachment, as shown in Fig. 3, encircles the hollow shaft. It has four curved and eccentric slots 22, each of which holds one of the shoes 19 and is adapted therethrough to operate the die with which said shoe is connected. The plate 21 also has a peripheral recess 23 and at one end of said recess a seat 24, whose purpose purpose will be presently explained. 25 is



another plate divided into two parts at right angles to the division of the plate 21, so that they break joints when in position. The plate 25 is secured to the plate 21 by screws (see Fig. 5) which co-operate with the screw-holes shown at Fig. 3. Said plate 25 has also in its edge sockets—say to the number of three or four—in which a handle 26 may be inserted, as shown at Figs. 1 and 6.

The means of attachment between the head and the plates 21 and 25 consists of a hollow bolt 27, having a shoulder 28, which holds in a recess in the inner face of the head, as is shown at Fig. 5. The end of said bolt fits into the peripheral recess of the plate 21. A nut 29 on top of the bolt serves as a clamping device therefor. Within the bolt is a spring-actuated plunger 30, which when brought into coincidence with seat 24 will enter the latter, but which when out of coincidence will be upheld, as seen at the left-hand illustration of Fig. 5, by engagement with the edge of the recess.

In the operation of my invention the dies are set for the size of pipe required to be cut by loosening the nut upon the hollow bolt, which has been heretofore referred to, and then by means of the insertible handle shown at Fig. 6 turning the two attached plates 21 and 25 until the scroll-slots carry the proper standard marks on the dies into proper relation to the standard mark on the head, as seen at Fig. 2. The nut is then tightened. The dies are thus secured in their proper position; but it is desirable that they may still be withdrawn slightly for the release of finished work. This is provided for by the limited play which the bolt has in the recess in the edge of the plate 21. To withdraw the dies to the limited extent just referred to, the sliding plunger is withdrawn out of its seat 24 and the plates turned by means of the insertible handle. The slots acting on the dies thus retract them. A reverse movement of the handle carries the dies back to their closed position, when the plunger drops into its seat and locks the parts and the handle is withdrawn to permit of the free rotation of the head and its hollow shaft. At the front end of the bed is a vise 32, in which work may be secured. This vise is adjunctory merely and may be of any preferred construction.

In connection with the leader-ring upon the rear end of the hollow shaft, which has been heretofore described, I employ a leader-nut 33, which is shown at Figs. 4 and 10 as consisting of a hollow hub having thereon faces *a, b, c, d, e, and f*, each forming a partial nut and provided with screw-threads, as is shown at Fig. 11. These faces are adapted to co-operate with the threads upon different leader-rings, which may be attached to the shaft, and for purposes of convenience I form these partial nuts with threads, as follows: one face with eighteen threads right to the inch and one with eighteen left, one with eleven and one-half right, one with eleven and one-half

left, one with fourteen right, and one with fourteen left, these being the sizes most commonly used; but of course the machine may be provided with any number of nuts having different pitches of thread for use in connection with such leader-rings as are suitable thereto. The hollow nut is supported eccentrically upon a hub 34 by means of a screw 35, and to this hub is secured a handle 36, by means of which, as will readily be understood by Fig. 4, the nut after being turned by hand so as to bring the required face opposite the leader-screw may be projected into engagement therewith. The leader-nut is also provided with a yoked projection 37, which may be turned so as to embrace the leader-ring at its edges and so cause the head to revolve without any longitudinal movement for the purpose of cutting off pipe. The cut-off tool 38 is seated in a way formed for this purpose in the disk and is operated inward, as occasion requires, by means of a screw 39. The construction of this cut-off tool, however, forms no part of my present invention.

In operating the feeding portion of my machine the proper leader-ring is first attached to the shaft and that surface of the leader-nut which is threaded to correspond with the ring turned toward said ring and then projected against it by means of the handle 36. The pipe is then placed in position for the action of the dies and the head and shaft rotated by means of the long pinion. (Shown at Fig. 1.) As the head revolves, it and the shaft will by engagement of the leader-screw and leader-nut describe a spiral path in accordance with the pitch of the leader-screw, and this causes the dies to make their initial cut upon the pipe with entire accuracy. The dies of course correspond in pitch with the leader-screw threads, and after they have threaded the pipe for some little distance they will continue to cut upon the pipe indefinitely without the guiding action of the leader-screw. As soon as they have thus commenced to guide themselves it is usual to throw the leader-nut out of engagement by means of the crank and leave it disengaged until the next piece of pipe to be threaded is inserted.

I claim—

1. In a machine substantially as described, the combination, with the hollow main shaft having a gear thereon, a pinion having means for the application of power thereto meshing with and adapted to operate the said gear, the head carried by the main shaft and provided with suitable threading-tools, and a threaded leader-ring detachably secured upon the opposite extremity of the said shaft, of a polygonal leader-nut having a plurality of its faces concaved, said faces bearing threads of different pitch, and a single yoked plane projecting face, said leader-nut being mounted eccentrically and provided with a handle whereby it may be revolved into or out of engagement with the said leader-ring, as set forth.



2. The combination, with the hollow shaft and the head secured thereto, of the dies adapted to cut at either end thereof, having means for the attachment of independent shoes and provided with grooves and seated in the head, means, as described, for holding the dies, the said independent shoes having means for attachment with the dies, and a scroll-plate adapted to engage the said shoes, and means for operating and locking the scroll-plate.

3. In a machine of the character described, the combination, with the head, of the grooved dies seated therein, retaining-plates fitting the grooves and adapted to hold the dies, shoes independent of said dies, provided with projecting studs for engagement with suitable openings therein, and a scroll-plate for engaging the shoes, and means for operating the scroll-plate.

4. In a machine of the character described, the combination, with the head, of a series of

dies adapted to cut at either end thereof, seated and adapted to slide therein and provided with sockets, shoes independent thereof and having projecting pins or studs for engagement with said holes, and a scroll-plate engaging the shoes and through them adapted to operate the dies.

5. In a machine of the character described, the combination, with the head, of a series of dies mounted therein and adapted to have a radial movement, each die provided with a socket, shoes 19, independent of said dies, each having a stud 20 for engagement with the die-socket, and a scroll-plate engaging and adapted to operate them and the dies, substantially as set forth.

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

ARTHUR W. CASH.

Witnesses:

S. H. HUBBARD,

M. C. HINCHCLIFFE.