

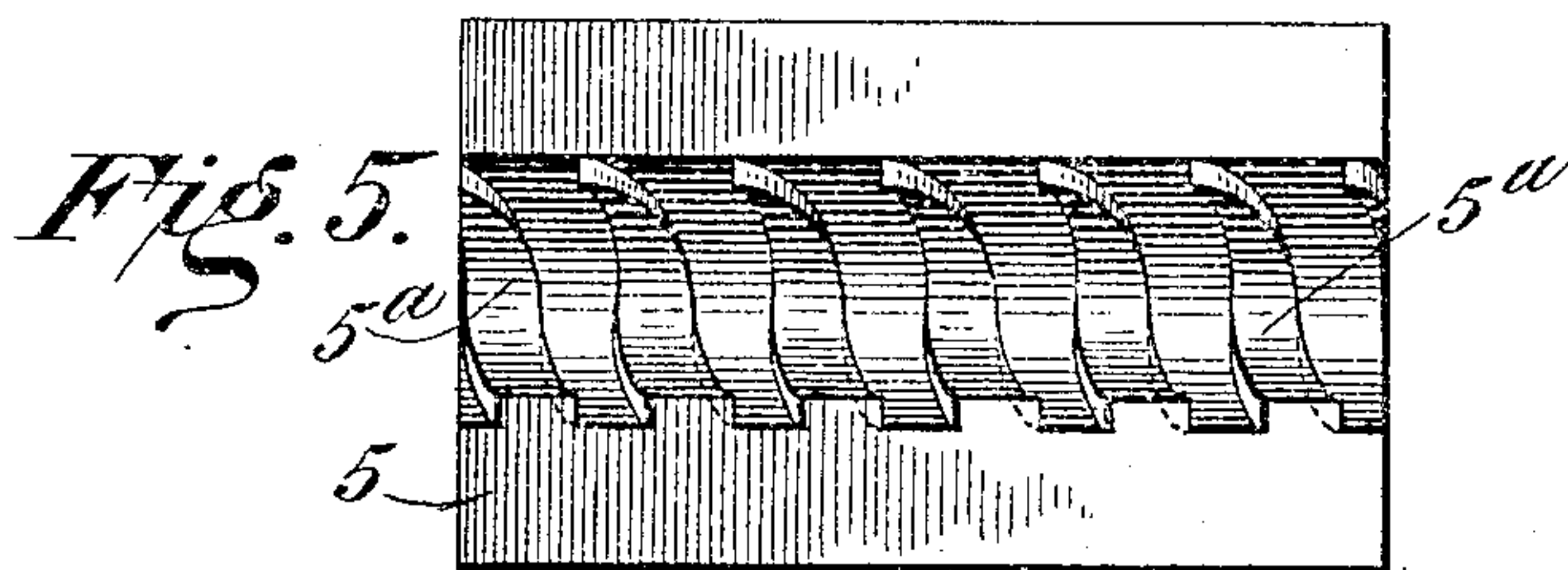
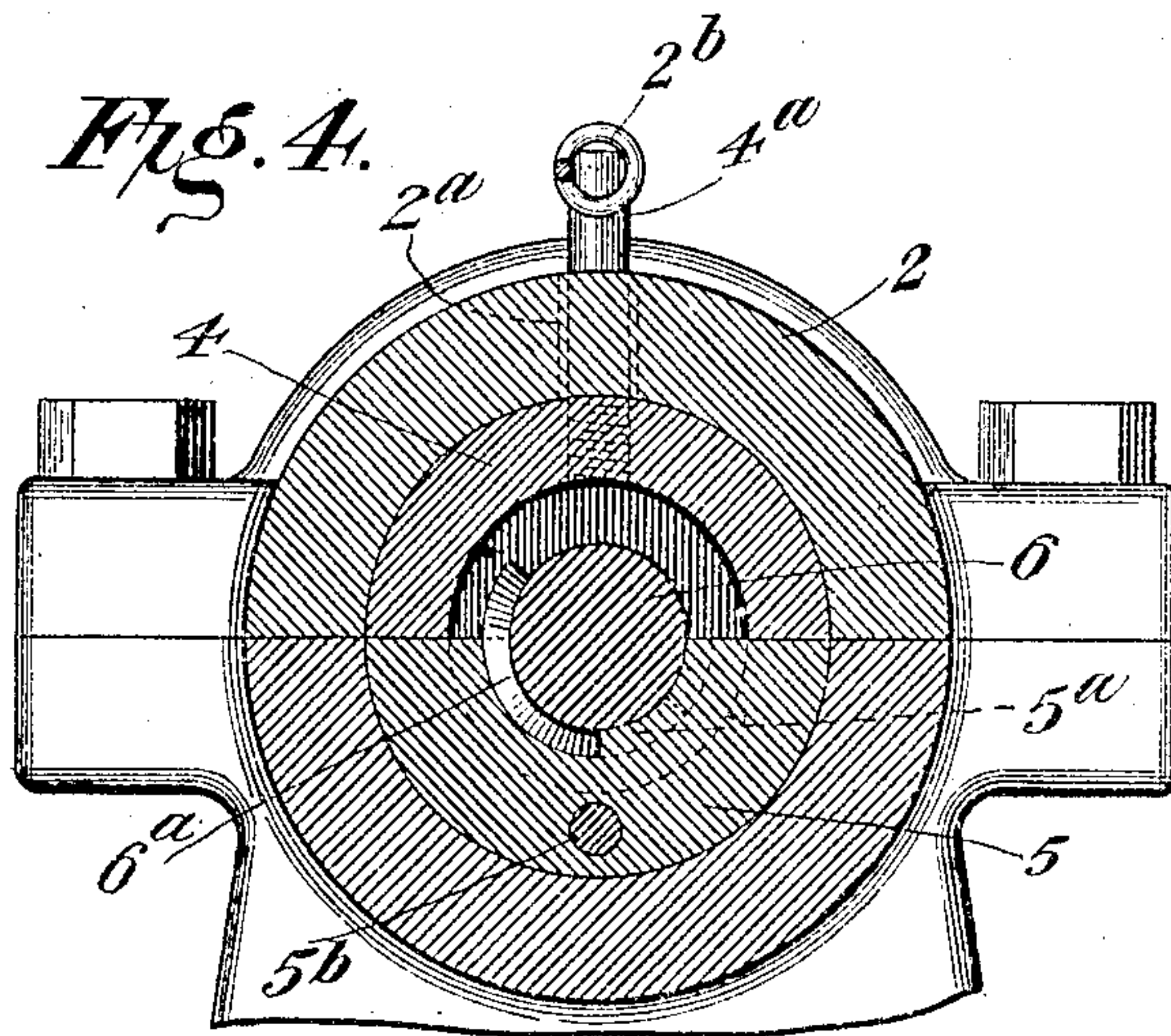
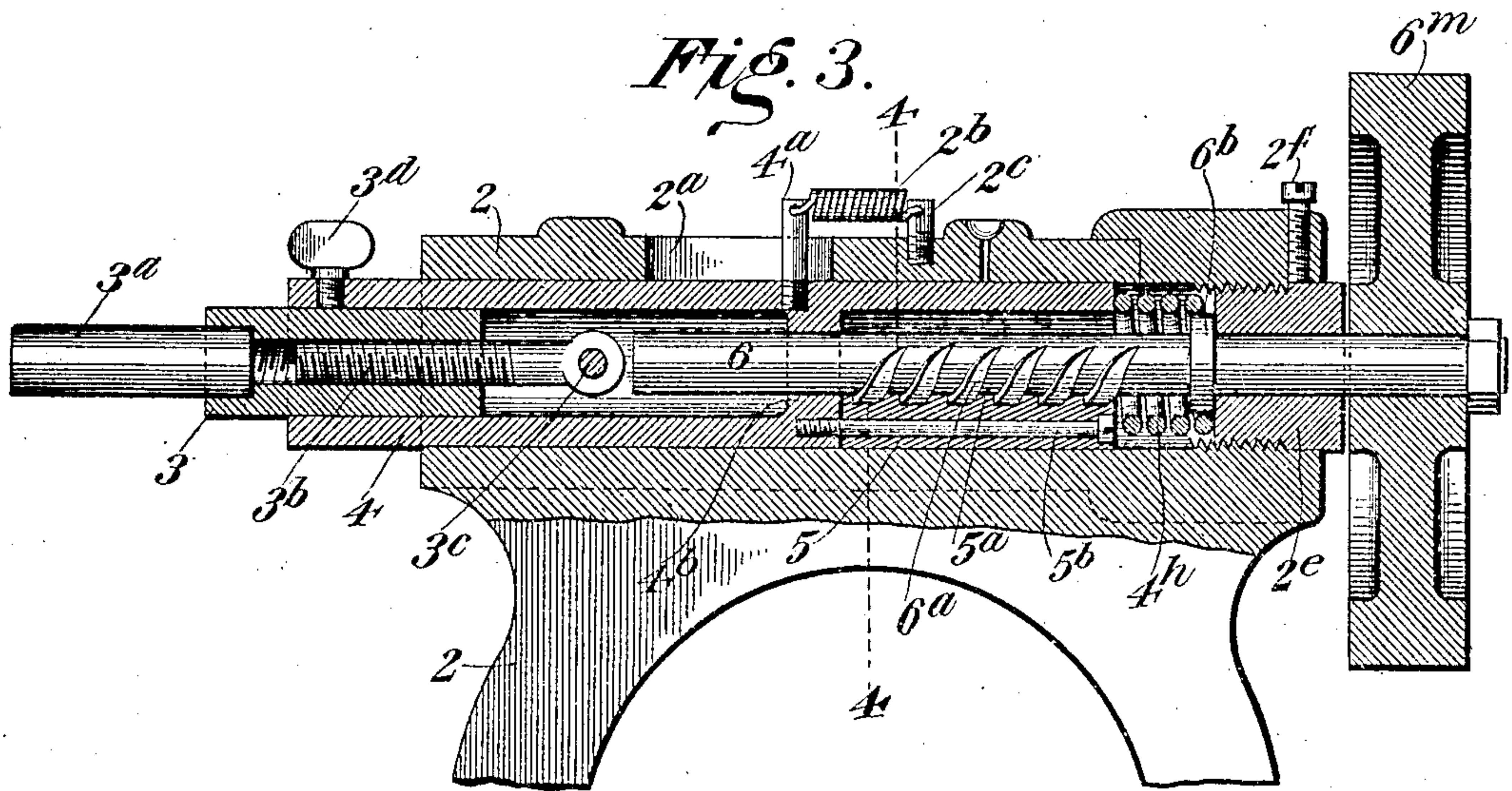
No. 882,426.

PATENTED MAR. 17, 1908.

G. W. SCHREURS.
BUTTON BLANK CUTTING MACHINE.

APPLICATION FILED DEC. 29, 1906.

2 SHEETS—SHEET 2.



WITNESSES

James B. Mansfield

INVENTOR

Garrett W. Schreurs
BY *Hyland & Fowell*
Attorneys

UNITED STATES PATENT OFFICE.

GARRETT W. SCHREURS, OF MUSCATINE, IOWA.

BUTTON-BLANK-CUTTING MACHINE.

No. 882,426.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed December 29, 1906. Serial No. 350,080.

To all whom it may concern:

Be it known that I, GARRETT W. SCHREURS, of Muscatine, in the county of Muscatine and State of Iowa, have invented certain new and useful Improvements in Button-Blank-Cutting Machines; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in button-blank cutting machines especially such as are employed for cutting blanks from bone, shells and the like, and its objects are to provide a machine whereby the plug or pusher is moved toward the saw, or vice versa, in a proper manner for each rotation of the shaft or spindle,—and to provide novel means whereby the spindle is reciprocated as it is rotated, so as to first cause the saw to cut the blank from a shell or other material interposed between the saw and plug or pusher, and then spring back out of the way and allow the shell to be re-positioned; second, to provide means for operating the spindle automatically, at the will of the operator, so that he can employ both hands to hold or manipulate the shell, thus greatly expediting the cutting operations and merely has to attend to the proper positioning of the shell relatively to the cutter, thereby increasing the capacity of the machine, and reducing the manual labor heretofore attendant on the ordinary hand-operated blank cutting machines.

The invention will be hereinafter set forth more in detail, with reference to the accompanying drawings which illustrate the at present preferred form of the machine embodying the invention, and I set forth the features and combinations of parts for which protection is desired in the claims following the specifications.

In said drawings—Figure 1 is a side elevation of the complete machine, partly in section. Fig. 2 is an end elevation of Fig. 1. Fig. 3 is an enlarged section through the pusher operating devices. Fig. 4 is a transverse section on line 4—4, Fig. 3. Fig. 5 is a detail of the interrupted-screw-threaded block attached to pusher.

In the drawings, 1 designates the head-stock of the complete machine, which carries a shaft 1^a, having a tubular saw 1^b attached to its inner end and provided with a stepped

pulley 1^c intermediate its bearings which can be belted to any suitable driver, as usual. The head-stock is mounted on a bench or table of ordinary construction.

Opposite the head-stock is the tail-stock 2, in which is slidably mounted a sleeve 4, which I term the "pusher" and which has an internally threaded plug holder 3 in its inner end carrying a lead or other soft metal plug 3^a, said plug holder engaging a screw 3^b, secured in the pusher by a pin 3^c, so that by turning the plug holder the screw will force it in or out of the pusher,—and by turning it sufficiently the screw 3^b can be made to eject the plug 3^a out of the plug holder which is a very useful feature. The plug holder can be locked, when placed, by means of a set-screw 3^d tapped through the outer end of the pusher and engaging the side of the plug holder as shown.

The pusher 4 is preferably non-rotatable in the tail-stock, although longitudinally movable therein; and as shown it is kept from rotating by means of a pin 4^a passing through a slot 2^a in the tail-stock and connected to one end of a spring 2^b, the other end of which is fast to a pin 2^c on the tail-stock as shown, and normally tends to retract the pusher in the tail-stock and draw the plug away from the saw.

Attached to the rear part of the pusher is a block 5 which is parti-cylindric, and is provided internally with coarse threads 5^a forming an "interrupted screw" in the rear end of the pusher. This block 5 may be formed with the pusher but is preferably separable therefrom and detachably attached thereto by bolts 5^b, or other suitable fastenings. Arranged axially of and passing into the rear end of the pusher is a spindle or shaft 6 whose inner end has a sliding bearing in a partition or web-portion 4^b in the pusher, while its outer end has a bearing in and passes through a head-block or plug 2^e which closes the opening in the outer end of the tail-stock and confines the pusher therein. Said plug may be threaded into the tail-stock as shown, and may be locked by a set-screw 2^a.

Outward movement of the spindle is prevented by a collar 6^b thereon bearing against the inner end of the plug 2^e. The spindle is provided intermediate the bearing 4^b and collar 6^b with parti-circumferential screw-threads 6^a forming an "intermediate screw" opposite and adapted to engage with the in-

interrupted screw-threads 5^a, when the spindle is rotated. The threads 5^a, 6^a, are quite coarse and their pitch is such that if the spindle be rotated while threads 5^a, 6^a, are in engagement the pusher will be moved inward sufficiently to properly present a shell to the saw and hold it thereto until a blank is cut therefrom. Something less than a whole revolution of the spindle is sufficient to disengage the threads 5^a, 6^a, and during their engagement the pusher is moved inward,—as the spindle cannot move outwardly in its bearings; the instant the threads disengage, the pusher is retracted by the spring 2^b, but its return movement may be cushioned by a buffer-spring 4^h interposed between the plug 2^e and the inner end of the pusher and block 5, as shown.

The meeting or engaging ends of the threads 5^a, 6^a, are preferably rounded or curved as shown, so that they will engage without shock or danger of locking and will also move the pusher quickly at the start, and then gradually reduce its movement and slow it down as the cutter finishes the severance of a blank, thus preventing the too rapid feed of the shell against the cutter and breaking out the blanks. By properly adjusting plug 3^a relatively to the saw the cutting operations can be performed with the utmost nicety and precision.

While the spindle 6 may be turned by hand, I prefer to operate it automatically, and for this purpose to employ a frictional drive as follows: On the outer end of spindle 6 is a pulley 6^m which is driven by a belt 7^m running over pulleys 7^a, 7^b, the latter being fixed upon a counter-shaft 7^c, and the former being journaled in the upper end of a swinging frame 7 hinged upon shaft 7^c, so that pulley 7^a can be swung on an arc concentric with shaft 7^c, and thus bring one run of the belt 7^m into contact with the face of pulley 6^m. The shaft 7^c may be driven by any suitable means, not shown, so as to drive belt 7^m continually. The frame 7 may be swung toward pulley 6^m by means of a link 7^d one end of which is pivotally attached to the frame 7, and the other end to one arm of a bell-crank lever 7^e, pivoted at its bend upon a support 8, and having an adjustable weight 7^f on its longer arm, which can be adjusted and secured thereon by a set-screw 7^g, so as to regulate the frictional pressure of the belt 7^m against pulley 6^m. The lever 7^d can be variably connected to the lever 7^e by engaging it with different holes 7^h in the short arm of the lever. The weight is so adjusted that the belt will frictionally drive the pulley and spindle 6 to move the pusher and plug toward the saw with the proper speed and force to cause the saw to cut the blanks from the shell with uniformity and without breaking through the shell. Obviously by shifting the weight in or out on the lever 7^e, the friction

will be increased or diminished, and thus the feed of the shell easily controlled. If desired, the workman could operate the lever 7^e by hand or foot so as to manually control the feed of the speed of rotation of the spindle, but practically he can adjust the weight 7^f so as to insure the proper and regular feed of the shell entirely automatically, and thus have both hands free to hold and manipulate the shell. The interrupted threads impart the same extent of reciprocation to the pusher for each revolution of the spindle,—but the plug holder is adjustable in the pusher, so that the plug can be adjusted exactly relatively to the saw so as not to enter the saw, yet insure that the cutting operation will be completed in the proper manner.

It will be observed that the spindle or shaft 6 is rotated continually in one direction, and does not have to be reversed to retract the pusher;—also that it moves the pusher forwardly during its revolution and then the pusher returns idly. Owing to the frictional drive the rotation of the spindle is not necessarily uniform in practice as it moves slowly during the cutting operation and against the resistance of spring 2^b and the shell, and when the interrupted screws clear it can move more quickly as the resistance is lessened. By providing a frictional drive the feed during the cutting operation is variable according to the thickness and toughness of the shell, and thus is practically regulated by the shell itself, resulting in more perfect blanks.

While I prefer to mount the plug on the tail-stock and the saw on the head-stock, as is customary, obviously the positions of these members could be reversed. The shaft 6 could be turned by hand, but the automatic frictional driving means is preferable, as it produces equally as good results, and enables the workman to more accurately and quickly position the shell between the saw and plug, and a great many more blanks can be cut in a given time by such automatic mechanism.

The frame 7 is preferably made extensible, as by making its side members in sections connected by bolts 7^c, one member being slotted so that it can be slid relatively to the bolt when the latter is loosened, and thus the belt 7^m can be kept tensioned according to the pressure to be applied to it.

When the machine is operated by hand a great many more buttons can be cut than is possible with the present used machines which require several turns of the shaft forward and backward to move the saw or plug properly to and from the work. While by my invention something less than one turn of the shaft is sufficient to produce the cutting of a blank, and the plug is retracted automatically during the instant that the threads are disengaged, which is about a half-inch on the surface of the spindle, and

therefore the action of the spindle on the pusher is practically continuous. And I also avoid the objection or danger of puncturing the blank, or injuring the plug by too great pressure and too far travel of the pusher before reversing. And I am enabled to use soft metal plugs in place of wood, which is a great practical advantage as less time is lost in adjusting and renewing plugs.

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

15 1. In a button blank cutting machine, the combination of a stock, a pusher slidably mounted in the stock, a rotatable shaft extending into the pusher, and interrupted screw-threads on the shaft and pusher for converting the rotary motion of the shaft into a sliding motion of the pusher.

20 2. In a button blank cutting machine, the combination of a pusher, a block attached thereto having internal interrupted screw threads, a spindle extending into said block, and having external interrupted screw threads adapted to engage those of the block during part of the revolution of the spindle for projecting the pusher, and means for rotating the spindle.

30 3. In a button cutting machine, the combination of a tubular pusher, a plug-holder in one end of the pusher having a threaded opening extending axially thereof, and a

screw fixed in the pusher and engaging the threaded opening in the plug holder.

4. In a button cutting machine, the combination of a pusher, a rotatable shaft, and means for imparting reciprocating motions to the pusher by rotating said shaft; with a plug holder in the pusher having a threaded opening extending axially thereof, and a screw in the pusher engaging said opening for adjusting said holder in the pusher.

5. In a button blank cutting machine, the combination of a stock, a pusher slidably mounted therein, a spring for retracting said pusher, a spindle arranged axially of said tail-stock, and having interrupted threads engaging corresponding threads on the pusher; and means for rotating said spindle.

6. In combination, a pusher, a rotatable spindle arranged axially thereof, a spring for retracting the pusher, and engaging means on the pusher and spindle for moving the pusher against the spring during part of the rotation of the shaft; with devices for rotating said spindle.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

GARRETT W. SCHREURS.

Witnesses:

J. C. COSTER,
I. B. GRADE.