

No. 618,583.

Patented Jan. 31, 1899.

J. H. & W. D. PLAYER.

SPOKE TIGHTENER.

(Application filed Feb. 24, 1898.)

(No Model.)

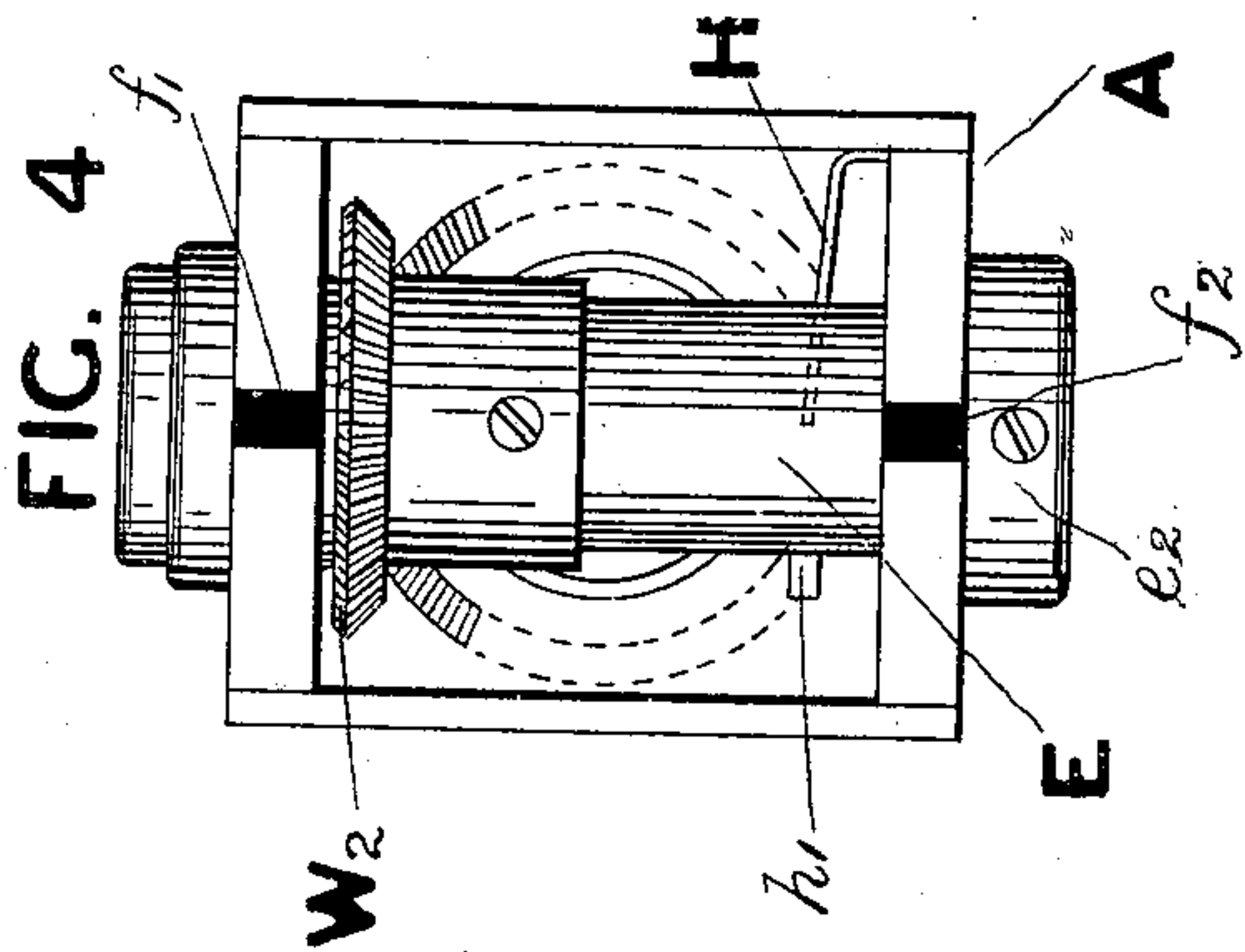


FIG. 5

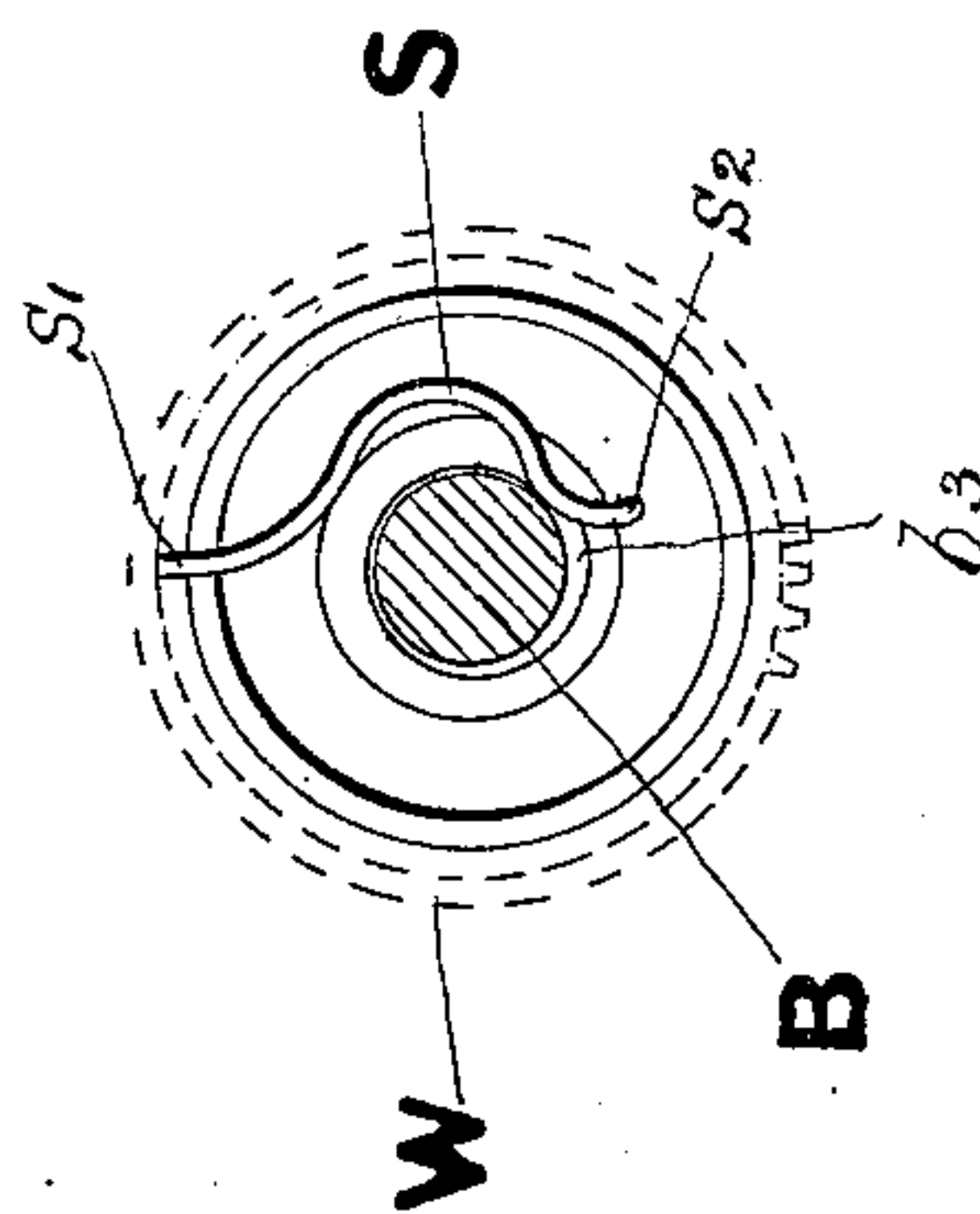


FIG. 2

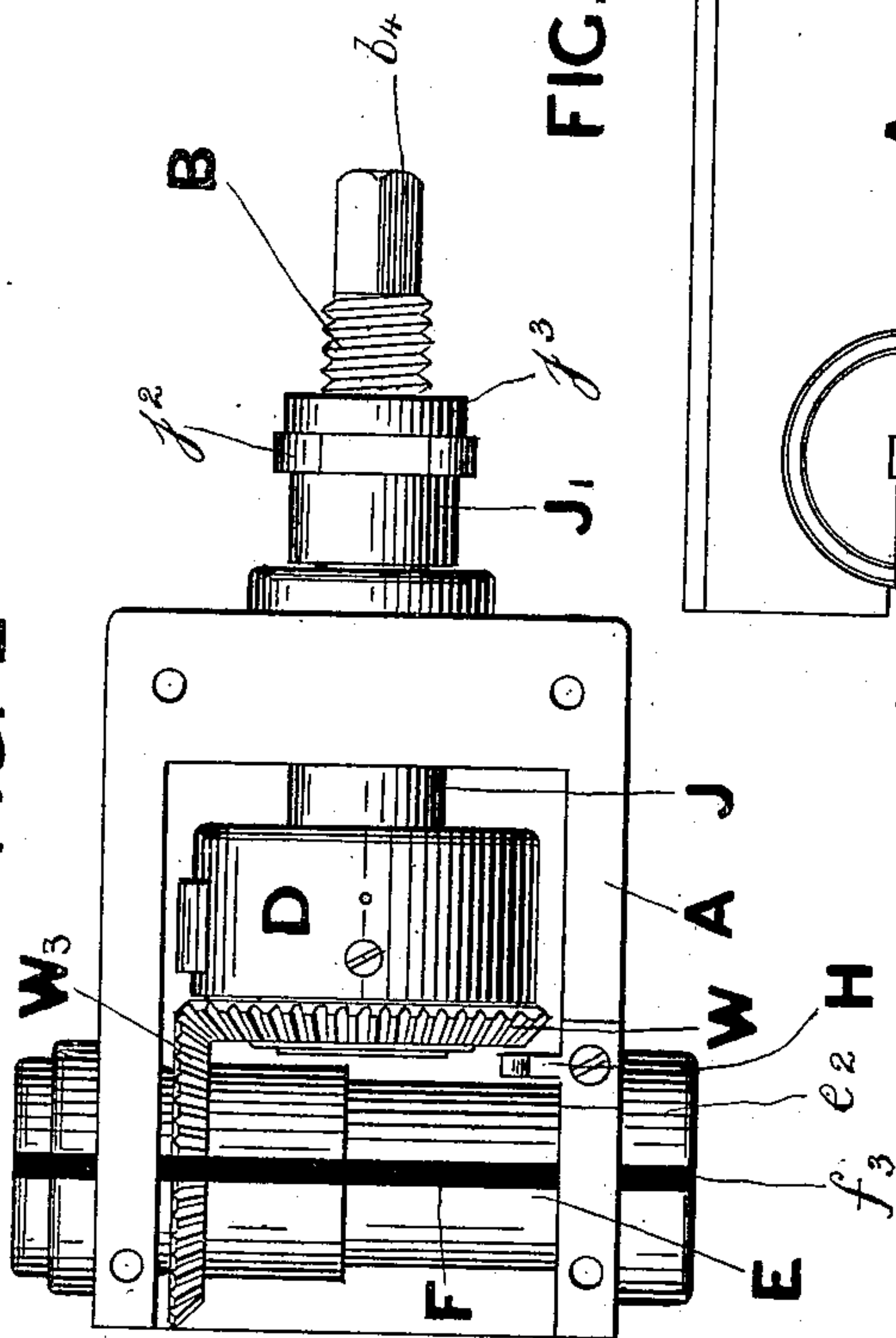


FIG. 1

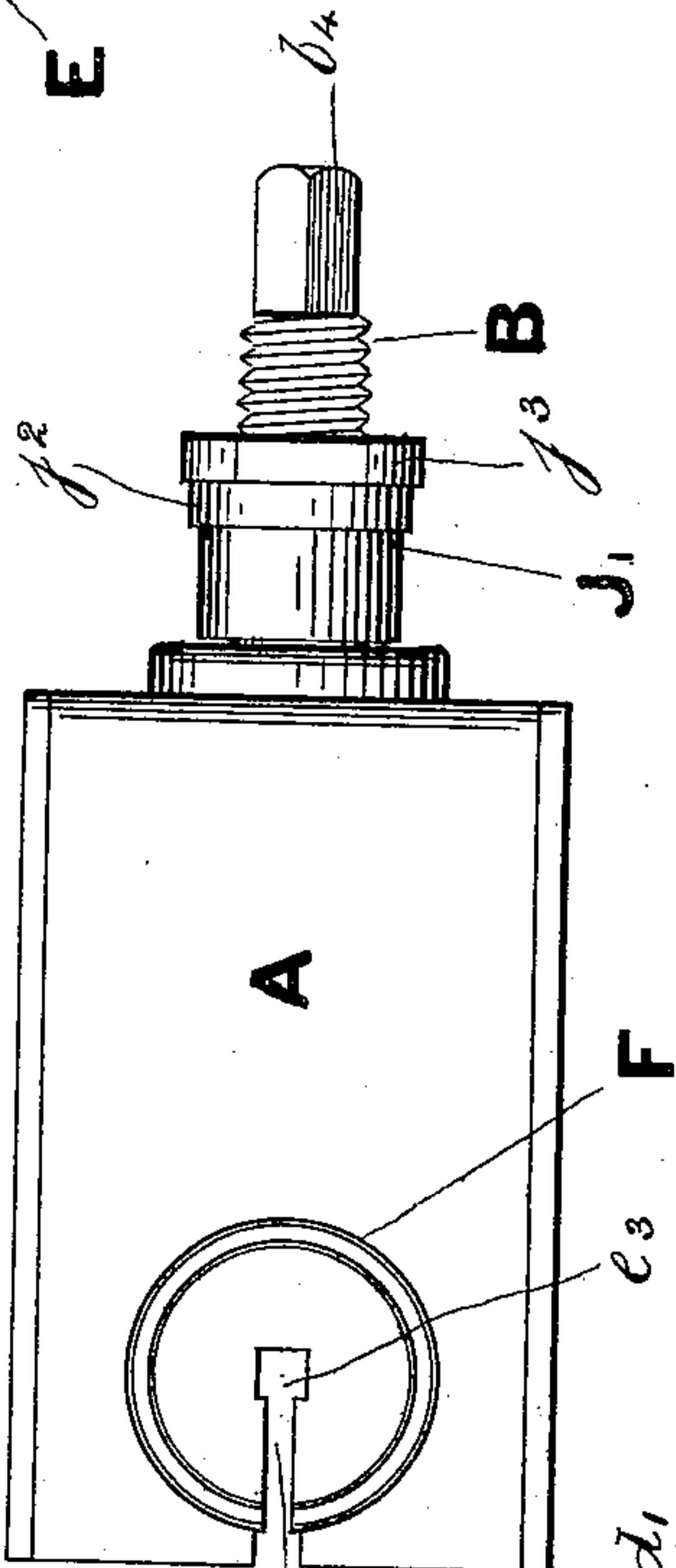
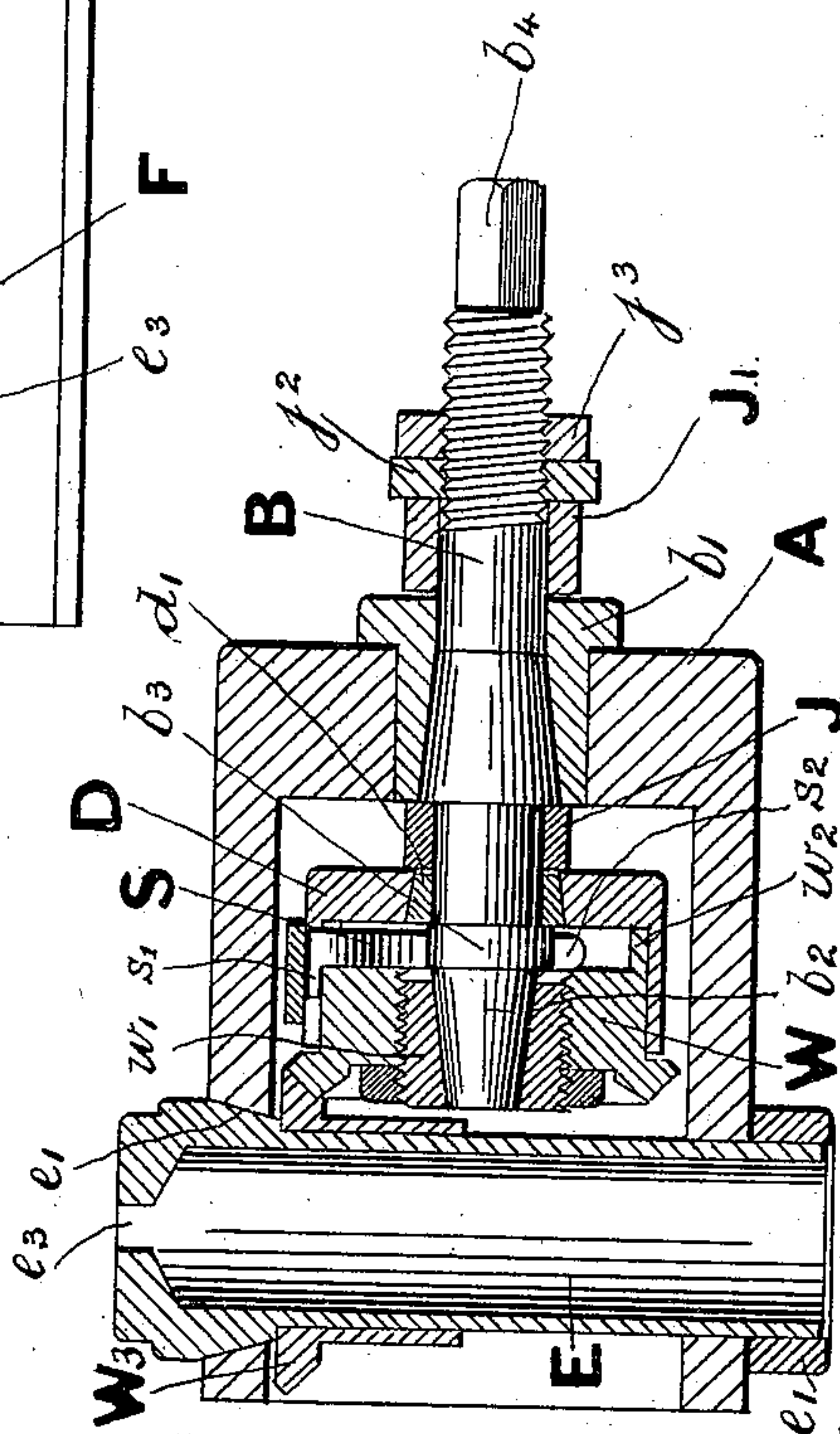


FIG. 3



Witnesses:

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# UNITED STATES PATENT OFFICE.

JOHN HENRY PLAYER, OF COVENTRY, AND WILLIAM DREDGE PLAYER, OF BIRMINGHAM, ENGLAND.

## SPOKE-TIGHTENER.

SPECIFICATION forming part of Letters Patent No. 618,583, dated January 31, 1899.

Application filed February 24, 1898. Serial No. 671,475. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN HENRY PLAYER, tool-maker, of 5 Wren street, Coventry, in the county of Warwick, and WILLIAM DREDGE  
5 PLAYER, manufacturer, of 112 Newhall street, Birmingham, England, subjects of the Queen of Great Britain, have invented certain new and useful Improvements in and Connected with Spoke-Tighteners; and we do hereby de-  
10 clare 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 ap-  
pertains to make and use the same.

Our invention has for its object improve-  
15 ments in and connected with hand and machine tools by which we are enabled when using our tool for tightening up spokes to indicate when sufficient tension has been put upon each spoke in building up a wheel or  
20 when sufficient tension has been put upon a drill, tap, or the like.

In order that our invention may be clearly understood and easily carried into practical effect, we have appended hereunto examples  
25 of our tool.

Figure 1 is a plan view of our tool complete. Fig. 2 is a side elevation showing the sides of the case removed. Fig. 3 is a part-  
30 sectional view of Fig. 2. Fig. 4 is an end view of Fig. 2 with the sides of the case fixed in position. Fig. 5 is an internal view of the tension portion of our tool.

In carrying our invention into practice we form the frame or case A, in one end of which  
35 we mount the spindle B in the cone-bearing  $b'$ , and on the inner end  $b^2$  of this spindle, which is formed conical, we mount the bevel-wheel W, provided with the adjustable conical bearing  $w'$ , in which the coned end of the  
40 spindle fits. This wheel is also formed with the flange  $w^2$ , in which we fix the end  $s'$  of the spring S. The other end  $s^2$  bears against the eccentric or cam  $b^3$ , formed on or attached to the spindle. We then fix the cap or cover D  
45 over the flange  $w'$ , and this cap or cover is formed with a conical hole which takes its bearing on the cone  $d'$ , fixed on the spindle immediately above the eccentric  $b^3$ , by which means the spindle and wheel are secured to-  
50 gether. We now mount the bevel-wheel  $W^3$

on the tube or sleeve E, which gears with the bevel-wheel W, and this tube or sleeve, which is formed with the conical bearing  $e'$  at one end, is mounted in the frame or case at or about right angles to the spindle B and is  
55 held in position by the collar  $e^2$ , which is fixed at the other end by screws or otherwise. The slot F is cut or formed along the length of this tube and also in the spur-wheel  $W^3$ , and corresponding slots  $f'$ ,  $f^2$ , and  $f^3$  are cut or  
60 formed in the edges of the sides of the frame or case and in the collar  $e^2$ . The coned end of the tube or sleeve E is formed solid, and in the center of this end we form the square hole  $e^3$  with the slot  $e^4$ , which communicates  
65 with the slot F. The distance-pieces or collars J and J' are provided so as to keep the various parts in position, and the lock-nuts  $j^2$  and  $j^3$ , which screw onto the spindle, hold the parts together.  
70

The *modus operandi* is as follows: To tighten up a spoke, the tool is passed onto the spoke by means of the slot F, so that the tube or sleeve E surrounds a portion of the spoke. The tool is then moved until the nipple enters  
75 the hole  $e^3$ . The spindle is now revolved by attaching a flexible shaft to the end  $b^4$ , or the spindle may be revolved by a hand-wheel fixed to this end of the spindle or by other means, thus causing the two spur-wheels to  
80 revolve also, and consequently the sleeve or tube E and the spoke-nipple, by which means the spoke is tightened up, and as soon as sufficient tension has been put upon the spoke the strain on the spindle overcomes the ten-  
85 sion of the spring S, which measures and limits the strain put upon each spoke and which bears against the cam  $b^3$ , thus allowing the coned end  $b^2$  of the spindle to revolve in its bearing  $w'$  and the bevel-wheels W and  $W^3$   
90 to remain stationary, thereby indicating to the operator that sufficient tension has been put upon the spoke. It will be evident that the spring which measures and limits the amount of tension to be put upon the spoke  
95 may be of various shapes and may be placed in any position between the driving medium and the part which grips the nipple by suitably arranging the various working parts and also that the holding medium E may be driven  
100



by other means instead of bevel-wheels. Fixed in the interior of the frame or case is the spring-catch H, which is set at an angle and which serves as a stop-piece for the peg or projection  $h'$ , which is secured to the tube or sleeve in such a position that when this tube or sleeve is revolved in one direction the stop  $h'$  comes in contact with the spring-catch H when the slot F is exactly opposite the slots  $f'$ ,  $f^2$ , and  $f^3$ , thus indicating when all the slots are opposite or in a line to enable the tool to be withdrawn; but when the tool is revolved in the reverse direction this stop  $h'$  slides over the spring-catch H.

It will be evident that we may use ball-bearings in place of cone-bearings and that our tool may with equal advantage be used for other purposes—such, for instance, as measuring and limiting when a certain tension has been put upon drills, taps, bits, or the like—by slightly modifying its construction.

What we claim, then, is—

1. The spoke-tightening device herein set forth and shown consisting of a nipple holder or spanner driven by a train of wheels or their equivalents from any convenient driving-spindle B whether driven by hand or power

but having a spring S or its equivalent interposed between the power applied and the nipple-holder for the purpose of measuring and limiting the strain put upon each spoke as the nipple is screwed up.

2. A hand or machine tool for tightening spokes comprising the case or frame A the spindle B with its bevel-wheel W and the limiting or measuring spring S, the tube or sleeve E with its corresponding wheel  $W^3$  all operated in the manner and for the purpose substantially as herein set forth and as shown upon the drawings.

3. A spoke-tightening device, consisting of a frame having lateral slots, a rotary nipple holder or spanner having a lateral slot, the train of wheels for driving the same, and the spring in the driving connections for limiting the strain put upon each spoke as the nipple is screwed up, substantially as described.

In testimony whereof we affix our signatures in the presence of two witnesses.

JOHN HENRY PLAYER.

WILLIAM DREDGE PLAYER.

Witnesses:

GEORGE LESTER,

ERNEST NYER.