

No. 675,019.

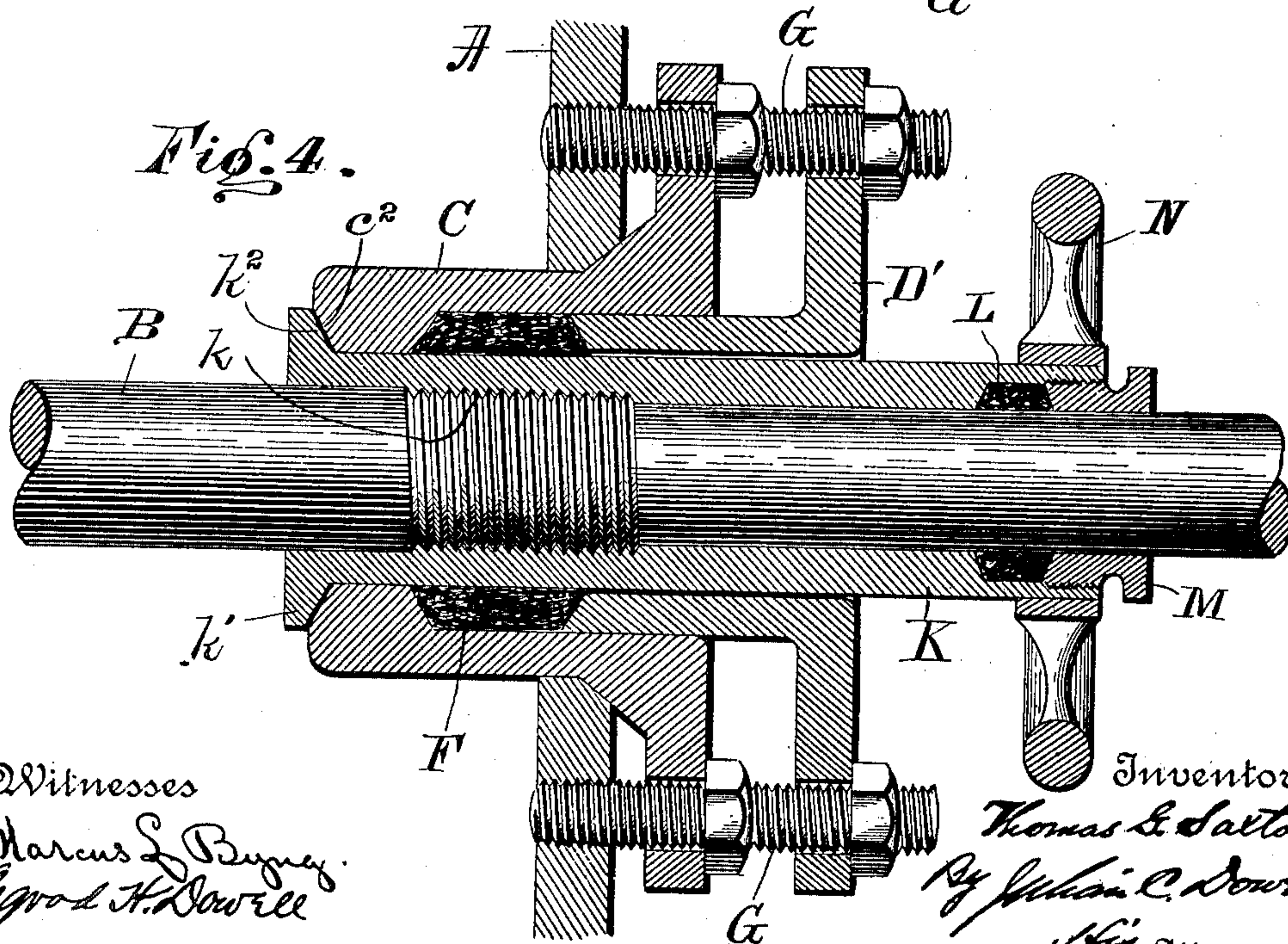
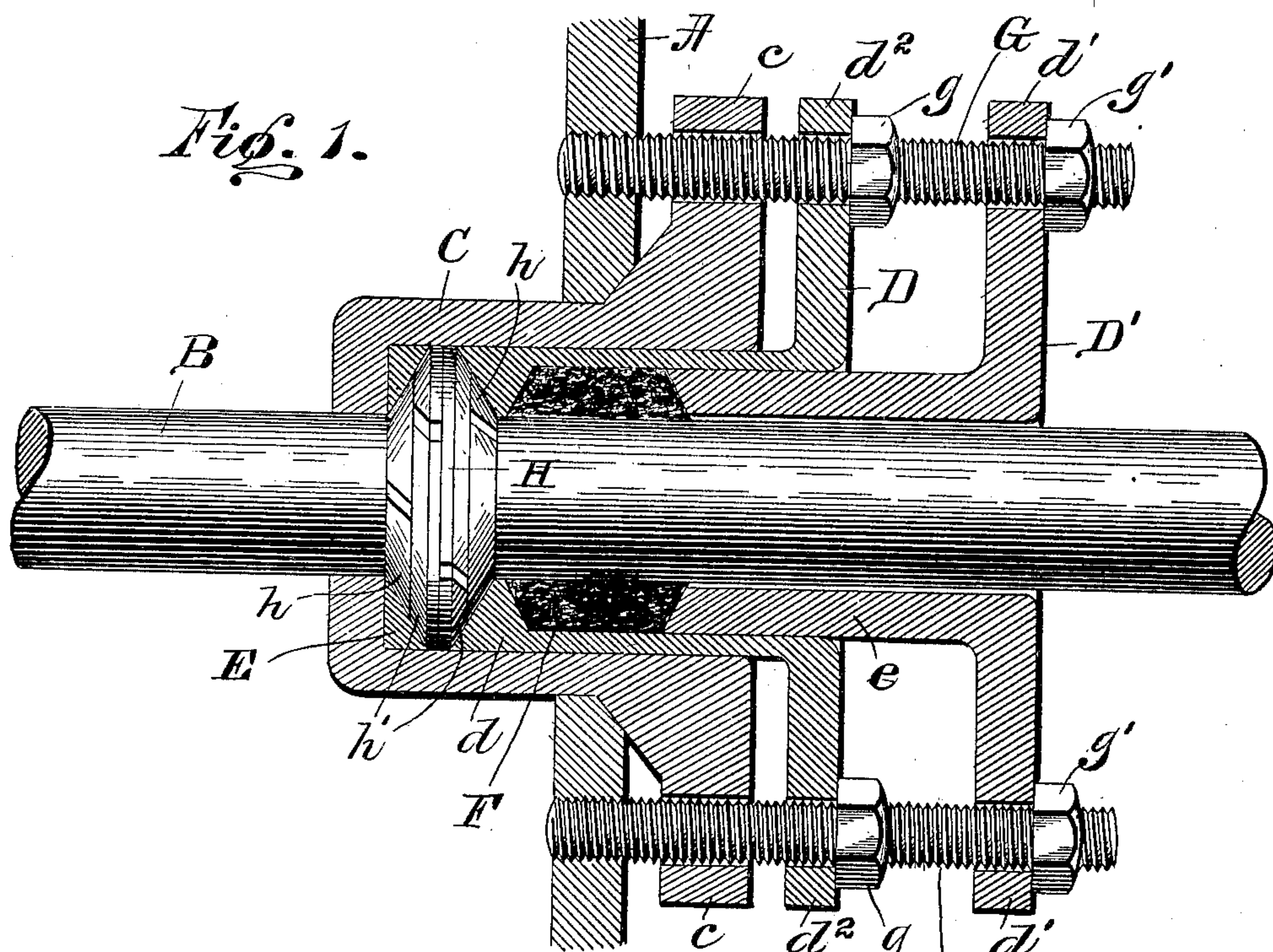
Patented May 28, 1901.

T. G. SAXTON.
THROTTLE ROD PACKING.

(No Model.)

(Application filed July 2, 1900.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

Fig. 2.

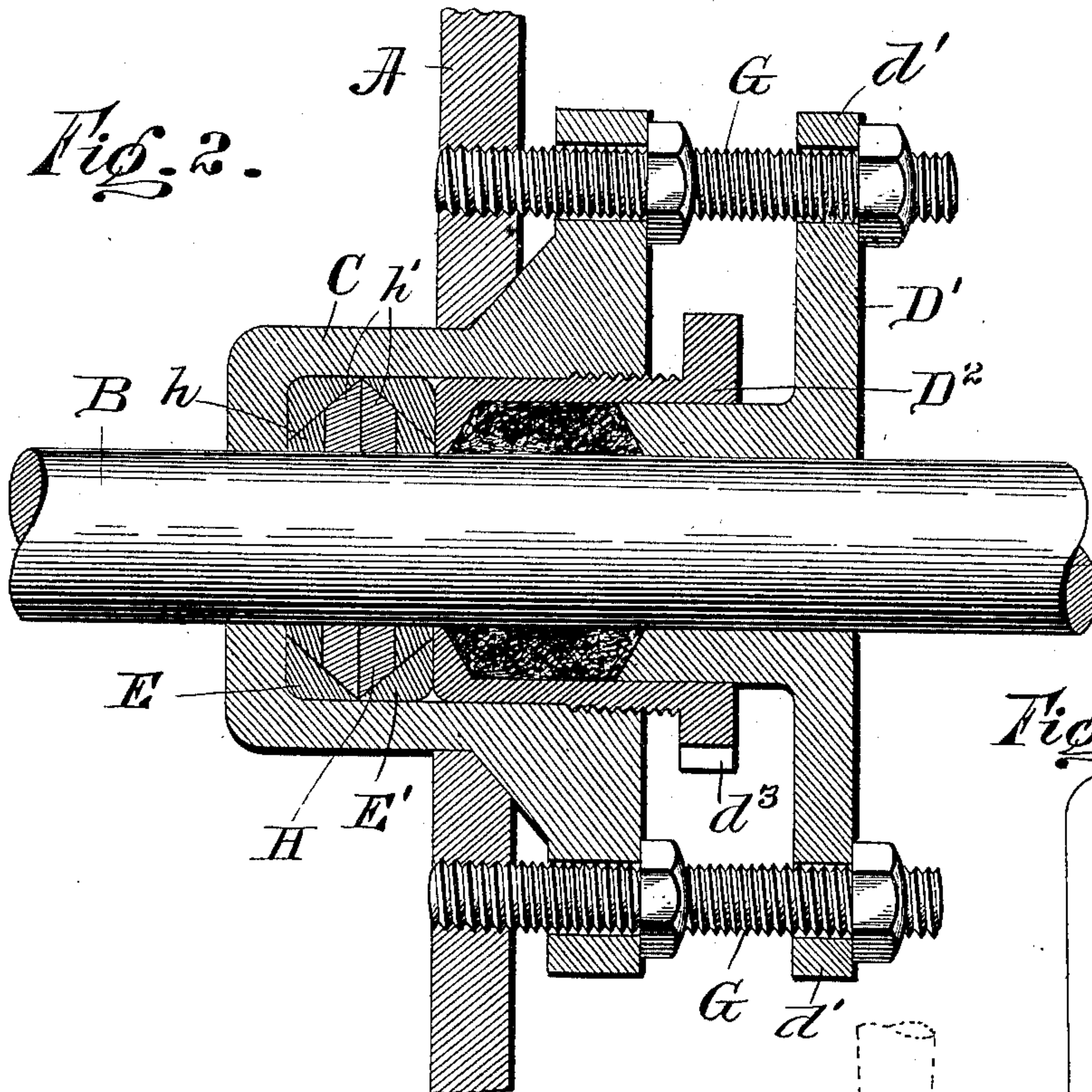


Fig. 5.

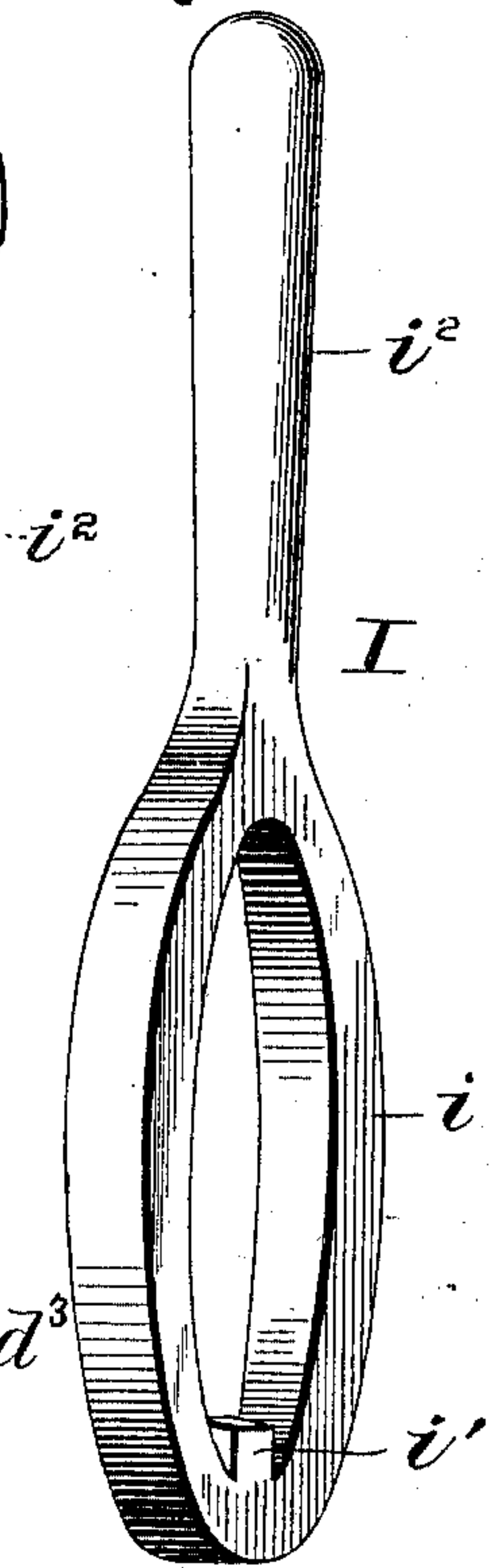
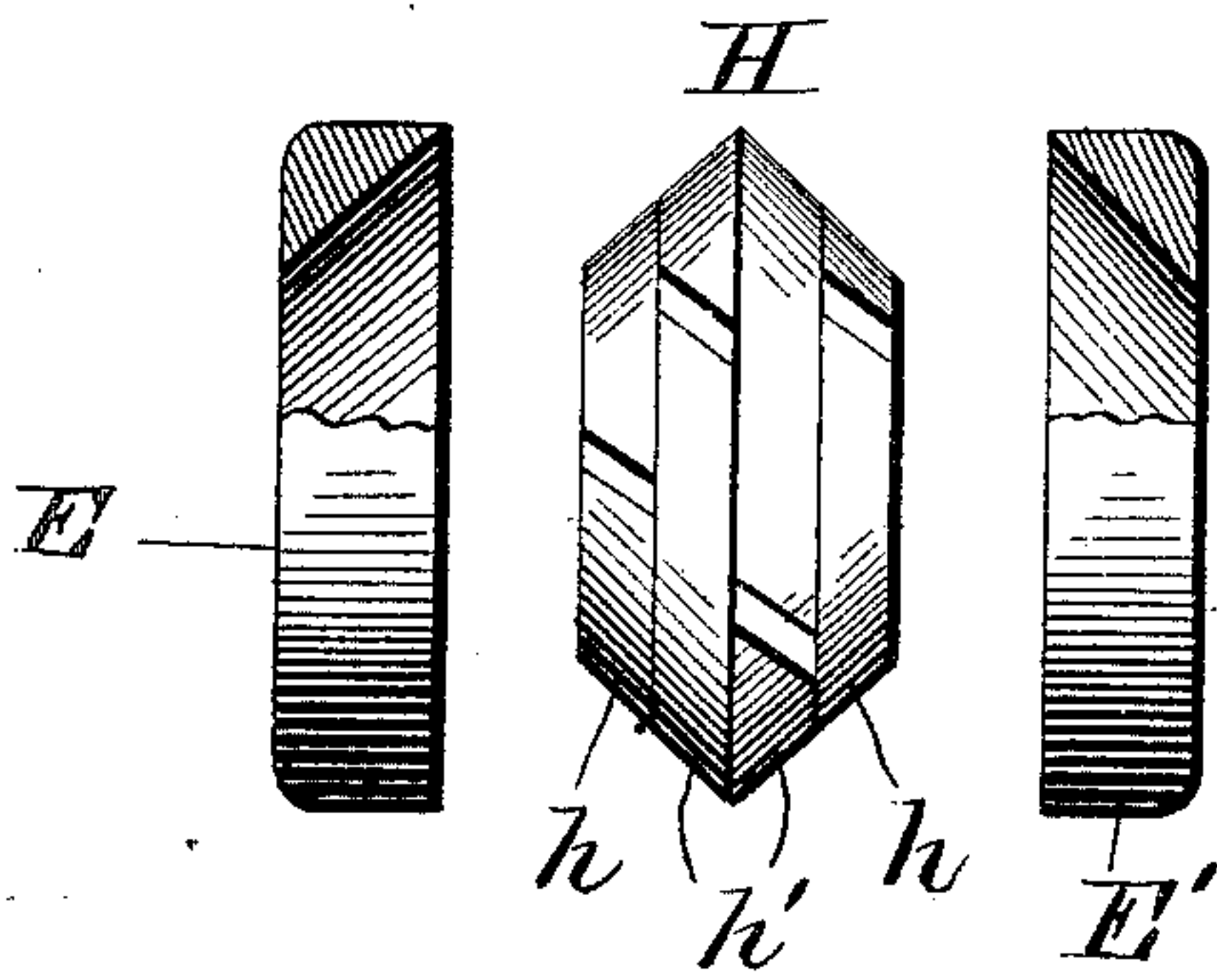


Fig. 3.



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UNITED STATES PATENT OFFICE.

THOMAS GUNNI SAXTON, OF LEXINGTON, KENTUCKY, ASSIGNOR TO
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THROTTLE-ROD PACKING.

SPECIFICATION forming part of Letters Patent No. 675,019, dated May 28, 1901.

Application filed July 2, 1900. Serial No. 22,348. (No model.)

To all whom it may concern:

Be it known that I, THOMAS GUNNI SAXTON, a citizen of the United States, residing at Lexington, in the county of Fayette and State of Kentucky, have invented certain new and useful Improvements in Throttle-Rod Packing; 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 rod-packing for piston-rods and valve-stems, and more particularly to an improved rod-packing for the throttle-rods of locomotive and other engines.

With the ordinary stuffing-boxes and packing for the rods or spindles of throttle-valves in which the valve rod or spindle passes through the valve-casing or boiler when the packing becomes worn or destroyed and it is desired to remove it from the stuffing-box and to renew the packing it is usually necessary, on account of the great pressure within the boiler, to first allow the furnace-fire to die out and the boiler-pressure to be reduced, which renders it necessary, after renewing the packing, to renew the fire and raise the boiler-pressure, thus consuming considerable time, as well as causing a loss of fuel and power. On account also of the high steam-pressure within the boiler the throttle-rod in the valve-casing is sometimes forced open even against the action of the throttle-rod-controlling mechanism. Thus in locomotive-engines where the throttle-rod is controlled by a lever held in position by means of a spring-actuated latch engaging the teeth of a stationary rack or quadrant if the spring which holds the rack normally in engagement with the teeth of the rack has not sufficient power or becomes weak in use the steam-pressure is sometimes sufficient to open the valve against the action of said controlling-lever, lifting the latch and causing the same to move past the teeth on the rack or quadrant, and this sometimes results in causing the engine to run away, with usually disastrous results.

The primary object of my invention is to provide efficient means for forming a steam-tight joint around the throttle-rod, so as to permit the removal of the usual fibrous pack-

ing and the renewal thereof without putting out the furnace-fire or requiring the boiler-pressure to be reduced, or, in other words, without "killing" the engine, as is usually necessary, thus effecting a great saving of fuel and time and avoiding much inconvenience.

A further object is to provide efficient means for temporarily "locking" the throttle-rod while the fibrous packing is being removed and replaced or renewed with as little delay and inconvenience as possible and in such manner as to afford an effectual steam-tight joint between the throttle-rod and the stuffing-box through which it passes by the instrumentality of such locking mechanism.

The invention will first be hereinafter more particularly described with reference to the accompanying drawings, which form a part of this specification, and then pointed out in the claims at the end of the description.

In said drawings, in which corresponding parts in different views are denoted by similar letters of reference, Figure 1 represents a longitudinal sectional elevation, on a somewhat enlarged scale, of a device embodying my invention as applied to the boiler-head of an ordinary locomotive-engine. Fig. 2 represents a longitudinal sectional elevation, on a somewhat enlarged scale, of a modification of the invention designed as a new construction or in applying the device to an old engine lying in for repairs. Fig. 3 is a detail view of the packing-receptacle or auxiliary gland and parts coöperatively connected therewith removed from the stuffing-box shown in Fig. 2, showing said parts in the order in which they are inserted in said stuffing-box. Fig. 4 represents a longitudinal sectional elevation of another modification of the invention as applied to an engine lying in for repair or as a new construction, and Fig. 5 is a perspective view of a convenient form of tool or wrench for screwing and unscrewing the auxiliary gland and packing-receptacle shown in Figs. 2 and 3.

In the drawings the letter A may denote a portion of a boiler head or shell, B a throttle rod or spindle, and C an ordinary stuffing-box through which the rod passes in the usual manner. Said parts may be of the construc-

tion shown or of any desired construction and may be secured to the boiler in any proper manner.

D and D' denote the two members of a composite gland and packing-receptacle, each preferably formed with a cylindrical sleeve, one, as D, being slidably fitted within the bore of the stuffing-box proper, and the other, as D', being similarly fitted within the part D, which latter also serves as a packing-receptacle. The part D has at its inner end an annular enlargement or flange d , the outer face of which may be inclined or beveled to fit a correspondingly-beveled seat or surface of a valve ring or rings H, as will be presently explained. Fibrous or other packing F is placed within the auxiliary gland D and compressed by the sleeve e of the gland proper, D'. The exterior flanges or ears d' , d^2 , and c of the parts D', D, and C, respectively, are suitably apertured to receive the fastening-bolts G, by which said parts are attached to the boiler-head A, as shown. Said bolts may be tapped into the boiler-head and screw-threaded to receive the nuts g and g' thereon, by which the auxiliary gland D and the gland proper, D', are retained in the desired position on the bolts and may be screwed tightly against the two members of the gland for the purpose of compressing the packing within the packing-receptacle or auxiliary gland and locking the steam around the throttle-rod, as will be presently explained. Within the stuffing-box C and between the inner end thereof and the beveled face or seat on the end of the supplementary gland D are fitted the metallic ring E and a conically-arranged series of rings H, encircling the rod and adapted, when pressed by screwing up the nuts g , to grasp the rod and hold the same in a fixed position, at the same time sealing the joint or seam around the rod at such point, so as to form a perfectly steam-tight or air-tight joint, thus permitting the removal of the gland D' and renewal of the fibrous packing F without extinguishing the furnace-fire or killing the engine. In the form shown in Fig. 1 the metallic ring E has an inclined or beveled face fitting against a similarly-inclined face or seat on the conical series of rings H, the opposite face of which bears against the inner end of the sleeve of the supplementary gland D, said rings E h h' being split or divided to adapt them to contract under compression, so as to tightly hug the rod and form a steam-tight joint and lock holding the rod, so as to prevent the same from accidental movement under pressure of the steam when the gland D' is removed to permit the removal and renewal of the fibrous packing. This locking of the steam around the throttle-rod by temporarily closing the seam or space encircled by the valve-rings is accomplished by screwing up the nuts g , and thereupon the nuts g' may be unscrewed and the gland D' and packing F removed and replaced without interfering with the fire or reducing the steam-pressure.

I thus provide a very efficient means for forming a steam-tight joint and lock for the throttle-rod to permit the removal of the gland and withdrawal of the old packing and the substitution of new packing therefor without killing the engine, thus saving fuel, material, and time.

In the modification shown in Fig. 2 the sleeve or cylindrical portion of the supplementary gland (marked D²) is exteriorly screw-threaded and adapted to be screwed into the interiorly-screw-threaded opening or bore of the stuffing-box C, and the flanged or enlarged inner end of said gland D² forms an abutment for a metallic ring E', similar to the ring E in Fig. 1, but having an inclined face or seat confronting the correspondingly-inclined seat on the ring E, the conical series of rings being interposed. I thus dispense with the nuts g and the apertured flange or ears d^2 of the supplementary gland. (Shown in Fig. 1.) For conveniently manipulating the supplementary gland a suitable tool or spanner-wrench I may be employed, consisting of a ring i encircling the throttle-rod and provided with a lug i' for engaging a notch d^3 in the supplementary gland, said tool being provided with a suitable handle i^2 for manipulating the same in screwing or unscrewing the gland. The operation of the parts thus described, as will be seen, is similar to the arrangement shown in Fig. 1, except that instead of an extra set of nuts upon the bolts G the spanner-wrench or tool I is manipulated for screwing the supplementary gland to compress the rings.

In Fig. 4 is shown another modification, adapted for use as a new construction or for application to an engine lying in for repair. In this modification, K denotes a sleeve fitted upon the rod B within the stuffing-box C and interiorly screw-threaded, as at k , for a portion of its length to engage corresponding exterior screw-threads upon the rod B, said sleeve having a flange or enlargement k' on its inner end, the inner face k^2 of which may be inclined or beveled to fit a correspondingly-inclined seat c^2 on the inner end of the stuffing-box C, so that when the sleeve K is screwed up tight a steam-tight or air-tight joint will be formed between the valve-seats $k^2 c^2$. The outer end of the sleeve K is interiorly recessed to receive fibrous or other suitable packing L, which may be compressed within the recess by a gland M, having exterior screw-threads and screwed into the interiorly-screw-threaded end of the sleeve, as shown. As a convenient means for turning the sleeve K so as to lock the throttle-rod and seal the joint between the sleeve and stuffing-box while removing and renewing the fibrous packing F a hand-wheel N or other suitable device may be provided on the end of the sleeve K, or its outer end may be constructed to engage a wrench or other tool for operating the same. Within the stuffing-box C in Fig. 4 fibrous packing F may be placed the same as in the

constructions shown in Figs. 1 and 2, said packing being compressed by the cylindrical portion or sleeve of the gland D', and bolts corresponding with the bolts G G in Fig. 1 are provided with nuts similarly placed thereon for securing the stuffing-box and gland to the boiler head or shell, as shown.

As will be observed in each of the forms shown, when the throttle is closed by screwing up or tightening the clamping-nuts *g* in Fig. 1, or the supplementary-gland or spanner-nut construction D², (shown in Fig. 2,) or the sleeve K in Fig. 3 the throttle-rod will be firmly locked and held until released by loosening said tightening means, and at the same time a steam-tight or air-tight joint will be formed around the rod, between the same and the stuffing-box, and thereupon the composite gland (shown in Figs. 1 and 2) or the ordinary gland (shown in Fig. 4) may be easily removed and the old packing withdrawn and renewed, thus obviating the killing of the engine and saving fuel, material, and time.

The construction shown in Fig. 1 is particularly designed for application to the throttle-rod of an ordinary locomotive-engine as usually constructed and is adapted to be easily and cheaply applied, while the construction shown in Fig. 2 is preferably used in new constructions or for application to an engine lying in for repair, this construction having the advantage of the presence of a wrench or removing-tool I, which is always on the rod, avoiding liability to be misplaced and rendering it always at hand ready for use. The construction shown in Fig. 4 is also applicable to new constructions or to an engine lying in for repair.

It will be understood, of course, that various modifications may be made in the details of construction and arrangement of parts without departing from the spirit and scope of my invention, and hence I do not desire to be limited to the constructions described and shown. It is obvious that any suitable valve-rings may be employed within the stuffing-box, between the inner portion thereof and the inner end of the supplementary gland, so long as such rings are adapted to accomplish the desired locking of the throttle-rod and of the steam around the same, so that the rod may be immovable while the fibrous packing is being removed and replaced. It is also obvious that other means may be employed for securing the stuffing-box and gland, as well as the supplementary gland, in place, the means being simple and economical constructions adapted for the purposes stated, though other equally simple and inexpensive constructions may be employed, if desired. It will also be understood that the improvement may be applied to other uses than those stated, though especially designed for throttle-rods of locomotive or other engines.

Another advantage of my improvement is that in case the spring-actuated dog for locking the throttle-rod in engagement with the

rack or quadrant should become weak or broken, so as to permit the steam-pressure on the rod to move the latter and open the throttle, as sometimes happens in the use of devices of this character as ordinarily constructed, the engine may run away, whereas I avoid any such difficulty by locking the rod and at the same time forming a steam-tight joint about the same, so as to insure the retention of the rod in a fixed position while removing and replacing or renewing the fibrous packing in case of leakage or otherwise.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In combination with the throttle-rod of a locomotive or other engine, and the stuffing-box for the usual fibrous packing for such rod, means for forming an independent steam-tight joint around the rod and directly with the steam-chest, to permit the renewal of such packing without extinguishing the fire or "killing" the engine, said means being adapted to "lock" the rod during the time of such renewal, substantially as shown and described.

2. In combination with the throttle-rod, the stuffing-box containing suitable fibrous packing, and the gland removably secured thereto for compressing such packing, means for forming at will a steam-tight joint around the rod and directly with the steam-chest for locking the rod in a fixed position in such manner as to permit the gland and fibrous packing to be removed without "killing" the engine, substantially as described.

3. In combination with the throttle rod or spindle, the stuffing-box for fibrous packing and the removable gland therefor, the contractible rings, and means for compressing the same so as to form an independent steam-tight joint around the rod between such packing and the interior of the steam-chest or boiler and at the same time locking the rod so as to hold the throttle-valve in a fixed position while the gland and fibrous packing are being removed and replaced, substantially as described.

4. In combination with the throttle rod or spindle, the stuffing-box through which said rod passes, the gland, and means for securing said parts together and to the boiler, a combined supplementary gland and packing-receptacle having a sleeve inserted in said stuffing-box, rings on the rod between the end of said sleeve and the inner end of the stuffing-box, and means for adjusting said supplementary gland independently of the gland proper, so as to compress said rings and thereby form a steam-tight joint around the rod and also lock the rod while said gland and fibrous packing are being removed and replaced, substantially as described.

5. In combination with the throttle-rod of a locomotive or other engine, and the stuffing-box for the usual fibrous packing for such

rod, the contractible rings, and means for compressing the same around the rod, forming practically a steam-tight joint with both the rod and steam-chest, said rings being adapted to "lock" the rod to permit the renewal of such fibrous packing, substantially as described.

6. In combination with the throttle rod or spindle, and the stuffing-box for holding a suitable fibrous packing around said rod, means for holding the rod in a fixed position and also forming a steam-tight joint around the same directly with the steam-chest to prevent the escape of steam regardless of the presence or absence of said fibrous packing; said means comprising a supplementary gland and packing-receptacle combined having a cylindrical portion or sleeve adjustably secured in said stuffing-box, a cover for said supplementary gland having a sleeve adjustably secured in the sleeve of the latter, and a series of rings adapted to clasp said rod between the sleeve of said gland and the inner end of the stuffing-box, together with means for adjusting said gland and cover independently of each other for compressing or releasing

said packing and said rings, substantially as described.

7. In combination with the throttle-rod, the stuffing-box, the supplementary gland and packing-receptacle adjustably secured within the stuffing-box for holding fibrous packing, the gland proper having a tubular portion or sleeve fitted within said supplementary gland and means for adjusting the same so as to compress the fibrous packing around the rod, together with contractible rings interposed between the inner end of the stuffing-box and said fibrous packing, and means for adjusting said supplementary gland so as to cause said rings to hug the rod and form a steam-tight joint and lock for holding the rod and throttle in an immovable position while the fibrous packing and its compressing-gland are being removed and replaced, substantially as described.

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

THOMAS GUNNI SAXTON.

Witnesses:

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W. A. MCDOWELL.