

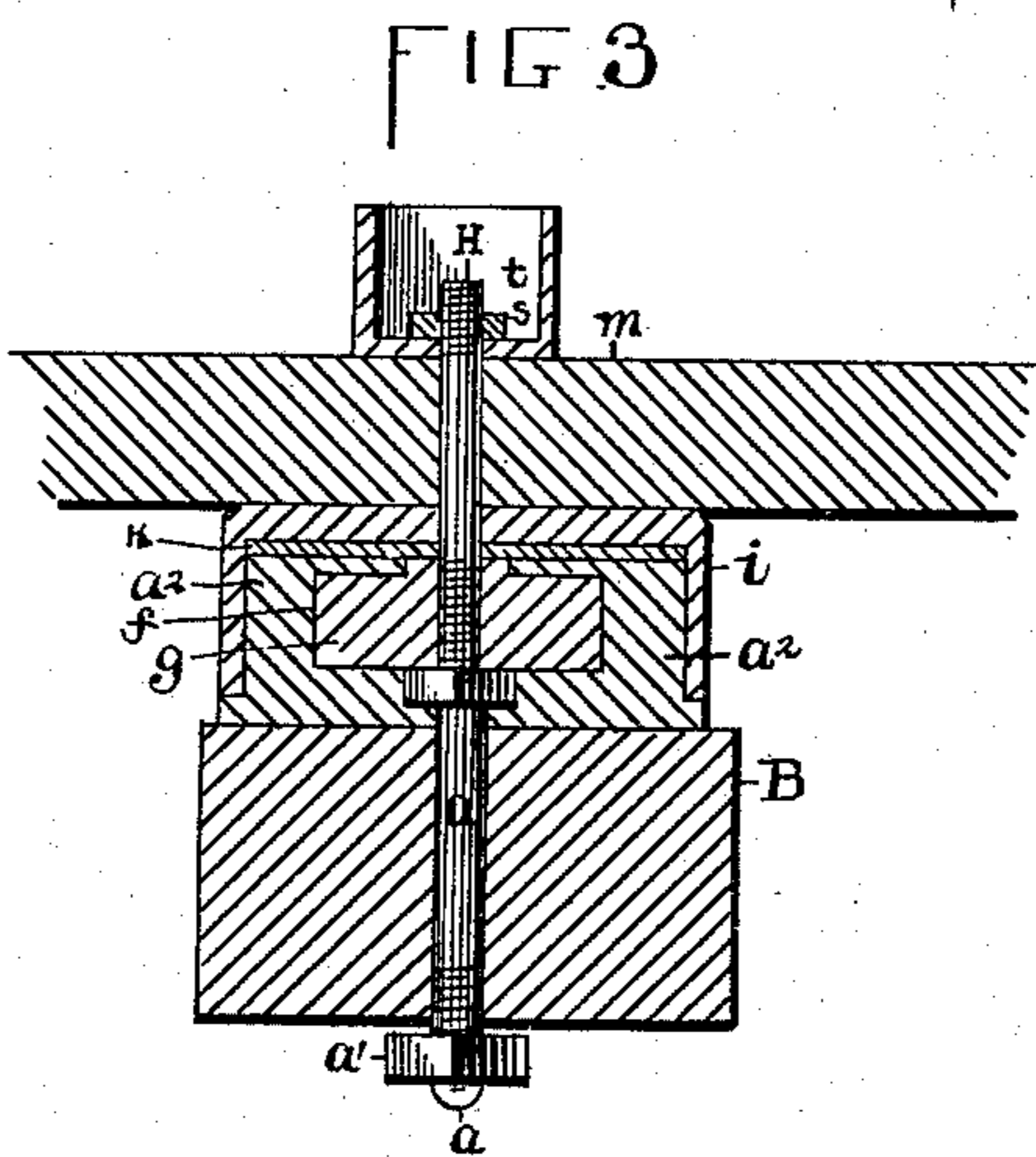
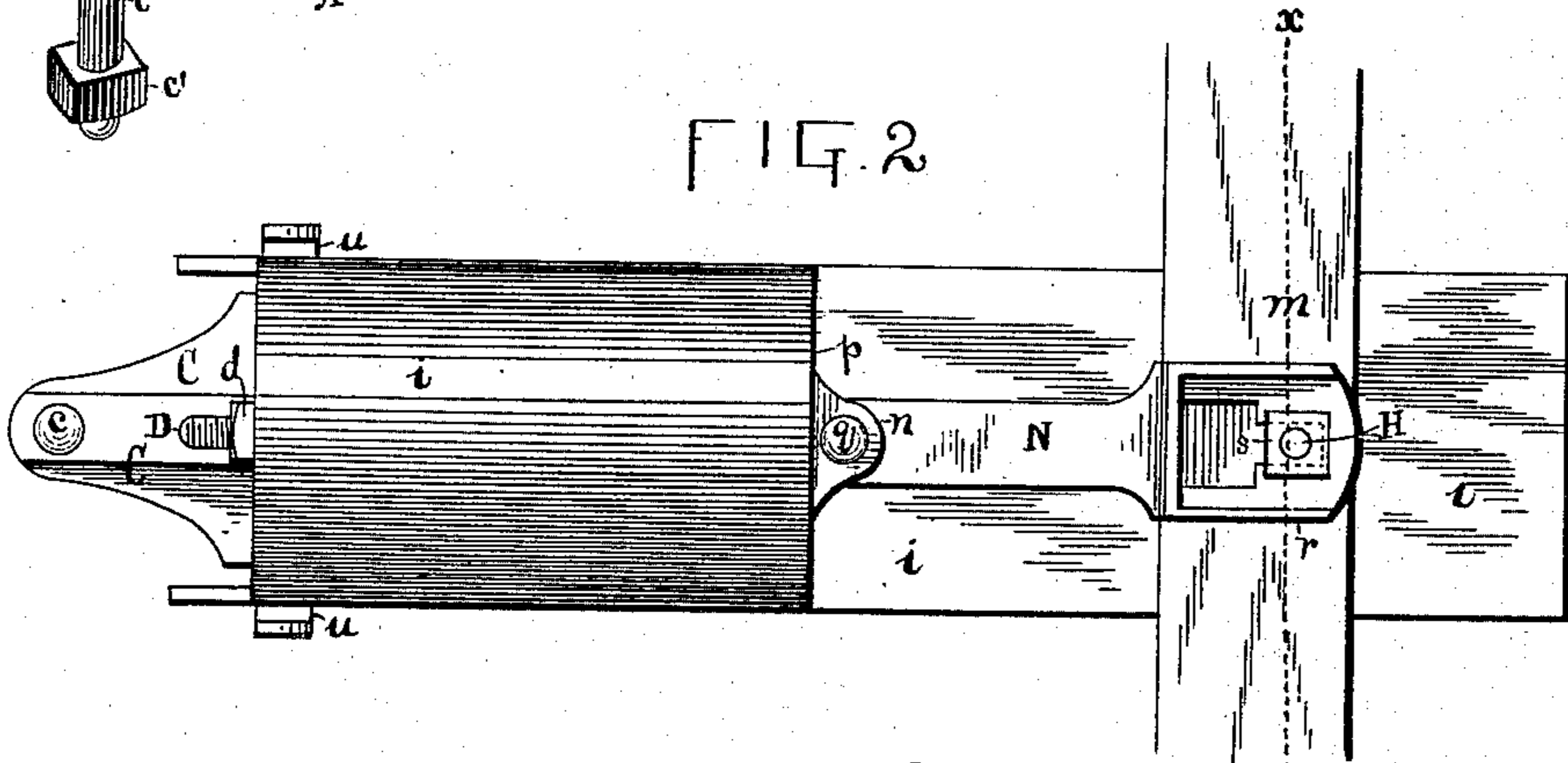
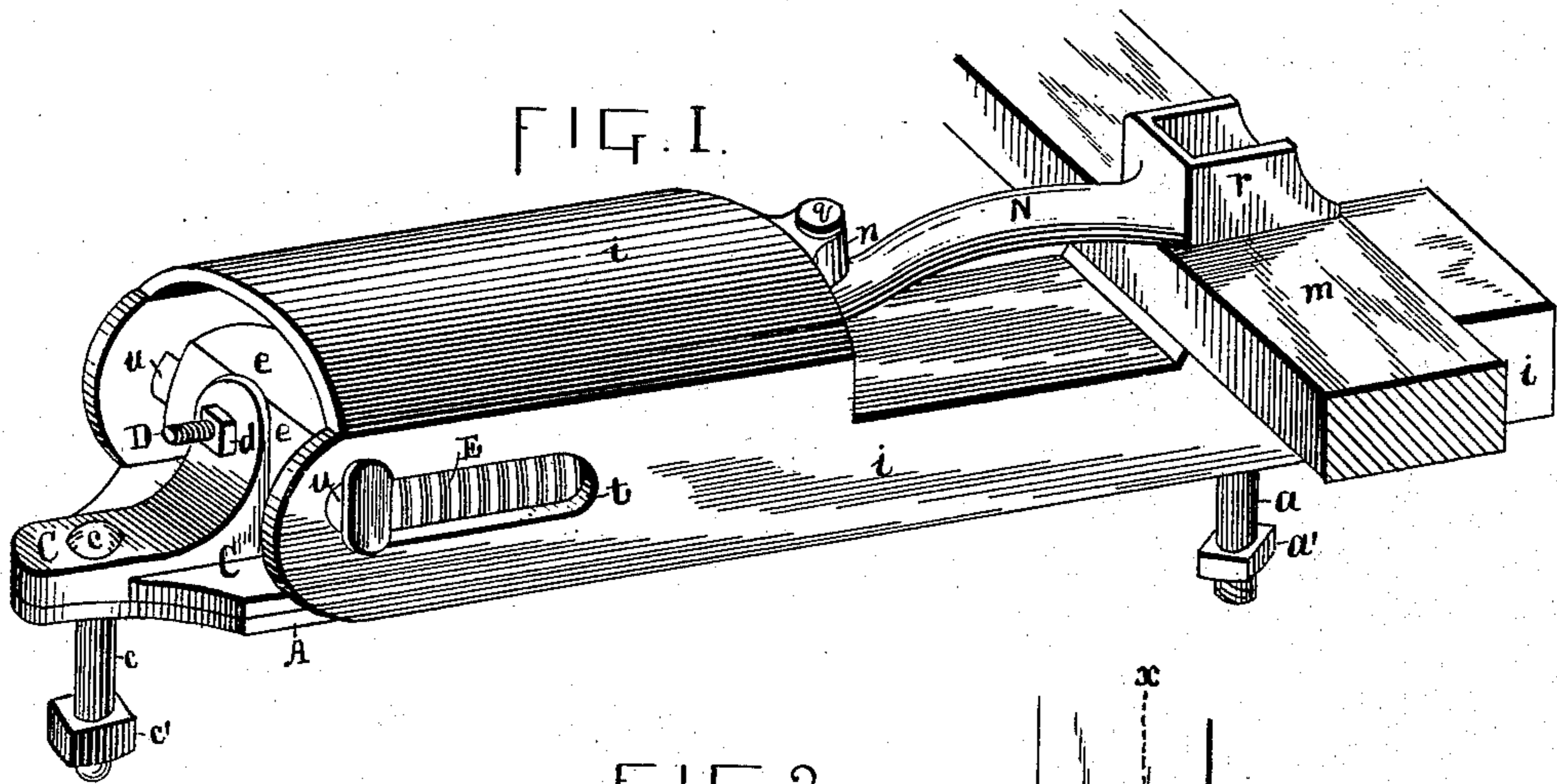
(No Model.)

2 Sheets—Sheet 1.

J. A. SIMPSON.
DOUBLETREE SPRING.

No. 416,757.

Patented Dec. 10, 1889.



WITNESSES:

Geo. B. Travel
John Travel

INVENTOR

James A. Simpson
BY *C. C. Shepherd*
ATTORNEY

(No Model.)

2 Sheets—Sheet 2.

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FIG. 4

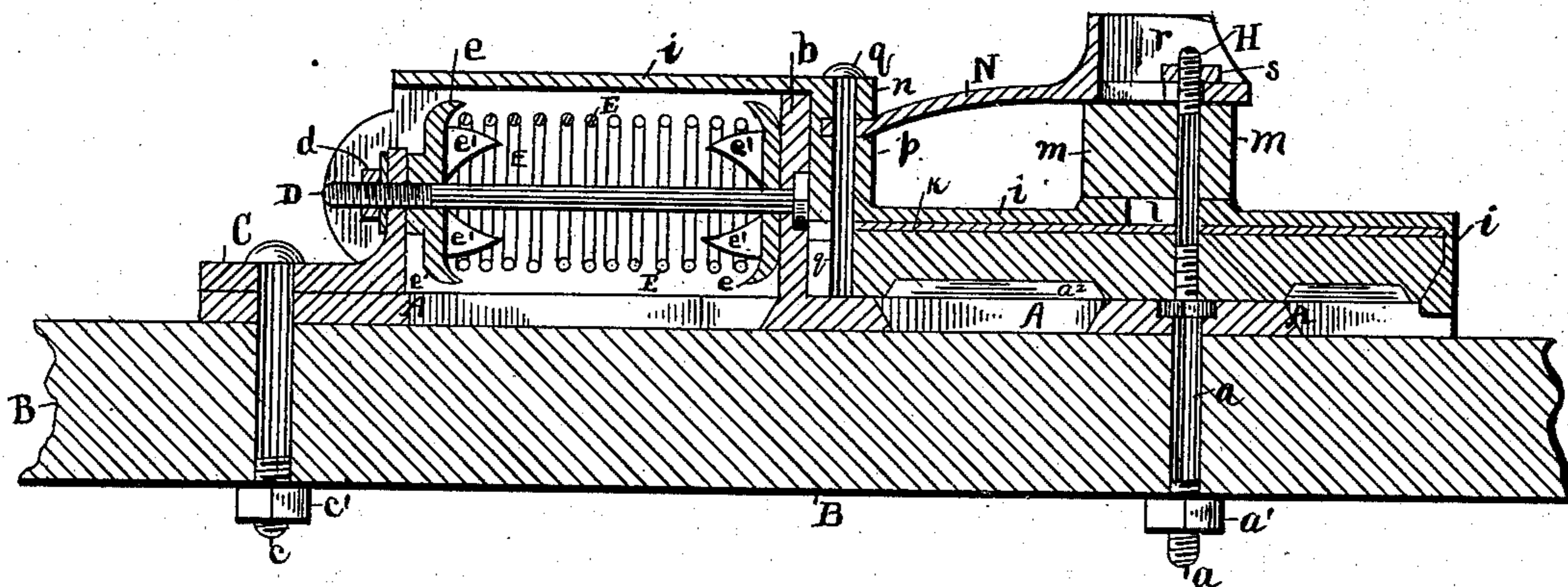
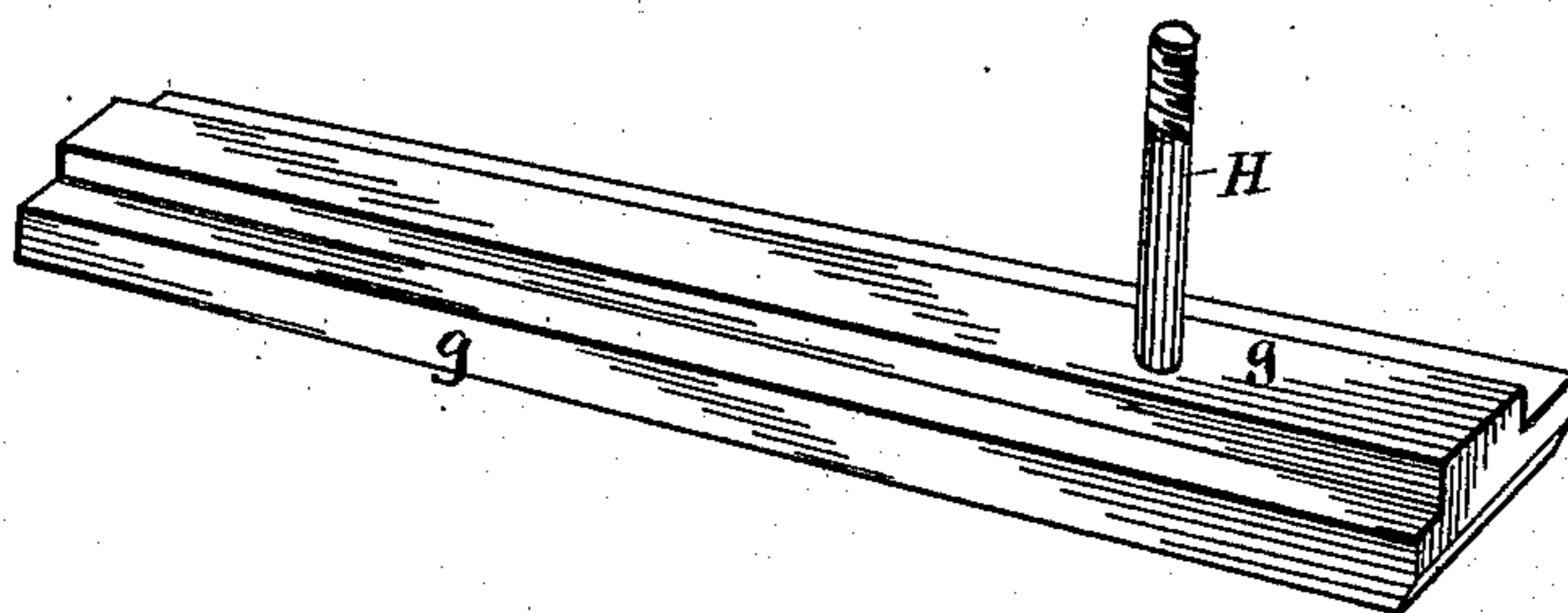


FIG. 5



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UNITED STATES PATENT OFFICE.

JAMES A. SIMPSON, OF COLUMBUS, OHIO.

DOUBLETREE-SPRING.

SPECIFICATION forming part of Letters Patent No. 416,757, dated December 10, 1889.

Application filed May 3, 1889. Serial No. 309,478. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. SIMPSON, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Doubletree-Springs, of which the following is a specification.

My invention relates to the improvement of doubletree-springs of that class adapted to be attached to the tongues or poles of vehicles; and the objects of my invention are to provide a durable and inexpensive device of this class by means of which the horses will be relieved of the sudden jar usually occasioned by the starting and stopping of the vehicle; to so construct the same as to admit of its being readily and easily attached to the tongue of a wagon, and in so doing to obviate the necessity of forming more than one extra bolt-hole in said tongue; to construct the sliding parts of said device in a superior manner; to admit of said parts being readily disconnected for the purpose of oiling, repairing, &c.; to prevent the strain being made against a nut, as is usually done; to provide a superior coupling for the doubletree-bolt and sliding case; to so construct said coupling as to admit of its use as a wrench when detached, and to so construct the casing for the spring and sliding parts as to prevent the entrance of dirt, snow, or ice. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a view in perspective of my device. Fig. 2 is a plan view of the same. Fig. 3 is a transverse section taken on line $x x$ of Fig. 2. Fig. 4 is a vertical longitudinal section taken through the center of the device and through a portion of a wagon-tongue, and Fig. 5 is a view in perspective of the internal sliding tongue.

Similar letters refer to similar parts throughout the several views.

A represents an oblong metallic plate adapted to be secured at its forward end to the upper side of a wagon-tongue B by means of a bolt a , made to pass vertically through said plate and the usual doubletree bolt or pin hole formed in the tongue. The head of this bolt is, as shown, countersunk until flush with the upper surface of said plate A, while its lower end is provided with a nut a' .

Made to project upwardly from about the center of the plate A, with which it is formed, is a transverse plate or partition b .

C represents a metallic angle-plate, the horizontal arm of which is made to rest upon and extend forwardly a short distance from the rear end of the plate A, from which point its remaining arm projects upwardly, as shown.

Through a bolt-hole formed in the rear portion of the plate C and through a corresponding hole formed in the tongue of the vehicle is made to pass a vertical bolt c , the latter provided with a nut c' on its lower end, as shown.

D represents a bolt made to pass rearwardly through the base-plate projection b at about the center of its height, said bolt having its head countersunk in the front side of said projection and having its rear end passing loosely through a hole formed in the vertical arm of the angle-plate C, said bolt being held in this position by a nut d on the screw-threaded projecting rear end thereof, said nut bearing against the rear face of the vertical arm-plate C. The bolt D carries, also, between the plates C and b two metal disks e , which, abutting, respectively, against the inner side of the plates C and b , have their inner faces slightly concaved, as shown, to receive the ends of a spiral spring E, which surrounds the bolt D. The disks or spring-caps e are provided, as shown, on their concave sides with projecting lugs e' , which serve to form a further support for the spring. That portion of the base-plate A in front of the partition-plate b has projecting upwardly therefrom, on opposite sides of the center of its width and near its edges, two longitudinal parallel guide-lugs a^2 , said lugs having their upper sides turned inwardly at right angles with their bodies to within a short distance of each other, thus forming a longitudinal channel f and an upper slotted opening therefrom.

g represents a sliding tongue of such form as to fit and slide between the guide-lugs a^2 and having its central portion on its upper side thickened, as shown, to fit and slide between the inwardly-turned ends of the lugs a^2 , the upper surface of said thickened portion being thereby made flush with the upper surface of said inwardly-turned ends. The

tongue *g* is, as shown, somewhat shorter than that portion of the plate *A* in front of the projecting plate *b*, and has its forward end beveled rearwardly and downwardly, as shown in Fig. 4 of the drawings.

H represents a vertical metallic pin having one of its ends rigidly secured to the sliding tongue *g* near the center of the length of the latter, the remaining portion of said pin being made to project upwardly and having on its upwardly-projecting end screw-threads, as shown.

i represents a metallic casing of such form as to fit over the spring *E*, base-plate *A*, and its sliding tongue *g*. As shown in the drawings, this case is highest in the rear half, and at the point where it descends to meet the sliding tongue and its boxing a shoulder *p* is formed, which abuts against the front side and upper half of the plate *b*. The inner surface of the forward end of the case *i* is beveled rearwardly and downwardly, as shown, to conform to the shape of the bevel of the forward end of the tongue, which it embraces.

k represents a metallic friction-plate, preferably formed of steel, which bears upon the upper sides of the base-lugs *a*² and upon the upper surface of the central portion of the tongue, said friction-plate being of equal length with said tongue. As shown in the drawings, the forward portion of the upper side of the case *i* bears upon said friction-plate *k*. The tongue-pin *H* passes through a suitable hole formed in the friction-plate *k* and through a short longitudinal slot *l*, formed in the case *i*.

Pivotal support on the upwardly-projecting portion of the pin *H* in the usual manner is the doubletree *m*.

N represents a coupling-piece, the rear end of which is provided with a vertical bolt-hole, said rear end being adapted to be inserted between two lugs *n*, made to project forwardly from the shoulder *p* of the casing. The rear end of said coupling-piece is detachably secured in this position by means of a vertical pin *q*, made to pass downward through holes formed in said lugs *n*, through the end of the coupling-piece, and thence down through the casing *i* in rear of the tongue *g*.

As shown in the drawings, the tongue *g* is of such length that when the pin *q* is inserted in rear of said tongue, as above described, the forward end of the tongue is thereby firmly held against the forward end of a case *i*, which, owing to the beveled form of said tongue and case end, the latter will be securely locked from rising. When the tongue is in this position, the pin *H* will be within the forward end of the slot *l*.

The forward portion *r* of the coupling-piece *N* has, as shown, the general form of a wrench-head—that is, a cross-wall and two side walls at right angles therewith are made to project upwardly from the body of the coupling to form approximately three sides of a square.

This wrench end of the coupling rests upon the doubletree *m*, and has formed in its bottom plate a square opening, from which extends forwardly and communicates therewith a slotted opening, through which projects the upper screw-threaded end of the pin *H*. A nut *s*, screwed upon said pin end and made to bear against the bottom plate of the wrench end of the coupling, supports said coupling in its place on the doubletree and prevents the latter from being raised from its position on the case *i*.

The rear portion of the case *i* is assured in its position by having projecting through horizontal slots *t*, formed in its outer sides, the ends of transverse arms *u*, made to project outwardly from the rear spring-holding disk *e*.

The operation of my device is as follows: The base-plate *A* is secured, as above described, to the upper side of the wagon-tongue. Before inserting the bolt *c*, however, the plate *C* is pressed forward sufficiently to slightly compress the spring *E*, the bolt-hole in said plate *C* being so located as to bring it opposite the bolt-hole in the tongue when the spring is compressed. The horses being hitched in the usual manner to the doubletree, it will be seen that when said horses are started the forward movement of the doubletree will, through the pin *H*, cause the forward movement of the case *i*, the friction-plate *k*, and tongue *g*. This forward movement of the case *i* will operate through the arms *u*, projecting therethrough, to compress the spring against the forward disk *e*. The spring having thus been sufficiently compressed, it will be seen that the forward movement will be gradually imparted to the vehicle, thus relieving the horses of the jar usually occasioned by pulling directly against the weight of the vehicle. It will be observed that the strain or force of the forward pull will be brought against the stationary plate *b*, and not against a nut, as is usually done. In case it is desired to elevate the casing from the forward portion of the device this may be accomplished by removing the nut from the upper end of the pin *H*, withdrawing the pin *q*, removing the coupling *N* and doubletree *m*, and forcing the pin to the rear end of the slot *l*. This backward movement of the pin *H* will cause the tongue *g* and friction-plate *k* to travel to the rear sufficiently to withdraw the forward beveled end of the sliding tongue from its seat within the end of the casing, and thus admit of the case being raised and the tongue withdrawn for oiling, repairing, &c. The hard friction-plate *k* will operate to lessen the wear between the lugs *a*² and the case.

In the attachment of the above-described device to the vehicle-tongue it will be seen that it will be necessary to form but one extra bolt-hole in the vehicle-tongue, the usual doubletree-pin hole being utilized for securing the forward end of the plate *A* thereto.

The coupling-piece N will not only serve by its shape for a wrench, but will operate as an upper bearing for the doubletree.

By the above-described construction and operation it will be observed that a durable and comparatively inexpensive device is provided, by means of which the sudden and injurious jar experienced by horses in starting a vehicle is obviated.

10 Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a doubletree-spring, the combination of the stationary base-plate A, secured, as described, to the wagon-tongue B, and having vertical spring-bearing projecting plate *b* and guide-lugs *a*², with the sliding tongue *g*, pin H, projecting therethrough, casing *i*, having slots *t*, doubletree *m*, resting on said casing and pivoted on pin H, angle-plate C, bolted to base-plate A, horizontal bolt D, extending between plates A and *b*, spring-caps *e*, mounted on bolt D, arms *u*, extending from one of said caps through case-slots *t*, and 25 coiled spring E, surrounding bolt D, substantially as and for the purpose specified.

2. In a doubletree-spring, the combination of the stationary base-plate secured, as described, to vehicle-tongue B, and having vertical spring bearing-plate *b* and guide-lugs *a*², 30 with the sliding tongue *g*, having its forward end beveled, pin *h*, projecting from said tongue, friction-plate *k*, casing *i*, having slotted top opening *l* and side slots *t*, and having its forward end beveled on its inner side, 35 doubletree *m*, pivoted, as described, on said case, wrench-shaped coupling N, connecting pin H and central shoulder *p* of the case, pin *q*, passing downward through said coupling-piece and case and behind the sliding tongue 40 *g*, angle-plate C, bolted to base A, horizontal bolt D, extending between plates A and *b*, spring-caps *e*, carried by bolt D, arms *u*, projecting from one of said caps through case-slots *t*, and coiled spring E, surrounding bolt 45 D, substantially as and for the purpose set forth.

JAMES A. SIMPSON.

In presence of—

C. C. SHEPHERD,
J. H. FRAVEL.