

No. 695,508.

Patented Mar. 18, 1902.

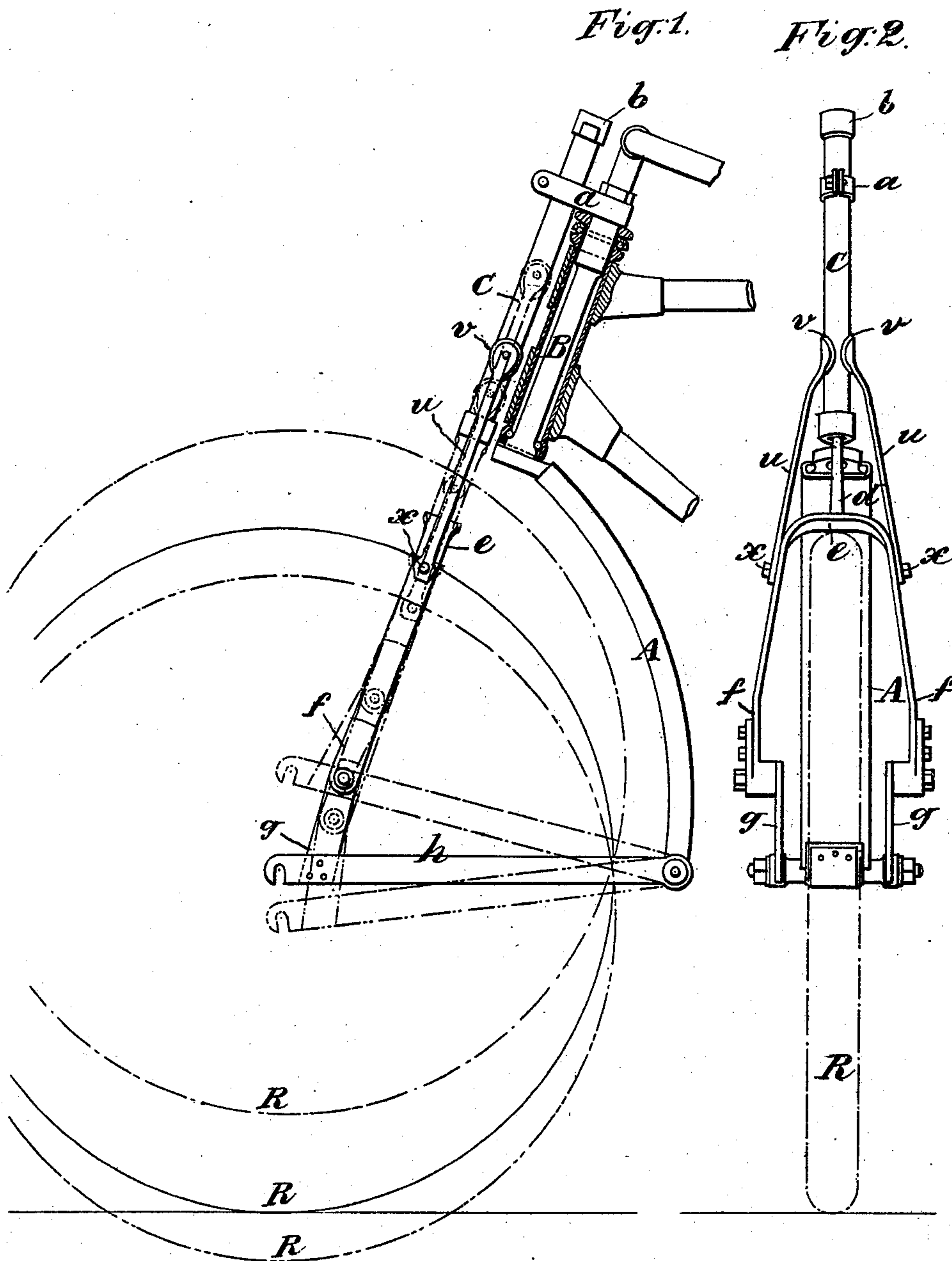
J. M. M. TRUFFAULT.

FRICTIONAL RETARDING MEANS FOR SPRING VEHICLES.

(Application filed Sept. 4, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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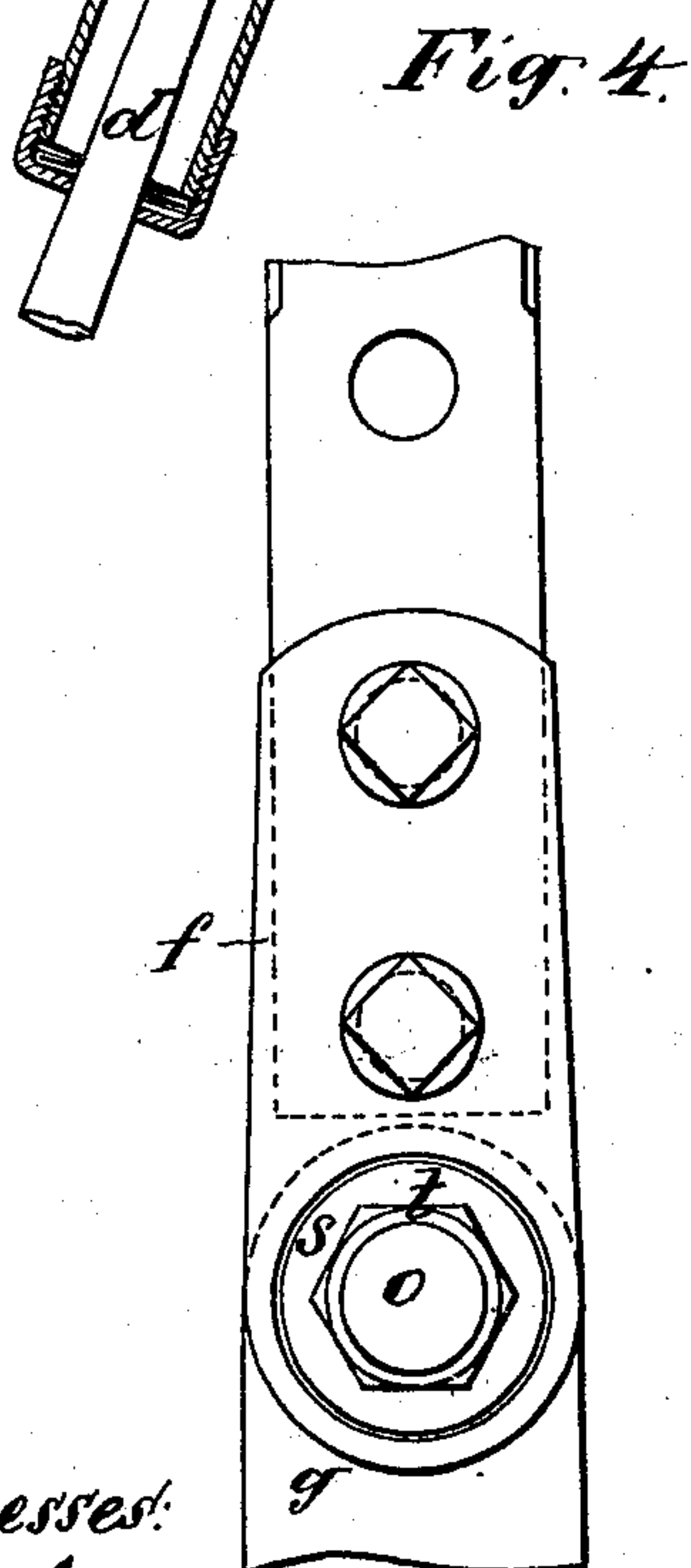
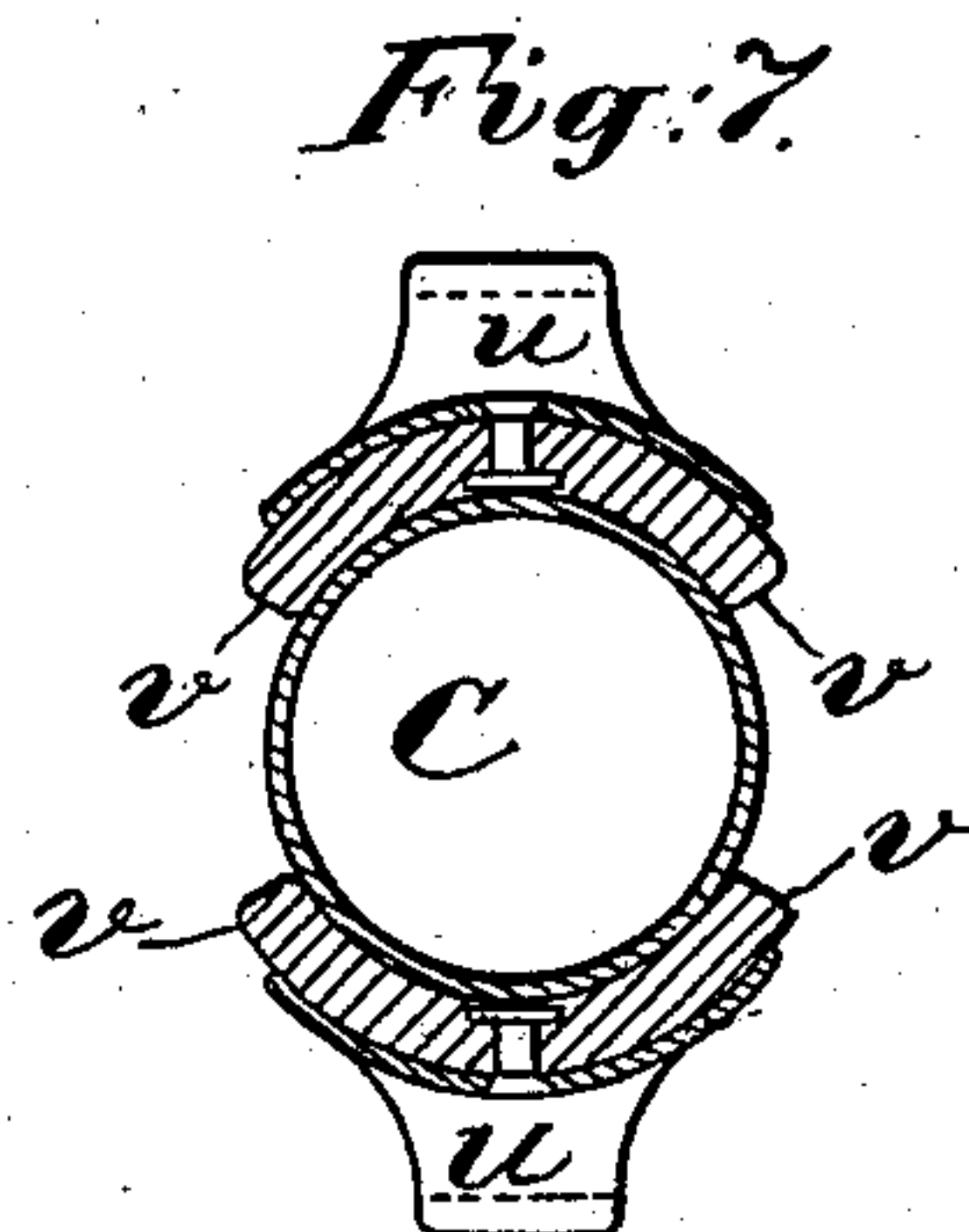
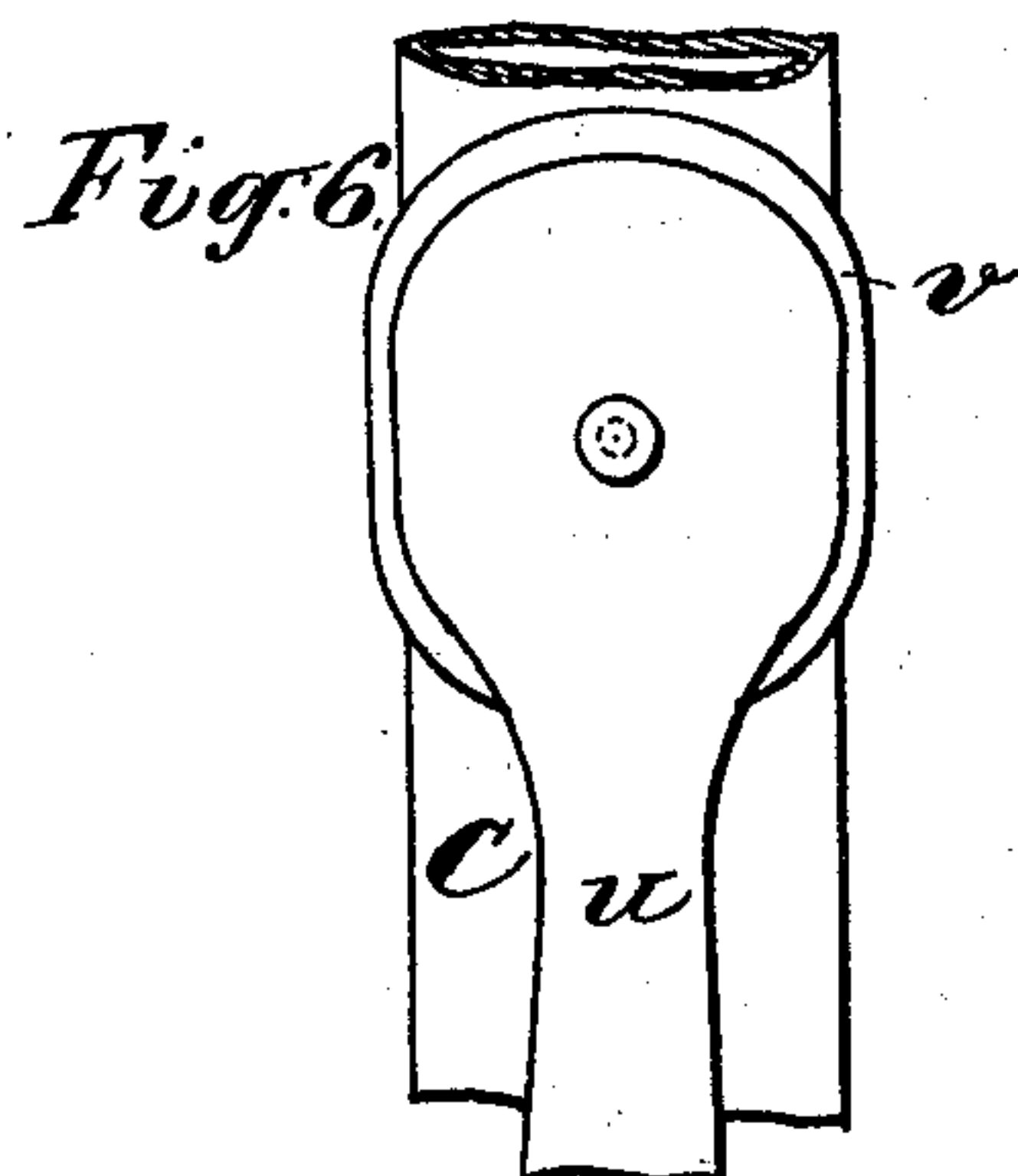
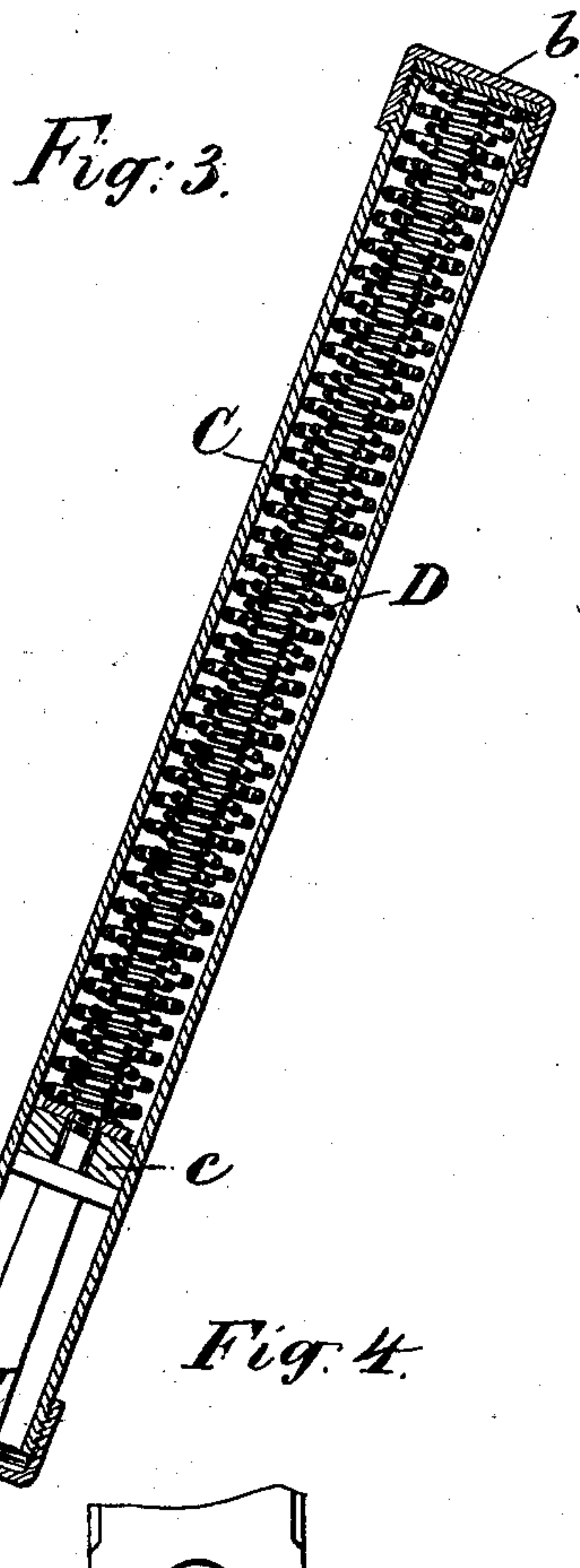
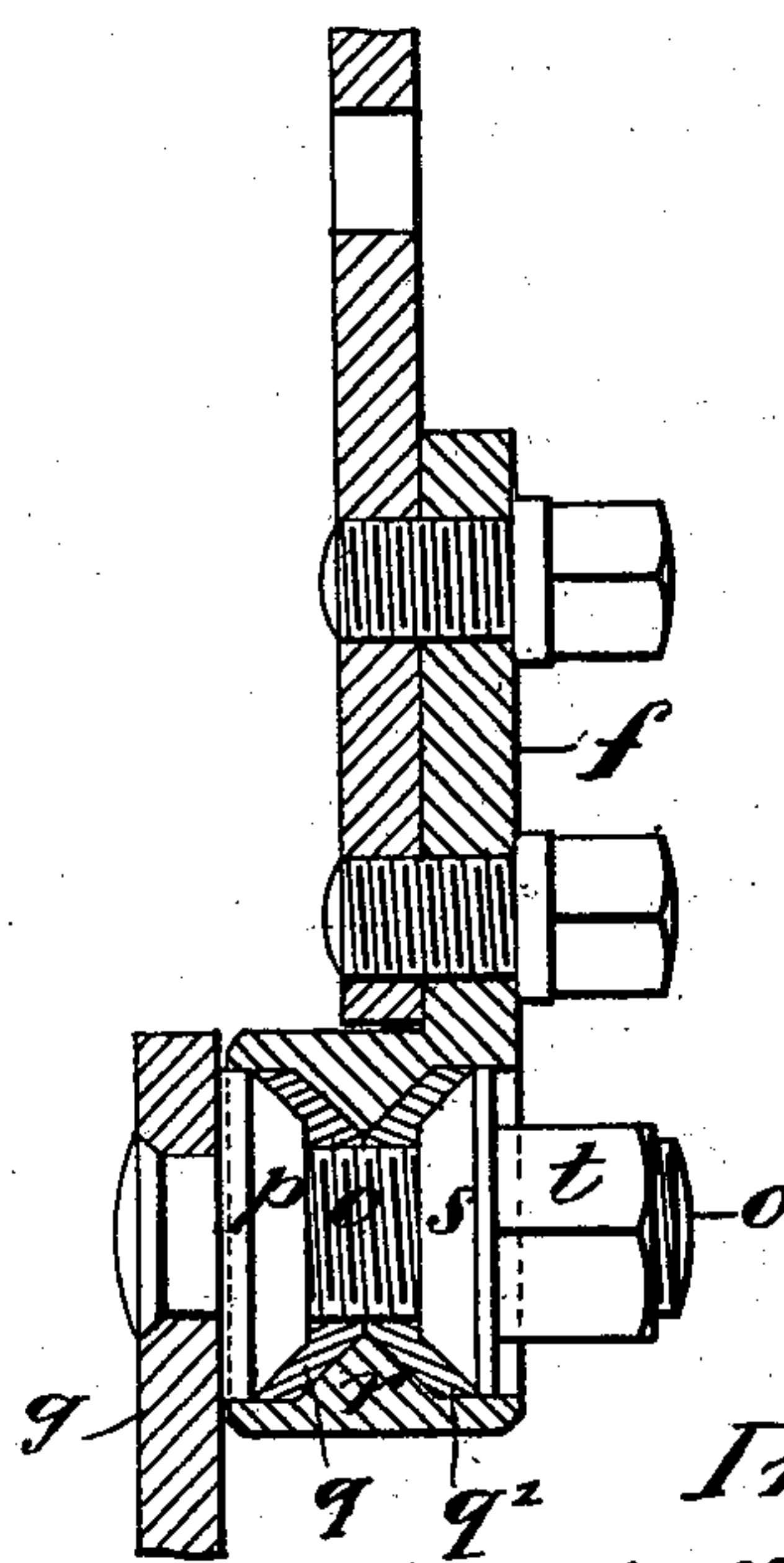


Fig. 5.



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UNITED STATES PATENT OFFICE.

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FRICTIONAL RETARDING MEANS FOR SPRING-VEHICLES.

SPECIFICATION forming part of Letters Patent No. 695,508, dated March 18, 1902.

Application filed September 4, 1900. Serial No. 28,956. (No model.)

REISSUED

To all whom it may concern:

Be it known that I, JULES MICHEL MARIE TRUFFAULT, a citizen of the French Republic, and a resident of Paris, France, have invented certain new and useful Improvements in Frictional Retarding Means for Spring-Vehicles, of which the following is a specification.

This invention relation to the class of vehicles in general wherein springs are employed to relieve jolting and vibration, and particularly motor cars and cycles of the various well-known kinds. Notwithstanding the use of springs for supporting the bodies of such vehicles, much inconvenience is felt from the shocks and vibrations due to the wheels, and particularly the front steering wheel or wheels, striking obstructions in the road.

The object of the present invention is to overcome or materially modify these shocks and vibrations by combining with the spring supporting devices certain frictional devices between the moving parts or between the running-gear and the spring-supported parts, whereby said frictional devices serve as brakes to retard the too-rapid vibration or movement of the parts.

The invention may be embodied in various ways and by details of mechanism which vary, the particular construction depending to a considerable extent on the kind of vehicle to which it is applied.

In the accompanying drawings the invention is shown as embodied in a motor-tricycle and as applied to the front thereof.

In said drawings, Figure 1 is a side elevation of the front portion of the tricycle, showing the mountings of the front wheel thereof; and Fig. 2 is a front elevation of the same parts. These views are on a small scale. Fig. 3 is a sectional view of the spring-casing and spring. Figs. 4 and 5 are respectively a side elevation and sectional view of the connection of the spring with the running-gear, to be hereinafter described. Figs. 6 and 7 are respectively a side elevation and transverse section of the frictional-joint couplings or connections.

B is the steering-stem, mounted to rotate

axially in the tubular frame member, as usual, and A is a curved bar secured rigidly to the lower end of the stem B and extending downward back of the wheel R, which latter is indicated merely diagrammatically in Figs. 1 and 2. The bar A has jointed to it two arms *h*, which embrace the wheel R and extend forward to the hub thereof. The movements of the wheel up and down, as indicated by dotted lines in Fig. 1, cause the arms *h* to move or swing about their jointed connections with the lower end of the bar A.

Mounted in front of the stem B and secured thereto by a collar *a* is a spring-casing C in the form of a tube, and seen detached in Fig. 3. In this casing is a piston *c* on a piston-rod *d*, which extends down out of the lower end of the casing C and is coupled to a fork *e*, the branches *f f* of which extend down at the sides of the wheel, Fig. 2, and are jointed, respectively, to lugs or branches *g* on and forming parts of the arms *h*. In the casing C is a compression-spring D, situated between the piston *c* and the cap *b* on the upper end of the casing. From the respective branches *f* of the fork *e* arms *u*, secured to the branches at *x*, extend up to the casing C and carry at their upper ends pads *v*, which bear yieldingly on said casing.

The specific details of the construction will now be described with reference to Figs. 3 to 7, which show them on a scale larger than that of the principal views. As seen in Fig. 3, the spring D is made of two or more coil-springs, one within the other and preferably coiled in opposite directions. Preferably, also, the outer spring will be of thicker wire than the one next inside of it, and this latter will be of thicker wire than that one within it, so that the power to resist compression will be about equal in all the springs. The chamber in the casing C occupied by the spring will be filled with grease of about the consistency of butter, this grease filling all the space not occupied by the spring itself. When the wheel R is driven upward by an obstruction, the spring yields under the upward pressure of the piston *c*; but the friction of the latter in the casing and the movement

of the coils of the spring in the thick grease will offer a yielding resistance and tend to retard the movement. The pads *v* on the arms *u* are of some soft material—as leather, for example—and these pads press yieldingly on the surface of the casing *C* with a gripping pressure, thus also aiding by friction to retard the upward movement of the wheel *R* with a yielding resistance and cooperating with the retarding-spring. The frictional devices at the joints where the arms *h* are coupled—at one end to the bar *A* and at the other end through the lugs *g* to the branches *f* of the fork—are illustrated in detail in Fig. 5. A bolt *o*, fixed at its head in the lug *g* and having a conical part *p*, is provided with a splined conical washer *s* and a nut *t*. The eye *r*, through which the bolt *o* passes, is conically countersunk at its opposite ends and provided with leather washers *q q'*. When the bolt is in place and the nut *t* screwed up, the cones *p* and *s* bear frictionally on the washers and offer yielding resistance to the rotation of the bolt in the eye, thus cooperating with the other frictional devices.

Obviously the several devices for producing a frictional yielding resistance to the movements of the spring-supported parts of a vehicle may be applied in various ways, according to the particular construction and arrangement of the parts of the vehicle, and this invention is not limited to the exact construction shown.

I am aware, of course, that in spring-vehicles as now constructed there will often be found an immaterial amount of friction at the connecting-points between the parts which move relatively to each other; but this friction produces no useful result or effect whatever, whereas in my construction the yielding friction is very material, and while permitting the spring to compress and expand smoothly it exerts at all times a uniform retarding or slowing effect thereon when the spring expands, while it cooperates with the spring when the latter is under compression. Obviously the effect of my invention will be to materially modify the functions of the spring and cause it to act more slowly, but at the same time permit it to act smoothly and evenly. Obviously, also, the yielding friction must be regularized and uniform and not arbitrary and irregular in its action.

Having thus described my invention, I claim—

1. In a vehicle, the combination with a supporting-spring between the parts of the vehicle movable relatively to each other, of non-pneumatic frictional means between the parts which provides a yielding resistance to move-

ment, said means producing a retarding effect on the reaction of the spring.

2. In a vehicle, the combination with the wheel thereof, the frame carried by said wheel, and a spring interposed between said wheel and frame, of non-pneumatic frictional mechanism which provides a yielding resistance to the movements of the parts, said means serving to materially and uniformly exert a retarding effect on the said movements of the parts in both directions.

3. In a vehicle, the combination with the wheel thereof, the frame above the wheel, and the spring mechanism between the frame and the wheel, said spring mechanism comprising a tubular casing, a closely-fitting piston therein, the rod of said piston coupled to the arms carrying the wheel, the said arms, and a spring in the said casing composed of two or more telescoped coil-springs immersed in a pasty mass of grease which retards the action of the spring, substantially as set forth.

4. In a vehicle, the combination with the wheel thereof, the frame above the wheel, arms pivotally attached to said frame and carrying the wheel, the spring-casing, the spring therein, the closely-fitting piston therein, the rod of said piston, the fork between said piston and the arms carrying the wheel, the arms *u*, and the pads *v* on said arms and gripping the spring-casing frictionally and producing a retarding effect on the reaction of the spring, substantially as set forth.

5. In a vehicle, the combination with the frame, the spring-casing thereon, the spring therein, the closely-fitting piston therein, the rod of said piston, the fork coupled to said rod, and the arms *h*, pivoted to the frame with frictional pivot-joints, and also to the branches of the said fork with frictional pivot-joints, the friction sufficing to materially resist the recoil of the spring, substantially as set forth.

6. In a vehicle, the combination with the wheel, the frame, the arms pivoted to the frame at one end, and the spring between said arms and frame, of the frictional pivot-bearings between the arms and the frame, each of these bearings comprising a bolt *o*, fixed in one of the parts and bearing cones *p* and *s*, and a nut *t*, the said cones and nut, and the coned leather washers *q* and *q'* in the eye of the other part, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JULES MICHEL MARIE TRUFFAULT.

Witnesses:

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