

No. 607,353.

Patented July 12, 1898.

N. DUVAL-PIHET.
ADJUSTABLE SPRING BEARING.

(Application filed Jan. 25, 1895.)

(No Model.)

FIG. 1.

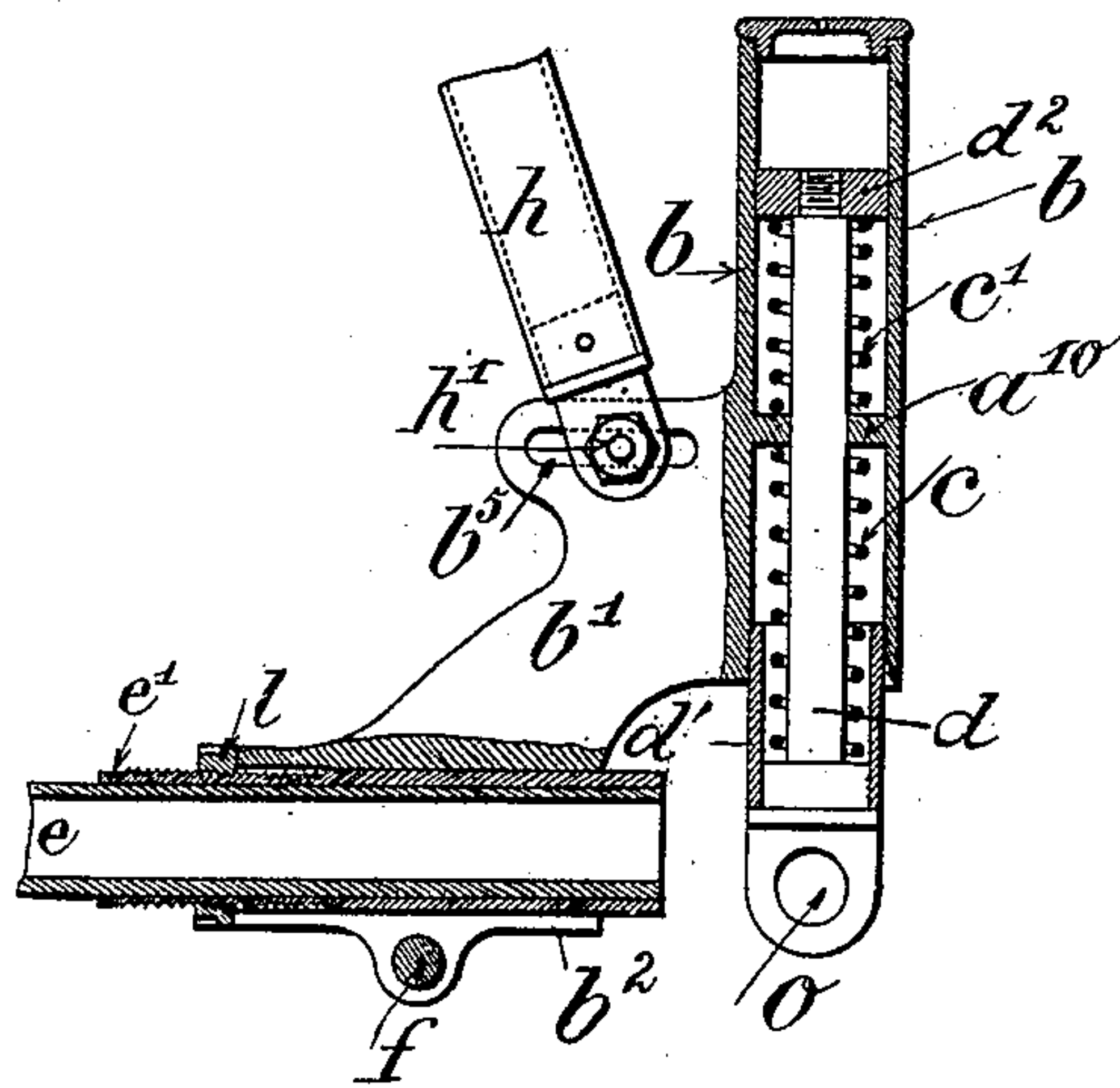


FIG. 2.

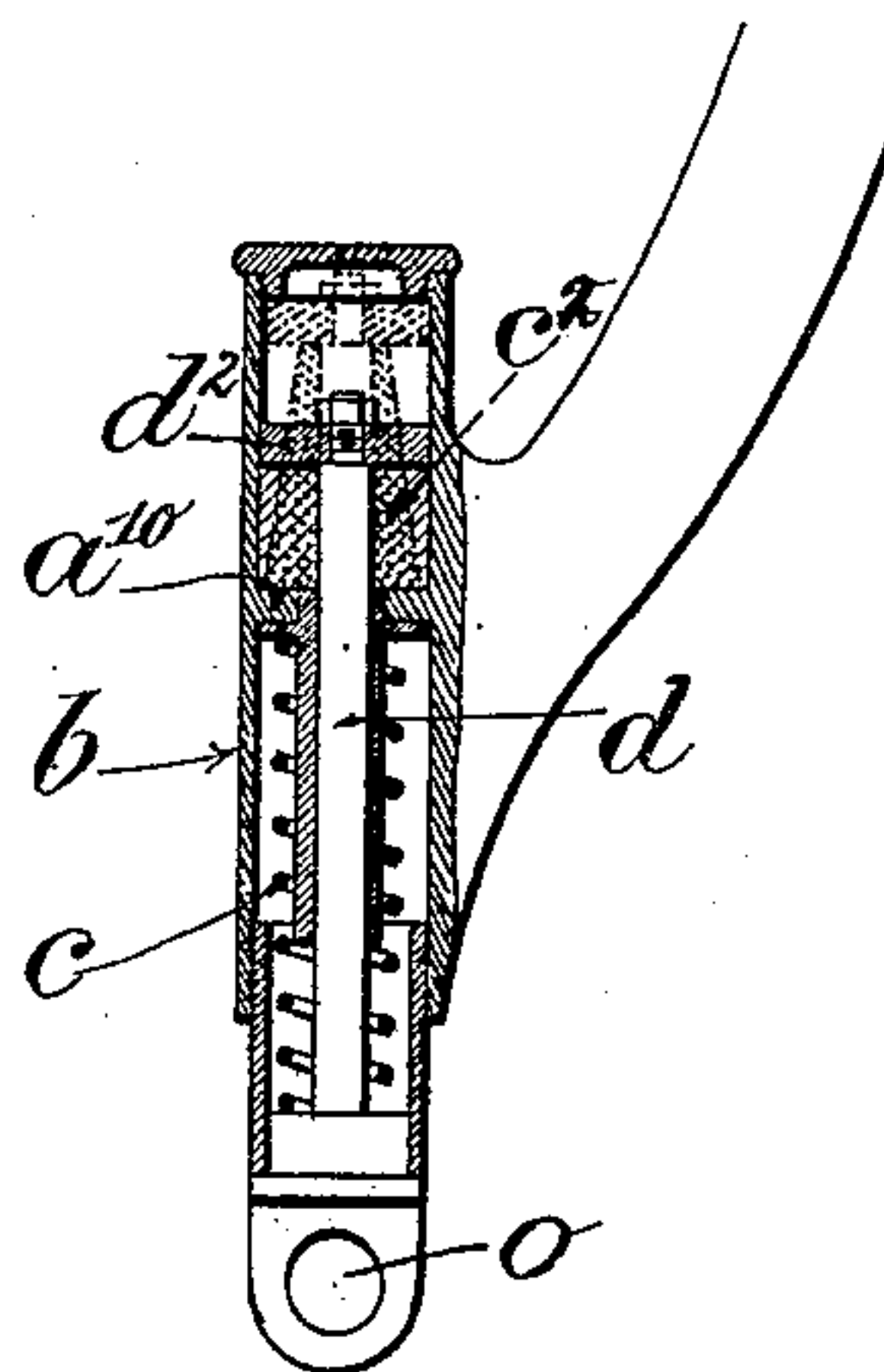
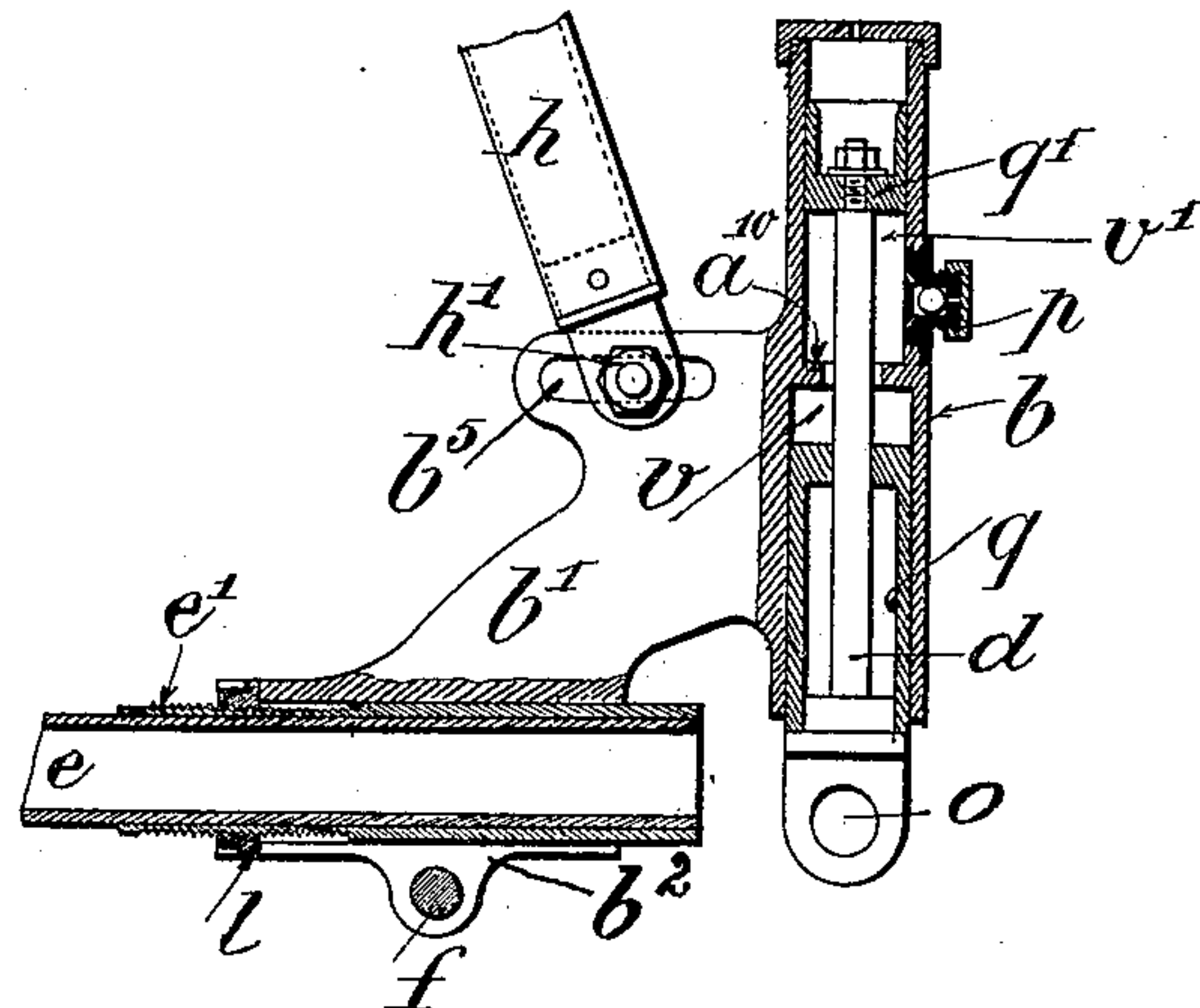


FIG. 3.



WITNESSES
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NICOLAS DUVAL-PIHET, OF PARIS, FRANCE.

ADJUSTABLE SPRING-BEARING.

SPECIFICATION forming part of Letters Patent No. 607,353, dated July 12, 1898.

Application filed January 25, 1895. Serial No. 536,279. (No model.) Patented in France October 12, 1894, No. 242,031; in England December 5, 1894, No. 23,664, and in Switzerland December 12, 1894, No. 9,725.

To all whom it may concern:

Be it known that I, NICOLAS DUVAL-PIHET, a citizen of the French Republic, and a resident of Paris, France, have invented certain new and useful Improvements in Suspending Devices for the Frames of Cycles or other Light Vehicles, (which have been patented in France October 12, 1894, No. 242,031; in England December 5, 1894, No. 23,664, and in Switzerland December 12, 1894, No. 9,725,) of which the following is a full, clear, and exact description.

My invention relates to a suspension device for the frame of light vehicles, such as bicycles, and has for its object to provide a light, strong, and compact construction of the above-indicated class.

In my improved construction I employ double springs or cushions between each member of the fork and the wheel-axle, one spring of each set being a compression-spring and the other an expansion-spring, and both springs are contained in a single casing located above the axle.

Reference is to be had to the accompanying drawings, which are longitudinal sectional elevations of three different forms of construction embodying my invention.

Figures 1 and 3 show the application to the rear wheel, and Fig. 2 to the front wheel.

In Fig. 1, *o* indicates the socket which receives the axle of the rear wheel, said socket being formed at the end of a rod *d*, fitted with a sleeve *d'*, which has sliding engagement with the casing *b*, located above the axle. This casing is divided by a transverse partition *a*¹⁰ into an upper compartment containing a coiled expansion-spring *c'* and a lower compartment containing a similar compression-spring *c*. The adjacent ends of the springs bear against the said partition *a*¹⁰, while the upper end of the spring *c'* bears against a piston-like head *d*² on the rod *d*, and the lower end of the spring *c* bears against the socketed head at the lower end of the said rod.

It will be understood that when the rider mounts the wheel the lower spring *c* will be compressed and the upper spring *c'* will be expanded. They will of course both work to bring the wheel and frame back to a predetermined position relatively to each other in

case jars should cause temporarily a greater compression of spring *c* and a greater expansion of the spring *c'*.

It will be understood that the above-described construction is provided on each side of the wheel. From each of the casings *b* a bracket *b'* extends longitudinally, said bracket being formed with a split sleeve or clamping-sleeve *b*², arranged to surround the threaded reinforcing-tube *e'*, secured upon the fork end *e*. A nut *l*, screwing on the sleeve *e'*, permits of adjusting the tension of the chain in the ordinary manner, said nut abutting against the end of the sleeve *e'*, and a transverse clamping-screw *f* with a corresponding nut serves to hold the parts in position after adjustment. Each member of the upright fork *h* of the rear wheel is forked or divided at its lower end and is connected to the bracket *b'* by means of a bolt and nut *h'*, and when said nut is loose, as it is during adjustment, the bolt may slide in a longitudinal slot *b*⁵ of the bracket *b'*.

In Fig. 2 the lower spring *c* is a coiled compression-spring, as in Fig. 1, but the upper spring *c*² is formed by a perforated rubber washer of originally conical shape, as shown by dotted lines; but when assembling the parts the washer is compressed and expanded transversely to a cylindrical shape. The spring *c*², although compressed to bring it into the shape shown, is an expansion-spring in the sense that the weight of the rider, by forcing the casing *b* downward relatively to the rod *d*, causes the spring *c*² to expand while the spring *c* is compressed.

In Fig. 3 the double spring is formed by pneumatic cushions with differential pistons *q* and *q'*, connected by the rod *d* and located in the compartments *v* and *v'*, separated by the partition *a*¹⁰. Both springs or cushions are above the axle of the wheel. The space between the pistons is adapted to be filled with compressed air or gas through a valve-nipple *p*. Owing to the difference in the diameters of the pistons the compressed fluid will act as a double spring in the same manner as two coiled springs.

By the employment of double springs located in a single casing above the wheel's axle and on each side of the wheel I secure considerable rigidity and stability for the

frame, while permitting of readily adjusting the tension of the chain.

Having thus fully described my invention, I claim as new and desire to secure by Letters
5 Patent—

1. The combination with an axle, of a rod or support carried thereby, a sleeve or casing slidable on said rod, a spring connected to the rod and casing, a bracket connected to
10 the casing, a frame on which the bracket is slidable, a threaded tube embracing the frame, and a nut engaging the bracket and having threads engaging with the threads of the said tube, substantially as described.

15 2. The combination with an axle, of a rod or support carried thereby; a casing surrounding said rod, a cushioning-spring con-

nected to the casing, and to the rod, a bracket connected to the casing and having a forked portion, a frame straddled by the forked por- 20 tion, a threaded sleeve or tube secured to the frame, and slidable in the forked portion of the bracket, a nut engaging the bracket and operating on the said tube, and means for holding the bracket in position, substan- 25 tially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 14th day of November, A. D. 1894.

NICOLAS DUVAL-PIHET.

Witnesses:

CHARLES THIERRY,
EUGÈNE WATTIER.