

E. RIMAILHO.  
SHOCK ABSORBING DEVICE.  
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990,293.

Patented Apr. 25, 1911.

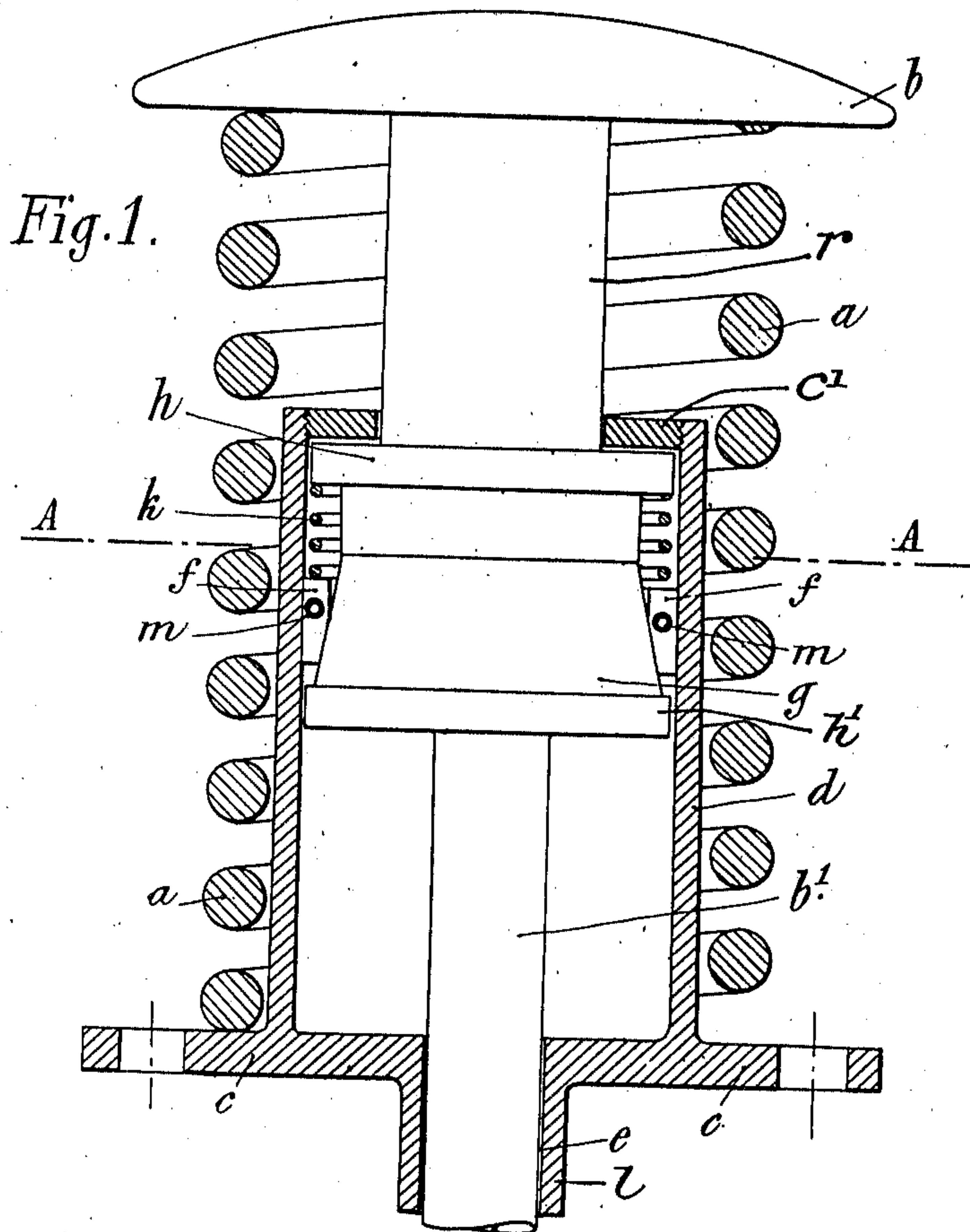
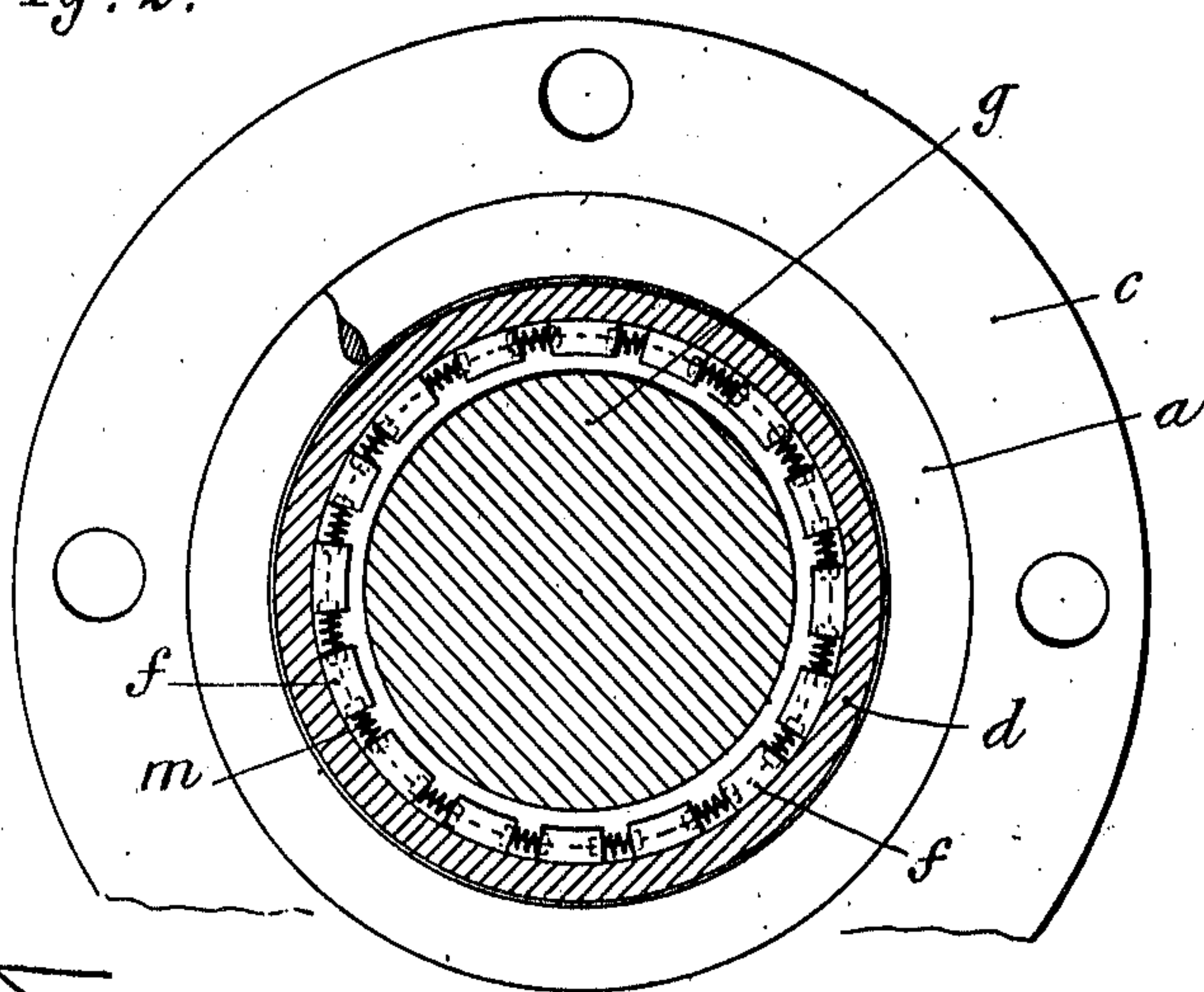


Fig. 2.



Witnesses:  
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Inventor  
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by *Attorney*  
his Attorney



# UNITED STATES PATENT OFFICE.

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DES SUSPENSIONS ET ROUES FLEXIBLES, OF PARIS, FRANCE.

## SHOCK-ABSORBING DEVICE.

990,293.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed December 30, 1909. Serial No. 535,673.

*To all whom it may concern:*

Be it known that I, EMILE RIMAILHO, a citizen of the French Republic, and residing at 61 Avenue de Neuilly, Neuilly-sur-Seine, Seine, France, have invented a certain new and useful Shock-Absorbing Device, of which the following is a specification.

My invention relates to an improved buffer or shock absorber, intended for use in connection with railway cars and the like.

The primary object of the invention is to provide an effectively operating device of this character, which is of simple construction and may be readily attached to, and detached from, the vehicle in connection with which it is used.

The invention includes the novel structural elements and combinations of features defined by the appended claims and herein-after described, reference being had to the accompanying drawing, wherein—

Figure 1 is a longitudinal sectional view of a shock absorbing device embodying my invention; and Fig. 2 is a horizontal sectional view taken on the line A—A of Fig. 1.

Shock absorbing devices of the character herein referred to may be employed on such vehicles as railway cars, and when so employed are secured to the sill of the car and act to absorb the shock occasioned by the impact of one car against the other.

Referring to the drawing by reference characters, my improved shock absorber includes a lower plate *c* which is adapted to be firmly secured to a fixed part of the car such as the sill thereof. Preferably formed integrally with the plate *c* is a casing *d* which may be of any desired form but is, by preference, cylindrical as shown in the drawing, and is capped by a circular plate *c'* which may be threaded to the casing *d*. Slidably mounted within the casing *d* is a truncated cone shaped member *g* having an upper flange *h* and lower flange *h'*. Projecting upwardly from the flange *h* and passing through the plate *c'* is a rod *r* having secured to its free end a head *b*, preferably of the general configuration illustrated, and adapted to be abutted by an impacting body, such for example, as another car or a similar head *b* carried on such other car. Projecting from the lower flange *h'* of the member *g* is a rod *e* passing through the plate *c* and guided in its movements in a sleeve *l* formed integrally with the plate *c*. Ar-

ranged between the head *b* and the plate *c* and preferably surrounding the casing *d* is a coiled spring *a* which is adapted to take up or absorb the shocks and jars when the head *b* is pushed inwardly and compresses the spring.

Arranged within the casing *d* and in operative relation to the member *g* is the means for impeding the recoil of the spring *a*. The means which I preferably employ consist of a series of wedges *f* each having a curved face contacting with the interior of the casing *d* and a wedge face adapted to contact with the conical surface of the member *g*. These wedges are kept spaced apart by a series of small springs *m* the ends of which enter suitable grooves in the sides of each two adjacent wedges. Arranged over the wedges *f* and between the latter and the flange *h* is a helical spring *k* which exerts uniform pressure upon the upper faces of all the wedges.

The operation of the invention is as follows:—When the shock absorber encounters an obstacle, such as when two vehicles impact, the head *b* will be pushed inwardly thereby depressing the member *g* and the parts secured thereto or formed integrally therewith. In this action no impediment to the compression of the spring *a* is offered, and the spring as compressed to an extent corresponding to the violence of the impact or the weight of the impacting body. As the member *g* is depressed it is cleared of the wedges *f* which are forced downwardly by the light spring *k* which is very slightly compressed by the pressure of the flange *h* against the same. As soon as the spring *a* tends to extend or recoil on account of the cessation or diminution of the force acting to depress *b*, the wedges *f* which are always subject to the action of the spring *k* oppose the return movement of *h*, this opposition increasing directly as the inclination of their generating lines is nearer to the angle of gripping and as the external cylindrical surfaces of the wedges in contact with the face of the casing increases.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a shock absorber of the character specified, the combination with a member adapted to be secured to a fixed part of a vehicle, of a second member depressible rela-



tively to said first named member, a shock absorbing element interposed between said members and becoming operative when the second member is depressed, a conical body 5 movable with said second member, and a plurality of wedges disconnected from and in frictional contact with said conical body and adapted to retard its return to initial position.

10 2. In a shock absorber, of the character specified, the combination with a member adapted to be secured to a fixed part of a vehicle, of a second member depressible relatively to said first named member, a shock 15 absorbing element interposed between said members and becoming operative when the second member is depressed, a conical body movable with said second member, a plurality of wedges disconnected from and in frictional contact with said conical body and 20 adapted to retard its return to initial position, and flexible means interposed between said wedges and adapted to keep the same spaced apart.

25 3. In a shock absorber of the character specified, the combination with a member adapted to be secured to a fixed part of a vehicle, of a second member depressible relatively to said first named member, a shock 30 absorbing element interposed between said members and becoming operative when the second member is depressed, a conical body movable with said second member, a plurality of wedges having their wedge faces in 35 peripheral contact with the conical body, and a flexible element adapted to exert uniform pressure on all of said wedges, said wedges being forced into engagement with the first named member to retard the recoil 40 of the second named member.

4. In a shock absorber of the character specified, the combination with a member adapted to be secured to a fixed part of a vehicle, of a second member depressible relatively to said first named member, a shock 45 absorbing element interposed between said members and becoming operative when the second member is depressed, a conical body movable with said second member, a plurality of wedges having their wedge faces in 50 peripheral contact with the conical body,

flexible means interposed between adjacent wedges to keep the same apart, and additional flexible means adapted to exert uniform pressure on the upper faces of the 55 wedges, said wedges being forced into engagement with the first named member to retard the recoil of the second named member.

5. In a shock absorber of the character 60 specified, the combination with a member adapted to be secured to a fixed part of a vehicle, of a second member depressible relatively to said first named member, a shock absorbing element interposed between said 65 members and becoming operative when the second member is depressed, a conical body movable with said second member, a series of flexibly interconnected wedges peripherally contacting with the conical body and 70 being movable independently thereof, said wedges being forced into engagement with the first named member to retard the recoil of the second named member, and an annular flexible member adapted to exert uniform 75 pressure upon the entire series of wedges.

6. In a shock absorber of the character specified, the combination with a casing having a plate adapted to be secured to a fixed part of a vehicle, of a head adapted to be 80 depressed by a body impacting against the same, a truncated conical body reciprocable in the casing, a rod connecting the head and conical body, a spring interposed between the under side of the head and the upper 85 face of the plate, a flange formed at one end of said conical body, a series of flexibly interconnected wedges arranged below the flange and adapted to contact peripherally with the conical body, said wedges being 90 forced into engagement with the casing to retard the recoil of the truncated conical body, and a coiled spring interposed between the flange and wedges and adapted to exert uniform pressure on the latter. 95

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EMILE RIMAILHO.

Witnesses:

HENRI MONIN,  
H. C. COXE.