

E. F. CIGLIA & L. F. PELLETIER.  
SHOCK ABSORBER.

APPLICATION FILED JAN. 11, 1908.

Patented Mar. 14, 1911.

2 SHEETS-SHEET 1.

986,622.

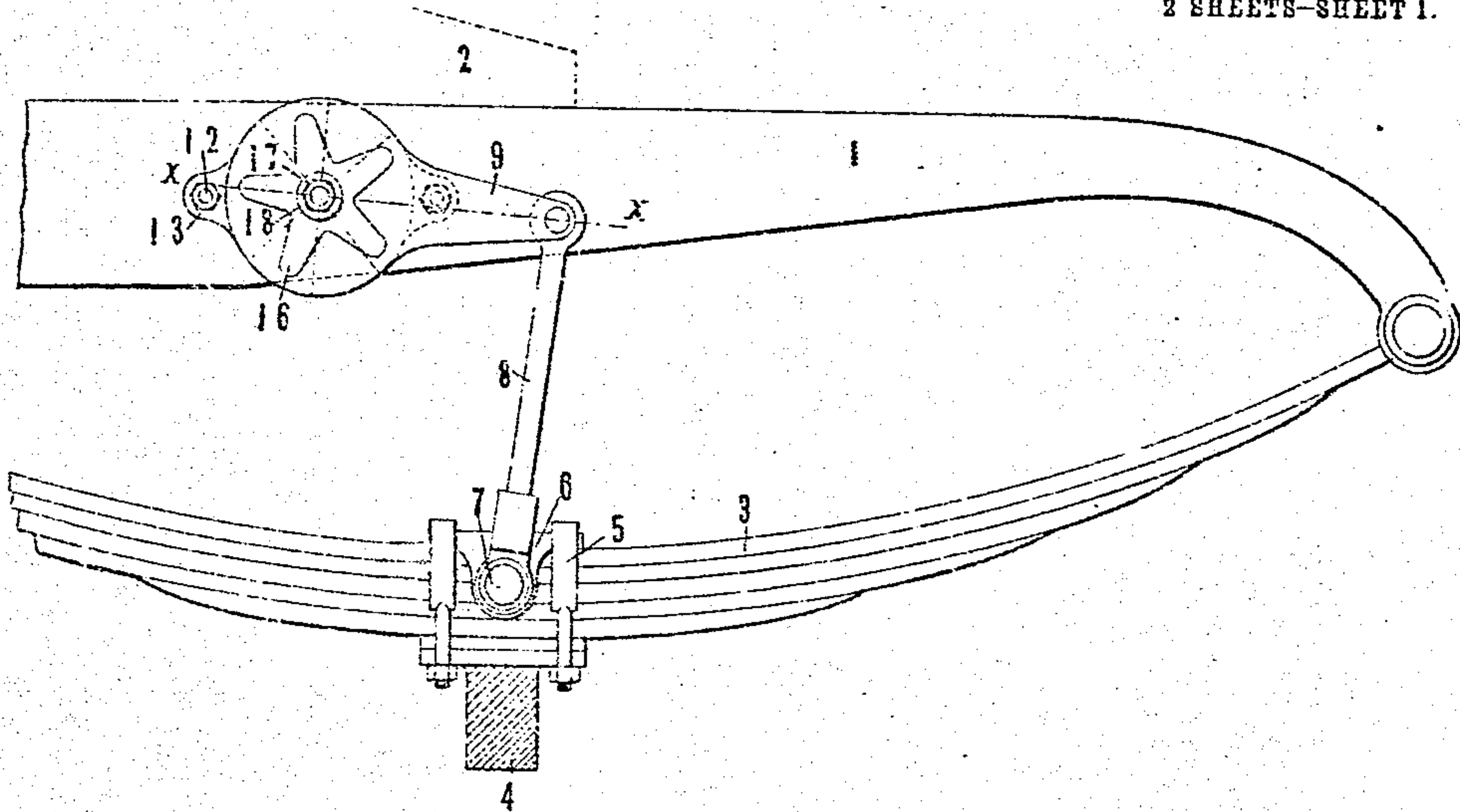


Fig. 1.

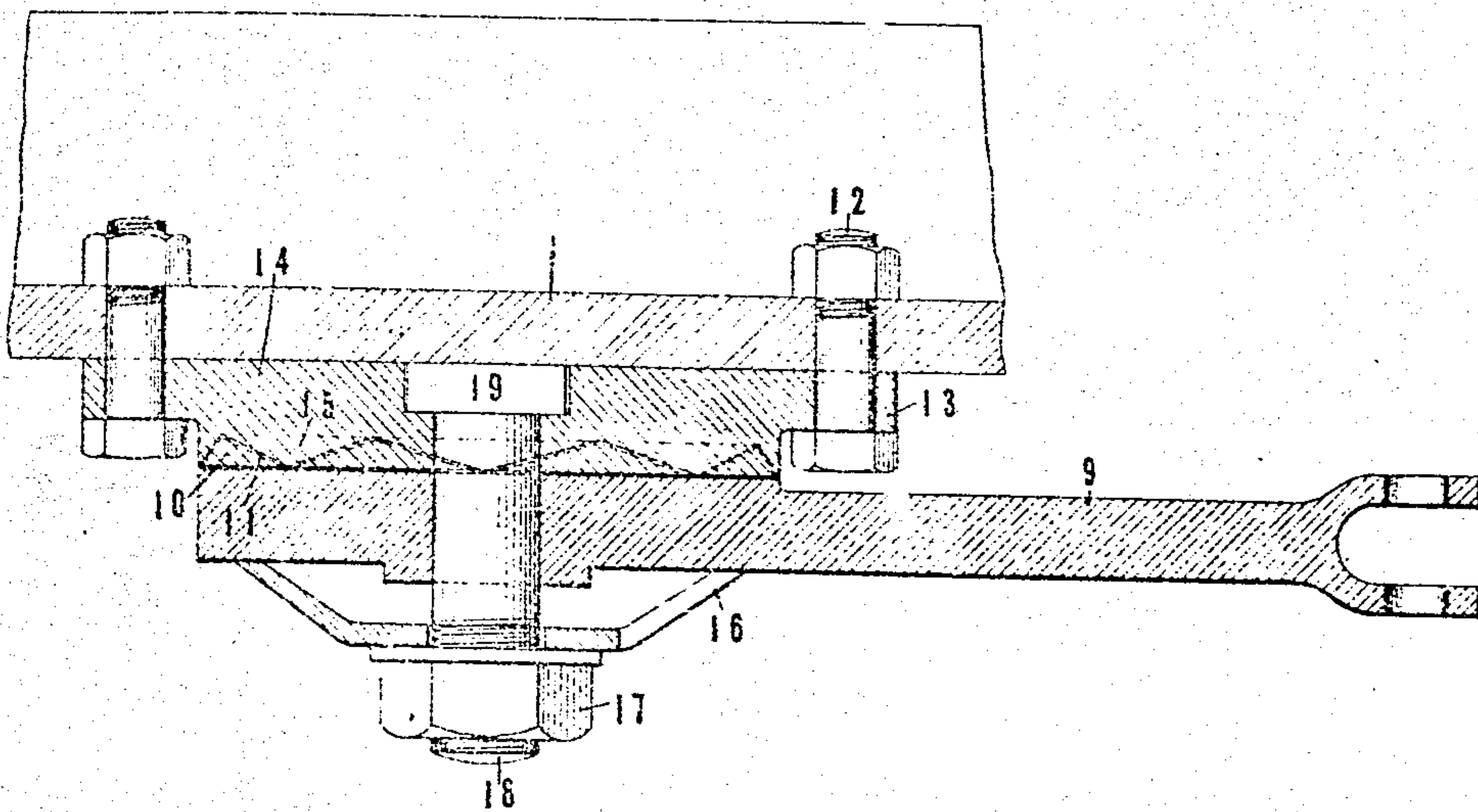


Fig. 2.

WITNESSES

*Horatio Perry*  
*Samuel J. Gert.*

INVENTORS

*E. F. Ciglia*  
*L. F. Pelletier*  
BY *Amel. C. Gifford*  
ATTORNEYS

E. F. CIGLIA & L. F. PELLETIER.

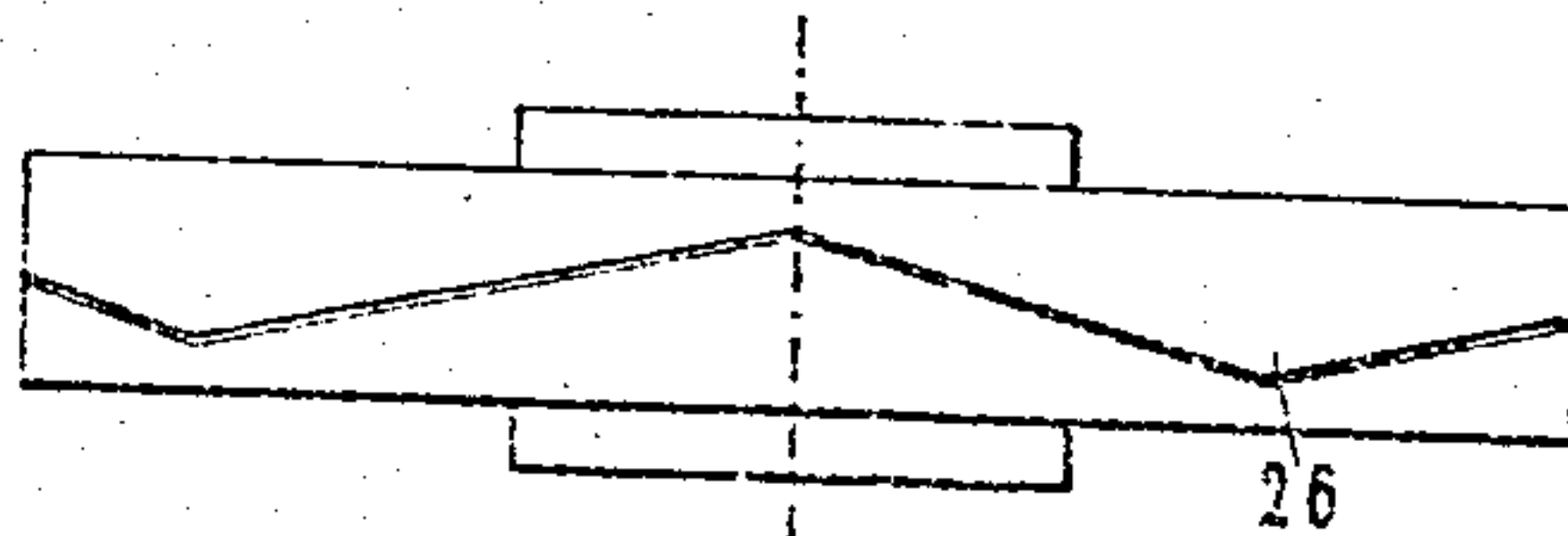
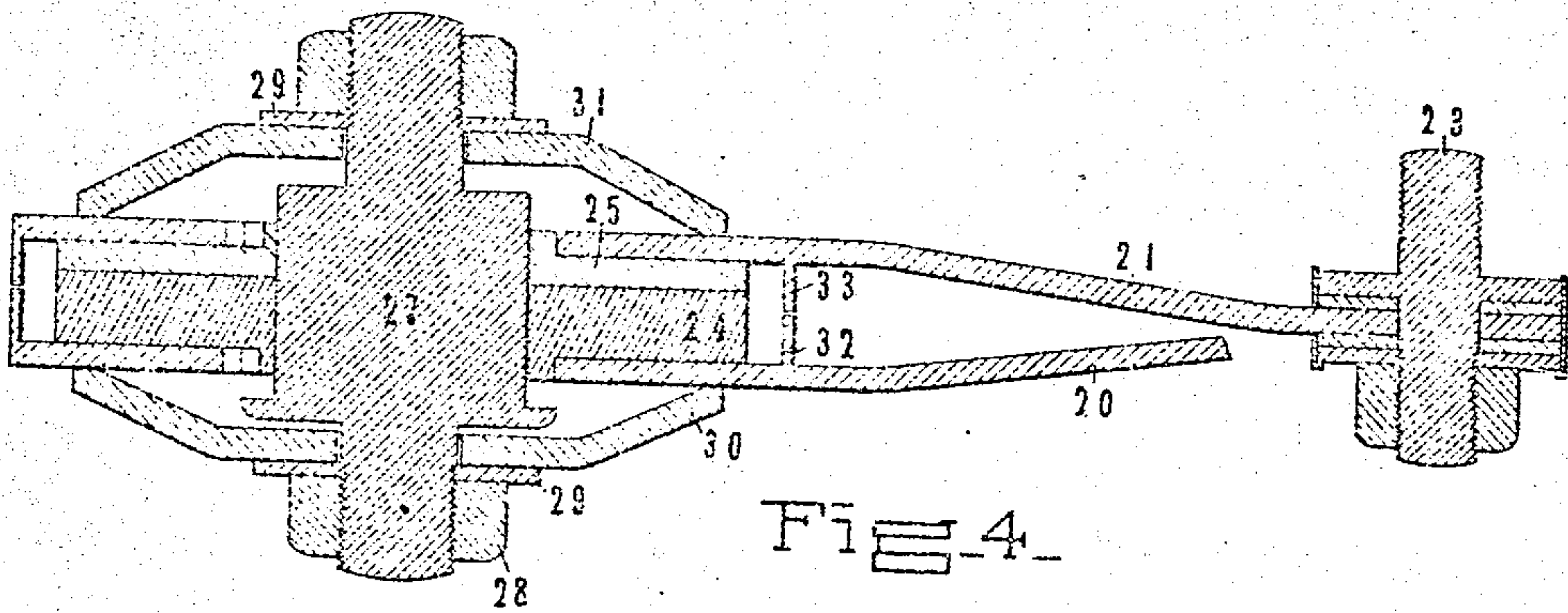
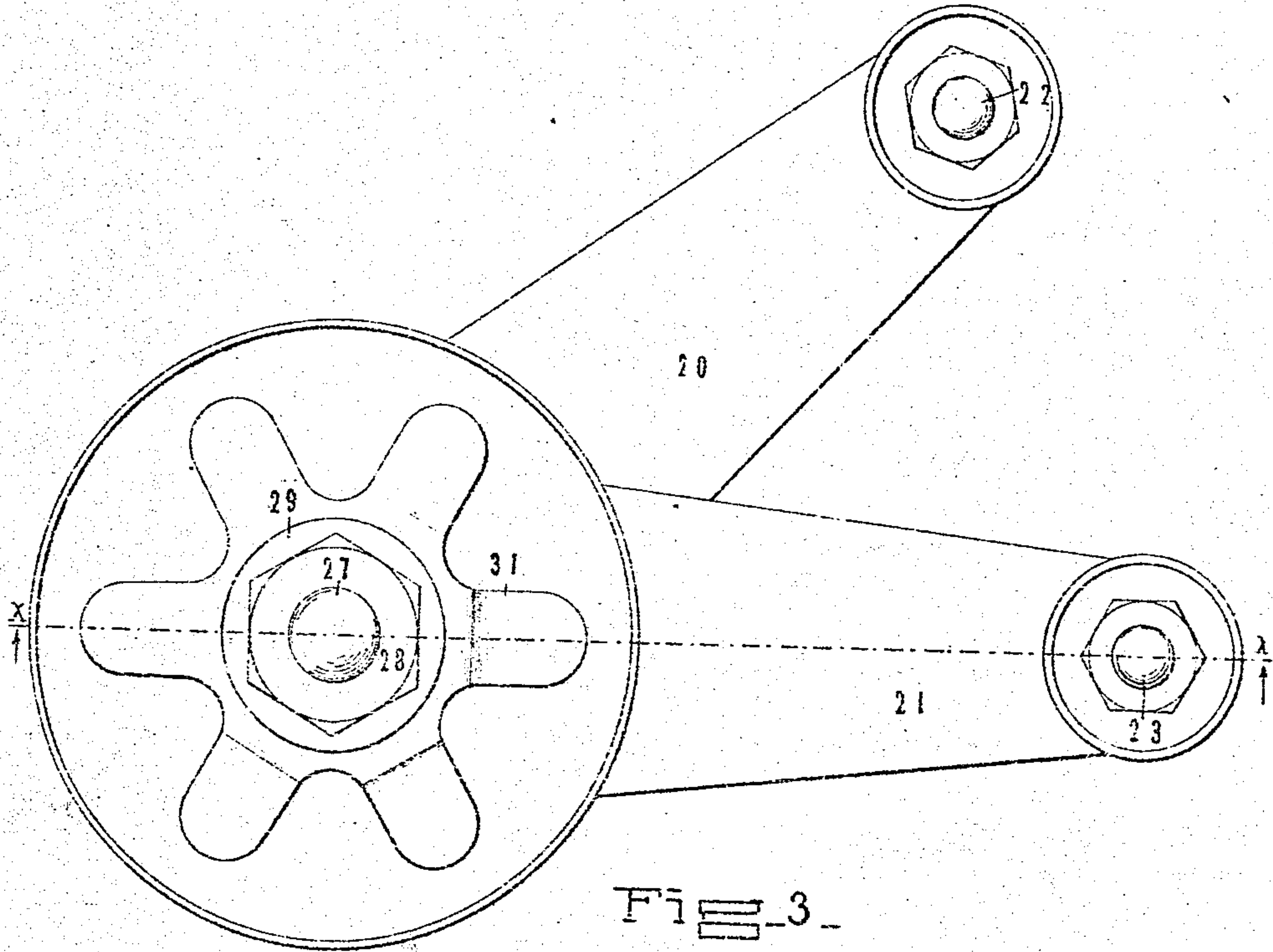
SHOCK ABSORBER.

APPLICATION FILED JAN. 11, 1908.

Patented Mar. 14, 1911.

2 SHEETS-SHEET 2.

986,622.



WITNESSES  
*Samuel L. Albert*

Fig. 5.

INVENTOR  
*E. F. Ciglia*  
*L. F. Pelletier*  
BY *Woolfield & Woolfield*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

ERNEST F. CIGLIA AND LOUIS F. PELLETIER, OF NEW YORK, N. Y., ASSIGNORS, BY  
DIRECT AND MESNE ASSIGNMENTS, TO CIGLIA SHOCK PREVENTER COMPANY, A  
CORPORATION OF NEW YORK.

## SHOCK-ABSORBER.

986,622.

Specification of Letters Patent.

Patented Mar. 14, 1911.

Application filed January 11, 1908. Serial No. 410,461.

*To all whom it may concern:*

Be it known that we, ERNEST F. CIGLIA and LOUIS F. PELLETIER, a subject of the King of Italy and a citizen of the United States, respectively, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Shock-Absorbers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the mounting of vehicle bodies.

One of the objects thereof is to provide simple and effective means for preventing excessive swaying or bounding of vehicle bodies.

Another object is to provide means of the above type of durable construction and reliable action.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated.

In the accompanying drawings, wherein are shown one or more of the various possible embodiments of the several features of this invention, Figure 1 is a side elevation; Fig. 2 is a sectional view taken along the line  $x-x$  of Fig. 1 and showing the parts upon a larger scale; Fig. 3 is a side elevation of a slightly different embodiment; Fig. 4 is a sectional view taken along the line  $x-x$  of Fig. 3; Fig. 5 is a detail edge view of parts shown in Fig. 3.

Similar reference characters refer to similar parts throughout the several views of the drawings.

In order that certain features of this invention may be the more readily and fully understood, it may be noted that in connection with apparatus of the general nature of that with which this invention deals, if it be attempted to control the action of the spring-gear by means depending upon frictional engaging surfaces, these surfaces are subjected to almost constant wear during the

travel of the vehicle and are either worn away or polished smooth so as to be of little practical value. If it be attempted to remedy this defect by providing means for tightening the surfaces, there is not only frequent adjustment required, but the bearing members must be replaced when worn. The elimination of objectionable features of this nature is among the dominant aims of this invention.

Referring now to the accompanying drawings, there is shown in Fig. 1 a spring bar or portion of the vehicle frame 1 upon which is mounted the body, diagrammatically indicated at 2. Connected with the bar 1 is the spring 3, herein shown as of the semi-elliptic type and mounted upon the axle 4. Secured in place upon spring 3, as by the clips 5, is a saddle 6 having pivotally mounted thereon, as at 7, a link 8 jointed at its upper end to a swinging member 9. This member is provided upon its inner surface with sector-shaped projections 10 having inclined bearing surfaces 11. Mounted upon the bar 1, as by means of bolts 12 passing through perforated lugs 13, is a plate 14 having formed upon its outer surface the projections 15 similar in form and function to projections 10 and adapted to interfit with respect thereto, as best shown in Fig. 2 of the drawings. These parts in their normal position lie as shown in Fig. 2 with each projection 10 and 15 resting within the recess between the opposing projections and there urged into this position as by the star-shaped spring 16 adjustably held in place by a nut 17 upon a bolt 18 the head 19 of which is countersunk within the plate 14.

The action of the above-described embodiment of this invention is substantially as follows:—Assuming the parts to be in the position indicated in the drawing and that the axle 4 is thrown upwardly, as by reason of passing over an obstruction upon the road, the bar 1 and body 2 are correspondingly lifted through the spring-gear and, if the upward thrust is sudden and violent, there is a tendency of the body to bound or oscillate with respect to the axle to a disagreeable degree. As the body and axle move toward and away from one another, however, the link 8 swings the member 9



about bolt 18, the cam or inclined meeting surfaces of the projections 10 and 15 causing this member, upon swinging, to be forced outwardly from the plate 14. This movement is resisted by the spring 16 which is distorted thereby and upon the edges of the projections passing one another, if the member is carried to this extent, the spring forces the projections one within another in a changed angular relation and is thus released. In this manner the spring is intermittently distorted and released as the member 9 swings about its axis, although it will be understood that for slight vibrations the projections are not moved to such an extent as to pass one another.

It may here be noted that by the term "spring gear" as used throughout is meant any resilient means for supporting a vehicle body, and by the terms "distort" and "release" as used throughout with reference to a spring is meant respectively any change of form of the spring away from its normal free position and any action whereby the spring is permitted to move toward its normal free position.

Referring to the construction shown in Figs. 3, 4 and 5 of the drawings, there are provided a pair of members 20 and 21 the ends of which, 22 and 23, may be pivotally connected between relatively movable portions of a vehicle in such manner as to cause a relative movement of these parts upon the vehicle body moving with respect to the axle. Keyed to or formed integral with member 20 is a bearing plate 24 and similarly related to the member or lever 21 is a bearing plate 25. These plates are provided with interfitting projections 26 as indicated in Fig. 5 of the drawings, the relation of these parts being similar to the corresponding portions of the construction first described. As is clearly shown in Fig. 5 of the drawings, the sides of these teeth are inclined at an angle of less than  $30^\circ$  with their general planes of motion, and such conformation results in a smooth and efficient action and eliminates any tendency to lock the parts. Loosely passing through members 24 and 25 is a heavy pin 27 the outer ends of which are threaded and provided with nuts 28 and washers 29. These nuts serve to hold in position star-shaped springs 30 and 31 which force the plates 24 and 25 toward one another. Upon arms 20 and 21 are formed or mounted the annular flanges 32 and 33 the edges of which rest in contact and serve to act as a dust-guard for the moving parts. It will be seen that upon the arms 20 and 21 swinging with reference one to another, their movement is opposed by the action of springs 30 and 31 in a manner which will be clear from the description of the construction first described.

It will thus be seen that there is provided apparatus in which the several objects of this invention are achieved and the above enumerated advantages are, among others, present. The parts are few in number and cheap and simple in form and are readily assembled or taken apart. Friction, moreover, is not depended upon in the action of the device and no parts are subjected to any material wear, thus doing away with the necessity for adjustment or renewal. The action is positive throughout and thoroughly reliable, and the entire device is well adapted to meet the requirements of the most severe practical use.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween.

Having described our invention what we claim as new and desire to secure by Letters Patent is:

1. In a device of the nature disclosed, in combination, a vehicle body, a vehicle axle, a spring interposed between said axle and said body and connected with both, a pair of arms mounted to swing as said spring is compressed or expands and having respectively thereon in rigid relation a cam portion, said cam portions having along their adjacent surfaces three or more intermeshing projections the sides of which are inclined at angles of less than  $30^\circ$  with the planes in which they swing, means holding said cam portions in operative relation one to another to permit free swinging with respect one to another, and resilient means tending to urge said cam portions together, said several parts being formed and related to tend to return said arms to a predetermined normal relative position from any position into which they are moved in use.

2. In a device of the nature disclosed, in combination, a vehicle body, a vehicle axle, a spring interposed between said axle and said body and connected with both, a pair of arms mounted to swing as said spring is compressed or expands and formed to converge at their free ends toward a single plane, said arms having respectively thereon in rigid relation a cam portion, said cam portions being interchangeable and having on their adjacent surfaces three or more



intermeshing projections the sides of which are inclined at angles of less than 30° with their planes, means holding said cam portions in operative relation one to another to permit free swinging with respect one to another, and resilient means tending to urge said cam portions together, said several parts being formed and related to tend to return said arms to a predetermined nor-

mal relative position from any position into which they are moved in use.

In testimony whereof we affix our signatures, in the presence of two witnesses.

ERNEST F. CIGLIA.

LOUIS F. PELLETIER.

Witnesses:

ROBERT S. BLAIR,  
EDGAR WHITNEY.