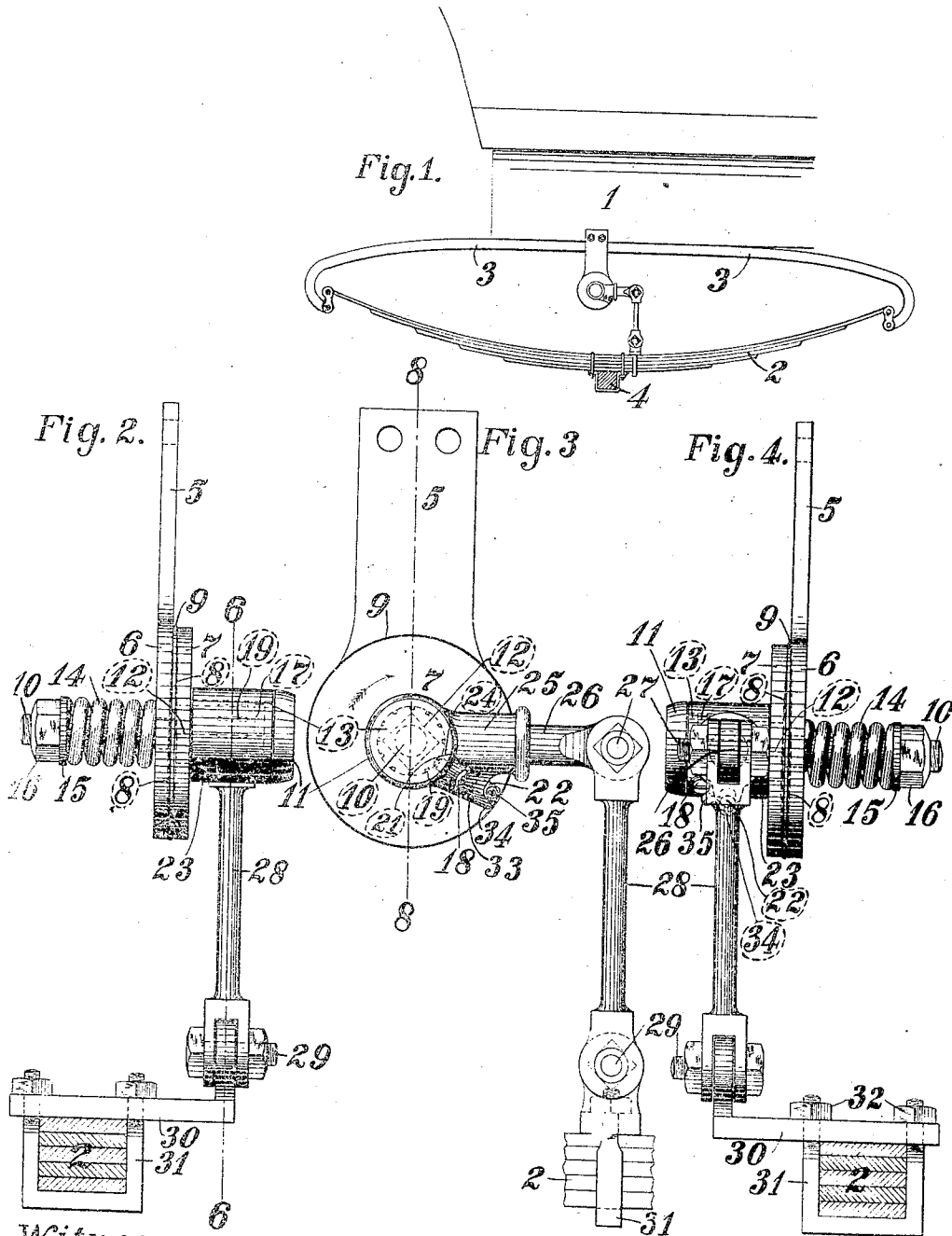


S. FURMIDGE.
 MEANS FOR PREVENTING REBOUND IN VEHICLES.
 APPLICATION FILED DEC. 22, 1905.

938,753.

Patented Nov. 2, 1909.
 2 SHEETS—SHEET 1.



Witnesses:
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 Gladys Walton.

Inventor:
 Samuel Furmidge.
 By *Hugh N. Wagner*
 His Attorney.

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2 SHEETS—SHEET 2

Fig. 5.

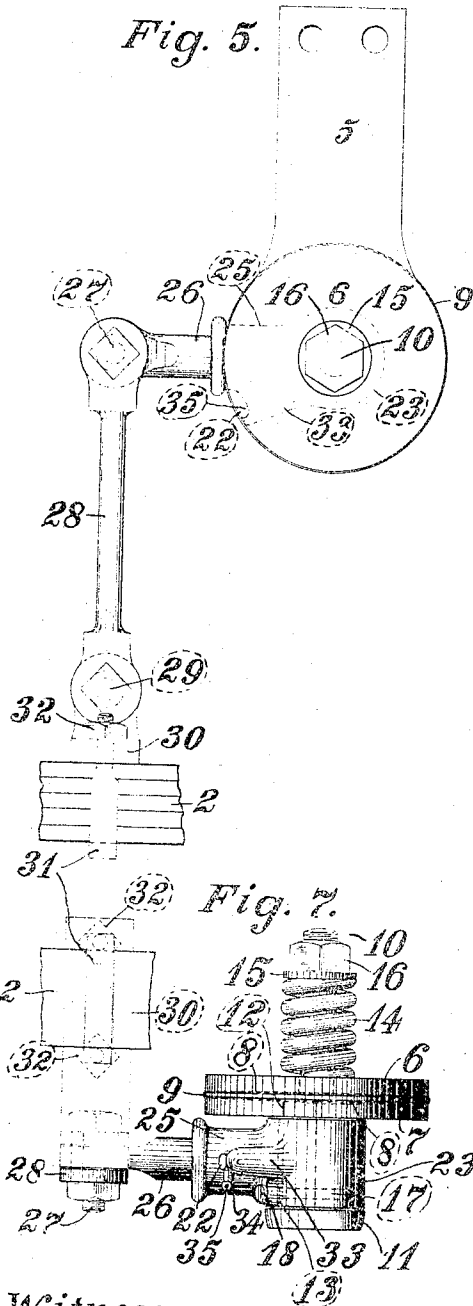


Fig. 6.

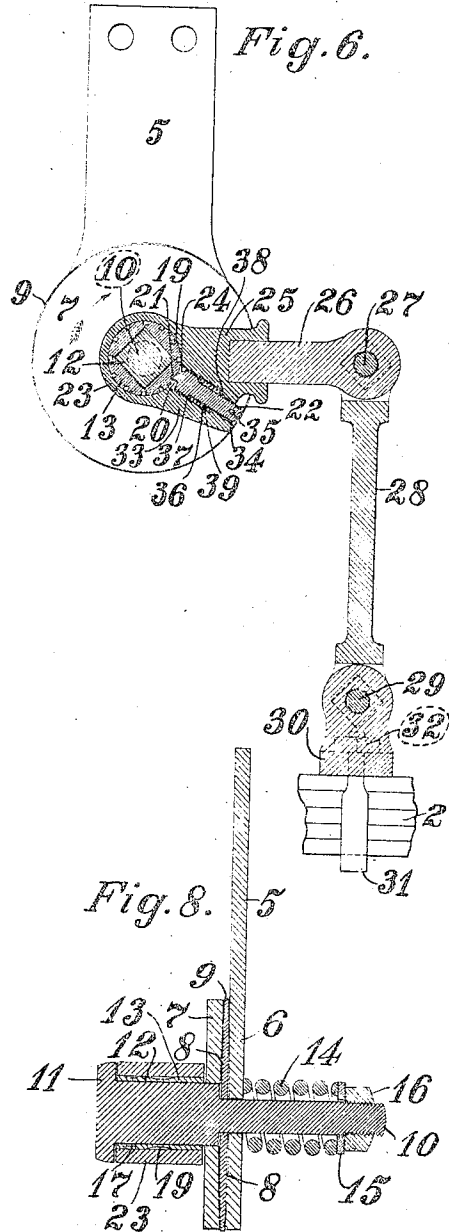


Fig. 7.

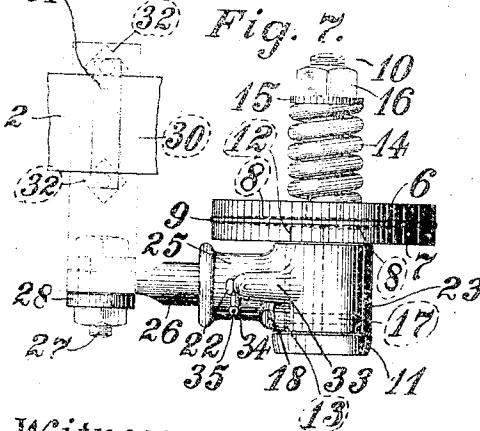
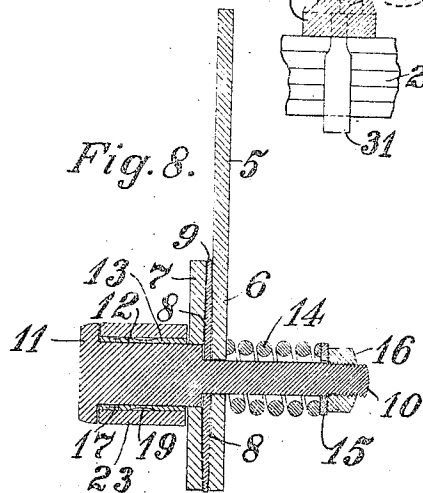


Fig. 8.



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UNITED STATES PATENT OFFICE.

SAMUEL FURMIDEN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO SUPPLEMENTARY SPIRAL SPRING COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI

MEANS FOR PREVENTING REBOUND IN VEHICLES.

738.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed December 28, 1908. Serial No. 202,980.

To all whom it may concern:

Be it known that I, SAMUEL FURMIDEN, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Means for Preventing Rebound in Vehicles, of which the following is a specification.

This invention relates to means for preventing the rebound of a vehicle body after same has flattened the leaf spring or otherwise descended against spring pressure.

In the drawings accompanying this specification and forming part of same, in which like numbers of reference denote like parts wherever they occur, Figure 1 is a side elevation, showing this device in its relation to the vehicle body and to the leaf spring and axle; Fig. 2 is a rear elevation; Fig. 3 is a side elevation of the device on an enlarged scale compared to Fig. 1; Fig. 4 is a front elevation; Fig. 5 is a side elevation, the opposite of Fig. 3; Fig. 6 is a sectional view on the line 6--6, Fig. 2; Fig. 7 is a bottom plan view; and Fig. 8 is a sectional view on the line 8--8, Fig. 3.

The vehicle body 1 rests on the leaf or semi-elliptic spring 2 by means of brackets 3 or other suitable means, and the spring 2 is bound to the axle 4.

The anti-rebound device consists essentially of a pair of metal or hard plates or disks with a washer of leather or other material softer than that of the disks between same. In the drawings, I have shown the device attached to the vehicle body by the hanger 5, which is enlarged at its lower end to form the disk 6. The disk 6 and the disk 7 are concave on their adjoining faces, and the cavity 8 thus formed is occupied by the washer 9 of leather or other material softer than the material of the disks but preferably tough and comparatively unyielding. The washer 9 will be made in double convex form to fit the cavity 8, but its edges extend as far as or slightly beyond the periphery of the disks 6 and 7. The bolt 10 having the head 11 extends through the angular opening 12 in the cylinder 13 and disk 7, being at that point shaped to conform to the angle of said opening, and through the round opening in washer 9 and disk 6, smaller in size than the circumference of the helical spring 14 which is confined between the disk 6 and washer 15, said spring being nor-

mally compressed by the nut 16 so as to force the disk 6 and washer 9 closely against the disk 7 and thus to produce strong friction when disk 6 is revolved or moved, as hereinafter described. The cylinder is obviously held from rotation by the squared shank of the bolt 10, and is prevented from longitudinal movement by means of the circumferential groove 17 in which the inner end of screw 18 seats. Angular-mouthed recesses or notches 19 formed lengthwise in said cylinder and in a series around same constitute it a ratchet in which the straight edge 20 of the tooth 21 of the dog 22 bites, if the collar 23 be revolved in the direction indicated by the arrow in Fig. 3. If, however, collar 23 be moved in the opposite direction, the beveled edge 24 of said tooth will ride over the notches of the ratchet without hindrance.

A sleeve 25 is cast integral with the collar 23, and arm 26 is welded therein (or arm 26 may be formed integral with collar 23). Arm 26 is connected by a swivel joint 27 to the link 28, the latter being swiveled at 29 to the angle-iron 30, which rests upon the leaf spring 2. Bolt-holes in said angle-iron allow the passage therethrough of the arms of the clip 31, which binds said angle-iron to the leaf spring by means of the nuts 32.

The dog 22 reciprocates in a passage 33 provided in an offset 34 formed on the sleeve 25, said offset being extended into the lug 34, to form a recess to act as a keeper for the pin or handle 35 by which said dog 22 may be manipulated to transform it from one which bites when the collar 23 is moved in the direction indicated by the arrow in Fig. 3 to one which bites when said collar is moved in the opposite direction, said dog being merely turned around and the pin 35 then again resting in the recess formed by lug 34, but being turned the other way from that shown in the drawings. This arrangement is necessary so that the anti-rebound device may be placed in positions other than that shown in the drawings, as for instance in the position (not shown) of having the clip 31 to the rear of axle 4 and the collar 23 so swung around that arm 26 projects toward the rear of the vehicle.

The operation is as follows: When the wheels of the vehicle strike a depression in or projection above the roadway, a downward impulse is thus given to the body 1 of

the vehicle thus flattening the leaf springs 2 to a greater extent than has been occasioned by the mere weight of the vehicle and its occupants. This causes the hanger 5 to move downwardly with the body 1, and this necessarily carries the disk 6 to a lower position than that illustrated in Fig. 1. On account of the definite relation existing between arm 26 and link 28 (due to the fixity of the hanger 5), when the disk 6 thus descends, carrying with it the bolt 10, the link 28 holds the forward end of the arm 26 at the same height above the leaf spring 2 as before the descent of the vehicle body, but the said carrying downward of the bolt 10 causes the arm 26 to swing on the swivel joint 27 so that the rearward end thereof is relatively lowered from its former position. Said arm is not prevented from thus swinging downward, the beveled edge 24 riding freely over the ratchet notches 19, as hereinbefore described. As soon as the body 1 begins to rise again with the impulse of the leaf springs 2 that constitutes the objectionable rebound heretofore common, the straight edge 20 of the tooth of the dog 22 bites the ratchet notches, being pressed thereinto by the spring 36 abutting between the shoulders 37 and 38. This holds the collar 23 from rotation independent of the cylinder 13, and as the upward pull of the vehicle body, carrying with it the hanger 5, disk 6, bolt 10, etc., is irresistible, the dog 22 forces the cylinder 13 to rotate, and by this means (on account of the square opening therethrough and the squared shank of the bolt 10 and the square opening through disk 7) the latter is caused to revolve against the strong frictional resistance of the washer 9 pressed into contact with disk 7, as hereinbefore described. This frictional resistance is very strong, and modifies the rebound so as to relieve same of all objectionable features. On the other hand, this arrangement does not unduly nullify the resilience of the leaf springs. One advantage in this connection is essentially noteworthy—namely, that, while the frictional resistance is ever ready for action to prevent the rebound, yet it does not act until the rebound begins; while effectually preventing the rebound, it does not retard the downward movement of the body so as to diminish the easy riding qualities of the vehicle.

It will be obvious that other forms of ratchets than the particular one herein shown and described can be used, and that numerous other changes can be made in such minor details without departing from the nature and spirit of this invention.

Having thus described my said invention, what I claim and desire to secure by Letters-Patent is:

1. In a device of the character described, the combination of a fixed friction plate, a

movable friction plate, each being concave on the side adjacent its fellow, and a convex washer interposed between same.

2. In a device of the character described, the combination of a pair of concaved friction disks having a convex leather washer therebetween, the circumference of which is greater than that of said disks, means for holding said disks tightly against said washer, and means for moving one of said disks relative to the other.

3. In a device of the character described, the combination of a fixed friction member, a movable one, a cylinder, a bolt passing through said three members and causing said movable member to rotate, and means for actuating said bolt by said cylinder.

4. In a device of the character described, the combination of a fixed friction member, a movable one, a cylinder having a circumferential row of notches, a bolt passing through said three members and causing said movable member to rotate and means for actuating said bolt by said cylinder, said means riding freely over said notches while the vehicle body is descending but engaging same while it is rising.

5. In a device of the character described, the combination of a fixed friction plate and a movable one, ratchet means for actuating said movable member, a depressible arm terminating in a collar encircling said ratchet, an offset from said collar, and a dog in said offset, by which said collar is locked to said ratchet, said members being thereby caused to rotate in unison.

6. In a device of the character described, the combination of a fixed friction plate and a movable one, ratchet means for actuating said movable member, a depressible arm terminating in a collar encircling said ratchet, and means carried by said collar whereby said collar grips said ratchet as said collar moves in one direction, but said means riding over said ratchet as said collar moves in the other direction, said means being so adjustable as to lock said collar to said ratchet while moving in either direction desired.

7. In combination with a vehicle body and the springs thereof, a member carried by the vehicle body, a friction member coacting with said member, a body passed through each of said members and related to said friction member to rotate therewith, and means related to the springs and inclosing an extension of said body to rotate the latter by applying power to the inclosed part thereof on rising of the vehicle.

8. In combination with a vehicle body and the springs thereof, a member carried by the vehicle body, a friction member coacting with said member, a body which passes through each of said members and which is so related to said friction member as to ro-

5 tate therewith, and means related to the
springs and inclosing an extension of said
body, said extension being equipped with
ratchet means to rotate same on rising of the
vehicle.

10 9. In a device of the character described,
the combination of a pair of friction mem-
bers, a cylinder, means rotating with one of
said friction members, and means for actu-
ating said last-mentioned means by said
cylinder.

15 10. In combination with a vehicle body
and the springs thereof, a member carried
by the vehicle body, a friction member co-
acting with said first-mentioned member,
a body related to said friction member to
rotate therewith, and means related to the
springs and inclosing an extension of said
body to apply power to said body on rising

of the vehicle, thereby to rotate the friction 20
member.

11. A device of the character described,
comprising a fixed friction plate, a movable
one, a ratchet-bearing member extending
outwardly from said movable plate, on each 25
side and rotating in unison therewith, a de-
pressible arm, means to lock said arm to said
ratchet as said arm moves in one direction
but riding over same as said arm moves in
the opposite direction, and a spring engag- 30
ing the ratchet-bearing member to press
said friction plates together.

In testimony whereof I have affixed my
signature in presence of two witnesses.

SAMUEL FURMIDGE.

Witnesses:

ELLIOTT R. GOLDSMITH,
GLADYS WALTON.