No. 780,496. PATENTED JAN. 24, 1905.

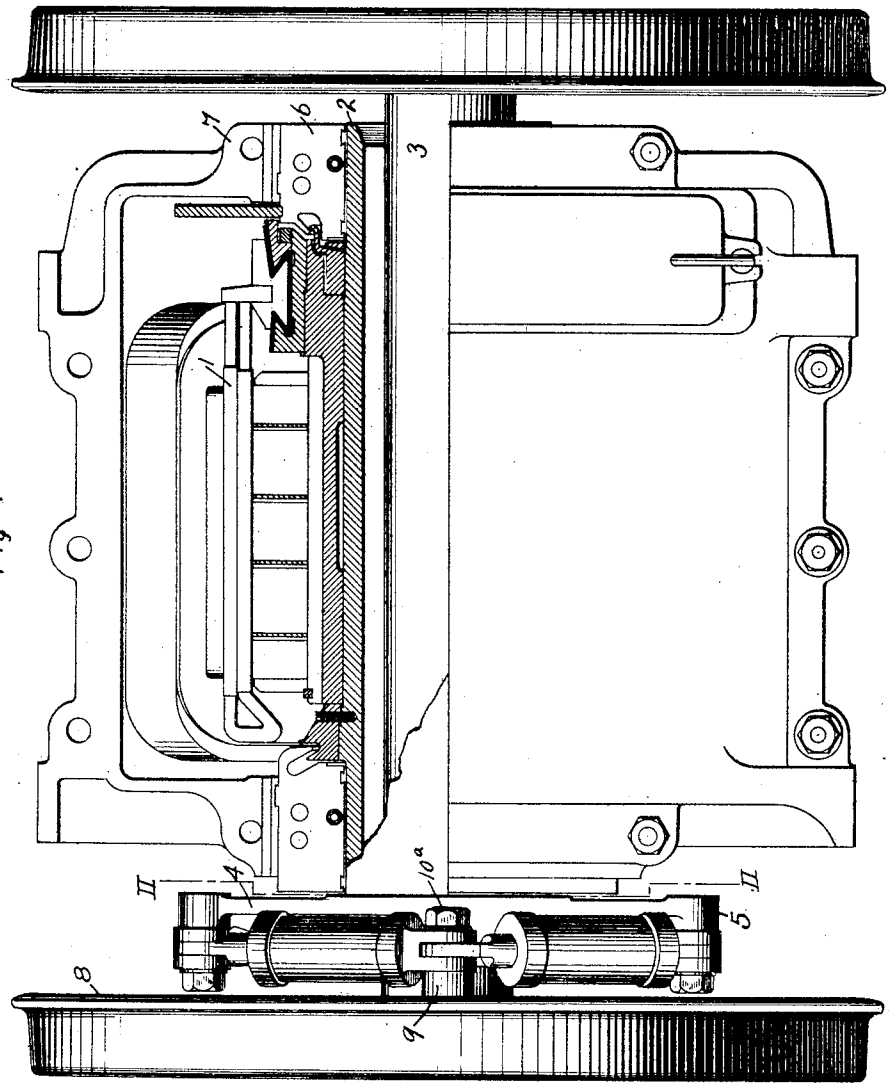
K. F. ELERS.

RESILIENT LINK.

APPLICATION FILED MAY 18, 1904.

2 SHEETS—SHEET 1.

Fig 1



WITNESSES:

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2 SHEETS—SHEET 2.

Fig. 2.

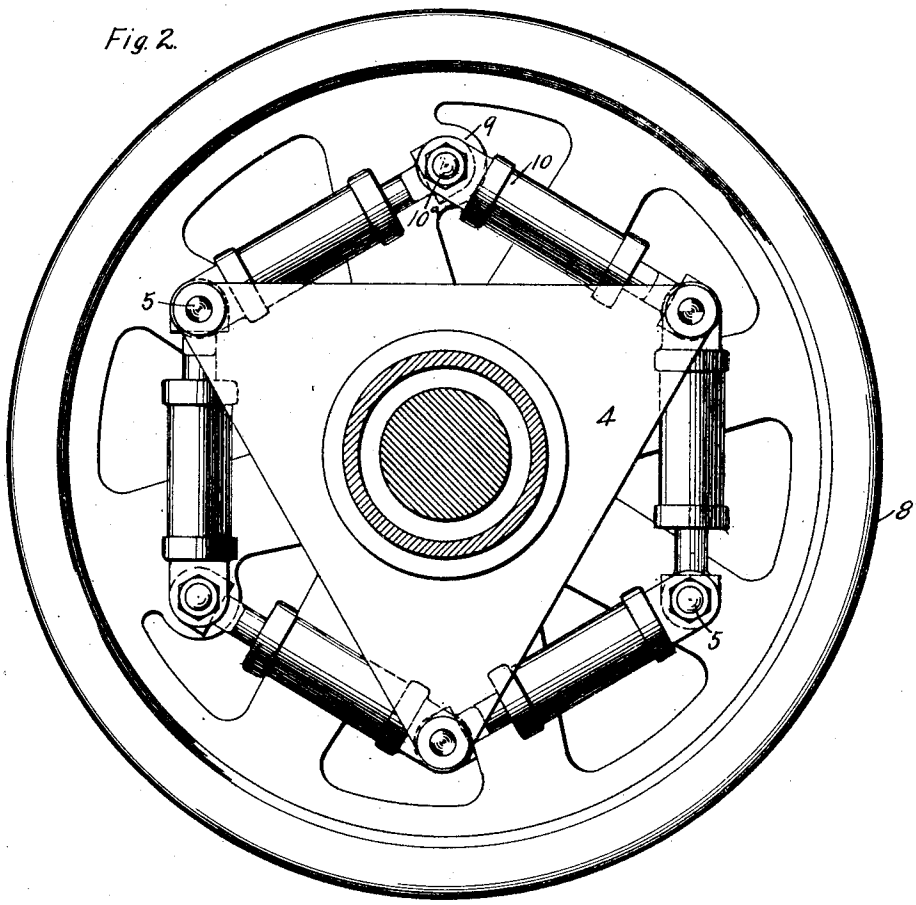
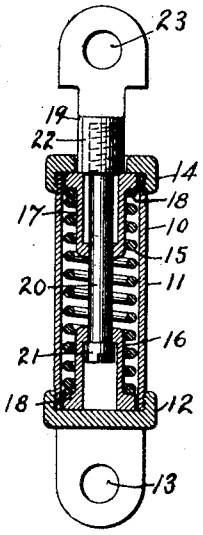


Fig. 3.



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UNITED STATES PATENT OFFICE.

KARL F. ELERS, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

RESILIENT LINK.

SPECIFICATION forming part of Letters Patent No. 780,496, dated January 24, 1905.

Application filed May 18, 1904. Serial No. 208,621.

To all whom it may concern:

Be it known that I, KARL F. ELERS, a subject of the King of Sweden and Norway, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Resilient Links, of which the following is a specification.

My invention relates to means for flexibly connecting together two members of a machine, and more particularly to devices which are employed for coupling the armatures of electric-railway motors directly to the driving-axles.

The object of my invention is to provide simple resilient couplings for the purpose described in which the springs while in use are always under compression.

In the use of coil-springs where the work to be done or where the load to be carried by them approaches the limits of their capacities it is desirable whenever possible to place them under compression rather than under tension, chiefly for the reason that they may be so designed that if the load becomes abnormal they will close tightly and form a cylinder and also because complicated devices for attachment to the ends thereof, such as are necessary with springs placed under tension, are avoided. In railway practice it is particularly desirable to have all parts, particularly the suspension devices for the motors, safe and reliable, and my invention provides a maximum reliability of service, because the springs which form parts of the suspension-links are always in compression regardless of the direction of rotation of the motor-armature.

In the accompanying drawings, Figure 1 is a view, partially in end elevation and partially in section, of a car-truck and motor provided with my invention. Fig. 2 is a view in section on line II II of Fig. 1, and Fig. 3 is a sectional view of one of the links constructed in accordance with my invention.

The motor-armature 1 is built upon a suitable quill 2, the inner diameter of which is somewhat larger than the diameter of the driving-axle 3. The quill 2 is provided at one end with a triangular plate 4, which has suitable stud-bolts 5 at its extremities. Bearings 6 for the quill 2 are carried on the field-magnet frame 7, which is mounted in any suitable manner upon the framework (not shown) of the car-truck.

At three equidistant points the driving-wheel 8 is provided with suitable lugs 9, to each of which one end of a suspension-link 10 is pivotally attached by means of a bolt 10^a, the other ends of the links being secured to the triangular plate 4 by means of the stud-bolts 5.

Referring now particularly to Fig. 3, each suspension-link 10 comprises a tubular sheath 11; a cap 12, screwed upon one end of the sheath and having an eye 13; an annular cap 14, screwed upon the other end of the sheath; a coil-spring 15 within the sheath; two thimble-pieces 16 and 17, inserted in the respective ends of the coil and having flanged outer ends 18, upon which the corresponding ends of the spring 15 are seated, and a connecting-rod 19 for the thimble-pieces, comprising a bolt 20, having a head 21 seated within the thimble-piece 16, and a nut 22, that projects through the cap 14 to engage the outer end of the thimble-piece 17 and is provided with an eye 23. If the eyes 13 and 23 are drawn apart, the spring 15 is placed in compression, since the head 21 engages the thimble-piece 16 and the annular cap 14 engages the thimble-piece 17, and if the link is placed in compression the nut 22 of the connecting member engages the outer end of the thimble-piece 17 and the thimble-piece 16 is seated upon the cap 12. Evidently, then, the spring 15 is always placed in compression regardless of whether the link as a whole is placed in tension or compression.

While I have shown the tubular sheath 11 and the cap 12 as separate parts, it is obvious that they may be cast or forged as a single piece. It is equally obvious that more than one spring may be employed in each sheath, that both ends of the quill 2 may be provided with suspension means such as I have shown at one end only, and that the details of con-

struction may be otherwise varied from what I have specifically shown and described without departing from my invention.

I claim as my invention—

1. A resilient link comprising a coil-spring, thimble-pieces projecting into the ends thereof and having bearing-surfaces therefor, a connecting-rod having shoulders which engage said thimble-pieces, a sheath for said parts and an annular cap therefor through which said rod projects.

2. A resilient connecting-link comprising a sheath with attachment means at one end thereof and an annular cap for the other end, a coil-spring within said sheath, perforated thimble-pieces at each end of the spring, and a connecting-rod which projects through the thimble-pieces and the annular cap.

3. A resilient connecting-link comprising a sheath having attachment means at one end, an annular cap for the other end thereof, a coil-spring within said sheath, thimble-pieces respectively inserted in the ends of said spring and having bearing-surfaces therefor, and a connecting-rod having shoulders which engage said thimble-pieces and one end of which projects through the annular cap.

4. A connecting-link comprising a coil-spring, thimble-pieces projecting into the respective ends of the spring and having seats therefor, a bolt having a head that engages one thimble-piece and a nut that engages the other thimble-piece and is provided with an eye, and a sheath having caps with which the outer ends of the thimble-pieces engage, one of said caps having an eye.

5. The combination with a wheel and its shaft or axle, of a quill or sleeve loosely surrounding the shaft or axle and provided with laterally-projecting arms, and a plurality of links having springs that are placed under compression by rotation of the quill or sleeve in either direction.

6. The combination with an electric motor comprising an armature and a quill or sleeve therefor, of a car-truck one of the axles of which is surrounded by said quill or sleeve and a set of links connecting one of the truck-wheels with the quill or sleeve each of which has a spring that is compressed by the rotation of the motor-armature in either direction.

7. A link for connecting a railway-motor armature with one of the truck-wheels which comprises a coil-spring, a sheath having an attachment device at one end and a connecting-rod having an attachment device at the opposite end, said parts acting to compress the spring when said attachment devices are forced away from each other and also when they are forced toward each other.

8. An extensible and compressible link comprising a sheath having an eye at one end and an opening at the other end, a coil-spring, two thimble-pieces against which the respective ends of the spring rest and a connecting member having an eye at its outer end and making opposing engagement with said thimble-pieces.

In testimony whereof I have hereunto subscribed my name this 3d day of May, 1904.

KARL F. ELERS.

Witnesses:
BIRNEY HINES,
J. C. MORSE.