

H. GREGORY, Jr.

Elastic Connections for Riggings, &c.

No. 149,745.

Patented April 14, 1874.

Fig. 1.

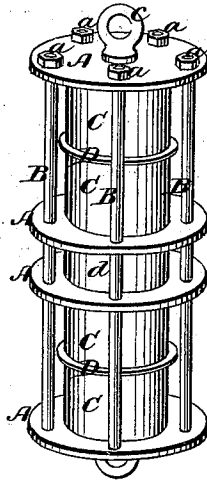
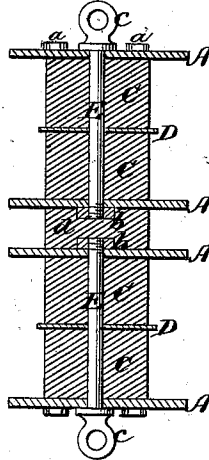


Fig. 2.



WITNESSES

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IMPROVEMENT IN ELASTIC CONNECTIONS FOR RIGGING, &c.

Specification forming part of Letters Patent No. **149,745**, dated April 14, 1874; application filed November 12, 1873.

To all whom it may concern:

Be it known that I, HANSON GREGORY, JR., of Rockland, in the county of Knox and State of Maine, have invented a new and useful Improvement in Connecting-Shackles; and I do hereby declare the following to be a full, clear, and exact description of the same, which will enable those skilled in the art to construct and use the same, reference being had to the accompanying drawings, which form part of this specification.

Figure 1 is an upright perspective view of the device. Fig. 2 is a vertical central section of the same.

Two series of cylindrical rubber springs, situated in a cradle provided with double heads, which are connected together by rods, and each of the series of springs having at their interior bases circular disks provided with perforations, through which the said rods pass, thus allowing the interior disks freely to move longitudinally on the connecting-rods, have heretofore been employed in connection with eyebolts, one for each series of springs, and passing through the axes of the cylindrical series of springs and the double head, thereby allowing the interior disks to move freely on said connecting-rods when actuated by a force applied to the eyebolts. In this construction an open space is left between the interior disks, and any strain on the eyebolts compresses the springs and retracts the eyebolts beyond the end heads, the eyebolts and springs regaining their normal position when the strain is removed, thus forming an elastic connection, the advantages of which are obvious.

The elastic connection which I have above described is, however, objectionable, for the following reasons: An open space, as above stated, is left between the interior disks, and when any strain is made on the eyebolts, as in towing, for example, the obvious effect would be to compress the springs and partially retract the eyebolts beyond the outer faces of the end heads of the elastic connection. If one of the towing-cables in this condition were to break from the strain which often occurs, the eyebolts thus retracted from the end heads would suddenly be projected forward, as an arrow from a bent bow, with a

force equal to the elastic force of the compressed springs, and, there being an open space between the disks and no resistance offered, the elastic force of the springs, together with the momentum acquired by the eyebolts, would tend to break the parts, particularly the shoulders near the eyes of the eyebolts, which, being impelled forward by the elastic force of the springs, would strike against the double heads. The open space between the interior sliding disks is likewise objectionable for another reason, which is, that it is extremely liable, in warping in a cold climate, to be filled with ice or floating matter, such as sticks or floating sea-weed. In towing, also, the cables, when no strain is upon them, are apt, in comparatively shallow water, to rest at times upon the bottom of the sea; and under such circumstances the open space between the interior disks is extremely liable to become clogged with mud and sand, and thus, as in the case of being clogged with ice or floating material, the elastic connection will become in a great degree inoperative. To remedy these defects is the object of my invention; and to these ends it consists in the introduction, in the elastic connection above described, of a rubber cylindrical spring, which occupies the open space in the above-mentioned construction, the spring performing the double functions of taking up the recoil of the outer series of springs and preventing breakage of the parts, and at the same time filling up the said open space to prevent the accumulation of ice, mud, or floating material, which tends, by filling up the open space, to render the connection inoperative to a great degree.

In the drawings, A A are metal disks, having holes near their outer edges, through which rods B pass. There are four of these disks and five rods in this instance; but it is evident that the number of these may be increased or diminished, as desired. C C C C are circular sections of rubber or other suitable elastic substance or material. D D are small disks between the sections of rubber, which serve to steady and keep the same in place and guide the drawing-rods. The rods B are screw-threaded at their opposite ends, on which are placed nuts *a*, or the rods may be headed. E E are the drawing-rods, which pass loosely

through the centers of the disks and sections, and have upon their inner ends nuts *b b*, each resting upon a disk, *A*. The outer ends *c c* of the drawing-rods I prefer to form into rings, as shown; but hooks may be used, or otherwise, as is obvious. The rods *B* prevent the outer disks from separating, and hold all of the said disks in the same relative position, one to the other, and still allow them to move in the direction of the rods, or longitudinally. The drawing-rods, as they pass through the rubber sections *c*, hold them in place, and these sections are secured and protected by the outer rods *B*. Between the central disks *A* is placed a spring, *d*, of any suitable material or substance, the object of which is to relieve or take up any recoil of the other springs situated on either side.

The device operates as follows: The attaching-gear, ropes, chains, or rigid connections are attached to the rings or hooks of the drawing-rods, and any force or strain applied to these causes the inner disks to move in opposite directions or outward, and thus gradually compress the springs *C*, giving an elastic and steady strain.

The shackle may be changed and used, if desired, as follows, viz: One of the interior disks *A* and the pulling-rod corresponding thereto could be removed, and a head or nutted ring or hook be attached to one of the outer disks *A*. For light work this would answer.

I am aware that elastic connections have heretofore been employed with two series of springs in a cradle, each series having an eyebolt passing through them, and an open space between them; and I therefore lay no claim to such invention.

What I claim, and desire to secure by Letters Patent of the United States, is—

The heads *A A*, connected by the rods *B B* and springs *C C*, separated by the disks *D D* and eyebolts *E E*, in combination with the rubber cylindrical spring *d*, to receive the recoil of the series of springs on each side of it, and fill up the space between them, the whole being constructed, arranged, and operating in the manner and for the purpose set forth.

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Witnesses:

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