W. EPPELSHEIMER.

TIGHTENING AND STRETCHING ROPES, BELTS, &c.

No. 193,939. Patented Aug. 7, 1877.

Fig. 1.

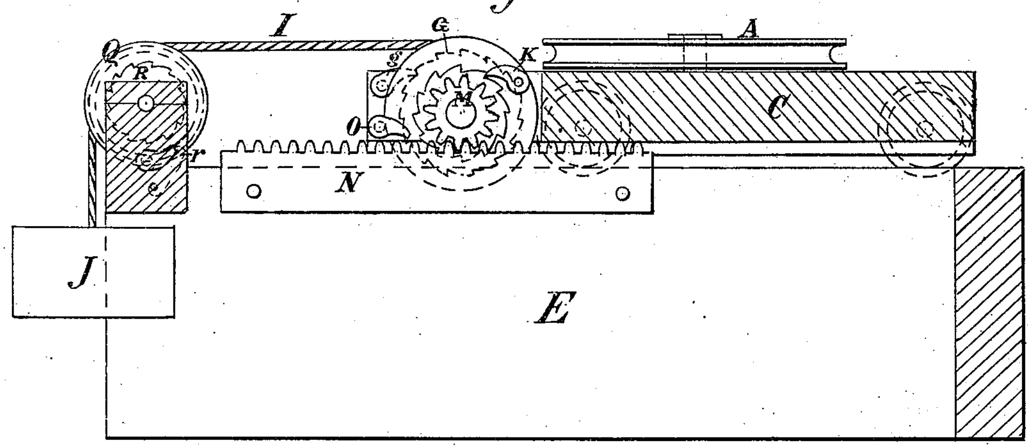


Fig. 2.

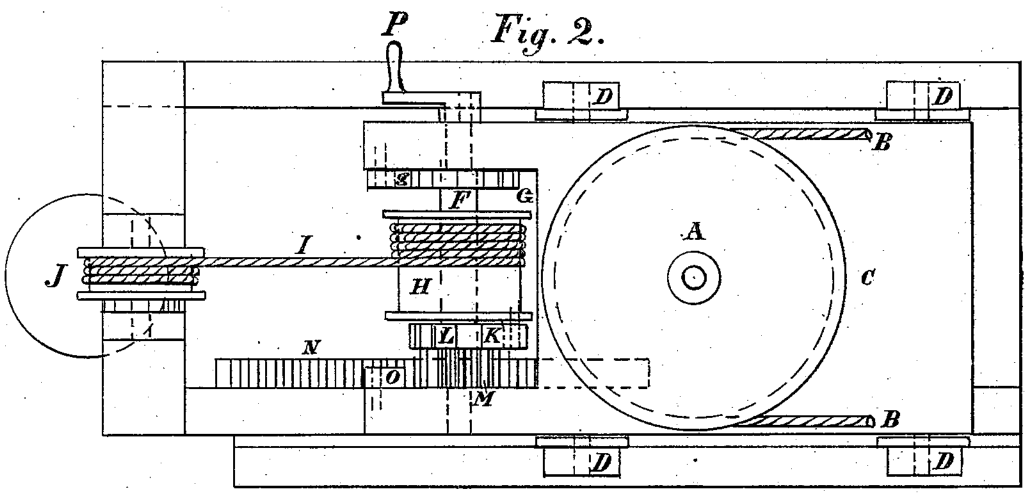


Fig. 3.

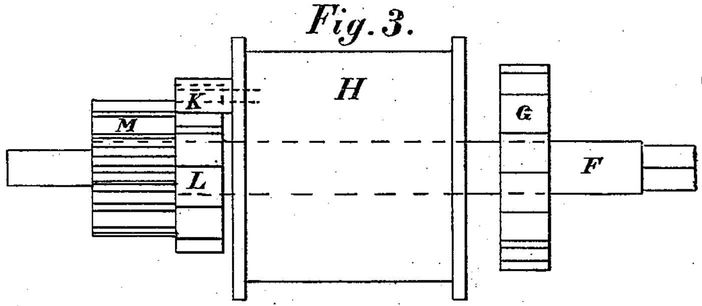
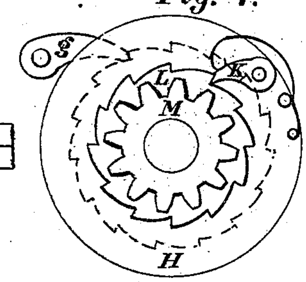


Fig. 4.



Witnesses:
H. J. Hüttner.
Julius Jacobs

Inventor:
William Eppelsheimer

UNITED STATES PATENT OFFICE.

WILLIAM EPPELSHEIMER, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN TIGHTENING AND STRETCHING ROPES, BELTS, &c.

Specification forming part of Letters Patent No. **193,939**, dated August 7, 1877; application filed May 16, 1877.

To all whom it may concern:

Be it known that I, WILLIAM EPPELSHEIMER, of San Francisco, in the county of San Francisco, State of California, have invented certain new and useful Improvements in Tightening and Stretching Ropes, Chains, or Bands, &c.; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The object of my invention is to furnish a device by which the endless rope, &c., for hauling or transmission of power may always be kept at a certain tension by a weight, which is attached to the apparatus in such a way that it will yield when the rope is subject to a greater strain than intended, the limits of which can be perfectly regulated, or that the weight cannot yield at all, however great the strain may be to which the rope is exposed.

There have been heretofore two ways to stretch the rope—first, by attaching a weight to a frame either sliding or mounted on wheels, which carries the rope or chain pulley; secondly, by applying a block or screw to it. In the first way the rope is stretched automatically in proportion to the weight applied. If the rope is subjected to a greater strain than that which half of the weight exerts it will yield. As this weight is usually made as light as circumstances permit, the rope is subject to jerks when power is suddenly applied. This jerking is avoided when the rope is stretched, as in the other way; but this requires considerable attention.

My invention combines both systems. It allows the stretching of the rope automatically, and prevents the yielding either entirely, or only to such a force as is desired.

Referring to the accompanying drawing, Figure 1 is a longitudinal section. Fig. 2 is a ground plan. Fig. 3 is a drawing of the working mechanism, drawn to a larger scale. Fig. 4 is a side view of the latter.

A is the pulley around which the rope B is stretched. On the rails E E run wheels D D D D, carrying the frame C, on which is mounted the pulley A. The frame C carries also a shaft, F, to which is keyed a ratchet-wheel, G, and a drum, H. The pawl *g*, for the ratchet-wheel G, is fastened onto the frame C. Around the drum H winds the chain or rope I, onto which is attached the weight J, by which the rope B is stretched. On one side of the drum H is the fulcrum for a pawl, K, which is pressed into a ratchet-wheel, L, whose teeth stand in opposite direction to those on G. L is loose on shaft F, but is firmly connected to a pinion, M, also loose on F, which gears into a rack, N.

It will be easily seen that if the drum H turns in one direction the pawl K glides over the teeth of ratchet-wheel L, and does not communicate any motion to it, whereas if the drum H turns the other way the pawl K acts as a coupling, taking the ratchet-wheel L, and also the pinion M, along. Instead of ratchet-wheel L and pawl K, any other suitable clutch-coupling acting automatically may be applied.

It will be seen that when the rope B is slack the weight J will pull on drum H upon shaft F, which is prevented from turning by ratchet-wheel G, and will move the frame C in opposite direction of the rope B. The clutch L will be out of connection with the drum H, and let the pinion M move loosely in the rack N. As soon as an excess of pressure on the rope B is produced, by change of temperature or other causes, then the frame C will move in an opposite direction, which causes the pinion M to revolve in rack N, and produce by the coupling L a turning of the drum H, winding up the weight J. The unwinding of the weight will be prevented by the ratchet-wheel G and pawl *g*. The force to move the pulley A in an opposite direction as it is pulled by the weight J is regulated by the difference of the diameters of the drum H and the pinion M. Should the frame C not move in the contrary direction at all, then the pawl O, fastened to the frame C, is let down into the rack N. In such a case I may omit the shaft F, with its mechanism attached to it, and fasten the weight J to the frame C, as usual, and use only the rack N and pawl O.

Should the stretching-weight J touch the floor, I shorten the stretching-chain I by turning shaft F by means of crank P, or other suitable mechanism, and winding the chain I

around drum H. If it should not be desirable to increase the difference between the radius of the pinion M and the drum H much, then an equal effort for retarding may be obtained by applying a friction-brake to shaft F or drum H.

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

1. The mounted pulley A on frame C, in combination with shaft F, ratchet-wheel G, and its pawl *g*, drum H, with weight J, coupling L, pinion M, and rack N, substantially as shown and described.

2. The mounted pulley A on frame C, with stretching-weight J, in combination with pawl O and rack N, substantially as shown and described.

3. The mounted pulley A on frame C, in combination with the shaft F, having the ratchet-wheel G, its pawl *g*, drum H, with weight J, pawl O, and rack N, substantially as shown and described.

WILLIAM EPPELSHEIMER.

Witnesses:
A. V. HEYNE,
J. C. CEBRIAN.