(No Model.)

W. MURPHY.

SURGE RELIEVER.

No. 412,113. Patented Oct. 1, 1889.

Fig. 1.

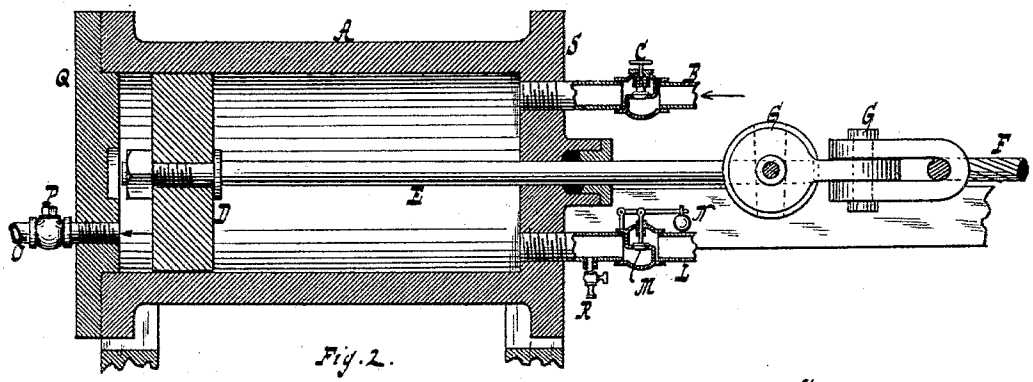


Fig. 2.

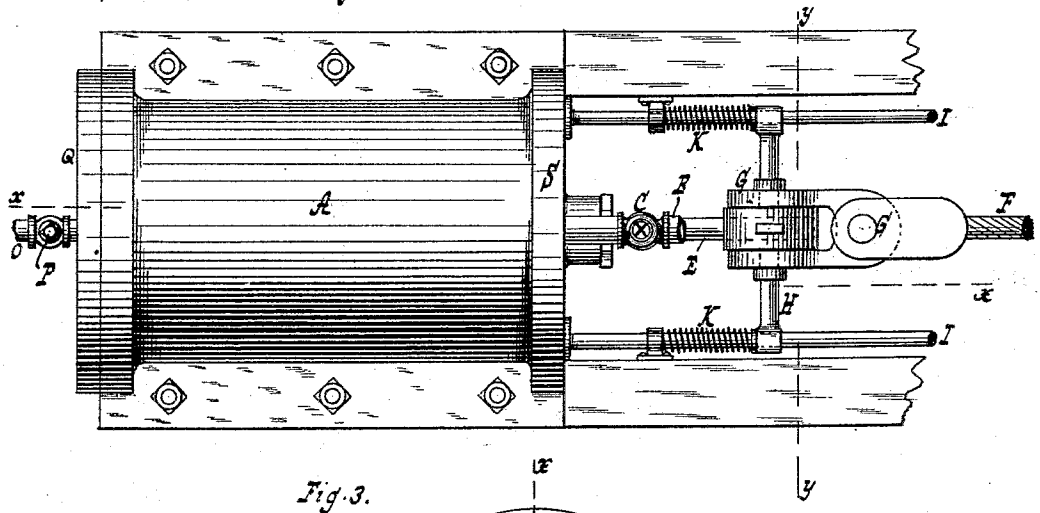
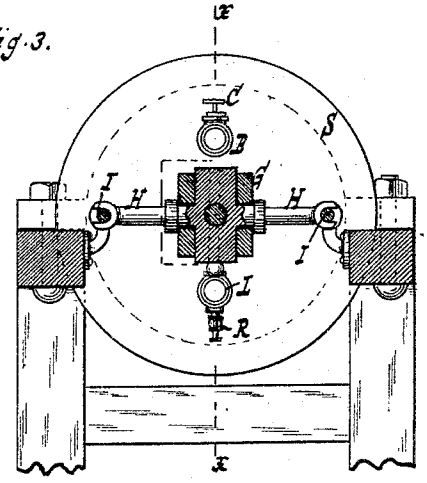


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM MURPHY, OF NEW YORK, N. Y.

SURGE-RELIEVER.

SPECIFICATION forming part of Letters Patent No. 412,113, dated October 1, 1889.

Application filed June 6, 1889. Serial No. 313,369. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MURPHY, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Surge-Relievers, of which the following is a specification.

This invention relates to a device for relieving the strain on a cable in towing vessels or saving life and property in case of vessels in distress, as set forth in the following specification and claims and illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of a surge-reliever along *x x*, Fig. 3. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a section along *y y*, Fig. 2.

Similar letters indicate corresponding parts.

In the drawings, the letter A indicates a cylinder into which steam or air is forced through the pipe B and inlet-valve C. The piston D has its rod E connected to a hawser or cable F. The cable F, when attached to a tow or to a vessel, is at times subject to violent jerks when the surge or waves strike the tow or vessel. The strain of such jerks is eased or relieved by the piston D being drawn toward the head S of the cylinder, thus compressing the steam or air between the piston D and head S and gradually bringing the piston to a stop. The valve C, as seen, is arranged to allow ingress of steam or air through inlet B, but to prevent egress through such pipe. When the cable F slackens, the piston D is forced toward the head Q, thus pulling in the slack of the hawser.

The cable F is secured to the rod E by a universal joint G G, so that the cable is free to swing laterally. The cross-head H of rod E is guided by the guides I, and springs K tend to hold the piston D a certain distance from the cylinder-head Q when the parts are at rest.

The head Q has an opening O, provided with a valve P. To prevent the pressure between the piston D and head S from becoming excessive, the outlet L has an outlet-valve M, having a pressure attachment, such as a spring or weight N. A drip R can be used to draw off condensed steam or moisture.

The pipe O can be connected with a condenser so as to cause a vacuum to be produced between the piston D and cylinder-head Q, thus aiding the pressure between the piston D and cylinder-head S in preventing the piston being moved toward the head S.

This device is a serviceable surge-reliever or automatic tight-rope machine, as it keeps a tight rope between a tug and tow or between two vessels between which coal and passengers are transferred.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a hawser, a piston connected therewith, and a cylinder containing the piston and having one end provided with two independent valves, one opening to admit a fluid into the cylinder at one side of the piston and the other connected with a pressure attachment and opening at a certain pressure to permit the outlet of a fluid from the cylinder at that side of the piston to which such fluid was admitted, substantially as described.

2. The combination, with the cable or hawser F and a piston-rod and piston connected to said hawser, of a cylinder for said piston, said cylinder being provided at one of its heads with an inlet-valve C, an outlet-valve M, having a pressure attachment, and an opening O and valve P, situated at the other cylinder-head, substantially as described.

3. The combination, with the cable or hawser F and a piston-rod and piston connected to said hawser, of a cylinder for said piston, said cylinder being provided with an inlet-valve C and an outlet-valve M, having a pressure attachment, a cross-head H for the piston-rod, guides I for said cross-head, and springs K, acting on said cross-head, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WM. MURPHY.

Witnesses:
WILLIAM C. HAUFF,
ERNST F. KASTENHUBER.