

(No Model.)

2 Sheets—Sheet 1.

C. E. NEWELL.

COMPENSATING MECHANISM FOR TOWING VESSELS.

No. 561,172.

Patented June 2, 1896.

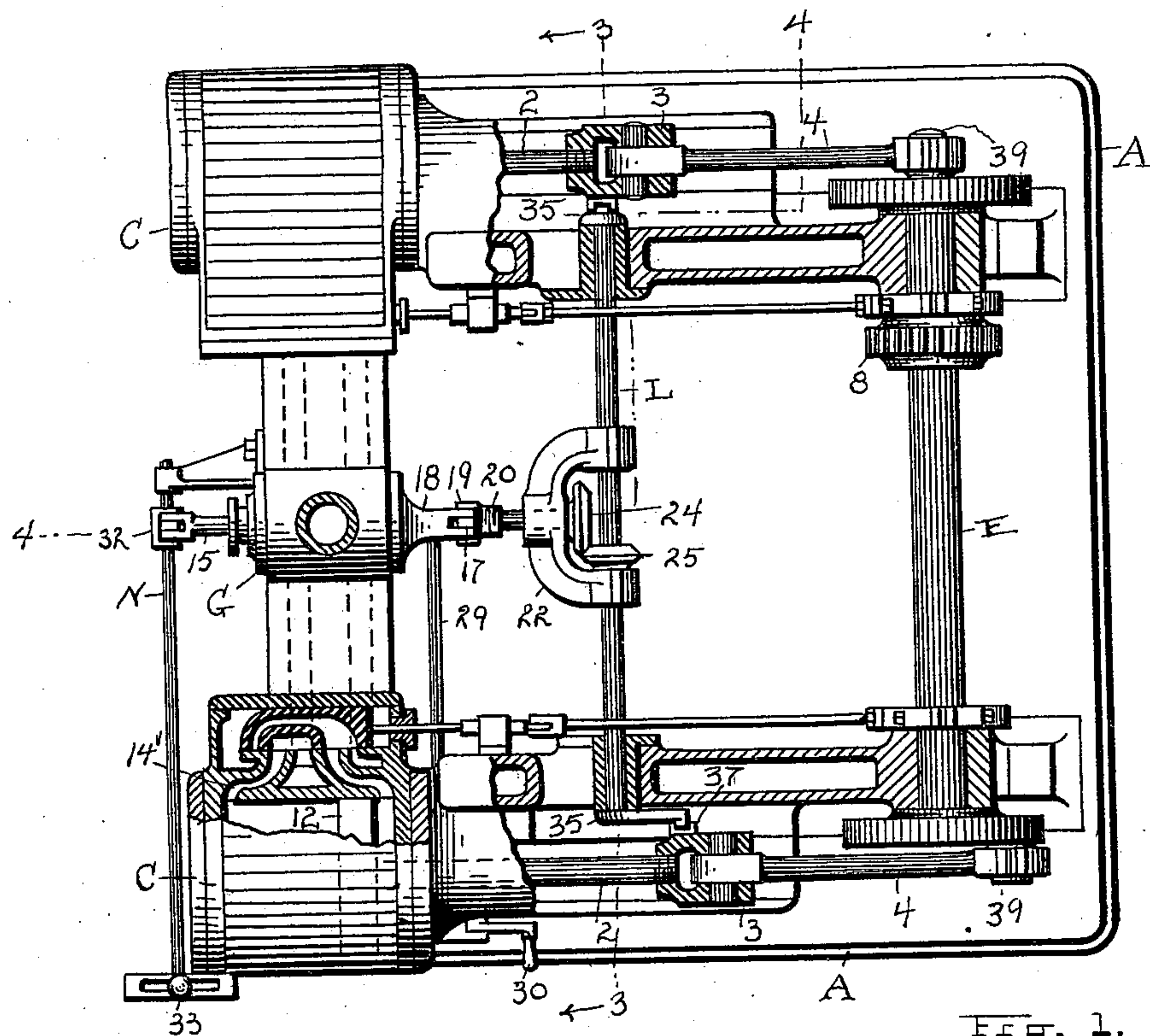


FIG. 1.

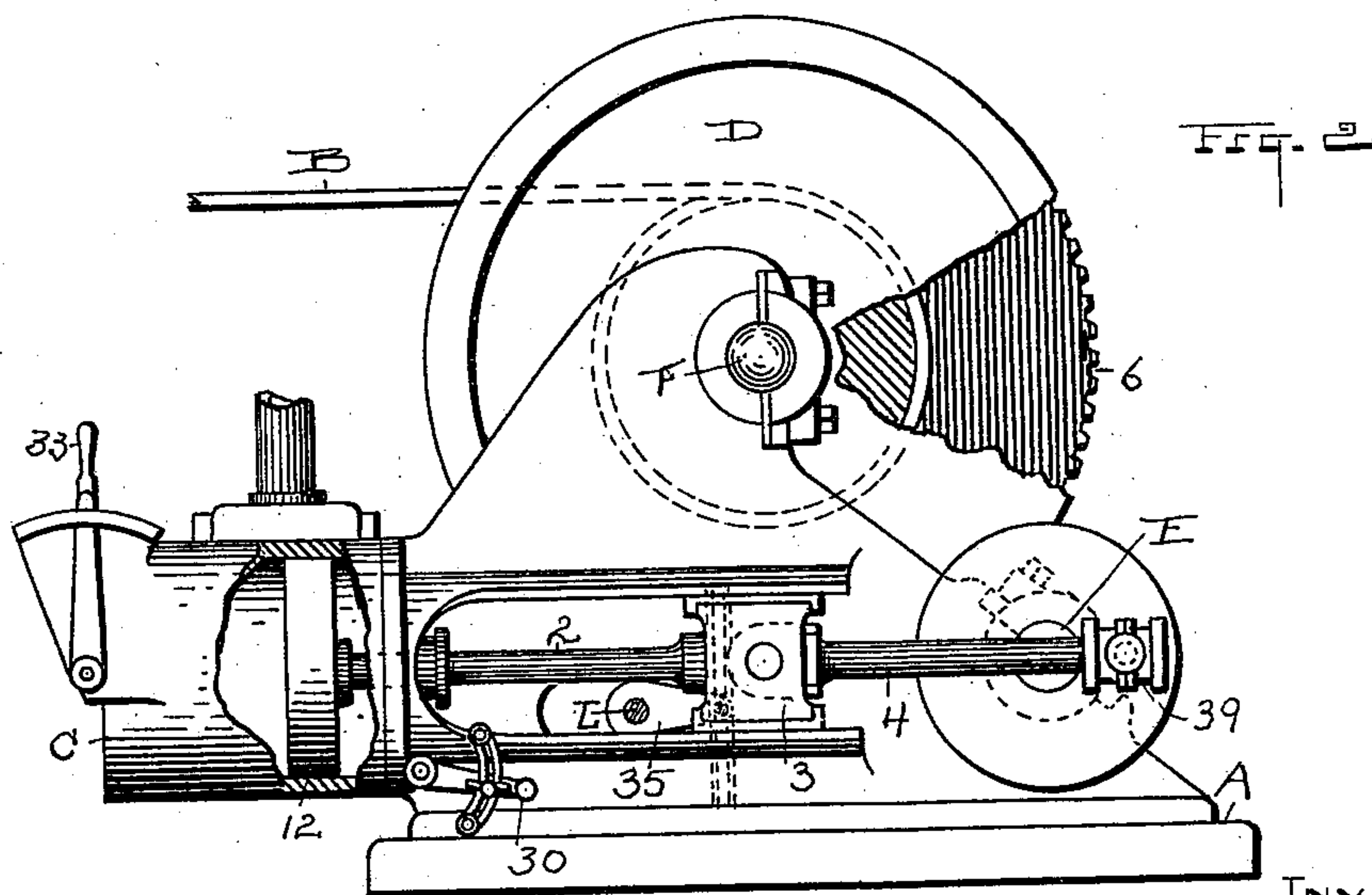


FIG. 2.

ATTEST

*R. B. Wozer*  
*H. E. Myrdra*

INVENTOR.

*Charles E. Newell*

By *H. J. Fisher* ATTORNEY

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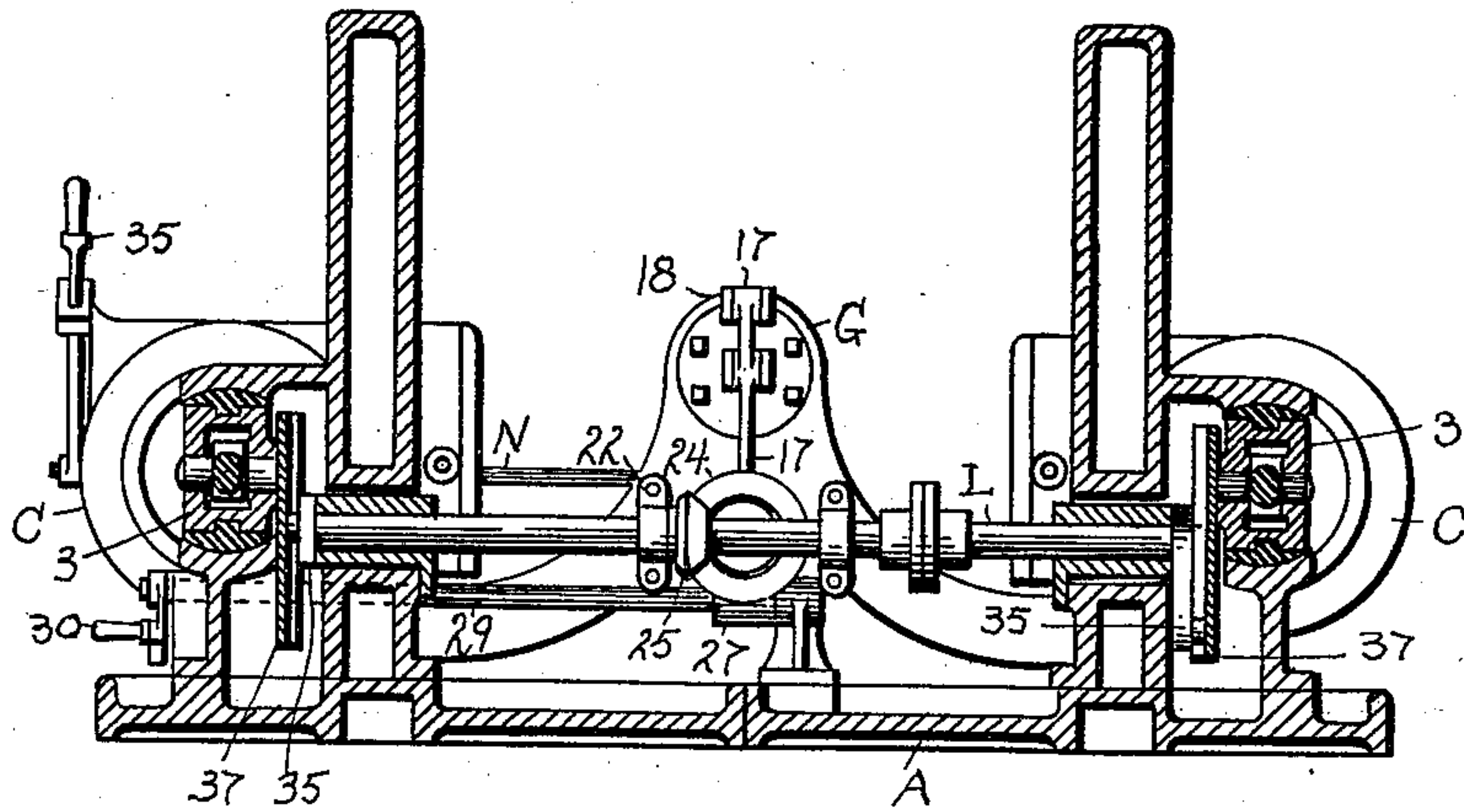


FIG. 3.

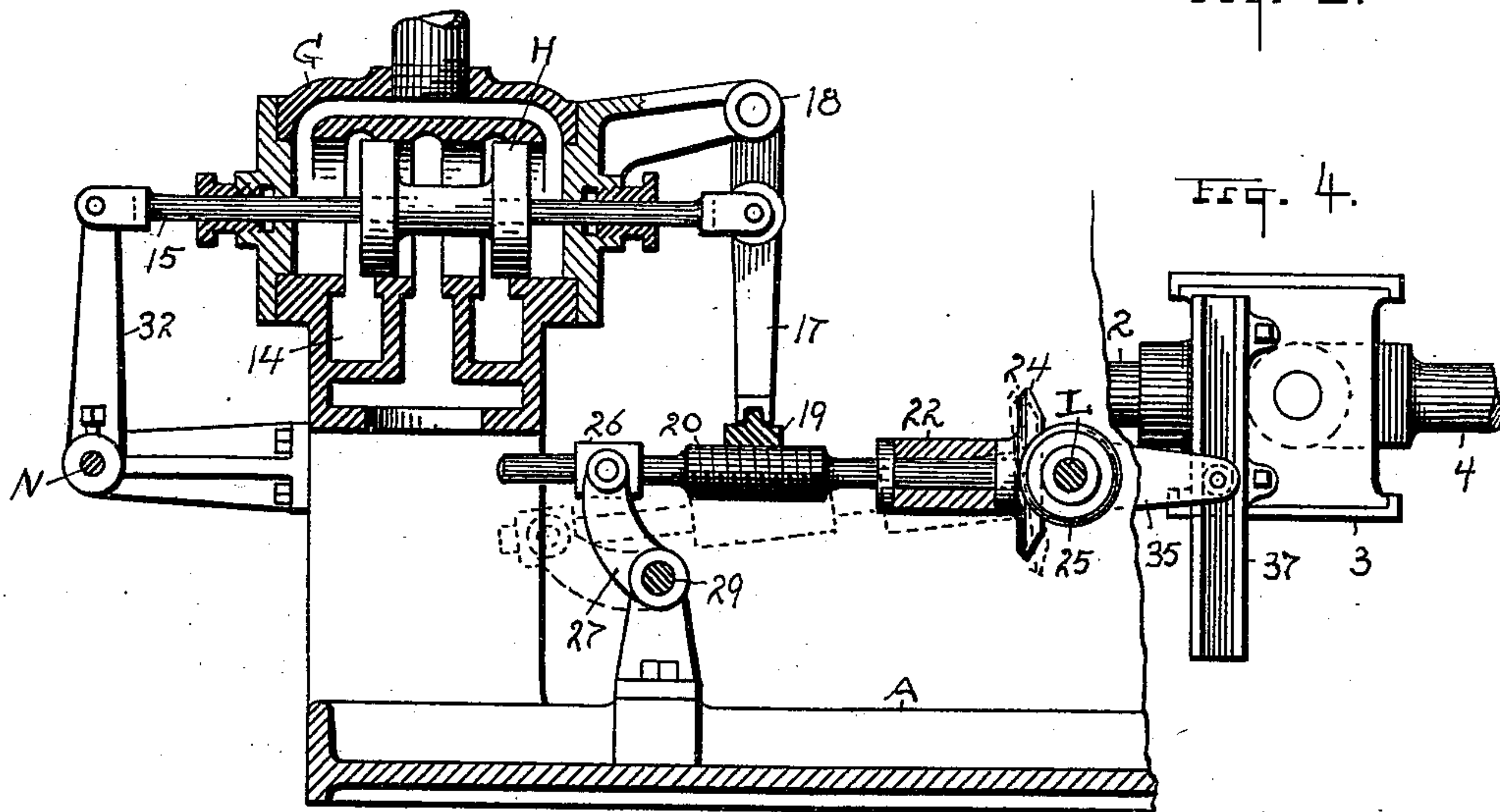


FIG. 4.

ATTEST

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# UNITED STATES PATENT OFFICE.

CHARLES E. NEWELL, OF CLEVELAND, OHIO, ASSIGNOR TO THE CHASE  
MACHINE COMPANY, OF SAME PLACE.

## COMPENSATING MECHANISM FOR TOWING VESSELS.

SPECIFICATION forming part of Letters Patent No. 561,172, dated June 2, 1896.

Application filed January 13, 1896. Serial No. 575,333. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES E. NEWELL, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Compensating Mechanism for Towing Vessels; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improved compensating mechanism for towing vessels; and the object of the invention is to provide means for relieving a towing-line of the strain that comes on it in heavy seas, which cause the tow to pitch and roll and in which the line is relaxed one moment and strained with the severest tension the next moment, imperiling the line and the vessel.

To these ends my invention consists in means which will temporarily relax the tension of the line at the instant of strain and recover the line when the strain has passed, all substantially as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view, partly in section, of my improved mechanism. Fig. 2 is a side elevation of said improved mechanism. Fig. 3 is a transverse sectional elevation on line 3 3, Fig. 1. Fig. 4 is a sectional elevation on line 4 4, Fig. 1.

The mechanism shown in the several views comprises a suitable base and frame A, upon which the operative parts are supported and which are designed to be located on the deck of the tow at about the place where the tow-line usually is hitched.

Instead of the usual connection on the deck for the line or cable B, I wind the cable about the drum D, with sufficient laps about the drum at all times to serve all the purposes of the invention. This drum is constantly free to rotate and pay out the line, subject, however, to the means provided for holding it steady at the place of normal pull or strain through the towing-line, so that when only the normal and regular pull is on the drum will be

held steadily at a given place and draw the load; but the mechanism holding it thus in place is of a compensating character, and while, obviously, many different mechanisms to serve this purpose will at once suggest themselves to any skilled mechanic, I have adopted for my use a pair of common and well-known engines C, having each a piston-rod 2, a cross-head 3, and a pitman 4, connected by crank or other well-known means with the cross-shaft E. This shaft is supported in suitable bearings in the main frame A and is parallel to the shaft F, carrying drum D. The said drum has a large gear 6, which meshes with a pinion 8 on the shaft E, and thus any and all tension or pull on cable B is communicated through the drum D and its gear 6 to pinion 8, shaft E, and thence back through the connections 4 3 2 to the engines C. Now these engines are used with steam or any other expansible agent and are provided with an automatic valve mechanism in valve-chamber G, say, as here shown, although this mechanism may be varied considerably, or indeed wholly changed, and still serve the same purpose and be within my invention, the object in any case being to have a mechanism which will automatically govern the flow of the power agent according to the needs of the machine and give more or less pressure in the engine-cylinders according as the cable-drum is under more or less strain.

It will be understood that in towing there is a constant and regular tension on the cable except, as in very rough weather, the pitching of the vessels may momentarily and repeatedly relax the tension and slack the cable. Extra or excessive tension is anticipated and provided for in the engine-cylinders and the valve-mechanism by so arranging the parts that the greater the strain the greater the cushioned resistance, the said cushion, however, being always present in sufficient degree to carry the load. Thus, referring to the drawings, we have the engine-pistons in position relatively—for example, as shown—though this is not an arbitrary position or arrangement, and both pistons are alike cushioned.



ioned—say by steam—in front of the pistons 12. In this position the valve H is open for the steam to enter the cylinders through the passage-ways 14 14'. The said valve has a  
 5 rod 15 extending at both ends through to the outside of the valve-chamber G, and at one end it is connected with a lever-bar 17, pivoted at its upper end to an arm 18, projecting from the valve-chamber G, and at the  
 10 other end has a half-nut 19, seated and operating on the threaded rod or shaft 20. This rod is supported at its inner end on a yoke 22, which is pivoted on the cross shaft or rod L and has a bevel-gear 24, which meshes with  
 15 a bevel-gear 25 on the said shaft L. At its opposite or outer end the rod 20 is supported in a sleeve 26, carried by an arm 27, rigid with an operating-rod 29, extending in from the side of the machine and having a lever  
 20 or handle 30 to rotate said rod, and thus raise or lower the sleeve 26 and rod 20, supported by the inner arm 27 on said rod. In this way I can throw the half-nut 19 and rod 20 out of engagement when it is desirable to do so—  
 25 as, for example, when for any reason it is necessary to operate the valve H independently of its automatic operating mechanism. In this case the valve is operated through the shaft N, having a rigid arm 32, connected  
 30 with the outer end of valve-rod 15, and the handle 33, Fig. 2.

The rod 20 is rotated and the valve H thereby actuated through the line of mechanism above described, extending to shaft or rod L,  
 35 and this rod in turn is operated by its end levers 35, engaging in the vertical channeled bars 37 on the inside of each of the sliding cross-heads 3. The parts shown in Fig. 4 are the parts which belong on the farther side of  
 40 the machine, as shown in Fig. 1, but are brought out into the relation of the corresponding parts on the near side of the machine, as appears in Fig. 1, so as to more clearly show their construction than would  
 45 otherwise be convenient. The levers 35 have each a projection working in the corresponding channel 37, and said levers stand at right angles to each other, so as to insure their operation at all times whatever the position of  
 50 one or the other in the said channels. The said levers also are of a length corresponding exactly to the throw of the pitman 4 on its crank 39, and thus the said parts work harmoniously together.

55 In operation if there be a quick or severe pull on cable B the gear 6 will rotate to the left, Fig. 2, and pinion 8 to the right. This of course will cause the cross-heads 3 to slide toward the engine-cylinders, and the shaft L  
 60 and its pinion 25 would be rotated, and the connecting mechanism running thence to valve H would cause said valve to open proportionately to said movement. Assuming then that this valve be already slightly open,  
 65 it would, by letting in more steam, introduce

still more pressure in front of pistons 12, and the cushioning effect thereof would be increased, as already described. Then as soon as the tension on cable B is relaxed the pistons would move back under said pressure to  
 70 normal position and the slack of cable B would be instantly taken up by a counter rotation of the drum D. Thus I am enabled to control the valve H automatically without any  
 75 hand manipulation whatever and to restore all the parts to their normal position after each crisis, where they are ready to respond again and again as the demand for accommodation is repeated.

The valve mechanism and connected parts 80 are partly single and partly double, as shown, while the pistons are double or in pairs, and the same reference letters and figures relate to the same parts on both sides of the machine.

When the tension on the drum is relaxed 85 and the pistons move back, the rod 20 is turned in the reverse direction and the nut 19 travels to the left and carries the valve H to the left also, thus partly cutting off again the steam-pressure.  
 90

What I claim is—

1. The drum and the engine and mechanism operatively connecting the same, and a pressure-regulating valve for the engines, in combination with a cross-rod having levers at its  
 95 ends and vertical guideways on the cross-heads of the said engines to rotate said rod, a pivoted lever connected with the stem of the said regulating-valve and operating mechanism for said valve between said lever and the  
 100 said cross-rod, substantially as described.

2. The cable-drum, the engines and a cross-head for each engine connected with the shaft of said drum, in combination with a pressure-regulating valve for the engines, a cross-rod  
 105 having levers at its ends at different angles and connected with said cross-heads, a rotating shaft actuated from said cross-rod, and operating mechanism connecting said shaft with the said pressure-regulating valve, substantially as described.  
 110

3. The combination described, consisting of the pressure-regulating valve and the cross-heads of the engines, and mechanism connecting said cross-heads operatively with said  
 115 valve comprising a rotating shaft 20 and a half-nut in engagement therewith, and means to lower said shaft out of engagement with said nut, substantially as described.

4. The engines and the cable-drum and the  
 120 mechanism operatively connecting said parts, in combination with the cross-heads of the engine, a cross-rod operatively connected with said heads at its ends, the pressure-regulating valve for said engines, a vibrating lever  
 125 for operating said valve and mechanism connecting the said lever with the said cross-rod, substantially as described.

5. The machine having a drum, a shaft operated therefrom, the engines and mechanism  
 130



connecting said engines and shaft, in combination with a pressure-regulating valve for said engines, the cross-heads and a cross-rod operatively connected with the same at its  
5 ends, a shaft, gears between said rod and said shaft to rotate the shaft, and an arm actuated by said rod and operatively connected with the spindle of the said valve, whereby the

valve is automatically operated by the drum and the engines, substantially as described. 10

Witness my hand to the foregoing specification.

CHARLES E. NEWELL.

Witnesses:

H. T. FISHER,

H. E. MUDRA.