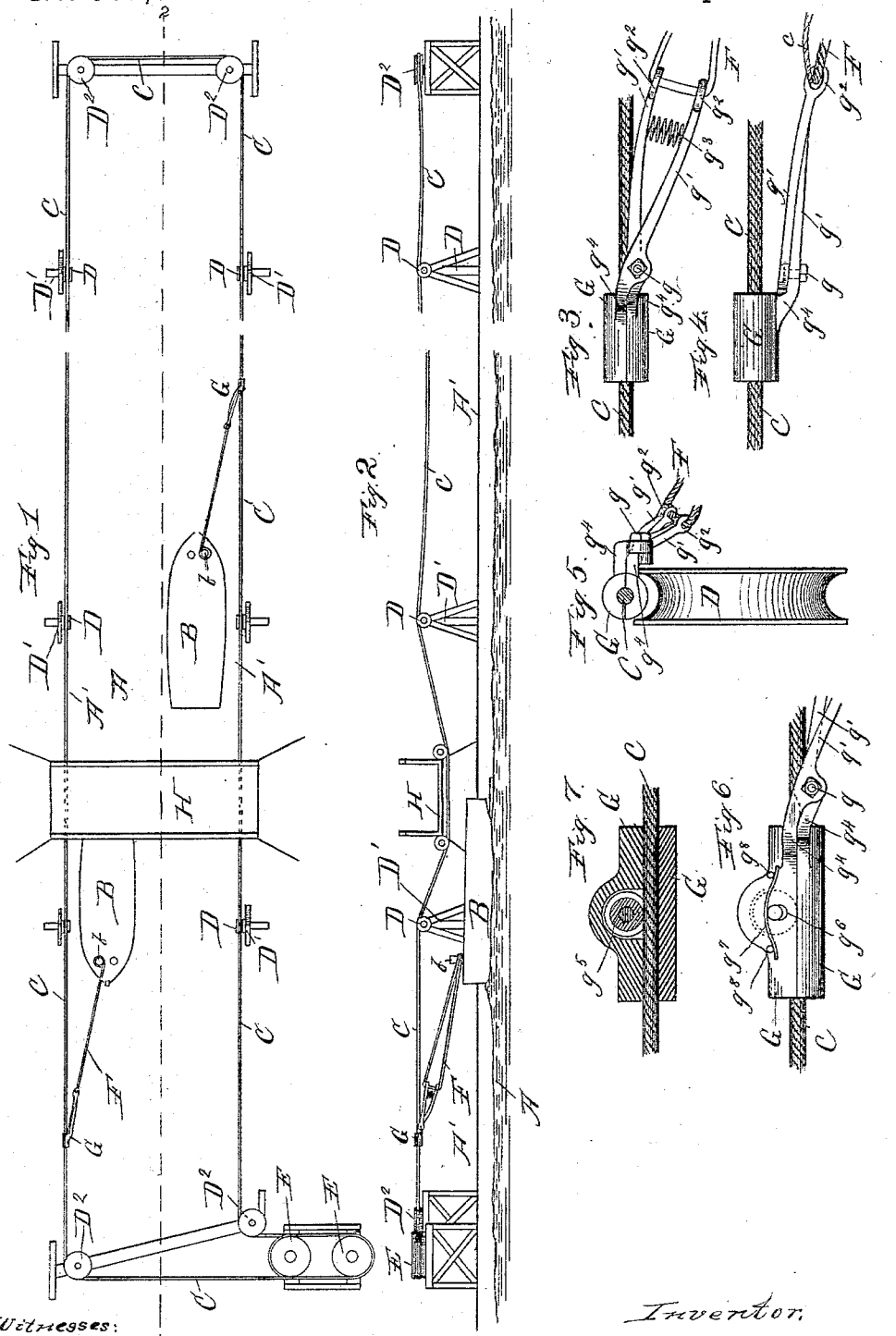
(No Model.)

# C. F. CASSLEMAN.

## SYSTEM AND APPARATUS FOR PROPELLING CANAL BOATS.

No. 381,675. Patented Apr. 24, 1888.



Witnesses:
Lew. B. Ellis.
A. W. Munday

Inventor.
Christian F. Cassleman.
By Munday, Evarts & Adcock
His Attorneys.

N. PETERS. Photo-Lithographer. Washington, D. C.

# UNITED STATES PATENT OFFICE.

CHRISTIAN F. CASSLEMAN, OF CHICAGO, ILLINOIS.

## SYSTEM AND APPARATUS FOR PROPELLING CANAL-BOATS.

SPECIFICATION forming part of Letters Patent No. 381,675, dated April 24, 1888.

Application filed November 28, 1887. Serial No. 256,323. (No model.)

*To all whom it may concern:*

Be it known that I, CHRISTIAN F. CASSLEMAN, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Systems and Apparatus for Propelling Canal-Boats, of which the following is a specification.

The object of my invention is to provide a system or means of propelling canal-boats rapidly by power, and at the same time produce no violent waves tending to wash the banks of the canal, which is the case where screw or other propellers are mounted on the canal-boat itself.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a plan or diagram view of a system and apparatus embodying my invention. Fig. 2 is a section or side elevation taken on or looking from the line 2 2 of Fig. 1. Fig. 3 is an enlarged detail side elevation of the gripping device. Fig. 4 is a plan view of the same. Fig. 5 is an end view showing the gripping device passing over one of the idler or cable-supporting pulleys, and Figs. 6 and 7 show a modified form of the gripping device.

In said drawings, A represents a canal; A', the banks of the canal; B, canal-boats; C, an endless cable; D, idler-pulleys supported on braced posts D' on each bank of the canal; $D^2$, the horizontal pulleys at the loop of the cable, and E the driving-pulleys. These driving-pulleys are driven by steam-engines or other suitable motive power, and they and their driving mechanism are or may be constructed the same as the driving-pulleys, mechanism, and engines of cable railways now commonly in use, and the construction of which is well known to those skilled in the art, and need not, therefore, be here shown or described in detail.

F represents the tow line or rope, and G is the gripping device by which the tow-line is removably connected to the cable C at any point thereon. This gripping device consists, essentially, of a pair of gripping-jaws, G G, pivoted together at $g$ and having lever-arms $g'$ $g'$, each furnished with an eye, $g^2$ $g^2$, for the tow-line to pass through. The tow-line is doubled upon itself after being passed through the eyes of the grip-arms and secured at both ends to the snubbing-posts $b$ of the boat, so that the tension upon the thus doubled tow-line will itself operate the grip-levers and firmly clamp the grip-jaws upon the cable C. A spring, $g^3$, between the grip-arms $g'$, serves to open the grip-jaws when the tension on the tow-line is slackened. The grip-arms $g'$ are both connected or attached to the grip-jaws G G at their inner or canal side edges near the meeting line of the jaws, as clearly indicated in Figs. 3 and 5, and said grip-arms are here provided with a horizontal shoulder or offset, $g^4$ $g^4$, so that said shoulders or offsets may ride over the rim of the pulleys, and also to prevent the grip-arms from striking or coming in contact with the pulleys as the grip passes the same.

The grip-jaws should be made circular in cross-section and about correspond in size to the groove of the pulleys D. Each of the grip-arms $g'$ $g'$ is provided with similar offsets or shoulders, $g^4$ $g^4$, so that when the cable passes under bridges, as H, which span the canal the cable may pass under the idler-pulleys D at the sides of the bridge, and the grip device be thus adapted to pass under such idler-pulleys as well as over the pulleys which are mounted on the supports D'. The supports D' should be planted as near the bank of the canal as practicable, and generally they need be of comparatively slight height. These supports for the cable-pulleys may be of any suitable construction. The construction, however, which I prefer to employ is a tripod of three posts secured together at the top, as indicated in the drawings. The inner one of these posts projects at its foot toward the canal, so as to brace the support against the side strain due to the inclined direction of the tow-line.

As shown in Figs. 6 and 7, I have provided one of the grip-jaws with a transverse friction-roller, $g^5$, which is journaled in slots $g^6$ in the grip-jaw and furnished with a strong spring, $g^7$, secured to the pins or projections $g^8$ on the grip-jaw. The function of this friction-roller in the grip is to produce a more gradual gripping of the cable by permitting the cable to slide through the grip-jaws over this friction-roller, as the grip-jaws are first closed, the spring forcing the roller in contact with the cable before the rigid surface of the jaw upon

which the roller is mounted comes in contact with the cable. Ordinarily, however, the length and elasticity of the tow-line itself will be such as to prevent any sudden strain upon the mechanism, and the starting of the boat may also be eased by the canal-boatman allowing the tow-line to slip slowly at the snubbing-post. This construction of the grip, as shown at Figs. 6 and 7, however, is the more improved and perfected form of my invention.

In operation, to release the grip from the cable all that is required is simply to slacken the tow-line at the snubbing-post of the boat. The tension on the gripping-jaws will be at the same time released, and the cable thus permitted to slide freely through the grip. The weight of the tow-line when the same is thus slackened will, however, be sufficient to keep the jaws closed around the cable, and thus to keep the grip in place thereon. If this tension or strain upon the grip-levers should be sufficient on account of the weight or length of the tow-line to cause the jaws to grip the cable, the spring $g^3$ may be made stronger to counteract this. I prefer that this spring should be made strong enough to entirely open the gripping-jaws and permit the grip to drop off the cable on the ground when the tension of the tow-line is entirely slackened and no strain exerted upon the grip-arms. The canal-boatman may thus either retain the grip in place on the cable while the cable slips through the same by simply keeping a slight tension on the tow-line, or he may permit the grip to become entirely disengaged from the cable, as he may desire. If desired, a guide-line, *c*, may be attached to one of the arms of the grip; but ordinarily this will not be required, as the cable will slip very readily and easily through the grip when the tension on the tow-line is slackened. To tighten the grip upon the cable, the operator simply tightens the tow-line around the snubbing-post, when the tension of the same upon the grip-arms will close the grip upon the cable. By arranging the grip-arms at a greater or less angle to each other the tension of the tow-line may be made to exert a greater or less force upon the grip-jaws, as may be desired. The tightness of the grip may also be varied by increasing or diminishing the length of the grip-arms or levers.

In passing from one cable to another the grips are of course first disengaged from the one cable and then attached to the next succeeding one.

The supports D may, if desired, be arched or spanned over the canal, and the idler-pulleys thus brought to or near to the middle line of the canal.

I claim—

1. The apparatus for propelling canal-boats, consisting of an endless cable with pulleys on which said cable travels journaled on suitable supports on the banks of the canal, grip devices suspended from and carried by said cable, and tow-lines connecting said grip devices with the canal-boats, said grip devices having jaws with longitudinal grooves to fit upon the cable, substantially as specified.

2. The apparatus for propelling canal-boats, consisting in the combination of an endless traveling cable, pivoted grip-jaws fitting upon and gripping the traveling cable and furnished with a pair of grip arms or levers, and a double tow-line passing in a loop through the eyes of said grip-arms, whereby the tension of the tow-line will close the jaws of the grip, said grip-jaws and lever being suspended from and carried by the traveling cable, substantially as specified.

3. The apparatus for operating canal-boats, consisting in an endless traveling cable and a grip suspended therefrom and carried thereby, consisting in jaws G G, fitting upon and gripping the cable, having arms $g'$ $g'$, pivoted together and furnished with eyes $g^2$ $g^2$ and spring $g^3$, for opening the same, and a doubled tow-line, F, passing through the eyes of said grip-arms and connected at both ends to the snubbing-post of the canal-boat, substantially as specified.

4. The combination of an endless traveling cable, idler-pulleys over and under which said cable passes, fitting upon and gripping the cable, grip-jaws G G, grip-arms $g'$ $g'$, pivoted together and having offsets $g^4$ $g^4$ to adapt said grip device to pass over and under said idler-pulleys, and a doubled tow-line connected to said grip-arms and attached to the boat, substantially as specified.

5. The apparatus for propelling canal-boats, consisting in an endless traveling cable, grip-jaws G G, fitting upon and gripping the cable, having pivoted arms $g'$ $g'$, one of said grip-jaws being furnished with a transverse friction-roller and a spring for forcing said roller into engagement with the cable when the jaws are closed, and a tow-line connecting said grip-arms with the canal-boat, substantially as specified.

Signed and dated at Chicago, Illinois, this 26th day of November, 1887.

CHRISTIAN F. CASSLEMAN.

Witnesses:

H. M. MUNDAY,

EDMUND ADCOCK.