(No Model.) 2 Sheets—Sheet 1.

A. SCHAUSTEN.

MEANS FOR PROPELLING CANAL BOATS.

No. 348,296. Patented Aug. 31, 1886.

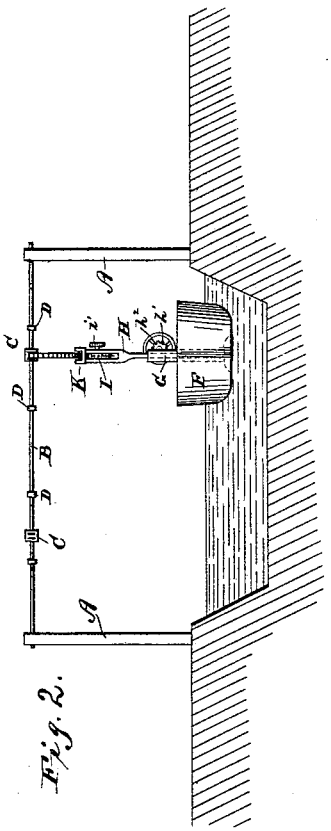
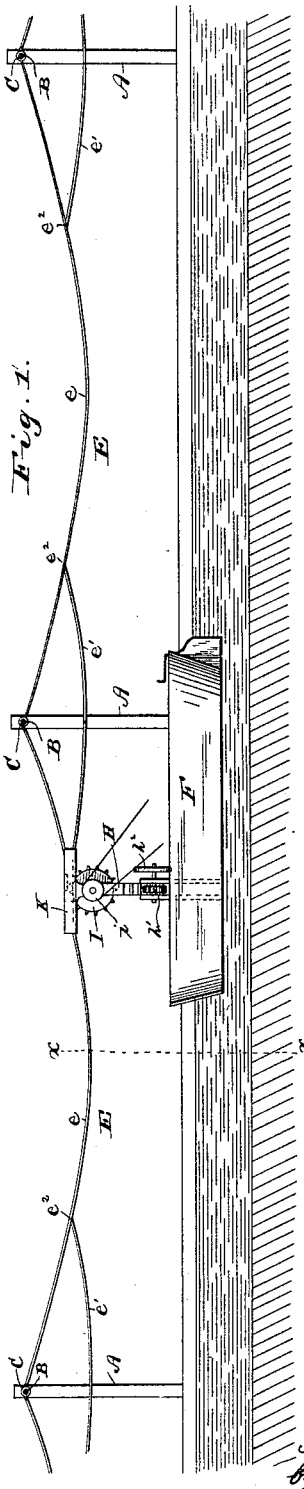


Fig. 2.



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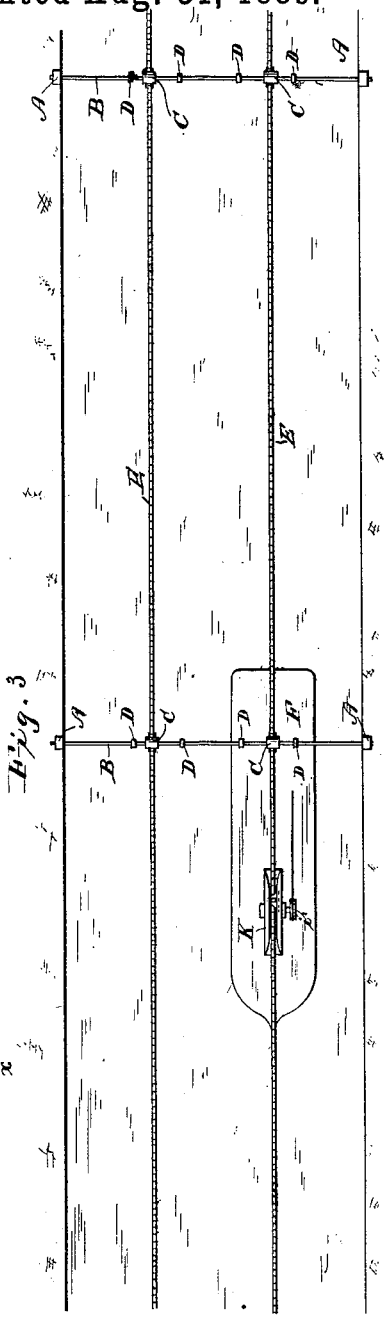

Fig. 3.

Witnesses.
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James M. Dumont.

Inventor.
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by Frank D. Johns
his Attorney.

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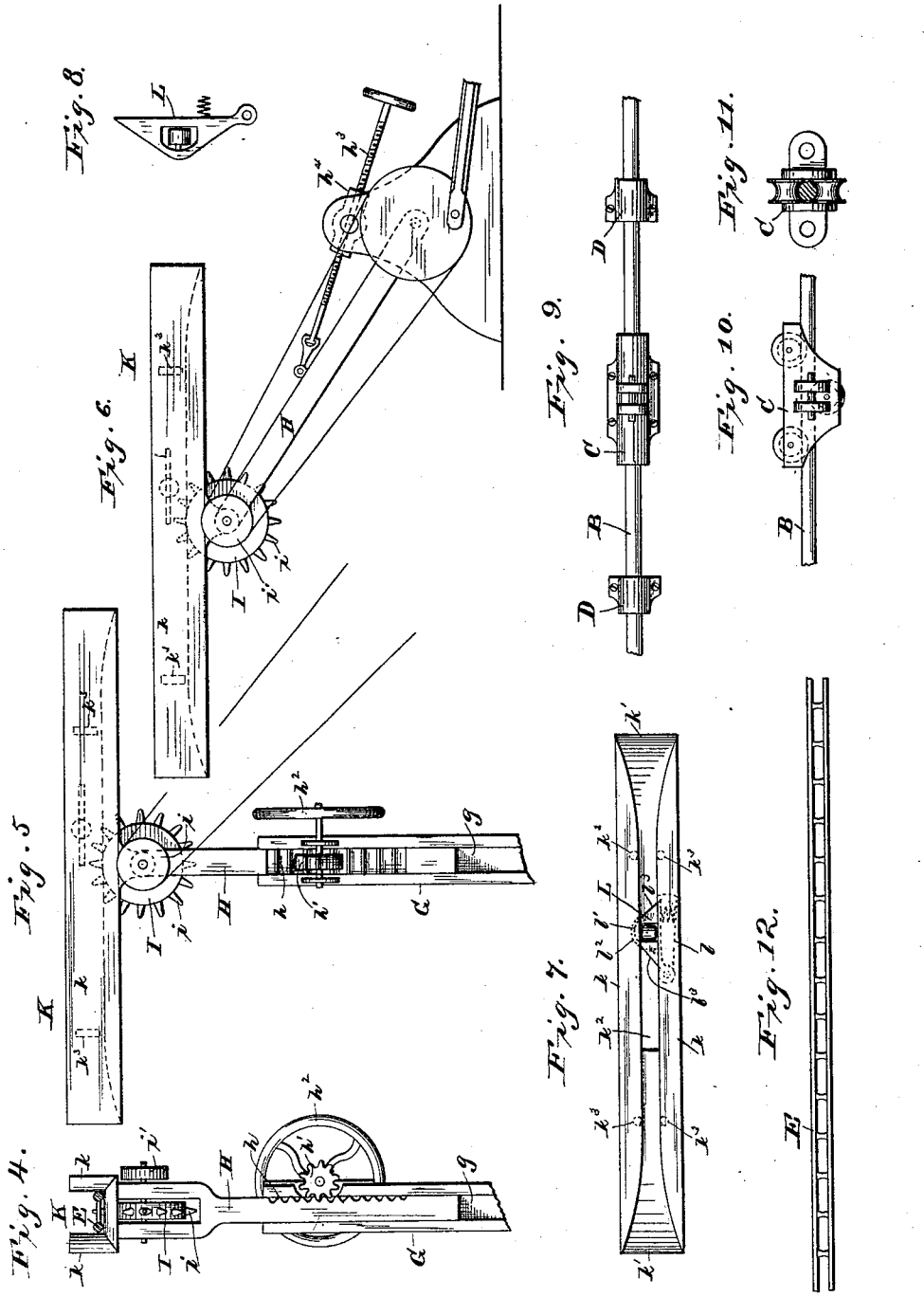

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Chas. R. Burr.
James M. Durant.

Inventor.
August Schausten
by Franck D. Johns
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UNITED STATES PATENT OFFICE.

AUGUST SCHAUSTEN, OF WASHINGTON, DISTRICT OF COLUMBIA.

MEANS FOR PROPELLING CANAL-BOATS.

SPECIFICATION forming part of Letters Patent No. 348,296, dated August 31, 1886.

Application filed April 19, 1886. Serial No. 199,291. (No model.)

To all whom it may concern:

Be it known that I, AUGUST SCHAUSTEN, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Means for Propelling Canal-Boats; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in means for propelling or towing canal-boats in which the boat is provided with a traction-wheel operated by suitable power, and adapted to engage with a traction chain or cable suspended above and along the line of a canal or water-way.

My said invention consists in certain novelty in the manner of suspending the traction chain or cable, so that it will hang loosely from its supports and present no fixed or immovable points to obstruct or interfere with the passage of the traction-wheel, and so that it may have both a lateral and vertical movement, thus permitting said chain or cable to accommodate itself to any variations in the course of the boat or to any tossing or up-and-down movement of said boat.

It further consists in mounting the traction-wheel on a vertically-adjustable frame or support, whereby said wheel can be raised or lowered to adjust it to the distance between the deck of the boat and traction-chain, which distance varies according to the draft or immersion of the boat or height of the water-level; and it further consists in providing the traction-wheel with a guiding device adapted to engage with the chain or cable and hold it in contact with said traction-wheel.

The particular construction and arrangement of the various parts of my invention I will now proceed to point out and describe, reference being had to the accompanying drawings, in which—

Figure 1 is a central longitudinal section of a canal provided with a traction-chain hung in accordance with my invention, a boat being shown having a traction-wheel engaging with said chain. Fig. 2 is a cross-section of the canal, taken on the line *x x* of Fig. 1; Fig. 3, a top plan view showing two lines of traction-chains. Fig. 4 is an end elevation of the vertically-adjustable frame or support carrying the traction-wheel and chain or cable guide; Fig. 5, a side elevation of the same; Fig. 6, a modified form of said adjustable frame or support; Fig. 7, a top plan view of the chain or cable guide; Fig. 8, a detail showing the locking device for holding the chain or cable in contact with the traction-wheel; Fig. 9, a detail showing a portion of the cross beam or cable, the traveling carrier which supports the traction-chain, and the adjustable stops for limiting the movement of said carrier. Figs. 10 and 11 are details showing a modification of the traveling carrier; and Fig. 12 is a section of the traction-chain.

Referring to said drawings, A represents a series of standards or posts on each side of the canal and opposite to each other. Said standards are placed at suitable distances apart, (preferably about two hundred and fifty feet,) and the corresponding and opposite standards are connected at a proper height above the level of the canal by cross beams or cables B, which span the canal at right angles.

C are traveling or sliding carriers mounted on the cross beams or cables B. Said carriers support the traction chain or cable hereinafter described. They may be made of a single piece of metal having a bore sufficiently larger than the cross beams or cables to permit said carriers to move freely on said cross beams or cables; or said carriers may be made in two parts and bolted together. With the latter construction they can be adjusted after the cross beams or cables are put in place. If desired, the carriers can be provided with rollers, as shown in Figs. 10 and 11.

D are adjustable stops on the cross beams or cables placed on each side of the carriers C to limit their movement.

E is the traction-chain, which is formed by sections of chain *e*, secured to and suspended from carrier to carrier lengthwise over the line of the canal, and connected by similarly-formed sections of chain, *e'*, extending under the cross beams or cables, and secured to the sections *e* at points e^2, on each side of and at equal distances from the cross-beams or cables; or the traction-chain may be made in one continuous piece, and is secured to the carriers by supplemental chains, cables, or rods.

A traction chain or cable suspended as above

described hangs loosely from its supports and has no fixed or immovable points to obstruct or interfere with the passage of the traction-wheel hereinafter described. Said chain or cable also has a limited vertical and lateral motion.

The traction-chain is made flat, as shown in Fig. 12, and is formed by two wire ropes connected by studs at proper intervals, or may be manufactured in one piece, with open spaces or holes to receive the teeth of the traction-wheel. If desired, a cable or solid metal rack may be used. I, however, prefer the flat chain.

F represents a canal-boat. On the boat I place an upright frame or stand, G, having a guideway, *g*. In the guideway I mount a standard or support, H, having a forked upper end, in which is mounted the traction-wheel I. The teeth or spurs *i* of the traction-wheel engage with the openings or holes in the traction-chain as the wheel is rotated, and thus propels the boat. Said wheel I is provided with a pulley, *i'*, which is connected with suitable motive power. Any other suitable means for rotating the traction-wheel may be used.

h is a rack on the lower part of the standard H.

h' is a pinion mounted on a suitable shaft and meshing with the rack *h*. Said pinion is operated by a suitable hand-wheel, h^2. By means of this rack and pinion the standard or support H can be raised or lowered, thus raising or lowering the traction-wheel to adjust said wheel with reference to the distance between the deck of the boat and level of the traction-chain, which distance varies according to the immersion or draught of the boat or the height of the water-level. Instead of the rack, a screw-thread on the lower part of the standard H may be used.

In Fig. 6 I show a modification of the adjustable frame or support carrying the traction-wheel. In this the standard or arm H is pivoted to a suitable frame, and is operated by a screw-threaded rod, h^3, working in an internally screw-threaded bearing, h^4. On top of the standard or support is a chain or cable guide, K, consisting of a trough having vertical sides *k*, and open flaring ends *k'*. In the bottom of the trough is an opening, k^2, through which the spurs or teeth of the traction-wheel project. k^3 are friction-rollers on each side of the trough, and just back of the ends of the same. The traction-chain rests in the bottom of the trough, its weight holding it in contact with the traction-wheel. To prevent the chain from coming out of the trough, I provide a spring-locking latch, L, pivoted in a recess, *l*, (shown in dotted lines,) said latch being located on one side of the trough and at a point just behind the traction-wheel. The outer end or point, *l'*, of the latch engages with a small notch or recess, l^2, on the opposite side of the trough. L' is a friction-roller in the latch, which engages with the top of the chain. The sides l^3 of the latch are beveled and present a diagonal line to the center line of the guide. This latch serves to lock the traction-chain in the guide and in engagement with the traction-wheel; but when the beveled or diagonal sides of the same come in contact with the joints connecting the sections of chain *e* and *e'* said latch will be forced back into the recess *l* until the boat passes said joints, when its spring will force it back to its normal position over the traction-chain. This chain or cable guide renders it very much easier to keep the traction-wheel in engagement with the traction chain or cable.

From the above description the advantages of my improved method of propelling or towing canal-boats will readily be seen.

The traction-wheel being mounted on a vertically-adjustable frame or support can be easily raised or lowered to adjust it, as heretofore described, to the distance between the deck of the boat and level of the traction-chain, which distance varies according to the immersion of the boat or height of the water-level. The traction-chain being hung loosely from its supports will have a slight vertical motion to counterbalance any tossing or up-and-down movement of the boat produced by agitation of the water or other cause. Said traction chain or cable, also being supported as described from traveling or sliding carriers on the cross beams or cables, will have a lateral motion within a certain limit, determined by the distance apart the stops are placed, thus permitting said chain or cable to accommodate itself to variations in the steerage-way of the boat. This is a great advantage, and is particularly noticeable on sinuous portions of the canal, rendering it very much easier to turn any curve or bend, the steersman having only to bring the boat around a comparatively easy curve, whereas when the chair or cable is rigidly secured to its supports abrupt angles have to be passed, frequently making it necessary to release the traction-wheel from the traction chain or cable.

Two lines of traction chains or cables may be used, as shown in Fig. 2. Boats going in opposite directions will then use the opposite chains or cables.

I do not wish to be understood as limiting myself to the specific construction herein shown and described, as various changes may be made in the manner of suspending the cable and in the construction and arrangement of the traction-wheel without materially departing from the spirit of my invention.

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

1. The combination, with a canal or water-way and a boat provided with a propelling device for engaging a suspended traction chain or cable, of a series of supports extending over said canal or water-way and a traction chain or cable attached to said supports by flexible connections, substantially as described, whereby said traction chain or cable is permitted

both a lateral and vertical movement at its points of attachment to the supports.

2. The combination, with a canal or water-way and a boat provided with a propelling device for engaging a suspended traction chain or cable, of a series of supports extending laterally over said canal or water-way, traveling carriers mounted upon said supports, and a traction chain or cable attached to said carriers by flexible connections, substantially as described, whereby said traction chain or cable, when engaged by the propelling device, is permitted both a lateral and vertical movement.

3. The combination, with a canal or water-way and a boat provided with a propelling device for engaging a suspended traction chain or cable, of a series of supports extending laterally over said canal or water-way, traveling carriers mounted upon said supports, and suitable stops for limiting the movement of said traveling carriers, and a traction chain or cable attached to said carriers by flexible connections, substantially as shown and described.

4. The combination, with a boat and a traction chain or cable suspended above a canal or water-way, substantially as described, of a traction wheel or driver mounted upon a vertically-adjustable support secured to the boat and adapted to be rotated in contact with the traction chain or cable to propel said boat, all arranged and operating substantially as and for the purpose set forth.

5. A suitable vertically-adjustable frame or support secured to a boat and carrying on its upper end a traction chain or cable guide consisting of a trough having open ends and an opening in its bottom, in combination with a traction-wheel mounted on the support carrying the chain or cable guide, and projecting partially through the opening in the bottom of said guide, and adapted to engage with a traction chain or cable suspended above and along the line of a canal or water-way, all arranged and operating to the end that the guide will hold the chain or cable in engagement with the traction-wheel, substantially as shown and described.

6. A suitable frame or support secured to a boat and carrying on its upper end a traction chain or cable guide consisting of a trough having open ends and an opening in its bottom, and a suitable automatic spring-latch for holding a traction chain or cable suspended above and along the line of a canal or water-way in said guide, in combination with a traction-wheel mounted on the frame or support carrying the guide, projecting through the opening in the bottom of said guide, and adapted to engage with the traction chain or cable, all arranged and operating substantially as shown and described.

7. A suitable frame or support secured to a boat and carrying on its upper end a traction chain or cable guide, K, having an opening, k^2, in its bottom, and an automatic spring-latch, L, having beveled or diagonal sides l^3 l^3, and adapted to hold a traction chain or cable suspended above and along the line of canal in the guide K, in combination with a traction-wheel mounted on the support carrying the guide, projecting through the opening in the bottom of said guide, and adapted to engage with the traction chain or cable, all arranged and operating substantially as shown and described.

8. A series of cross beams or cables, B, extending laterally over a canal or water-way, in combination with the traction chain or cable E, consisting of the sections *e*, loosely suspended from cross-beam to cross-beam and connected by the sections *e'*, extending under the cross-beams, whereby said traction-chain may have a lateral and vertical movement, substantially as shown and described.

9. The series of cross beams or cables B, extending laterally over a canal or water-way, traveling carriers C, mounted on the cross-beams B, in combination with the traction chain or cable E, consisting of the sections *e*, loosely suspended from carrier to carrier and connected by the sections *e'*, extending under the cross-beams B, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

AUGUST SCHAUSTEN.

Witnesses:
JOHN W. PARKER,
ROBERT E. MORRIS.