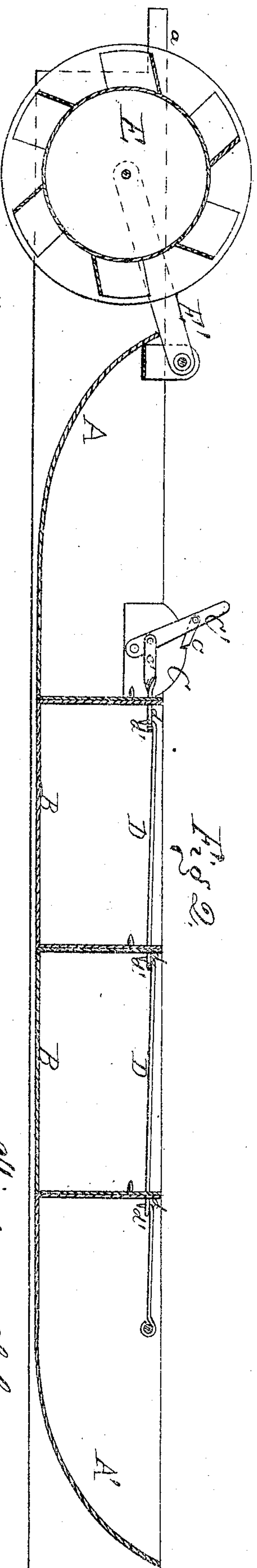
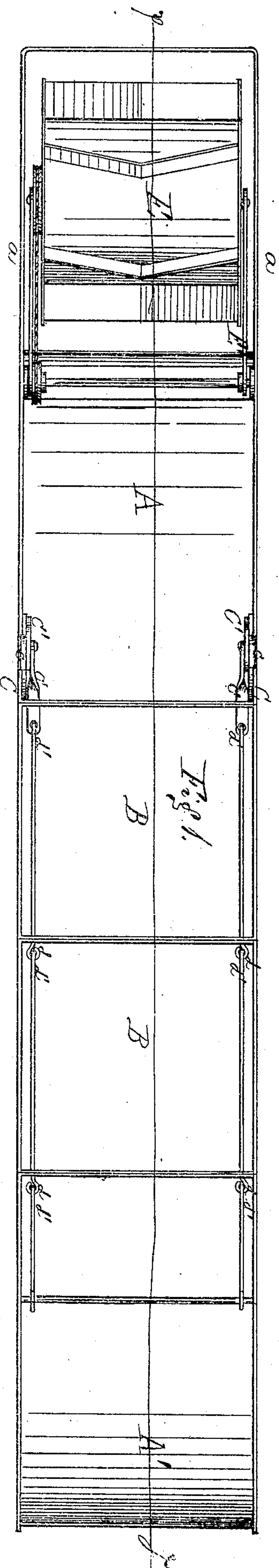


101004

William F. Goodwin  
Inventor in the construction of Boots

PATENTED MAR 22 1870



Witnesses  
H. H. Goodwin  
H. H. Goodwin

William F. Goodwin  
by his attorney  
A. M. Smith



# UNITED STATES PATENT OFFICE.

WILLIAM F. GOODWIN, OF METUCHEN, NEW JERSEY.

## IMPROVEMENT IN PROPELLING CANAL-BOATS.

Specification forming part of Letters Patent No. 101,004, dated March 22, 1870.

*To all whom it may concern:*

Be it known that I, WILLIAM F. GOODWIN, of Metuchen, county of Middlesex, State of New Jersey, have invented certain new and useful Improvements in Canal-Boats, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a plan or top view of my improved boat, and Fig. 2 is a longitudinal sectional view through line *x y*, Fig. 1.

Similar letters of reference denote corresponding parts in both figures.

My improvement is intended to be applied more particularly to canal-boats and all others which are used in navigating narrow and shallow channels, such as bayous, small rivers, &c.

It has been considered a well-settled principle in navigation that the amount of water which a boat will displace in moving through it is just the same, whatever may be her form, and that the amount of power which is required to force the boat through the water can be diminished only by the employment of sharp lines in the construction of her bow; but this involves a good deal of expense, and diminishes the amount of storage-room in a boat. In like manner there is a vacancy created at the stern of the boat, into which the water is drawn by suction, which suction is created by the same power used for propelling the boat. Now, it follows, as a matter of course, that the power required to effect this displacement at the bow, and the replacement at the stern of the boat, is in addition to the power absorbed in overcoming the friction of the water upon the sides and bottom, and when the boat is moving through a narrow channel like a canal this displacement becomes a serious obstacle, from the fact that the water cannot readily flow past the sides of the boat, but is literally piled up in front, and the increase in the power required becomes so great that only very low rates of speed can be obtained, except at great expense.

Another and perhaps more serious objection to the use of steam-power upon canals is that the wave created by both the boat and the propelling-wheel washes the banks to such

an extent as to make its use impracticable under any construction and arrangement which has hitherto been employed.

By my construction, however, the first-named difficulty is overcome by placing the propelling-wheel in front of the boat, extending the sides of the boat in front of the bow, which may be made like an ordinary scow, in such manner as to inclose the entire breadth and depth of water to be displaced, so that when the wheel is put in motion the boat is not forced against the water which lies in front of it, thereby piling the water up and throwing it off against the banks; but instead of this the water is drawn in under the wheel and forced under the bottom of the boat, being discharged toward or at its extreme rear end, so that the water, instead of being higher in front of the boat, is actually found to be the highest behind it, and a boat can be propelled at the desired rate of speed without producing the objectionable swell or wave, and without the employment of nearly so much power as is required in the construction in present use.

The invention which I wish to protect by the Letters Patent asked for in this application relates to the construction of a boat involving the principles of construction above set forth, and which is built in sections, whereby it may be made of any desired length, and yet can be taken apart whenever it shall be necessary to pass through a lock.

The nature of the invention will be fully understood from the following description of its construction and operation.

In the drawings, A represents the bow of the boat, made in the form of a common scow, except that the sides are extended, as at *a*, in front of the bow far enough to inclose the propelling-wheel. The stern A' is made preferably in the same form as the bow.

B B are intermediate sections, made of the same width and depth as the end sections, but having square or upright ends to match and fit closely the inner ends of the two outer sections, as shown in the drawings. C is a ratchet-plate secured to the side of the boat. C' is a lever pivoted to plate C or to the side of the boat. *c* is a pawl attached to lever C', and engaging with teeth formed in plate C. *c'* is a link, also connected at one end with le-

ver C'. D D are rods, each provided at one end with a perforation or eye, *d*, and at the other end with a hook, *d'*.

There should be one set of these coupling devices upon each side of the boat, and by making the pair of rods used with each section of the same length as the section, and then connecting them together, as shown in the drawings, any desired number may be attached to each other, and propelled by the same power.

E is a paddle wheel or drum, mounted in radial arms E', said arms being supported upon the bow of the boat in such manner that the wheel is free to rise and fall, resting upon the water in the space inclosed by the extended sides *a*.

The wheel is driven by an engine or suitable power located at a convenient point in the boat.

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

The combination of sections A A' B, coupling-rods D D, extending lengthwise through the sections, and the lever C', or its equivalent, for tightening the coupling or releasing the same, as set forth.

WM. F. GOODWIN.

Witnesses:

ALEX. MAHON,  
H. H. DOUBLEDAY.