

No. 647,269.

Patented Apr. 10, 1900.

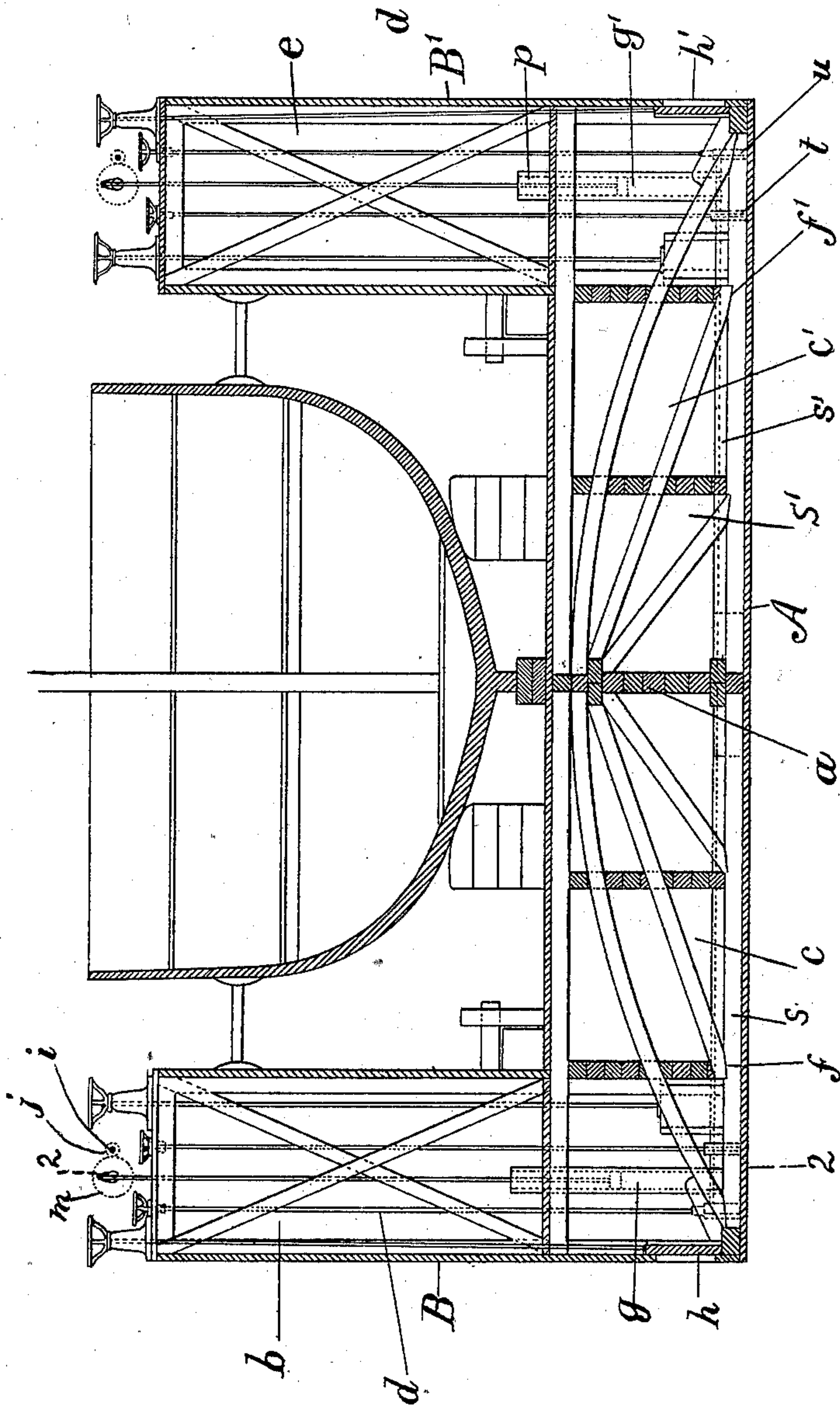
F. C. LANG.  
DRY DOCK.

(Application filed May 6, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



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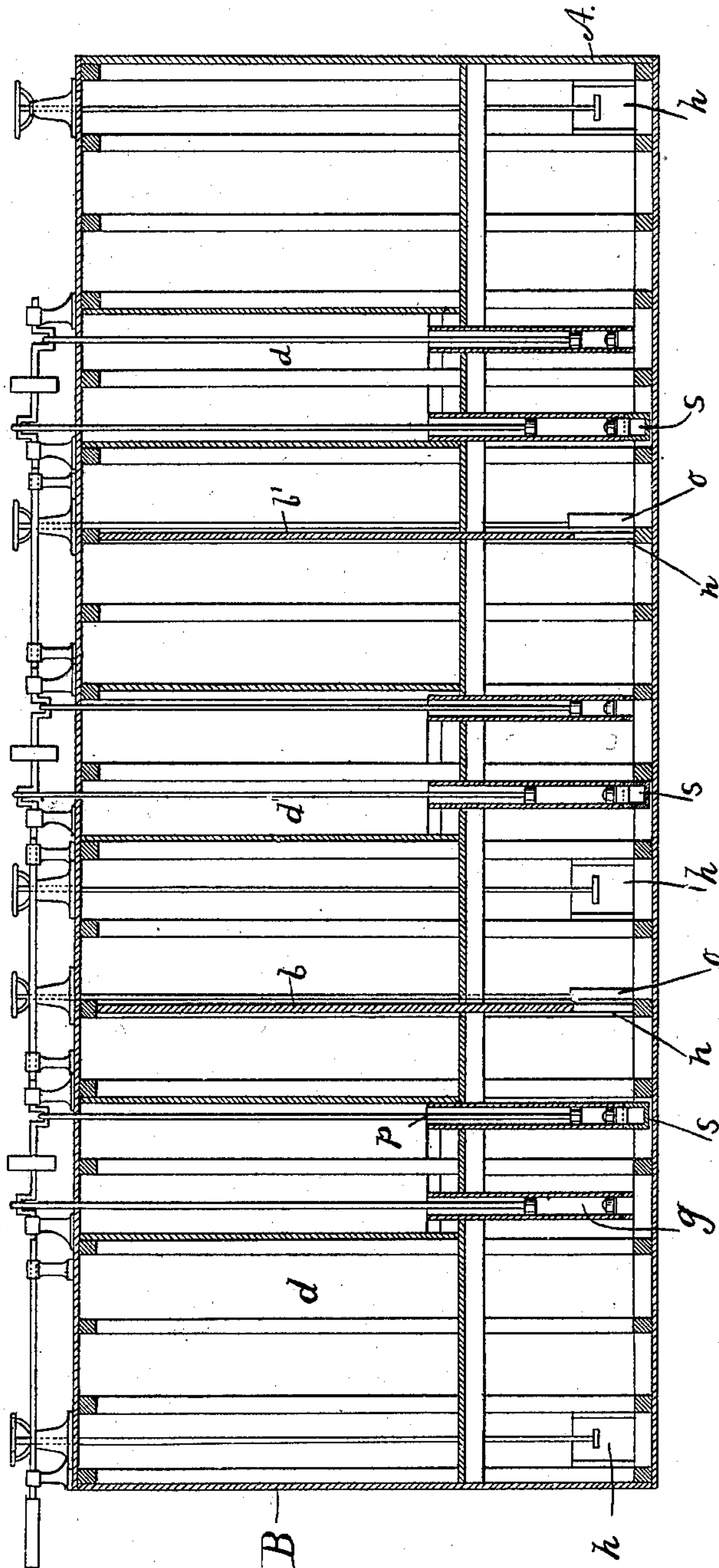
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Fig. 2



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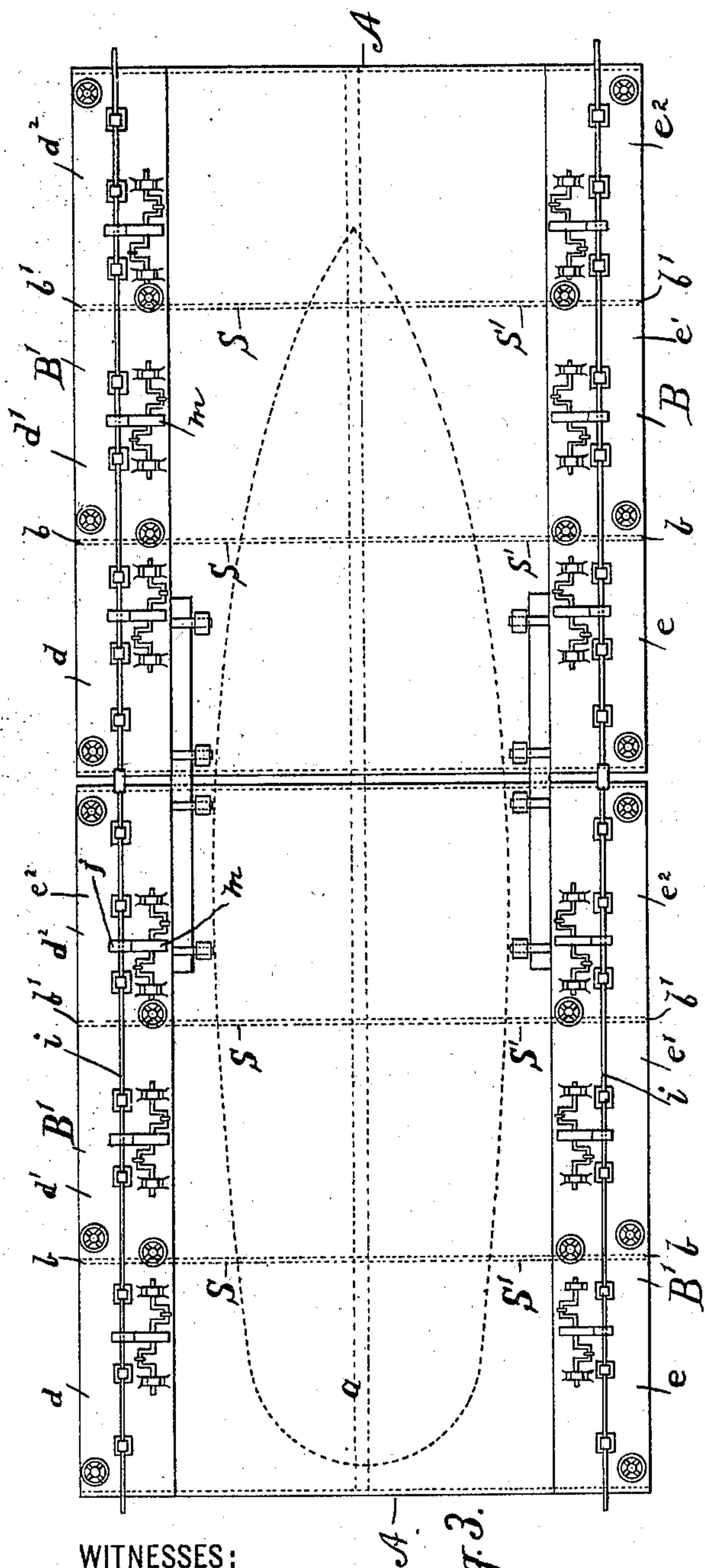
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Fig. 3.

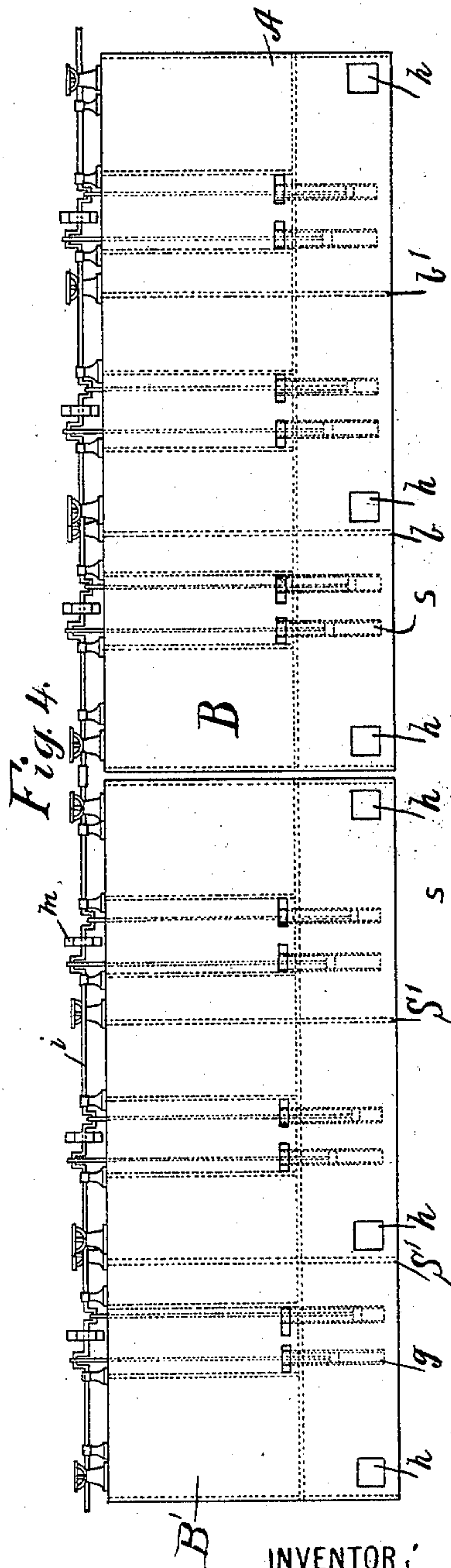


Fig. 4.

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# UNITED STATES PATENT OFFICE.

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## DRY-DOCK.

SPECIFICATION forming part of Letters Patent No. 647,269, dated April 10, 1900.

Application filed May 6, 1899. Serial No. 715,808. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK C. LANG, a citizen of the United States of America, residing at Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Dry-Docks, of which the following is a specification.

My invention has reference to improvements in sectional floating dry-docks, and has for its objects, first, to reduce the number of sections without affecting the capacity of the dock and to render each section or any compartment thereof controllable independently of the other section or compartment, which object I accomplish by building each section in one structure formed with a plurality of compartments distinct from each other, but which may be operated one from the other, each compartment having its individual pumps for discharging the water from the respective compartment and also with individual flood-gates for each compartment; secondly, it has for its object to enable a vessel which is not of sufficient length to take the whole section or sections to be properly docked and supported throughout its entire length by pumping out that part or parts of the section or sections on which the vessel may rest, and, thirdly, to enable a sectional dock of two or more sections to be coupled together and each individual section in the set to be controlled independently, and therefore rendering the dock capable of safely docking vessels of the greatest length and tonnage built.

To this end my invention consists in a floating dry-dock consisting of two or more sections constructed so as to fit together end to end, provided with means for securing them together and with means for coupling together end to end the shafts for operating the pumps, and each of the sections of said dock having a plurality of water-compartments adapted to be flooded and pumped out independently and having gates for establishing communication between them.

The nature of my invention will be best understood when described in connection with the accompanying drawings, in which—

Figure 1 represents a transverse cross-section through one of the dock-sections. Fig. 2 is a longitudinal section on the line 2 2,

Fig. 1. Fig. 3 is a plan or top view drawn to a smaller scale and showing two dock-sections coupled together. Fig. 4 is a side elevation of the same.

Similar letters of reference designate corresponding parts through the several views of the drawings.

Referring to Figs. 1 and 2 of the drawings, the letter A designates the body, and B B' the wings, of one of the sections, which sections are subsequently to be joined together or united in numbers corresponding to the length of the vessel to be docked. The body and wings are built up water-tight, as usual, and are braced and stiffened by suitable trusses and braces in a proper manner to sustain the weight of the vessel under the usual conditions. Each wing B B' is subdivided by transverse vertical partitions *b* and *b'* into a number of longitudinal compartments *d d'* *d*<sup>2</sup> and *e e'* *e*<sup>2</sup>, and the body A is centrally subdivided by a bulkhead *a* into two compartments *c c'*. Each compartment *c c'* is divided by transverse partitions *SS'*, arranged in line with the partitions *b b'* and forming part of the same. The compartment *c* communicates with the compartments *d* by passages *f* and the compartment *c'* with the compartments *e e'*, &c., by a passage *f'*. Each compartment *d d'* *d*<sup>2</sup> and *e e'* *e*<sup>2</sup> is provided with a pump *g g'*, of any usual construction, adapted for the purpose of removing water from the individual compartments, which are closed substantially water-tight from each other. Each of the aforesaid compartments is also provided with a gate *h h'*, operated from above in a usual manner for the purpose of permitting water to enter said compartments *d d'* *d*<sup>2</sup> and the compartments *c c'* when the dock is to be lowered ready to receive the vessel. The pumps *g g'* may be independently actuated, or they may be driven from a main shaft *i*, to which they are connected by gears *j* and *m*, and which said gears are arranged to be disconnected—for instance, by sliding one gear upon a shaft in a usual manner—so that any individual pump may be run independently of the others or any desired number made to operate simultaneously, as may found necessary in docking the vessel. In the partitions *b* and *b'* and at the lower ends thereof are formed openings *n*, closed by gates *o*, which are op-



erated from above in a manner similar to the gates *h*, which said gates *o* are for the purpose of placing the several compartments *d* *d'* *d*<sup>2</sup> and *e* *e'* *e*<sup>2</sup> into communication with each other, respectively. The several compartments *d* *d'* *d*<sup>2</sup> are also placed in communication with the compartments *c* *c'*, as before described, and consequently with the compartments *e* *e'* *e*<sup>2</sup>, by means of conduits *s*, extending from said compartments *d* into said compartment *c*, and said compartments *e* *e'* *e*<sup>2</sup> are in a similar manner placed in communication with the compartment *c'* by conduits *s'*. The conduits are closed by suitable gates *t*, operated from above to close off one-half of the dock from the other. In the present example I have shown the conduits *s* *s'* communicating with pumps *p* *p'*, and I provide in this instance additional gates *u* for closing off the suction ends of the pumps *p* *p'* from the respective compartments in which the pump is located. Sections of this construction are coupled together in a usual manner, as shown in Figs. 3 and 4, until the required length of the dock is obtained for accommodating the vessel to be docked, and in view of the construction hereinbefore described each section is independent of the other, and each section has a number of independent compartments, from which water may be removed or allowed to flow in, according to the manner in which the load is distributed on said sections or compartments. If, for instance, the vessel is shorter than one section, the water in the compartments *d* and *e* can be admitted to a lower level than in the compartment *d*<sup>2</sup> or *e*<sup>2</sup>, on which latter compartment less load will fall. If one of the pumps in any compartment of one wing B or B' should fail to operate properly, the corresponding gate *o* can be opened to place the adjoining compartment in communication with such disabled compartment. Water can also be drawn from the section *b* and compartment *c* into the compartment *c'* and section B', and vice versa, by the use of the pump *p'*, to which the conduits *s* *s'* are connected. If a pump *g* in any compartment should fail, the pump *p* in the same compart-

ment can be used to draw water from said compartment by having the valve *t* closed and the valve *u* open.

I am well aware that it is not new, broadly, to divide a floating caisson or pontoon into water - compartments communicating with each other and controlled by valves or gates, and this I do not claim. My invention relates to sectional docks, the several sections of which are provided with means for connecting and securing them together and for coupling end to end the aligned shafts of the sections, and each of said separate sections is divided by transverse partitions into subsections capable of being separately flooded and pumped out and also capable of being put in communication with each other at will. This construction offers special advantages in a sectional dock and affords complete control of the dock in handling the largest vessels.

What I claim as new is—

1. A sectional floating dry-dock consisting of two or more separate and independent sections provided with means for connecting them together end to end and each of said sections subdivided by transverse partitions into a plurality of sections, each provided with independent means for flooding and emptying it, substantially as set forth.

2. A sectional floating dry-dock consisting of two or more separate and independent sections provided with means for connecting them together end to end, and each of said separate sections subdivided by transverse partitions into a plurality of sections and these by a longitudinal partition into lateral compartments, and each of said compartments provided with means for flooding and emptying it and means for putting it into communication with an adjacent compartment, substantially as set forth.

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

FREDERICK C. LANG.

Witnesses:

E. P. HENDRICKSON,  
G. W. EISENBRAUN.