

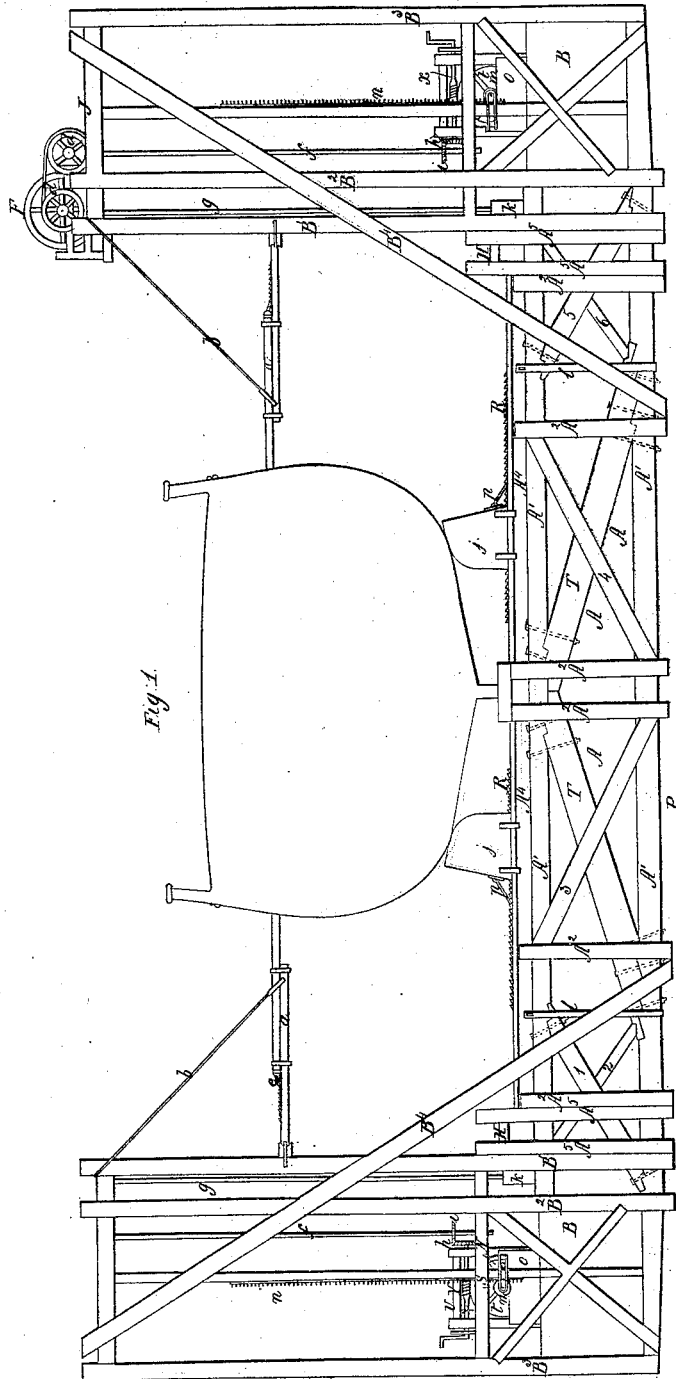
Dodge & Burgess.

*Sheet 1,
3 sheets.*

Floating Dry Dock.

N^o 2,281.

Patented Oct. 9, 1841.



Dodge & Burgess

*Sheet 2,
3 Sheets*

Floating Dry Dock.

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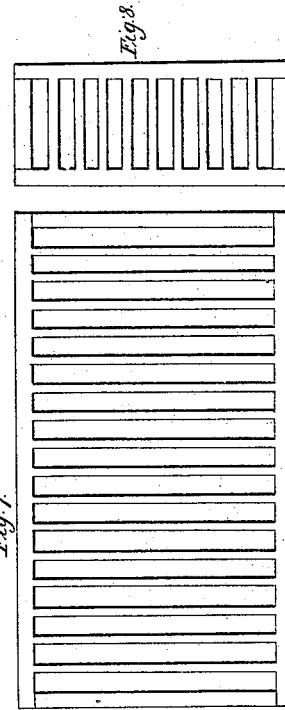
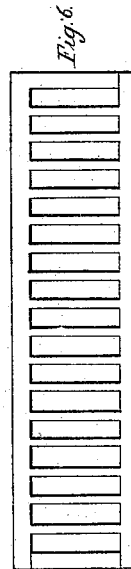
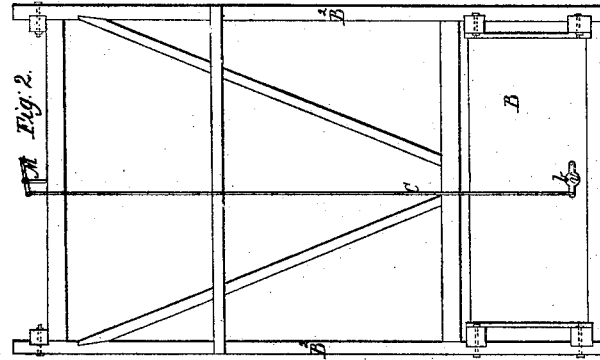
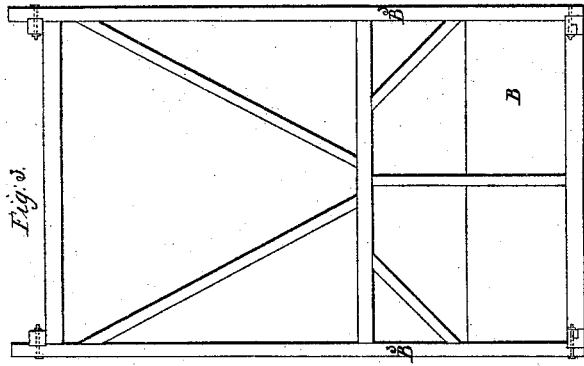
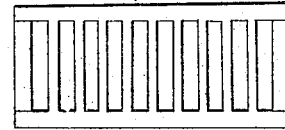


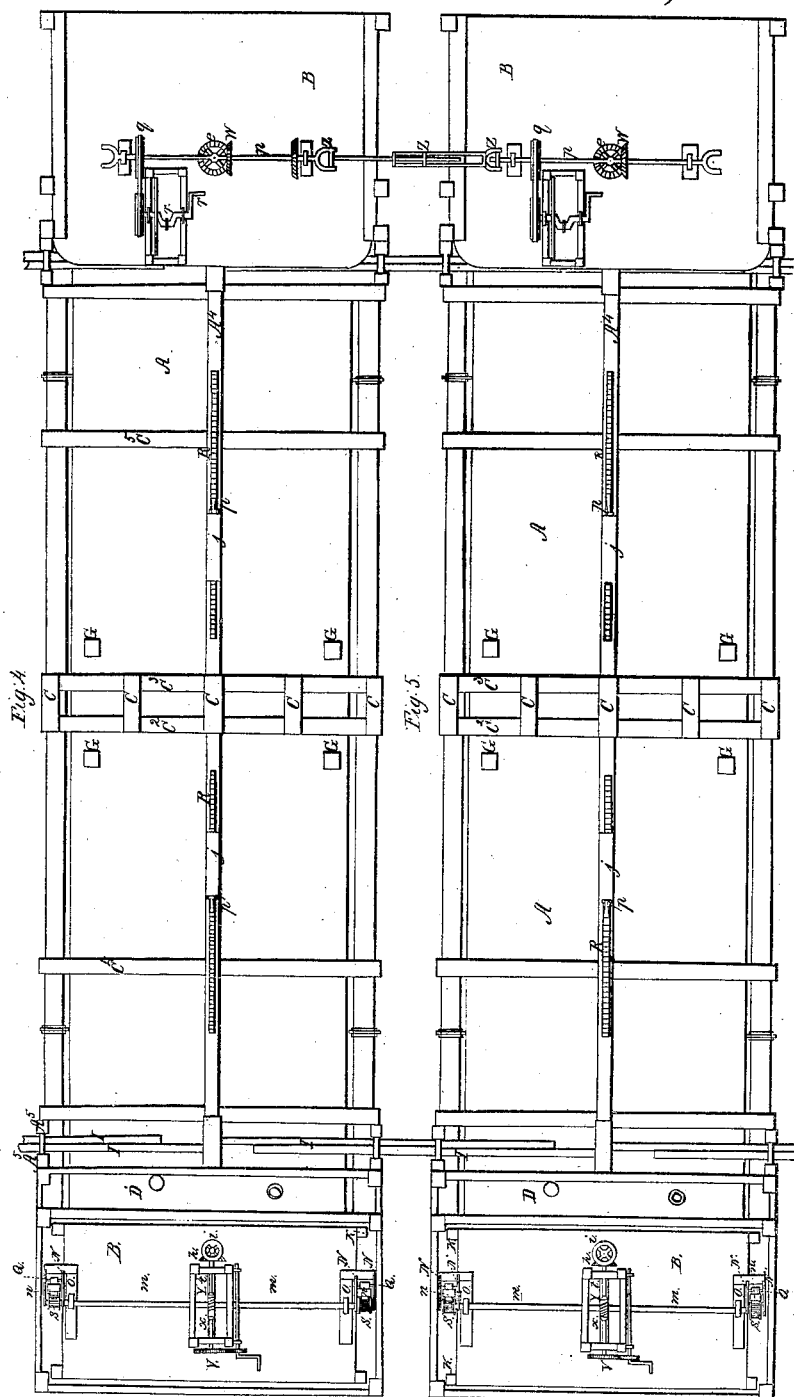
Fig. 8



Sheet 3,
3 Sheets.

N^o 2,281.

Patented Oct. 9, 1841.



UNITED STATES PATENT OFFICE.

D. DODGE AND P. BURGESS, OF NEW YORK, N. Y.

FLOATING DRY-DOCK.

Specification of Letters Patent No. 2,281, dated October 9, 1841.

To all whom it may concern:

Be it known that we, DANIEL DODGE and PHINEAS BURGESS, of the city, county, and State of New York, have invented a new and useful Improvement in Floating Dry-Docks, which is described in the following specification, reference being had to the annexed drawings, making a part of the same.

Figure 1 represents an elevation of one of the sections with the vessel to be raised thereon, Fig. 2, inner elevation of the side wall, Fig. 3, outer elevation of the side wall, Figs. 4 and 5, plan of two sections connected together, Figs. 6, 7, and 8, the manner of stiffening the tanks and floats.

Similar letters refer to corresponding parts in the several figures.

This floating dry dock is composed of one two or more sections, connected together by suitable mechanical arrangements, the particulars of which are described hereafter.

The several sections being made alike, the description of one will be sufficient for all. Each section therefore is composed of a huge horizontal platform, containing within its frame the stationary floats, or water tanks, (A' A' A') and two sides or frames B' B' B' one on each end of said platform between the frames of which are contained the side floats B, B, Figs. 1, 2, 3, 4, 5. This platform is composed of two sides, each side having two horizontal beams A' A' one above the other, a suitable distance apart the lower beam extends the whole length of the platform and side walls, the upper beam sufficiently long to extend from the inner side to inner side of the side walls. These horizontal beams are enabled to support the weight to which they must be subjected, by the addition of two heavy truss beams I placed between them. Starting from a suitable position on the top of the lower beam and abutting against each other near the center of the underside of the upper beam A. These truss beams are notched in a suitable manner to the main beams and secured in their position by large iron bolts. In addition to these truss beams other braces 1, 2, 3, 4, 5, 6, diagonally placed to each other are placed between the said horizontal beams in any suitable position to give such additional strength as may be required. From the upper horizontal beam to the lower one, large straps of iron l are passed to secure them more firmly.

Side pieces or uprights A² as they may

be called, are halved over the timbers A with which they are in contact. These uprights rise a little higher than the top of the upper beam A' and extend a little below the lower beam aforesaid; from the lower end of these uprights cross beams extend across to the lower end of the uprights on the opposite side and in a similar manner, cross beams c² c³ c⁴ c⁵ extend from the upper ends of said uprights suitable size straps of iron pass from the upper to the lower cross beams aforesaid at each end thereof, the two uprights A² A² which are nearer the middle of the platform are about 1 foot from each other, the upper ends of these uprights have also a cross beam as aforesaid connecting the corresponding set on the opposite side of the platform, the keel blocks c, c, c, c, (Fig. 1 and 4, 5) are placed at suitable distances from one another and resting on the middle cross beams c² c³ just mentioned. Inclosed on the frame work as described are the water tanks A A, there being two of them in each section; these tanks rest upon the lower cross beams as described. These water tanks A, A, are made of timbers and to be sufficiently strong by the addition of bolts and braces or other suitable articles as may be thought advisable, each tank is provided with a hole D closed by a gate, opened by a rod of the usual construction attached to a lever on the platform on the top of each side wall; on the top of each tank on the outer end thereof, an air tube may pass up to the top of the side wall, to permit the escape of the air in the tanks. Adjacent thereto is the cylinder or pump k having therein a piston worked by means of a connecting rod g attached to a crank r resting in a suitable frame on the platform of the side walls on which there is a fly wheel F, which pump is for exhausting the tanks. On the top of each tank at the corners, near the center beams are placed air valves, to let the air escape that may get confined in the back end of the tanks; said valves are constructed in the following manner: a hole is made through the top of the tank 2 inches more or less in diameter over which is placed a valve of sufficient size to cover this hole. Over said valve is placed a protection block G with a mortise or space in the under side of it of sufficient size to admit the valve to open and shut, fastened to the top of the tank, three holes are made in each side of

said block three-fourths inch in diameter to let the air pass out from the valve.

On each side and at each end of the huge platform are raised two upright stanchions A⁵ A⁵ about a foot (more or less) from each other; they are halved on the main beams A' aforesaid, and they rise a suitable distance above the upper main beam where those adjacent to each other are connected by a girth H. The object of this arrangement is to enable us to connect in a suitable manner, another section of strong horizontal beams I being passed from one set of beams to another set on another section.

About the middle of the top of each section of the platform, running lengthwise of it, is placed a strong and powerful ratchet, (R, Figs. 1, 4, 5) over which moves two large bilge blocks j j each of which having a catch or pall p behind them, which fits the ratchet and works therein.

The side walls containing the side floats (B, B, Fig. 1).—There are two side walls, one at each end of the platform P each are similarly constructed. I shall describe one wall as it will answer for both. The inner side of the wall or that next the platform is shown in Fig. 2 and the outer side of it at Fig. 3. From the lower horizontal beam A' before mentioned, three uprights B¹ B² B³ are raised on each side, sufficiently high as may be deemed necessary say about three times the height of the platform. The two uprights B¹ B² are near together and are connected and braced to the corresponding ones opposite in the manner by horizontal, oblique and other braces. The uprights B³ are connected in a similar way as represented. See Figs. 2 and 3 which represents the present mode of connection, but this arrangement may be modified to suit the builder; an oblique beam of timber B⁴ acting as a brace, passed from the cross girth near the top of the side wall, and extends to a suitable position on the lower horizontal beam A' before mentioned of the platform P it is halved on every timber with which it comes in contact and firmly pinned and bolted. Resting on the top of the side wall is a platform which contains the gearing connected with the driving shaft.

Inclosed in each of the frames composing the side walls are the side floats B B. These floats are made of wood and well put together by bracing &c. at each of the corners of each float aforesaid, a suitable size piece of timber K is attached on which timber two rollers may be placed one above the other, the object of these rollers is to assist in raising or depressing the float aforesaid by their rolling on the face of the corner posts of the frame. Each of the said floats are provided with an aperture, closed or opened by means of any suitable arrangements of valves such as v Fig. 2. The gate

or valve v to the floats B B is the same form as those described for the tanks A A and opened by a rod c which reaches near the top of said float on which is placed a lever in the form as those for the tanks A. On the top of each float is the lower horizontal shaft m extending across the full length thereof and supported on two suitable size blocks o one at each end; at the extreme ends of the said horizontal shaft is a wallower S working into the rack n. This rack n is an upright, starting from the lower beam A before mentioned, and rising to the height of the side walls one being on each side. The wallower, S is kept in its position against the rack by a strap of irons N being passed around the axle and connected by a suitable arrangement to the block O. Behind the rack is a roller Q which is kept close to the back of the rack by wedges or keys. About the middle of the horizontal shaft aforesaid is a large toothed wheel t Figs. 1, 4, 5. About the middle of the top of the float B is a frame U containing gearing to work the large toothed wheel just mentioned. This frame is composed of four uprights, two of which form an end and are near together, resting across the highest girths of the said frame, is the shaft x with an endless screw y working in the toothed wheel t. One end of this shaft x has a cog wheel V attached, and the other end a mitered wheel h working into a similar mitered wheel i sliding up and down with the motion of the float on a square or round bar f which turns with the wheel i the opening in the center being square where the shaft is square and when round furnished with a tongue and groove to prevent the shaft from turning without said miter wheel.

The driving shaft.—Lengthwise upon the top of said wall is extended a line of large driving shafts p p p which are connected together at the junction of each section by means of universal extension joints z. This driving shaft (p, Figs. 4, 5) is supported by journals placed upon blocks of wood on the top of the platform of a side wall and is provided with a suitable size cog wheel, miter wheel e w and band wheel q. On this platform is also a frame composed of uprights containing within them the fly wheel F and cranks r which work the pumps &c. On the axle of this fly wheel is attached a band wheel d connected by a revolving strap to the band wheel q on the main driving shaft, p. This main driving shaft p can be set in motion by means of the band wheels before mentioned or by means of any suitable gearing attached to the cog wheel thereon, the motion communicated by steam, &c. In either arrangement the motion of the driving shaft by means of its mitered wheel moves the miter wheel e at the head of the rod f which again moves the sliding

miter wheel *i*, which also turns the miter wheel *h* attached to the shaft *x*, by means of an endless screw *Y* on the said shaft making into the teeth of the cog wheel *t*, turns it and the horizontal shaft *m*, and causes the side floats *B B* to rise or fall at the pleasure of the workman by means of the wallowers *s* and racks *n* before described. Should air be used to force the water out of the tanks instead of pumping, suitable pipes must be provided to conduct the air to the pumps.

Operation.—The sections as many as may be necessary to raise the vessel are suitably connected together into one section which is brought to the spot where it is wanted. Having ascertained the proper quantity of water to be received in order to preserve the required buoyancy of the floats *B B* in sustaining the superstructure of the dock the gates of the main tanks *A A* and side floats *B B* are opened and the water fills them to a certain height that is necessary to sink the dock to a proper depth. The gates are now closed and the side floats *B B* are now raised by steam or otherwise (as already described) the tanks *A A* continue to sink as the side floats *B* aforesaid are raised until the dock arrives in a suitable position to receive the vessel. The vessel is now floated in and secured in a central position, which will bring her keel over the keel blocks *C, C, C, C*. The wale shores *j* are now brought to bear upon the side of the ship sufficient to preserve her position. The gates of the side floats *B* are now opened and as the water is discharged and the bottom tanks *A A* are relieved of their burden by pumping the dock gradually ascends until the ship's keel feels the upward bearing of the blocks *C* beneath, the cords of the bilge blocks *j*, are now drawn and by means of the before described ratchets and pawls, are secured firmly under the ship's sides. The

wale shores *a* which are each made in two parts, lapped and banded together with sliding ratchet joints *e* are also sprung home upon their sides and the fabric becomes a fixed subject for the operation of the shipwright. As soon as the water is principally discharged from the side floats *B B* the gates are closed in order to again raise the side floats aforesaid which now operate as buoys, having discharged their load and being made water tight. The exhausting pump *K* is also kept in operation until the platform is sufficiently elevated for the convenient operation of the workmen. In launching the ship from the dock the same process is pursued as in preparing to receive it, and in which situation it is ready for the reception of another vessel without further delay or preparation. The water in the tanks *A A* may be forced out by means of air by any suitable mode.

It will be remembered that we have described parts which have long since been used in floating dry docks and that therefore we do not claim them as our invention, but

What we do claim and desire to secure by Letters Patent is—

1. The method herein described of moving the end floats in all the sections with the same degree of velocity so as to insure an equal strain upon all the parts of the vessel to be raised by connecting the main shafts on all the sections on each side by universal and extension joints, substantially as herein described.

2. We also claim the extension wale shores constructed as herein described.

DANIEL DODGE.
PHINEAS BURGESS.

Witnesses:

WM. G. WOOD,
THOMAS J. POWERS.