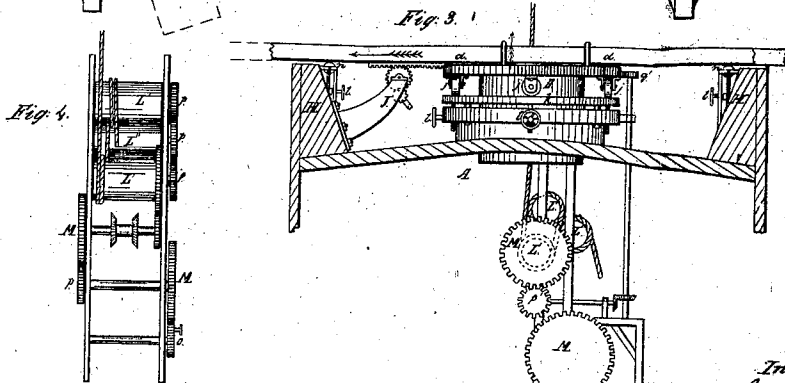
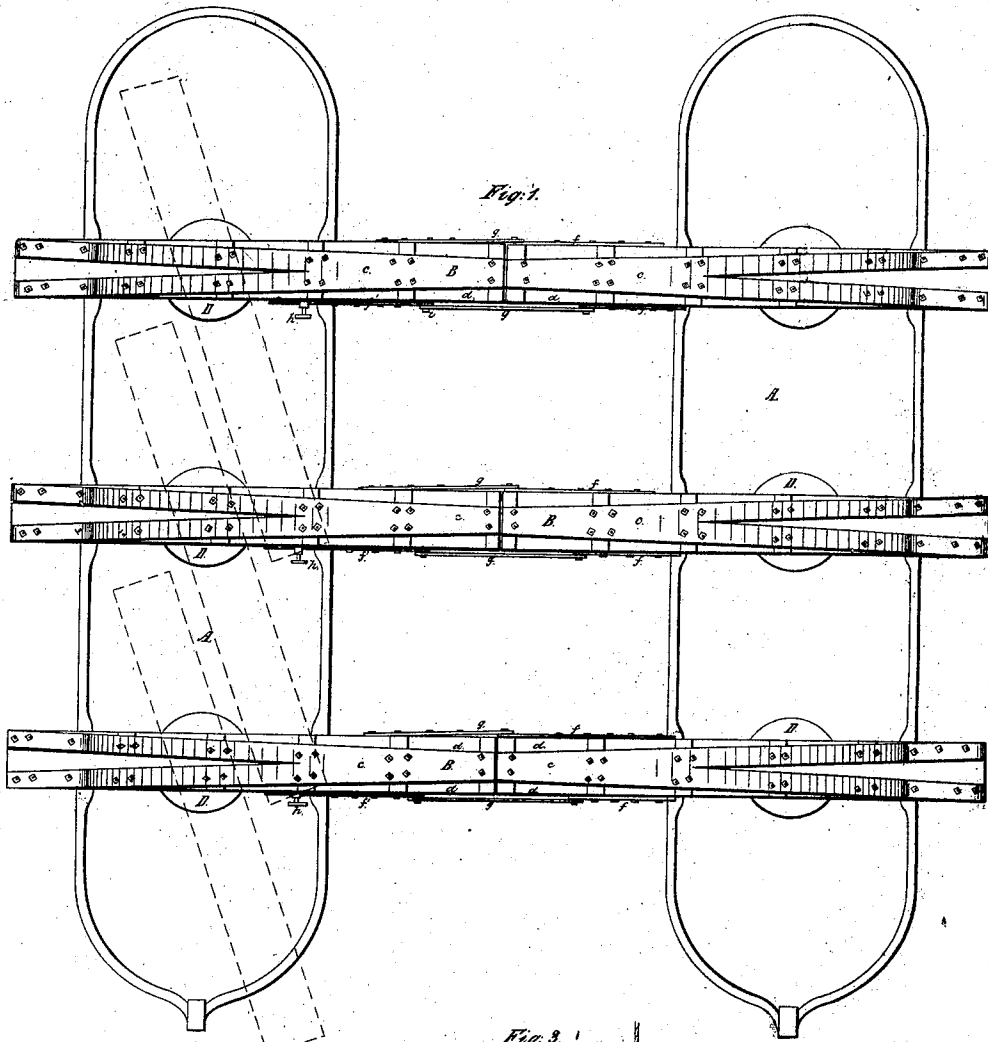


G. W. Talcott. *Sheet 1, 2 Sheets.*
Raising Sunk Vessels.

Nº 43873.

Patented Aug. 16, 1864.

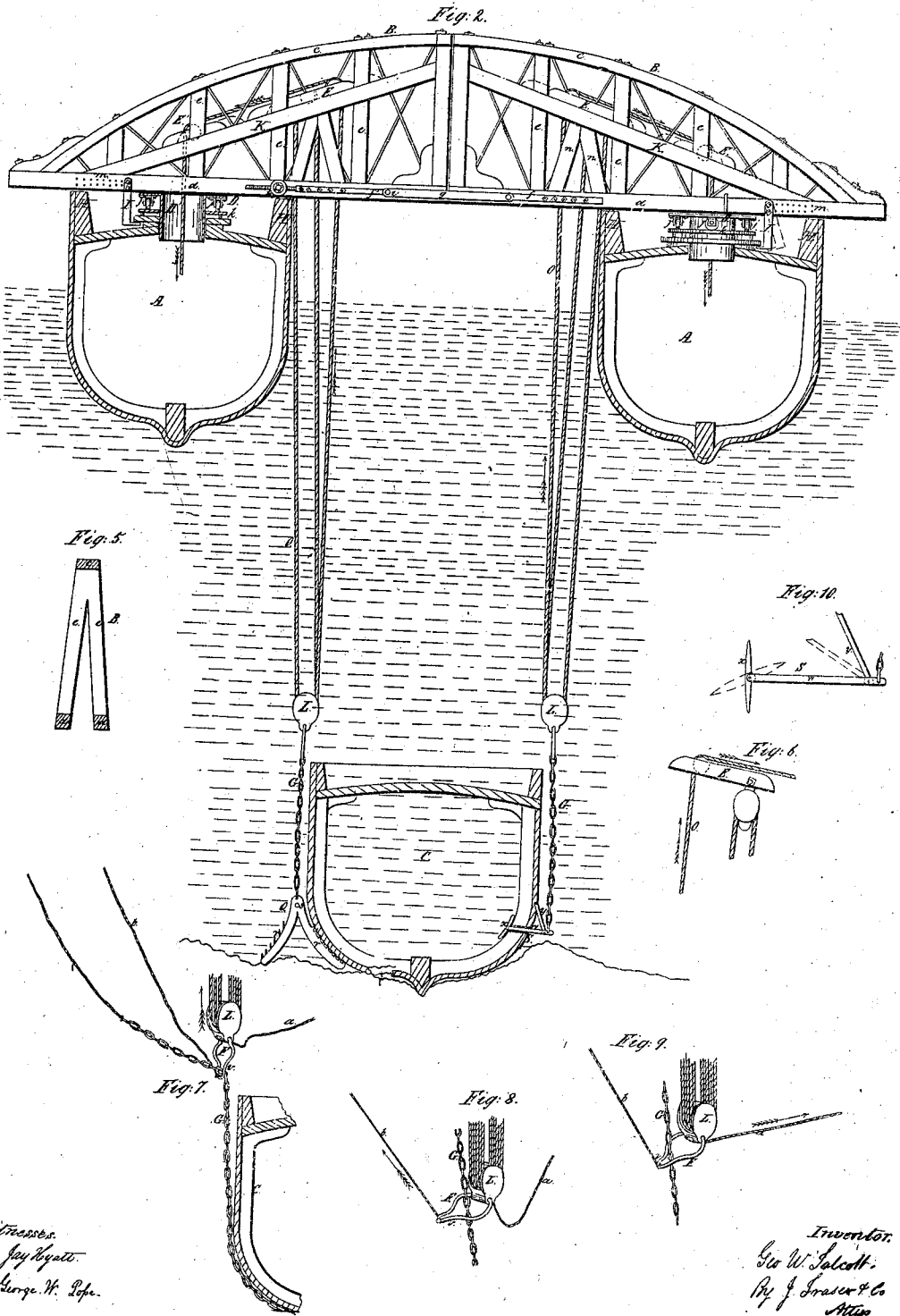


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Raising Sunk Vessels.
No. 43,873.
Patented Aug. 16, 1864.

Sheet 2, of 2 Sheets.



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UNITED STATES PATENT OFFICE.

GEORGE W. TALCOTT, OF BUFFALO, NEW YORK.

IMPROVEMENT IN FLOATING-DERRICKS.

Specification forming part of Letters Patent No. 43,873, dated August 16, 1861.

To all whom it may concern:

Be it known that I, GEORGE W. TALCOTT, of the city of Buffalo, in the county of Erie and State of New York, have invented a new and Improved Sectional Floating-Derrick for Wrecking Purposes; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan view representing the hulls or barges A A and the top of the sectional arches B connected. Fig. 2 is a vertical section of the hulls A A on a plane between two of the arches B, showing one of them in elevation, in working position over a sunken wreck, C, to which the grapples are attached. Fig. 3 is a vertical section through the deck of one of the barges, showing one of the turn-tables D and the hoisting-machine connected with it, both in elevation, and also a portion of one of the chord-timbers of the arches. Fig. 4 is a front elevation, detached, of the hoisting-machine, shown in side view in Fig. 3. Fig. 5 is a cross-section through one of the arches B, showing its form transversely. Fig. 6 is a detached view of one of the movable bearings E of the purchase-blocks. Fig. 7 is a view of the tackle-block clutch-ring F in its position when the wreck is suspended on chains. Fig. 8 represents the clutch ring F as it appears when tripped for overhauling the tackle-blocks down. Fig. 9 represents the clutch-ring F in the act of being connected with the chain G after overhauling the tackle-block by being drawn into "bite" by the guy-line a, while held in position by means of the trip-line b. Fig. 10 is a detached view of the toggle-bar and brace-grapple S.

Like letters of reference designate corresponding parts in all of the figures of the drawings.

The nature of my invention consists in the construction and arrangement of a series of arches upon the decks of two steam-barges, each arch being bisected vertically, and the sections arranged each upon a turn-table on the decks of the vessels, which is operated by steam-power in the hold, so that the sections may be swung around lengthwise of the deck for sailing, or connected with their corresponding sections on the other barge, for the pur-

pose of operating on submerged wrecks. The arches may be of any required number that the dimensions of the barges will accommodate, or that the burden required to be raised may demand, as each is provided with a hoisting-machine situated directly underneath the turn-table, and a tackle-block for each section, so that two sections, being firmly connected together, they constitute an independent arch capable of being employed with its adjuncts for raising and supporting a body separately or in conjunction with the others of the series, and the sections are also capable of separate action by being revolved on their axes to bring them into or out of service, and, by being moved bodily across the deck of the vessel, to give more or less space between the two barges, according to the size of the wreck to be operated on.

It also consists in a peculiar construction of the hoisting machinery, adapting it to the raising of heavy burdens in a steady and uniform manner, and in an improved form of clutch-ring for holding the chain cable by the tackle-block, and allowing the same to be overhauled in deep water, if necessary; and, further, in the construction of the grappling devices for connecting to sunken wrecks with greater facility than has heretofore been done.

My invention will best be understood by a general description of the operation of raising a wreck, followed by a more particular description of the specific parts which I claim.

As wrecking is usually conducted, temporary arches or "bents" of sufficient strength are built on vessels or lighters stationed over the place of the sunken wreck, when cables are drawn under it and power applied to them by means of capstans, windlasses, or other mechanism, usually by manual labor, until the wreck is raised to the surface, pumped free from water, and floated off to a place of safety. This process would be sufficient ordinarily were the foundation of these appliances firm and stable, but on the treacherous water the occurrence of a blow or gale produces a seaway, in which it is impossible to sustain a hold fast to so vast and unwieldy a burden as a sunken vessel of large size, or even of remaining in the place of operation, without having the whole structure go to pieces and be lost. The liability to this diffi-

culty is greatly increased by the slow process of working, which involves a delay of many days in securing a wreck.

It is the object of my invention to so facilitate this operation by adapting my structure and machinery to the purpose that a wreck may be raised in a much shorter time, thereby incurring less risk by the period of exposure, and by having the power contained within my apparatus not only capable of raising and sustaining the load but of propelling it to a place of greater safety or more convenient operation in shoal water, even before it is raised to the surface. To accomplish this result I provide each of my barges with a propeller-wheel in the stern and a boiler of sufficient capacity to supply not only the engine of the propeller but also engines for each hoisting-machine, there being one to each half-section of the arches. Whatever number of them I may employ, and in order that, in case of a sudden and violent storm, no part of the apparatus need be lost, as well as to facilitate going to and from the place of operation, the semi-arches are turned on their central bearings, D, as shown in red lines in Fig. 1, so as to stand closely side by side and nearly longitudinal with the barges, and trim or balance the vessels in sailing order, so that they can ride safely in all weather.

The arches are constructed with double chord-timbers or stringers *d d*, and the vertical supporters *e e* unite and are bolted or framed together before reaching the crown-timbers *c c*, which are divided at the span, but unite before reaching the crown, as is best represented in Figs. 1 and 5. By this means each arch is made to brace itself laterally, so as to stand firmly, as well as to secure greater strength at the base in the coupling of the stringers, where the greatest strain falls when in operation.

The coupling of the arch-sections is effected as follows: Each of the chord-timbers *d d* has two or more heavy straps or bars of iron, *f f*, bolted firmly to it, one being on each side, and there may also be one on the bottom. On one section they are applied so as to be movable longitudinally, and a swing-bar, *g*, from the opposite section being hooked onto a bolt or pin, *i*, provided for the purpose, the movable one is made to draw the arches together tightly and in true line at the base by a screw and hand-wheel, *h*, preferably. When the connection has been made sufficiently tight in this manner, several bolts are passed through the movable bars and timbers before attaching to the wreck, to relieve the screw from the strain which might otherwise strip off the thread. The arch-sections rest on the turn-tables when they are swung on board the vessels, but when raising a wreck they rest on chords H H, built up from the hull of the vessels on a line with the rails. The turn-tables rest on friction-rollers J J, which move on a track, *k*, which is raised by the hand-screws *l l* or other appliances, to elevate the arch-sections above the chocks or bearings on the vessels when they are being swung around, so that the weight is thrown on the friction-rollers.

tions above the chocks or bearings on the vessels when they are being swung around, so that the weight is thrown on the friction-rollers.

When the sections are disconnected to be swung on board of the barges, a turn-table is raised by the means above mentioned till it receives the weight of one section and raises it clear from the chocks, when it is secured by means of the hook or clamp I, or its equivalent. The arms of this clamp are bolted through the stringers *d* with two bolts, which hold it rigidly. By removing one, the other acts as a pivot on which the clamp may be turned back and disengaged from the platform of the turn-table, as shown by the red lines in Fig. 2. A series of bolt-holes, *m m*, is provided, so that the clamp may be altered to adjust it to the position which the section may occupy relative to the turn-table.

The arch sections are made for "rigging in and out board," to adapt them to the width of the wreck—that is, they are capable of an end-wise movement across the deck or beam of the barges to give a greater span. This is effected by raising them on rollers *n n*, which are attached to the side of the chock. These rollers are raised and lowered in the same manner as the turn tables by hand-screws *ll*. When raised in this manner, the sections can be moved "in and out board" by the winch-gearing on the bracket J acting on a rack-bar provided for the purpose on the lower side of the stringer. The clamps I I, that hold the arches fast to the turn-tables, must have been previously loosened, so that they will work free from each other during the change.

Double truss-braces K in each section of the arch, stayed underneath with angular braces or arches *n n*, between each division of the uprights *e e*, form a stable support for the bearing-block E, as well as a double track on which it is moved, to adapt the tackle-block to the width of space to which the arch may be adjusted. The hawser O, which may be of wire, Manila, or chain, passes from the tackle-block L between the braces K and over a friction-roller in the block E; thence over a similarly-constructed and movable bearing-block, E', placed directly over the tubular center of the turn-table D, and passing down through which, it is wound up on the three drums L' L' L'. These are grooved spirally, so that the hawser will follow in a true coil and not ride one coil upon another. The third or last, L'', is a slack-drum, its office being to take up the slack of the hawser, and thus prevent any possibility of its slipping. These drums are driven by the gear-wheels and pinions *o p M* from the small engine N, the power being applied to the small pinion *o* and gearing from that to the larger wheels, so as to multiply the power and give a slow and steady motion. The power is still farther increased by the tackle-block L, which should have four or more sheaves, and that being connected with the chain cable G, which is around or grappled to the wreck, it is apparent that the lifting power

which is applied to the wreck from the several arch-sections may be very great, and increased to any extent that the strength of the construction will withstand. A beveled pinion on the shaft of pinion, *p'*, Fig. 3, drives the red and pinion *g g'*, which, when thrown into gear with the teeth on the periphery of the turn table D, causes it to revolve to swing the arches around for the purposes heretofore mentioned.

A small engine is applied to each of the hoisting-machines, so that one may be worked independently of the other, or all together. Another engine drives the propeller-wheel of each barge, so that the attendance of a tug is not required, thus saving a considerable expense, and the steam from the same boiler supplies all the engines. The barges having been brought into position over the place of the wreck, the tackle-blocks are overhauled so as to bring the clutch-ring F down to the rail of the wreck, if it does not lie too deep—say, in four or five fathoms. If the wreck lies on a rock, so that a chain, G, may be passed under it, that is done, and both ends or a bite of the same being fastened securely in the clutch-rings, the machinery in the hulls is started and the hoisting begins, and continues until the wreck is raised sufficiently to allow of the other chains being swept under it, when the hoisting power of each arch is put in motion and all lift equally. If the wreck lies embedded, it may be raised sufficiently by grappling to get a chain under it. I employ two kinds of grapples, one (shown at Q, Fig. 2) formed with teeth on the outer side of two curved diverging bars which are suspended from a chain cable, the head or shank being provided with a stock, *s*, like that of an anchor. The sharp teeth *r* make it self connecting when it is drawn up under the stern or other projecting portion of a sunken vessel. The other form of grapple is shown in Fig. 10. It consists of a shank, *w*, having pivoted at one end a toggle-bar, *x*, which, when in a position parallel with the shank, will pass through a hole in the side of the vessel, and is then turned in a position which does not admit of its being drawn out, as shown in Fig. 2. Near the opposite end of the shank, where it is attached to the chain G, a brace, *y*, is pivoted in such a manner that, when the toggle-bar is inserted so as to hold, the brace is set against the outside of the hull, supporting the shank at the point where the lifting power is applied. This requires the services of a diver to go down and bore a hole in which to insert the toggle end of the grapple, but further diving is not requisite in using my apparatus.

If, in raising a wreck, it is in water of such depth that it is necessary to "fleet the tackle," or overhaul it down again while the wreck is partially raised, the ends of the chain G are drawn up and secured to a brace of the arch which sustains the wreck for the time and leaves the tackle and hawser free for overhauling. When the tackle has been over-

hauled, connection is again made between the chain and tackle-blocks by means of the improved clutch-ring F and the trip and guy lines *b a*, as shown in Fig. 7, 8, and 9. This clutch-ring consists of a ring pivoted to the tackle-block, and having on the side opposite thereto a yoke or extension, *v*, formed by elongating the side of the ring so that the links of the chain G will enter edgewise between the parallel sides, but cannot be drawn through it because the links above and below, being transverse, are too large to pass. The operation of this clutch-ring is simple, and will be best understood by the drawing in Fig. 7, where the chain G, which sustains the wreck, hangs in the yoke *v* of the ring. In Fig 8 the chain has been secured to the arch above, leaving the tackle-block free, and the ring F is shown "tripped" by means of the line *b* in the hands of an attendant on board one of the barges, so that the tackle-block may be flected down. This operation takes place under water without difficulty and without the aid of a diver. Fig. 9 shows the manner in which the clutch-ring is connected with the loaded chain after overhauling, it being drawn onto the chain by the guy-line *a*, while held in position by the trip-line *b*.

The pivot or center of the turn-tables consists of a large iron tube extending down through the deck, (shown most clearly at D' in the section, Fig. 2.)

The advantages of this construction are important, as it allows the hawser to pass through the tube exactly in the center transversely of the arch, and without interfering with anything, while it serves as a guard to protect the hawser from friction or injury while working. It also acts as a stay to prevent the arches from tarring, and steadies the barges if they careen, while its form combines the greatest strength obtainable from the amount of metal employed. The arches are to be cross-bolted with strong iron tension rods between each post in every section.

The construction of the bisected arches B B, with their adjuncts, consisting of the turn-table D and chocks or side bearings H H, gives the apparatus great adaptability for the purpose of wrecking and for many other purposes, such as submarine construction, as it is obvious that either of the hulls A may be anchored, and the half-sections of the arches, turning freely on the turn-tables by means of mechanism, may be employed to unload stone or other heavy material from the vessel's deck or hold, and, by means of the tackle, lower it to great depths with precision; and by dropping the arch-sections onto the chocks H each may be used as an independent derrick to raise heavy bodies, such as pieces of sunken ordnance.

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

1. The vertically-bisected arch or arches B, in combination with the barges or-hulls A A, when the same are so constructed that the

sections may be disconnected and swung on board the vessels for sailing, or connected with corresponding sections on another vessel to form a complete arch, substantially as and for the purposes set forth.

2. In combination with the bisected arch or arches B, the tubular turn-table D, arranged and operating substantially as and for the purposes described.

3. In combination with the bisected arches B, the tackle L, and movable bearings E E', arranged and operating substantially as and for the purposes set forth.

4. In combination with the adjustable turn-table D, the chocks or bearings H H, for receiving the weight of the arches B B and their burthen directly on the sides of the vessels after the turn-tables have been lowered away, substantially as described.

5. Working the arch-sections B in or out board on the barges A A by means of the rack on chord *d* and pinion on the bracket J, or their equivalent, substantially as and for the purposes set forth.

6. The hoisting apparatus consisting of the drums L' L'' L', pinions *o p* M, in combination with the divided swinging arch-sections B and tackle L, substantially as set forth.

7. The combination and arrangement of the movable tackle-bearing blocks or carriages E E' with the truss-brace K, which forms a

track for the same, substantially as shown and described.

8. Forming the arches B, divided at the base or chord and united at the crown, for the purpose of giving greater steadiness and stability, substantially as described.

9. The self connecting grapple Q, constructed substantially as described, for fastening to projecting parts of a wreck without the aid of a diver.

10. The diver's grapple S, consisting of the stock *w*, toggle-bar *x*, and brace *y*, for fastening to the side of a vessel, as set forth.

11. The clutch-ring F, constructed with the yoke *v*, in combination with the chain G, tackle-block L, trip-line *b*, and guy *a*, arrange and operating substantially as set forth.

12. The combination of a series of swinging bisected arches, B B, tackle L, grapples Q and S, with hoisting machine and engine for each arch-section, and the two hulls or barges A A, all arranged and operating together for the purpose of raising sunken vessels, &c., substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GEO. W. TALCOTT.

Witnesses:

J. FRASER,

R. F. OSGOOD.