

(No Model.)

2 Sheets—Sheet 1.

J. HALTON.
SUBMARINE PLOW.

No. 525,897.

Patented Sept. 11, 1894.

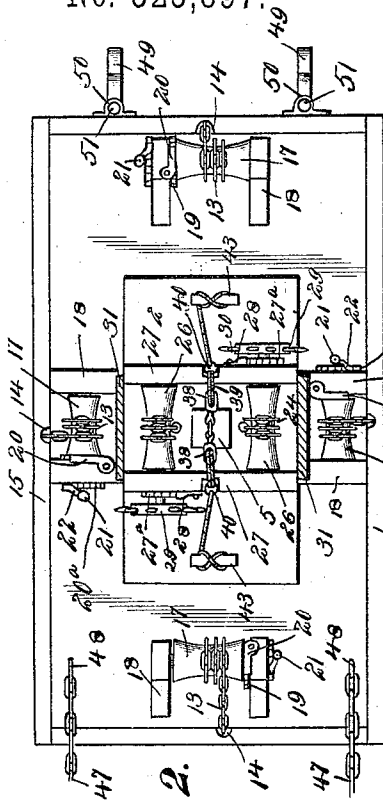


Fig. 2.

Fig. 1.

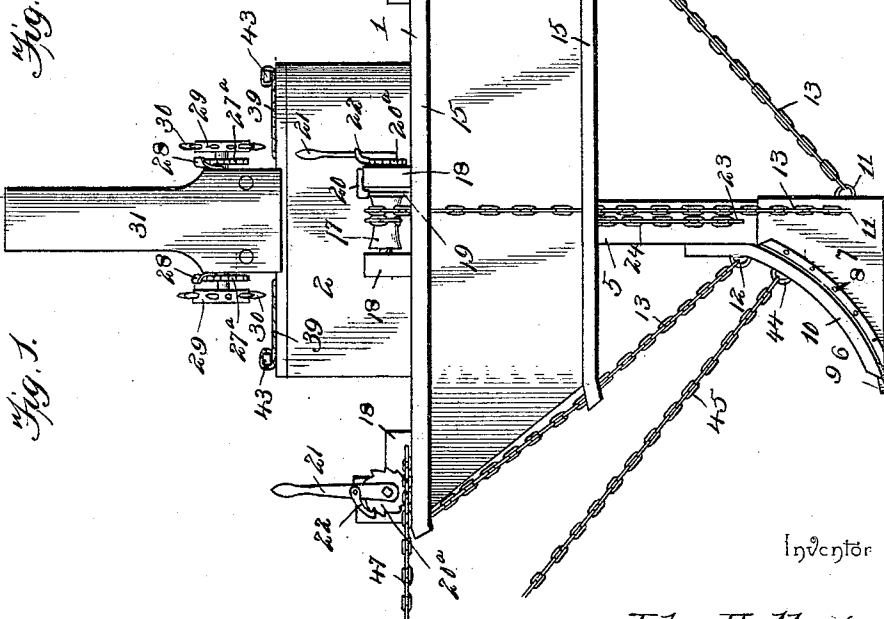
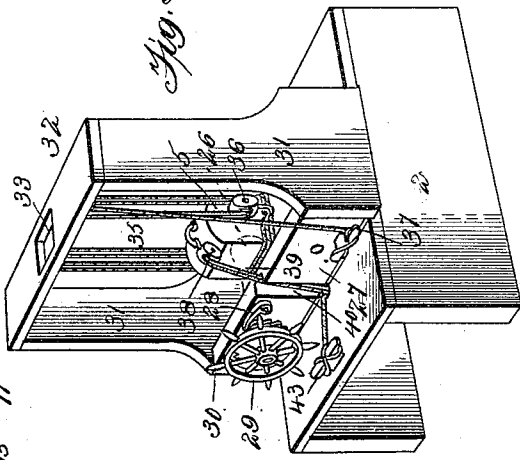


Fig. 3.



Inventor

Witnesses

Paul Shaw.
S. A. Quinn.

By *his* Attorneys.

John Halton,

C. Snow & Co.

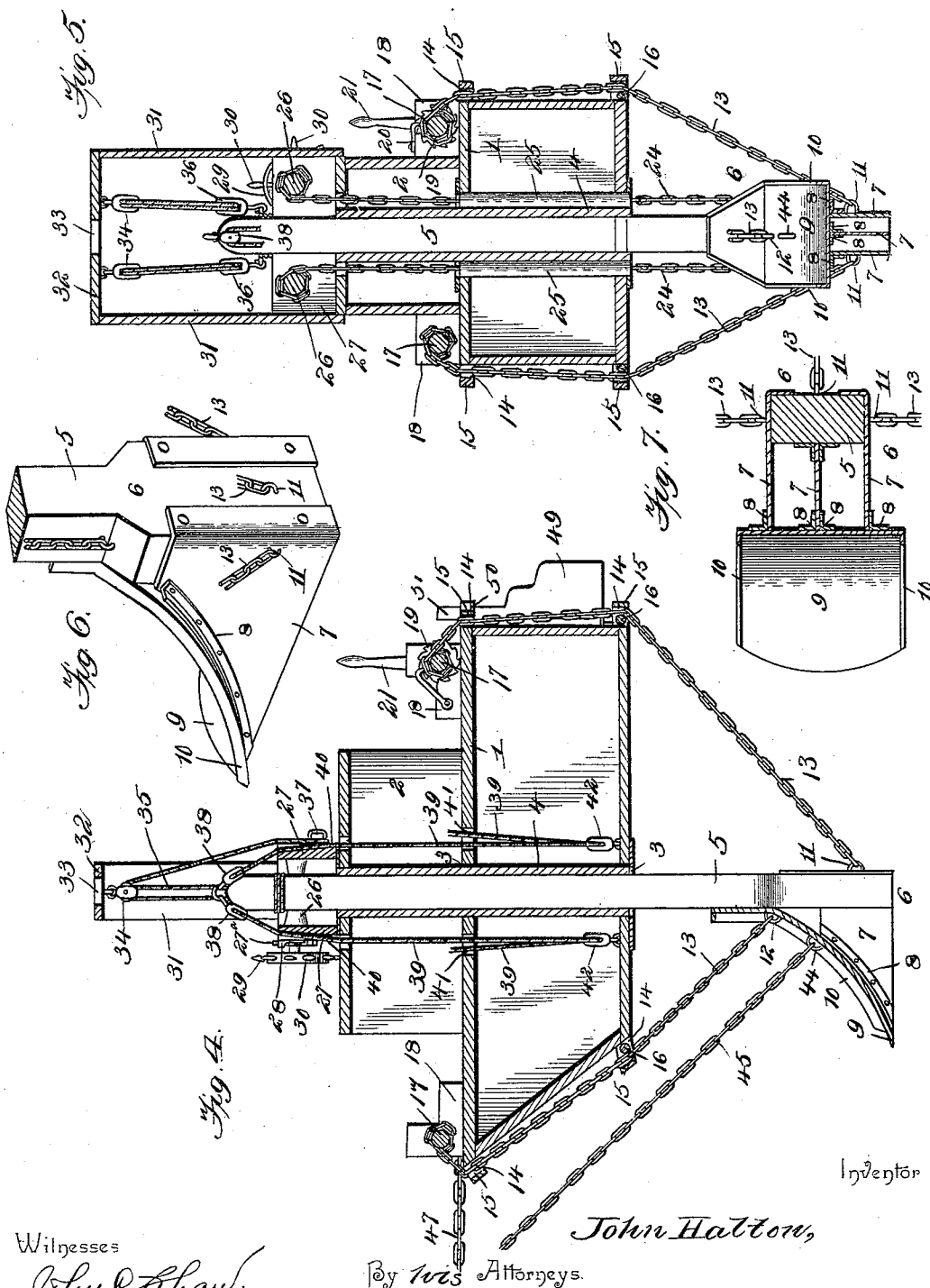
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2 Sheets—Sheet 2.

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SUBMARINE PLOW.

No. 525,897.

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Witnesses

John Shaw.
J. R. Moore

By *W. S. Attorneys.*

John Halton,

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

JOHN HALTON, OF ROUND ROCK, TEXAS.

SUBMARINE PLOW.

SPECIFICATION forming part of Letters Patent No. 525,897, dated September 11, 1894.

Application filed April 30, 1894. Serial No. 509,563. (No model.)

To all whom it may concern:

Be it known that I, JOHN HALTON, a citizen of the United States, residing at Round Rock, in the county of Williamson and State of Texas, have invented a new and useful Submarine Plow, of which the following is a specification.

My invention relates to an improvement in that class of submarine plows or excavators wherein a vertically-adjustable beam is employed, and provided on its lower end with a plow or excavator head adapted to perform the work of breaking up the bar; and the principal object of the invention is to provide a machine of this class and one wherein the beam will be capable of easier and more effectual adjustment to suit the conditions of the operation being performed.

Other objects of minor importance are contemplated, such as simplicity, durability, and cheapness, and the thorough attainment of all will be fully seen upon an understanding of the invention.

In the accompanying drawings: Figure 1 represents a side elevation of my complete machine, it being shown in use. Fig. 2 is a plan view thereof, the top beam of the yoke or pulley frame being broken away. Fig. 3 is a detail perspective of the upper deck of the machine, showing its attachments. Fig. 4 is a longitudinal section. Fig. 5 is a cross-section. Fig. 6 is an enlarged detail of the plow or excavator head. Fig. 7 is a horizontal section of the same.

The body of the machine consist of a float or boat like device, having a main deck 1, and an upper deck or bridge 2. Formed in the body or float are the openings 3, which are arranged both in the bottom and deck 1 thereof, and in vertical alignment. Arranged in these openings and extending upwardly to the deck 2 is the beam-well 4, which forms an open or clear passage from the deck 2 down to and through the bottom of the vessel. The well 4 has, of course, no connection with the interior of the body, so that the water will be allowed to enter the well but will not affect the buoyant properties of the body-portion.

Located and movable vertically in the well 4 is the plow-beam 5, which extends below the bottom of the body-portion and above the deck

or bridge 2. The lower end of the beam 5 is provided with the head 6, which consists of the triangular and vertical plates 7, secured to the beam and projecting forwardly therefrom. These plates are three in number and extend parallel with each other, their front edges being provided with the angle-plates 8, whereby they are rigidly secured to the curved front plate 9. The plate 9 extends from the lower extremities of the plates 7 upwardly to a point above the said plates and is secured to the beam 5. Formed on the plate 9, and extending around the sides and upper end of the same is the flange 10, which curves forwardly, so as to give the plate a shovel-like form. That part of the beam 5 to which the plates 7 are secured is enlarged laterally, so as to give a proper surface for the connection of the plates.

Secured to the sides and rear of the beam 5, and near the lower end thereof, are the eyes or hooks 11, while the front side of the beam, at a point near the upper end of plate 9, is provided with a similar device 12. To each of the hooks 11 and 12 the four chains 13 are respectively connected, and from their hooks the chains extend upwardly through the openings 14 in the buffer-beams 15, to the deck 1 of the body. The openings 14 in the lower beams 15, are attended by the anti-friction rollers 16, which are arranged at the lower edge of the body and serve to reduce the friction between the chains and body-portion. The chains 13 are one for each side of the body, and are wound over the drums 17, which are one for each chain, and are mounted in the boxes 18, affixed to deck 1 near the edge thereof.

Secured to the drums 17 are the ratchet-disks 19, and these co-operate with the gravity-pawls 20, of one of the boxes, whereby the drums may be held in the desired position. One end of the trunnions of the drums 17 is extended beyond the boxes and provided with the ratchet-wheels 20^a, adapted to operate with the levers 21. These levers are revolvably mounted on the trunnions and provided with the pawls 22, which engage the wheels 20^a. By this means the drums may be revolved and their respective chains wound thereon. The chains 13 are provided

for bracing and steadying the plow or excavator head.

Connected to the lower portion of the beam 5, and on opposite sides thereof, are the eyes or hooks 23, to which the chains 24 are respectively attached. From the hooks 23 the chains 24 extend upwardly through the wells 25 and to the deck 1. The wells 25 are two in number, one for each chain 24, and operate as does the well 4—to prevent the water from entering the body and to provide a device which will allow chains 24 free vertical movement. The upper ends of the chains 24 are secured to and wound over the drums 26, which are mounted on the transversely-extending beams 27, secured, in turn, to the deck 2. The drums 26 are one for each chain 24, and have one of their trunnions extended on alternate sides and provided with the ratchet-wheels 27^a and pawls 28, whereby back movement of the drums is prevented.

29 indicates an operating-wheel, which is fixed to each of the extended trunnions of the drums 26, and provided with the peripheral studs 30, by which they may be operated. Through this means the drums 26 may be revolved at will and the chains 24 wound thereon, thus adjusting the beam 5 to the required depth. Rigidly secured to the ends of the beams 27, and arising vertically therefrom, are the standards 31, which project for a distance equal to about the height of the deck or bridge 3, and are provided at their upper ends with the cross-bar 32. This bar 32 is in vertical alignment with the beam 5, and provided with the opening 33, through which the beam may pass when raised to the level of the bar 32. Secured to the bar 32, one on each side of the opening 33, are the compound pulleys 34, to which the ropes 35 are connected and over which they are wound.

36 indicates two pulleys, which are connected to the upper end of beam 5 and over which the lower portions of the ropes 35 respectively pass. The ends of the ropes are secured to the beams 27 by means of the cleats 37, secured rigidly to the beams. By these means the beam 5 may be raised and held rigidly, as will better appear hereinafter. Secured to the upper end of the beam 5 are the duplex and compound pulleys 38 to which the ropes 39 are connected. The ropes 39 are two in number, and are arranged one on the front and one on the rear side of the beam 5, and proceed down through the passages 40, in the beams 27, and through the openings 41 in the deck 1, to the lower portion or bottom of the body. Here the ropes 39 are connected to the body by means of the pulleys 42, and the free ends of the ropes proceed up to the cleats 43, to which they are secured. These ropes 39 serve to hold the beam 5 down, and cause the ropes 35 and chains 24 to be drawn taut and the plow-beam to be held rigid and steady. Secured rigidly to the plate 9, of the plow or excavator head is the hook 44, to which the chain 45 is connected.

From the hook 44 the chain 45 extends forwardly and upwardly, and this chain is adapted to be connected to a tug boat or other source of power.

47 indicates two additional draft-chains or ropes which are connected to the eyes or hooks 48, of each forward side of the boat, and which extend forwardly to the tug. By this means the machine is drawn through the water and its plow-head made to operate. I have provided two rudders 49, which are journaled in the boxes 50, of the rear end of the body, and may be actuated by any suitable mechanism attached to the shanks 51. This mechanism may be of any class or construction and does not enter into my invention. To use my appliance for cutting down bars or other obstructions in river or harbor channels, the several ropes or chains which are connected to the beam 5 are operated to adjust the beam to the proper depth, and the ropes are then secured to their respective securing devices, so that the beam and attached plow will be rigidly secured in place. The appliance is now drawn through the water so that the plow-head will engage the bar, and this will result in a destruction of that part which the plow engages. When one trip has been made, the ropes 39 are slacked and the ropes 35 operated to raise the beam 5 and its attachments, in which position the parts remain until the machine is in position to make a second cut, when the ropes 35 are slacked and ropes 39 tightened. This will secure the beam in position; and so the machine operates until the work has been done. It will be seen that the guy chains 13 and 24 will not have to be disturbed during this operation, and they may be adjusted at the start and kept so during the whole operation, their function being to limit the downward movement and restrain the lateral movement. When the depth of the plow is to be changed, the chains 13 and 24 will have to be adjusted to suit the new depth, and this may be done by means of the lever and ratchet mechanism attached thereto.

Having described my invention, what I claim is—

1. A submarine plow, consisting of a float having a vertical well therein and extending down to and through its bottom, a beam arranged and movable vertically in the well, a plow-head secured to the lower end of the beam, an auxiliary well extending parallel with the first and a chain or rope extending through the well and connected to the lower end of the beam and having its upper ends secured to the deck of the float, and a second chain secured to the beam and extending downwardly from the point of connection therewith, whereby the beam may be adjusted and held incapable of vertical movement, substantially as described.

2. A submarine plow consisting of a float having an approximately vertical well therein, and extending entirely through the same,

a plow-beam arranged in the well and movable longitudinally therein, a chain connected to the beam and extending upwardly from the point of connection, a winding drum 5 over which the upper end of the chain is wound, and a second chain secured to the beam and extending downwardly from the point of connection and connected to the float when so extended, whereby the beam 10 may be adjusted in the well and held incapable of longitudinal movement, substantially as described.

3. A submarine plow consisting of a float, an approximately vertical well in the float 15 and extending entirely through the same, a plow-beam arranged and movable vertically in the well, two auxiliary wells arranged

alongside the first well, a chain extending through the auxiliary wells and connected to the lower portion of the plow-beam, winding- 20 drums on the deck of the float, over which drums the upper ends of the chains are connected, and two additional chains or ropes connected to the upper end of the beam and extending downwardly therefrom, whereby 25 the beam may be adjusted and held so, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN HALTON.

Witnesses:

J. H. HOLT,

R. M. SNODELY.