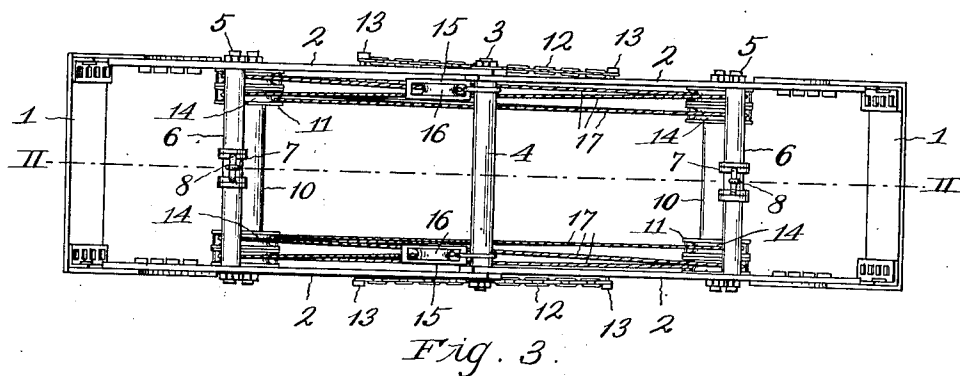
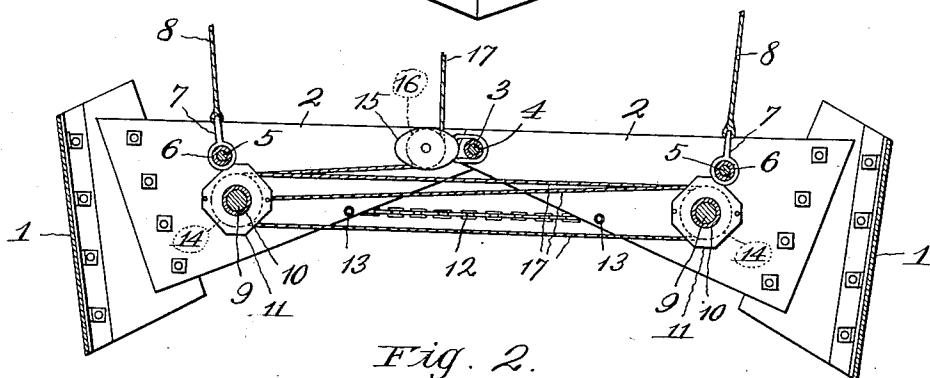
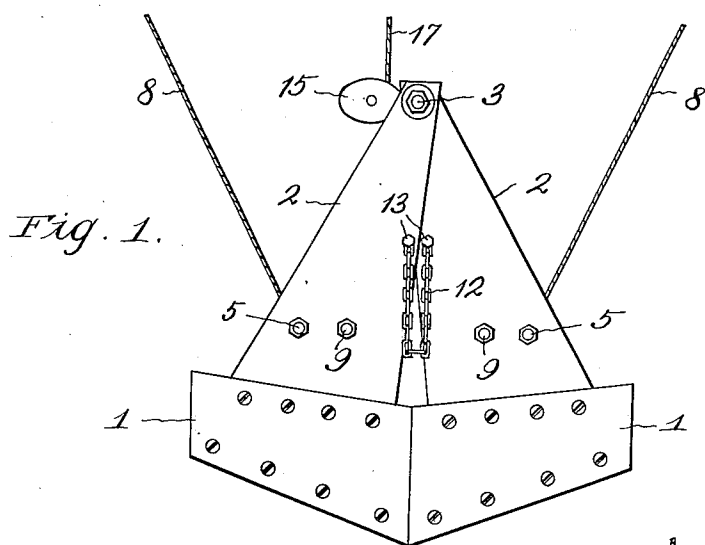


J. D. PENNEWELL.
CLAM SHELL.
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936,560.

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Witnesses:
M. Cox.
L. H. Doering.

Inventor:
John D. Pennewell,
By F. G. Fischer, atty.

UNITED STATES PATENT OFFICE.

JOHN D. PENNEWELL, OF KANSAS CITY, MISSOURI.

CLAM-SHELL.

936,560.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN D. PENNEWELL, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Clam-Shells, of which the following is a specification.

My invention relates to improvements in clam-shells for dredges and excavating machines, and one of my objects is to produce a clam-shell capable of a wider opening than those now in general use, so that it will take up its full capacity of sand or other material at each operation.

A further object is to produce a clam-shell possessed of considerable closing power so that it may be successfully operated upon coarse material and whereby the two sections of the shell are drawn together to prevent leakage of material at the joint between said sections.

Referring now to the accompanying drawing, which shows the invention: Figure 1 is a side elevation of the clam-shell in a closed position. Fig. 2 is a central vertical section on line II—II of Fig. 3. Fig. 3 is a plan view of the clam-shell in an open position.

In constructing the invention I make the scooped portion thereof in two halves or sections 1, the adjacent edges of which are adapted to abut against each other and thereby form a tight joint to prevent leakage of material therefrom. In order to obtain a wide opening of the scoop, I rigidly secure each section 1 to the free ends of a pair of arms 2, pivotally-connected at their opposite ends by a transverse tie-rod 3 provided with a sleeve 4, whereby the pivoted ends of each pair of arms are prevented from springing inward toward each other.

5 designates a tie-rod uniting the free portions of each pair of arms which are prevented from springing inward by a sleeve 6 through which each tie-rod extends. Each sleeve 6 is provided with a clevis 7 to which an opening cable 8 is secured. Each tie-rod 5 is arranged at about the center of gravity of its respective section, so that the sections will open slowly and thereby avoid injuring the pivotal tie-rod 3.

9 designates a tie-rod which assists each tie-rod 5 in holding the free portions of each pair of arms together. Tie-rods 9 are provided with sleeves 10 which prevent blocks 11, mounted near the ends of the tie-rods, from moving inward toward each other.

12 designates a pair of cables connected to bolts 13 on arms 2 to limit the opening movement of the clam-shell, which is closed by a combined closing and hoisting tackle, whereby considerable leverage is obtained to overcome the resistance offered by the material when scooping up or hoisting the same. Said tackle comprises the blocks 11, which are provided with sheaves 14, a pair of blocks 15 provided with sheaves 16, and a pair of cables 17 attached at their lower ends to one set of blocks 11, thence run around sheaves 14, and upward around sheaves 16 to the usual derrick and motor, not shown. Blocks 11 are so arranged with respect to the pivotal tie-rod 3 that they are in a plane below the same when the shell is opened to its full extent as shown in Fig. 2, hence no difficulty will be experienced in closing the shell, whereas if the centers of the blocks 11 and the tie-rod 3 were on the same plane, it would be difficult to close the shell.

In practice the shell is opened to its full extent and dropped upon the material with the sections 1 substantially in a vertical position, which insures a scooping up of the material to their full capacity when cables 17 are drawn upward.

From the above description it is apparent that I have produced a clam-shell which is simple but powerful in construction and operation, and well adapted for the purpose intended.

Having thus described my invention, what I claim is:—

1. A clam-shell having two sections each of which consists of a pair of arms and a scooped portion secured to the free ends of each pair of arms, a tie-rod pivotally connecting the opposite ends of the arms, tie-rods uniting each pair of arms near their free ends, the last-mentioned tie-rods being on a plane below the first-mentioned tie-rod when the clam-shell is opened to its full extent, blocks carried by the tie-rods, combined hoisting and closing cables extending around the sheaves of the blocks and attached at their lower ends to two of said blocks, and means for opening the clam-shell.

2. A clam-shell having two sections each of which comprises a pair of arms and a scooped portion secured to the free ends of each pair of arms at an angle whereby said scooped portions will assume substantially a vertical position when the clam-shell is open to its full extent, a tie-rod pivotally connect-

ing the opposite ends of the arms together, a sleeve on said tie-rod abutting at its ends against one pair of arms, blocks loosely connected to said sleeve, tie-rods uniting each pair of arms near their free ends, blocks mounted on said tie-rods, sleeves on the last-mentioned tie-rods abutting at their ends against the blocks, combined hoisting and closing cables extending around the sheaves

of all the blocks and attached at their lower 10 ends to a pair of blocks, and means for opening the clam-shell.

In testimony whereof I affix my signature, in the presence of two witnesses.

JOHN D. PENNEWELL.

Witnesses:

A. L. STRASSER,

F. G. FISCHER.