M. VALENTIN.

PROCESS AND APPARATUS FOR DREDGING BY SUCTION.

APPLICATION FILED JAN. 3, 1919.

1,351,979. Patented Sept. 7, 1920.

Fig. 1.

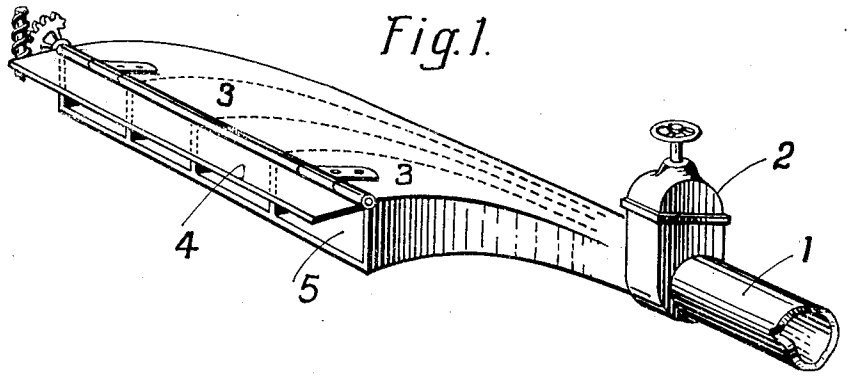


Fig. 2

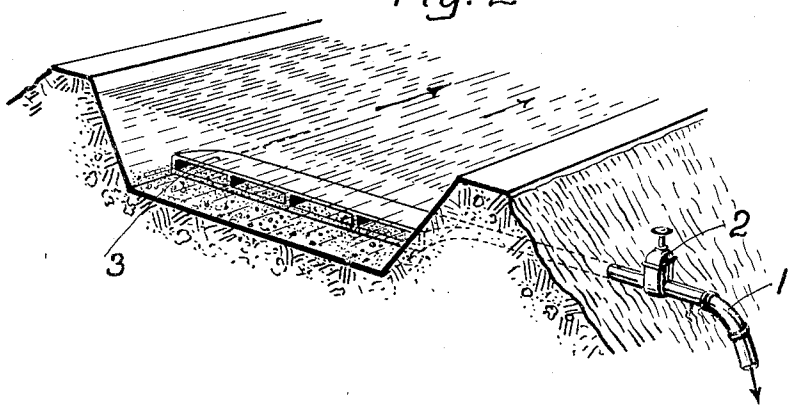
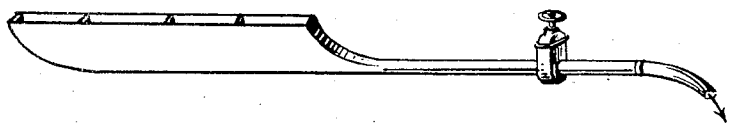


Fig. 3



Inventor:
Marcel Valentin
By Louis Poirier & Co
Attorney.

UNITED STATES PATENT OFFICE.

MARCEL VALENTIN, OF MEXICO, MEXICO.

PROCESS AND APPARATUS FOR DREDGING BY SUCTION.

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Application filed January 3, 1919. Serial No. 269,501.

To all whom it may concern:

Be it known that I, MARCEL VALENTIN, a citizen of the French Republic, residing at Mexico City, Federal District, Mexico, have invented certain new and useful Improvements in Processes and Apparatus for Dredging by Suction, of which the following is a specification.

This invention relates to a process and an apparatus for extracting in a continuous and automatic manner, the particles of solid material such as sand and gravel which are dragged by the current along the beds of water courses.

When an orifice is made on the bottom of a receptacle full of liquid, the latter escapes rapidly therethrough and thus produces a powerful suction at the point of issue. This suction is soon dissipated in the whole body of liquid and at a relatively short distance from the orifice loses much of its power and becomes so weak that it is then unable to drag along the particles that may accumulate on the bottom.

The object of this invention is to concentrate said suction at the exact point where it may be most advantageously used. For instance, in the case of a canal to be dredged, the suction is concentrated at the bottom of the course, following a horizontal and perpendicular line to the direction of the stream, in such a way that the drifting sand and gravel are intercepted and sucked off.

The three figures of the drawing are perspective views of the apparatus that performs the above mentioned work.

Figure 1 shows the apparatus by itself.

Fig. 2 shows the apparatus already installed on the bottom of a canal ready to be operated, the gate being omitted for convenience of illustration.

Fig. 3 shows the suction head or manifold in a vertical position.

(1) is a main pipe to exhaust a convenient volume of liquid. (2) is a valve to regulate the passage of the water through the main pipe (1). (3) is a suction head or manifold the interior of which is divided into a series of suction passages or channels which have approximately the form of flattened funnels placed one close to the other and joining the main pipe; these funnels extend across the entire width of the canal.

(4) is a hinged gate valve operated by a worm gear as shown or by any other operative means; the object of the hinged gate is to regulate the section of the inlets of the suction manifold.

When the valves (2) and (4) are opened, a certain volume of water runs out through the manifold (3) and exhaust pipe (1), dragging along with it and removing the sand and gravel which drift along the bottom of the water course.

The suction channels and in general all the dimensions of the apparatus, should be made proportionate to the particular local conditions relative to deepness and the velocity of the current, and the size and character of the materials to be carried off. Furthermore a judicious usage of the hinged gate (4) and the regulating valve (2) will permit the perfect adaptation of the apparatus after having been installed.

It must be understood that each part of the apparatus and most particularly the suction head or manifold can be divided into several pieces, according to the dimensions of the apparatus and the specific materials of which the apparatus is constructed; masonry, concrete with or without reinforcements, ceramic material, metal, etc., or any other suitable material may be used.

Having thus described my invention what I claim is:

1. A suction head for dredging the beds of flowing streams, comprising a plurality of juxtaposed funnels connected together and adapted to rest upon the bed with their open mouths arranged in the path of the current, said funnels having their outlet portions curved laterally in the same direction and opening along a horizontal line perpendicular to the direction of flow of the current so as to concentrate along such line the suction created by the passage of the water through said funnels.

2. A suction head for dredging the beds of flowing streams, comprising a plurality of juxtaposed funnels connected together and adapted to rest upon the bed with their open mouths arranged in the path of the current, said funnels having their outlet portions curved laterally in the same direction and opening along a horizontal line perpendicular to the direction of flow of the current so as to concentrate along such line the suction created by the passage of the water through said funnels; and regulating valve means adjustably located at the mouths of all of the funnels to regulate the passage of the water therethrough.

3. A suction head for dredging the beds of flowing bodies of water, comprising a flattened, funnel-shaped casing having a laterally-curved discharge portion, the interior of said casing being divided into a plurality of tapering channels, the inlet ends of which open through the front of the casing, and the outlet portions of which are curved in conformity with the discharge portion of said casing and open thereinto, said discharge portion terminating along a horizontal line which is perpendicular to the direction of flow of the water passing through said funnels so as to concentrate along such line the suction created by the passage of the water.

4. In an apparatus for dredging the beds of flowing streams, the combination of a suction head consisting of a plurality of juxtaposed nozzles connected together and adapted to rest upon the bed with their open mouths arranged in the path of the current, said funnels having their outlet portions curved laterally in the same direction and opening along a horizontal line perpendicular to the direction of flow of the current so as to concentrate along such line the suction created by the passage of the water through said funnels; an outlet pipe connected to the suction head and into which all of said funnels discharge; and means for regulating the passage of the water through said pipe.

In testimony whereof I have affixed my signature.

MARCEL VALENTIN.