No. 775,255. PATENTED NOV. 15, 1904.

N. H. & R. H. F. SEWALL.

MEANS FOR DREDGING.

APPLICATION FILED JULY 9, 1903.

NO MODEL.

Fig. 1.

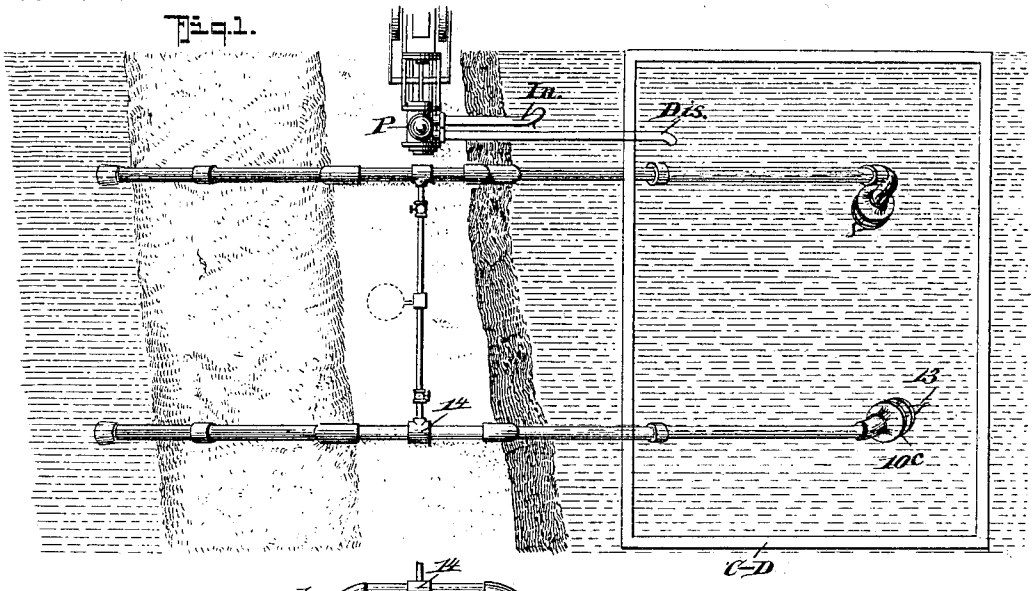


Fig. 2.

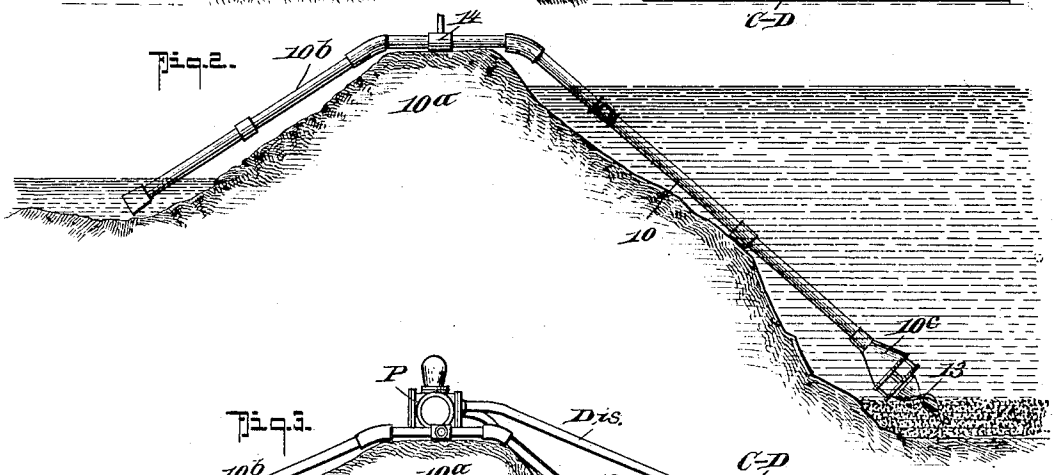


Fig. 3.

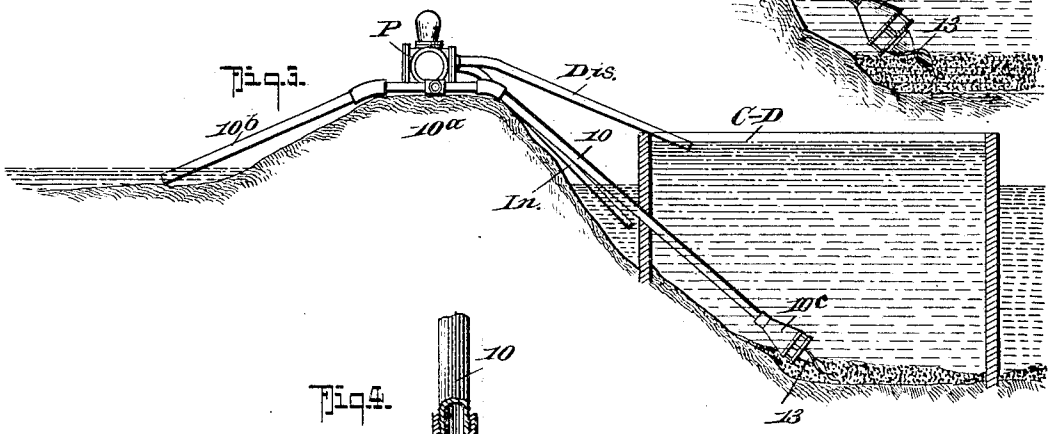
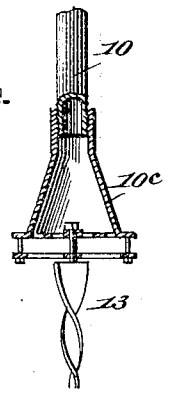


Fig. 4.



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UNITED STATES PATENT OFFICE.

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MEANS FOR DREDGING.

SPECIFICATION forming part of Letters Patent No. 775,255, dated November 15, 1904.

Application filed July 9, 1903. Serial No. 164,816. (No model.)

To all whom it may concern:

Be it known that we, NICHOLAS H. SEWALL and ROBERT H. F. SEWALL, of New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Dredging, of which the following is a specification.

This invention relates to an improved method and means for removing mud, sand, or silt from the sides or bottoms of rivers when it is desired to clean out or enlarge the channel or raise the surrounding land, build levees, &c., or to lower the flood-levels; and primarily this invention seeks to accomplish such results in a very economical and effective manner.

With these and other objects in view, which hereinafter will be made clear, our invention consists in the method and means hereinafter fully described, and pointed out in the appended claims.

In the drawings we have shown two different forms or applications of our invention, one of which is especially adapted for use at points where the water-level falls (as in tide-water of the river) to a point below the discharge of the suction or lift devices or in a lake or pond where the natural fall of the water caused by drawing off of a considerable quantity thereof with the silt and mud will cause its head or level to drop below the line of discharge of the lift or suction tube. The other form of our improvement is intended for use in rivers having their normal water-level always at a point above the discharge or surrounding land-level, the same being more especially intended for use on rivers such as the Mississippi, in which the water head or level during a considerable period of the year, especially during the spring freshets, remains above the low or surrounding land-level inside the levees.

In the drawings we have illustrated two forms or applications of our invention, in which—

Figure 1 represents a diagrammatic plan view showing a levee or bank, a low-land portion, and a coffer-dam surrounding that part of the river to be dredged. Fig. 2 illustrates in cross-section a levee and a river having its water-level normally above the low or surrounding land. Fig. 3 illustrates in transverse section the arrangement shown in Fig. 1, and Fig. 4 shows a combined receiving-funnel and digger-auger constructed to be especially applicable to our form of hydraulic-lift devices.

In its more general application, such as illustrated in Fig. 1, the method of applying our invention is as follows: At the point in the river or lake from which it is desired to remove the mud, silt, or sand a coffer-dam (indicated by C D in the drawings) is built, and at a suitable point on the bank of the stream adjacent the coffer-dam is placed a pump P, having its intake *In* extended into the stream outside the coffer-dam and its discharge *Dis* extended into the coffer-dam, the purpose of such pump being to maintain the water head or level within the coffer-dam at a point above the surrounding surface on which the material lifted from the river or lake is to be deposited, it being manifest that by this method the water-head can be kept on a level over the area to be dredged always at a proper or desired height irrespective of the regular water-level of the river or lake. The lift or suction devices, which are arranged similar but operate reversely to a siphon, comprise one or more pipes having a long leg 10, which may be formed of one or more sections, a bank portion 10^a, and a short leg 10^b, which may also be formed of sections. The long leg 10 in the form of lift devices shown forms the inlet and the short leg the outlet, it being also understood that a flow through the pipe after being initially created by any means will continue so long as the water-level within the river or lake remains above the discharge of leg 10^b. The lower end of the leg 10 has a funnel-like receiver 10^c, having a screened intake to prevent particles entering and choking the pipe.

As the lift action is effected entirely by hydraulic pressure and as the weight of the leg 10 will to a limited degree allow the funnel

or intake to drop down as the silt, sand, or mud is being drawn up, and to prevent the funnel becoming so much submerged that the material will become too solid to be freely and uninterruptedly moved, said funnel is provided with an automatically-operated stirrer 13 in the shape of an auger journaled at its upper end to project longitudinally and centrally out from the intake-mouth, whereby the flow of the semifluid material as it is drawn into the intake will in engaging the auger cause it to rotate, and in consequence sufficiently stir the material at the intake to prevent a solidified accumulation thereof at such point.

To effect an initial lift action through the lift-pipe the same at a suitable point, preferably of the bank portion, has a coupling 14, to which an air-suction pump is connected, the purpose of which is to draw off any air which might be within the pipe, and thereby create the initial flow therethrough, said coupling having its lateral or outlet provided with a cut-off valve for cutting out the air-pump. The long leg 10 is also provided with a valve near the water-surface to regulate the flow and for flushing purposes.

When the river or lake has a normal head or water-level at a point above the discharge-end of the lift-pipe, it will not be necessary to use the coffer-dam and the pump for maintaining the proper height of water, as will be clearly understood by reference to Fig. 2 of the drawings.

From the foregoing description, taken in connection with the drawings, it is thought the operation and advantages of our improvement will be readily apparent.

It will be observed that the lift and discharge from the bed of the lake or river will continue as long as the level in the river is above the discharge end, and by providing the intake with self-operating auger-like cutters or stirrers the same materially assists the water in dislocating the silt or mud on the river-bottom.

While our improvement is more especially adapted for cleaning out channels and river-beds, as above stated, it is obvious that the same may be also utilized for irrigating and fertilizing purposes—as, for example, for distributing water and mud over a rice or other field from a bayou or river.

When the form of our invention as illustrated in Fig. 2 is used, the cost for maintaining it in operative condition will be practically *nil*, and when the form shown in Fig. 1 is employed the only actual cost for maintaining the operation thereof will be the small cost of keeping up a flow of water to the coffer-dam to maintain the water-level therein at a proper and desired height.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A hydraulic conveyer or lift for removing mud, silt or sand from the bottom of rivers, lakes, &c., and discharging them over a levee, wall or other inclosure; comprising a lift-pipe extending over the wall having its intake end at a lower level than its discharge end and its discharge end maintained at a lower level than the head or water-level of the river, lake, &c., as set forth.

2. In a hydraulic lift of the character stated, in combination with the pipe having a long and a short leg for purposes stated; an intake-funnel connected to the end of the long leg, and an auger digger or stirrer projected longitudinally from the intake and rotatably mounted thereon, substantially as shown and for the purposes described.

3. The hereinbefore-described improvements in means for dredging, comprising a lift-pipe having a long pendent leg provided with an intake having automatically-operated stirrers for agitating the mud or silt, and a shorter leg discharging over the levee, wall or other inclosure onto shore, said pipe having a flushing-valve and an air-outlet, and means for maintaining the discharge end of the lift at a point below the water-level of the river, lake, &c., all being arranged substantially as shown and for the purposes described.

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