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DREDGER

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4 Claims. (Cl. 37-71)

The present invention relates particularly to the type of dredgers used in the removal and processing of gold bearing earth normally forming the bed of a water course, or an artificial body of water.

In this form of placer mining it is common practice to move the dredger into position and then by operation of a drag-line-bucket remove the material from the bed and deposit it in a processing plant on a separate bottom, the control of the bucket being entirely in the hands of the operator.

It is one object of the present invention to provide a structure wherein the bucket and the entire processing plant are associated on the one dredger, and wherein the bucket is automatically carried from the raising to the dumping position in one continuous movement.

It is also an object to provide an assembly that is anchored to the dry ground adjacent the forward or bucket-operating end whereby tailings may be discharged freely into the water at the other end and in no way interfere with the dredging operation.

Furthermore, it is an object to provide an assembly that will permit a substantial increase in the quantity of material handled, or processed, in a given time, and one in which an automatic control of the bucket dumping operation is provided.

In the drawing:

Figure 1 is a side elevation of a dredger embodying my invention.

Figure 2 is a top plan view of the same.

Figure 3 is a detail illustration of the automatic clutch control.

In the accompanying drawing forming a part of this application I show at 1 a hull or floating barge on which is mounted a washing plant 2 consisting of a receiving hopper, trommel, stacker, sluice tables, and all of the necessary equipment common to such a structure. In an assembly of this kind the receiving hopper is located at the end of the barge opposite to the discharge from the trommel, hereinafter referred to as the front end, and in the present instance the receiving hopper is indicated by the character 3.

In carrying out my invention I provide a recess in the forward end of the barge 1 as shown at 4, this recess being located immediately below the forward edge of the hopper 3 to permit the unobstructed passage of the bucket 5 back into the water after the dumping operation.

At 6 I show a boom or strut straddling the hopper 3 and pivotally mounted on the barge 1

at 7-7. This strut is fitted with a pair of pulleys at its upper end as at 8 and normally is tilted forwardly as shown and supported by contact with the top edge of the hopper but may swing backwardly to a vertical, or nearly vertical position as indicated by the dotted line 9 in substantial alignment with the rear edge of hopper 3.

A boom 10 is pivoted on supports 11 on either side of the barge 1 at its forward end, from which points it projects forwardly of the barge and converges to form a triangle, and is fitted with a ground penetrating mooring pin at its forward end and a sheave at 12 and 13 respectively.

The dragline bucket 14 and its carrying cables 15 and 16 on pulleys 8 and 13 together with the cone clutch controlled drums 17 which operate the cables are well known and common in the art and need not be described in detail. Likewise the operating means for the clutches are of standard construction, indicated generally at 18. But the clutches and drums and controlling means are mounted on a deck 19 overlying the washing apparatus with the said operating means passing close to the strut 6 with one of said controlling means having a pin 20 extending laterally therefrom in the path of travel of the strut 6 so that when the said strut is moved to its vertical position it will contact the pin 20 and actuate the controlling means to disengage the clutch to which it is connected.

The dragline bucket 14 is manipulated and controlled exactly in accordance with known practice, except that the boom which handles it is mounted directly on the same barge the plant 2 is mounted on. The common practice of mounting this boom on a separate conveyance and in such a manner as to permit its being swung in all directions as it carries the loaded bucket, requires that it be exceptionally strong and rigid which means that it is a costly item.

By mounting the boom 10 directly on the barge 1 and placing the major portion of the load on the strut 6 I am enabled to build the boom cheaply and economically and to use it, with the pin 12, for mooring the barge. And since the bucket and its load is carried mainly by the nearly vertical strut 6 and no universal swinging movement of the boom 10 is required the lifting and discharging of the load is greatly simplified.

Assuming the barge to be properly placed and the bucket 14 to be in the position shown, the controlling means is manipulated to lower the bucket through the recess 4 to the bottom of the body of water 21 and then to draw the same for-

wardly and upwardly, in which operation the bucket acquires a load of the gold bearing alluvial soil. When the bucket emerges from the water the controls are operated to pull it upwardly past the position shown until it reaches the top end of its flight, when continued movement will cause the strut 6 to swing backwardly until it approaches a vertical position and the bucket is suspended over hopper 3. At this time the controls should be manipulated to halt the rearward movement, but if the operator is inattentive and neglects to act the controls will be automatically actuated to effect this result as described. The bucket may then be emptied into the hopper 3 and the operation repeated, the strut 6 swinging back to its angular position for the lowering of the bucket as the direction of movement of the cables is reversed.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. The combination with a dredger barge for placer mining having a washing plant disposed thereon including a receiving hopper mounted adjacent its forward end, of a forked boom mounted on its forward end on either side of the hopper, a forked strut pivotally mounted on the barge on either side of the hopper rearwardly of the boom and on a horizontal axis adjacent the rear plane of the hopper, and normally tilted forwardly therefrom, a dragline and bucket operatively mounted on said boom and strut, and operating means for said dragline including clutch controlled drums, operating rods for the clutches extending forwardly to pass in close proximity to the strut, means for actuating the rods, and an auxiliary means for automatically operating one rod to disengage one clutch comprising a pin mounted to extend laterally from one rod and

lie in the path of travel of the strut at the close of its rearward movement.

2. The structure set forth in claim 1 wherein the free end of the boom is provided with an earth engaging mooring pin.

3. The combination with a dredger barge for placer mining having a washing plant disposed thereon including a receiving hopper mounted adjacent its forward end, of a boom mounted on its forward end adjacent the hopper, a strut pivotally mounted on the barge adjacent the hopper rearwardly of the boom and normally tilted forwardly with respect to the hopper, a dragline and bucket operatively mounted on said boom and strut, and operating means for said dragline including clutch controlled drums, operating rods for the clutches extending forwardly to pass in close proximity to the strut, means for actuating the rods, and an auxiliary means for automatically operating one rod to disengage one clutch comprising a pin disposed to extend laterally from one rod and lie in the path of travel of the strut at the close of its rearward movement.

4. The combination with a dredger barge for placer mining having a washing plant disposed thereon including a receiving hopper mounted adjacent its forward end, of a boom mounted on its forward end adjacent the hopper, a strut pivotally mounted on the barge adjacent the hopper rearwardly of the boom and normally tilted forwardly with respect to the hopper, a dragline and bucket operatively mounted on said boom and strut, and operating means for said dragline including clutch controlled drums, operating rods for the clutches extending forwardly of the barge, and strut actuated means operative to actuate one rod to disengage one clutch at the close of its rearward movement.

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