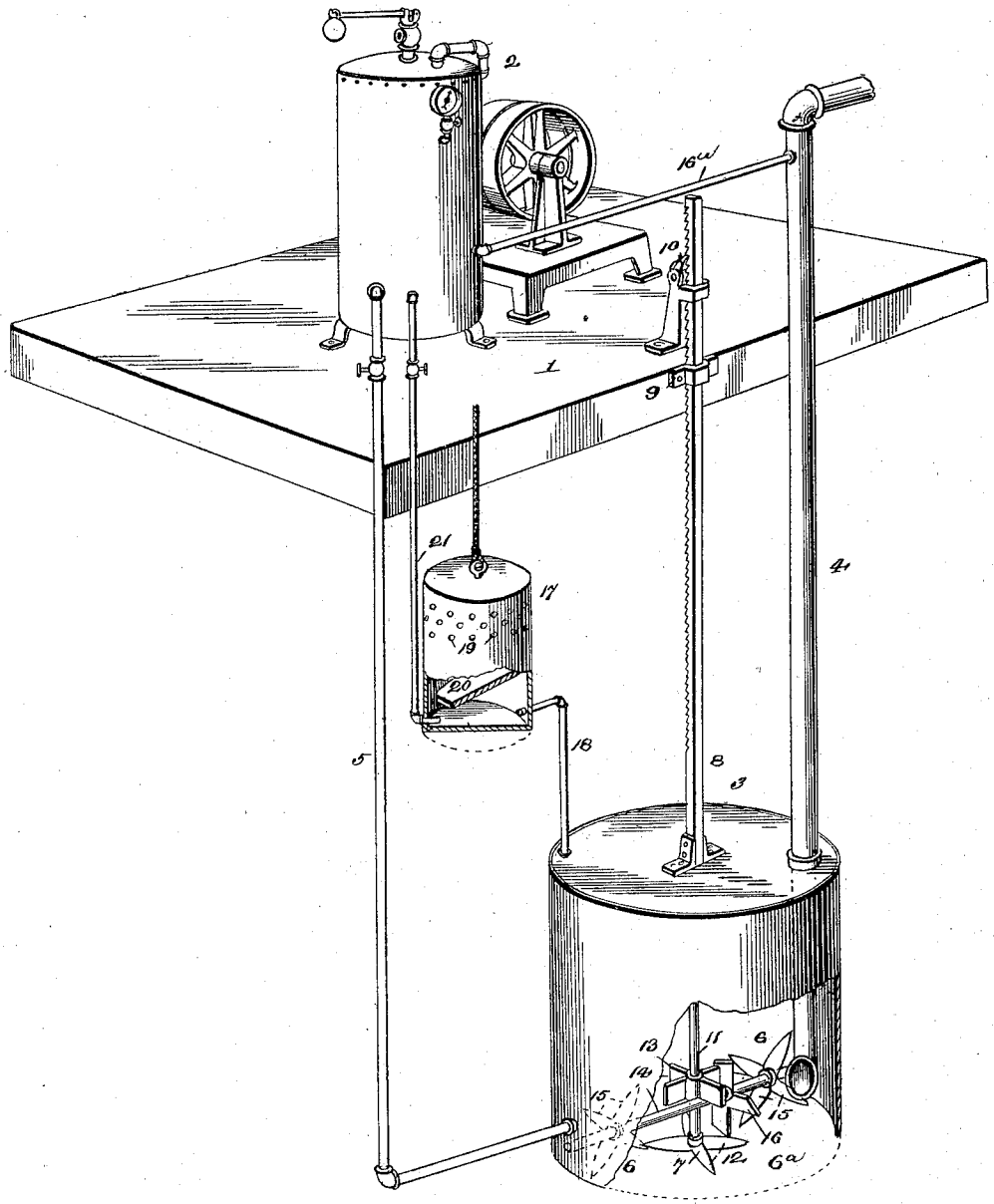
No. 609,350. Patented Aug. 16, 1898.

T. R. JONES.

PNEUMATIC DREDGER.

(Application filed Apr. 15, 1897.)

(No Model.)



Witnesses
Jos. L. Stack.
Victor J. Evans.

Inventor
Thomas R. Jones
By John Wedderburn.
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

THOMAS RICHARD JONES, OF SACRAMENTO, CALIFORNIA.

PNEUMATIC DREDGER.

SPECIFICATION forming part of Letters Patent No. 609,350, dated August 16, 1898.

Application filed April 15, 1897. Serial No. 632,276. (No model.)

To all whom it may concern:

Be it known that I, THOMAS RICHARD JONES, a citizen of the United States, residing at Sacramento, in the county of Sacramento and State of California, have invented certain new and useful Improvements in Pneumatic Dredgers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in dredging-machines, and has more particular relation to pneumatically-operated dredging-machines.

The invention consists of the combination, with a suitable support, of a dredging-bucket, a pneumatic conveyer connecting said support and bucket, digging devices mounted on said bucket, and means for operating said devices by compressed air introduced into the bucket from the support.

The invention also consists of certain other novel constructions, combinations, and arrangements of parts, all of which will be hereinafter more fully described and claimed.

In the accompanying drawing, forming part of this specification, the figure represents a perspective view of the apparatus embodying my invention, a portion of the bucket and ejector being broken away to expose the interior.

1 in the drawing represents the float; 2, the air-compressor; 3, the dredging-bucket; 4, the discharge-pipe; 5, the supply-pipe; 6, the vertical digger, and 7 the horizontal digger. The said float 1 may be of any desired construction in the form of a boat, so that the same may be carried about from place to place in the operation of dredging sand-bars and the like.

The compressor 2 may be of any ordinary type, operated by a suitable motor mounted upon the float 1. The bucket 3 is closed on all sides, but is formed with an open bottom 6, adapted to rest upon the sand-bar or river-bed which is to be dredged. This bucket is supported in position by a vertical standard 8, secured to its upper end and passing through a suitable guide 9, secured to the float 1, and provided with a pawl 10, which engages suitable rack-teeth formed on said standard 8 to hold the same in any of its adjusted positions.

The horizontal digging device 7 comprises a vertical shaft 11, journaled in said bucket 3 and formed at its lower end with a plurality of digging-blades 12. This shaft is further provided with a plurality of wings 13, the use of which will be hereinafter more particularly described.

The vertical digging device 6 comprises a horizontal shaft 14, provided at its opposite ends with a plurality of digging-blades 15. Inclined wings 16 are mounted on said shaft 14 and are adapted to be operated as will be hereinafter described.

The compressor 2 is connected to the bucket by means of a supply-pipe 5, so that the air forced down through said pipe will enter said bucket at such an angle as to strike the wings 13 and 16, and thus rotate the respective diggers and cause them to loosen and stir up the mud or sand with which they are contacting.

The discharge-pipe 4 is also connected to said bucket and to the compressor 2 by a branch pipe 16^a, which latter causes a suction in said pipe 4, which draws the contents of the bucket 3 upward and discharges the same at any suitable point.

An ejector 17 is connected with the bucket 3 by means of a pipe 18, which enters said bucket at its upper end and is connected to the ejector at its lower end. Said ejector comprises a closed casing formed at its top with a plurality of perforations 19 for the ingress of water. Said casing is also provided with an inclined diaphragm 20, located a short distance above its bottom. The air-compressor 2 is also connected with the ejector by a pipe 21, which enters said ejector near its lower end and directly opposite the port of the pipe 18.

It will be observed from the above that the pressure of air through the pipe 21 will cause the water to be drawn into the ejector-casing and be carried, with the air passing under the diaphragm 20, out through the pipe 18 into the bucket. By this means the contents of the bucket are always held in the desired degree of liquid suspension, so that they may be readily drawn up through the suction-pipe 4.

It will be observed from the foregoing description that my improved bucket may be

moved about from place to place and lowered onto the river-bed or sand-bar, when the operation of the respective diggers 6 and 7 will cause the contents of said bucket to become thoroughly stirred and mixed, so as to be easily drawn up through the tube 4 and discharged into a suitable barge or upon the shore through suitable piping.

By the peculiar construction of the diggers the same are operated by the compressed air introduced into the bucket. This compressed air at the same time assists in the operation of the suction-pipe 4, as a current is established through the bucket between the inlet and outlet pipe which readily carries over the contents of said bucket.

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

1. In a dredger, the combination with a suitable support, of a dredging-bucket suspended therefrom, a discharge from said bucket, rotatable diggers mounted in said bucket and each provided with a plurality of wings, and means for introducing compressed air into said bucket against said wings, to operate said diggers, substantially as described.

2. In a dredger, the combination with a suitable support, of an air-compressor mounted thereon, a bucket suspended from said support, a pneumatic discharge-pipe connected to said bucket, a plurality of rotatable diggers mounted in said bucket, and each provided with a plurality of wings, and a pipe connecting the air-compressor with the bucket for forcing air into the latter to operate said diggers, substantially as described.

3. In a dredger, the combination with a float, of an air-compressor mounted thereon, a bucket closed at its top and sides, a standard connected to said bucket, and adjustably mounted upon said float, a suction discharge-pipe connected to said bucket, a plurality of pneumatic diggers mounted in said bucket, and a compressed-air supply connecting said compressor and bucket for operating the diggers, substantially as described.

4. In a dredger, the combination with a suitable support, a dredging-bucket connected thereto, a pneumatic discharge for said bucket, digging devices mounted in said bucket, means for introducing compressed air into said bucket for operating said devices, and a water-ejector connected to the air-compressor and adapted to eject water into said bucket, substantially as described.

5. In a dredger, the combination with a suitable support, of a dredging-bucket connected thereto, a pneumatic discharge for said bucket, digging devices mounted in said bucket, means for introducing compressed air into the bucket for operating said devices, a water-ejector, a pipe connecting the air-compressor with the lower portion of the water-ejector, a pipe connecting the opposite side of the ejector with the bucket, and a diaphragm mounted in the ejector for directing the air therethrough, substantially as described.

6. A dredger comprising a dredging-bucket, digging devices therein, mechanism for operating said digging devices, and means for introducing compressed air to said mechanism substantially as shown and described.

7. A dredger comprising a bucket, an air-compressor, digging devices in said bucket, a motor for driving said devices and connections from the air-compressor whereby the air may be utilized to drive the digging devices substantially as shown and described.

8. In a pneumatic dredging apparatus the combination of the dredging-bucket, the digging devices, an air-compressor, the ejector connected with the bucket and arranged to supply water thereto, and connections between the ejector and the air-compressor whereby said ejector may be operated by compressed air substantially as described.

9. An apparatus substantially as described consisting of the air-compressor, the dredging-bucket, the discharge-tube, the water-ejector having a water-inlet, and connections between the said ejector and the air-compressor, and between such ejector and the dredging-bucket substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

THOMAS RICHARD JONES.

Witnesses:
GEORGE VERNON WATSON,
ERASTUS HOLDEN.