G. H. DAVIDSON.

SAND WHEEL.

APPLICATION FILED FEB. 9, 1910.

975,331.

Patented Nov. 8, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

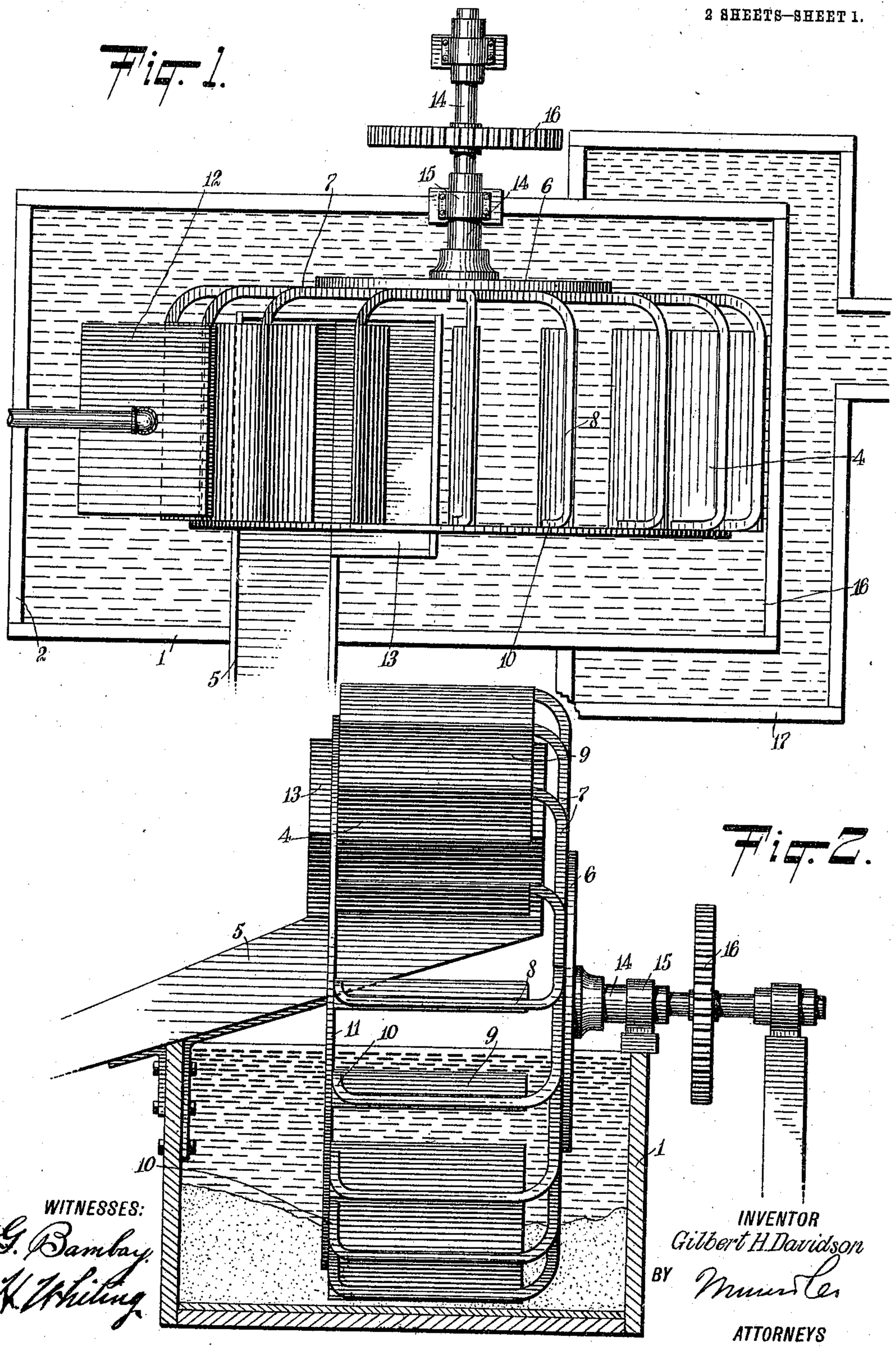

Fig. 2.

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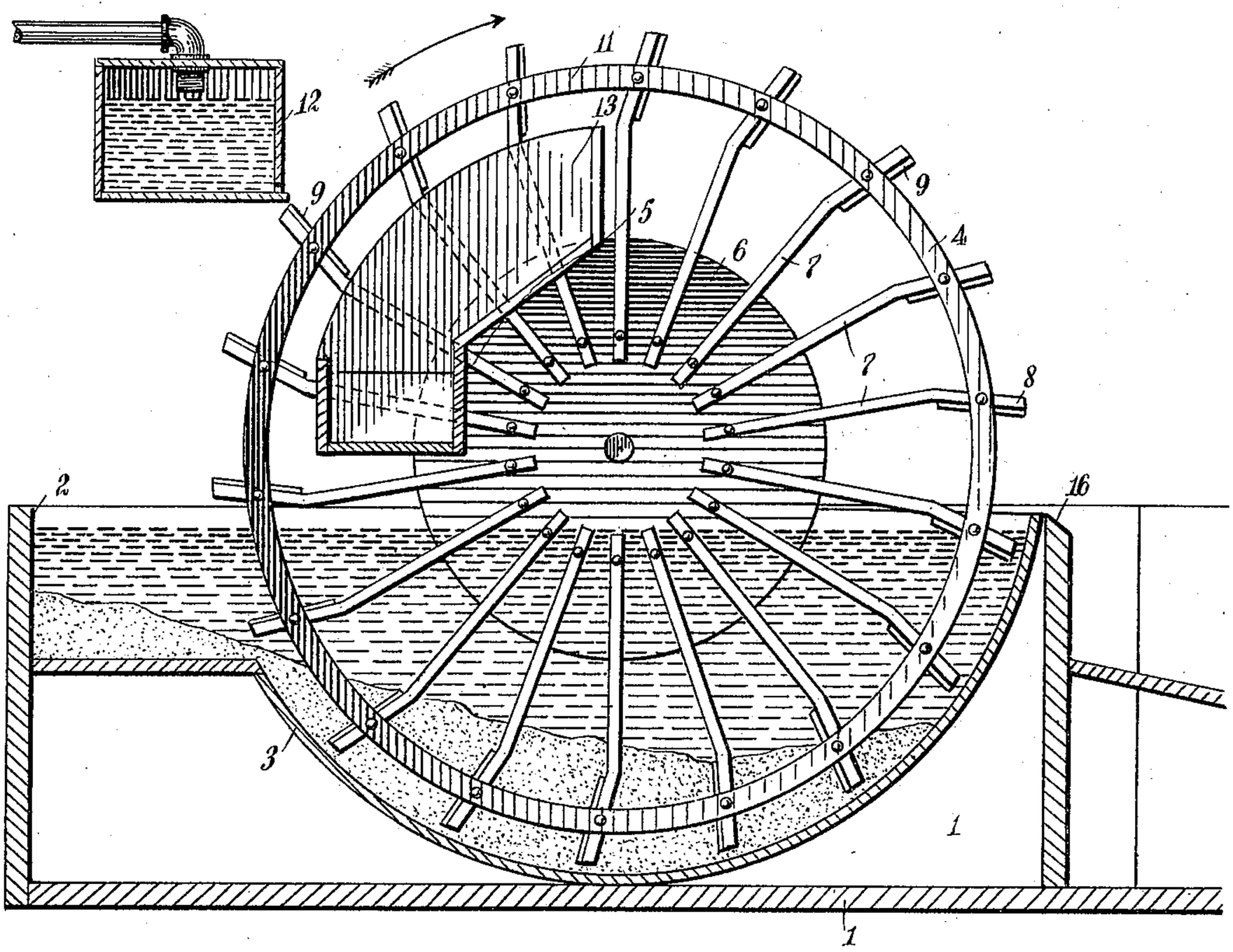
Fig. 3.



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GILBERT HENRY DAVIDSON, OF MORENCI, ARIZONA TERRITORY.

SAND-WHEEL.

975,331. Specification of Letters Patent. Patented Nov. 8, 1910.

Application filed February 9, 1910. Serial No. 542,858.

To all whom it may concern:

Be it known that I, GILBERT HENRY DAVIDSON, a citizen of the United States, and a resident of Morenci, in the county of Graham and Territory of Arizona, have invented a new and Improved Sand-Wheel, of which the following is a full, clear, and exact description.

This invention relates to a wheel adapted to take the coarse sand out of an ore, such as copper sulfid, after it has been crushed and ground; and particularly relates to a type which is adapted to separate the sands from the slimes and water, and may be used singly, or a plurality of them in series.

An object of this invention is to provide a device which will be simple in construction, inexpensive to manufacture, and clean, efficient and positive in its operation.

A further and important object is to provide a device which will remove the sands from a receptacle in such a manner that the slimes and dirty water will be separated therefrom in a clean and efficient manner.

These and further objects, together with the construction and combination of parts, will be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a top plan view; Fig. 2 is a vertical transverse section; and Fig. 3 is a vertical longitudinal section.

There are many so-called sand-discharging wheels now on the market, which merely lift the material from the tank or other receptacle and deposit it over the end thereof, together with the water and slimes, without cleaning the material in any way whatsoever. The purpose of this invention is, therefore to raise the material in such a manner that it will be supported on a substantially horizontal member when it emerges from the upper surface of the water, so that the slimes will be readily washed out, then subsequently removing the cleaned, drained sands from the supporting member by fresh water, and depositing them in a suitable conveying member, where they may be carried to the place desired.

Referring more particularly to the separate parts of the device, 1 indicates a suitable tank or receptacle, which receives the mixture of slimes, sands and water at its head 2. The tank 1 is provided with a false bottom 3, of an arcuate shape for a portion of its length, so as to bring it into coöperation with a sand wheel 4, so that the ore may be readily scooped up by the wheel. The wheel 4 is of a peculiar form in order that it may permit the intrusion of a conveying member 5, which is in the form of a chute, within its outer periphery, so that the wheel can deposit material into the conveying member 5 and yet rotate. The wheel 4 consists of a plate 6, to which is secured, at suitable spaced intervals, in any well known manner, a plurality of radially-extending arms 7. These arms 7 are bent to form transversely-extending extensions 8, which form the means for securing blades or buckets 9 to the arms. The arms 7 are further bent backward beyond the extensions 8, to form flanges 10, to which is secured in any well known manner, a ring 11, so as to reinforce the arms and swing them firmly back.

It is to be noted that the blades or buckets 9 are so secured on the arms that they will emerge from the water in the tank 1 substantially level, so that the slimes and water will be drained from the sands collected on the blades. When the blades 9 have been elevated a sufficient distance, the sands slide off into the interior of the wheel, and drop into the conveying member 5. In order to cleanly wash the sands from the blades 9, there is provided a spraying tank 12, which is supplied with water under a constant head, and flushes the sands with a clean supply of water into the conveying member or chute 5. The chute 5 is provided with wash-boards 13, so as to catch any splash and deposit it into the main portion thereof. This conveying member or chute 5 may be supported in any well known manner either on the tank 1 or adjacent to the tank, and is adapted to convey the sands elevated by the wheel 4 to any suitable place where they may be further treated. The wheel 4 may be supported in any well known manner, as by means of a shaft 14, secured to the plate 6 and rotatably supported in a bearing 15 located on the side of the tank 1. The shaft 14 is adapted to be driven from any suitable source of motive power connected up to a gear 16, secured thereon. The slimes and overflow water from the tank 1 pass over the foot end thereof, indicated at 16, to an over-

flow tank 17, from whence it may be further treated by subsequent wheels, which take out the finer sands, or it may be treated in any other suitable manner.

The operation of the device will be readily understood when taken in connection with the above description. The mixture of sands, slimes and water is fed into the tank 1, at the head end thereof, and is subjected to the action of one or more of the wheels 4. The false bottom 3 brings the material into the sphere of operation of the blades 9, which scoop it up, and inasmuch as they extend substantially horizontal when they emerge from the top level of the water, they will retain merely the coarse sand material, and permit the water and slimes to drain off. When the blades have been rotated a sufficient amount to cause them to incline inwardly, the sprayer 12 will flush them off the blades with clean water, into the conveying member or chute 5, which carries them off, to be subsequently treated by another process. The overflow from the tank 1 passes down into the overflow tank 17, from whence it may pass to subsequent tanks, in which it is treated by additional sanding wheels, or may be passed to vanners or other ore-dressing devices.

While I have shown one embodiment of my invention, I do not wish to be limited to the specific details thereof, but desire to be protected in various changes, modifications and alterations which I may make within the scope of the appended claims.

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

1. A wheel adapted to scoop material from a receptacle containing a liquid, said wheel comprising a plurality of radially-extending arms and flat blades unobstructed on all sides secured to said arms, said arms having a bend therein intermediate their ends, whereby said blades are adapted to leave said liquid in a substantially horizontal position.

2. In a device of the class described, the combination with a wheel having a plurality of flat blades unobstructed on all sides, adapted to scoop material from a receptacle containing a liquid, said blades being adapted to extend at an even horizontal level when leaving the surface of said liquid, said wheel being open at one side, of a conveyer adapted to extend through said open side into the interior of said wheel and also adapted to receive the material scooped up by said blades, and a sprayer for flushing the material from said blades onto said conveyer, said blades being adapted to successively form inclined chutes between said sprayer and said conveyer.

3. In a device of the class described, the combination with a wheel adapted to scoop material from a receptacle containing a liquid, said wheel having flat blades unobstructed on all sides, adapted to perform the scooping operation, said blades being adapted to extend substantially horizontal in leaving said liquid, of means for receiving the material scooped up by said blades.

4. A sand wheel for scooping up material, comprising a supporting member, a plurality or arms extending from said supporting member, said arms being bent to form supporting means for scooping blades, said arms further having flanges formed thereon, and a ring secured to said flanges for uniting said arms together.

5. The combination with a sand wheel adapted to scoop up material, comprising a plate, a plurality of arms extending radially from said plate, said arms being bent to form extensions and flanges, blades secured to said extensions, and a ring secured to said flanges and adapted to join said arms together, of a chute adapted to extend interiorly of said wheel and receive the material scooped up by said wheel.

6. In a device of the class described, the combination with a wheel adapted to scoop material, said wheel comprising a plate, a plurality of arms extending radially from said plate, said arms being bent to form extensions and flanges, blades secured to said extensions, and a ring secured to said flanges and adapted to join said arms together, of a chute adapted to extend interiorly of said wheel, and a water-sprayer for flushing the material off said blades into said chute.

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

GILBERT HENRY DAVIDSON.

Witnesses:

J. M. ERICHSON,

JOHN KIDDIE.