Apr. 10, 1923 1,451,479

R. SMITH

CHAIN SAND DREDGE

Filed Dec. 12, 1921

FIG. 1

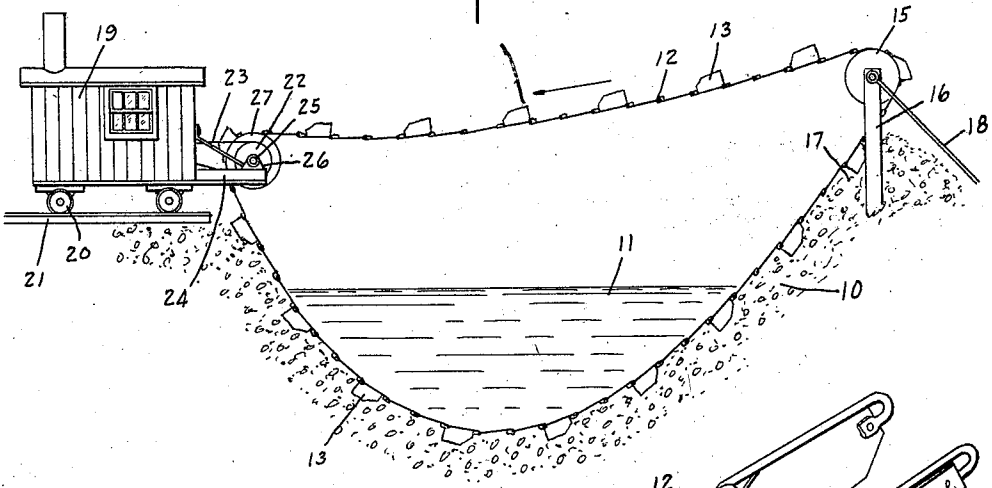


FIG. 2

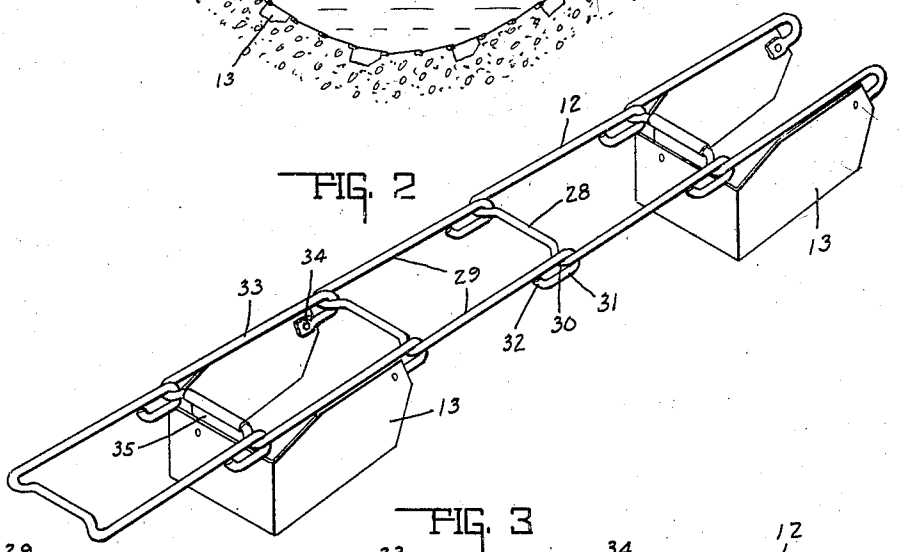
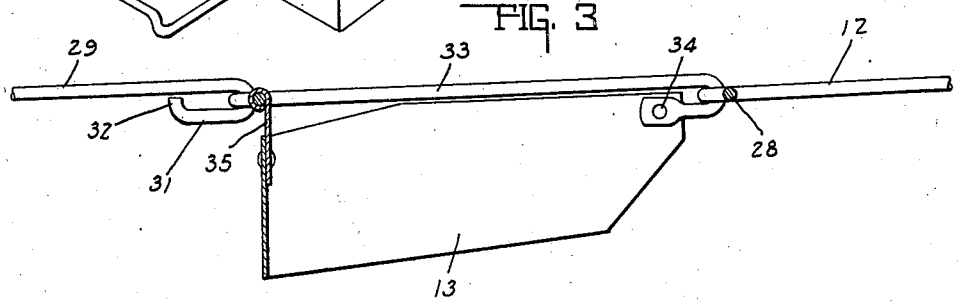


FIG. 3



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UNITED STATES PATENT OFFICE.

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CHAIN SAND DREDGE.

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To all whom it may concern:

Be it known that I, ROSELL SMITH, a citizen of the United States, and a resident of Lebanon, county of Boone, and State of Indiana, have invented a certain new and useful Chain Sand Dredge; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

The object of this invention is to improve the construction and arrangement of an apparatus for excavating sand, gravel or the like by means of a dredging chain substantially as shown and described in my Patent No. 775,686, issued November 22, 1904.

The particular feature of this invention resides in the construction of the chain employed and in the manner of securing the dredging buckets thereto, whereby the chain will be more flexible and will not bind when in operation and the buckets will be secured thereto in such a manner as not to weaken the chain or the connections by the abrasion of the sand.

The full nature of this invention will be understood from the accompanying drawings and the following description and claims.

In the drawings Fig. 1 is a side elevation of the apparatus, showing a water filled gravel pit in vertical section. Fig. 2 is a perspective view of a portion of the chain with the buckets secured thereto. Fig. 3 is a longitudinal sectional view of a portion of the chain with the bucket secured thereto.

In the drawings there is shown a gravel pit 10 in which there is a body of water 11, or 10 may represent the bed of a river or stream 11. An endless chain is formed of the links 12 carrying the buckets 13 that are held by two oppositely located means so that one side of the chain will sag, and as it is drawn across the bottom of the gravel pit will enable the buckets to carry out the gravel from said pit. Said chain is supported and carried at the right hand end by the sprocket wheel 15, mounted on a pole 16, embedded in a vertical position within the gravel pile 17. Said pole is anchored in position by a cable 18, or by any other suitable means.

At the other side of the gravel pit there is an engine house 19 supported upon the wheels 20 riding on the tracks 21, said housing inclosing an engine, not shown herein, which drives a pulley 22 by means of the belt 23. The pulley 22 is mounted on a platform 24 extending from the engine house over the pit and is keyed on the shaft 25 carried by the bearings 26. Adjacent the pulley 22 and keyed on said shaft is a driving sprocket 27 over which rides the chain 12. The dredge chain is moved by this means in the direction indicated by the arrows, thereby keeping the top of said chain substantially straight horizontally and permitting the bottom of the chain to sag in conformity with the bottom of the pit.

As the pit grows deeper it is necessary for the means on which the two sprocket wheels are mounted to be brought closer together in order to permit increased sagging or the chain may be lengthened by inserting more links. For this reason it is desirable that one end of the chain be mounted on means movable longitudinally thereof and, therefore, the engine and engine house is mounted on wheels riding on a track extending longitudinally of the chain. The same purpose may be accomplished by mounting the engine house on a flat boat riding in the water of the pit or stream, wherein said stream or pit has considerable width.

In order that the chain may be readily lengthened or shortened it is made up of links similar in form, all being hooked into each other but each link having one end 28 and two sides 29 so that it is open at the opposite end from the end piece 28. At the two connections of the link between the portions 28 and 29 there are notches 30. The other ends of the sides 29 are provided with hooks arranged to engage the notches 30 in each preceding link. These notches keep the sides of the link in position so they can not move towards each other, thereby holding them properly spaced. The hook portions of the links comprise a portion 31 extending rearwardly from the free ends of the side portions 29, a substantial distance parallel thereto and spaced therefrom at a slightly greater distance than the diameter of the side and end pieces. On the rear of each of the hook portions 31 there are inwardly projecting calks 32 which extends substantially at right angles to the portion 31 in position to abut the sides 29 and maintain the portion 31 in properly spaced relation thereto. The calk 32 acts as a spacer for

maintaining the portion 31 properly spaced from the portion 29 and also provides a stop against which the notched portion 30 may abut and limit the rear movement of the preceding link. By means of this arrangement each preceding link will at all times be loosely held in the hook portion of the adjacent link so that no binding can take place and will also always be free to slide back and forth until it abuts the calk 32.

The bucket 13 instead of being secured directly to the side portions 29 of the links, is provided with an individual link 33 of substantially the same formation as the links above described, which extends over the bucket with its side portions immediately above the sides of the bucket. The hook portions extend rearwardly and are secured to the forward end thereof by rivets or other suitable means, as at 34, whereby the forward end of said bucket is supported by the portion 28 of the preceding link. The rear end of the bucket is provided with a strap 35 veted thereto and suspended from the rear cross member of the bucket link 33, said strap 35 encircling that portion of said link 33 as shown in Fig. 3.

With this arrangement the bucket is permanently secured to one of the links without being riveted to the side thereof or in any other way decreasing the strength or permitting abrasion of the rivets or other securing means by the sand. Since all of the links are alike, including the bucket links, they may be arranged in any desired manner, being inserted or removed by spreading apart the hook portions thereof.

The invention claimed is:

1. In a chain sand dredge, a chain formed of links comprising two parallel side portions connected by an end cross portion, hooks provided on the free ends of said side portions for engaging the next adjacent link, and projections on the ends of said hooks for maintaining said hooks in position to permit the sliding movement therein of said adjacent link and acting as stops for limiting the sliding movement thereof.

2. In a chain sand dredge, a chain formed of links having parallel side portions connected at one end with a cross portion, hooks provided on the free ends of said side portions for engaging the adjacent link, said hooks comprising a downwardly and rearwardly bent portion extending parallel to and in spaced relation with said side portions and upwardly turned ends extending towards said side portions for maintaining the spaced relation of said rearwardly bent portions with respect to said side portions and acting as a stop for limiting the sliding movement of the adjacent link between the side and link portions.

3. In a chain sand dredge, a chain formed of links, one of said links having side portions connected at one end with a cross portion, the other ends of said side portions being provided with hooked portions adapted to engage the cross portion of the preceding link, a bucket, means for securing the forward end of said bucket to the hook portions of said link, and means for securing the rear of said bucket to the cross portion of said link, whereby said bucket will be supported and maintained in fixed relation therewith.

4. In a chain sand dredge, a chain formed of links one of said links having side portions connected at one end with the cross portion, the free ends of said side portions being provided with hooked portions adapted to engage the cross portion of the preceding link, a bucket having its forward end fixedly secured to the rearwardly extending ends of the hooked portions of said link, and a strap secured to the rear of said bucket and hooked over the cross portion of said link for supporting the rear of said bucket, whereby said bucket will be maintained in fixed relation therewith.

In witness whereof, I have hereunto affixed my signature.

ROSELL SMITH.