No. 878,526. PATENTED FEB. 11, 1908.

C. H. GUNN.

TRIANGULAR DREDGING BUCKET AND HOIST FOR SAME.

APPLICATION FILED APR. 22, 1907.

4 SHEETS—SHEET 1.

Fig. 2

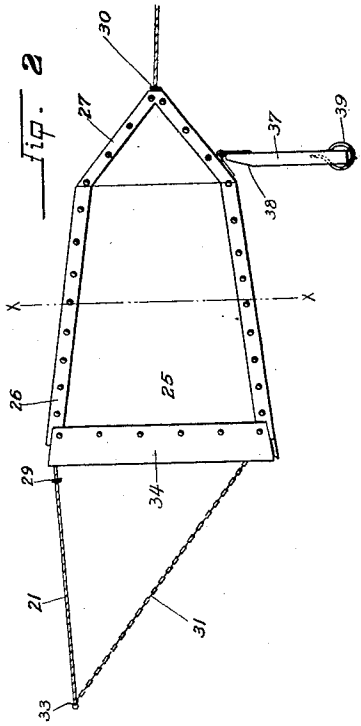
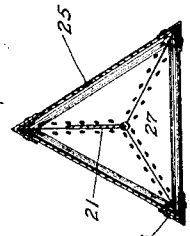


Fig. 3



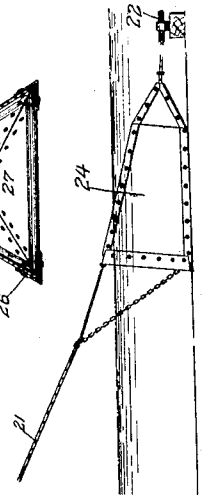
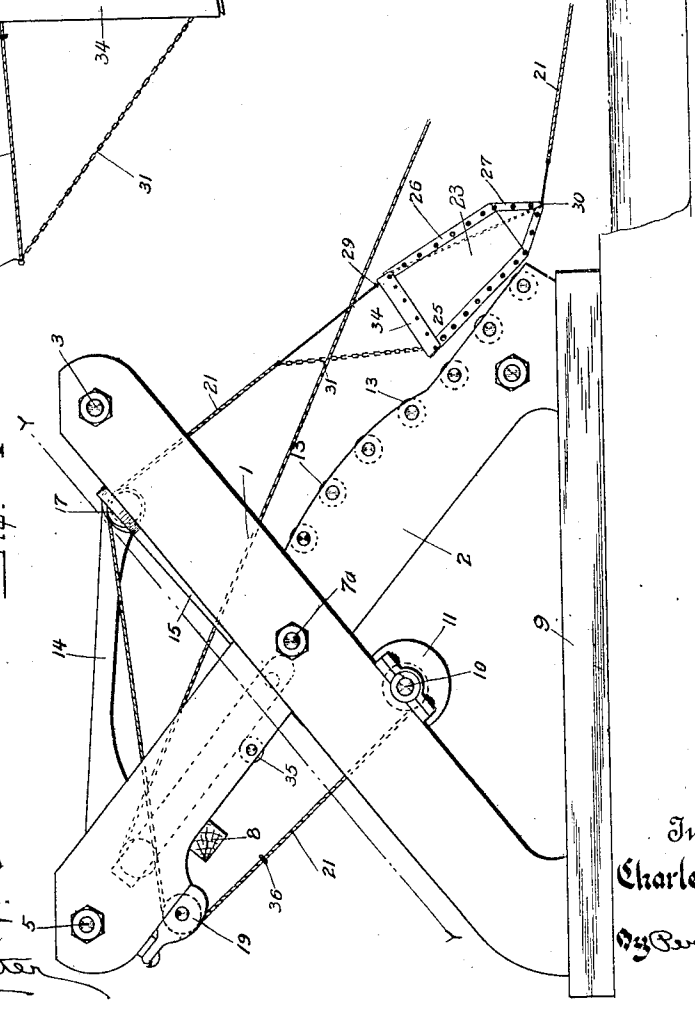


Fig. 1



Witnesses

Frank H. Carter

J. E. Webster

Inventor

Charles H. Gunn.

By Percy S. Webster

Attorney

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Fig. 4

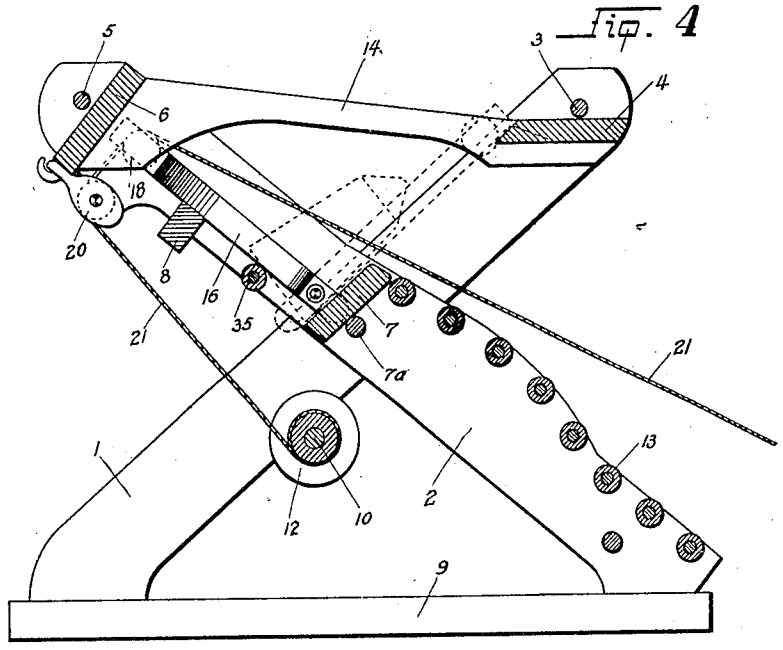
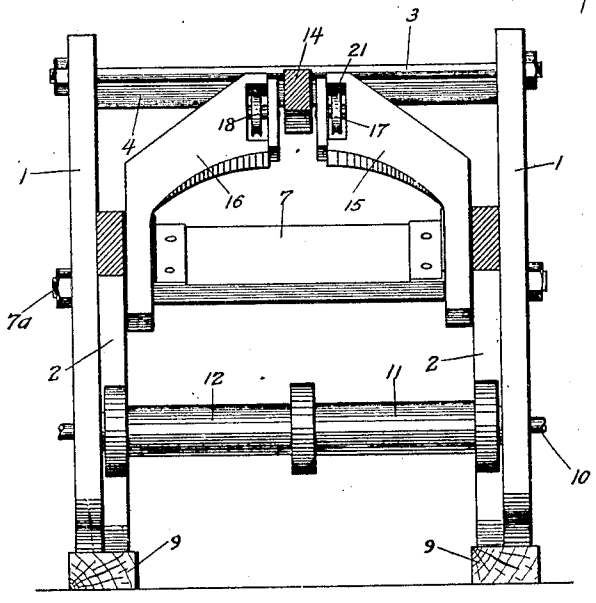


Fig. 5



Witnesses

Frank A. Carter.

S. B. Webster

Inventor

Charles H. Gunn.

By Percy S. Webster

Attorney

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C. H. GUNN.

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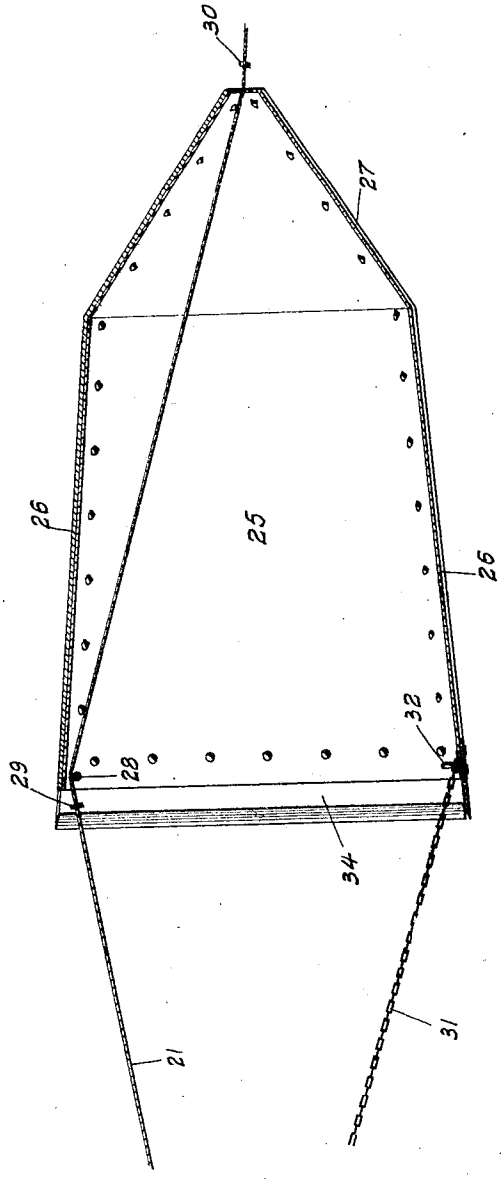
APPLICATION FILED APR. 22, 1907. 4 SHEETS—SHEET 3.

Fig. 6



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Frank H. Carter

J. B. Webster

Inventor

Charles H. Gunn.

by Percy S. Webster

Attorney

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4 SHEETS—SHEET 4.

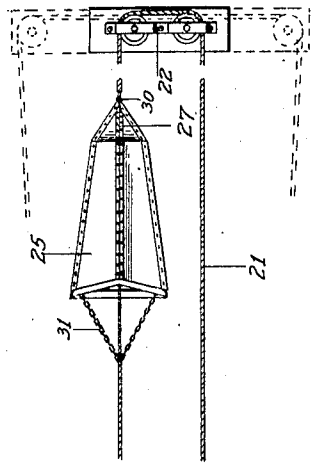
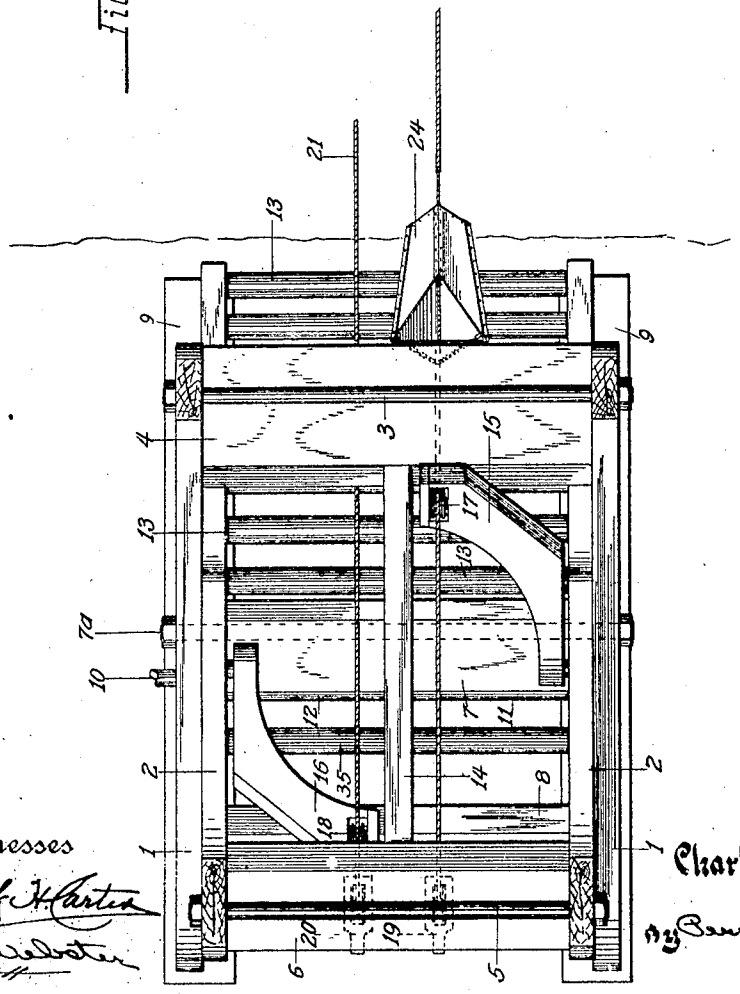


Fig. 7



Witnesses

Frank H. Carter

Inventor

Charles H. Gunn

By Barney S. Webster

Attorney.

UNITED STATES PATENT OFFICE.

CHARLES H. GUNN, OF MARYSVILLE, CALIFORNIA.

TRIANGULAR DREDGING-BUCKET AND HOIST FOR SAME.

No. 878,526. Specification of Letters Patent. Patented Feb. 11, 1908.

Application filed April 22, 1907. Serial No. 369,445.

To all whom it may concern:

Be it known that I, CHARLES H. GUNN, a citizen of the United States, residing at Marysville, in the county of Yuba and State of California, have invented certain new and useful Improvements in Triangular Dredging-Buckets and Hoists for Same; and I do declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in dredging machinery and particularly to the dredging buckets and hoisting mechanism therefor, my object being to dig, gather up and carry gravel or other material from greater depths and distances than is possible with the type of machines now so commonly used; also to gather the gravel from beneath swift running water or other difficult places with an ease and effectiveness not yet attained. These objects and many minor ones I accomplish by means of triangular gathering or dredging buckets adapted to be pulled along the surface of the material to be gathered, said buckets being so constructed and equipped as to cause the blades thereof to dig into and gather the gravel when the said buckets are drawn forward; also by means of a hoisting mechanism and cables adapted to co-act with said buckets for aiding said buckets to perform the functions aforesaid and to automatically raise the buckets and dump the material therein at any desired point; and also by such other and further construction as will appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views.

Figure 1 is a side elevation of my improved hoist showing the cable and bucket mechanism operatively connected therewith. Fig. 2 is a side elevation of the bucket detached. Fig. 3 is a sectional view of the bucket taken on a line *x x* of Fig. 2. Fig. 4 is a longitudinal section of the hoisting mechanism. Fig. 5 is a sectional view taken on a line *y y* of Fig. 1. Fig. 6 is a longitudinal section of the bucket. Fig. 7 is a top plan view of the device.

Referring more particularly to the reference numerals on the drawings I provide, for the hoisting mechanism, substantially X-shaped side frames composed of cross members 1 and 2. Joining the tops of the members 1 is a cross brace 3 and just beneath said brace is a cross beam 4. Similarly a cross brace 5 and beam 6 join the tops of the members 2. A center cross beam 7 joins the centers of said side frames, while a brace 7^a also joins said centers. A cross beam 8 extends across the members 2 at a point beneath the beam 6 and forms a stop for oscillating arms as will appear. The whole frame is set on mud sills 9 for the purpose of transportation.

Journaled between the lower ends of the members 1 is a shaft 10 on which are secured cable drums 11 and 12.

Disposed between the lower ends of the members 2 are a plurality of rollers 13 leading up to the beam 7, for the purpose hereinafter set forth.

Extending across from the centers of the beams 4 and 6 is a cross beam 14 adapted for the double purpose of bracing the device and form a guide and bearing surface for oscilliating arms 15 and 16, said arms being pivotally mounted on the members 2 and adapted to oscillate between the beam 4 and stop beam 8, and carrying pulleys 17 and 18 respectively at their upper ends.

Hung on the beam 6 are pulleys 19 and 20 disposed in alinement with the pulleys 17 and 18 respectively.

A cable 21 is secured to the drum 11 and extends through the pulley 19 and 17, thence around pulleys 22 set at any desired distance from the hoisting mechanism, from whence said cable extends back and through the pulleys 18 and 20 and around the drum 12. At intermediate points on said cable are fixedly secured bucket 23 and 24, constructed substantially as follows:—The said buckets are formed in a triangular shape, the sides 25 being joined together by means of angle irons 26 riveted thereto. Said sides 25 taper slightly from the front toward the rear and are formed with an abrupt pointed end 27. The cable 21 extends over a pin 28 in the forward end of the apex of said triangular bucket, thence through the pointed end 27, said buckets being held in their fixed position on said cable 21 by means of forward stops 29 adapted to engage with the pins 28 and rear stops 30 adapted to engage with the pointed ends 27. Said stops perform other functions as will appear. Chains 31 are

suitably secured to pins 32 in the lower vertices of said triangular bucket and join with the cable 21 at points 33. Blades 34 are removably bolted to the sides 25 of the buckets as shown.

In practice the buckets 23 and 24 are so disposed that as one is drawn toward the hoist the other is drawn away therefrom, and for this purpose the drums 11 and 12 rotate alternately the reverse of each other, the same being actuated by any suitable power.

As a hypothesis from which to commence the description of the operation of the device I will consider the bucket 23 as having been drawn up to the hoist and caused the arm 15, in a manner as will appear, to be carried back to the stop beam 8, the arm 16 being in its upright position against the beam 4. The drum 12 is then rotated to cause cable 21 to draw bucket 24 forward, the drum 11 unwinding said cable at the same time, thus pulling the bucket 23 rearward. As the bucket 24 is pulled forward the pull of the stop 30 against the point 27 and the cable 21 extending over the pin 28 naturally tips the bucket forward, thus causing the blade to dig into the gravel and thus fill the buckets, the chains 31 keeping the same from digging so far as to tip or stick the same. As the bucket 24 is filled and pulled upward the same advances onto the rollers 13, the upward position of the pulley 18 lifting the bucket over onto said rollers and preventing them from colliding therewith. As said bucket is advanced on said rollers, the joint 33 engages with the pulley 18 and, being unable to pass therethrough, carries the arm 16 backward, the downward curve described by said arm pulling the bucket over the beam 7 into a dumping position, (as shown in dotted lines, Fig. 4), said bucket resting on a roller 35 which prevents too far a downward movement of said bucket. As the bucket 24 is drawn forward as described the bucket 23 is being drawn rearward, and the feature of the stop 29 bearing against the pin 28 and the cable pulling through the end 27, combined with the pointed end 27, easily carries and slides the said bucket over any obstruction which it might encounter in its rearward travel. As the joint 33 reaches the pulley 18 and starts the arm 16 rearward, a stop knot 36 in the cable 21 engages with the pulley 17 and pulls the arm 15 forward as the arm 16 is pulled rearward, thus preparing the machine for reversing the movement of the buckets as described. Then the movement of the drums 11 and 12 are reversed, thus reversing the operation thus described.

The feature of having the buckets of a triangular shape presents the following advantages:—It permits of any side being used as the bottom, thus presenting three times the usual bearing surface, which is a great advantage in that the material worn out by constant friction is a great item of expense in dredging. The triangular shape permits of the arrangement of the cable entering the forward end of the apex over pin 28, thence through the point 27, which permits of the digging motion described and the easy rearward pulling of said buckets. In changing the bearing side of said bucket, the position of the cable would of course be always changed to the apex thereof in order to produce the proper operation. The angle irons 26 and blades 34 being secured to the outside of the sides 25 also present a large quantity of bearing surface which is essential as pointed out heretofore.

Should I desire to do simply leveling or grading with my device I have provided a dumping mechanism consisting of a hinged channel iron 37 having a bevel 38 at its upper end and a curved lower end 39. While the buckets are drawn to the desired point for dumping the said irons 37 drag along behind the said buckets. When it is desired to dump said buckets they are backed and the curved portion 39 engages the ground and forces the irons 37 to a vertical position, which of course tips the buckets forward, thus dumping them. This dumping means may, however, be used or left off at will.

Thus it will be seen that I have produced a device which substantially fulfils all the objects of the invention as set forth herein.

While in this specification I set forth the present and preferred detail of construction, still in practice many small deviations from such detail may be resorted to at will without departing from the spirit of my invention.

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

1. In a device of the character described a hoisting machine having substantially X-shaped side frames suitably braced together, and formed of cross members, a plurality of rollers disposed between the lower ends of one set of said frame members, a cable means on said frame, buckets secured to said cable means, and means for automatically raising said buckets onto said rollers, and means for automatically dumping said buckets, as set forth.

2. In a device of the character set forth a hoisting frame, cable means thereon, triangular shaped dredging buckets secured to said cable means, and means for automatically raising said buckets onto said frame and dumping the same, as specified.

3. In a device of the character described a hoisting means, a cable arranged in connection therewith, triangular shaped buckets secured on said cable, and means whereby a forward movement of said cable will cause said buckets to tilt slightly forward, as set forth herein.

4. In a device of the character described a hoisting frame, an inclined roller receiving mechanism installed therein, oscillating arms pivotally secured to said frame and extending normally above the top of said roller mechanism, pulleys arranged in the tops of said arms, a cable suitably disposed through said pulleys and adapted to carry dredging buckets, and means on said cable for oscillating said arms as required, as specified.

5. In a device of the character described a hoisting frame, an inclined roller mechanism disposed thereon, oscillating arms pivotally mounted on said frame and extending normally above the upper end of said roller mechanism, a cable disposed through said arms and engaging with suitable hoisting drums, buckets secured to said cable, means for alternately advancing one bucket and drawing the other backward, and means on said cable for alternately oscillating said arms backward and forward, as set forth.

6. In a device of the character described a hoisting frame, an inclined roller mechanism disposed in said frame, means for automatically advancing buckets onto said roller mechanism, means for automatically tipping said buckets off the top of said roller mechanism into a dumping position, and a stop roller disposed in a lower plane than the top of said roller mechanism and adapted to regulate such dumping position, as set forth.

7. In a device of the kind described a bucket formed of triangular shape, tapering slightly from the forward end to the rear end thereof and formed at its rear with an abrupt pointed end, and a cable attached to said bucket and operated by a hoisting machine, as set forth.

8. In a device of the character described a bucket formed in triangular shape and formed with an abrupt pointed rear end, a pin across the apex of said bucket at the front end thereof, a cable extending over said pin, thence through said pointed end, stop knots in said cable adapted to co-act with the said pin and said pointed end, and a hoisting mechanism operating said cable, as set forth.

9. In a device of the character set forth a bucket formed triangular in shape and having an abrupt pointed rear end, angle irons riveting the sides of said bucket at its vertices, removable blades secured to said sides, and a cable mechanism secured to said bucket, said cable being operated by a suitable hoist, as specified.

10. In a device of the character described a triangular shaped bucket formed with an abruptly pointed rear end, pins across the forward ends of the vertices of said bucket, a cable extending over the pin in the apex of said bucket, thence through the said pointed end, a stop knot on said cable just outside said last named pins, a similar stop knot in said cable just outside said pointed end, chains connected to the other two pins and secured at their other ends to said cable, and a hoist operating said cable, as set forth.

11. In a device of the character described a triangular bucket formed with an abrupt pointed end, a channel iron removably hinged to the under side of said pointed end, said channel iron having a beveled edge at its upper end and a curved lower end, and a cable adapted to operate said bucket as set forth.

12. In a device of the character described a means for dredging in deep water, a means for hoisting said dredging means, a means for automatically dumping said dredging means, means for returning said dredging means to its lower position, and means for tilting said dredging means with said hoisting means, as specified.

13. In a device of the character described a supporting frame, an inclined roller mechanism disposed therein, oscillating arms pivotally mounted on said frame and extending normally above said roller mechanism, pulleys secured to the tops of said arms, a front stop and a rear stop for said arms, a center guard member extending across the centers of said stops, and pulleys swung on said frame to the rear of and in alinement with said first named pulleys, a cable extending through all of said pulleys, a stop knot in said cable on each side of said first named pulleys and adapted to engage therewith but run free through said last named pulleys, and dredging buckets secured on said cable, as specified.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. GUNN.

Witnesses:

L. A. P. EICHLER,

WM. M. CUTTER.