

No. 619,601.

Patented Feb. 14, 1899.

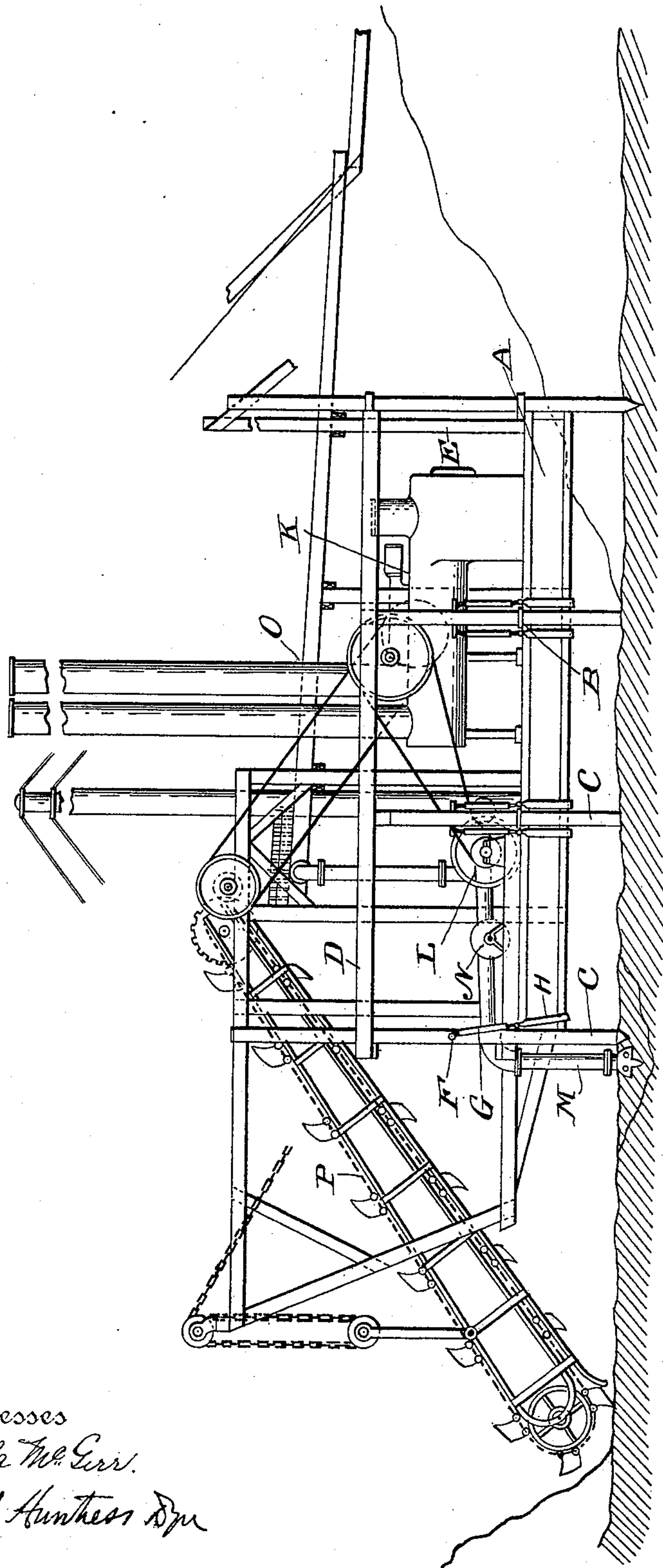
A. McDOUGALL.
DREDGING APPARATUS.

(Application filed June 4, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



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2 Sheets—Sheet 2.

Fig. 2.

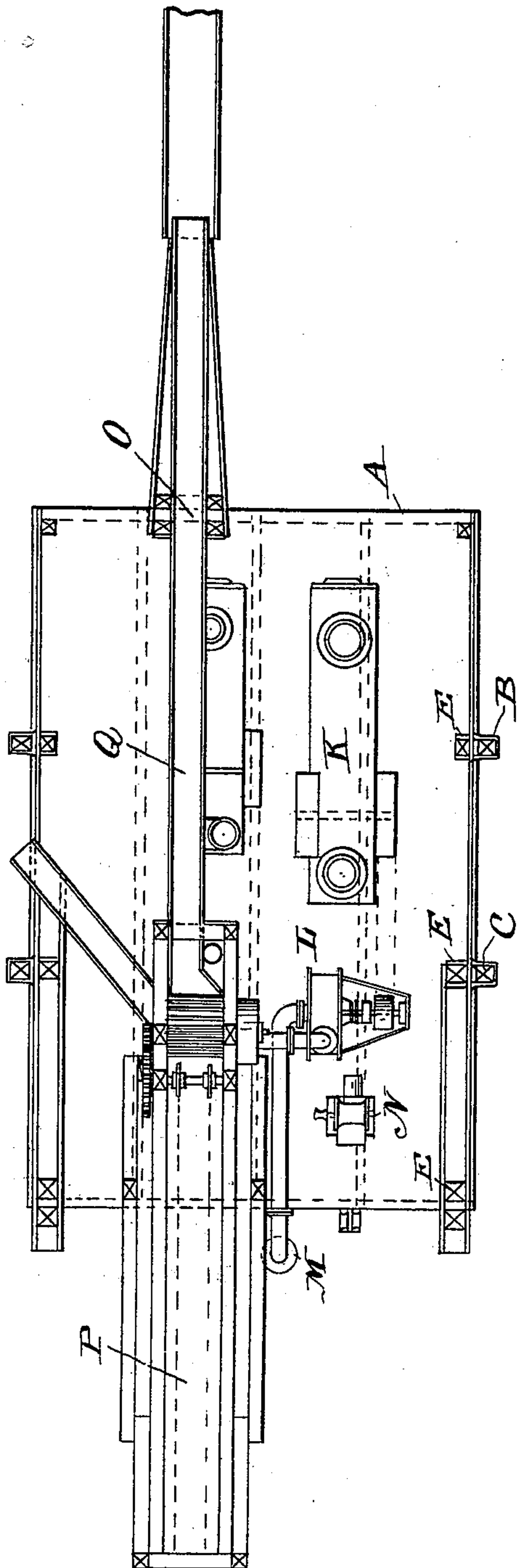
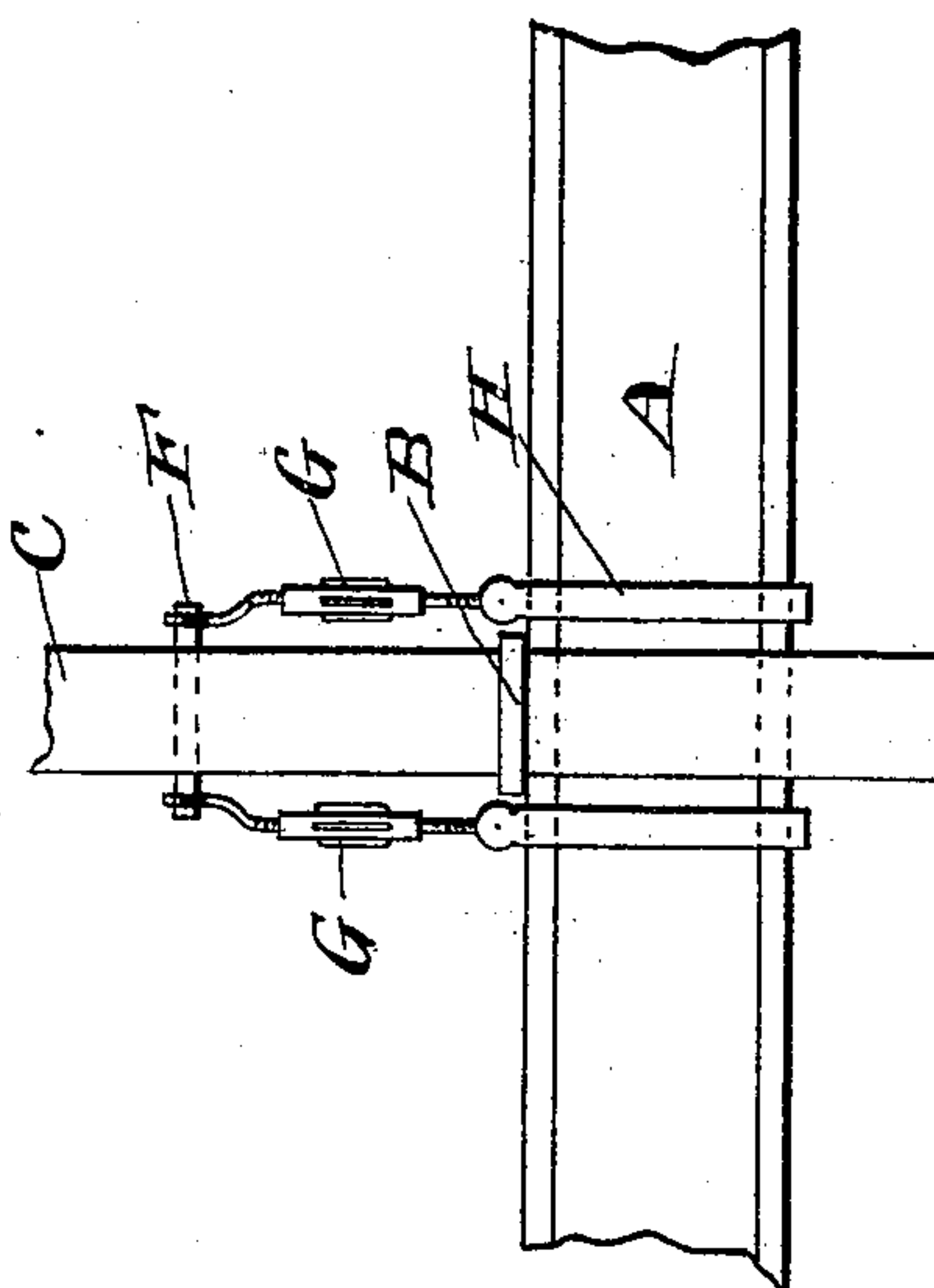


Fig. 3.



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UNITED STATES PATENT OFFICE.

ALEXANDER McDOUGALL, OF DULUTH, MINNESOTA.

DREDGING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 619,601, dated February 14, 1899.

Application filed June 4, 1898. Serial No. 682,597. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER McDOUGALL, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Dredging Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in dredges for use in gravel or placer mining for gold, and is particularly employed in conditions wherein the gold-bearing sand is carried upon bed-rock in connection with a greater or less amount of water.

The present invention is an improvement in dredges invented by me and described and claimed in the following United States Letters Patent: No. 531,740, dated January 1, 1895; No. 547,496, dated October 8, 1895, and Nos. 604,627 and 604,628, dated May 24, 1898.

The improved dredge is in the form of a float or scow provided with adjustable supporting legs or spuds and so arranged that it may be moored over the channel of the stream with the legs resting upon the bed-rock, the water of the stream being diverted or otherwise gotten rid of, whereby the dredge will be sustained some distance above the gold-bearing sand or gravel.

The placer-gold is often found in pockets upon the surface of the bed-rock, and by supporting the dredge on legs some distance above the rock these pockets under the dredge can be effectively cleaned by hand.

This form of dredge is more especially adapted for mining in meadows or creek-bottoms—as, for instance, where a creek passes through a meadow and has large margins of gravel-bottom and in connection with the large amount of water present the gravel can only be reached by dredging, owing to the leakage of water through the gravel if damming is attempted. An ordinary dredge can be employed for the removal of the uppermost gravel; but such dredges are not adapted for or capable of use in removing the gravel found in pockets, cracks, and crevices upon the surface of the bed-rock and which contains practically all of the placer-gold.

This invention seeks to accomplish the successful removal of all the gold-bearing gravel by providing the dredge with supporting-legs, preferably but not necessarily adjustable, so that when the rock is uneven the legs can be so secured as to make the scow level when standing on the bed-rock. Where the legs are not made adjustable, inequalities in the surface of the bed-rock can be compensated for by wedging up those legs that otherwise would not rest upon a firm foundation.

The scow can be built or placed in a small pond alongside of the creek, or when the conditions will allow it a hole can be made near the creek or it can be placed upon the creek-bottom itself, the water being diverted off to one side by damming the creek above.

The scow is provided with the usual steam-pumps and in addition thereto the usual sluice-boxes, which preferably extend behind, and in some cases when found useful a bucket-dredger may be employed, which may extend over the forward end of the scow. The pumps and dredges being set to work, the hole can be enlarged until it is two or three times the size of the scow. The sand and gravel passing through the sluice-boxes to the rear of the scow will form the dump. The floating scow is easily moved about to permit the dredge to operate to the best advantage until the bed-rock is reached. Then the water is pumped out and the scow settles down on its legs, which rest upon the bed-rock, and then is in any way leveled. The water is then pumped out entirely from the pond, the scow being carried on its legs five or six feet above the bed-rock, which allows of cleaning the bed-rock by hand-shovels or some analogous means, so that all the gold-bearing sand or gravel is removed from the crevices and pockets.

During the cleansing of the rock-bed there may be considerable leakage through the gravel. A deeper part (the sump) is made in the bed-rock for the suction end of the pump to work in, and if there is not water enough for the proper operation of the pump more is drawn from the adjoining creek or means are provided for allowing the water to run back from the dump into the pond. Very often the bed-rock in placers is so soft and slaty that the pendulum suction end of the

pump can easily cut or move its way in the bed-rock for a foot or more to make a good sump, and thus allow the sand and gravel to get at the suction end of the pump.

5 In the event of a bucket-dredge being used the gravel or sand scraped from under the dredge can be thrown into the pocket end. The pit or pond can be enlarged as much as
10 three times that of the scow and is so proportioned that the dump at the rear of the scow will not be too large to easily hold all the tailings that come out of the hole.

If desired, the legs at the rear of the scow may be dispensed with, the rear end of the
15 scow resting on the dump itself. This will greatly steady it, and the rear of the scow will answer as a bulkhead to prevent the tailings from running back to the pond or pit.

After the spot under the scow has been
20 completely cleared of gold-bearing sand the hole, pit, or pond is allowed to fill and the scow to float, when it can be moved forward to perform the same operation over again.

In order to better understand the nature
25 of my said invention, attention is called to the accompanying drawings, forming part of this specification, and in which—

Figure 1 shows a side view, and Fig. 2 a top
30 view, respectively, of the scow; and Fig. 3, a side view, enlarged, of one of the supporting legs or spuds.

In the above views like parts are represented by the same letters of reference.

The scow A is preferably provided with
35 guards B, through which the legs C pass. In order that these legs may be held with sufficient rigidity to support the scow some distance above the bed-rock, a superstructure D is arranged, carried upon supports or up-
40 rights E at the corners and at intermediate stations on the side of the scow. Instead of passing the legs through the guards B a part or all of them may pass through the bottom of the scow itself, wells or pockets being built
45 in the scow to make it water-tight. By this means the scow can be supported from the center in addition to from the sides. The legs are secured in any way; but that shown in Fig. 1 is the preferable form.

50 An iron bolt F passes through one of several openings in each leg and connects at each extremity to a turnbuckle G, the lower ends of which are connected to a strap H, bolted to the side and bottom of the scow. The
55 turnbuckles take the entire weight of the scow and can be tightened or loosened as desired with an ordinary wrench. This is the preferred way of supporting the legs adjustably; but many other supporting devices may
60 be used for the purpose. It is quite essential, however, that the legs be adjusted independently, as the surface of the bed-rock is inevitably uneven.

A suitable boiler and engine K are mounted
65 upon the scow and serve to operate the centrifugal pump L. This pump connects with

the swinging pendulum suction end M, as described in my above-mentioned patents.

A steam-winch N is employed for adjusting
70 and swinging the pendulum end, and the material from the pump L passes into the chute O. All of these features of invention are fully described in my before-mentioned pat-
75 ents. In addition an endless chain bucket-dredge P can be employed, and which may be operated by the same engine, or, if desired, by an independent engine Q. The winch N can be used if it is desired to warp the dredge about.

The details of pump, dredges, and sluices
80 are immaterial to the present invention, which lies entirely in the broad idea of applying a scow or float with supporting-legs.

The operation of my improved scow is as
85 follows: The water in the creek to be mined is diverted to one side by any means—such, for instance, as a dam. In the space below the dam a well or pocket is made, and in this the scow is placed, or it may be built or put together therein. Sufficient water is admitted
90 to the pocket to float the scow. The pocket may be then increased in size to as much as two or three times that of the scow. This can be very easily done by means of the bucket-dredge and pumps. The sand removed will
95 pass through the concentrating apparatus on the scow, which will remove any gold found therein, or it may be passed directly astern upon the dump. When all the gravel has been removed from the pocket as is practi-
100 cable by means of a bucket-dredge, the pumps are put in operation and the water pumped out of the pocket until the scow settles down and is supported above the bed-rock upon its legs. If the legs are adjustable, they are
105 so arranged that each will equally support the scow, whereas if they are not adjustable wedges or pieces of rock or wood are driven below them to form as firm a foundation. A certain proportion of water will always leak
110 through the gravel around the dam. Its removal is provided for by means of the pendulum suction end, which swings from side to side and forms the sump, into which all of the water will drain. The gold-bearing gravel
115 found under and around the dredge can be removed by workmen and passed upon the scow by any means, but preferably by the bucket-dredge or pump, where it will pass through the concentrator and the tailings will
120 be passed upon the dump. This dump will also serve to steady the stern of the scow in its elevated position. After the bed-rock is cleaned the pumps can be stopped sufficiently
125 long to allow enough water to enter the pocket to float the dredge, when the pocket can be extended forward and the operation repeated.

Having now described my invention, what I claim as new therein, and desire to secure
130 by Letters Patent, is as follows:

1. Means for mining, comprising in combination a pit, means for admitting water to

said pit, a dredging-scow having supporting legs or spuds thereon, and means for removing water from said pit, whereby the scow will be supported above the bottom of said pit.

5 2. Means for mining, comprising in combination a pit, means for admitting water into said pit, a dredging-scow having adjustable supporting legs or spuds thereon, means for removing water from said pit, whereby the
10 scow will be supported above the bottom of said pit.

3. Means for mining, comprising in combination a pit, means for admitting water into said pit, a dredging-scow having supporting
15 legs or spuds thereon, an operating-pump supported upon said scow for removing water from said pit, whereby the scow will be supported above the bottom of said pit.

4. Means for mining, comprising in combination a pit, means for admitting water into said pit, a dredging-scow having adjustable supporting legs or spuds thereon, an operating-pump supported upon said scow for removing water from said pit, whereby the scow
20 will be supported above the bottom of said pit.

5. Means for mining, comprising in combination a pit, means for admitting water into

said pit, a dredging-scow having supporting legs or spuds thereon, an operating-pump supported upon said scow for removing water
30 from said pit, whereby the scow will be supported above the bottom of said pit, and sluice-boxes arranged above said scow and connecting with the discharge from said pump.

6. In a mining apparatus, the scow A provided with adjustable legs or spuds C, having pins F passing through each with adjustable turnbuckles G thereon, substantially as set forth. 35

7. In a mining apparatus, the scow A provided with adjustable legs or spuds C, having pins F passing through each with adjustable turnbuckles G thereon, the lower ends of which are connected to a strap H, secured to the said scow, substantially as set forth. 40

This specification signed and witnessed this 45
24th day of May, 1898.

ALEXANDER McDOUGALL.

Witnesses:

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