

G. KUHN.
Dredgers.

No. 158,717.

Patented Jan. 12, 1875.

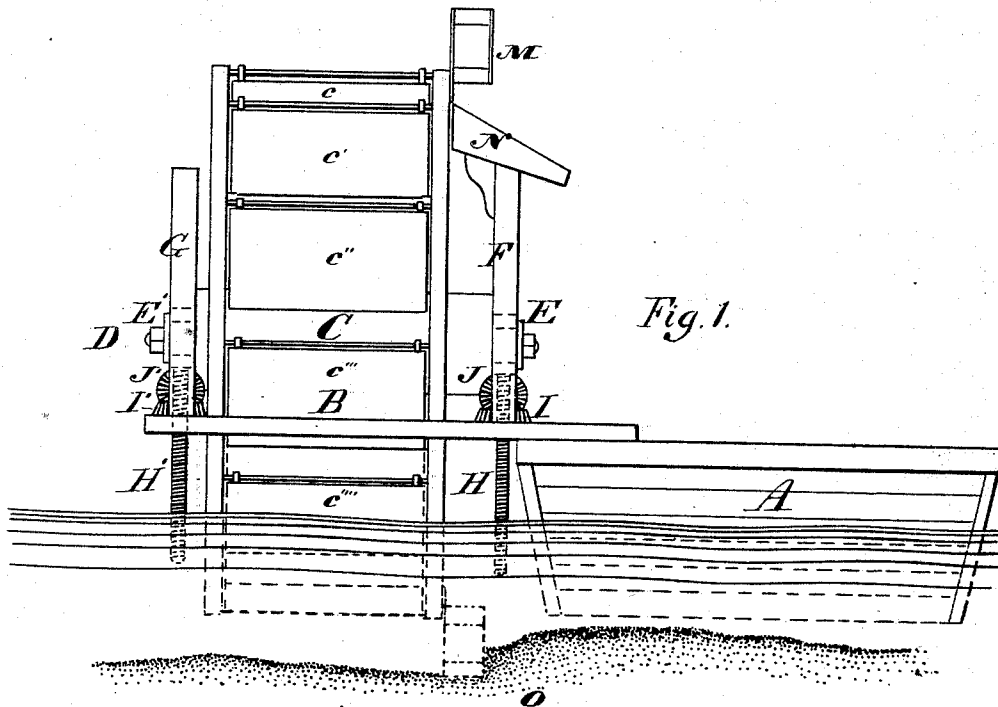


Fig. 1.

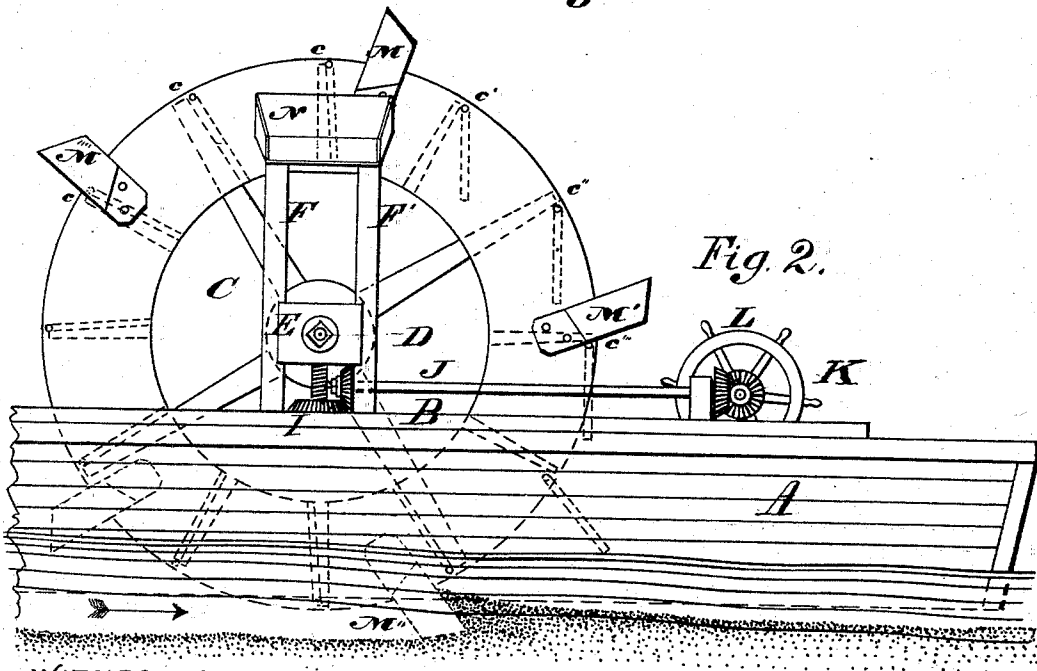


Fig. 2.

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IMPROVEMENT IN DREDGERS.

Specification forming part of Letters Patent No. 158,717, dated January 12, 1875; application filed October 24, 1874.

To all whom it may concern:

Be it known that I, GEORGE KÜHN, of St. Louis, Missouri, have made a new and useful Improvement in Sand-Elevators, of which the following is a full, clear, and exact description, reference being hereby had to the annexed drawing, making a part of this specification, in which—

Figure 1 is an end elevation of the invention attached to a barge. The wheel is lowered to bring the elevators in contact with the sand. Fig. 2 is a side elevation of the same.

Like letters indicate like parts.

The object of the present invention is to provide means, which are economical in construction and operation, for raising sand from the beds of rivers. By it, also, sand can be elevated from depths greater than is practicable with the ordinary elevators hitherto in use. It consists, mainly, in a current-wheel of peculiar construction, in combination with an elevating device, constructed and operating substantially as is hereinafter set forth. It further consists, in combination with the wheel and elevator, of the means provided for transferring the sand, when raised, to the deck of a barge or any suitable place, where it can be secured.

In the accompanying drawing, A represents a barge of ordinary construction. At the side thereof it is provided with a frame, B, similar in its general construction to that employed to sustain the paddle-wheel of a steamer. Inclosed in the frame is a current-wheel, C. The journals of the shaft D of the wheel do not rest in fixed bearings, but in bearings that are adjustable vertically. For this purpose the bearings or blocks E E' are arranged in guides F F' and G G', which, in turn, are arranged vertically, and respectively, on either side of the frame B. The blocks are sustained inside the guides, and at any desired point, by screws H H', which are arranged vertically, and which engage in stationary nuts I I' below. These nuts are made in the form of miter gear-wheels, with which, on either side of the frame B, engages a system of geared shafting, J J'. The shafts J J' are geared to a cross-shaft, K, which is provided with a wheel, L. All of the shafts rest in suitable bearings arranged on the frame B. The wheel C, whose

frame is of any suitable construction, is provided with feathering buckets or paddles c c', &c., which are arranged and hung as shown in Fig. 2, being, at their outer edges, pivoted to the wheel-frame at or near the extremities of the wheel-arms. Behind each bucket are arranged, respectively, stops d d', &c. The wheel, at the side toward the barge, and at or near its rim, is provided with a series of elevators, M M', &c., which are of any suitable shape. They are arranged to scoop up the sand as the wheel turns around. At the top of the guides F F' is arranged a spout, N, arranged so as to direct the sand as it falls from the elevators onto the barge.

In operation, the barge bearing the wheel is stationed in the desired locality. There must be a current in the river sufficient to turn the wheel, and it is preferable to operate where the river-bottom is inclined, as indicated at O in Fig. 1. By means of the system of gearing above described the wheel is lowered, so as to bring the elevators in contact with the sand. The barge and wheel are turned to the direction of the current, as indicated by the arrow in Fig. 2. This causes the wheel to revolve. Were the buckets of the wheel fixed, like those of an ordinary paddle-wheel, the movement of the wheel would be so sluggish as to render it useless as an elevating device; but, owing to the peculiar arrangement of the buckets, as shown and described, the wheel is relieved from lifting any water, and power is developed sufficient to operate the elevators and raise the sand. It is apparent that provision must be made for constantly keeping the elevators in contact with the river-bottom, as, in operating, a depression immediately beneath the elevators is continually forming. This is accomplished partly by means of the device for regulating the height of the wheel, and partly by drawing the barge higher up over the sand-bar. By thus utilizing the river-current, sand can be readily and economically lifted from a depth greater than is practicable with the ordinary steam siphon-pumps now in use. Nor is the employment of skilled labor necessary.

I am aware that, for the purpose of deepening the channel of a river, a device such as shown in Bonneville's English patent has

been used. The construction referred to consists of a wheel, which, at its periphery, and in place of the ordinary paddles, is provided with teeth, and also with elevators, the teeth and elevators being alternately arranged. The wheel is supported by and inclosed between two barges, and behind the wheel gates are lowered, so that, when the wheel is in use, the flow of water between the barges and about the wheel is deadened. The wheel rests upon the river-bed, and is caused to turn against the stream by dropping the barges down the stream. The teeth loosen the dirt and the elevators lift it up and over the wheel, and onto a chute behind it, whence it slides off into the stream again. It will be observed that the current of the stream does not directly actuate the wheel, but only through the movement of the barges, and, therefore, even if new with me, would be useless for my present purpose; but I disclaim such construction. For the same purpose—*i. e.*, scouring out the river-bottom—wheels have been proposed which are made with the usual fixed paddles, upon whose outer edges are attached teeth or fingers, wherewith, as the wheel turns, the river-bed is stirred up, and the dirt, with-

out being elevated above the surface of the stream, is carried away by the current. As the wheel revolves, it and the supporting-barges are fed down the stream. This construction I also disclaim. Nor do I broadly lay any claim to wheels provided with feathering-paddles; nor to the elevators, shown independent of the wheel, to which they are attached; but

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

1. The combination of the current-wheel C, provided with the feathering-buckets *c c' c''*, &c., and the elevators M M', &c., arranged as described, the barge A, and the frame B, substantially as shown and described.

2. The combination of the wheel C, provided with the feathering-buckets *c c' c''*, &c., and the elevators M M', &c., the standards F F', spout N, barge A, and frame B, substantially as described and shown.

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Witnesses:

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