(No Model.)

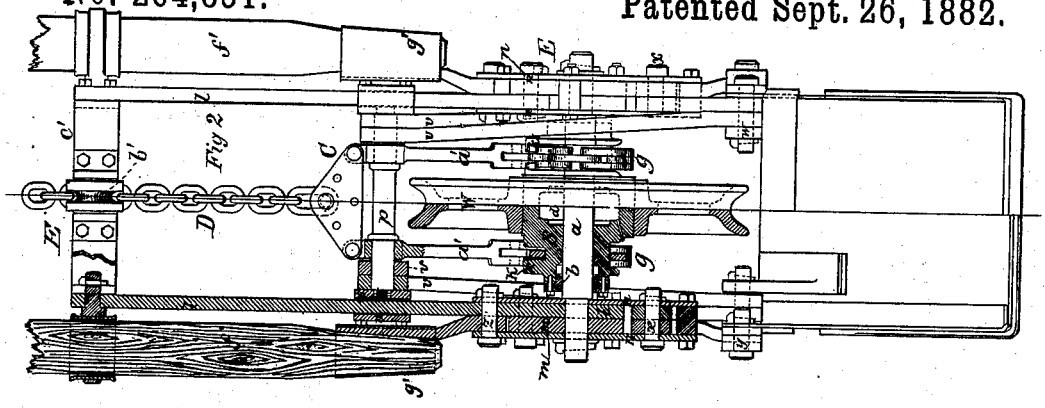
2 Sheets—Sheet 1.

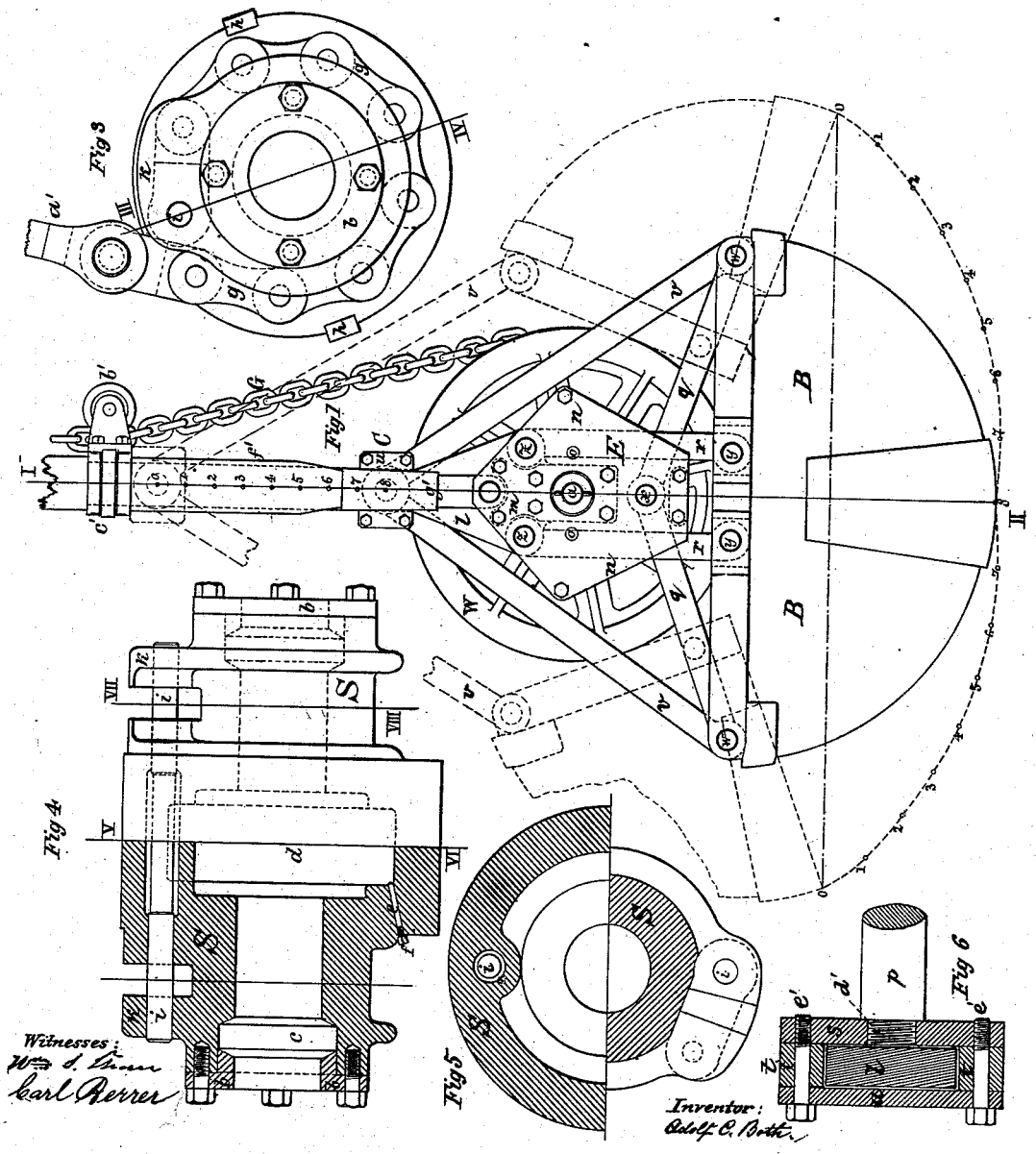
A. C. BOTH.

DREDGING MACHINERY.

No. 264,851.

Patented Sept. 26, 1882.





Witnesses:
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Inventor:
Adolf C. Both.

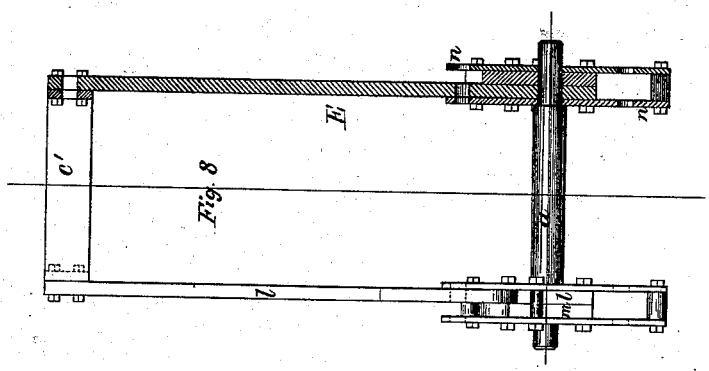
(No Model.)

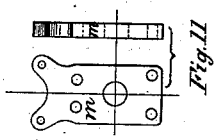
2 Sheets—Sheet 2.

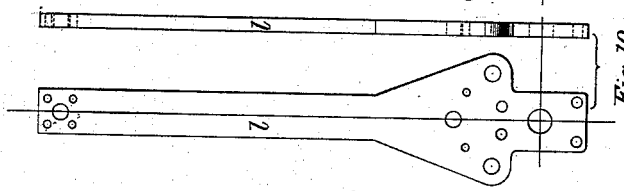
A. C. BOTH.

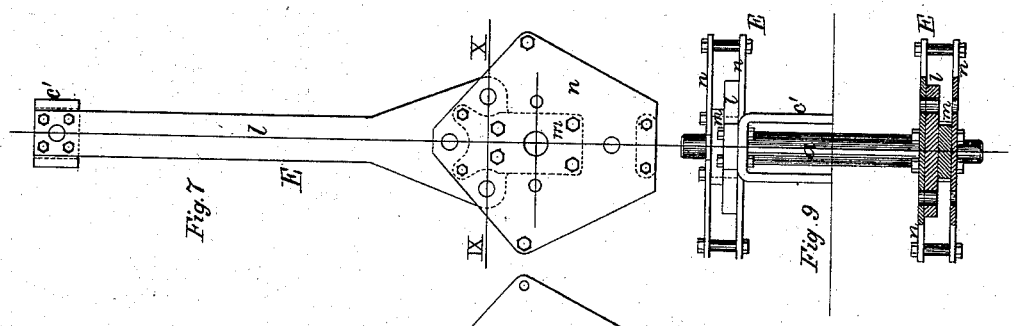
DREDGING MACHINERY.

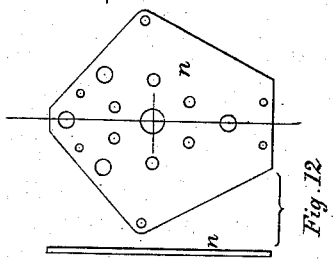
No. 264,851. Patented Sept. 26, 1882.











Witnesses:
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Inventor:
Adolf C. Both

UNITED STATES PATENT OFFICE.

ADOLF C. BOTH, OF PORTLAND, MAINE.

DREDGING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 264,851, dated September 26, 1882.

Application filed April 26, 1882. (No model.)

To all whom it may concern:

Be it known that I, ADOLF C. BOTH, of Portland, in the county of Cumberland, of the State of Maine, have invented a new and useful Improvement in Machinery for Dredging the Bottoms of Navigable Waters; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a side elevation of my improved dredging machinery. Fig. 2 is an edge view of it, partly in section, the section being on line I II of Fig. 1. Fig. 3 is an end view of the lubricating-sleeve with one of its chains, to be hereinafter explained. Fig. 4 is a representation of such sleeve, partly in vertical and longitudinal section and partly in elevation, the plane of section being indicated by the line III IV of Fig. 3. Fig. 5 is a duplex transverse section of the sleeve, the plane of section of the upper portion of the said figure being in the line V VI of Fig. 4, while that of the lower portion is on line VII VIII of said Fig. 4, and is represented as inverted. Fig. 6 is a horizontal section of one of the slide-heads of the shaft *p*, to be hereinafter described. Fig. 7 is a side view, Fig. 8 a front elevation, and Fig. 9 a top view, of the "frame" E, hereinafter described, parts of it in the latter figures being shown in section, the plane of section of Fig. 9 being on line IX X of Fig. 7. Fig. 10 shows a front and an edge elevation of the guide *l*, making part of the frame. Fig. 11 is a front and edge view of the filling-pieces *m*, to be hereinafter referred to. Fig. 12 shows front and edge views of the plate *n*, hereinafter mentioned.

The dredging apparatus embracing my present invention is very similar to that set forth in the United States Letters Patent No. 138,227, granted to me April 29, 1873.

In carrying out my said present invention I have wholly dispensed with the gears and one shaft and its chain-wheels appertaining to the mechanism described in the said patent, and have applied to the main or stationary shaft *a* and the chain-wheel W, hereinafter described, what I have termed a "self-lubricating sleeve," S, which revolves on the shaft, and is connected with the sliding frame by chains *g*, and serves with such as a windlass mechanism to enable the main chain wheel W to effect the depressing of the sliding frame or cross-head C, connected with the buckets by arms or bars, as shown and specified.

The nature of my invention is defined in the claims hereinafter presented.

In Fig. 1 of the drawings the two buckets or scoops are shown at B and B as closed together, they by broken or dotted lines being represented as open or raised upward. Each bucket, at each of its outer corners, is connected with the shaft *p* of a vertically-movable cross-head, C, (suspended by a chain, D,) by two connection-bars, *v*, pivoted to the buckets and upon the shaft *p*. Furthermore, each bucket, near its outer corners, is also connected with a frame, E, by two bars, *q*, pivoted to such bucket, and also to the said frame. Pivots of the bars *q* and *v*, with the bucket, are shown at *w* in Figs. 1 and 2, while the pivots of the bars *q*, with the frame E, are represented at *x* in the said figures. Besides the bars *v* and *q*, each bucket, at or near its inner corners, is connected with the frame E or the plates *n n*, making part thereof, by connection-bars *r*, pivoted to the bucket and the frame, the pivots being shown at *y* and *z* in Figs. 1 and 2. The said frame E is composed of the cross-head *c'*, the two vertical bars *l l*, the four plates *n*, and the two filling-pieces *m*, all being as and arranged and connected substantially as represented.

Within the frame E, at its lower part, is a shaft, *a*, which extends across and makes part of the said frame, but is not revoluble therein. On this shaft, concentrically, and to revolve thereon, is the self-lubricating sleeve or barrel, S, which, besides being bored axially to receive the shaft, has a chamber, *d*, in its middle and stuffing-boxes *b c* at its ends, the part *c* of each box being to receive an annular stuffing to encompass the shaft. An induct, *e*, provided with a screw-stopper, *f*, and arranged as shown in Fig. 4, enables the chamber *d* to be supplied with a charge of oil. As the sleeve or barrel S, when the dredging-machine is in use, goes in and out of the water, the propriety of having means of lubricating its bearing-surfaces on the shaft *a* and of keeping such

free from water will readily be seen. I therefore provide the part S with the oil-chamber and the stuffing-boxes. The oil within the chamber *d* will lubricate and keep oiled for a great length of time the bearing-surfaces of the sleeve and shaft.

The revoluble sleeve S is provided with projections or lugs, as shown at *k*, to receive the pin *i* for connecting it to the two chains *g*, the pin being arranged in the sleeve, the lugs, and the chains, as shown in Figs. 2, 3, and 4.

The chain-wheel W is fitted concentrically on and is keyed to the sleeve S, and such sleeve has fixed to it, as shown at *i* in Fig. 3, two chains, *g*, which depend from bars or long links *a'*, extending down from the cross-head C, as shown in Fig. 2. Another chain, G, fastened to the grooved periphery of the wheel W, and led upward in rear of and against a guide-roller, *b'*, projecting from a cross-head, *c'*, of the frame E, serves to revolve the wheel W, and of course the sleeve or barrel S, in order to wind on the latter the chains *g*, and thereby depress the cross-head C and the shaft *p* on two vertical and parallel guides, *l*, fixed in and to the frame E. By properly moving the cross-head C the bars *v* and *q* will cause the buckets to be swung into their outward positions, ready for excavating earth on their being next drawn toward each other.

The shaft *p* has a screw, *d'*, at each end of it, such screw being to screw into a plate, *s*. (See Fig. 6.) This plate is placed across the inner side of the guide *l*, and is connected with a plate, *u*, arranged on the outer side of such guide, by screws *e'* going through the said plates, and intervening pieces *t*, arranged as shown. By such means the shaft *p*, at each end of it, is adapted to slide upward and downward on one of the guides *l*.

The two outer wooden poles, *f*, of the frame E extend within and are fastened to socketed pieces *g'*. Each of these pieces *g'* extends down between two plates, *n*, arranged as shown in Figs. 1 and 2, one of the guides *l* and a filling piece or plate, *m*, being also arranged and secured between the said plates by screw-bolts and nuts thereof.

In opening and closing the buckets the pivots *w* move nearly in vertical directions. To accomplish such movements the pivots *y* of the bar *r* move in nearly horizontal directions, all of which effects a substantially even distribution of the power applied to close the buckets. For equal intervals of the traverse of the shaft *p*, as marked 0, 1, 2, 3, 4, 5, 6, 7, and 8 on one of the bars *f'* of the frame E, the corresponding positions of the cutting-edges of the buckets are shown, and also marked in like manner in the curved and dotted lines, which in Fig. 1 denote the paths of motion of such cutting-edges. These edges will be moved through the earth to be dredged with very nearly an evenly-distributed power from the beginning to the end of each of the cuts.

By dispensing with the gears, one shaft, and chain-wheel, as used in my aforesaid patented dredge, and using the self-lubricating and revoluble windlass or sleeve S on the shaft *a*, I not only materially simplify the dredge, but cause it to operate to much better advantage.

Having thus described my improved mechanism for dredging, what I claim therein as of my present invention is as follows, viz:

1. The combination of the revoluble windlass or sleeve S, provided with the end stuffing-boxes, the oil-chamber and its induct, and the connection-chains *g* with the frame E, shaft *a*, cross-head C, buckets B, and their connection-bars *r q v*, and with the wheel W, the said wheel W and cross-head C being provided with the chains D and G, and all being adapted and to operate substantially as set forth.

2. The revoluble sleeve S, provided with the lugs *k*, and also with the bolt *i*, arranged in it, and the said lugs, substantially as represented, in combination with the chains *g*, coupled to such sleeve by means of such bolt and lugs.

3. The shaft *p*, having at each end of it a screw, *d'*, screwed into the plate *s*, in combination with the plates *s* and *u*, and the filling-pieces *t*, arranged with and applied to the guides *l*, all being substantially as set forth.

4. The combination of the socket-pieces *g'*, plates *n*, and filling-pieces *m* with the bars *f'* and the guides *l* of the frame E, all being arranged and adapted substantially as set forth.

ADOLF C. BOTH.

Witnesses:
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BRON B. MANSFIELD.