Sheet 1, 2 Sheets.

J. Hart.

Dredging Mach.

No. 1,011. Patented Nov. 20, 1838.

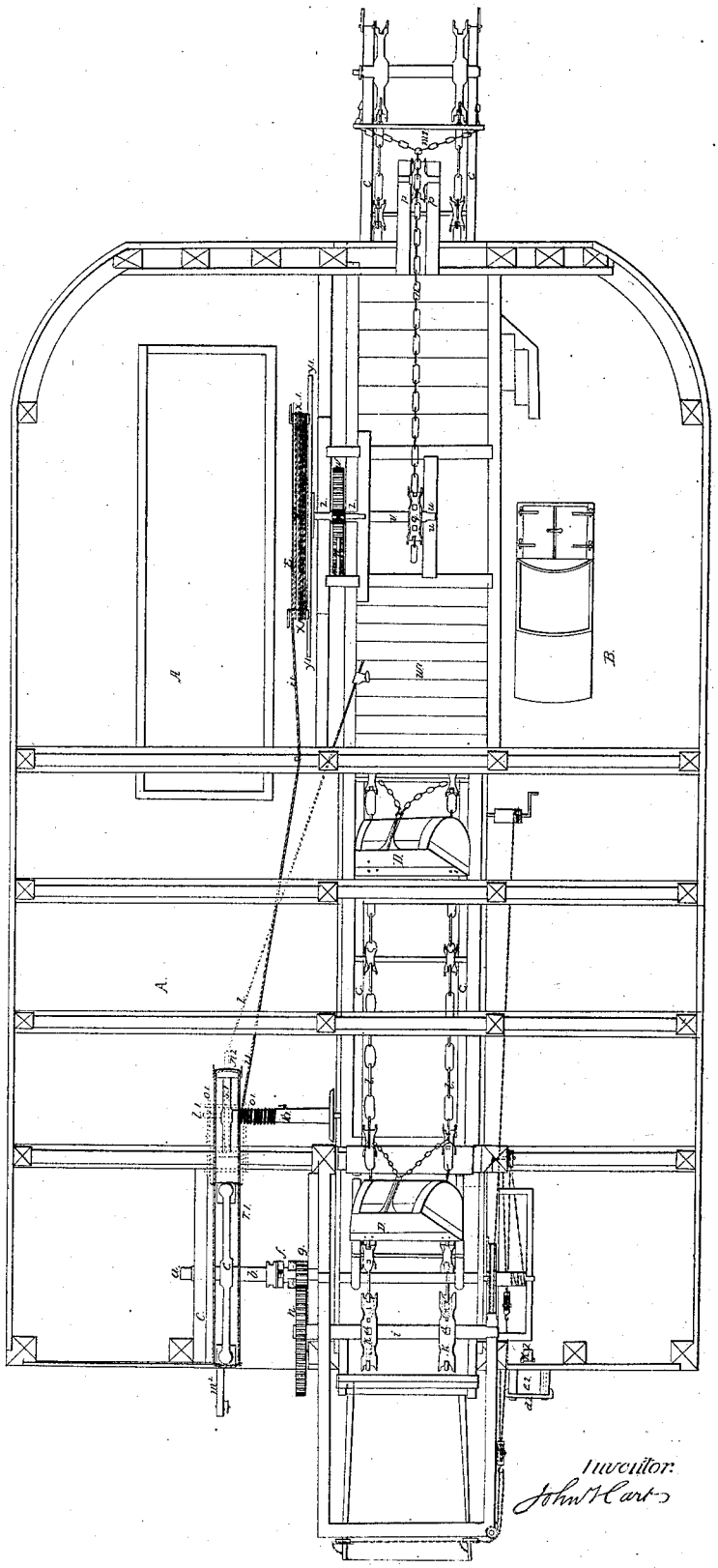

Fig. 1.

Witnesses:
Chas. W. Fuller
Henry Kurtz

Inventor:
John Hart

Sheets, 4 Sheets.

J. Hart.

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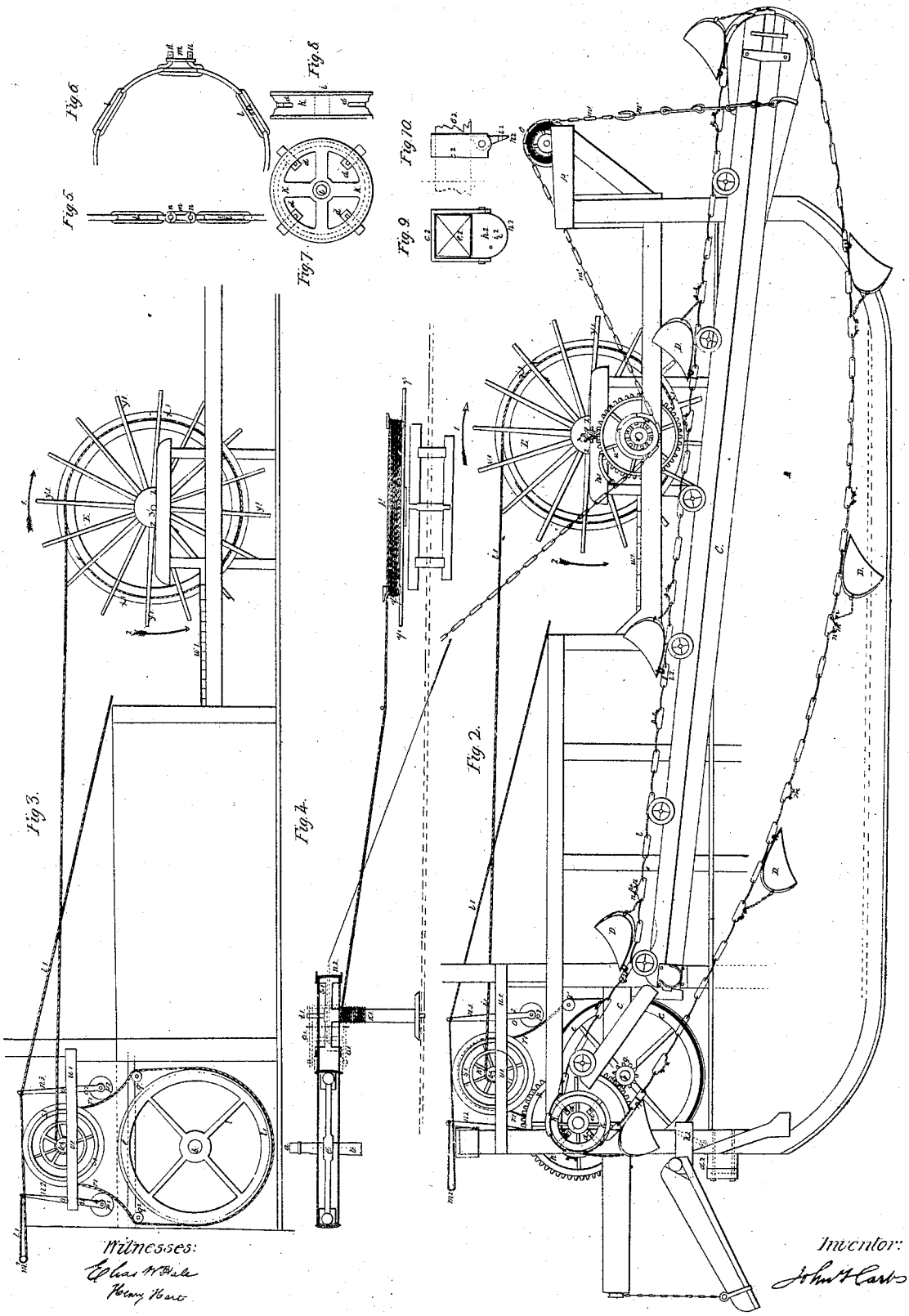

Witnesses:
Elias W. Hale
Henry Hare

Inventor:
John Hart

UNITED STATES PATENT OFFICE.

JOHN HART, OF MIDDLETOWN, CONNECTICUT.

MUD-MACHINE.

Specification of Letters Patent No. 1,011, dated November 20, 1838.

To all whom it may concern:

Be it known that I, JOHN HART, of Middletown, county of Middlesex, State of Connecticut, engineer, have made certain new and useful Improvements in the Working Parts of the Common Mud Dredging and Raising Machine, for which I seek Letters Patent of the United States, as not having been before applied as I apply and use the same, and that the said improvements and the means of constructing and using the same are fully and substantially set forth and shown in the following description and in the drawings attached to and making a part of this specification, wherein—

The principal figure in Sheet No. 1 is a horizontal plan of the common mud dredging machine; that in Sheet No. 2 is a vertical and sectional elevation of the same, both with my improvements attached and the figure No. 3, in Sheet No. 3 is a vertical section and Fig. 4 a plan of my improvement shown detached.

The other detached figures are consecutively explained hereafter and the same letters and figures as marks of reference apply to the same parts in all the several figures.

A a flat vessel of considerable size for receiving the boiler, fuel, engine and principal parts of the working machinery; B, a smaller vessel for the people and stores, strongly connected to the larger one with the vibrating ways; C, for the buckets strongly hung between the two vessels in a gallows frame, which also assists in connecting the two vessels.

a is a crank by which the power is to work the whole machinery, fixed on one end of the shaft *b*, which is strongly mounted in framing *c*. On the shaft *b* is the fly wheel *e*, and between that and the opposite bearing is the clutch *f*, sliding on the shaft *b*, into or out of the clutch part of the driving pinion *g*, which gears into the large tooth wheel *h*, mounted on that end of the bucket shaft *i*. On this the chain wheels *k k* are fitted, each wheel made with four shifting studs *d d d d*, to lock into the long links of the bucket chain *l*. This chain is made so that each flat link has a curve, to fit the wheels *k*, *k*. The large link that takes the bucket staple has a strong wrought iron brace e^2 (Fig. 2) and in given lengths, a link is inserted, made with an open side, turned up to receive a double eyed collar link *m*, and the collar link, when put in, is kept in place by small keys *n*, going through the vertical arms of the open link. This mode of making and using an inserted link, affords the means of shortening, or lengthening, or repairing a bucket chain, or shifting a bucket, without shifting the whole chain out of place, and the construction of the chain and open link is shown, in larger scale, in the detached Figs. 5 and 6, Sheet 3, and the chain wheels *k*, *k*, are also shown in skeleton, direct, and sectionally, in the detached Figs. 7 and 8, Sheet 3, by which it will be seen that these wheels are cast solid, and the shifting studs put through mortises, with keys to hold them in, and allow of their being changed when worn out, instead of the wheel being made in two parts, and screwed together, as hitherto done.

The bucket ways C, and mud buckets D, are all made and filled in the usual way, and on that account are not further described.

The raising and lowering of the bucket ways is effected by the slings and yoke *m'* (Fig. 2), and chain *n'*, which goes over the sheave *o*, mounted on the double davit *p*, thence under the chain wheel *q* to a sheave at the head of the gallows frame and having at its inner end a counterweight all made as usual and not further described or shown.

The chain wheel *q*, fitted with a groove and studs to match the chain *n'*, is mounted on a shaft, *v*, fitted in bearings *u*, *u*, and having the tooth wheel *w*, on one end, where it gears into the pinion *x*, which is fitted to a shaft *y*, mounted on bearings *z*, *z*, and carrying on it the raising or lowering wheel E; this is made so, that it serves as a tram wheel by the spokes, *y'*, and as a drum by the flanched rim *x'*, and through it the ways are regulated by the directing workman who stands on the stage *w'* shown as fitted for the purpose.

Immediately over the fly wheel *e*, (Fig. 1) a frame *u'*, (Fig. 2) is laid to receive the bearing *v'*, of the shaft *t'*, on one part forming a winch *k'* (Fig. 1) and at the other end the flanged drum *s'*, is mounted, and over this is placed the belt *r'*, so that it hangs loosely around and below the fly wheel *e*, and is kept from contact with it by the small rollers *q'*, q^2, mounted below the drum *s'*, when not required in use. In the post formed by the frame which carries the drum

s', are the two tightening drums p', p^2 shown in Fig. 1, Sheet 1 and in Fig. 3, Sheet 3, by full lines and in Fig. 4, partly by dotted lines all shown in the vertical position as set over the fly wheel e, these are hung in the swing frames o', and o^2. The upper part of each of these frames terminates in arms n^2, n^3, and at one end of the frame u' is the vertical davit and sheave m^2. A rope l' goes from the arm No. 2, toward the sheave m^2, and returns and fastens to the arms n^3, and thence leads to the frame over the stage w'. Winch k', (Fig. 1) receives one end of a rope i' the other end of rope being attached to the drum x', on the wheel E and the tooth wheel w, is fitted with a pawl h', to retain it in its place as wanted. This part of the apparatus is to be used as follows: When the bucket ways are to be lowered the attending laborer lifts the pawl h', back and turns the ways wheel E in the direction of the arrow 1, by the spokes y'. This lowers the ways, at the same time unwinding the rope i', off the winch k', the belt r', being slack does not hinder the operation of lowering. When the buckets and ways have to be raised the attendant laborer leaves the wheel E and simply hauls on the rope l', which pulls the arms n^2, and n^3 onward and forces the drums p', and p^2, inward against the belt r'. This brings the belt below in contact with the rim of the fly wheel e, whose motion given by steam power carries the drum s', and winch k', (Fig. 2) down and drives the raising wheel E around in the direction of the arrow 2, by winding off the rope i', from it to the winch k', raising the ways and buckets more easily and rapidly than can be effected by manual labor or common gear power as the chain n' is more quickly drawn in. Near the machinery in the smaller vessel B projecting over the end is a frame d^2, forming a slide carrying the anchor post, e^2. This is fitted to slide in a movable metal frame c^2 whose fourth side is a gudgeon flap n^2, the part of it next the post being an elliptical quadrant whose longest axis becomes an eccentric point that contracts the distance to the farther side of the frame c^2, and thereby nips the post e^2 so firmly, that it will raise the post upon entering the hook of a pair of tackle blocks into the hole i^2, in the arm of the flap h^2, and applying power through the fall and a windlass. The form of this nipper frame and quadrant flap is shown in the detached Figs. 9 and 10. To let the post fall for anchoring it is only needful that the tackle be beveled to settle the frame c^2, on the frame d^2, and entering a cross bar in the hole i^2, depress the flap h^2, and the nip being removed the post will suddenly fall and lodge itself as required. When not in use the post is to be retained up at any convenient height by the pawl k^2, whose point enters one of a tier of vertical ratchet teeth cast for the purpose and put in the side of the post next the vessel.

I do not claim to have invented any of the parts of the machine thus described except as follows:—

1. The application of the inserted link and wrought iron brace as described herein by which the bucket chain may be lengthened, or shortened, or a portion taken out for repair, or a bucket shifted out, or in, without shifting the whole chain and also serves to receive the link of the back chain, such inserted links being used in combination with curved links, made to fit the periphery of the chain wheel, and with curved links of any length sufficient to allow of using only four strong shifting teeth or studs in each bucket chain wheel such chain wheel being cast in one piece, with mortises to receive the studs or teeth.

2. The application of the belt r', from the fly wheel e to the drum s', and combination of the other connections to the raising wheel E, as herein substantially described, for raising the bucket ways, this combination effecting that object, with a great saving of labor, and it not having, to my knowledge, been so applied before; the form and operation of the frame for raising and lowering the anchor post, as the same is herein described and set forth.

In witness whereof I have hereunto set my hand in the city of New York on the seventh day of August one thousand eight hundred and thirty eight and of the Independence of the United States the sixty-third.

JOHN HART. [L. S.]

Witnesses:
C. NAGLE,
W. JAY HASKELL.