

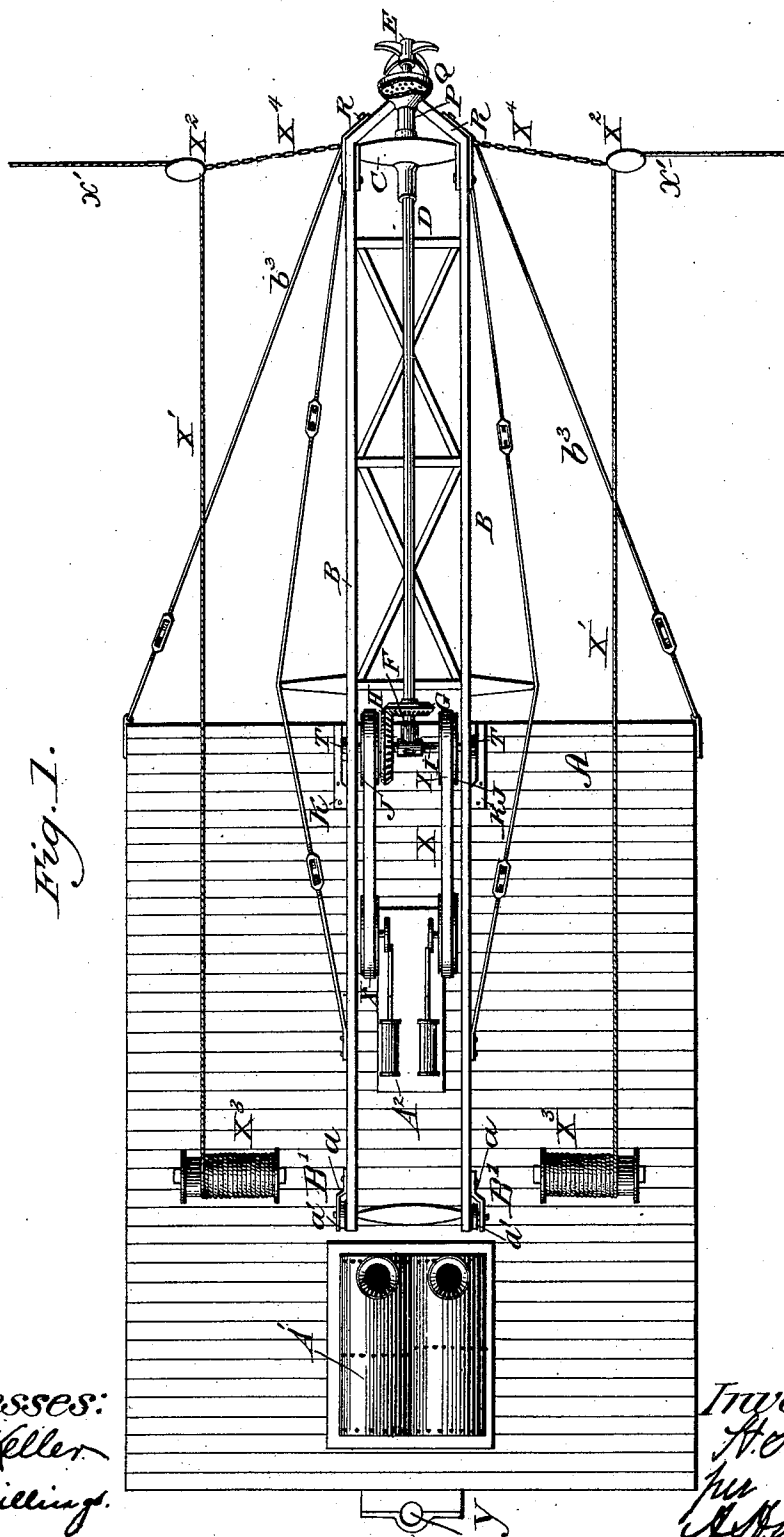
No Model.)

4 Sheets—Sheet 1.

H. S. BROWN.
DREDGING MACHINE,

No. 404,891.

Patented June 11, 1889.



Witnesses:
B. F. Keller
H. D. Billing.

Inventor:
H. S. Brown,
per
A. H. Woodhall.

(No Model.)

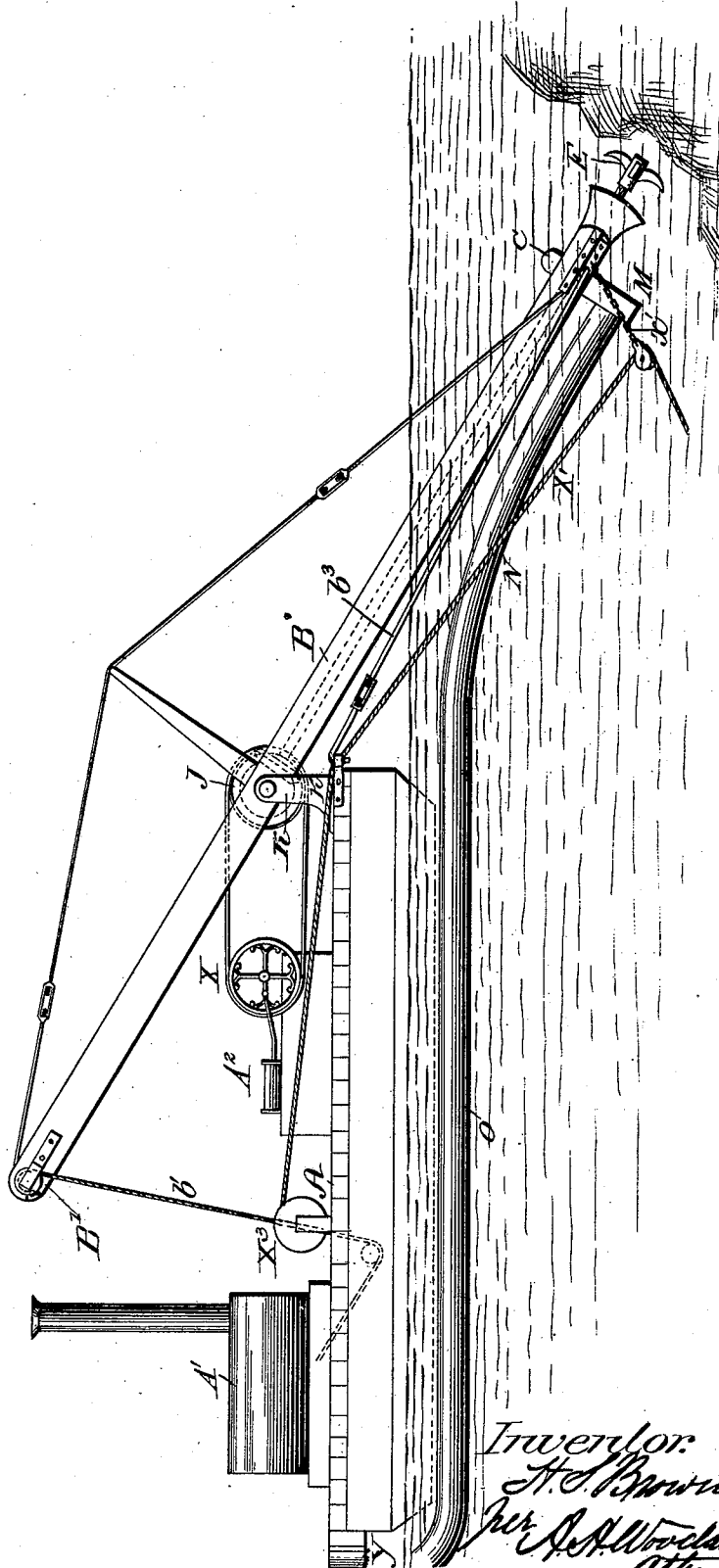
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Fig. 2.



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(No Model.)

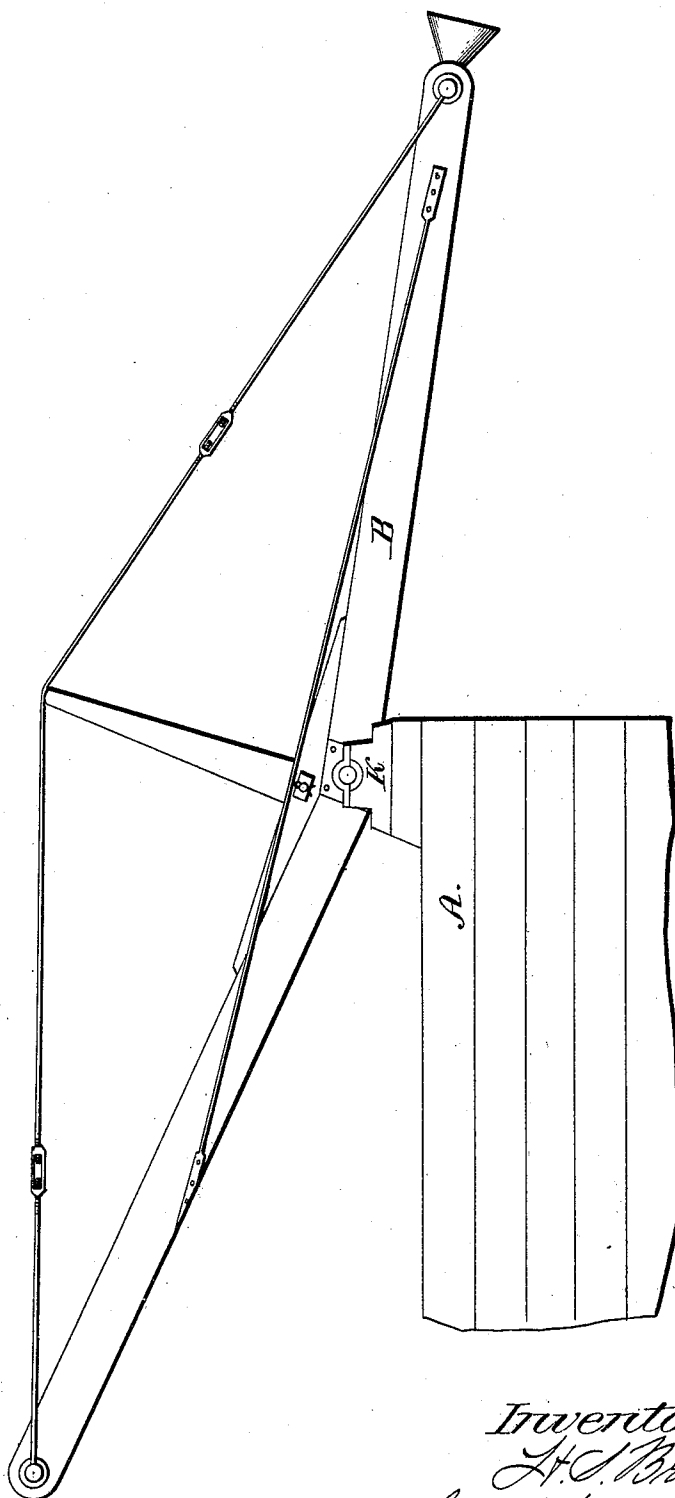
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Fig. 3.



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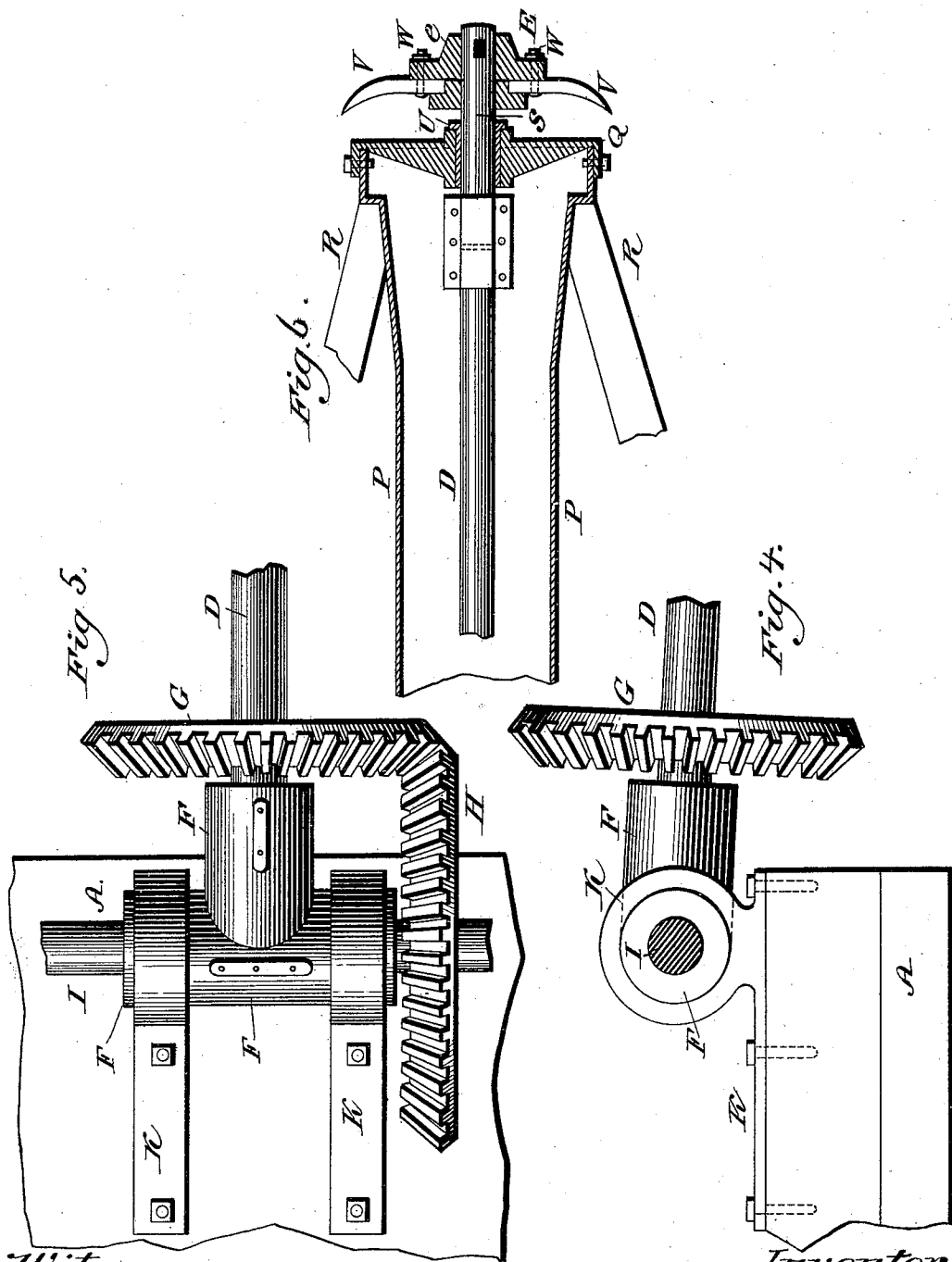
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UNITED STATES PATENT OFFICE.

HORACE S. BROWN, OF QUINCY, ILLINOIS.

DREDGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 404,891, dated June 11, 1889.

Application filed June 9, 1886. Serial No. 204,601. (No model.)

To all whom it may concern:

Be it known that I, HORACE S. BROWN, a citizen of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented certain new and useful Improvements in Dredging-Machines; and I do declare the following to be a full, clear, and exact description of the invention, 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 letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in dredging-machines, and has for its object to improve upon previous devices of this character and to render them more durable and efficient in operation.

To such ends and such others as the invention may pertain the same consists in the peculiar combinations and the novel construction, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the drawings, and then particularly pointed out in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a top plan illustrating my improved dredging-machine. Fig. 2 is a side elevation thereof. Figs. 3 to 6 are details of parts of the same, more particularly hereinafter referred to.

Referring now to the details of the drawings by letter, A designates the deck of a suitable boat best fitted for the purpose, A' the boilers, and A² the engine, located as shown, and secured to the deck or frame of the boat.

B is the trussed sweep-beam, the side bars of which extend one upon each side of the engine, as shown best in Fig. 1, and mounted on trunnions T T, so as to turn therein to raise and lower the front end as occasion may require. These trunnions are located above the deck and on the extreme end of the boat or across a recess in case a recess-hull is used. The side bars B B extend out beyond the end of the boat, and are properly joined together and trussed, as shown in Fig. 1. The inner

end of this trussed beam is provided with brackets *a*, in which are journaled the pulleys *a'*, by means of which and suitable ropes *b'* the lowering of the pump, hereinafter described, is controlled, in a manner well understood.

The centrifugal or rotary pump C is borne by and mounted between the front ends of the two trussed beams B. Its shaft D has its axis in line to cut the axis of the trunnions T. The outer end of the shaft D extends through the pump and the suction-pipe, and carries a digger-wheel E at the extreme outer end. The inboard end of the shaft D is supported by the box-bearing F, substantially T-shaped, as shown in Fig. 5. Near this end of the shaft D is keyed a bevel gear-wheel G, which receives the power from the engine as transmitted from the cross-shaft I through the bevel gear-wheel H. The said cross-shaft is supported and revolves in the trunnions T and the box-bearing F. To the shaft I is keyed the bevel gear-wheel above mentioned, which meshes with the bevel gear-wheel G. Between the beams B and near the ends of the shaft I are keyed two pulleys J J for the purpose of transmitting the power to the shaft from the engine by means of belts X.

K K, Figs. 4 and 5, are bearings for the box F. These bearings are fastened to the deck of the boat by bolts or other suitable means, as shown in said figures.

It will be readily seen that the shaft I, receiving power from the engine by belts over the pulleys J, and the shaft D being properly connected thereto by means of the bevel gear-wheels G and H, as above described, will drive the shaft D to operate the pump, and that both shafts will operate simultaneously.

The trussed beam B is bolted to and supported by the trunnions T, which rotate in their bearings. This admits the outward end of the beam carrying the pump to be lowered to any required angle. The box F also rotates in its bearings and forms a support for the cross-shaft I and also for the end of the shaft D, thereby maintaining the proper relations between these shafts at any angle the trussed beam may assume from the deck of the boat.

The delivery-opening M of the pump (see

Fig. 2) is connected by a flexible pipe N to a pipe-line O, which passes through under, over, or alongside the dredge-hull, as may be desired. The flexible pipe N is of sufficient length to give it an easy bend and admit of the pump being raised or lowered to any position without strain on the pipes. The pipe-line O, passing over, under, through, or alongside the dredge-hull to a pivot-spud at Y, which is fixed in the ground to hold the boat at the stern, is then turned upward or to either side, as may be desired. The pipe-line being brought to this pivoting-point of the dredge permits the digger end of the dredge to be swung from side to side, describing an arc the radius of which is governed by the length of the boat and beam. A side movement of the digger end of the machine is brought about by means of anchors (not shown) and the cables X' X', which pass over pulleys X² X² on the outboard ends of the trussed beam B and are brought in and around drums X³ on the boat, as shown in Fig. 1. The pulleys X² X² are supported from the beam B by means of the chains X⁴.

The outer end of the trussed beam is braced by the rods b³, connected at their inner ends to the deck in any suitable way.

R R are extension-braces fastened at one end to the outer end of the beams B and at the other end to the suction-pipe.

S, Fig. 6, is a short shaft, which is an extension of the shaft D, made by means of a suitable clamp-coupling, this coupling being arranged and intended to slip in case the digger-wheel strikes an obstruction. This short shaft passes through the bushed bearing U in the strainer-head Q, which may be of any well-known and approved construction, and carries the digger-wheel at its extreme end, as seen in Fig. 6, which also shows the construction of the digger-wheel, which consists of a cast flange-head e, keyed on the end of the shaft S. In the hub of the flange are mortises, into which are stepped the flukes or teeth V. These flukes are held rigid by means of stirrups W and bolts. The flukes V are made of preferably square wrought iron or steel forged out to a flat and curved shape, as shown. This forms a wheel with spur-like diggers around it, and the diggers can be easily replaced by new ones in case of breakage.

In case greater strength is required, the trussed beam B is made, as shown in Fig. 3.

What I claim as new is—

1. The combination, with the sweep-beam B, the trunnions T T, supporting the same,

and the bearings for said trunnions, of the box-bearing F, rotating in bearings on the boat and supporting the shaft of the digger-wheel, substantially as described.

2. The combination, with the pivoted sweep-beam B, the trunnions T, supporting the same, and the bearings for said trunnions, of the box-bearing F, rotating in bearings on the boat and supporting the shaft of the digger-wheel, and also the cross-shaft from which said digger-wheel shaft derives its motion, substantially as shown and described.

3. The combination, with the sweep-beam B, the trunnions T, the bearings therefor, the box-bearing F, rotating in bearings on the boat, and the longitudinal shaft D, supported at one end by the box-bearing F, of the cross-shaft I, also supported by said bearing F, the pump operated by said shaft D, and the digger-wheel, also operated by said shaft, substantially as described.

4. The combination, with the pivoted sweep-beam B, the trunnions T, the bearings therefor, the box-bearing F, rotating in bearings on the boat, and the longitudinal shaft D, supported at one end by the said bearing F, of the cross-shaft I, also supported by said bearing F, the pump operated by said shafts, the digger-wheel, the engine, the pulleys J J on the shaft I, and the belts X, all substantially as shown and described.

5. The combination, with the trussed beam B, the pump C, carried thereby, and the flexible pipe N, connected to the discharge-opening of said pump, of the pipe-line O, connected with the pipe N and passed alongside the hull of the boat to a pivot-spud Y, substantially as shown and described.

6. In a dredging-machine, the combination, with the shaft D, of the short shaft S, connected thereto by a clamp-coupling, as described, and the digger-wheel E, carried by the shaft S, substantially as shown and described.

7. In a dredging-machine, the combination, with the shaft D, strainer-head Q, the bushed bearing U therein, and the short shaft S, passed through said bushed bearing and connected to the shaft D by a clamp-coupling, of the digger-wheel carried by the outboard end of said short shaft, substantially as and for the purpose specified.

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

HORACE S. BROWN.

Witnesses:

J. E. McDAVITT,

CICERO F. PERRY.