

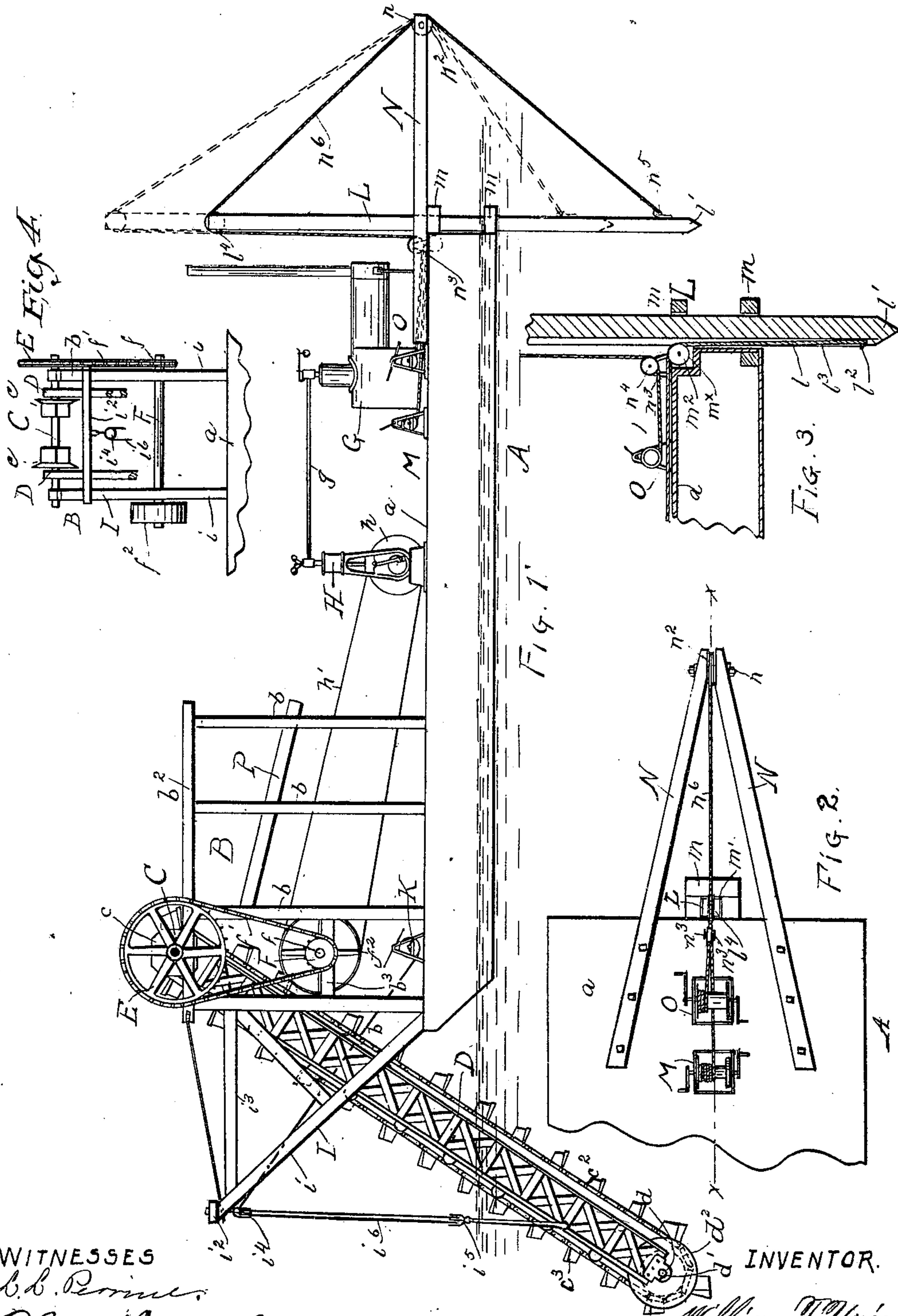
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W. T. URIE.
MINING DREDGE.

(Application filed July 13, 1900.)

(No Model.)



WITNESSES

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MINING-DREDGE.

SPECIFICATION forming part of Letters Patent No. 672,072, dated April 16, 1901.

Application filed July 13, 1900. Serial No. 23,525. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. URIE, a citizen of the United States of America, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Mining-Dredges; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to dredges for removing auriferous or other material from the beds of water courses or streams by the means of ordinary dredging apparatus, the movement rearwardly of the dredge-boat from the force applied to remove the material being resisted by an anchoring spud or spar.

The objects of the invention are, first, to enable the spud or spar to resist the variable strains arising from the recoil of the dredge-boat during the operation of the dredging devices, and, second, to protect the spud-elevating cable from the debris.

The invention consists in the novel construction and combination of parts, such as will be first fully described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a side view of an ordinary dredge boat or barge, showing the invention applied thereto. Fig. 2 is a broken plan view of the rear end of the boat or barge and of the invention as seen in Fig. 1, with the steam-boiler removed. Fig. 3 is a vertical sectional view taken upon the line $x x$ of Fig. 2, the upper end of the spud being broken away. Fig. 4 is a front view in detail of the separate frames supporting the main power-shaft.

Similar letters of reference indicate corresponding parts in all the figures of the drawings.

Referring to the drawings, A represents an ordinary dredge boat or barge, which extends in length a considerable distance, and, as shown, the rear end or stern of the boat is in a vertical plane and also extends at right angles to the sides. Upon the top of the dredge-boat is a horizontal deck a , extending the length and width of the boat.

Upon the deck a are separate upright

frames B B, extending in the longitudinal direction of the boat and arranged at a suitable distance apart for the support of the excavating devices. Each frame is composed of the standards $b b b b$, arranged at short distances apart, and upon the upper ends of said standards is a horizontal beam b^2 . Journaled upon the beams $b^2 b^2$ at each end is a transverse main power-shaft C, with which shaft are pivotally connected the upper ends of the ordinary truss-beams D D, the lower ends of which beams extend downwardly a short distance in advance of the forward end of the boat A to the bed of the stream and near the material to be excavated. At the lower ends of the beams and journaled in the journal-boxes $d d$ is a transverse shaft d' , upon which are the sprocket-wheels $d^2 d^2$. Upon shaft C are sprocket-wheels $c c$. Over the sprocket-wheels $c c$ are extended one end of the sprocket-chains $c^2 c^2$, the other ends of which chains are extended over the sprocket-wheels $d^2 d^2$ on the shaft d' and the ends of said sprocket-chains connected together in the usual manner. Upon the sprocket-chains $c^2 c^2$ are the excavation-buckets $c^3 c^3$.

Upon the end of shaft C which extends a short distance beyond the outer side of frame B is a large sprocket-wheel E. In the frames B B, about two-thirds the distance from the beams $b^2 b^2$ to the deck a , are the horizontal beams $b^3 b^3$, which are connected at their ends with separate standards $b b$ adjacent to each other at the forward end of the frames B B. Upon the upper side of the horizontal beams $b^3 b^3$ are journaled the ends of the transverse shaft f , which is in a vertical line with the shaft C. Upon the end of shaft f , which extends a short distance beyond the outer side of frame B, having the sprocket-wheel E, and directly beneath said wheel is a small sprocket-wheel F. Over the sprocket-wheel F is extended one end of a sprocket-chain f' , the other end of which chain is extended over the sprocket-wheel E and the two ends connected together in the usual manner. Upon the other end of shaft F is a band-wheel f^2 .

Upon the deck a , at the rear end of the boat or barge, is a steam-boiler G and an engine H, the engine being connected with the boiler by a steam-conducting pipe g . Upon the driving-shaft of the engine is a band-wheel h .

Over the said band-wheel h is extended one end of a belt or band h' , the other end of which belt is extended over the band-wheel f^2 on the shaft F in the frames $B B$ and the two ends connected together in the usual manner.

At the extreme forward end of the dredge-boat upon the deck a is a frame I , composed of the standards $i i$, the lower ends of which are close in position to the standards $b b$ at the forward ends of the frames $B B$. The upper ends of the standards $i i$ are inclined forwardly at an angle to the deck a and the upper ends connected with a transverse beam i^2 . With the upper ends of the standards $i i$ are connected the outer ends of the braces i^3 , the inner ends of said braces being connected with the upper ends of the forward standard b in each frame B . Upon the transverse beam i^2 is a block or sheave i^4 . Connected with the truss-beams $D D$ is a sheave i^5 . With the sheave i^4 is connected one end of a rope or chain i^6 , the other end of which rope extends through the sheave i^5 , and thence through the sheave i^4 and the end of the rope or chain connected with a winch K on the forward end of the boat.

At the rear end of the dredge-boat is a vertical movable boat-anchoring spud or spar L . Said spar is made, preferably, with flat sides at right angles to each other and of the same thickness at each end. Said spud or spar is of sufficient length to extend downwardly to the bed of the stream at its lower end, and said end inclined to a point l' to enter the material in the bed of the stream and anchor the boat in position, the upper end of the spud or spar extending a considerable distance above the level of the deck a . The spud or spar L is movable within the boxes $m m$, secured to the rear end of the boat or barge, one of which boxes is a short distance below and in a vertical line with the other. In each box is a square-shaped opening m' , adapted to receive the spar L . On the inner side of the spud or spar is a longitudinal groove l . (See Fig. 3.) In the rear end of the boat, opposite the box m and extending a short distance below the deck a , is a box m' , in which is journaled a pulley m^2 . With the lower end of the spud in the groove l is connected at l^2 one end of a spud-elevating rope l^3 , the other end of which rope extends upwardly in the groove l , thence over the pulley m^2 in the box m' , thence connected with the winch M on the deck a , which winch is placed a considerable distance from the spud or spar in the direction of the forward end of the boat. In the upper end of the spar is a sheave l^4 . With the deck a , on each side of the winch M , is connected by suitable bolts the inner ends of the braces $N N$, the outer ends of which braces extend horizontally a considerable distance from the vertical plane of the rear end of the boat and said ends inclined at an angle to the sides of the boat and toward each other. Through the outer ends of said braces extends

a pivot n , upon which pivot, between the ends of the braces, is a pulley n^2 . Upon the deck, a short distance from the spar L in the direction of the forward end of the boat, are the uprights $n^3 n^3$, in which is journaled a pulley n^4 . With the outer side of the spud or spar, a short distance upwardly from its lower end, is connected at n^5 one end of a truss member consisting of a wire cable n^6 , the other end of which cable extends upwardly over the pulley n^2 at the outer ends of the braces $N N$; thence over the sheave l^4 in the upper end of the spud L , thence downwardly to and beneath the pulley n^4 on the uprights $n^3 n^3$ on the deck a , thence in the direction of the forward end of the boat and connected with the drum of a separate winch O , arranged in position between the winch M and the pulley n , the elevating-rope n^6 extending beneath the drum of the winch O .

In operation the winch M is first operated to slacken the tension upon the wire rope n^6 and the winch O operated to lower the non-rotating spud L into the stream and to the depth within the material in the bed of the stream required to anchor the boat in position. In the paying out of the rope l^3 upon said winch the rope enters the groove l in the spud, and thus escapes the wear against the end of the boat and also the debris at the bed of the river. The winch M is then operated to impart a tension to the cable n^6 and the tension maintained upon the cable. Power is then communicated from the engine H to the band-wheel f^2 on the shaft F on the frames $B B$, thence to the main power-shaft C through the sprocket-wheels f and E and the sprocket-chains f' . From the shaft C power is transmitted to the sprocket-wheels $d^2 d^2$ on the truss-beams $D D$ and the excavator-buckets c^3 enter the material and carry the same to the upper end of the frame B and dump the material upon the chute P , from which it passes to the deck and is removed in the ordinary manner.

Auriferous material is subjected to washing and other well-known separating processes. During the operation of the buckets c^3 and in entering the material the impact which would ordinarily cause the recoil to move the dredge-boat away from the field of operation is resisted by the spud or spar, this resistance being thrown in my invention upon a truss-spar which at any depth will retain its position without bending or breaking and which is susceptible of an instant application of degrees of tension under any emergency and which may be applied at both ends of the dredge-boat, if found necessary.

I have shown in this application the common construction of the dredging devices for removing material from the beds of streams. I may, however, employ other forms of dredging devices and obtain the same advantageous results of the invention—as, for instance, the employment of the derrick. In the raising of the spud or spar from its anchoring posi-

tion the tension is released from the wire rope or cable n^6 , and the winch M serves to retain the spud by means of the rope l^3 in a retracted position. In general practice the winch M is operated by steam-power

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

1. A boat-anchoring spud or spar, having a longitudinal groove, and a spud-elevating rope connected therewith and extending within said groove.

2. The combination with a boat, of guide-boxes upon the end thereof, having openings and a non-rotating spud or spar within the openings in said boxes, said spud having a longitudinal groove, an elevating-cable connected with said spud within said groove, and a pulley upon said boat, in the path of the spud operating the cable.

3. In anchoring devices for dredge-boats, a spud or spar and a truss and a tension device, substantially as described.

4. A dredge-boat, and braces connected together at their outer ends, extending horizontally therefrom, and suitable tension-imparting devices upon said boat, a boat-anchoring spud, and guide-boxes upon said dredge-boat, having openings adapted to receive said spud, and a cable connected at one end with the lower end of said spud, the other end extending over the outer ends of said braces, and connected with said tension-imparting devices.

5. A dredge-boat and braces connected together at their outer ends, extending horizontally from said boat, a vertically-movable boat-anchoring spud and spud-guiding boxes

upon said boat, having openings adapted to receive said spud, spud-elevating devices upon said boat connected with said spud, and a tension-imparting cable connecting the outer ends of said braces with the ends of said spud.

6. A dredge-boat, and braces extending horizontally therefrom, and a cable-winch, a boat-anchoring spud, and spud-guiding boxes upon said boat, having openings adapted to receive said spud, spud-elevating devices upon said boat connected with said spud, suitable anti-friction devices upon said braces, and the upper end of said spud, and also upon said boat, and a tension-imparting cable connected with the lower end of said spud at one end, and having the other end extending over the anti-friction devices upon said braces, the upper end of said spud and upon said boat, and connected with said winch.

7. A dredge-boat, and dredging devices upon the forward end of said boat, and a boat-anchoring spud at the rear end of said dredge-boat having a sheave at its upper end, guide-boxes for said spud connected with the rear end of said boat, braces extending horizontally from the rear end, and inclined at an angle to the sides of said boat, and toward each other, and having a sheave in said ends, means for raising and lowering said spud, and a winch upon said boat, and a cable connected with the lower end of said spud and extending over the sheaves upon said braces, and the upper end of said spud, and also connected with said winch.

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