

No. 662,462.

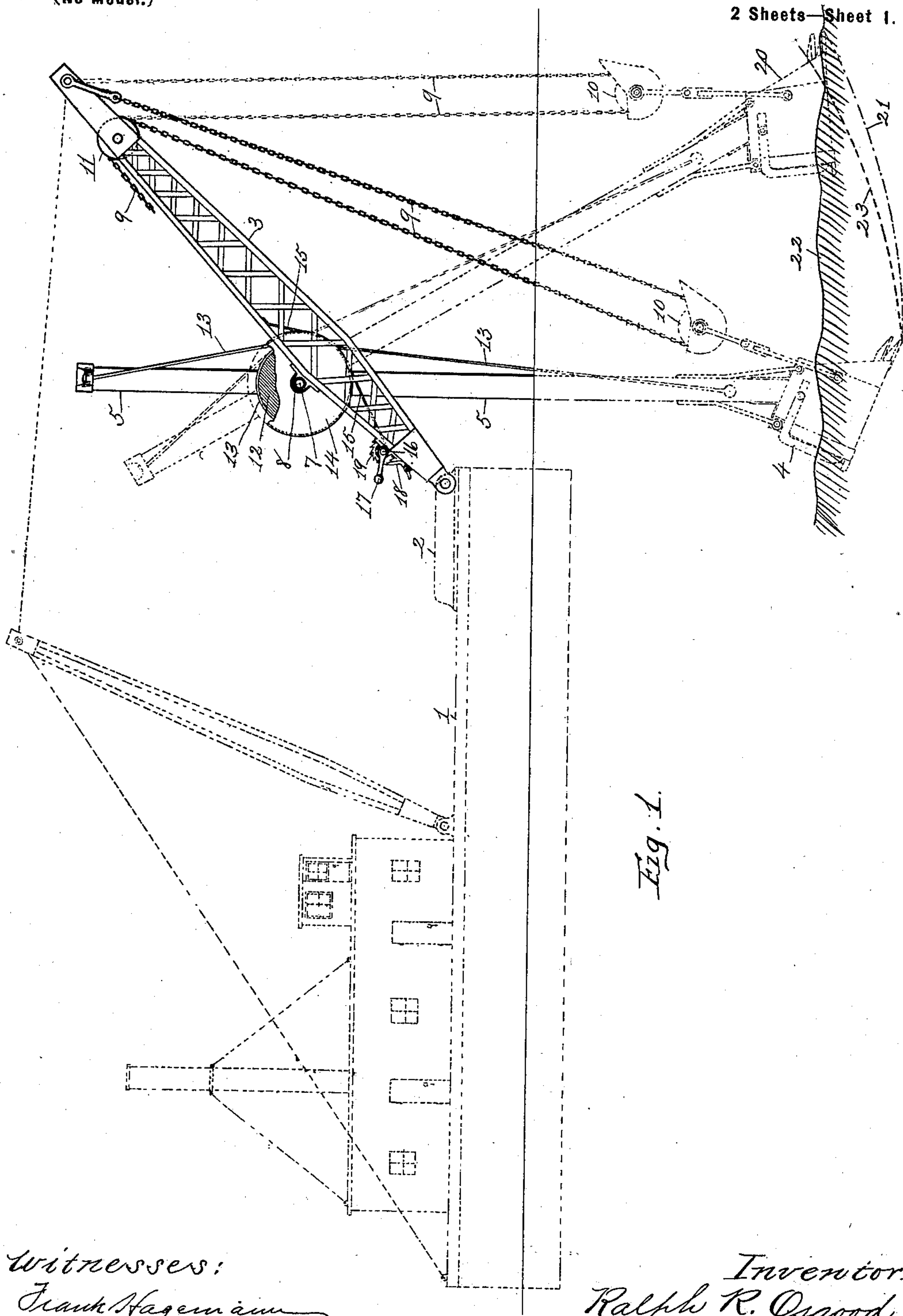
R. R. OSGOOD.  
DREDGE.

Patented Nov. 27, 1900.

(Application filed June 7, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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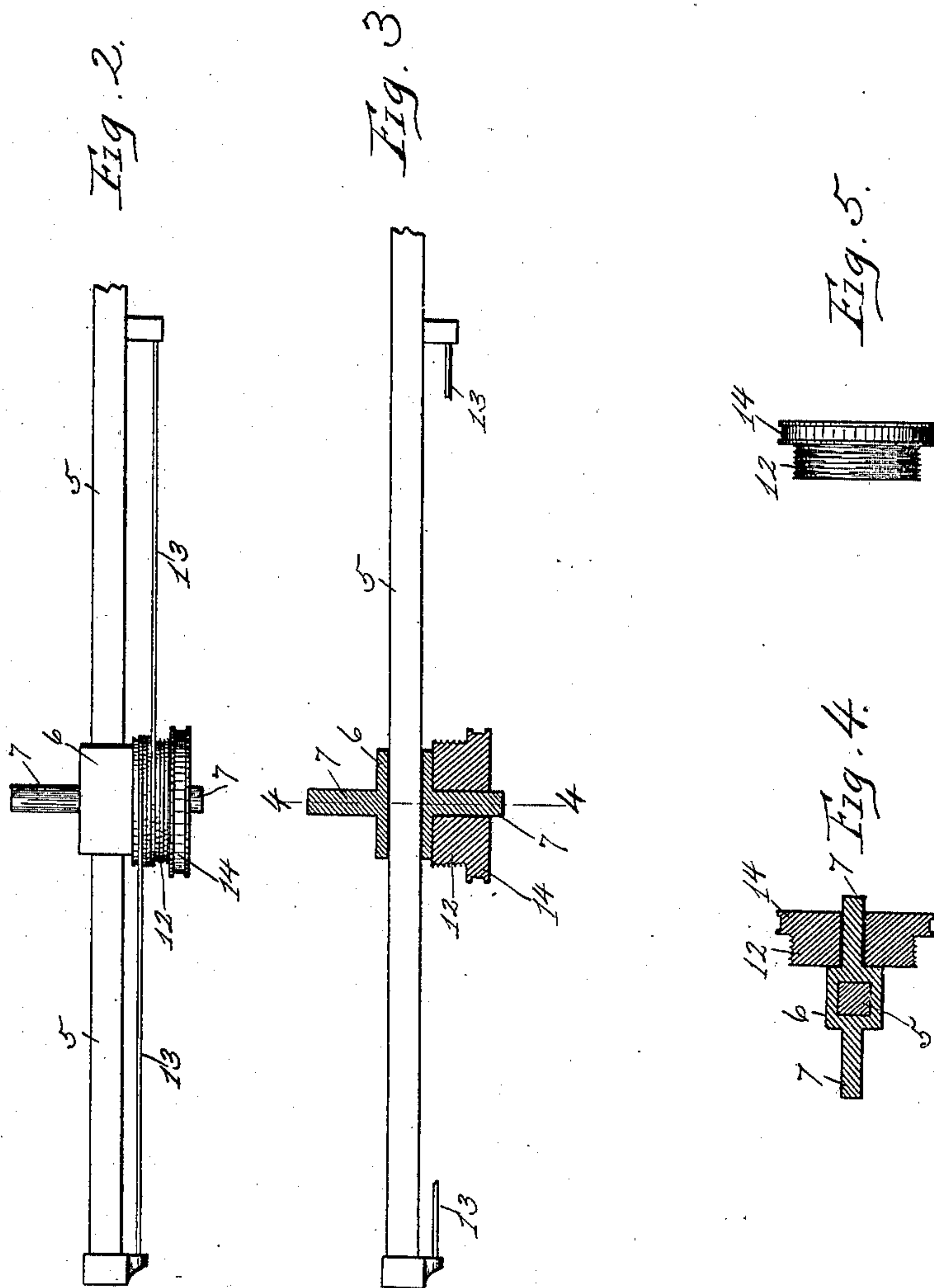
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# UNITED STATES PATENT OFFICE.

RALPH R. OSGOOD, OF LANSINGBURG, NEW YORK.

## DREDGE.

SPECIFICATION forming part of Letters Patent No. 662,462, dated November 27, 1900.

Application filed June 7, 1900. Serial No. 19,364. (No model.)

*To all whom it may concern:*

Be it known that I, RALPH R. OSGOOD, a citizen of the United States, residing at Lansingburg, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Dredges, of which the following is a specification.

The invention relates to such improvements; and it consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification.

Similar characters refer to similar parts in the several figures.

Figure 1 of the drawings is a view in side elevation of the dipper-arm and its supporting and operating connections of my improved dredge, the boat and submerged parts being indicated in outline by dotted lines. Fig. 2 is a top plan view of the upper portion of the dipper-handle and its controlling mechanism. Fig. 3 is a similar view with the trunnion-sleeve, cable-drum, and brake-band wheel in central section. Fig. 4 is a cross-section of the same, taken on the broken line 4 4 in Fig. 3. Fig. 5 is a side view of the drum and band-wheel detached.

The object of my invention is to more positively control the movements of the dipper and dipper-handle of a dredge or the like as well as to render the dredging operation of the dipper more effective.

Referring to the drawings, 1 represents, in dotted lines, the boat or body of a dredge.

Mounted upon the turn-table 2, to project from the bow of the boat, is a boom 3. The dipper 4 is fixed upon the lower end of the shaft or handle 5 and is mounted in a slide-way-support consisting of the trunnion-sleeve 6, having trunnions 7, supported in bearings 8 on the boom 3, all in the usual manner.

The dipper-handle is capable of reciprocating movements in the trunnion-sleeve as well as a swinging or oscillating movement on the axes of the trunnions.

Movements may be imparted to the dipper and handle by means of the chain 9, connected at one end with the outer end of the boom, passing thence downwardly around a sheave

or pulley 10 on the dipper and thence upwardly around a sheave or pulley 11, mounted on the upper end of the boom, whence said chain passes to a power-actuated drum or windlass (not shown) on the boat. It will be seen that by operating said chain when the dipper-handle is free to move in its slideway in the trunnion-sleeve reciprocating sliding movements can be imparted to the handle; but when this sliding movement of the handle is prevented or limited the operation of said chain 9 will cause the dipper and handle to swing or oscillate in a vertical plane on the axes of the trunnions.

One of the important features of my present invention relates to mechanism for controlling the reciprocating movements of the dipper-handle. Such controlling mechanism is shown in the form of a drum 12, rotatively mounted upon the boom 3, preferably concentrically with but independently of the trunnion-sleeve, as by loosely mounting the drum upon one of the trunnions 7, which drum is connected by a pair of cables 13 with the dipper-handle at points near its opposite ends. The cables are wound in opposite directions around the drum to which they are connected. These cables may be separate pieces of wire cable or the like, each having one end fixed to the drum, or they may be formed in a single piece having its middle portion fixed to the drum, in either case the connection being so made that a rotary movement of the drum in either direction serves to wind up one cable upon the drum and at the same time to unwind the other, thus causing the dipper to reciprocate in the trunnion-sleeve.

The drum may be provided with any known form of controlling mechanism or brake. As a means for controlling the movements of the cable-drum I have shown, fixed thereto, a band-wheel 14, around which is passed the friction band or strap 15, secured at one end to a fixed support and at the other end to a shaft 16, rotary in bearings on the boom and provided with an operating crank-handle 17, a controlling-pawl 18, and ratchet 19, whereby the band 15 can be wound up on the shaft 16 to apply brake-pressure to the drum, and thereby lock the same against rotary movement, the drum being thus temporarily



fixed to the boom. When the brake is released and the drum is free to rotate, reciprocating movements of any desired degree can be imparted to the dipper-handle by means of the chain 9, such reciprocating movements causing one of the cables to unwind from the drum and the other to be wound thereupon, accompanied by a rotary movement of the drum. When the brake is applied and the drum thereby fixed against rotary movement, the action of the chain 9 will cause the dipper-arm to swing upon the axes of the trunnions. This swinging movement of the handle accomplishes the winding of one cable upon the fixed drum and the unwinding of the other therefrom in accordance with the degree of such swinging movements, and I am able to utilize this winding and unwinding of the cables by the swinging movements of the handle to render the dredging operation of the dipper more effective.

When the dipper-handle is in an approximately vertical position, as shown in Fig. 1, it will be seen that by extending the cables 13 first to the forward side of the drum, as shown, when the handle is swung forward in the direction of its work the cable connected with the outer end of the dipper-handle will be wound upon the brake-locked drum, causing such cable to be shortened and the handle to be forced downwardly in its trunnion-sleeve, and this downward movement will continue as long as the swinging movement of the handle continues with the drum held in a locked position.

In swinging the dipper from the position indicated by the dotted lines 4 to that indicated by dotted lines 20 in Fig. 1 the effective length of the dipper-handle will be gradually increased, causing the nose of the dipper to traverse the path indicated by dotted lines 21 through the bottom or soil 22. The path traversed by the nose of the dipper when given a similar swinging movement in the manner heretofore employed is indicated by dotted line 23 in Fig. 1.

By comparison of the two paths 23 and 21 it will be seen that by means of my improved construction I am able to secure a longer and much more effective engagement of the dipper with the soil or material to be excavated than has been possible without the use of separate positively-driven mechanism.

The only power necessary with my improved construction is that for swinging the dipper-

handle, the reciprocating movement which causes the variation in the effective length of the handle being induced by its swinging movements. The degree of reciprocating movement thus imparted to the handle may be varied by the use of drums of different sizes adapted to the character of the work to be accomplished.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an excavator, the combination with a rotatively-supported sleeve; and a dipper-handle reciprocatory in said sleeve of means for swinging said handle; rotary mechanism supported on said sleeve for permitting and controlling the reciprocatory movements of the dipper-handle; means for controlling said rotary mechanism and causing a forward-swinging movement to induce an outward thrust of the dipper-handle.

2. In an excavator, the combination with a trunnion-supported sleeve; a dipper-handle reciprocatory in said sleeve; and means for oscillating said handle; of a drum rotatively mounted upon said trunnion-supported sleeve; a cable connection between said drum and the upper end of said handle leading to the forward side of the drum; and means for preventing rotation of said drum while a forward-swinging movement is imparted to said handle.

3. In an excavator, the combination with a trunnion-supported sleeve; of a dipper-handle reciprocatory therein; means for swinging the dipper-handle; a drum rotatively supported concentric with but independently of said sleeve; a cable connection between the upper end of said handle and said drum and adapted to be wound upon the drum; and means for preventing rotation of said drum.

4. In an excavator, the combination with a trunnion-supported sleeve; of a dipper-handle reciprocatory therein, means for swinging said dipper-handle; a drum rotatively supported concentric with but independently of said sleeve; cables oppositely wound upon said drum and connected with the dipper-handle near its opposite ends; and means for controlling the rotary movements of said drum.

In testimony whereof I have hereunto set my hand this 5th day of June, 1900.

RALPH R. OSGOOD.

Witnesses:

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