

No. 708,657.

Patented Sept. 9, 1902.

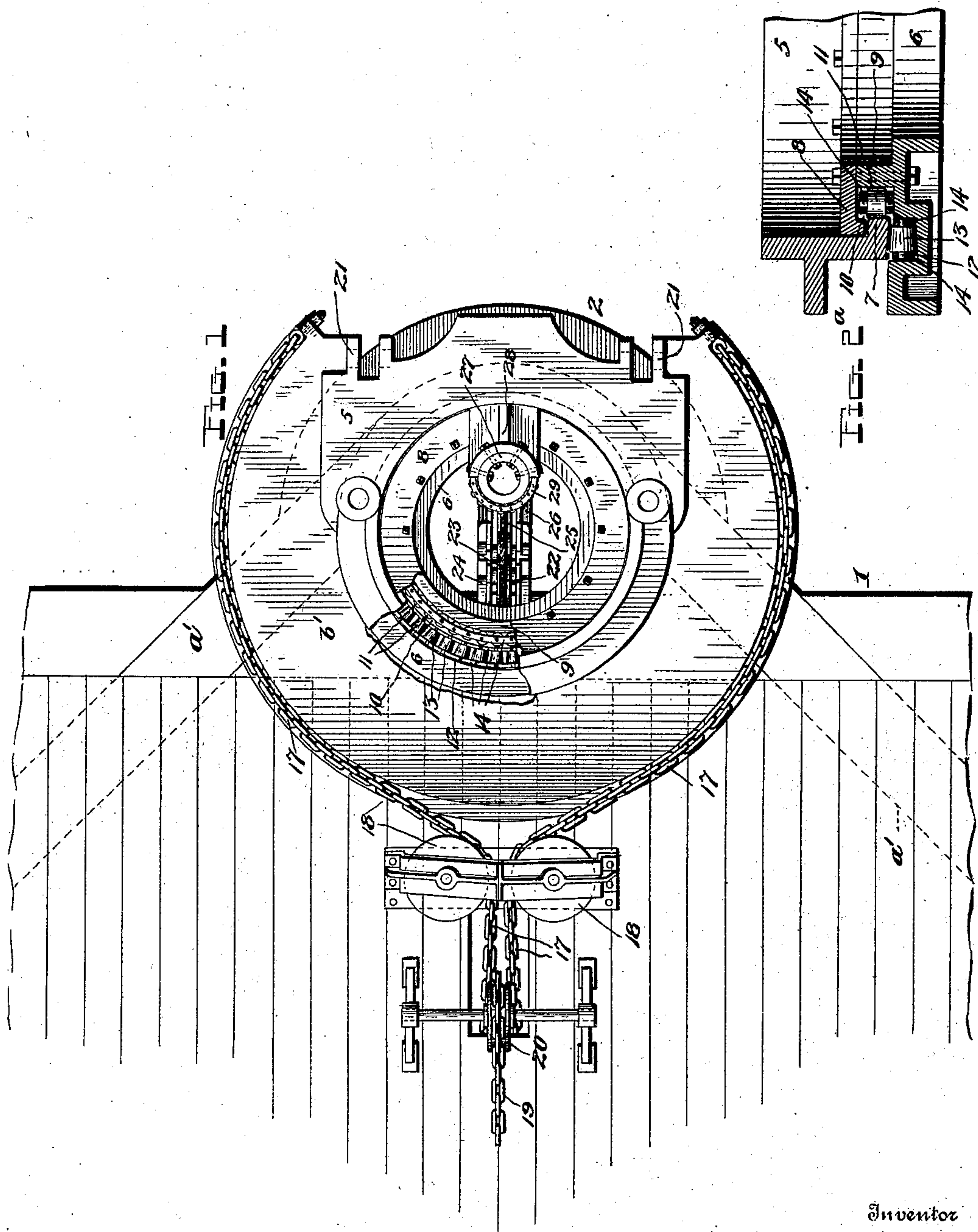
R. R. OSGOOD.

DREDGE.

(Application filed Feb. 6, 1902.)

(No Model.)

3 Sheets—Sheet 1.



Inventor

R. R. Osgood

Witnesses

J. A. Greisbayer, Jr.
J. A. Bullson

By

A. B. Wilson & Co.

Attorneys

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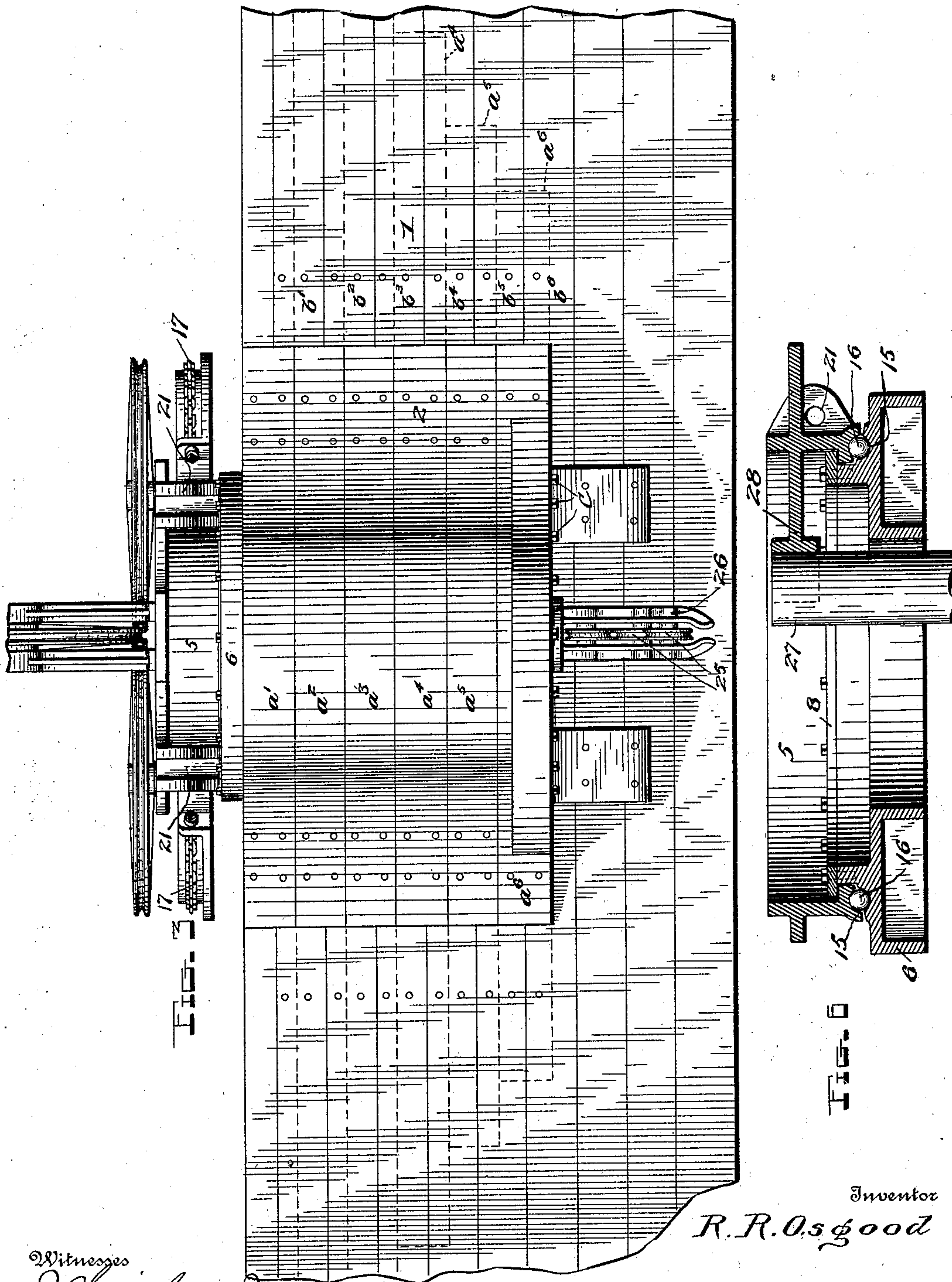
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Witnesses
J. W. Truesdell, Jr.
J. T. Bellson

By A. B. Wilson & Co.
Attorneys

Inventor
R. R. Osgood

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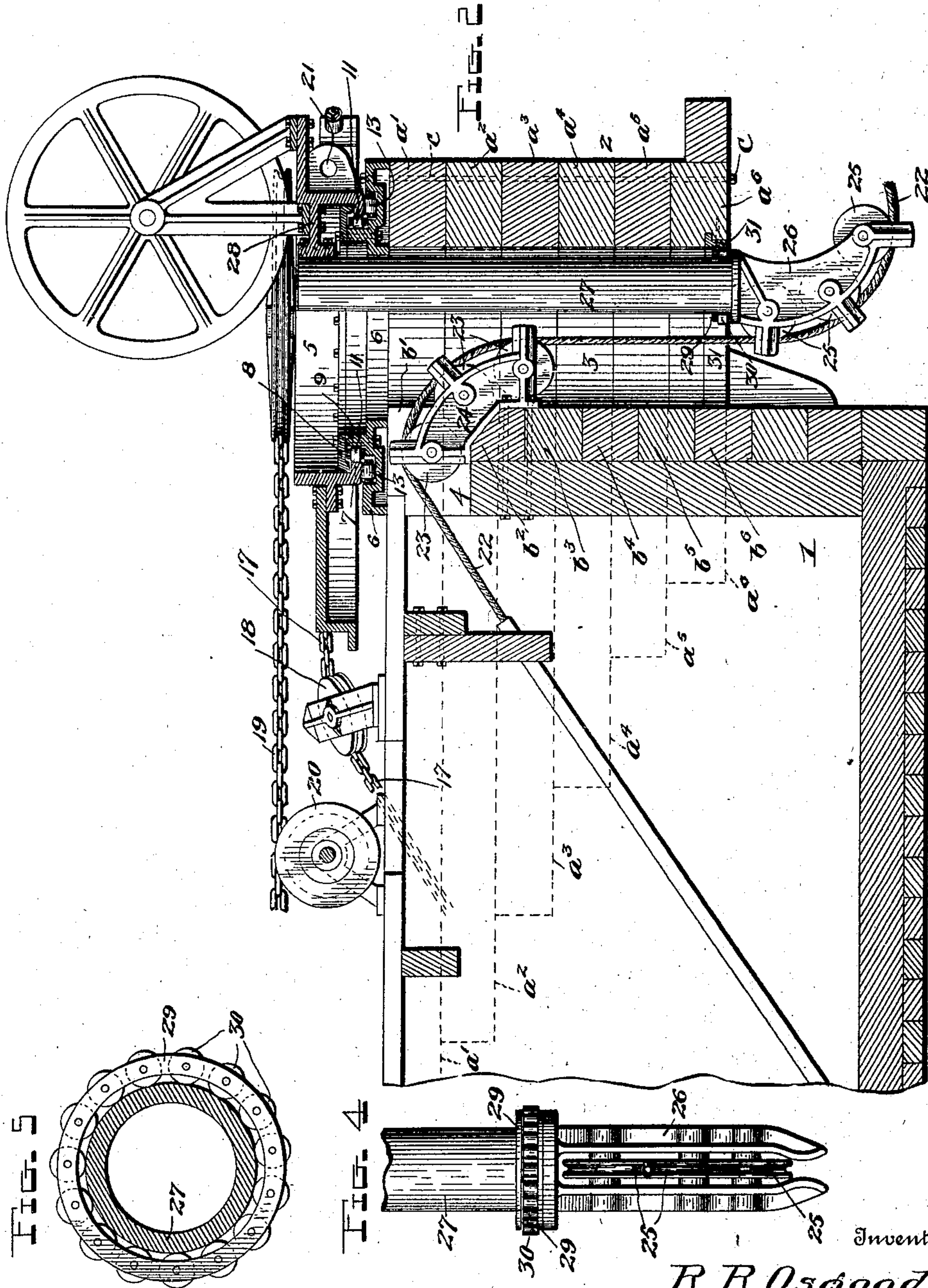
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3 Sheets—Sheet 3.



Witnesses
J. H. Kriebner, Jr.
J. H. Kriebner

By

R. R. Osgood
Inventor
A. B. Wilson & Co.
Attorneys

UNITED STATES PATENT OFFICE.

RALPH R. OSGOOD, OF UPPER TROY, NEW YORK.

DREDGE.

SPECIFICATION forming part of Letters Patent No. 708,657, dated September 9, 1902.

Application filed February 6, 1902. Serial No. 92,863. (No model.)

To all whom it may concern:

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

This invention relates to improvements in dredges and analogous machines, especially those wherein a turn-table is employed for the purpose of swinging the load from side to side.

Among the principal objects of my invention are the provision of improved means for facilitating the movements of the turn-table and enabling it to withstand the heavy strains to which it is subjected in the various positions to which it may be turned; to transmit those strains to the bed or foundation on which the turn-table rests without interfering with the movements of the turn-table while taking up the downward pressure and lateral or side thrust, so as to prevent crowding or binding of the turn-table against its track or way; to construct a turn-table foundation integral with and projecting from the dredge structure and having a well or passage within it for the backing chain or cable; to provide a novel construction and arrangement of guiding-sheaves for said backing chain or cable by means of which the lead of the cable will always lie in the center line of the turn-table and swing therewith and whereby the cable exerts a pulling strain in a more direct line to draw the dipper back, and finally to generally simplify and improve the construction and increase the practical efficiency of dredges of the character described.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in certain novel features of construction and combination and arrangement of parts, as will be hereinafter fully described, defined in the appended claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a top or plan view of a fragment of the bow or one end of a dredge, showing a

turn-table arranged for operation thereon in accordance with my invention, a portion of the top of the turn-table being broken away to show the antifriction-rollers. Fig. 2 is a vertical longitudinal section of the parts shown in Fig. 1, illustrating also the means for guiding the backing chain or cable. Fig. 2^a is a sectional view through the turn-table, showing the end friction-bearings. Fig. 3 is an elevation of the end of the dredge illustrated in Figs. 1 and 2. Fig. 4 is a detail view of the swinging sheave-guide for the backing-cable. Fig. 5 is a detail view of the antifriction roller-bearing for said guide. Fig. 6 is a sectional view through the turn-table, showing a modification in the construction of the antifriction roller-bearings.

Like reference characters indicate corresponding parts throughout the several views.

Referring now more particularly to the drawings, the numeral 1 represents the body or hull of the dredge, which is provided at one end with the bed or foundation 2, which supports the turn-table. This bed or foundation overhangs or projects beyond the end of the dredge structure and constitutes a part of said structure, being composed of a series of superposed timbers $a' a^b$, which are halved or otherwise fitted into engagement with the corresponding end timbers $b' b^b$ of the boat or structure, and are firmly secured together and to said end timbers by bolts c . The timbers $a' a^b$ decrease in length from the top to the bottom of the foundation, and the top timber or course a' extends to and is rigidly connected to the side timbers of the boat, thus forming a bed or foundation of great strength and rigidity. The outer or front surface of the bed or foundation is preferably curved or rounded off, as shown, and said bed or foundation forms, with the timbers $b' b^b$ of the hull, a vertical well 3, whose lower end is located at or near the bottom of the hull and whose upper end communicates with the hawser-hole 4 just below the deck-line.

The turn-table 5 is supported partly by the end timbers, but mainly by the bed or foundation, formed as above described, and is located immediately above the well 3, so as to lie coaxially therewith. It is carried by an annular base or track 6, which is securely

bolted to the foundation. The turn-table is provided with an inwardly-projecting flange 7, against which bears a retaining ring or annulus 8, which holds the turn-table in position, and this ring is bolted to a vertical flange 9, rising from said base. Between the flanges 7 and 9 a raceway 10 is formed to receive vertical antifriction-rollers 11, and between the upper surface of the base and the said flange 7 a raceway 12 is formed to receive horizontal antifriction-rollers 13. These rollers extend entirely around the circumference of the turn-table, and the rollers of each set or series have stub-shafts which revolve in a cage formed by opposing rings 14. The retaining ring or annulus 8 and the turn-table by overhanging the track and raceways 10 12 protect the same from the excavated mud and other foreign matter. The strain brought upon the turn-table by the load, (and in the case of a dredge or excavator by forcing the dipper into the bank,) among other things, tends to crowd the table laterally, whereby too great friction is produced in the ordinary construction of turn-table between the table and the devices employed for holding it in place on the track, interfering with the free movements of the turn-table and otherwise impairing the efficiency of the machine. By the use of the two series of antifriction-rollers this objection is avoided, as the horizontal rollers take up the downward pressure and strain, while the vertical rollers receive and transmit the lateral thrust to the flange 9 of the track, making the thrust uniform for all positions of the load. The turn-table is thus better supported in all positions than in previous constructions and is enabled to revolve more easily and with much less friction. The side bearings of the table on the foundation are also relieved of wear and the table is rendered less liable to breakage or damage by excessive strains, as well as capable of being moved with less power than heretofore required. In Fig. 6 the construction of the antifriction-bearings is modified by dispensing with the vertical rollers and concaving the meeting faces of the turn-table and track to form a raceway 15 for antifriction-balls 16, the said raceway being inclined from the vertical in order to adapt the balls to take up and transfer both the down pressure and the lateral thrust. This construction is not deemed so desirable as the double roller-bearings where great strain is encountered, but is effective under all ordinary conditions for lighter work.

17 17 are the swinging chains or cables by which the turn-table is revolved. These are guided by any suitable sheaves, as 18 18.

19 represents the usual hoisting-chain, which is guided by the sheave 20, and 21 21 the hinges for the attachment of a boom to the turn-table. It has not been deemed necessary to show the boom or the dipper or other load-supporting contrivance, as these

may be of any pattern. I may also here remark that it is not intended to limit the improvements to use in connection with boom-machines, for they may in some instances be advantageously employed in connection with crane-machines.

The backing chain or cable 22 is connected with the dipper-handle (not shown) and intended to control the backward movements of the dipper. With the usual hawser-holes applied to guide this chain or cable through the bow much difficulty is experienced, owing to the cramping of the chain as the load is swung from side to side, making it difficult to back the dipper in many positions and under all ordinary circumstances causing much wear and friction and consuming much unnecessary power. In addition it has heretofore been impossible to apply the necessary power to move the dipper back with any great amount of facility or speed on account of the indirect line of pull, which prevents the free movements of the handle. All these objections are obviated by the novel mode of mounting the chain or cable clearly shown in Fig. 2 and which I will now proceed to describe. The cable 22 passes vertically through the well 3 on a line coincident with the axis of the turn-table 5 and passes inboard through the hawser-hole 4 and over a series of guide-sheaves 23, mounted in a suitable bracket or frame 24, bolted to the timbers or frame of the boat 1. These sheaves preferably extend in the arc of a circle from the hawser-hole to the center of the well 3, so as to guide the cable with minimum resistance and so that the uppermost sheave is horizontal, while the other two sheaves of the series lie in different vertical planes, one to the rear of the other, as shown. The lower or outboard end of the chain or cable 22 passes out to the dipper-handle at the lower end of the well and is guided by a similar series of guide-sheaves 25, which also extend in the arc of a circle and are likewise arranged vertically and horizontally, with the inner and uppermost sheave disposed on the opposite side of the vertical axial line of the turn-table, so that that portion of the cable which extends between the lowermost pulley 23 and uppermost pulley 25 will extend in said line or in the plane of the axis of the turn-table. The sheaves 25 are mounted in a bracket 26, which is carried by a hanger 27, secured at its upper end to a portion 28 of the turn-table, whereby when the turn-table swings the sheaves 25 will also be swung to a corresponding degree and from the same center, by which means the lead of the cable will always extend straight from the center line of the turn-table to the sheaves 23, thus preventing it from binding or jamming and producing undesirable wear and friction. The hanger 27 is encompassed by a cage 29, carrying antifriction-rollers 30, which contact with a bearing and wear plate 31 on the foundation 2 and

reduce the friction as the hanger swings and at the same time transfer the strain to the foundation.

It will be noticed from the construction described that the backing chain or cable leads out at a point below the hawser-hole and close to the bottom of the boat. By this means it will be plain the cable is given a more direct line to pull the dipper back and the dipper rendered easier of control.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that the construction, mode of operation, and advantages of my improved dredge will be readily apparent without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. A dredge-boat having a turn-table foundation built integral therewith and projecting therefrom, said foundation having a well or passage within it for the backing chain or cable, substantially as described.

2. A dredge-boat having a massive or substantial integral or built-in overhanging turn-table support, substantially as described.

3. A dredge-boat having at one end a hawser-hole below its platform or deck line, and a turn-table foundation overhanging said end and having a well extending vertically from the deck-line to a point below the hawser-hole, substantially as set forth.

4. A dredge-boat having a hawser-hole and a turn-table foundation forming a well extending some distance below the hawser-hole for the lead of a cable, substantially as and for the purpose set forth.

5. A dredge-boat having a hawser-hole located below its platform or deck line, and a well communicating at its upper end with the hawser-hole and extending continuously from a point above to a point below the hawser-hole, substantially as and for the purpose set forth.

6. A dredge-boat having a turn-table, a guide-sheave below the turn-table and di-

rectly connected thereto to turn therewith, and a backing chain or cable guided by said sheave, substantially as set forth.

7. A dredge-boat having a hawser-hole, a turn-table foundation having a well in communication at its upper end with the hawser-hole and extending some distance below the same, a turn-table resting on said foundation, guide-sheaves located adjacent to the hawser-hole and at the lower end of the well for maintaining a cable-lead in line with the center of the table, and a hanger extending vertically through the well and carrying the lower sheave and connected at its upper end to the movable part of the turn-table.

8. A dredge-boat having a hawser-hole, a turn-table, guide-sheaves for guiding the lead of the cable to and from the hawser-hole in the central line of the turn-table, one of said sheaves being located adjacent to and the other below the hawser-hole, and means directly connecting the latter-named sheave with the turn-table to move with said turn-table, substantially as specified.

9. A dredge-boat having a hawser-hole, a turn-table foundation forming a well in communication at its upper end with the hawser-hole and extending some distance below the same, a turn-table resting on said foundation, guide-sheaves located adjacent to the hawser-hole and at the lower end for maintaining a cable-lead in line with the center of the table, means independent of the cable for connecting the lower sheave to turn with the table, substantially as and for the purpose described.

10. A dredge-boat having a hawser-hole, a turn-table, a well beneath the turn-table and extending below the hawser-hole, a backing-cable extending vertically in the well and passing through the hawser-hole, a guide-sheave for the cable at the lower end of the well, and a connection through the well between the turn-table and sheave, whereby the latter is directly connected to swing with the said turn-table, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

RALPH R. OSGOOD.

Witnesses:

CORNELIUS A. WALDRON,
FRANK A. WALDRON.