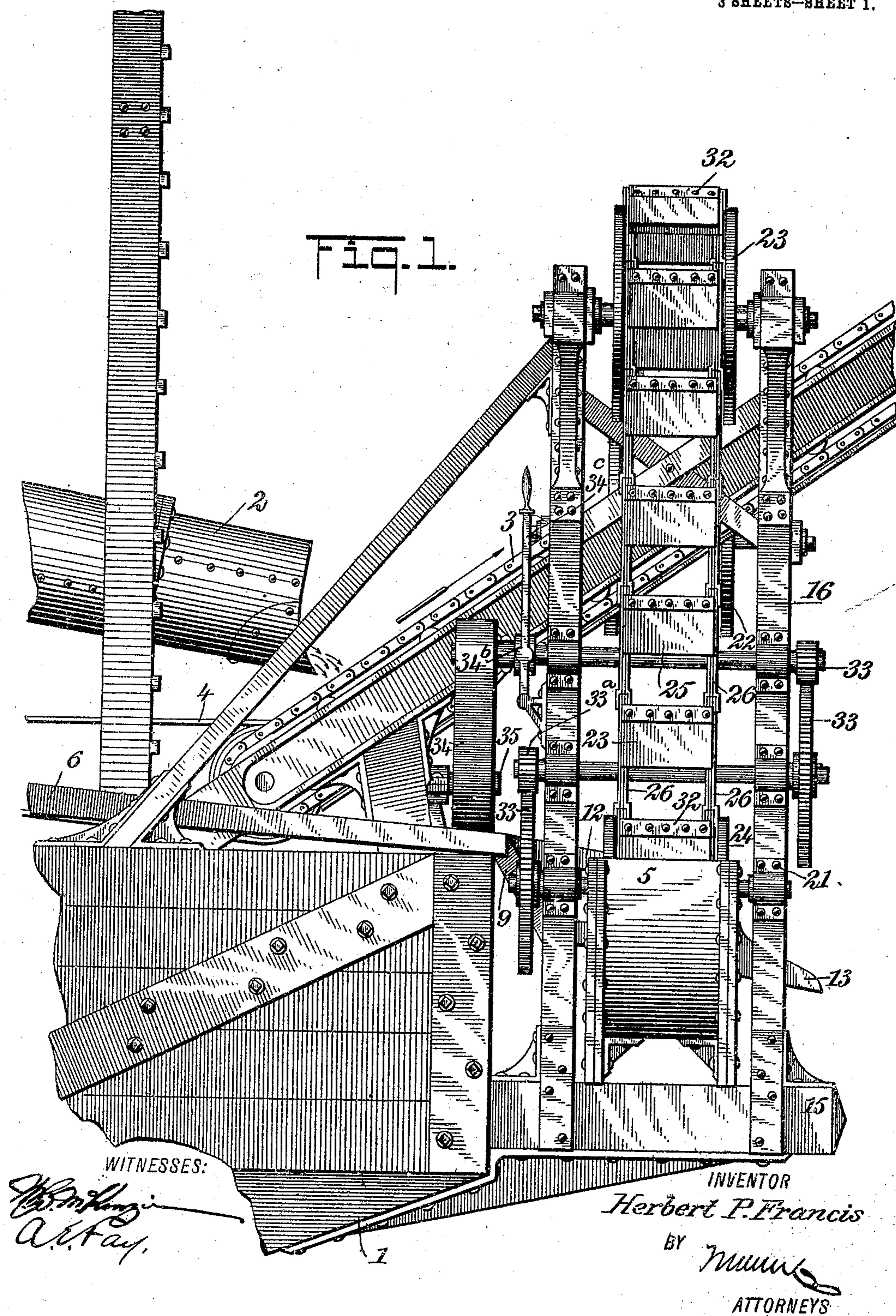


No. 805,906.

PATENTED NOV. 28, 1905.

H. P. FRANCIS.  
ATTACHMENT FOR DREDGERS.  
APPLICATION FILED JUNE 10, 1904.

3 SHEETS--SHEET 1.



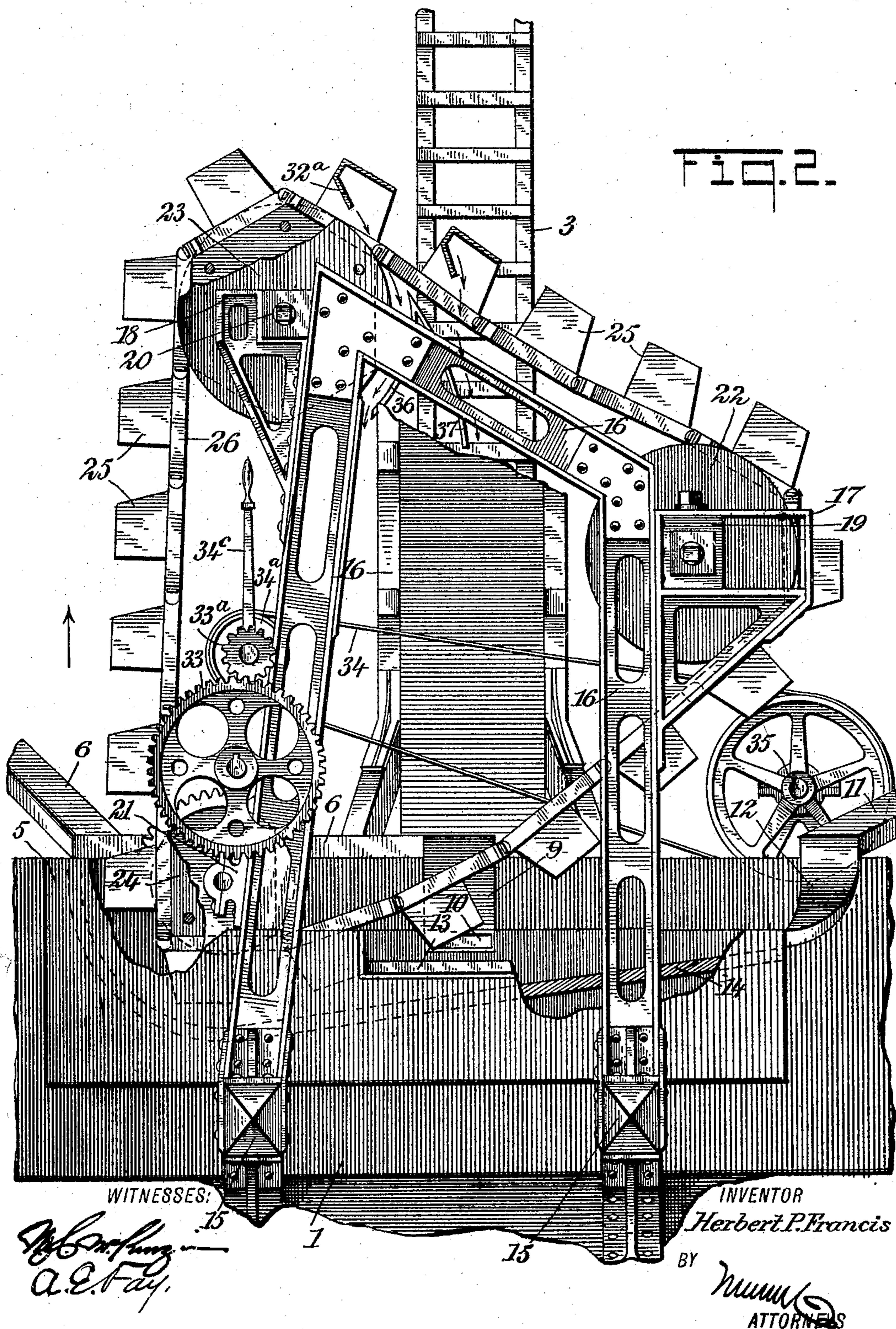
No. 805,906.

PATENTED NOV. 28, 1905.

H. P. FRANCIS.  
ATTACHMENT FOR DREDGERS.

APPLICATION FILED JUNE 10, 1904.

3 SHEETS—SHEET 2.



No. 805,906.

PATENTED NOV. 28, 1905.

H. P. FRANCIS.  
ATTACHMENT FOR DREDGERS.  
APPLICATION FILED JUNE 10, 1904.

3 SHEETS—SHEET 3.

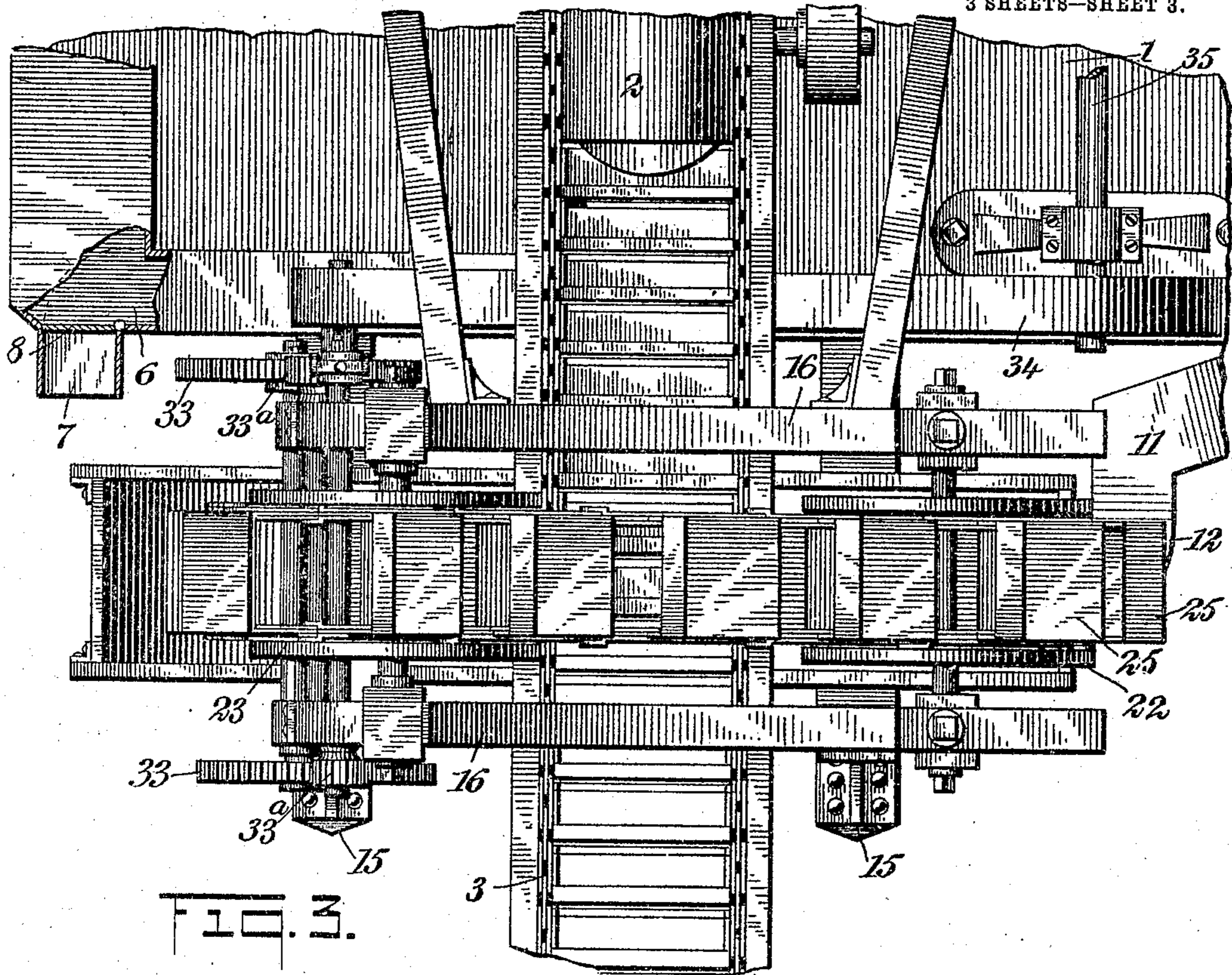


FIG. 3.

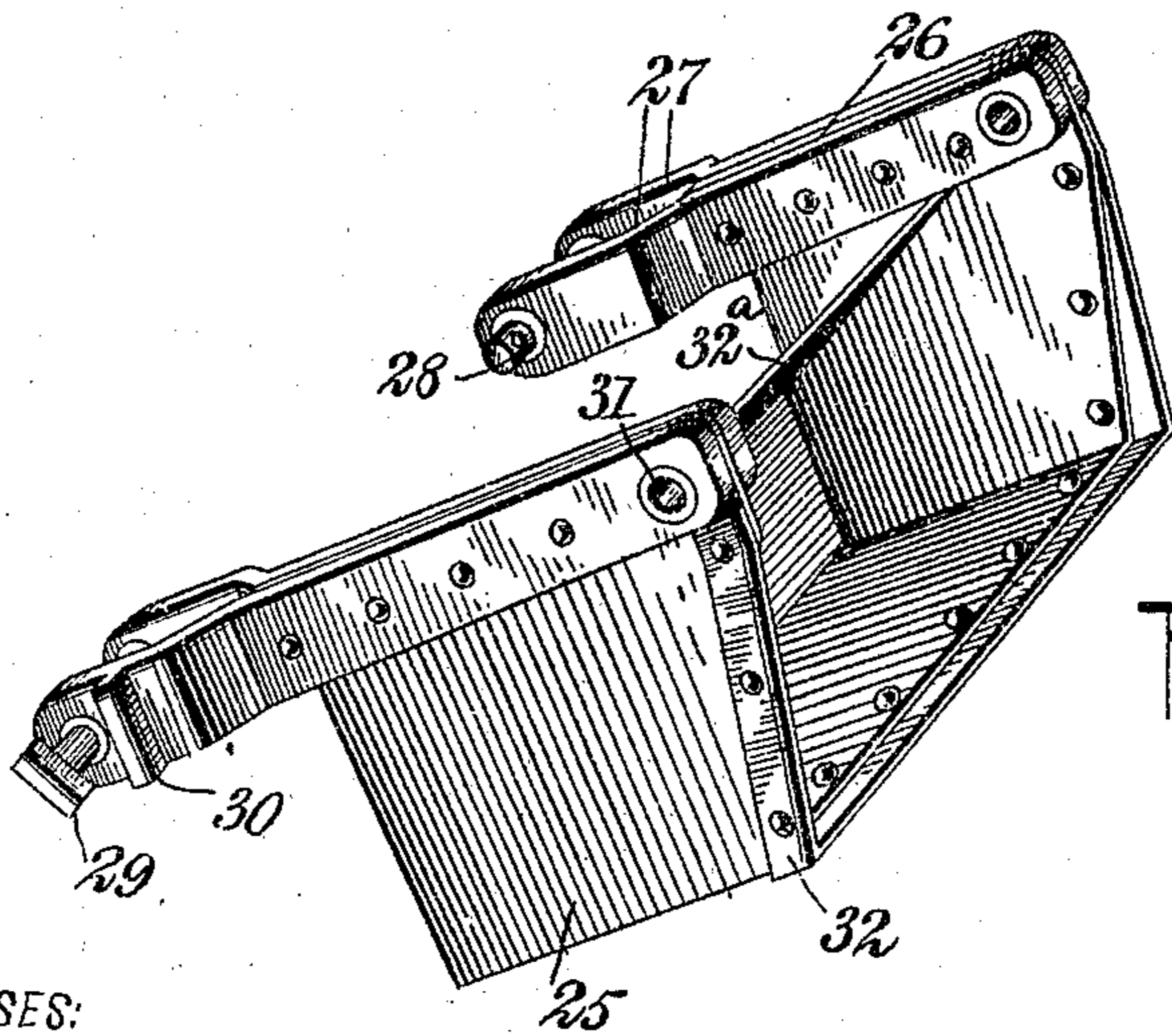


FIG. 4.

WITNESSES:

*W. B. Francis*  
*A. T. Fay*

INVENTOR

*Herbert P. Francis*

BY

*M. M. M.*  
ATTORNEYS

# UNITED STATES PATENT OFFICE.

HERBERT PAUL FRANCIS, OF OROVILLE, CALIFORNIA, ASSIGNOR OF ONE-HALF TO SAID FRANCIS, AND ONE-HALF TO RICHARD SAVILLE, OF OROVILLE, CALIFORNIA.

## ATTACHMENT FOR DREDGERS.

No. 805,906.

Specification of Letters Patent.

Patented Nov. 28, 1905.

Application filed June 10, 1904. Serial No. 211,965.

*To all whom it may concern:*

Be it known that I, HERBERT PAUL FRANCIS, a citizen of the United States, and a resident of Oroville, in the county of Butte and State of California, have invented a new and Improved Attachment for Dredgers, of which the following is a full, clear, and exact description.

My invention relates to an attachment for dredgers, especially for gold-dredgers for taking sand from the sluices and depositing it upon the stacker ordinarily employed in such machines. Heretofore dredgers of this character have been supplied with sand-pumps which take sand and water from the sand-box directly to the tailing-pile. The water thus thrown on the tailing-pile washes the sand and gravel into the pond behind the boat and prevents the proper piling up of material in the desired place. These pumps are expensive to run, requiring from twenty to forty horse-power, and are expensive to keep in repair on account of the cutting action of the sand.

The main purpose of my invention is to provide a device which will obviate the necessity for using these pumps.

Certain other objects of my invention and a detailed description of a preferred embodiment thereof will be given below.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side view of a portion of a dredger, showing a preferred form of my invention applied thereto. Fig. 2 is an end view of the same, partially broken away. Fig. 3 is a partial plan view of the same, and Fig. 4 is a perspective view of a detail.

The form of my invention illustrated comprises the usual stacker or endless conveyer for conveying sand from the usual rotary screen. Sluices also lead to a sand-box, and a second endless conveyer is used to withdraw the sand from the sand-box, partly drain it, and deposit it on the stacker, by which it is conveyed to the sand pile with the other sand.

In the drawings, 1 represents a boat or floating support and which may be of any ordinary or desired character.

2 represents a revolving perforated screen used on certain types of dredges for washing

the material that is dug up and discharging the rock and gravel upon a stacker 3, which in the present form consists of an endless conveyer driven by means of a belt 4 or by any equivalent device.

5 is a sand-box which is supplied with sand and water by means of sluices, one of which is represented by the numeral 6, and is provided with an outlet 7 into the water and which may be closed by means of a gate 8. It will be obvious that this gate in closing the outlet 7 will open the sluice 6, and vice versa. The sluice 6 empties into the sand-box through an inclined portion 9 and an opening 10 in the side of the sand-box. (See Fig. 2.) Another sluice 11 enters the sand-box at the end thereof through an inclined portion 12.

13 is an outlet in the side of the sand-box to provide for the overflow of water into the pond. The sand-box is provided with a bottom 14 at such an angle that the sand will be washed down far enough for the buckets to scoop it up as they pass through.

Timbers 15, which are attached to the stern of the boat, support a framework 16, which may be of any desired shape suitable for the device which it is designed to support. It is provided with brackets 17 and 18 for the support of boxes 19 and 20, the former of which is intended to be adjustable in the bracket 17 for tightening the chain, and another box 21 is secured to the frame at a lower point. These boxes support drums 22, 23, and 24, around which passes the conveyer, which consists of a series of buckets 25, each being rigidly secured to a pair of links 26, the links being pivoted together end to end, so as to make an endless chain passing around the drums. It will be observed that the links are preferably constructed of two pieces of metal riveted together, the material of the bucket being placed between the two halves of each link, and secured to them by rivets. The lower parts of the two halves are spread outwardly in order to receive the top of the next link, and a pin 28, having an angular or square head 29, is passed through holes in these bottom portions in order to attach the next link thereto. Lugs 30 are cast or forged integral with the outside half of each link for the purpose of preventing the turning of the heads 29. The pins pass through bushings 31 in the top of the next link adjoining. The edges of the buckets are preferably inclined to some

extent, as shown in Fig. 4, and are provided with a removable lip 32, riveted to the bucket and capable of being replaced when worn out. One of the sides 32<sup>a</sup> of the bucket is shorter than the outside one and is inclined slightly for the purpose of permitting the dumping of the material, as will be explained. This endless-chain conveyer is operated by means of gearing 33 33<sup>a</sup> through the instrumentality of a belt 34 and driving-shaft 35 or in any other convenient manner. The belt 34 runs over a pulley 34<sup>a</sup> on the shaft of the member 33<sup>a</sup> of the gearing, which pulley is loose on said shaft. Keyed to the shaft is a friction member 34<sup>b</sup>, which engages a friction-rim (not shown) on the pulley 34<sup>a</sup>. The friction member 34<sup>b</sup> is carried into engagement with the pulley 34<sup>a</sup> by means of a lever 34<sup>c</sup> when it is desired to throw the load on after the motor gets up to speed. It will be noticed that there is only one drum 24 at the lower part of the conveyer, while two drums are at the upper part. The highest drum 23 is considerably above the drum 22, and it will be obvious that when the buckets pass around the drum 23 in the direction of the arrow the material contained therein will be forced to drop from the buckets on account of the shape of the inclined sides 32<sup>a</sup>. The inclination of these sides will obviously depend upon the angle which the chain takes at this point. The water, however, which will be at the top and will have no cohesion with the sides of the bucket, will be discharged first, and a guide 36 is provided for directing most of the water away from the stacker 3, while a guide 37 is provided for directing the sand to the conveyer. The sand which is wet, but from which most of the water has been discharged, will obviously stick to the buckets longer than any water which may be contained therein, and consequently the guides 36 and 37 can be so placed as to perform the functions mentioned. It will be apparent that by the employment of such an arrangement the sand from the sand-box will be discharged on the stacker in a moist state, but still with very little water therein, and when it reaches the tailing-pile it will readily remain in the position in which it is deposited. The stacker will not be overloaded by this arrangement, for the more sand there is going through the dredger the less rock there will be.

It will be obvious that many modifications may be made in the apparatus illustrated in the drawings without departing from the spirit of my invention, as the drawings merely illustrate one embodiment thereof.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a dredging-machine, the combination of a stacker, means for supplying material thereto, a sand-box, a sluice emptying into said sand-box, and an endless conveyer

for removing sand and water from said sand-box and emptying the sand on said stacker.

2. In a dredging-machine, the combination of a stacker, means for supplying material thereto, a sand-box, a sluice emptying into said sand-box, an endless conveyer for removing sand and water from said sand-box and discharging the same, means for directing the sand from said conveyer to said stacker, and means for directing the water from said conveyer away from said stacker.

3. In a dredging-machine, the combination of a stacker, means for supplying material thereto, a sand-box having an overflow, a plurality of sluices emptying into said sand-box, and an endless conveyer for removing the material from said sand-box and discharging it on the stacker.

4. In a dredging-machine, the combination of a stacker, a sand-box having an inclined bottom, a plurality of sluices emptying into said sand-box, and an endless conveyer for removing material from said sand-box and discharging it on said stacker.

5. In a dredging-machine, the combination of a stacker, a sand-box, and an endless conveyer for removing material from said sand-box and discharging it on said stacker; said conveyer comprising a series of buckets and links, and a plurality of rotary drums over which said links pass.

6. In a dredging-machine, the combination of a stacker, a sand-box, and an endless conveyer for removing material from said sand-box and discharging it on said stacker; said stacker passing through said conveyer.

7. In a dredging-machine, the combination of a stacker, a sand-box, and an endless conveyer for removing material from said sand-box and discharging it on said stacker; said conveyer comprising a frame, and a plurality of rotary drums mounted on said frame, one of said drums being located higher than the others, said stacker passing through said conveyer at a point near said highest drum.

8. In a dredging-machine, the combination of a stacker, means for supplying material thereto, a sand-box, a sluice emptying into said sand-box, a frame, and an endless conveyer for removing material from said sand-box and discharging it on said stacker; said conveyer comprising a series of buckets and links, and a plurality of rotary drums mounted on said frames, two of said drums being located at the upper part of said frame, one higher than the other, said stacker passing through said conveyer at a point adjacent to the highest drum.

9. In a dredging-machine, the combination of a stacker, a sand-box, and an endless conveyer for removing material from said sand-box and discharging it on the stacker, comprising a series of buckets having links rigidly attached thereto, and means for piv-

otally attaching said links together end to end.

10. The combination of two endless conveyers, and a box for receiving sand and water, one of said conveyers being adapted to take material from the box and deposit it on the other conveyer.

11. In a dredging-machine, the combination of two endless conveyers and a box for receiving sand and water, one of said conveyers being adapted to take material from the box and deposit it on the other conveyer, and comprising a series of links each formed of two pieces of metal and having means for pivotally securing the links together end for end, and buckets rigidly attached to said links between the two pieces of metal.

12. In a dredging-machine, the combination of a stacker, means for supplying material thereto, a sand-box, a plurality of sluices emptying into said sand-box, and an endless conveyer for removing material from said sand-box and discharging it on the stacker; said conveyer comprising two series of links pivotally attached together end for end, and a bucket rigidly attached to each pair of links, said buckets having end pieces for attachment to the links.

13. In a dredging-machine, the combination of a stacker, a sand-box having an inclined bottom, a plurality of sluices emptying into said sand-box, and an endless conveyer for removing material from said sand-box and discharging it on said stacker; said conveyer comprising a pair of series of links pivotally attached together end to end, and a bucket rigidly attached to each pair of links, the said buckets comprising end pieces for attaching to the links, and two sides, one of said sides being shorter than the other and making an acute angle therewith.

14. In a dredging-machine, the combination of a stacker, a sand-box, and an endless conveyer for removing material from said sand-box and discharging it on said stacker, said stacker passing through said conveyer, and said conveyer comprising a pair of series of links pivotally attached together end for end, and buckets rigidly attached to each pair of links, said buckets comprising end pieces for attachment to the links, and two sides, one of said sides being shorter than the other and making an acute angle therewith.

15. In a dredging-machine, the combination of a stacker, a sand-box, and an endless conveyer for removing material from said sand-box and discharging it on said stacker, said stacker passing through said conveyer, and said conveyer comprising a series of links pivotally attached together end to end, and a series of buckets rigidly secured to said links, each of said buckets being provided with a lip removably attached to the working edges thereof.

16. In a dredging-machine, the combination of a stacker, a sand-box, and an endless conveyer for removing material from said sand-box and discharging it on said stacker, said stacker passing through said conveyer, and said conveyer comprising a series of links each formed of two pieces of metal and having means for pivotally securing said links together end for end between the two pieces of metal.

In testimony whereof I have signed my name to this specification in the presence of the subscribing witnesses.

HERBERT PAUL FRANCIS.

Witnesses:

ERNEST BRINKMANN,  
H. C. HILLS,  
L. W. VOORHEES.