No. 668,983.

Patented Feb. 26, 1901.

M. COVEL.

EXCAVATING APPARATUS.

(Application filed May 23, 1900.)

(No Model.)

3 Sheets—Sheet 1.

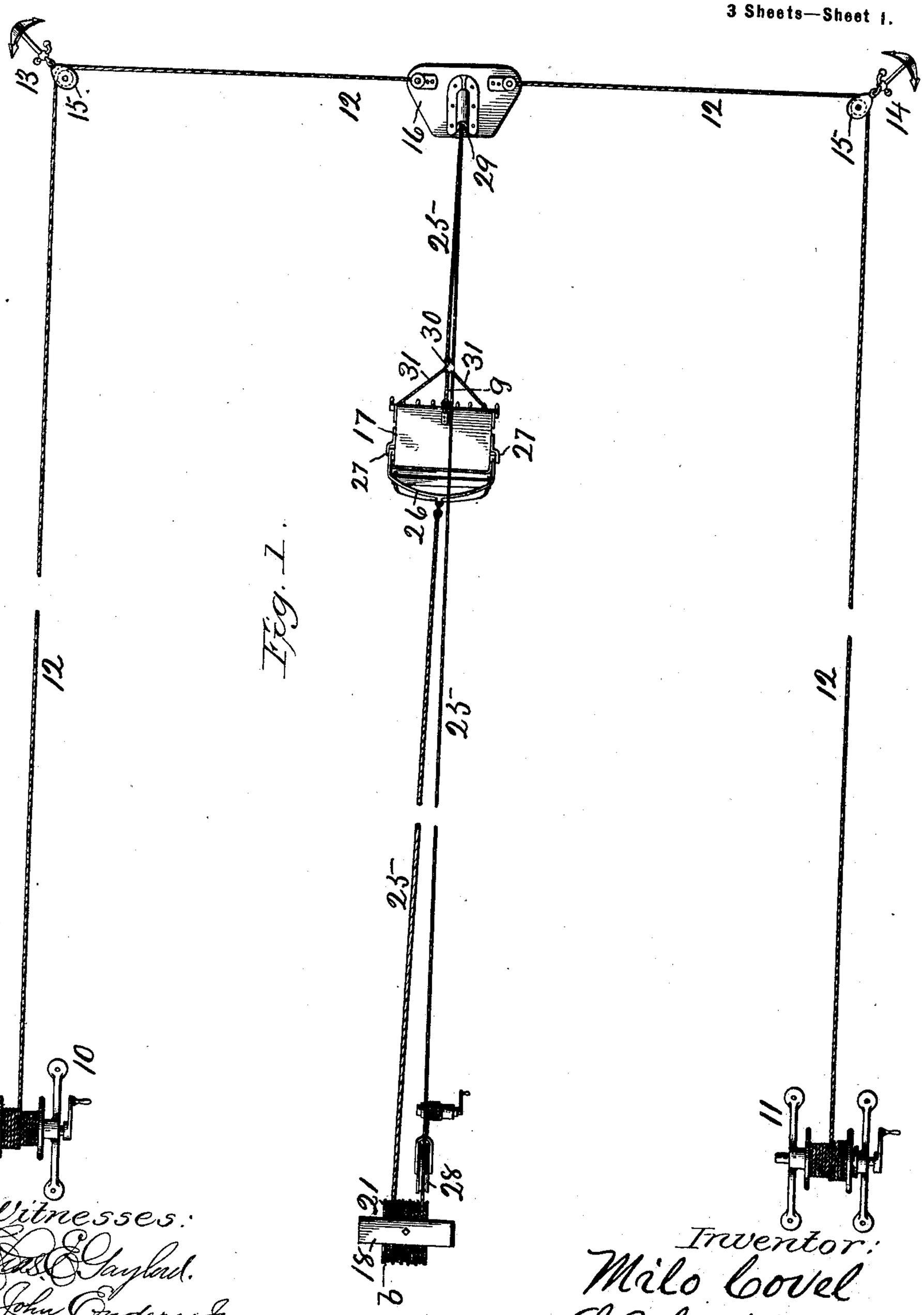


Fig. 1.

Witnesses:
Chas. E. Gaylord.
John Enders Jr.

Inventor:
Milo Covel
By L. B. Coupland & Co
Att'ys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 668,983.

Patented Feb. 26, 1901.

M. COVEL.

EXCAVATING APPARATUS.

(Application filed May 23, 1900.)

(No Model.)

3 Sheets—Sheet 2.

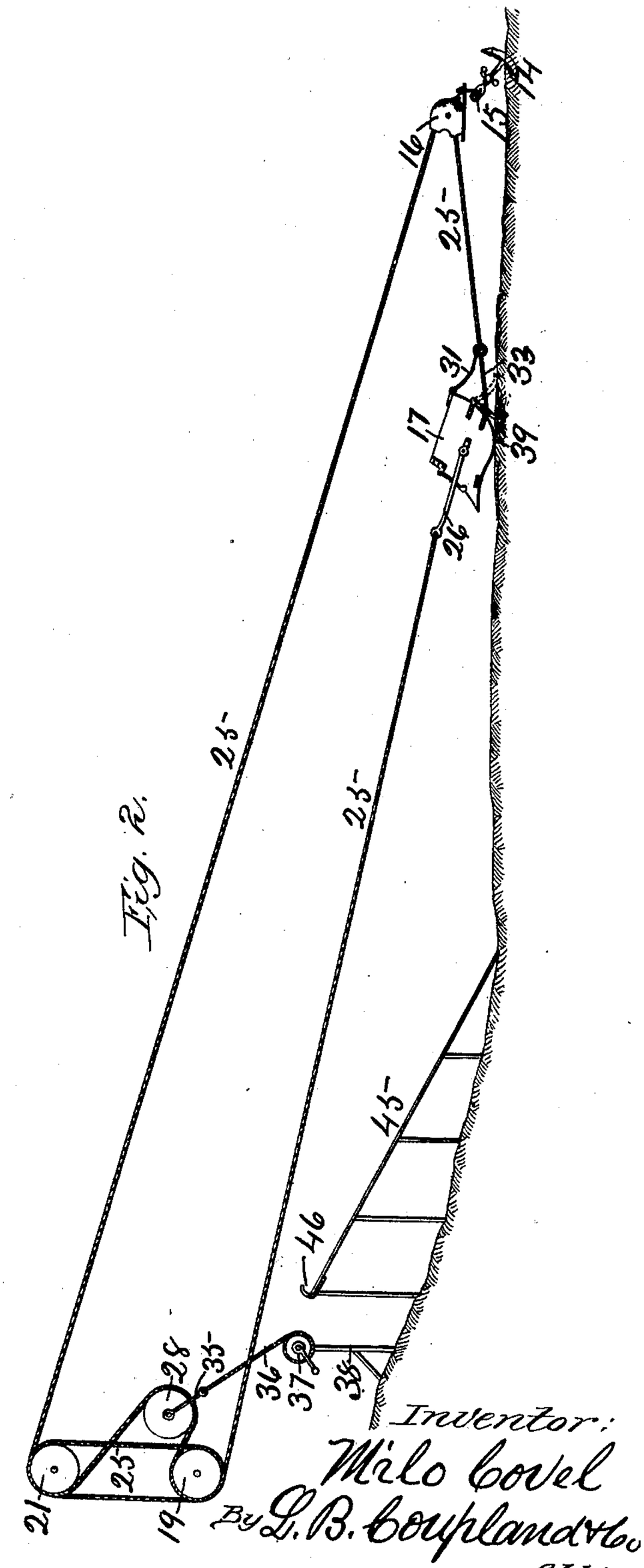


Fig. 2.

Witnesses:
Chas. E. Gaylord.
John Enders Jr.

Inventor:
Milo Covel
By L. B. Coupland & Co
Att'ys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 668,983.

Patented Feb. 26, 1901.

M. COVEL.

EXCAVATING APPARATUS.

(Application filed May 23, 1900.)

(No Model.)

3 Sheets—Sheet 3.

Fig. 3.

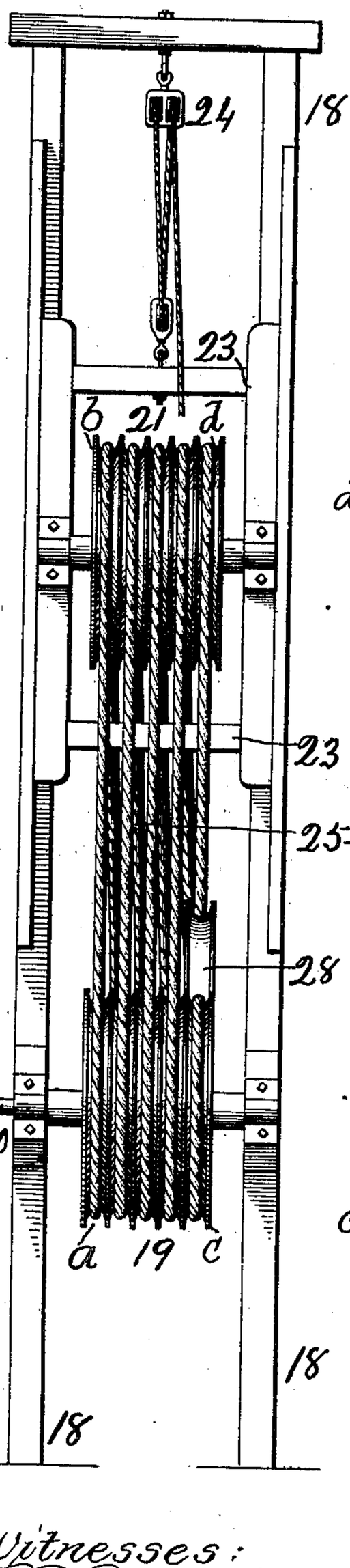
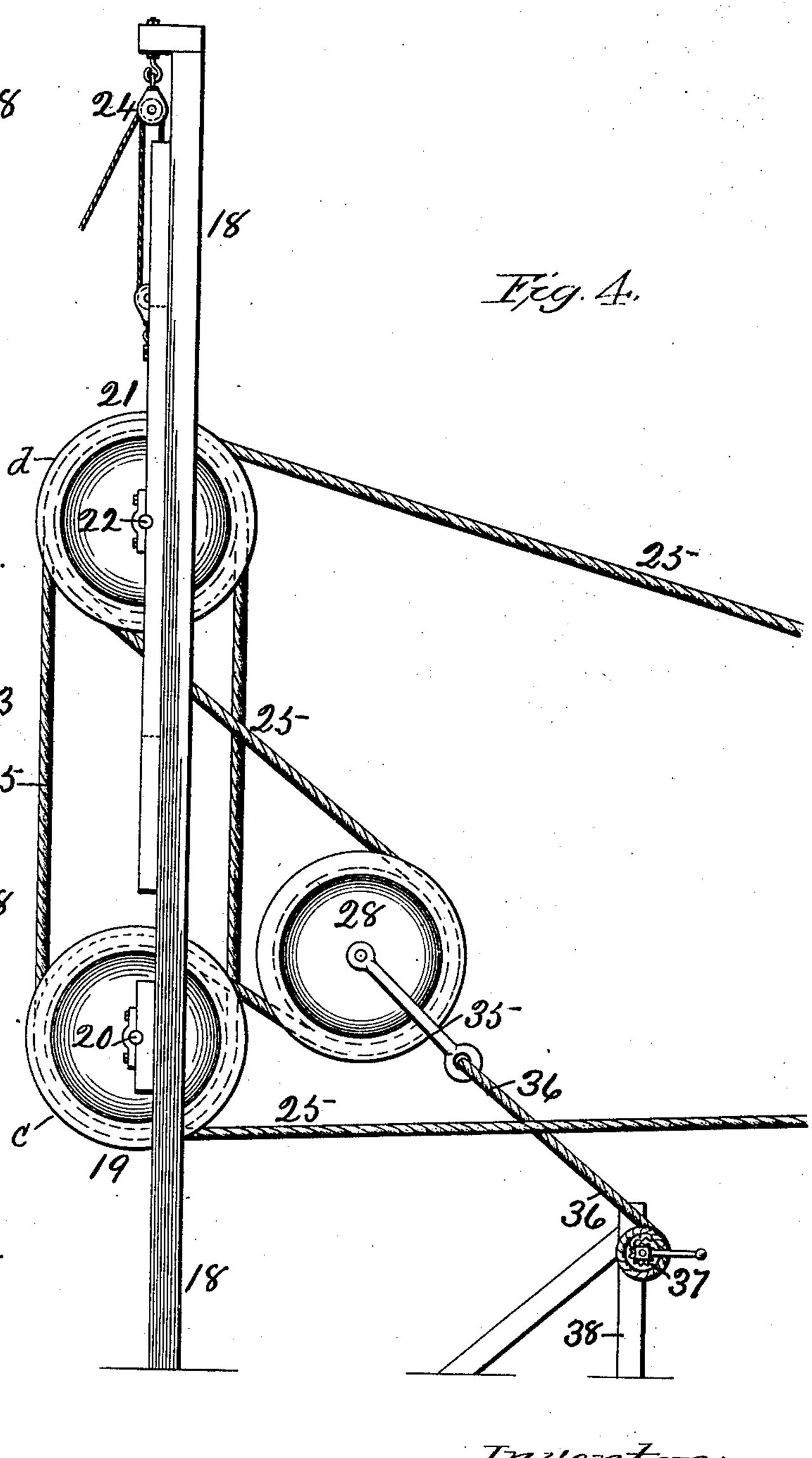


Fig. 4.



Witnesses:
Chas. E. Gaylord.
John Enders Jr.

Inventor:
Milo Covel
By L. B. Coupland & Co
Att'ys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MILO COVEL, OF CHICAGO, ILLINOIS.

EXCAVATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 668,983, dated February 26, 1901.

Application filed May 23, 1900. Serial No. 17,657. (No model.)

To all whom it may concern:

Be it known that I, MILO COVEL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dredging and Excavating Apparatus; and I do hereby 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 an apparatus that may be used in the water or on land, but is more especially intended for use in dredging in the beds of rivers and streams and along the sea-coast where gold-bearing earth and sand are to be found, and has for its object to provide a simple and convenient arrangement of this character that may be handled, transported, and operated with facility, as will be hereinafter set forth.

Figure 1 is a diagrammatical plan of the apparatus in its working position. Fig. 2 is a diagrammatical elevation of the same, some of the parts being omitted. Fig. 3 is an elevation of the operating sheaves and rope looking from the outside, and Fig. 4 is a side elevation of the same.

The apparatus is shown in Fig. 1 in a general working position. This disposition and arrangement may, however, be varied according to circumstances. The companion windlasses 10 and 11 may be of any or the usual form. A detailed description of the same is therefore not necessary. The windlasses are usually located some distance apart and have the ends of an anchor-cable 12 secured to their respective drums, so that the cable may be taken up on one drum and let out on the other as may be necessary in practical working. The companion anchors 13 and 14 are located in an outward position with reference to the windlasses and the mechanism controlling the movement of the dredging-bucket, as shown in Fig. 1. The anchor-cable runs through companion sheave-blocks 15, secured to the respective anchors, and then turns at right angles thereto. This arrangement incloses a field of considerable extent, which may be worked over with one setting of the apparatus. A movable sheave-block 16, Figs. 1 and 2, is mounted on the anchor-cable between the anchor-corners. By winding up on one windlass and letting out on the other the position of the movable sheave-block may be shifted from time to time as the work progresses, so that the bucket or scoop 17 may cover the field or surface inclosed by the anchor or shifting cable. The windlasses may be located any distance apart that is practical and relatively the same with reference to the anchors in accordance with the area of the territory it is intended to work over with one placing of the apparatus.

In working rivers and streams the windlasses and the anchorage-ground will usually be on opposite sides, and a convenient tree or other object may be used in place of the portable form of anchors shown. Portable anchors of the type shown are more especially adapted for submarine working along the sea-coast or beach, the anchors being located out in the water some distance from the shore-line and the other parts of the apparatus on the land.

The mechanism for operating the dredging-bucket 17 is mounted in a suitable supporting-framework 18 and principally comprises a system or train of rope sheaves and is located between the companion windlasses. The series of sheaves 19 are arranged side by side and rigidly mounted on a shaft 20, having suitable journal-bearings in its supporting-frame. The companion series of sheaves 21, making up the rope train, are loosely mounted on a shaft 22, journaled in a movable frame 23, having a slidable endwise movement in the main supporting-frame. By this means the loosely-mounted series of sheaves may be moved nearer to or farther from the companion series in giving the dredging-bucket more or less rope in accordance with the distance it is to travel or with reference to the location of the movable sheave-block on the anchor-cable. The block and tackle 24, connecting the main frame 18 and the movable frame 23, provides the means for shifting and retaining the movable frame and the sheaves carried thereby in the position to which it may be adjusted. The set of loose sheaves greatly eases the shifting of the movable frame. One end of the dredging cable or rope 25 is connected to a bail 26, the respective bent-around ends of which are

pivoted to the opposite sides of the dredging-bucket, as at 27. From the bucket the rope runs inwardly and over the sheave *a* of the series 19, then over the sheave *b* of the companion series, and so on back and forth alternately until the last sheave *c* of the series is reached, when the cable instead of going directly to the last sheave *d* of the series 21 first passes around a movable governor-sheave 28, then diagonally to and over sheave *d* and outwardly over a sheave (not shown) journaled in the movable sheave-block 16, as at 29, and lastly back to a loose intermediate connecting-ring 30. An intermediate flexible bail 31 is rove through this ring and has its respective ends connected to the rear top corners of the bucket, as at 32. A companion flexible bail 33 also passes through ring 30 and has its ends connected to the rear bottom corners of the bucket, as at 34. The governor-sheave 28 is journaled between the bifurcated ends of a connecting-rod 35, Figs. 1, 2, and 4, to the opposite end of which is connected one end of a rope 36, wound on a hand-crank drum 37, journaled in a post 38. This arrangement serves the purpose of enabling the operator to regulate and control the position and movement of the bucket in the operation of loading and dumping. By slacking up on the rope 36 the governor-sheave is drawn toward the train of sheaves and correspondingly lengthens the dredging-cable, which has the effect of drawing the flexible bail 31 taut and slacking on the lower companion bail and throwing the bucket into its loading scooping-up position. By winding up on the rope 36 and drawing the governor-sheave back from the train of sheaves the cable is shortened and the upper flexible bail slackened and the lower bail slackened, so as to let the bucket ride inwardly to be dumped on the rounded bottom surface 39, as shown in Fig. 2.

The short rope *g*, connecting ring 30 and the top center edge of the bucket in line with the dredging-cable, serves to assist in balancing the bucket.

The companion lugs 44, placed on each side and front end of the bucket, prevent the same from tipping over backward, as the lugs will come in contact with the bail 26, which is also prevented from dropping down below that point.

Before reaching the dumping-point the loaded bucket travels up an inclined dumping-platform 45, Fig. 2, to the upper end of which is secured a turned-over hook-plate 46, with which the shovel end of the scoop comes in contact and dumps the load, the governor-sheave being manipulated accordingly. When the apparatus is used in gold-bearing earth or sand, a suitable ore washer or separator may be located adjacent to the dumping-place and the contents of the bucket discharged directly therein.

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

1. In a dredging and excavating apparatus, the combination with the companion windlasses, of the companion anchors, the anchor-cable, connecting said windlasses and anchors, and the movable sheave-block, mounted on said cable between the anchors, whereby the relative position of said sheave-block may be shifted, substantially as and for the purpose described.

2. In a dredging and excavating apparatus, the combination with the companion windlasses, of the companion anchors, the anchor-cable, connecting said windlasses and anchors and inclosing a working field, the movable sheave-block, mounted on said cable between the positions of the anchors, the dredging-bucket, and its operative connections, substantially as described.

3. In a dredging and excavating apparatus, the combination with the companion windlasses set some distance apart, the companion anchors, set in an opposite position from said windlasses, the anchor-cable, having its respective end parts wound on the windlasses and running outwardly therefrom through sheaves secured to said anchors and running at right angles thereto, the movable sheave-block, mounted on the anchor-cable between the anchors, the dredging-bucket and its operative connection, substantially as described.

4. In a dredging and excavating apparatus, the combination with a shifting anchor-cable, inclosing a field or space to be worked, of a movable sheave-block, mounted on said cable between its terminal ends, a dredging-bucket, the train of sheaves, the dredging-cable, operatively connecting said sheave-block, the dredging-bucket and the train of sheaves, and means for shifting the position of the movable sheave-block in covering the field inclosed by the anchor-cable, substantially as described.

5. In a dredging and excavating apparatus, the combination with a supporting-frame, of a series of sheaves, mounted on a shaft journaled in said frame, a movable frame, having an endwise adjustment in the supporting-frame, a second series of sheaves, mounted on a shaft journaled in said movable frame, means for shifting and retaining the movable frame in its working position, the dredging-bucket, the dredging-cable, trained over and connecting said sheave series, one end of said cable being attached to the front end of said bucket, the movable sheave-block, through which the opposite end of the dredging-cable runs in connecting with the rear end of said bucket, and means for controlling the position of the bucket, substantially as described.

6. In a dredging and excavating apparatus, the combination with a dredging-bucket, of the operating-cable, having one end attached to the front end of the bucket, a loose ring, to which the opposite end of the cable is at-

tached, the flexible bail connections, between said ring and the upper and lower rear corners of said bucket, and means for controlling said connections in manipulating and changing the position of the bucket, substantially as described.

7. In an excavating and dredging apparatus, the combination with a bucket of two series of sheaves, the dredging-rope, running over said sheaves and operatively connecting with said bucket, means for changing the relative distance between said sheaves, means for controlling the working position of the bucket, the companion windlasses, the companion anchors, the anchor-cable, and the movable sheave-block through which one end of the dredging-cable runs, substantially as described.

8. In a dredging and excavating apparatus, the combination with the train of operating-sheaves, the dredging-cable, the bucket, the movable governor-sheave, and means for changing the position of the same with reference to the train of sheaves in controlling the movements of said bucket, substantially as described.

9. The combination with a dredging or excavating bucket, of a rake, pivotally mounted on the rear end thereof and adapted to dig up the earth on the outgoing movement, and swing free when moving in the opposite direction, substantially as described.

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

MILO COVEL.

Witnesses:
L. M. FREEMAN,
L. B. COUPLAND.