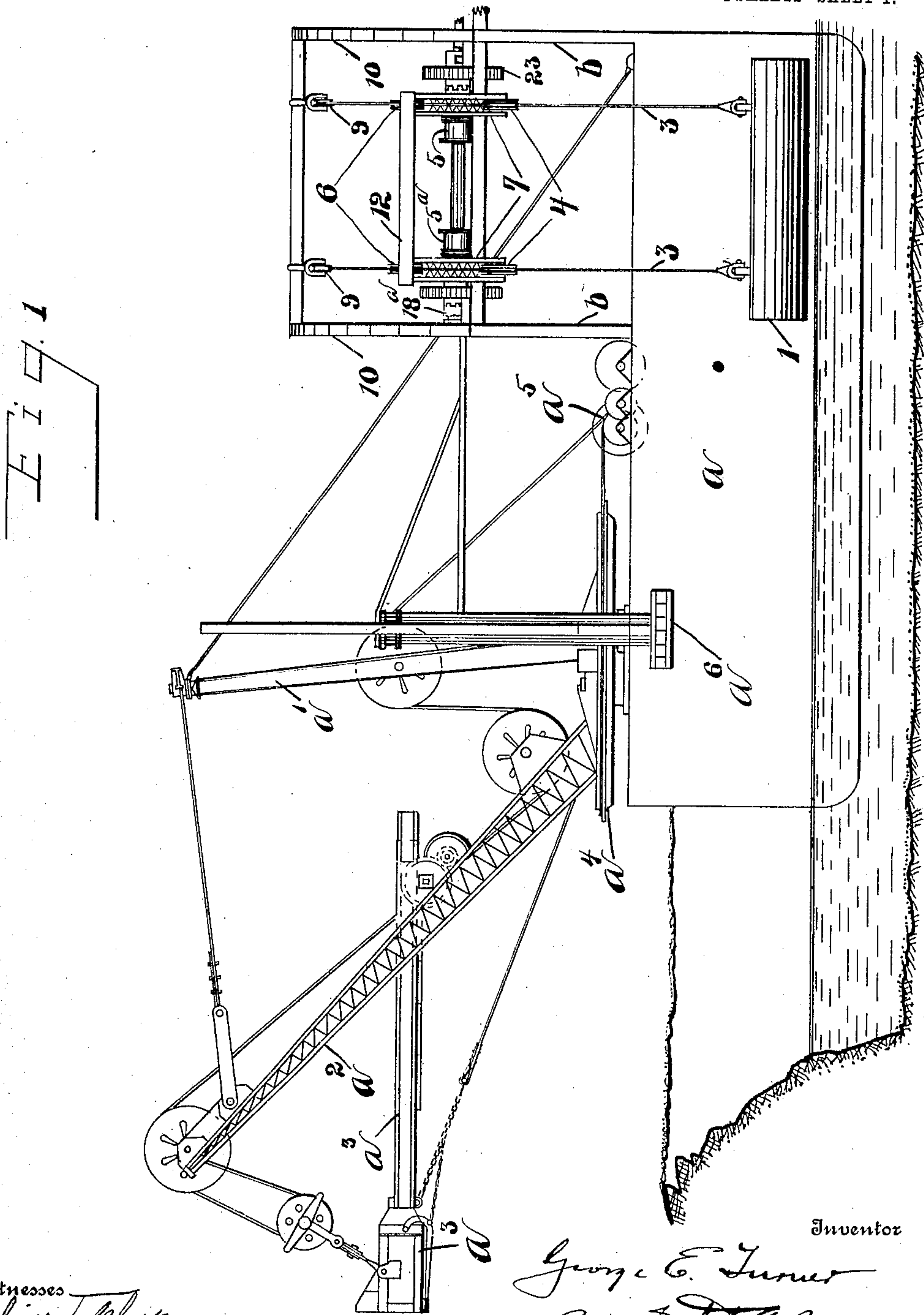


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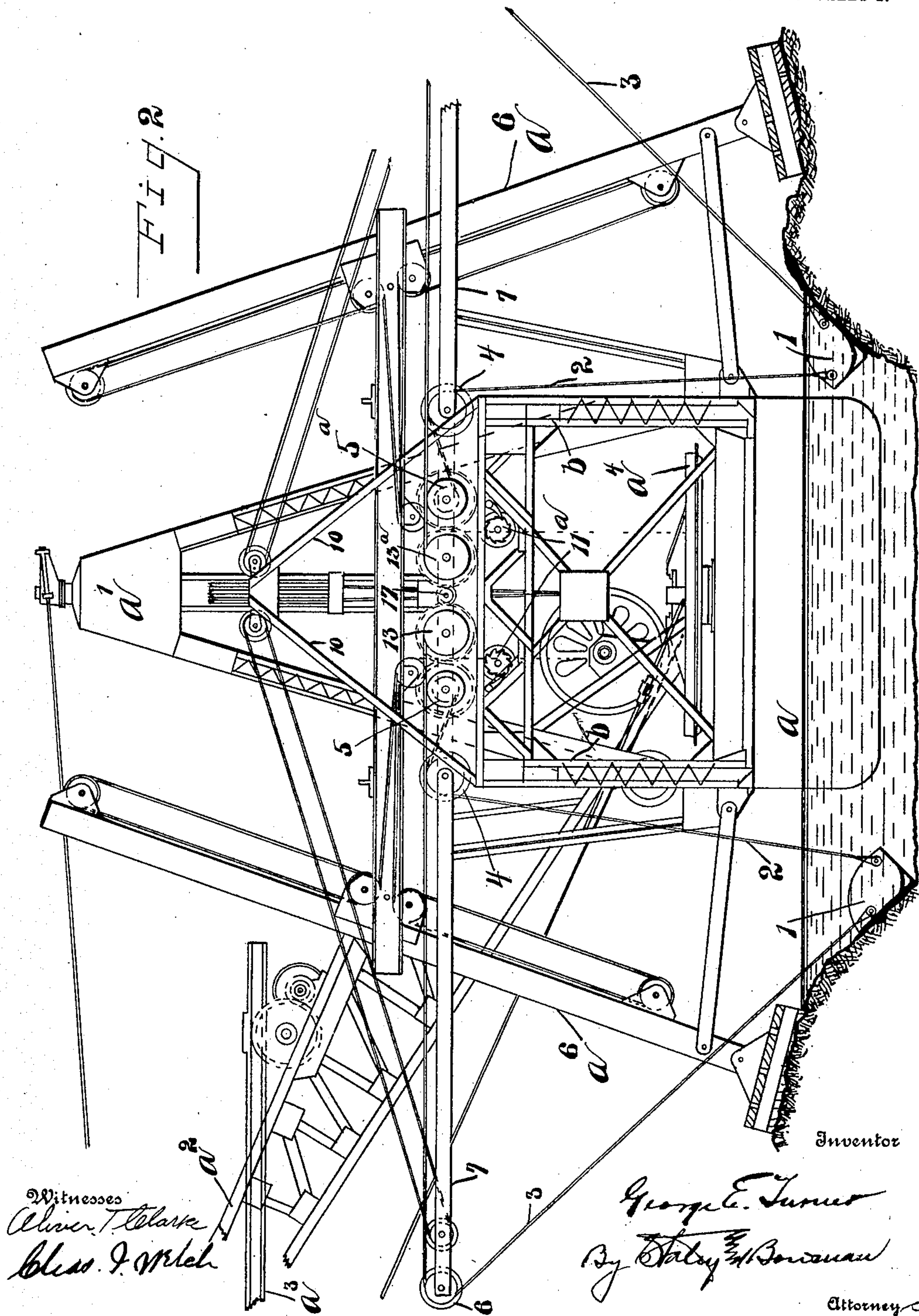
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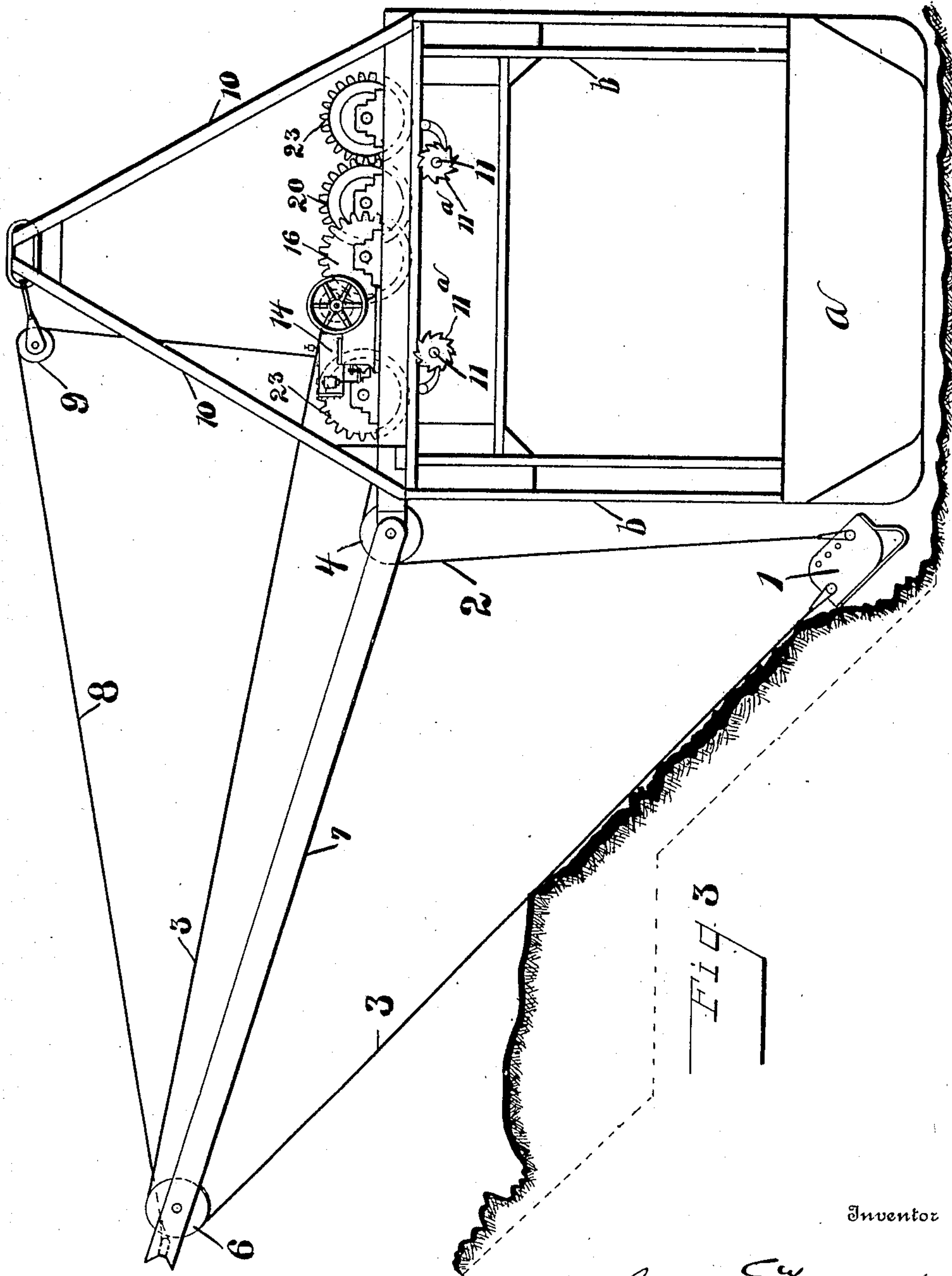
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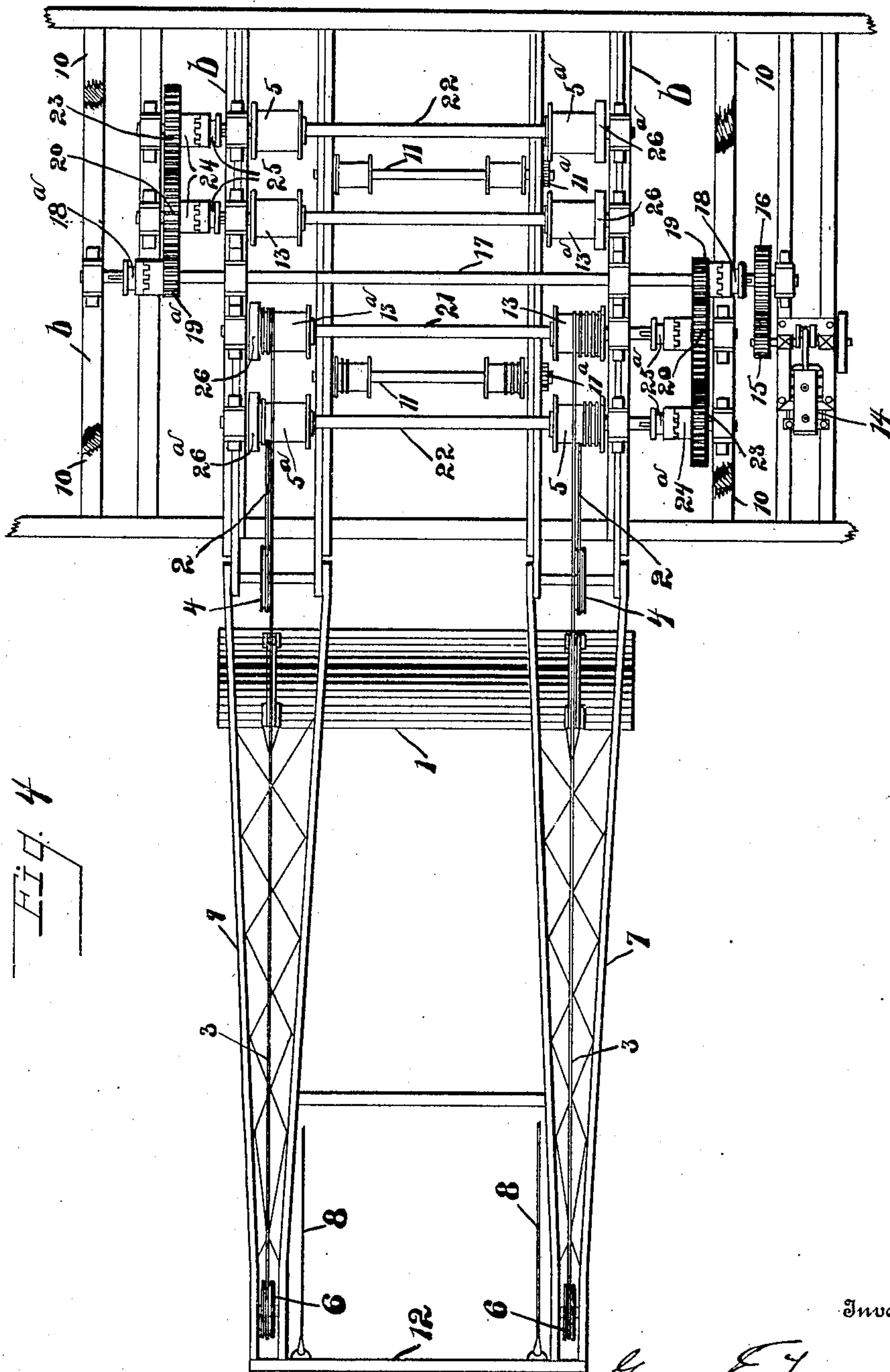
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Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE E. TURNER, OF BELLEFONTAINE, OHIO, ASSIGNOR OF ONE-TENTH TO H. L. WEISER, OF BELLEFONTAINE, OHIO.

EXCAVATING-MACHINE.

No. 919,498.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed July 22, 1908. Serial No. 444,732.

To all whom it may concern:

Be it known that I, GEORGE E. TURNER, a citizen of the United States, residing at Bellefontaine, in the county of Logan and State of Ohio, have invented certain new and useful Improvements in Excavating-Machines, of which the following is a specification.

This invention relates to improvements in excavating apparatus and especially to that class of excavating apparatus used for constructing ditches or canals where an ordinary steam shovel is employed mounted upon a dredge boat or car frame in the usual way.

The object of the invention is to provide an attachment in the nature of a shovel or cutter for the purpose of straightening and reducing the bank of a ditch or canal to an approximately straight line and easy slope, and to clean up and remove the spoil from the space immediately adjacent the ditch or canal and commonly known as the berm.

My invention consists in the constructions and combinations of parts hereinafter described and set forth in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a dredge to which my invention has been applied. Fig. 2 is a rear elevation of the same. Fig. 3 is also a rear elevation in detail of the side cutting attachment. Fig. 4 is a plan view of the same with the upper portion of the A-frame broken away.

Like parts are represented by similar characters of reference in the several views.

In the said drawings, I have illustrated my improvement as applied to a dredge of ordinary construction, although, as before stated, the device may be applied to an ordinary steam shovel mounted upon a car frame and trucks for use in a dry ditch or canal.

a represents the main frame or body of the dredge.

The main excavating mechanism is the same as is commonly used in machines of this character, a' representing the usual A-frame; a^2 , the boom, mounted upon the turn-table, a^4 , and carrying the usual dipper and its handle, a^3 ; and a^5 , the usual winding drums for operating the turn-table and dipper.

a^6 a^6 are the usual spuds used on dredges.

The main dipper or excavator a^3 , is located in the usual position on the forward part of

the frame-work of the machine so as to excavate forwardly thereof in the usual way.

Located to the rear of the main excavating apparatus is my improved side cutting attachment, the mechanism for operating the same being supported by the frame work b b . Two of these auxiliary cutters or scrapers may be employed, one on each side of the machine, and I have shown in the drawings two sets of winding drums and their operating mechanism, one set for each cutter, although but one of the cutters is shown. The two sets of drums and their operating mechanism are exactly the same and derive their motion from the same source so I have described but one set, giving the other set, however, the same reference characters.

The side cutter or scraper proper 1 consists of a long narrow bucket or dipper, constructed in any approved and usual form. It is suspended upon two pairs of ropes or cables, 2 2 and 3 3. The ropes 2 2 are connected to the rear upper part of the bucket and pass over sheaves or pulleys 4 4 to the winding drums 5 5^a, which are fast to the shaft 22 located in suitable bearings on the frame work b b . The ropes 3 3 are connected to the forward part of the bucket and extend around the sheaves or pulleys 6 6 located in the end of the beams 7 7; these beams being pivoted at their lower ends to the frame b b and supported at their outer ends by the ropes 8 8, connected preferably to the cross-beam 12, thence passed around the pulleys 9 9 on the A-frame 10, and thence extended to a winding shaft 11 by means of which the beams may be raised or lowered in a well known manner; this shaft having a pawl and ratchet device 11^a to hold the shaft in any position of adjustment. The ropes 3 3 are connected to the winding drums 13 13^a, which are fast to the shaft 21, also located in suitable bearings on the frame b b . These drums are operated from the engine or motor 14 located on the frame work b b . This engine is connected through the medium of a pinion 15, located on its crank-shaft, and gear 16 to the main operating shaft 17. This main shaft has splined or otherwise movably connected therewith two clutches 18 18^a adapted to be thrown into engagement with clutch faces formed on the respective pinions 19 19^a, loosely mounted on the shaft; one of these pinions being adapted to drive one set

of the winding drums and the other pinion to drive the other set. The movable clutches have any suitable means for throwing them into engagement with the pinions at the will of the operator. Each pinion meshes with a loose running gear 20 on the shaft 21, which gear 20 is in mesh with a loose gear 23 on the shaft 22. Each of these gears has formed thereon a clutch face 24 24^a, adapted to be engaged by the movable clutch members 25 25^a, splined to the respective shaft, and having means for throwing them into engagement with the gears at the will of the operator in a well known manner. If desired, any approved form of friction clutch may be employed between these gears and their shafts, but as the shafts are geared down to a comparatively slow speed, the simple form of clutches shown in the drawings will answer. Each of the drums 5^a and 13^a are provided with the usual band brake, as indicated at 26 and 26^a, for controlling the drums.

By changing the relative sizes of the gears 20 and 23, or of the respective winding drums, thus causing the pairs of ropes 2 2 and 3 3 to be hauled in at different speeds, any desired inclination of travel of the scraper may be secured to vary the inclination of the bank. Either of the side cutting attachments may be thrown out of operation by disengaging the clutches 18 18^a, or both may be operated simultaneously if desired. By raising or lowering the beams or arms 7 7 the angle of travel of the scraper may also be varied. In Fig. 3, the heavy line shows about the cross-sectional shape of any ordinary ditch and the condition of its bank or berm when cut with the usual dipper, while the light line shows a more desirable slope of the bank and the condition of the same after the ditch is finished with my improved side cutting device.

In the operation of the device, the scraper is dropped vertically in position by the ropes 2 2, then with both clutches 25 25^a set, both sets of ropes 2 2 and 3 3 hoist the scraper to the top of the bank, at which point, if it is desired that the scraper shall change direction of travel and follow horizontally along the berm to clean same, the clutch 25^a, controlling the drums for the ropes 2 2, is released, permitting the scraper to be dragged by the ropes 3 3 in a horizontal direction.

The device described can also be used for the purpose of removing to a much greater distance the entire amount of dirt being dug by the main or forward shovel. In such a use the bucket of the auxiliary device might preferably be made of a different shape and the side arms or booms be made considerably longer.

Having thus described my invention, I claim:—

1. In an excavating apparatus, a main ex-

cavating mechanism, and an auxiliary cutter or scraper, with means for operating the same, for reducing and straightening the sides or banks of the excavation made by said main excavating device, substantially as specified.

2. In an excavating apparatus, a main frame, a main excavating mechanism mounted upon the forward part of said frame, and an auxiliary cutter or scraper and its operating mechanism also mounted on said frame back of said main excavating mechanism and adapted to operate upon the sides or banks of the excavation made by said main excavating mechanism for reducing and straightening same, substantially as specified.

3. In an excavating apparatus, a main excavating mechanism, an auxiliary cutter or scraper, and means for drawing said cutter or scraper at an incline up the side or bank of the excavation made by said main excavating device and then horizontally away from said main excavating mechanism, substantially as and for the purpose specified.

4. In an excavating apparatus, a main frame, a main excavating mechanism thereon, an auxiliary scraper or cutting device also located on said frame back of said main excavating mechanism, and means for moving said scraper or cutter at an incline up the bank or side of the excavation made by said main excavating mechanism and then horizontally away from said frame, substantially as and for the purpose specified.

5. In an excavating apparatus, a main excavating mechanism, an auxiliary cutter or scraper, two sets of hoisting cables for said cutter or scraper, each of said sets being composed of one or more cables, one of said sets being adapted to hoist said cutter or scraper in a vertical or upward direction and the other of said sets being adapted to hoist said cutter or scraper in a forward and upward direction, substantially as specified.

6. In an excavating apparatus, a main excavating mechanism, an auxiliary cutter or scraper, two sets of hoisting cables for said cutter or scraper, each of said sets being composed of one or more cables, winding drums for said cables, booms having pulleys over which said cables pass, one set of said cables having its pulleys located at the base of said boom and the other set of said cables having their pulleys located at the other end of said booms so as to be capable of giving to said cutter or scraper an upward and outward motion, substantially as specified.

In testimony whereof, I have hereunto set my hand this 8th day of June, 1908.

GEORGE E. TURNER.

Witnesses:

A. JAY MILLER,

EDMUND J. BROPHY.