No. 798,596. PATENTED SEPT. 5, 1905.

E. T. CALLAHAN.

DUMPING EXCAVATOR.

APPLICATION FILED FEB. 9, 1905.

3 SHEETS—SHEET 1.

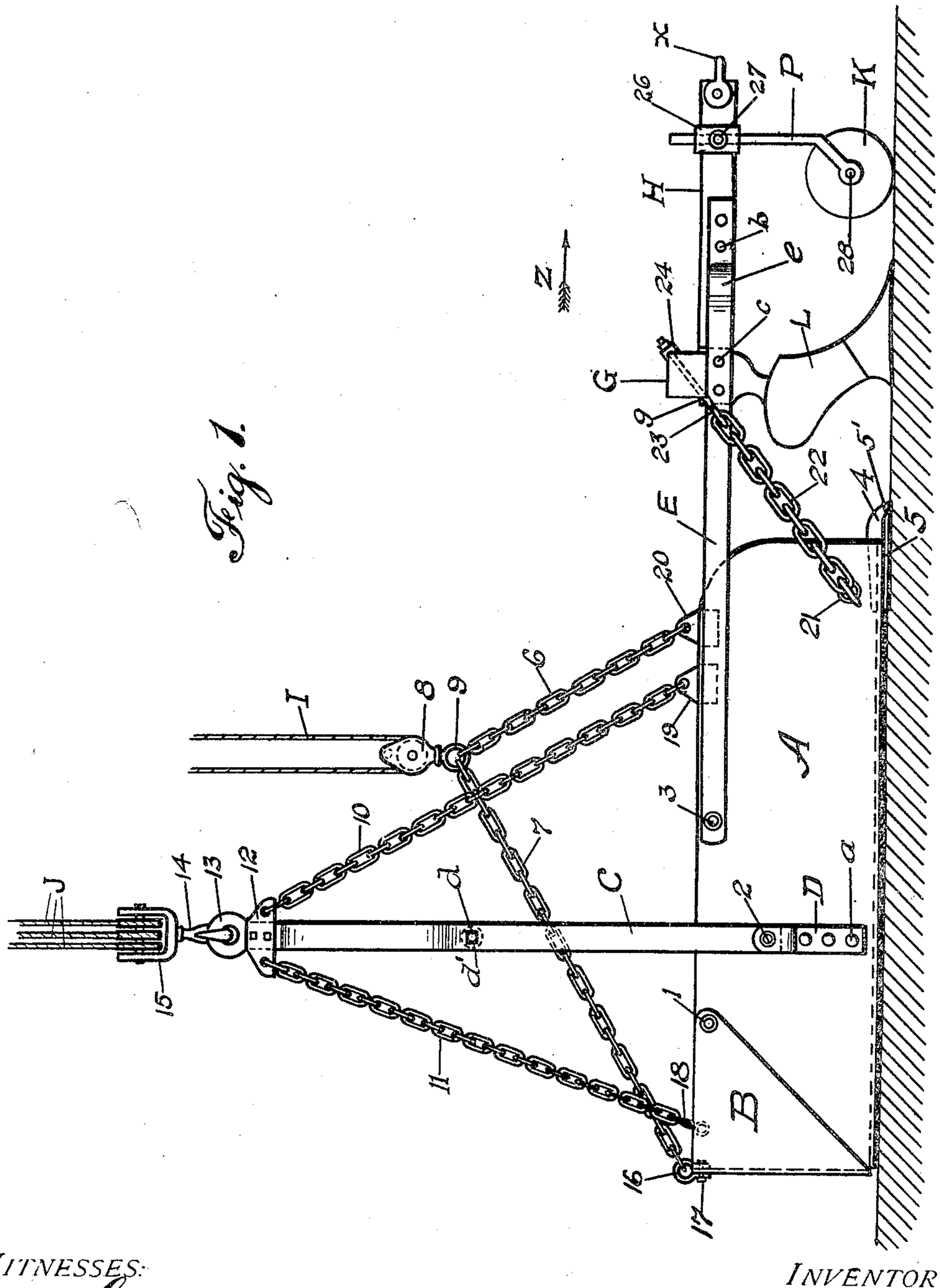

Fig. 1.

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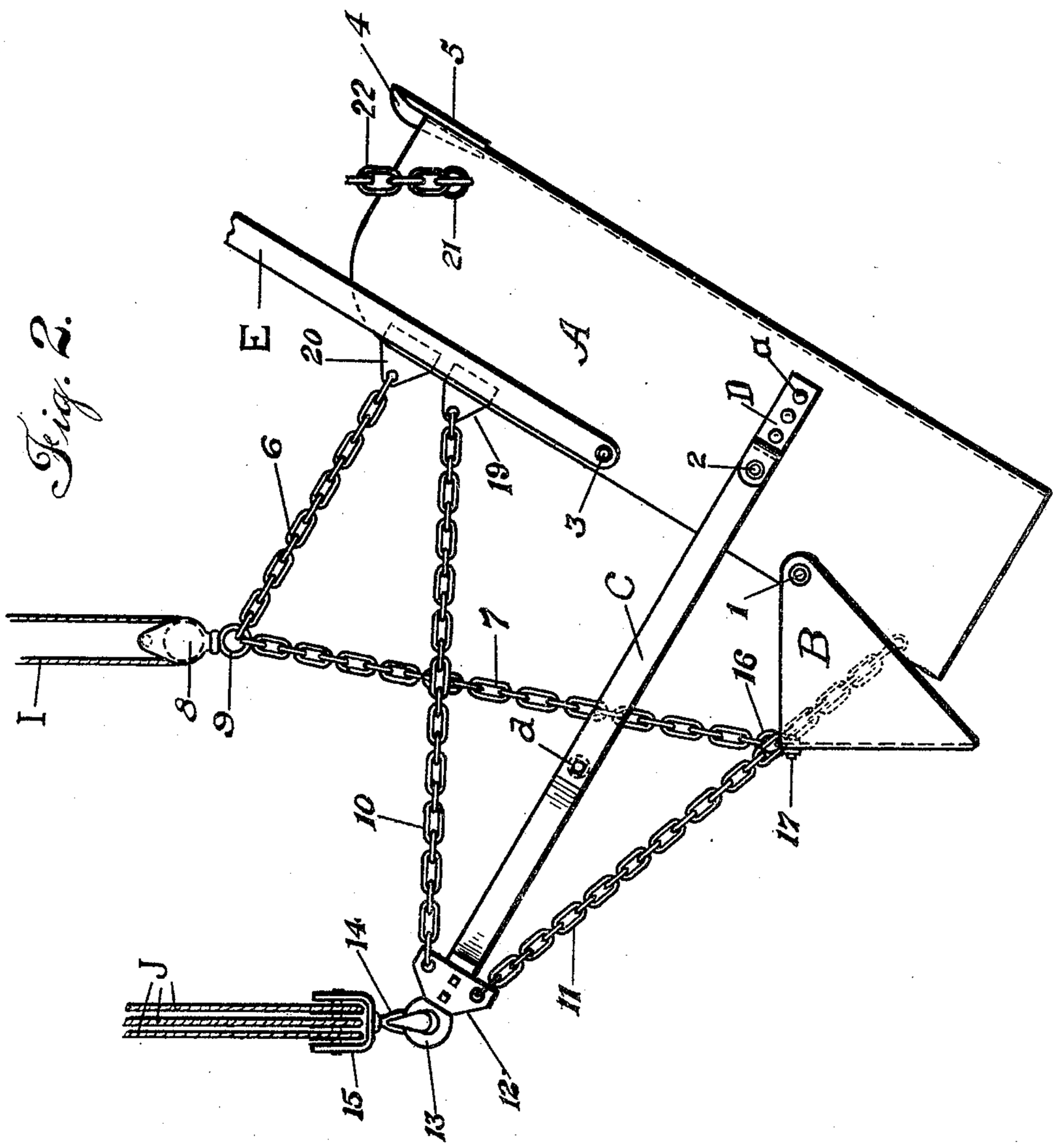
3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

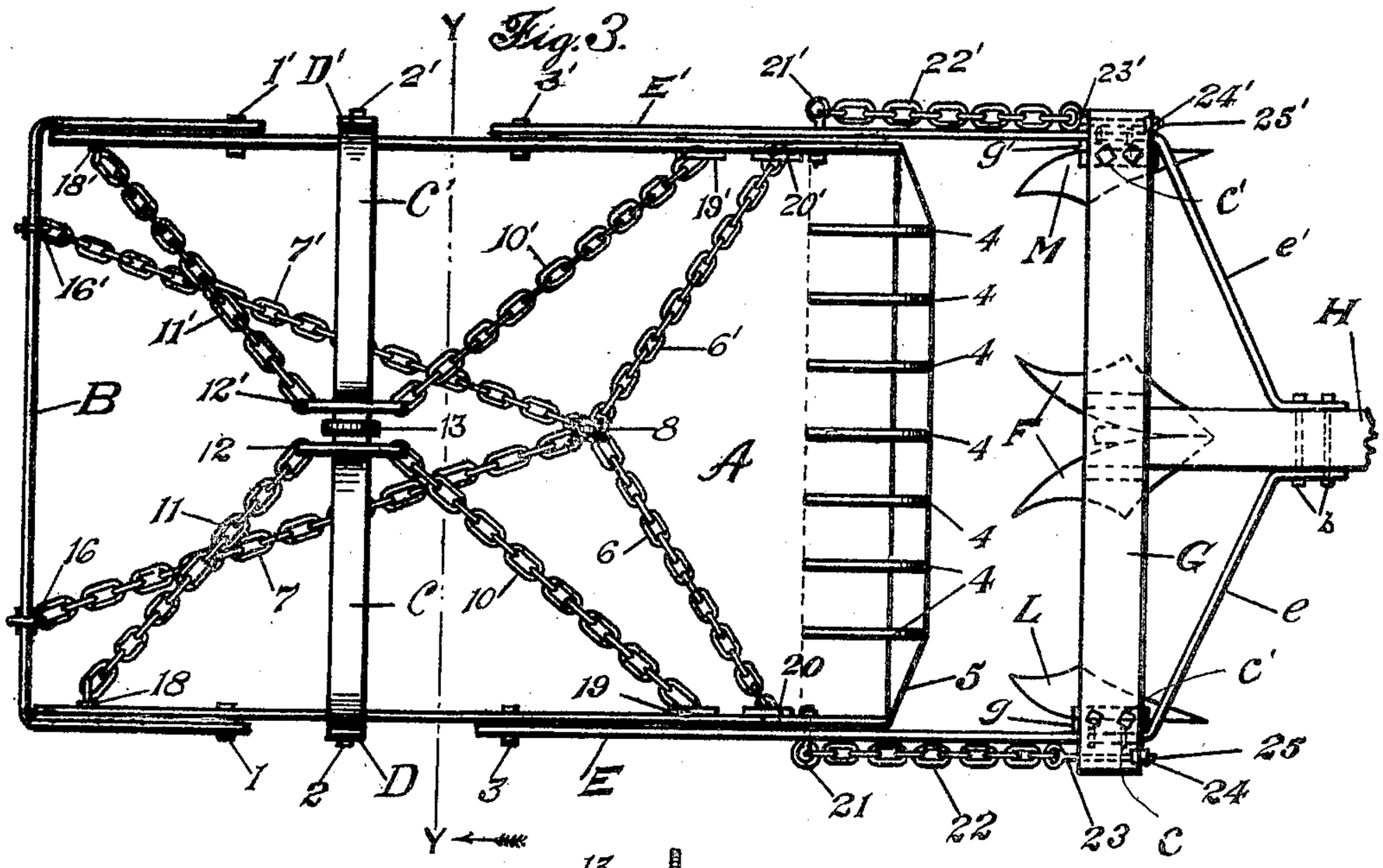
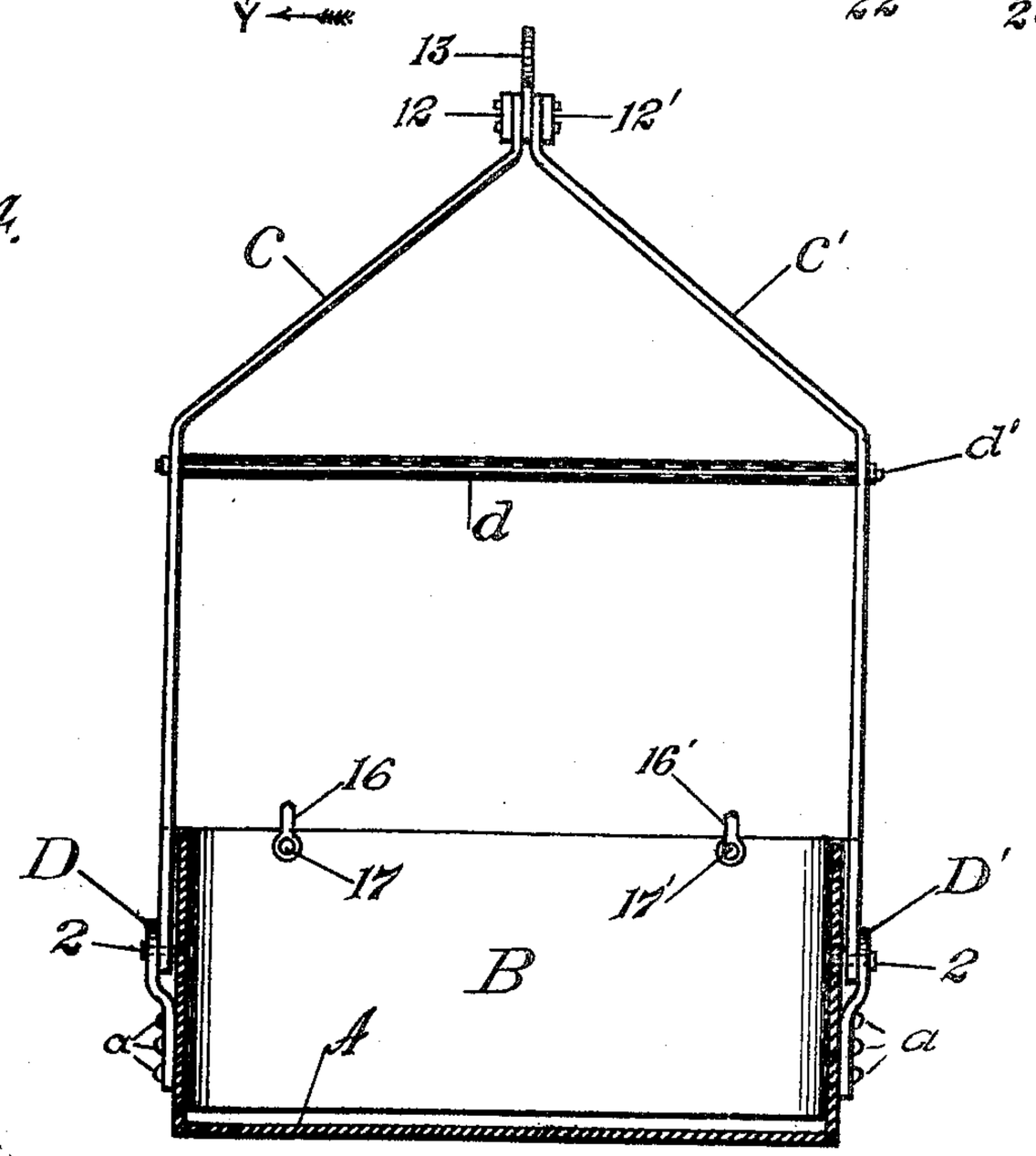


Fig. 4.



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EDWARD T. CALLAHAN, OF OMAHA, NEBRASKA.

DUMPING-EXCAVATOR.

No. 798,596. Specification of Letters Patent. Patented Sept. 5, 1905.

Application filed February 9, 1905. Serial No. 244,911.

To all whom it may concern:

Be it known that I, EDWARD T. CALLAHAN, a citizen of the United States, residing at Omaha, in the county of Douglas, State of Nebraska, have invented certain new and useful Improvements in Dumping-Excavators, of which the following is a specification.

My invention relates to dumping-excavators, and has for its object to improve and simplify the construction of such devices; and it consists in the various features of construction and arrangement of parts having the general mode of operation and accomplishing the results substantially as hereinafter more particularly set forth.

Referring to the accompanying drawings, wherein I have illustrated the preferred embodiment of my invention and sufficient of an excavator of this class to enable the invention to be understood, Figure 1 is a side elevation of the excavator, showing its position on the ground. Fig. 2 is a side elevation disclosing the general position of the parts when dumping. Fig. 3 is a plan view; and Fig. 4 is a sectional elevation on the line *y y*, Fig. 3, looking in the direction of the arrow, some of the parts being omitted.

Among the general objects of my invention it may be stated that I provide a dumping-excavator which is adapted to be used in many and various classes of excavation in connection with earth, loose rock, &c., and which is simple and inexpensive of construction, effective in operation, and not liable to get out of order, and which at the same time can readily be attached to any ordinary boom-derrick or hoisting apparatus and be operated by any suitable power in a manner well understood by those skilled in the art. Further, my improved excavator is so constructed and arranged that it will break the ground, so that it will readily be taken up by the excavator-body, and the operating device is so constructed and arranged and connected to the body as to get the best effects and digging capacity and so that the parts can be adjusted to adapt them for different conditions of ground and the excavating-work connected therewith. Further, I provide such a construction that when the excavator is filled it can be hoisted and the load quickly and readily dumped in any desired position from the rear of the body of the dumper. With this general statement in regard to the objects of my invention I will now proceed to describe in detail the embodiment thereof illustrated in the drawings.

The body or pan A of the excavator may be variously shaped, but is shown in the preferred form, being a substantially rectangular U-shaped pan or body having a substantially flat bottom and made of any suitable material—as, for instance, sheet metal bent or formed into the desired shape. In order that the pan or body can better accumulate the material, I attach to the forward end of the body and to the under side thereof a plate 5, the forward edge of which is sharpened or beveled, as at 5′, to aid in scraping and taking up the material gathered in the excavator-body. In order to tend to break up the material and further aid in loading the body of the excavator, I provide a series of teeth 4, which are shown as projecting beyond the forward end of the body proper and over the projecting end of the plate 5, and these teeth are secured to the body and plate in any suitable way, as by rivets. Thus the pan or body is itself provided with the projecting scraping-plate having a beveled edge and with teeth extending vertically above the plate, substantially in the manner shown, so that the material more readily enters the body of the excavator as it is moved forward in the usual operation of filling. In order to further break the ground and prepare it for more ready manipulation, I provide a number of plows or ground-breakers, which are arranged and connected in the manner substantially as hereinafter set forth in front of the body of the excavator. Thus in the present instance I have shown a number of plows or ground-breakers F, L, and M and have shown them mounted on a cross-beam G, to which beam is attached the tongue H, provided with a suitable clevis X or other means by which the excavator may be drawn forward in loading the same. I also attach to the tongue H a gage-wheel K, pivotally mounted at 28 in the adjustable wheel-carrier P, adjustably mounted on the tongue and secured by the clamp 26. This gage-wheel can be adjusted to aid in determining the depth to which the plows shall enter the earth when digging.

One of the most important features of my invention consists in the manner and means by which I connect the body or pan of the excavator with the cross-beam, to which latter the power is attached for drawing the excavator forward in filling the same. In order

to accomplish this, I connect the cross-beam G to the body A by hounds E E′. These hounds at their forward ends are preferably bent inwardly, as shown at *e e′*, and are secured to the tongue or draw-bar H by means of bolts *b*, and thereby tend to support and hold the cross-beam and draw-bar in proper relative position. The hounds may be attached to the cross-beam in any suitable way, and, as shown, in the present instance said hounds are provided with angle-irons *g g*, which are secured thereto by bolts *c* and are also secured by similar bolts *c′* to the under side of the cross-beam. The rear ends of these hounds are pivotally connected to the body A on each side near the top and preferably at or about the longitudinal centers of the sides of the body. This is an important feature of the invention in that by connecting the cross-beam by means of the hounds at or near the tops of the sides of the body or pan and adjacent the longitudinal centers thereof the draft on the body is exerted to the greatest advantage and in substantially the direction indicated by the arrow Z and tends to cause the forward portion of the body to enter the ground and quickly take up its load. In connection with this arrangement and for the purpose of regulating the depth to which the forward edge of the pan or body will enter the ground I provide adjustable connections between the forward end of the pan or body and the cross-beam G, and I have shown in the present instance gage-chains 22 22′, the rear ends of which are secured to the sides of the pan at or near the lower forward ends thereof in any suitable way, as by means of the hooks or eyebolts 21 21′, while the forward ends of these gage-chains are secured adjustably to the cross-beam—as, for instance, by eyebolts 23 23′, which bolts are shown as provided with washers 24 24′ and adjusting-nuts 25 25′. In this way it will be seen that the relations between the front end of the pan or body and the cross-beam can be readily adjusted, according to the character of the work being done. It will be seen, further, that with this arrangement of parts the plows first tend to break up the earth or material being excavated, and then the scraper-plate 5 and teeth 4 further engaging the material break it up and deliver it to the body, and the arrangement of the hounds pivoted, as above set forth, causes the forward end of the body to tend to enter the material, so as to gather a sufficient quantity in the quickest time, and by means of the gage-chains the degree to which this tendency is utilized can be adjusted according to the character of the material being excavated. It will thus be seen that the power necessary to draw the pan forward to get its load is utilized to the best advantage, and the pan or body can be quickly and readily filled and its relations to the source of power or cross-beam adjusted.

When the body or pan has received its load, of course it is necessary to raise it to the desired position and dump it in any desired place, and in order to raise it I have shown hoist-straps C C′, pivotally connected to the body A through the medium of bearing-lugs D D′, the latter being secured to the body by the rivets *a*. These hoist-straps extend upward in parallel planes and are provided with a separator *d*, shown in the form of a tube and secured in position by means of a bolt *d′* extending through the tube and through the hoist-straps C. Above the separator the hoist-straps are bent inwardly and connected to a hook-plate 13, adapted to receive the hook 14 of the block 15, receiving the usual hoisting ropes or chains J, connected with the boom-derrick or hoisting apparatus. (Not shown.) Also connected to the hoist-straps C, and preferably at or near their union with the hook-plate, are the guy-chains 10 and 11, they being shown as connected to the chain-plates 12 12′ at their upper ends and to the lugs 18 18′ and 19 19′ at their lower ends, these lugs being secured to the body of the excavator. This arrangement of hoist-straps and guy-chains furnishes a satisfactory means of elevating the loaded excavator-body and maintaining it in proper position while being elevated and also of permitting it to be dumped at the proper time.

In order that the load can be dumped quickly and readily, the pan or body is provided with a rear end-gate B, pivotally secured to the pan or body, as by means of pins or pivots 1 1′, and to this gate are connected the chains 7 7′, as by means of the clevises 16 16′, the other ends of the chains being connected to the ring 9 of the block 8, provided with the elevating rope or chain I. Also connected to the ring 9 are the chains 6 6′, the lower ends of which are connected to the forward upper edges of the pan or body, as by means of lugs 20 20′. It will be seen that the forward chains 6 6′ are relatively shorter than the rear dumping-chains 7 7′, connected to the gate at a distance from its ends, and they are so arranged that when the block 8 is raised by any suitable power into the position shown in Fig. 2 the gate is lifted and the material dumped without any danger of interference between the elevating and dumping connections or chains.

From this arrangement it will be seen that I provide a relatively simple and cheap but substantial construction which is effective in accomplishing the work intended. Not only is the excavator-body quickly and readily filled with material, the pull on the body being from near the center or top thereof by means of the hounds, and the forward edge of the scraper being adjustably controlled by the gage-chains, so that the earth after being broken by the plows is quickly gathered in the pan and then when the pan or body is

raised and swung to the desired position the dumping apparatus or chains are operated, which swings the body into the desired position and simultaneously opens the gate, permitting the free discharge of the material from the pan, but when the parts are lowered into excavating position they are ready to perform their proper functions in the most effective manner.

While I have thus specifically described and illustrated the preferred details of construction and arrangement of parts, it is evident that the general principles of my invention may be embodied in other structures having the same general mode of operation and producing substantially the same results in the same way, and I therefore do not limit my invention to the details shown and described.

What I claim is—

1. In a dumping-excavator, the combination with a rectangular body, of a cross-beam to which power is applied in drawing the body, and hounds extending from the cross-beam and pivotally connected to the body sides at or near the central top portions thereof, substantially as described.

2. In a dumping-excavator, the combination with a rectangular body, of a cross-beam to which power is applied, hounds extending from the cross-beam and pivotally connected to the body sides at or near the central top portions, and gage-chains connected to the cross-beam and to the forward end portion of the body, substantially as described.

3. In a dumping-excavator, the combination with a rectangular body, of a cross-beam to which power is applied, hounds extending from the cross-beam and pivotally connected to the body sides at or near the central top portions, gage-chains connected to the cross-beam and to the forward end portion of the body, and means for adjusting said gage-chains, substantially as described.

4. In a dumping-excavator, the combination with a body, of a cross-beam, a tongue connected to the cross-beam, plates mounted on said beam, hounds connecting the beam to the body, and gage-chains also connecting the beam to the body, substantially as described.

5. In a dumping-excavator, the combination with a rectangular body, of a cross-beam, a tongue connected to the beam, plates mounted on the beam, hounds extending from the cross-beam and pivoted to the body sides at or near their central top portions, adjustable gage-chains connecting the cross-beam and forward portion of the body, a projecting scraper on the bottom of the body, and teeth mounted thereon, substantially as described.

6. In a dumping-excavator, the combination with a rectangular body, of hoist-straps pivotally connected to the body, hoisting devices connected to the straps, and guy-chains connected to the body on opposite sides of the hoist-straps, substantially as described.

7. In a dumping-excavator, the combination with a rectangular body, of hoist-straps pivotally connected therewith, a separator between the straps, a hoisting-plate adapted to receive the hoisting mechanism, and guy-chains connecting the hoisting-plate with the body at opposite sides of the hoist-straps, substantially as described.

8. In a dumping-excavator, the combination with a body, of an end-gate pivotally connected therewith, a dumping-block, and dumping-chains connecting the block to the forward portion of the body and to the gate, substantially as described.

9. In a dumping-excavator, the combination with a rectangular body, of hoist-straps pivotally connected to the body, a pivoted end-gate, and dumping-chains connected to the forward part of the body and to the end-gate, substantially as described.

10. In a dumping-excavator, the combination with a rectangular body, of a cross-beam to which power is applied, hounds extending between the cross-beam and pivotally connected to the body sides at or near the central top portions, gage-chains connected to the cross-beam and to the body near its front portion, hoist-straps pivotally connected to the body, a pivoted end-gate and dumping-chains connected to the body and to the end-gate, substantially as described.

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

EDWARD T. CALLAHAN.

Witnesses:
J. H. CONRAD,
J. B. CEUBLER.