

No. 694,244.

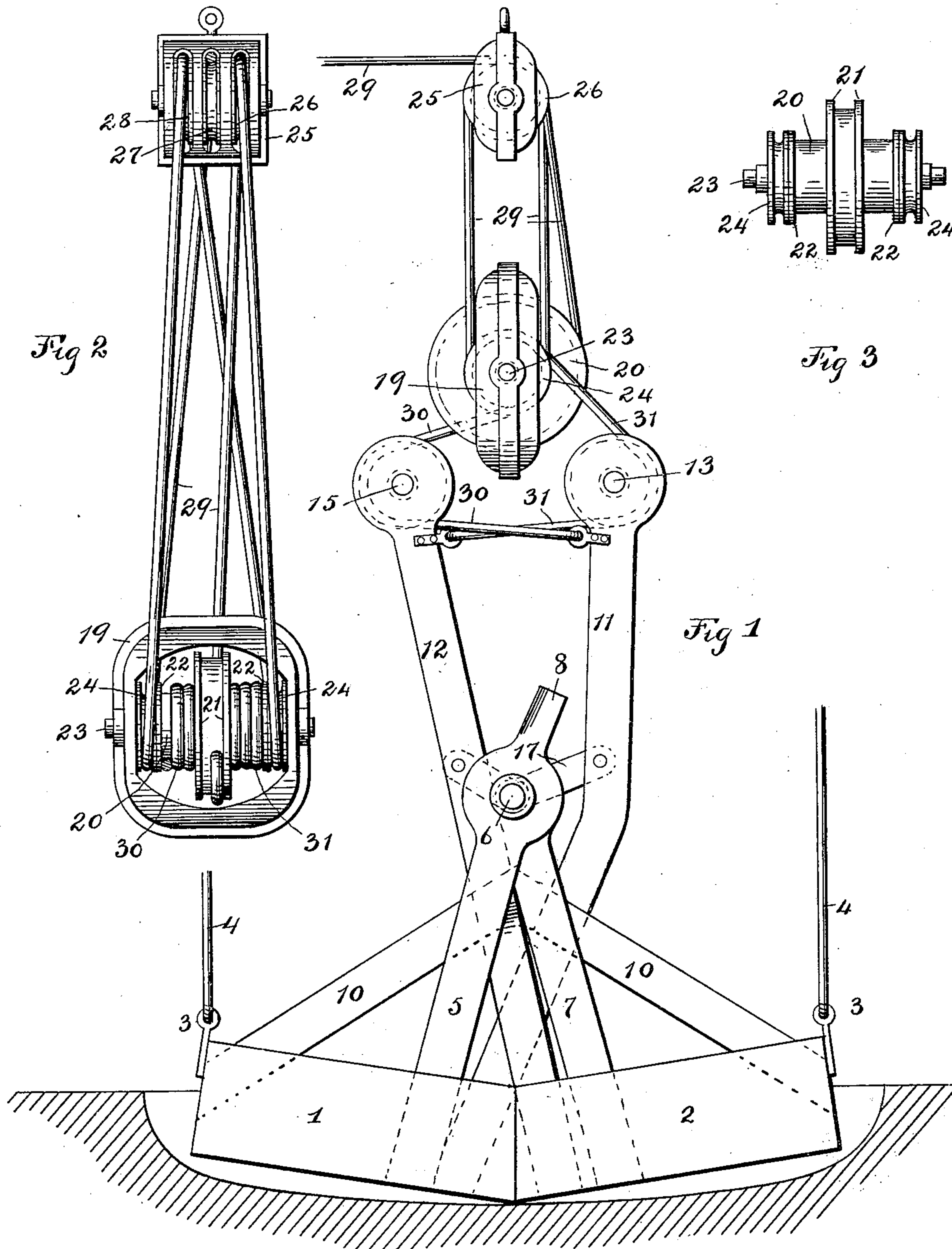
Patented Feb. 25, 1902.

C. W. BRADSHAW.
EXCAVATING MECHANISM.

(Application filed July 5, 1901.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:
O A Corcoran
J W, C. House

C. W. Bradshaw,

INVENTOR

BY
Warren D. House.
His ATTORNEY

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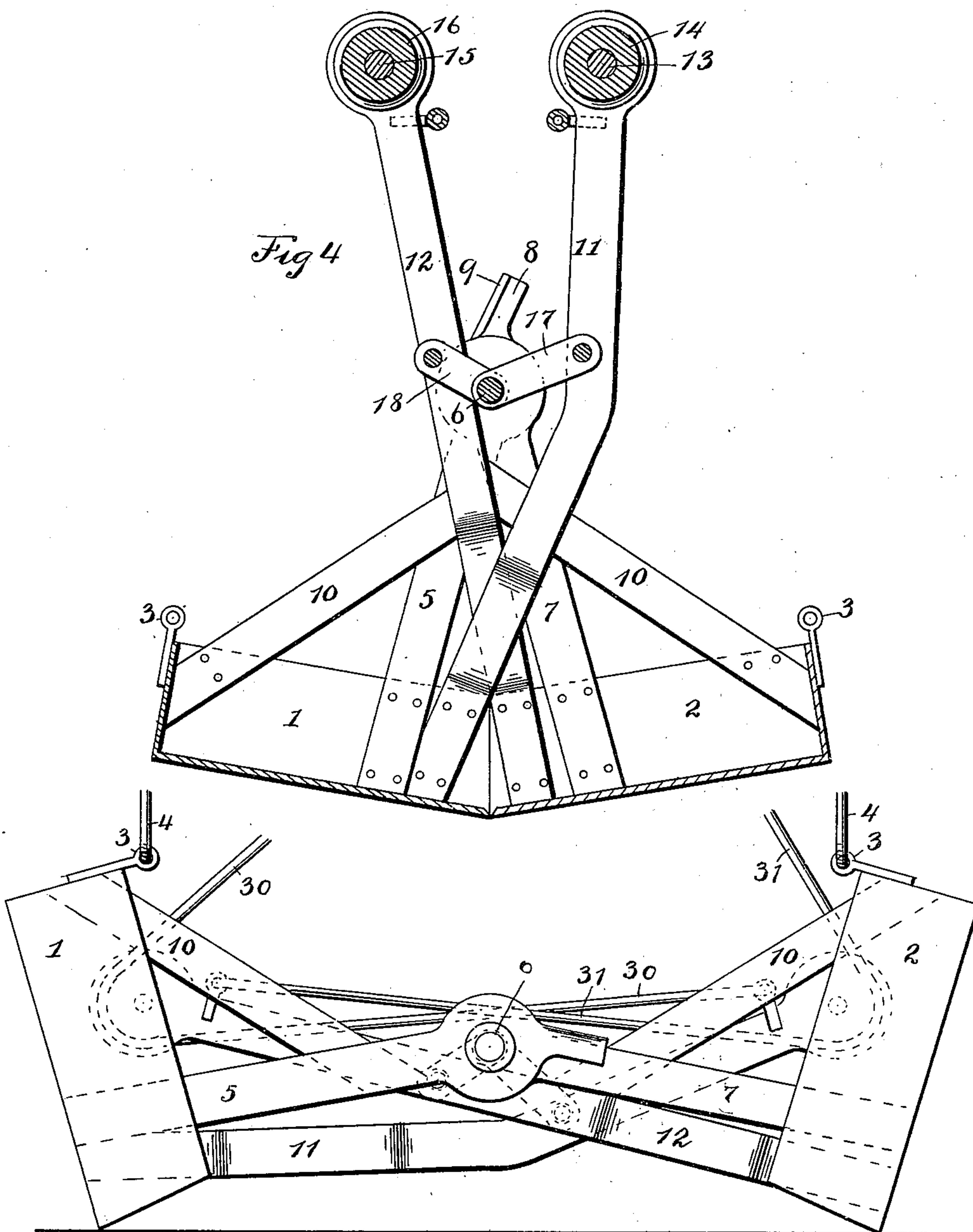


Fig 5

WITNESSES:
① A Corcoran
W. C. House

C. W. Bradshaw,

INVENTOR

BY
Warren D. House,
His ATTORNEY

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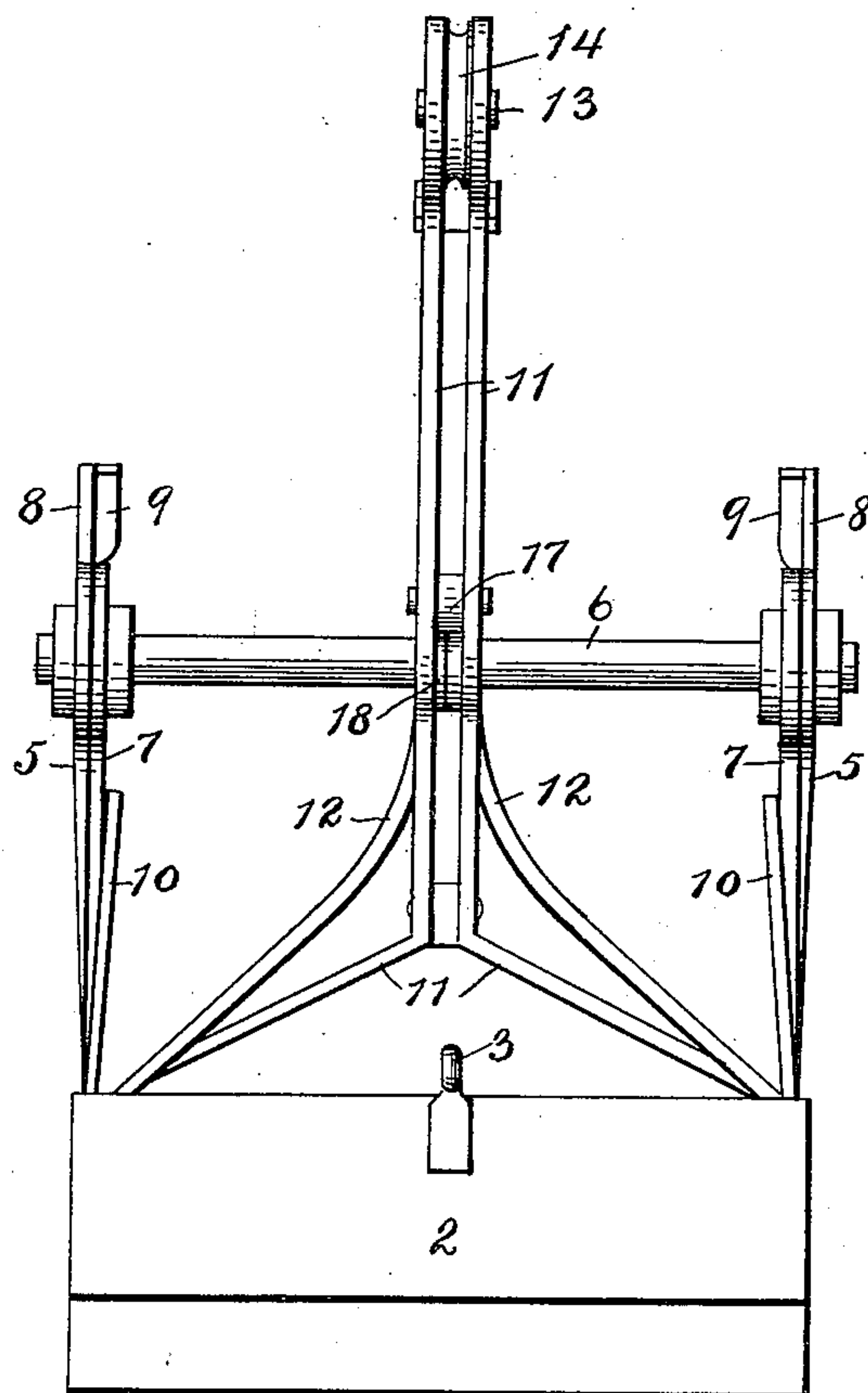


Fig 6

WITNESSES:

C. A. Corcoran
[Signature]

C. W. Bradshaw,

INVENTOR

BY

Warren D. House,

His ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES W. BRADSHAW, OF ARGENTINE, KANSAS.

EXCAVATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 694,244, dated February 25, 1902.

Application filed July 5, 1901. Serial No. 67,107. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. BRADSHAW, a citizen of the United States of America, residing in Argentine, in the county of Wyandotte and State of Kansas, have invented a new and useful Improvement in Excavating Mechanisms, of which the following is a specification, reference being had therein to the accompanying drawings, forming a part thereof.

My invention relates to improvements in excavating mechanism. It relates particularly to the class of excavating mechanism in which two scraper-pans hinged together and ordinarily known as a "clam-shell" are employed; and my invention consists in certain novel mechanism hereinafter fully described and claimed for operating the clam-shell mechanism.

In the accompanying drawings, illustrative of my invention, Figure 1 is a side elevation view showing the clam-shell in the closed position after having excavated a portion of the ground, which is shown in vertical section. Fig. 2 is a side elevation view of the block-and-tackle mechanism detached from the clam-shell. Fig. 3 is a side elevation view of the drum detached from its casing. Fig. 4 is a vertical sectional view with the block and tackle omitted and the parts in the same position as shown in Fig. 1. Fig. 5 is a side elevation view showing the clam-shell in the open position, parts of the operating-tackle being omitted. Fig. 6 is an end elevation view, the blocks and tackle not being shown.

Similar numerals of reference indicate similar parts.

1 and 2 indicate, respectively, the two scraper-pans, which are of the ordinary construction, the bottoms of which when in the closed position incline inwardly and downwardly. Each pan has secured to its upper rear end an eye 3, to which is secured the lower end of a lifting-cable 4.

To the two sides, respectively, of the scraper-pan 1 are secured at their lower ends two upright arms 5, the upper ends of which are pivoted to a central horizontal transverse shaft 6. The pan 2 is provided with a similar set of arms 7, which are also secured at their upper ends to the shaft 6. The upper ends of the arms 5 are extended and provided

each with a lateral flange 9, which bear upon the arms 7 when the clam-shell is in the open position, thus limiting the opening movement. Extending from the arms 5 and 7, respectively, and secured thereto are the braces 10, the outer ends of which are secured, respectively, to the two scraper-pans.

To the pan 1 is secured the lower end of a lever 11, which crosses, preferably below the shaft 6, a similar lever 12, secured at its lower end to the scraper-pan 2. The two levers 11 and 12 extend above the shaft 6, and their respective upper ends are disposed on the sides of the shaft 6 opposite to the sides at which are located the scraper-pans, to which they are respectively secured. In their preferable form each of the levers 11 and 12 is composed of two arms, the upper ends of which are parallel and the lower ends of which diverge below the shaft 6 and are secured, respectively, to the sides of the scraper-pan. The upper ends of the arms composing the lever 11 are connected by a transverse bolt 13, on which is rotatably mounted a pulley 14. A similar bolt 15 connects the two arms of the lever 12, and on this bolt is rotatably mounted a pulley 16. The lever 12 where it crosses the lever 11 lies preferably between the two arms of the lever 11.

Secured at its outer end to and between the two arms of the lever 11 is a link 17, the inner end of which is pivotally secured to the shaft 6. A similar link 18 connects the lever 12 with the shaft 6. The function performed by the two links 17 and 18 is to retain the levers 11 and 12 at their proper relative distance from the shaft 6 when a heavy load is taken by the pans 1 and 2.

Located between and above the upper ends of the levers 11 and 12, as shown in Fig. 1, is a casing 19, in which is rotatably mounted a drum 20, the central portion of which is enlarged and provided with peripheral flanges. Near each outer end of the drum is a peripheral flange 22. At each end of the drum and rotatable independently from and upon the shaft 23, which carries the drum, is a pulley 24. Above the casing 19 is a block 25, provided with three sheaves 26, 27, and 28, respectively. A hoisting-cable 29 is secured at its lower end to the enlarged portion of the drum 20 and passes from there to the sheave

26, thence around the right pulley 24, as viewed in Fig. 2, thence around the sheave 28, thence around the left pulley 24, and thence over the sheave 27 to the left, as viewed in Fig. 1, to the source of power. (Not shown.)

5 A cable 30 is secured at one end to the lever 11 near its upper end and passes from thence around the pulley 16 on the lever 12 to the left end of the drum 20, to which it is secured.

10 A similar cable 31 is secured at one end to the upper end of the lever 12 and passes from thence around the pulley 14 to the right end of the drum 20, to which it is secured. The supporting-block 25 may be carried or supported by any desirable means.

15 My invention is operated as follows: Assuming that the mechanism is in the position shown in Fig. 4, the cables 4 are drawn upwardly by any suitable means and the cable 20 29 is slackened. The scraper-pans 1 and 2 will swing on their arms 5 and 7 around the shaft 6 until the parts are in the position shown in Fig. 5, the cutting edges of the scraper-pans resting upon the material to be excavated. During the foregoing-described operation the cables 30 and 31 will be unwound from the drum 20 and the cable 29 will be wound around the drum. If now power be applied to the upper end of the cable 29, the drum 20 will be rotated, winding thereon the cables 30 and 31 and causing the outer ends of the levers 11 and 12 to approach each other, thus swinging the scraper-pans 1 and 2 on their arms 5 and 7 around the shaft 6 and toward one another. The weight of the mechanism will cause the cutting edges of the pans 1 and 2 to enter the material to be excavated, after which the forcing together of the outer ends of the levers 11 and 12 will cause the pans to force their way into and cause them to scoop up the material between them. When the levers have been forced to the position shown in Fig. 1, the clam-shell will be closed and the pans 1 and 2 will have obtained a load. Continued application of power to the upper end of the cable 29 causes the clam-shell and its load to rise from the ground, owing to the inability of the drum to rotate farther in the same direction, and thus give off from the drum 20 any more of the cable 29. The clam-shell and its load may be then carried by moving the supporting-block 25 to any desired position. The load may then be delivered by pulling upwardly on the cables 4 and relieving at the same time the strain on the cable 29, after which the parts will assume the position shown in Fig. 5, in which position the contents of the pans 1 and 2 will fall therefrom.

60 My invention is capable of many modifications without departing from its spirit.

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

65 1. An excavating mechanism comprising a clam-shell consisting of two scraper-pans pivotally connected together, two levers cross-

ing each other and secured respectively to opposite scraper-pans, two pulleys mounted one on each lever, a rotatable drum, means for rotating the drum, and two cables secured to and adapted to be wound on the drum when the drum is rotated in the proper direction, the two cables being secured respectively to opposite levers, each cable bearing upon the pulley on the lever opposite to the lever to which the cable is secured, substantially as described.

2. An excavating mechanism comprising a clam-shell consisting of two scraper-pans pivotally connected together, two levers crossing each other and secured respectively to opposite scraper-pans, two pulleys mounted one on each lever, a rotatable drum, two cables secured to and adapted to be wound on the drum when the drum is rotated in the proper direction, the two cables being secured respectively to opposite levers, each cable bearing upon the pulley on the lever opposite to the lever to which the cable is secured, and a hoisting-cable secured to and adapted to be wound on the drum when the other two cables are unwound therefrom, substantially as described.

3. An excavating mechanism comprising a clam-shell consisting of two scraper-pans pivotally connected together, two levers crossing each other and secured respectively to opposite scraper-pans, two pulleys mounted one on each lever, means for swinging the two scraper-pans apart, and means for swinging the scraper-pans toward each other consisting in a rotatable drum, means for rotating the drum, and two cables secured to and adapted to be wound on the drum when the drum is rotated in the proper direction, the two cables being secured respectively to opposite levers, each cable bearing upon the pulley on the lever opposite to the lever to which the cable is secured, substantially as described.

4. An excavating mechanism comprising a clam-shell consisting of two scraper-pans pivotally connected together, two levers crossing each other and secured respectively to opposite scraper-pans, two pulleys mounted one on each lever, means for swinging the scraper-pans apart, and means for swinging the scraper-pans toward each other consisting in a rotatable drum, two cables secured to and adapted to be wound on the drum when the drum is rotated in the proper direction, the two cables being secured respectively to opposite levers, each cable bearing upon the pulley on the lever opposite to the lever to which the cable is secured, and a hoisting-cable secured to and adapted to be wound on the drum when the other two cables are unwound therefrom, substantially as described.

5. An excavating mechanism comprising a clam-shell consisting of two scraper-pans pivotally connected together, two levers crossing each other and secured respectively to opposite scraper-pans, two pulleys mounted one on each lever, a rotatable drum, two cables

secured to and adapted to be wound on the drum when the drum is rotated in the proper direction, each cable bearing upon the pulley on the lever opposite to the lever to which the cable is secured, a supporting-block, and a hoisting-cable secured to and adapted to be wound on the drum when the two cables are unwound therefrom, the hoisting-cable passing from the drum to and supported by the supporting-block, substantially as described.

6. An excavating mechanism comprising a clam-shell consisting of two scraper-pans pivotally connected together, two levers crossing each other and secured respectively to opposite scraper-pans, two pulleys mounted one on each lever, a rotatable drum, two cables secured to and adapted to be wound on the drum when the drum is rotated in the proper direction, each cable bearing upon the pulley on the lever opposite to the lever to which the cable is secured, a supporting-block, a pulley rotatable independently of but movable with the said drum, and a hoisting-cable secured to and adapted to be wound upon the drum when the two cables are unwound therefrom, the hoisting-cable passing from the drum to the supporting-block thence around the pulley movable with the drum and thence again to the supporting-block, substantially as described.

7. An excavating mechanism comprising a clam-shell consisting of two scraper-pans pivotally connected together, two levers crossing each other and secured respectively to opposite scraper-pans, two pulleys mounted one on each lever, a rotatable drum, two cables secured to and adapted to be wound upon the drum when the drum is rotated in the proper direction, each cable bearing upon the pulley on the lever opposite to the lever to which the cable is secured, a supporting-block provided with three sheaves, two pulleys movable with the drum but rotatable independently thereof, and a hoisting-cable secured to and adapted to be wound upon the drum when the other two cables are unwound therefrom the said hoisting-cable passing from the drum to one of the said sheaves thence

around one of the pulleys movable with the drum, thence around one of the other sheaves, thence around the other pulley movable with the drum, and thence over the third sheave of the supporting-block, substantially as described.

8. In a clam-shell of the kind described, the combination with two scraper-pans, of a transverse shaft, arms secured respectively to the two scraper-pans and pivoted to the said transverse shaft, two levers crossing each other and secured respectively to opposite scraper-pans, and two links connecting the two levers respectively with the transverse shaft to which the links are pivoted, substantially as described.

9. In a clam-shell of the kind described, the combination with two scraper-pans, of a transverse shaft, arms secured respectively to the two scraper-pans and pivoted to the transverse shaft, and two levers each of which comprises two arms the upper ends of which are bolted together and the lower ends of each pair of arms diverging and secured to opposite sides of a scraper-pan, the two levers crossing and one lever being located between the two arms forming the other lever, substantially as described.

10. In a clam-shell of the kind described, the combination with two scraper-pans, of a transverse shaft, arms secured respectively to the two scraper-pans and pivoted to the transverse shaft, two levers crossing each other and secured respectively at their lower ends to the two scraper-pans, each lever consisting of two arms, the upper ends of each pair of said arms being connected to each other and the lower ends thereof diverging and secured to a scraper-pan, and two pulleys mounted one on each lever between the two arms thereof, substantially as described.

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

CHARLES W. BRADSHAW.

Witnesses:

WARREN D. HOUSE,
JESSIE R. COMSTOCK.