

No. 685,147.

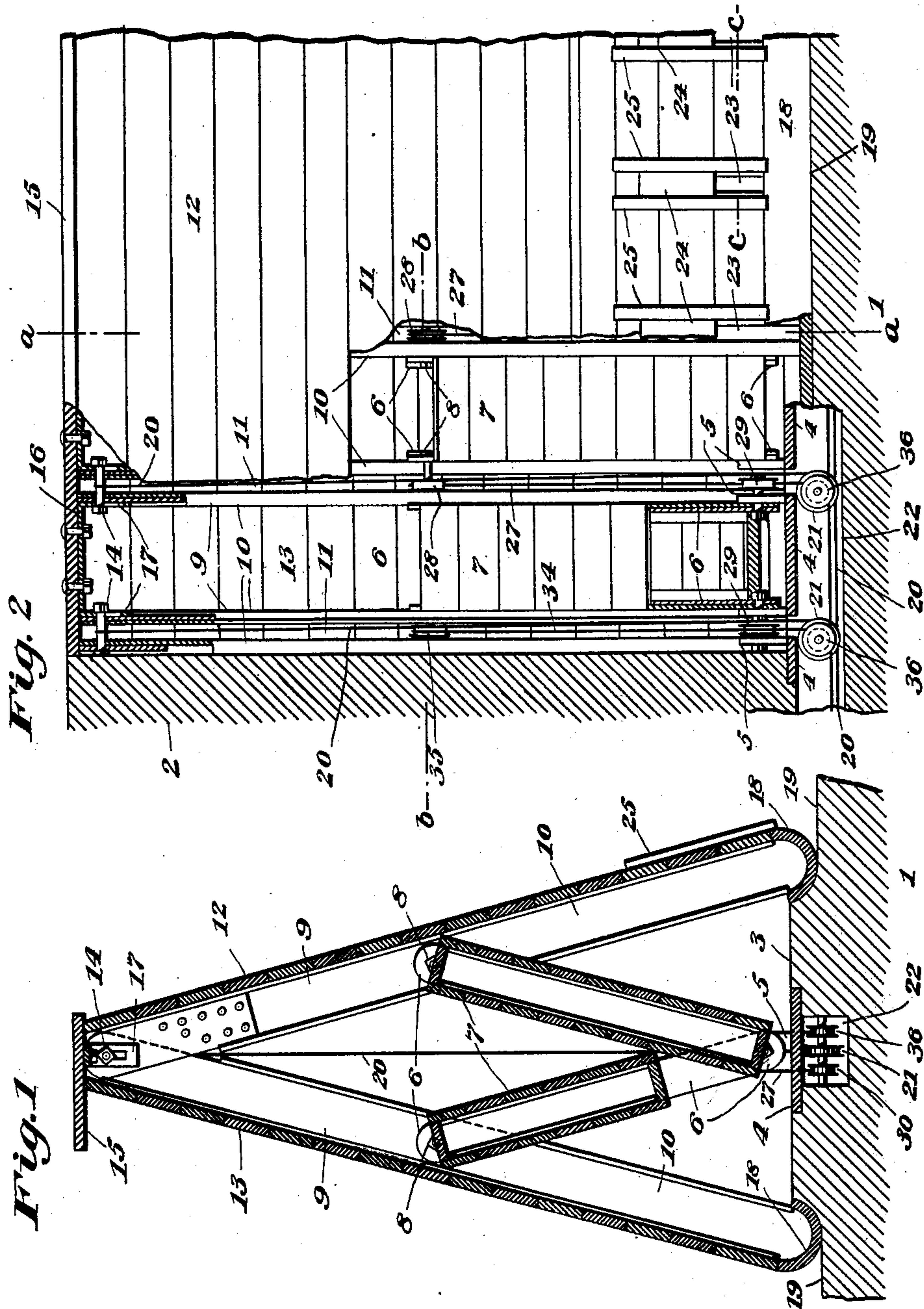
Patented Oct. 22, 1901.

P. N. JONTE.
MOVABLE WATER DAM.

(Application filed Dec. 6, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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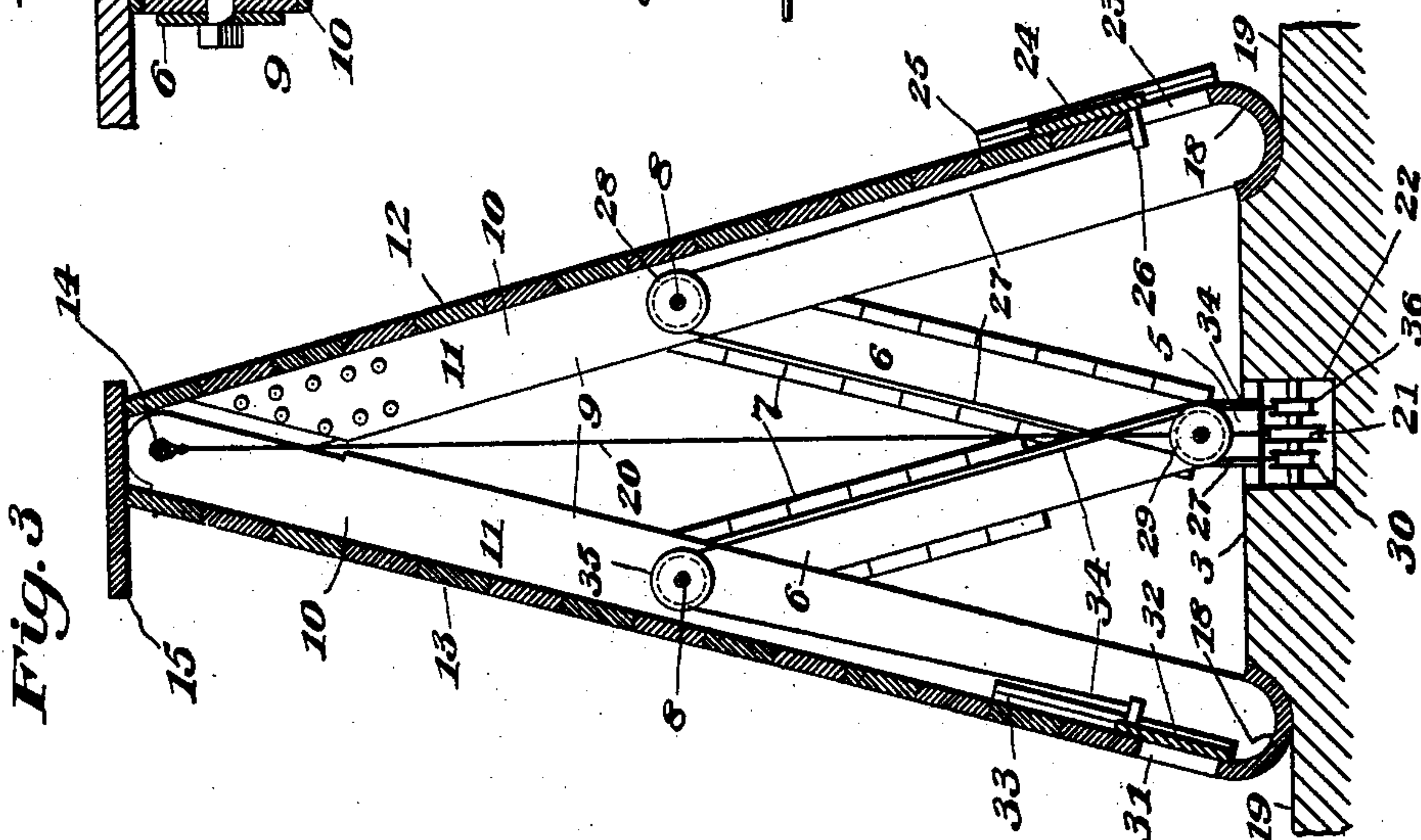
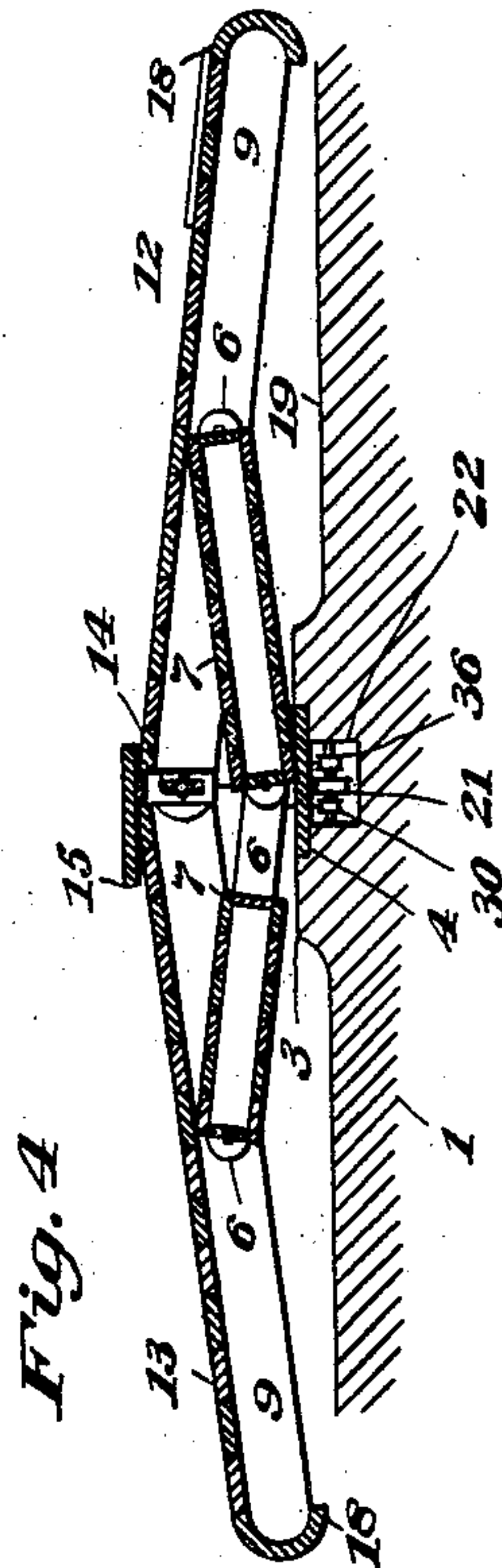
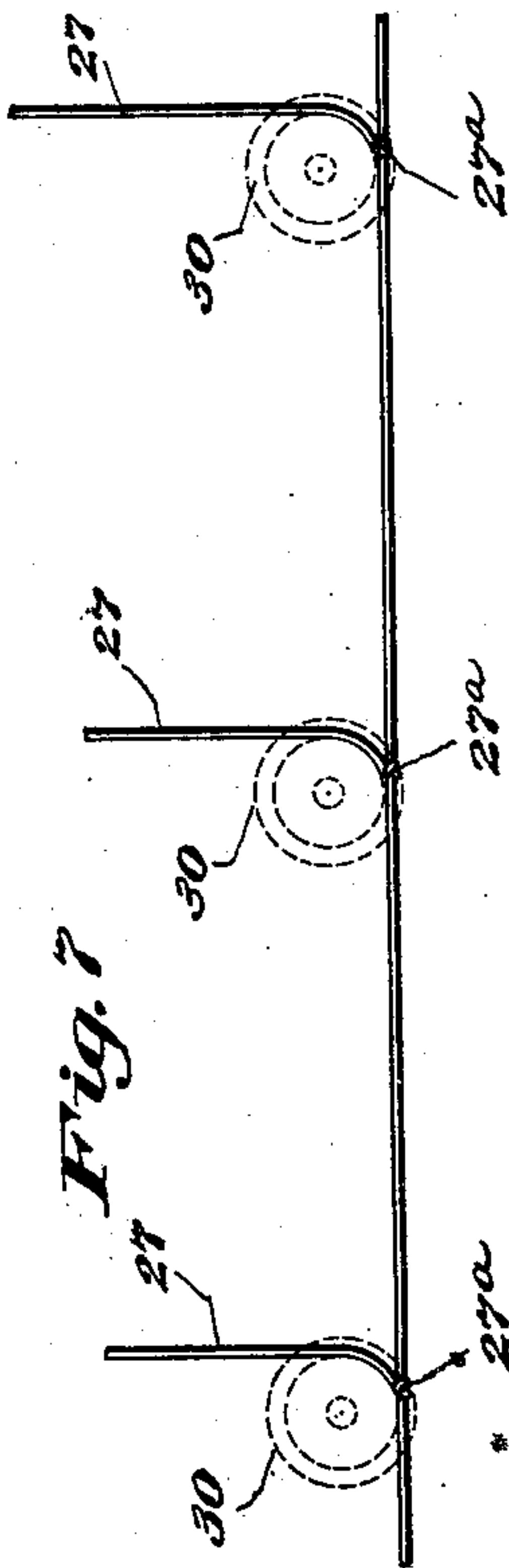
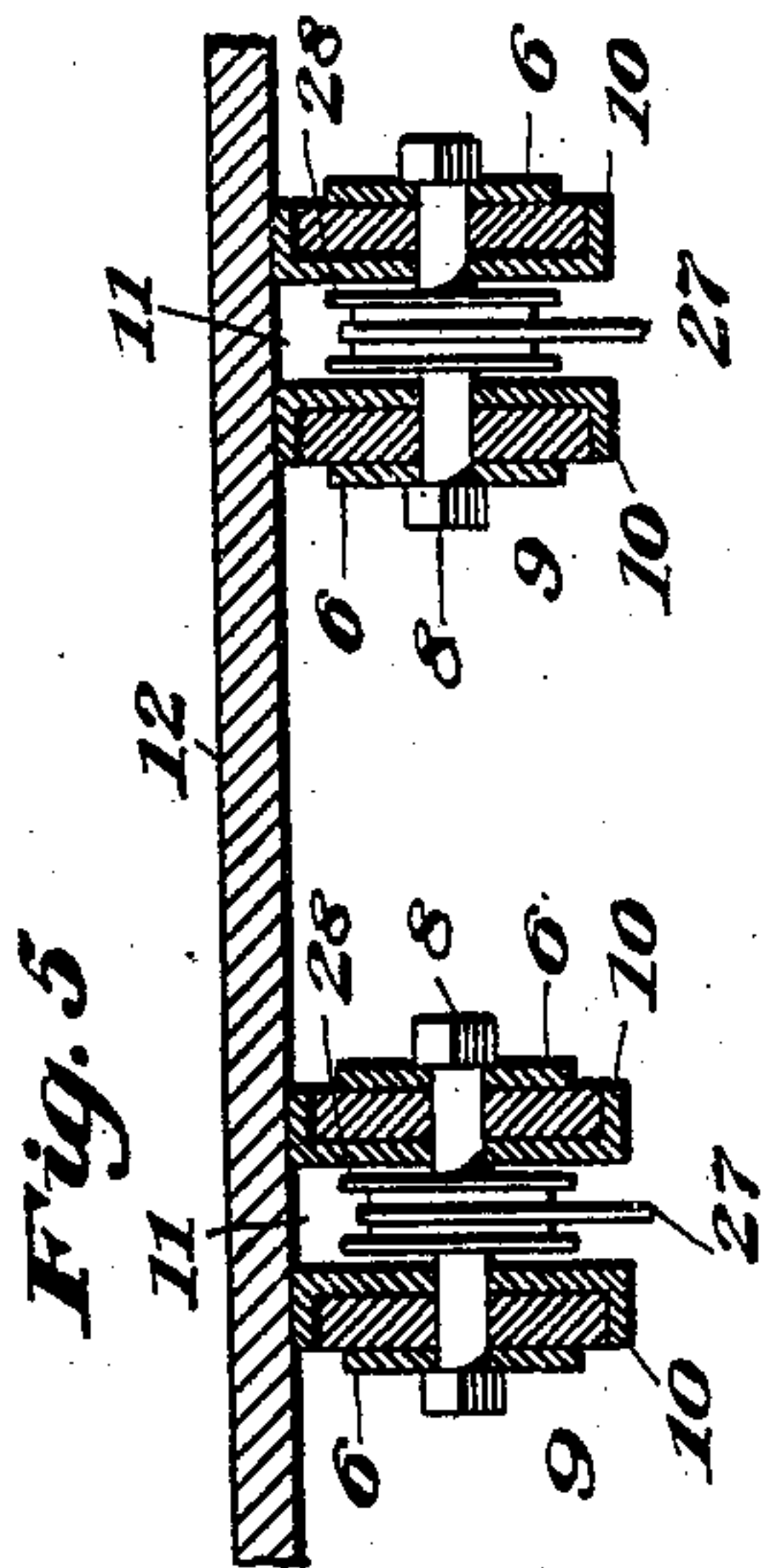
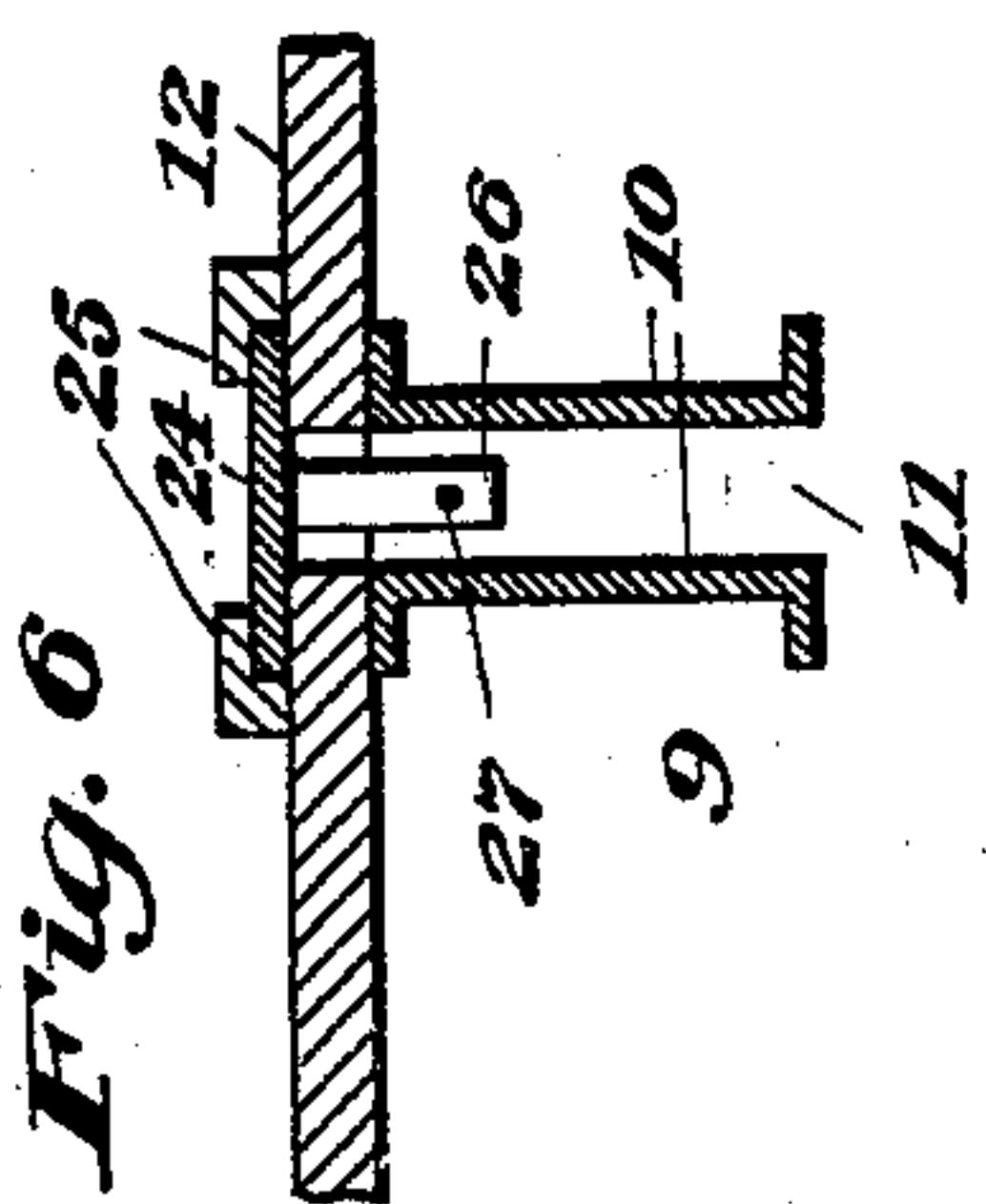
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UNITED STATES PATENT OFFICE.

PETER N. JONTE, OF CINCINNATI, OHIO.

MOVABLE WATER-DAM.

SPECIFICATION forming part of Letters Patent No. 685,147, dated October 22, 1901.

Application filed December 6, 1900. Serial No. 38,975. (No model.)

To all whom it may concern:

Be it known that I, PETER N. JONTE, a citizen of the United States of America, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Movable Water-Dams, of which the following is a specification.

This invention relates to certain improvements in movable dams or weirs such as are adapted to be raised to hold back a desired volume or depth of water or to be lowered to permit the free passage of a flood or freshet; and the object of the invention is to provide a dam or weir of this general character of a simple, strong, and inexpensive nature and provided with improved means for raising and lowering it.

The invention consists in certain novel features of the construction, combination, and arrangement of the several parts of the improved dam or weir, whereby certain important advantages are attained and the device is made simpler, cheaper, and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings, which serve to illustrate my invention, Figure 1 is a sectional view taken vertically through a dam or weir provided with my improvements, and Fig. 2 is an elevation of a portion of the improved dam or weir, part of the front wall thereof being broken away and shown in section to show various of the inclosed devices. Fig. 3 is a sectional view similar to Fig. 1, but taken through the improved dam or weir in the plane indicated by line *a a* in Fig. 2. Fig. 4 is a sectional view drawn to a reduced scale and taken in the same plane as Fig. 1, but showing the improved dam or weir in lowered position. Fig. 5 is an enlarged fragmentary sectional detail view taken in the plane indicated by the line *b b* in Fig. 2 and showing the arrangement of the pulleys and connections for adjusting the controlling gates or valves of the dam or weir. Fig. 6 is a view similar to Fig. 5, but taken in the plane indicated by line *c c* in Fig. 2 and showing the arrangement of the said controlling gates or valves. Fig. 7 is a somewhat dia-

graphic view showing the arrangement of the connections of the controlling means of the improved dam or weir.

In the views, 1 indicates the foundation for the improved dam or weir, laid at the bed of the stream, and 2 indicates one of the abutments at the ends of the dam or weir, while 3 represents a sill, raised slightly above the foundation and extended along the length of the movable dam or weir between the abutments at the ends thereof. Upon the sill 3 are laid frames 4, having upturned bearings or arms 5, spaced apart and adapted to receive and hold pivotally between them brace-arms 6, arranged in pairs pivoted to each bearing 5, the brace-arms of each pair being adapted for pivotal movement in opposite directions from a substantially erect position, as shown in Fig. 1, to a substantially horizontal position, as shown in Fig. 4, and vice versa. The brace-arms 6 carry water-tight boxings 7 to give buoyancy to the structure for purposes to be hereinafter referred to, and said boxings are so constructed as to extend between and tie together each two adjacent brace-arms which are adapted for pivotal movement in the same direction, so as to produce from each two such arms a practically integral brace.

The brace-arms 6 are pivotally connected at their upper ends by means of bolts 8 with trestles 9, each formed of channel-beams 10, spaced apart and pivotally connected at their upper ends, as shown at 14. There are four of the beams 10 used in the construction of each trestle, two such beams being adapted for pivotal movement on the bolt 14 relatively to the other two beams in each direction and being spaced apart to produce between them an open space or chamber 11, extended vertically in the dam or weir. The trestles have each the form of an inverted V, and the pivot-bolt 8 at the upper end of each brace-arm 6 has connection with the outer or channeled face of the trestle at a point slightly above the center of the trestle-arm, as shown in the drawings, the proportions of the parts being preferably such that the distance between the pivot-bolts 8 and 14 equals the throw of the brace-arms 6 upon their bearings 5, and consequently the beams or arms of the trestle in the rising and lowering movements of

the improved dam or weir extend parallel to the brace-arms 6 and give perfect balance to the structure.

The trestles 9 are spaced apart lengthwise of the improved dam or weir sufficiently to receive between them the corresponding braces formed of arms 6 and boxings 7, and the flanges of the beams 10 of said trestles afford ready means for attaching a sheathing 12, of wood or metal, as desired, to the front face of the dam or weir, a similar sheathing 13 being also provided upon the rear face of the dam. A foot-bridge 15 is also provided at the crest of the dam, being constructed of planks laid on the apices of the trestles supported on the sheathings 12 and 13 and held in place by means of angle-irons 16, secured to the undersides of the planks and bent down and adapted for engagement with the pivot-bolts 14 of the trestles, as shown at 17.

The front and rear walls of the improved dam or weir are each provided with a rounded metal shoe 18, adapted for sliding contact with the foundation 1, which is in front and at the rear of the dam leveled off to produce a smooth table 19 for the ready movement of the said shoes 18. When elevated, the trestles 9, to which said shoes 18 are attached, rest upon said table 19, so as to be maintained solidly in erect position, being at the same time braced and strengthened by the arms 6.

For elevating or raising the improved dam or weir I employ in part the buoyant housings 7, above mentioned, which serve by their buoyancy to partially elevate the dam, and in part other means, preferably, as herein shown, the head of the stream, which being exerted against the front wall of the improved dam or weir when the same is partially raised or elevated serves to press the same backward or rearward, at the same time, owing to the toggle-like arrangement of the braces and trestles, serving to swing the same pivotally and cause the trestles to stand in a more nearly erect position.

For lowering the dam wickets 23 are provided in the front wall 12, just above the shoe 18 thereof, through which wickets water may be admitted to the interior space between the front and back walls of the improved dam or weir and exerting its pressure against the back wall 13 will act to balance the pressure before exerted on the front wall 12, so that the dam or weir will fall of its own weight to a position at which it is maintained by the buoyancy of the boxings 7.

To control the admission of water at the wickets 23, I provide gates or valves 24, held to slide in guides 25 on the front face of the dam or weir and having arms 26, which are extended through the wickets into the spaces or chambers 11 with which said wickets are adapted for communication. In the said spaces or chambers 11 chains, cables, or other flexible connections 27 are attached to the arms 26 and are extended upward and

passed over sheaves 28 on the pivot-bolts 8, as shown in Figs. 2, 3, and 5, each two brace-arms 6 adjacent to the same trestle-arm being pivoted, as shown in Fig. 5, upon one bolt 8, which is extended through both beams 10 and the intervening space or chamber 11 of such trestle-arm to give support to said sheave 28. From the sheaves 28 the connections 27 are extended down over sheaves 29, held at the points of pivotal connection of brace-arms 6 with bearings 5, whence said connections are extended down over sheaves 30 into a conduit 22 beneath the frames 4 and extended along the length of the movable dam or weir into the abutment 2 at one end thereof, as shown in Fig. 2, and leading thence to a windlass or other device. (Not shown.) The connections 27 for the respective gates 24 are connected together, as shown at 27^a in Fig. 7, and from the end of the movable dam or weir one of said connections is extended in the conduit 22 to said windlass or other device and is adapted to be drawn upon in a way to raise the gates 26, and thereby flood the interior of the dam to permit the same to fall. The gates are arranged to close themselves by their own weight, which will usually suffice for this purpose.

To permit of discharging the water from the interior of the dam after the same has been partially raised and it is desired to further elevate it, I provide the rear wall 13 of the dam with other wickets 31 just above the shoe 18 and communicating with the spaces or chambers 11 in the trestles, said wickets 31 being adapted to be closed by gates 32, movable in guides 33, and having arms to which are attached flexible connections 34, which are extended up in the spaces or chambers 11 and are passed over sheaves 35 on the pivot-bolts 8 of the brace-arms for the rear wall of the dam, such pivot-bolts being arranged to extend across the spaces 11 similarly to those at the front wall of the dam to provide bearings for the sheaves 35. From the sheaves 35 the connections 34 are extended downwardly over the sheaves 29 at the pivotal connections of the brace-arms with bearings 5, and thence said connections 34 are extended in the conduit 22 over sheaves 36 and are connected together and adapted to be drawn upon in a way similar to that above described with reference to the gates 26 and their flexible connections 27.

When it is desired to lower the dam beyond the point at which it is maintained by the buoyant boxings 7, which it may at times be desirable to do, I provide chains, cables, or other flexible connections 20, attached, as shown in Figs. 2 and 3, to the pivot-pins 14 at the apices of the trestles 9 and extended down in the interior of the dam over sheaves 21 in the conduit 22, where such connections are secured together in a manner similar to that described with reference to connections 27 and shown in Fig. 7 and are adapted to

be drawn upon in a similar way to still further draw down the trestles and lower the dam or weir.

The improved dam or weir will of course be provided with suitable anchors for holding it in place upon the foundation 1, and the various parts will also be made of sufficient strength to resist the stress which will be brought to bear upon them in the workings of the improved dam or weir.

In operation when the improved dam or weir stands in its lowest position it may be raised by first slacking the connections 20, so as to permit the buoyant boxings 7 to partially elevate the dam or weir, after which, the forward wickets 23 being closed, the head of the stream above the dam will be exerted upon the front wall 12 and will act to raise the dam or weir to its highest position, the arms of the trestles, together with the braces, then moving upon themselves to accommodate such movement without in any way lessening the stability of the structure.

After the dam has been raised it may be partly lowered to permit the passage of a small rise or freshet by temporarily opening the forward and closing the rear wickets, thus balancing the head of the stream equally upon the front and rear walls of the dam and permitting the same to fall of its own weight to a partially-lowered position, from which it may be readily elevated by a reverse movement of the gates controlling said wickets.

From the above description it will be seen that the improved dam is of an extremely simple and inexpensive nature and affords a maximum of strength and mobility with a minimum cost of maintenance, and it will also be seen that the improved dam or weir is capable of some modification without material departure from the principles and spirit of the invention, and for this reason I do not wish to be understood as limiting myself to the precise form and arrangement of the several parts of the device as herein set forth.

Having thus described my invention, I claim—

1. A movable dam or weir comprising a wall pivotally supported above its lower edge and adapted to fall by gravity and arranged to be raised by pressure of the head of a stream at a point below its pivotal support and means for counterbalancing the pressure of said head on the wall to permit the wall to fall by gravity to a lowered position, substantially as set forth.

2. In a movable dam or weir, the combination of braces pivotally mounted, a wall pivotally supported upon said braces and adapted to fall by gravity to a lowered position and also adapted to be elevated by pressure of the head of a stream at a point below the pivotal connection of the wall with the braces and means for counterbalancing the pressure of the head upon said wall to permit the wall to fall by gravity to a lowered position, substantially as set forth.

3. In a movable dam or weir, the combination of two walls having pivotal connections at their upper parts and adapted for movement under pressure of the head of a stream, braces pivotally connected to said walls and to each other and means for controlling the pressure of the head on said walls, substantially as set forth.

4. In a movable dam or weir, the combination of two walls provided with wickets and one in advance of the other, the walls being separated by a space and each being adapted for movement under pressure of the head of a stream, mechanism for communicating the movement of one wall to the other and gates controlling said wickets, substantially as set forth.

5. In a movable dam or weir, the combination of two walls having pivotal connections at their upper parts and adapted for movement under pressure of the head of a stream, braces pivotally connected to said walls and to each other, mechanism for controlling the movement of one wall from the other, the walls being provided with wickets for the passage of water and gates controlling said wickets, substantially as set forth.

6. In a movable dam or weir, the combination of two walls provided with wickets and having pivotal connections at their upper parts, the walls being separated by a space and each being adapted for movement under pressure of the head of a stream, braces pivotally connected to said walls and to each other, buoyant boxings carried by said braces, and gates controlling said wickets, substantially as set forth.

7. In a movable dam or weir, the combination of two walls provided with wickets and having pivotal connections at their upper parts, the walls being separated by a space and each being adapted for movement under pressure of the head of a stream, braces pivotally connected to said walls and to each other, buoyant boxings carried by said braces, gates controlling said wickets and flexible connections secured to the walls and adapted to be drawn upon to lower the walls against the buoyancy of the boxings, substantially as set forth.

8. A movable dam or weir comprising a wall adapted to fall by gravity to a lowered position and means for supporting the wall, when raised, at a point above its lower edge, and a table extended along the stream-bed, the said lower edge of the wall being arranged, as the wall is raised, to traverse said table in a path extending lengthwise of the bed of the stream, substantially as set forth.

9. A movable dam or weir comprising a wall adapted to fall by gravity to a lowered position and means for supporting the wall, when raised, at a point above its lower edge, and a table extended along the stream-bed, the said lower edge of the wall being arranged, as the wall is raised, to traverse said table in a path extending lengthwise of the bed of the

stream and being adapted to be moved along said path by the pressure of the head of the stream to raise the wall, substantially as set forth.

5 10. A movable dam or weir comprising a movable wall having means for supporting it at a point above its lower edge when the wall is raised, a portion of the wall below its point of support being capable of movement in a
10 direction lengthwise of the stream-bed under pressure of the head of the stream upon the front face of the wall, and means for exerting the pressure of the head of the stream at the rear of the wall to permit the same to be low-
15 ered, substantially as set forth.

11. A movable dam or weir comprising two walls loosely connected together at their upper parts and movable supports for said walls, the said supports being loosely con-
20 nected to their respective walls above the lower edges of said walls and being arranged to permit said walls to be raised and lowered, substantially as set forth.

12. In a movable dam or weir, the combina-

tion of two walls separated by a space and 25 each adapted for movement under pressure of the head of a stream, movable supports whereon the walls are held for pivotal movement, mechanism for communicating the movement of one wall to the other and means 30 for admitting water to the space between the walls, substantially as set forth.

13. In a movable dam or weir, the combina-
tion of two walls separated by a space and
each having, above its lower edge, supporting 35 means and having, below its supporting means, a part movable under pressure of the head of a stream, means for communicating the movement of one wall to the other, and
40 means for admitting water to the space between the walls, substantially as set forth.

Signed at Cincinnati, Ohio, this 30th day of November, 1900.

PETER N. JONTE.

Witnesses:

JOHN ELIAS JONES,
J. D. THORNE.