

N. P. E. ANDERSEN.

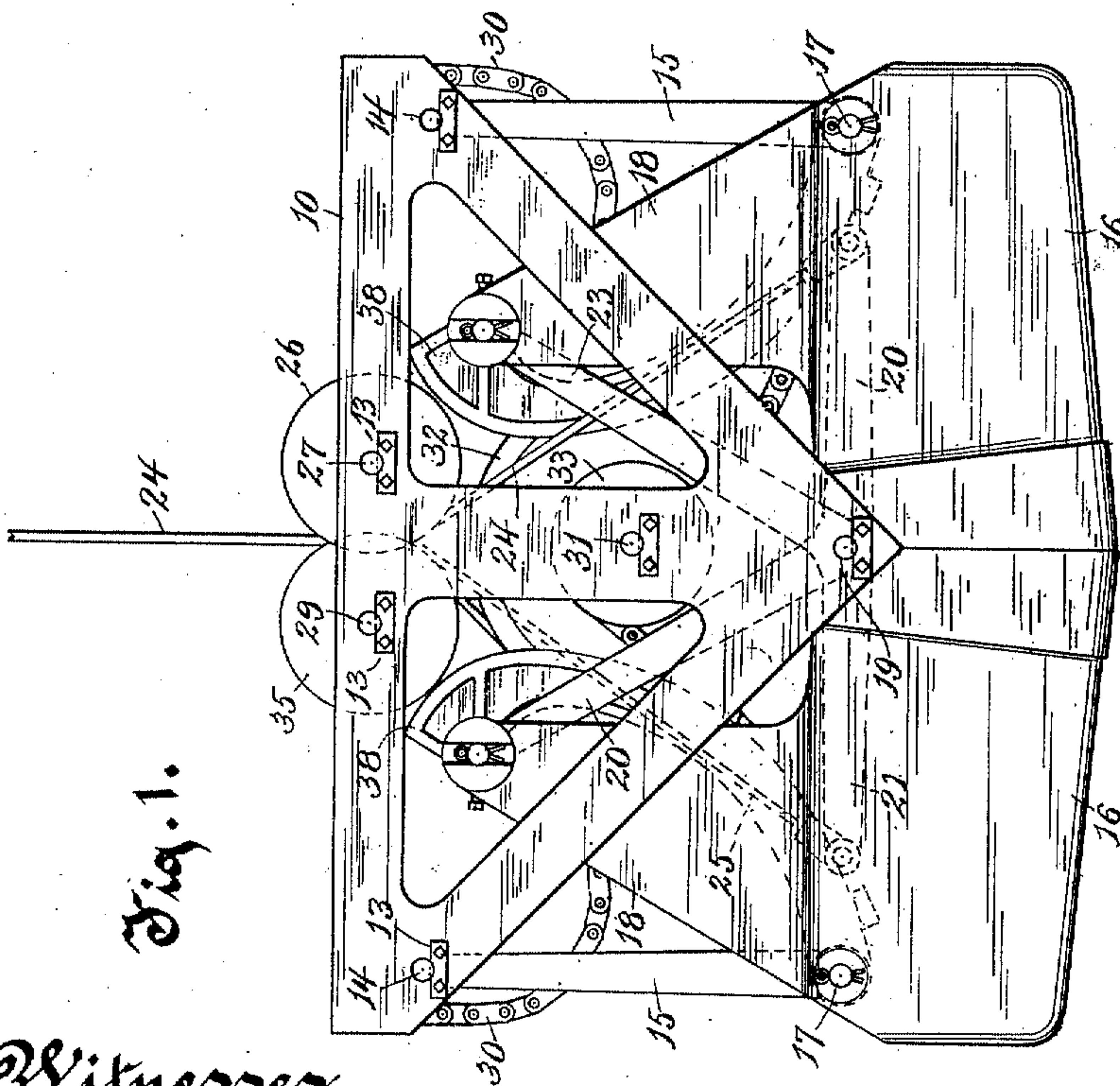
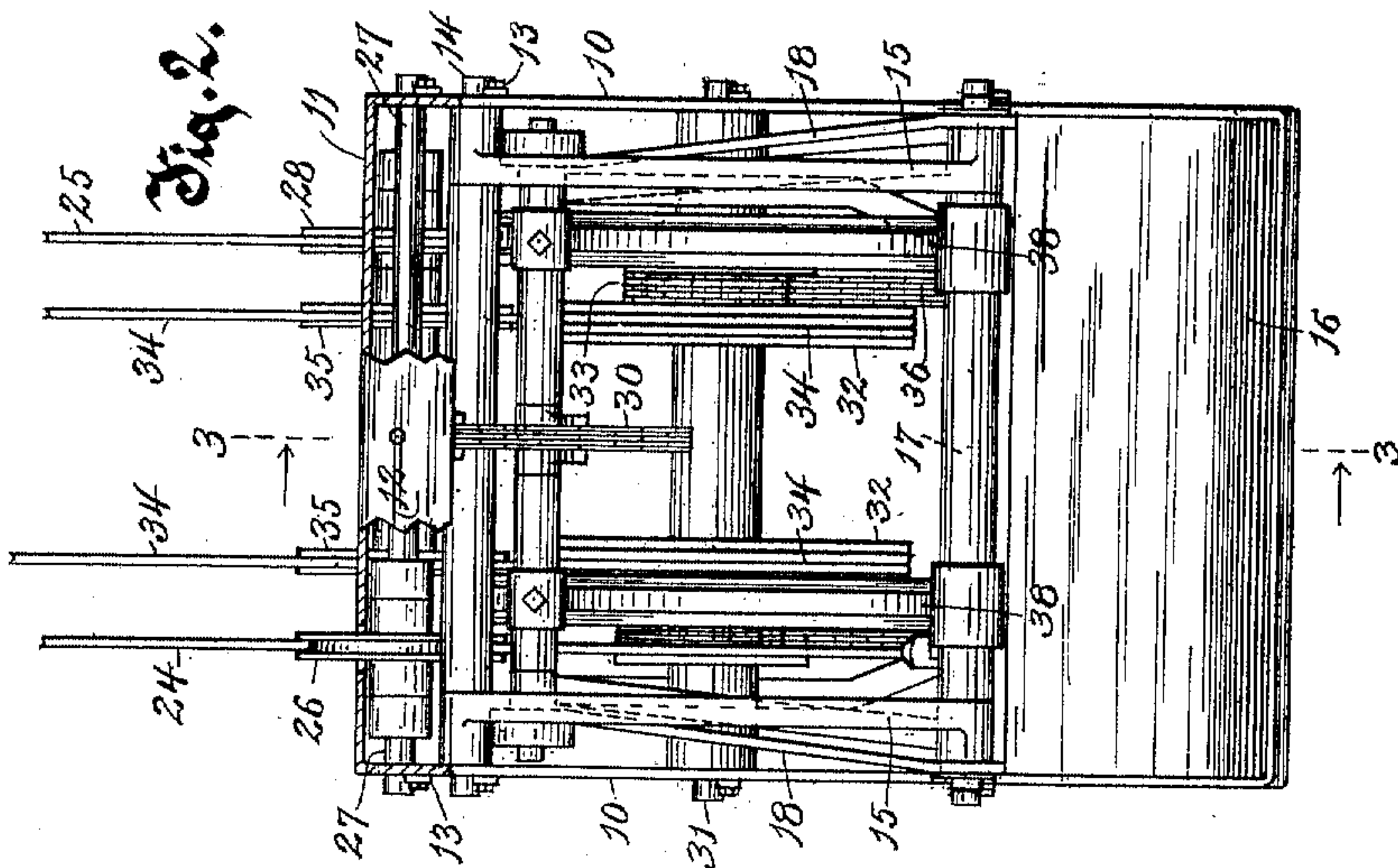
CLAM SHELL BUCKET.

APPLICATION FILED MAY 21, 1908. RENEWED JULY 11, 1910.

985,317.

Patented Feb. 28, 1911.

4 SHEETS-SHEET 1.



Witnesses.

*A. H. Keeney.*

*Amos F. Schmidt.*

Inventor.

*Nils Peter Erik Andersen.*

*Benedict, Morsell & Caldwell.*

*Attorneys.*



N. P. E. ANDERSEN.

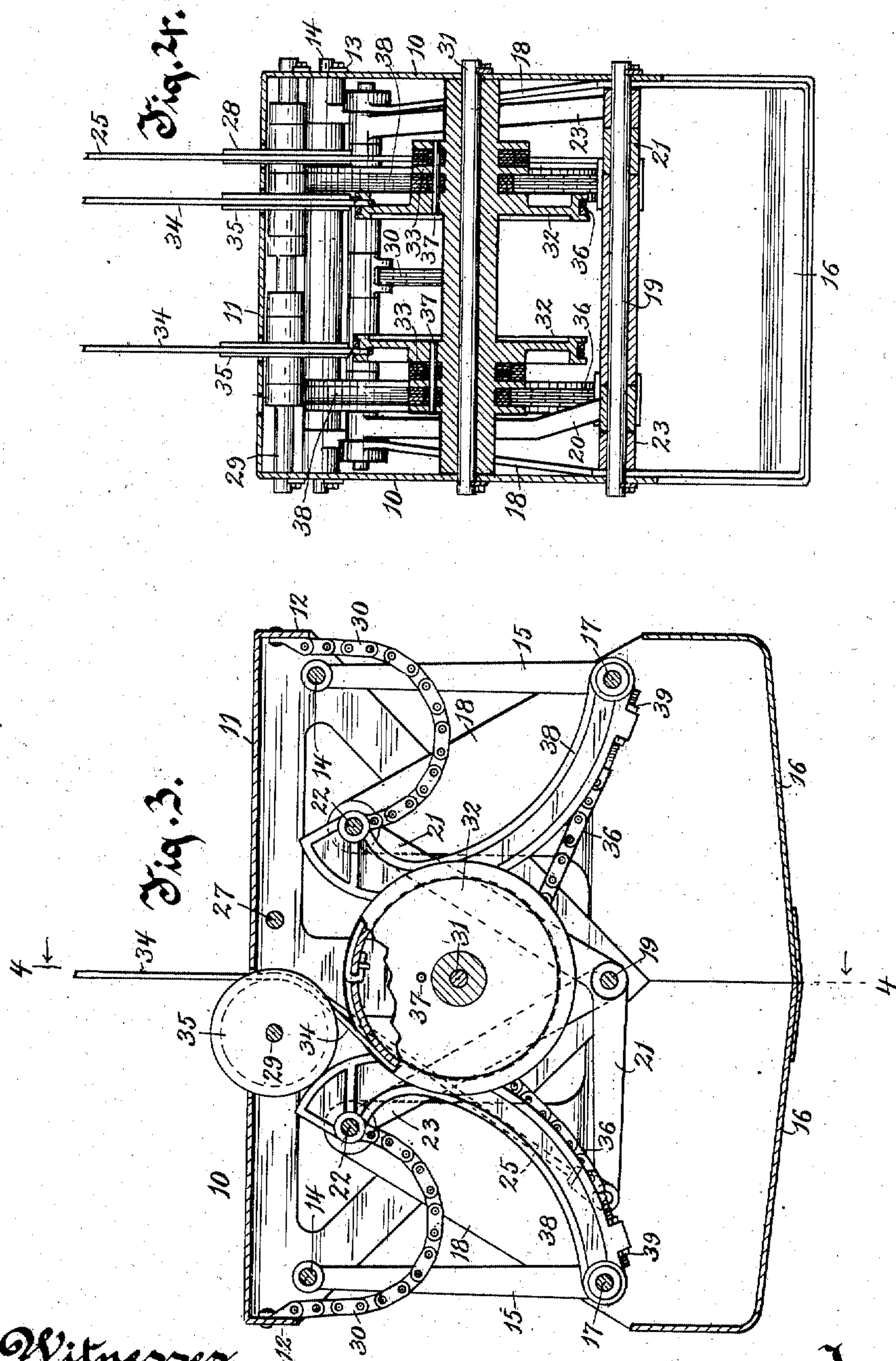
CLAM SHELL BUCKET.

APPLICATION FILED MAY 21, 1908. RENEWED JULY 11, 1910.

985,317.

Patented Feb. 28, 1911.

4 SHEETS—SHEET 2.



Witnesses.

*A. Keeney*

*Anna Schmidt*

Inventor.

*Nils Peter Erik Andersen*  
By *Benedict, Morsell & Caldwell*  
Attorneys.



N. P. E. ANDERSEN.

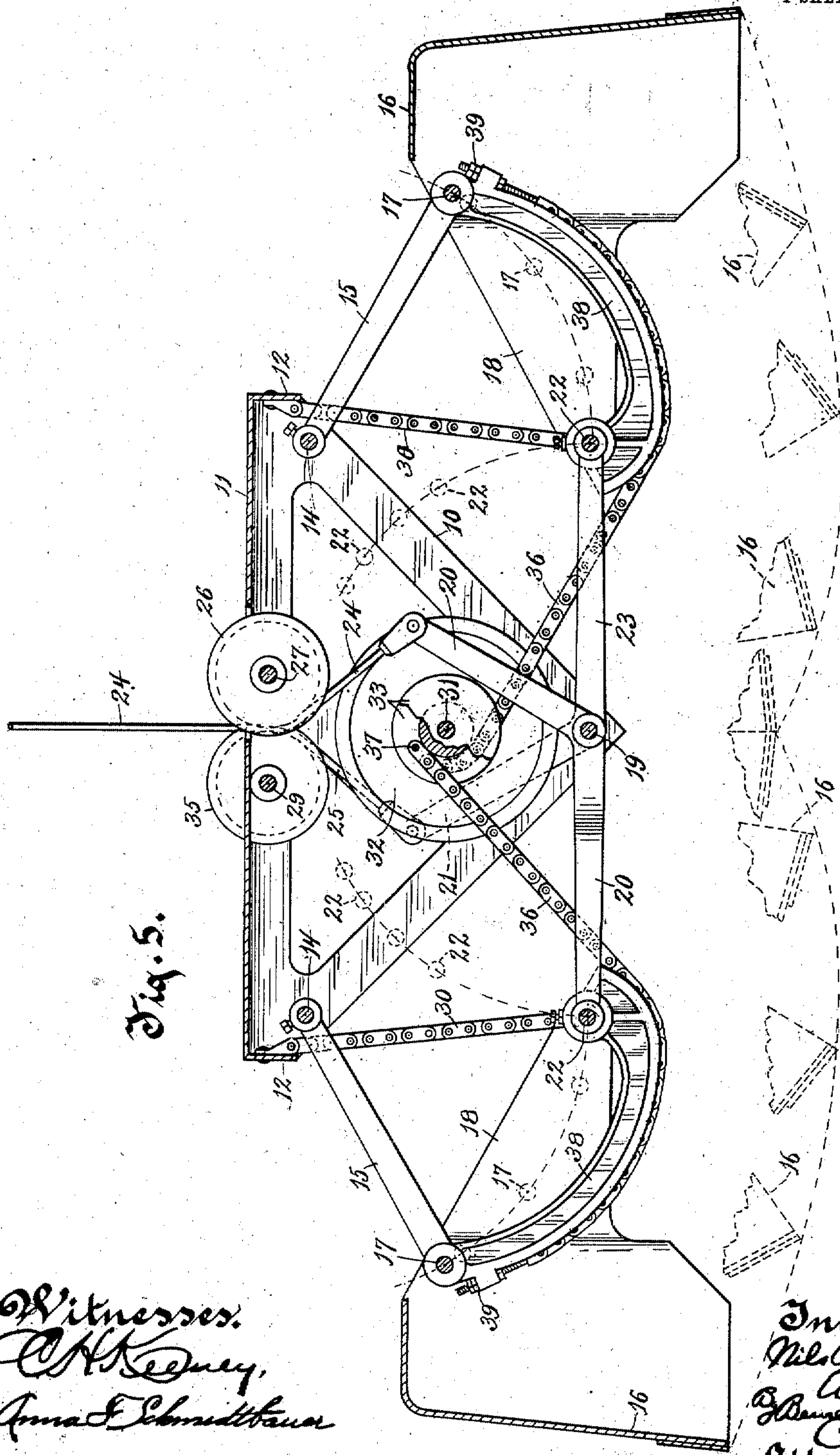
CLAM SHELL BUCKET.

APPLICATION FILED MAY 21, 1908. RENEWED JULY 11, 1910.

985,317.

Patented Feb. 28, 1911

4 SHEETS-SHEET 3.



Witnesses.  
C. H. Keeney,  
Anna F. Schmidtbauer

Inventor.  
Nils Peter Erik  
Andersen  
By Benedict, Monro &  
Caldwell  
Attorneys.



N. P. E. ANDERSEN.  
CLAM SHELL BUCKET.

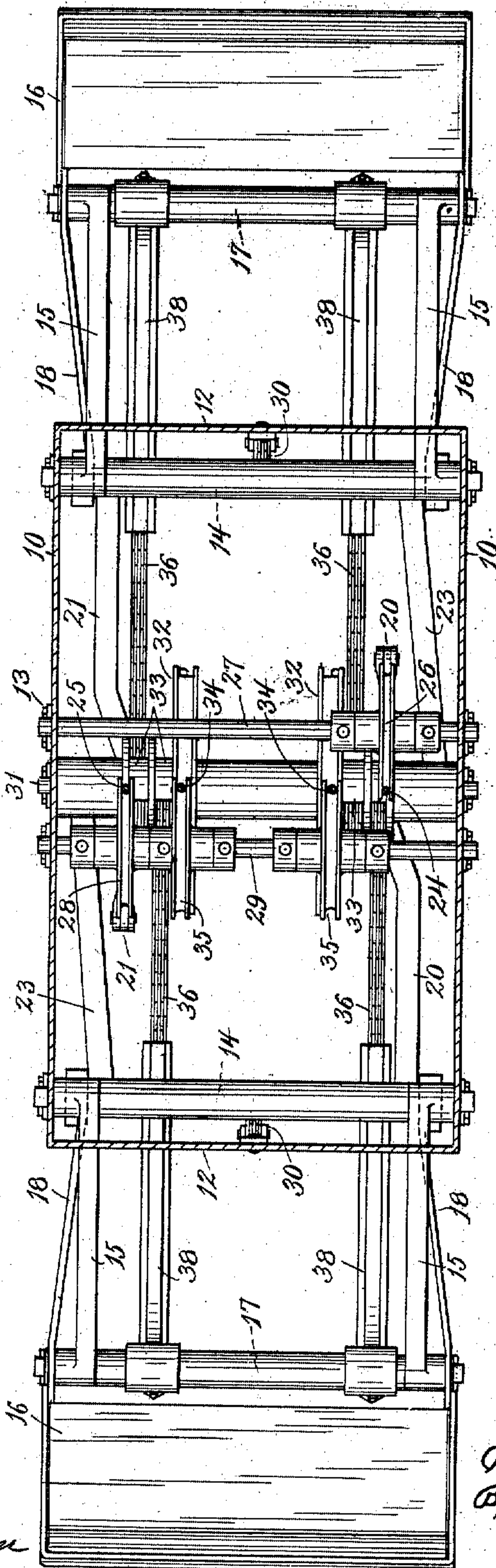
APPLICATION FILED MAY 21, 1908. RENEWED JULY 11, 1910.

985,317.

Patented Feb. 28, 1911.

4 SHEETS-SHEET 4.

Fig. 6.



Witnesses:  
C. H. Keeney.  
Anna Schmidtbaum

Inventor.  
Nils Peter Erik  
Andersen.  
By Benedict Morrell &  
Caldwell  
Attorneys.



# UNITED STATES PATENT OFFICE.

NILS PETER ERIK ANDERSEN, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-HALF  
TO JULIUS R. W. ANDERSON, OF CHICAGO, ILLINOIS.

CLAM-SHELL BUCKET.

985,317.

Specification of Letters Patent.

Patented Feb. 28, 1911.

Application filed May 21, 1908, Serial No. 434,026. Renewed July 11, 1910. Serial No. 571,503.

*To all whom it may concern:*

Be it known that I, NILS PETER ERIK ANDERSEN, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have  
5 invented new and useful Improvements in Clam-Shell Buckets, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

10 This invention has for its object to provide a clam shell bucket of a construction which will permit its scoop members to have a maximum spread with a minimum head room or clearance for vertical movement of  
15 the frame. The operating parts for the scoop members are so constructed and arranged that throughout their movements they contribute toward the accomplishment of the foregoing object to render the device  
20 most efficient in difficult situations such as when operating within the hold of a vessel where the space above the material is limited.

Another object of this invention is to improve upon details of construction to produce a strong and efficient clam shell bucket which will be simple in its arrangement and durable in use.

With the above and other objects in view  
30 the invention consists in the clam shell bucket herein claimed, its parts and combinations of parts and all equivalents.

Referring to the accompanying drawings in which like characters of reference indicate the same parts in different views; Figure 1 is a front elevation of a clam shell bucket constructed in accordance with this invention, shown in its closed position; Fig.  
40 2 is an end elevation thereof with parts of the cover flange broken away for clearness of illustration; Fig. 3 is a central sectional view on the plane of line 3—3 of Fig. 2; Fig. 4 is a transverse sectional view thereof on the plane of line 4—4 of Fig. 3; Fig. 5  
45 is a sectional elevation of the clam shell bucket in its open or extended condition, with a part of the chain reel broken away for clearness of illustration; and, Fig. 6 is a sectional plan view of the device in its  
50 open or extended position.

In these drawings 10 represents a pair of triangular side frames connected at their horizontal upper edges by a cover plate 11 with depending end flanges 12, all being  
55 preferably formed of sheet metal. The side

frames form supports for a number of pins or rods which pass through them to support the operating parts, such rods being preferably held in place by keeper plates 13 secured to the side frames and fitting in  
60 notches of the rods to prevent their turning as well as to prevent their longitudinal movement. Two of these rods are located at the ends of the side frames near the top thereof to constitute link-supporting rods  
65 14, from each of which a pair of links 15 are suspended. Each pair of links 15 supports a scoop member 16 by being loosely mounted on a rod 17 with its ends secured in the side walls of the scoop member at the rear there-  
70 of and near the top, there being extensions 18 on the side walls of the scoop extending a considerable distance above the rods 17. At the lower angle of the side frames one of the before-mentioned rods forms a ful-  
75 crum rod 19 on which bell crank levers 20 and 21 are fulcrumed, the one on the near side of the device having its longer end connected with a rod 22 which extends across the ends of the extensions 18 of one scoop  
80 and the other similarly connected to the other scoop on the far side of the device. Each scoop also has a link 23 connected to its rod 22 at the other end from the connection of the bell crank lever and also connect-  
85 ed to the fulcrum rod 19. The scoops are thus swung from the side frames by means of the links 15 and the bell crank levers and the links 23, this double connection with the frame requiring the scoops to move in a fixed  
90 path and to change their inclination while doing so. The bell crank levers 20 and 21 constitute the means for swinging the scoops, their shorter arms being connected to cables 24 and 25 respectively, the former passing  
95 around a pulley 26 on a rod 27 and the latter passing around a pulley 28 on a rod 29, so that the weight of the apparatus when it is suspended from these cables will serve to cause them to pull upwardly on the shorter  
100 arms of the bell crank levers so as to throw their longer arms outwardly and thus move the scoops to their extended positions as shown in Figs. 5 and 6. The outward movement of the scoops is limited by chains 30  
105 which connect the rods 29 on the extensions with the flanges 12 at the ends of the frame cover 11.

A rod 31 constitutes a drum rod with its ends engaged in the vertical central strip of 110



the side frames and has a pair of drums 32 loosely mounted on it but rigidly connected together, each carrying a double chain reel 33. Each drum is in effect a grooved pulley with a cable 34 having its end secured there-  
 5 to and passing around in the groove and then over a pulley 35, the two cables 34 constituting the hoisting cables by means of which the clam shell bucket is suspended  
 10 when being moved from place to place. Each groove of the double chain reel 33 of the drum has a chain 36 fastened therein, the two chains for each drum being preferably secured by means of a single pin 37 as  
 15 shown in Fig. 4, and these chains connect with curved chain guides 38 which extend from the rods 22 to the rods 17 at each side of the shell sections, said chains fitting in the grooved curved bearing surface of the  
 20 guides and adjustably connected to them near their connections with the rods 17 by adjusting bolts 39. By means of the adjusting bolts the chains may be tightened or loosened to accomplish their proper adjust-  
 25 ment. The curvature of the chain guides 38 causes the desired variation of leverage in the different positions of the scoops. When the clam shell bucket is in its extended position, as shown in Fig. 5, and resting upon  
 30 the material to be conveyed, the cables 34 on being tightened, while the cables 24 and 25 are released, will unwind from the drums 32 and cause said drums to turn and wind up the chains 36 to draw the scoops together,  
 35 said scoops moving almost horizontally and changing their inclination as they progress to constitute opposing shovels and gather the material therein until their cutting edges come together as shown in Figs. 1 and 3,  
 40 when further movement of the drums is prevented and the clam shell bucket is lifted with its load by further draft upon the hoisting cables 34. When the weight of the clam shell bucket is transferred from the  
 45 hoisting cables 34 to the cables 24 and 25, the bell crank levers 20 and 21 are swung thereby to open the scoops as shown in Figs. 5 and 6 and discharge the load.

The pulleys 26, 28 and 35 are so positioned that the cables 24, 25 and 34 are in alinement across the center of the frame and are similarly placed with respect to the center to avoid uneven suspension.

All of the parts on the rods of the device  
 55 are suitably spaced by sleeves or collars to hold them in their proper positions, and by reason of the removable keeper plates 13 any rod may be removed for repairs without disturbing the remainder of the machine.

60 The present invention is designed to improve upon existing constructions wherein scoop members are swung from a frame by means of links and levers, but wherein said levers are mounted on pivotal axes distant  
 65 from each other and swing from a position

below their shafts for the open condition of the scoop members toward each other and to a position above their shafts for the closed condition of the scoop members. One of the advantages gained by the present inven-  
 70 tion over such constructions above referred to is that by mounting the scoop operating levers on the same or practically the same pivotal axis they are enabled to increase the spread of the scoop members without a cor-  
 75 responding increase in the vertical clearance or head room within which the device may be operated. This will be seen by referring to Fig. 5 where the positions of the levers 20 and 21 are shown to be horizontal for the  
 80 open condition of the scoop members, the distance of the spread of the scoop members being measured by the length of such levers and the distance from the cross rods 22 to the bottoms of the scoops. Furthermore,  
 85 this degree of efficiency is attained by reason of the fact that the levers 20 and 21 of the present construction are so arranged as to contribute to the spreading effect throughout their entire movement on opening the  
 90 clam shell bucket.

In operation the opening and closing of the scoops are accomplished as above described, the movements being almost hori-  
 95 zontal and consequently being accomplished with a minimum vertical movement of the frame, thus enabling the clam shell bucket to operate in places where there is a low head room or clearance, as in the hold of a ship. This long approximately horizontal  
 100 movement of the scoop members also effects a more efficient operation thereof in scooping up the material.

Obviously any other reaving and construction of hoisting drums may be substituted for those here shown and described without departing from the spirit and scope of this invention, which are not dependent upon such details.

What I claim as my invention is: 110

1. A clam shell bucket, comprising a frame, links mounted on the frame, scoop members mounted on the links, levers on the frame mounted on the same or approximately the same pivotal axis and connected with the  
 115 scoop members, cables connected with the levers for causing them to spread the scoop members apart, a cable operated drum on the frame, and chains connected to the drum and to the scoop members whereby the latter may  
 120 be closed.

2. A clam shell bucket, comprising a frame, links mounted on the frame, scoop members mounted on the links, bell crank levers on the frame mounted on the same or approxi-  
 125 mately the same pivotal axis and connected with the scoop members, cables connected with the bell crank levers for causing them to spread the scoop sections apart, a cable operated drum on the frame connected di-  
 130



rectly above the pivotal axis of the bell crank levers and chains connected to the drum and to the scoop members whereby the latter may be closed.

5 3. A clam shell bucket, comprising a frame, links mounted on the frame, scoop members mounted on the links, levers on the frame mounted on the same or approximately the same pivotal axis and connected with the  
10 scoop members at a distance from the links and adapted to swing from a horizontal position for the open condition of the clam shell bucket to an upwardly inclined position for the closed condition of the clam  
15 shell bucket, cables connected with the levers for causing them to spread the scoop members apart, a cable operated drum on the frame directly above the pivotal axis of the levers, and chains connected to the drum and  
20 to the scoop members whereby the latter may be closed.

4. A clam shell bucket, comprising a frame, links mounted on the frame, scoop members mounted on the links, bell crank levers  
25 mounted on the frame with the same or approximately the same pivotal axis and having connection with the scoop members at a distance from the links and adapted to move from an approximately horizontal position  
30 for the open condition of the scoop members to an upwardly inclined position for the closed condition of the scoop members, cables connected with the bell crank levers for causing them to open the scoop members, a drum  
35 mounted on the frame above the pivotal axis of the bell crank levers, a cable for operating the drum, chains connecting the drum with the scoop members, and curved chain guides on the scoop members for varying the leverage in the different positions of the scoop  
40 members during the closing operation.

5. A clam shell bucket, comprising a frame, links mounted on the frame, scoop members mounted on the links, bell crank levers  
45 mounted on the frame with the same or approximately the same pivotal axis and having connection with the scoop members at a distance from the links and adapted to move from an approximately horizontal position  
50 for the open condition of the scoop members to an upwardly inclined position for the closed condition of the scoop members, cables connected with the bell crank levers for causing them to open the scoop members, a drum  
55 mounted on the frame above the pivotal axis of the bell crank levers, a cable for operating the drum, chains connecting the drum with the scoop members, and curved chain guides connected to the scoop members extending  
60 between the connections of the links and the bell crank levers therewith to vary the leverage in the different positions of the scoop members during the closing operation.

6. A clam shell bucket, comprising a frame,  
65 links mounted on the frame, scoop members

carried by the links, bell crank levers mounted on the frame with the same or approximately the same pivotal axis and having connection with the scoop members at a distance from the links, a drum mounted on  
70 the frame directly above the pivotal axis of the bell crank levers, a cable connected with the drum, cables connected with the bell crank levers, chain guides on the scoop members between the connections of the links  
75 and the bell crank levers therewith, and chains connected to the drum and adjustably connected to the chain guides.

7. A clam shell bucket, comprising a frame, links mounted on the frame, scoop members  
80 carried by the links, bell crank levers mounted on the frame with the same or approximately the same pivotal axis and having connection with the scoop members at a distance from the links, a drum mounted on  
85 the frame directly above the pivotal axis of the bell crank levers, a cable connected with the drum, cables connected with the bell crank levers, chain guides on the scoop members between the connections of the links and  
90 the bell crank levers therewith, chains connected to the drum and adjustably connected to the chain guides, and chains connecting the frame with the scoop members.

8. A clam shell bucket, comprising a frame,  
95 rods on the frame, links mounted on some of the rods of the frame, scoop members provided with cross rods, one of the cross rods being connected with the links, bell crank levers mounted on another rod of the  
100 frame and having connection with another cross rod of the scoop members, a drum mounted on another rod of the frame, a cable connected with the drum, cables connected with the bell crank levers, chain  
105 guides connecting the cross rods of the scoop members, and chains on the chain guides connected to the drum.

9. A clam shell bucket, comprising a frame,  
110 a drum rod thereon, a pair of drums mounted on the drum rod, cables connected with the drums, there being a pair of grooves in each of the drums, chains in the grooves of each drum, a pin passing through each drum and the ends of the chains, links on the  
115 frame, scoop members carried by the links, bell crank levers mounted on the frame beneath the drum rod and having connection with the scoop members at a distance from the links, cables connected with the bell  
120 crank levers, and chain guides on the scoop members having connection with the chains.

10. A clam shell bucket, comprising a frame consisting of side frames and a cover, rods  
125 connecting the side frames, a pair of drums mounted on one of the rods at approximately the center of the frame, pulleys mounted on one of the rods of the frame, cables passing through the cover and around the pulleys and connected to the drums, each of the  
130



drums being provided with a pair of grooves,  
chains with their ends in the pairs of grooves,  
pins passing through the drums and the ends  
of the chains, links mounted on rods of the  
5 frame, scoop members having cross rods to  
which the links are connected, extensions on  
the scoop members, cross rods on the exten-  
sions, bell crank levers mounted on one of  
the frame rods beneath the drums and con-  
10 nected with the cross rods of the extensions,  
cables connected with the bell crank levers,  
pulleys mounted on rods of the frame over  
which said cables pass and extend through

the cover in alinement with the other cables,  
curved chain guides connecting the cross 15  
rods of the extensions to the cross rods of the  
scoop members, adjustable connections on  
the chain guides for the other ends of the  
said chains, and chains connecting the frame  
cover with the cross rods of the extensions. 20

In testimony whereof, I affix my signa-  
ture, in presence of two witnesses.

NILS PETER ERIK ANDERSEN.

Witnesses:

R. S. C. CALDWELL,

ANNA F. SCHMIDTBAUER.

---

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."

---