

No. 730,521.

PATENTED JUNE 9, 1903.

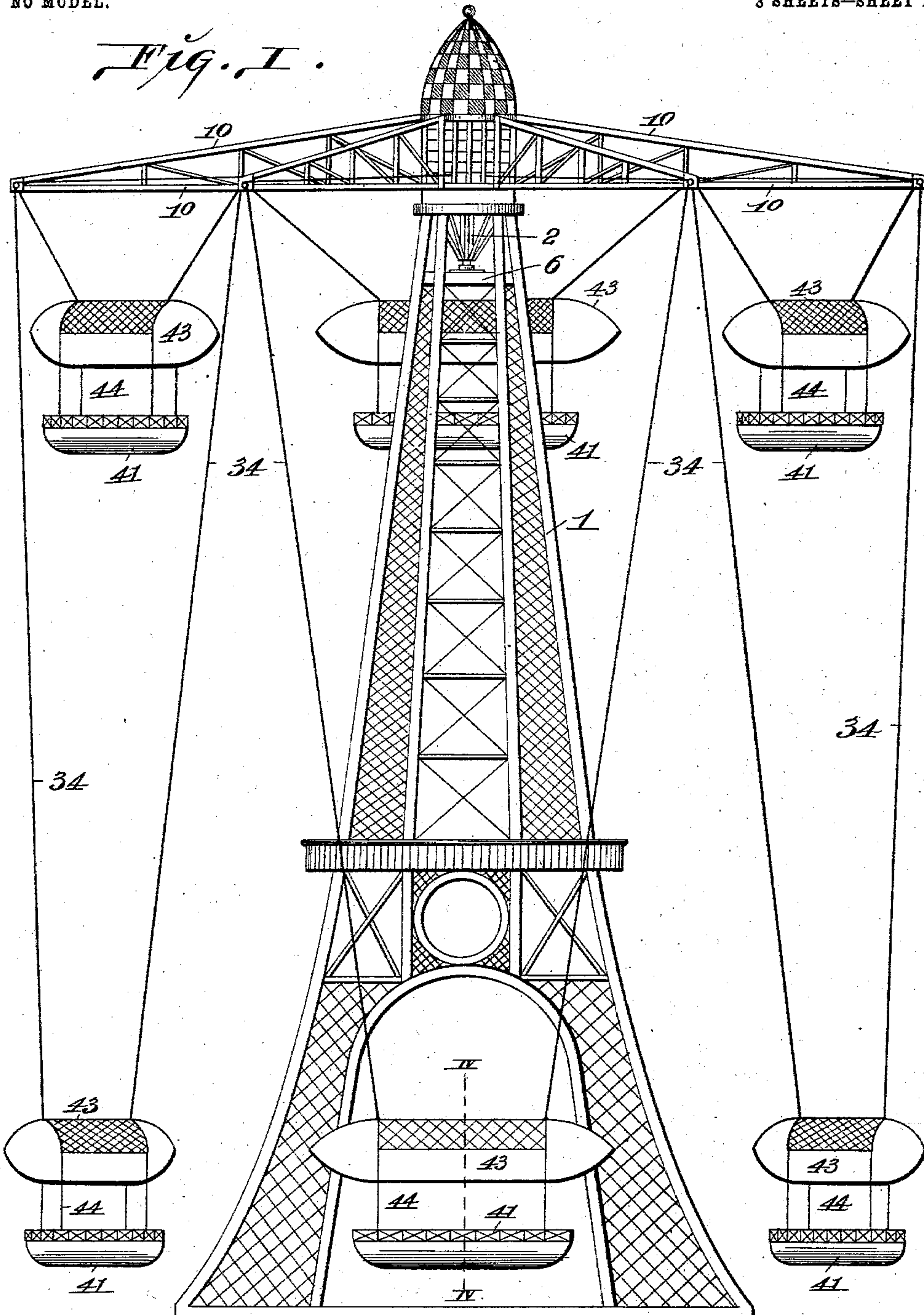
M. J. DONER.
PLEASURE TOWER.

APPLICATION FILED FEB. 24, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. I.



attest:—
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E. K. Knight

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By M. J. Doner, Pro. atty's.

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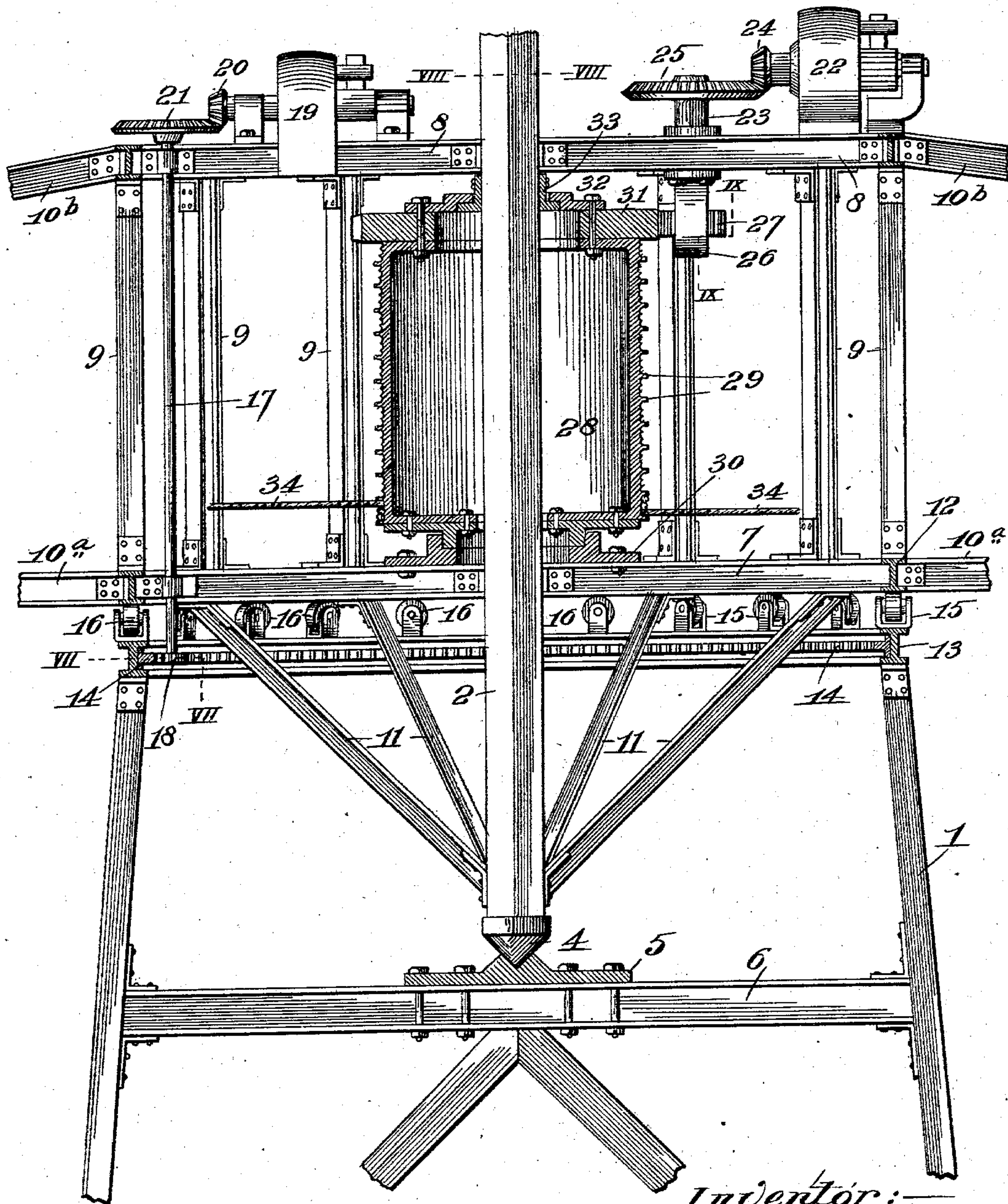
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3 SHEETS—SHEET 2.

Fig. II.



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3 SHEETS—SHEET 3.

Fig. III.

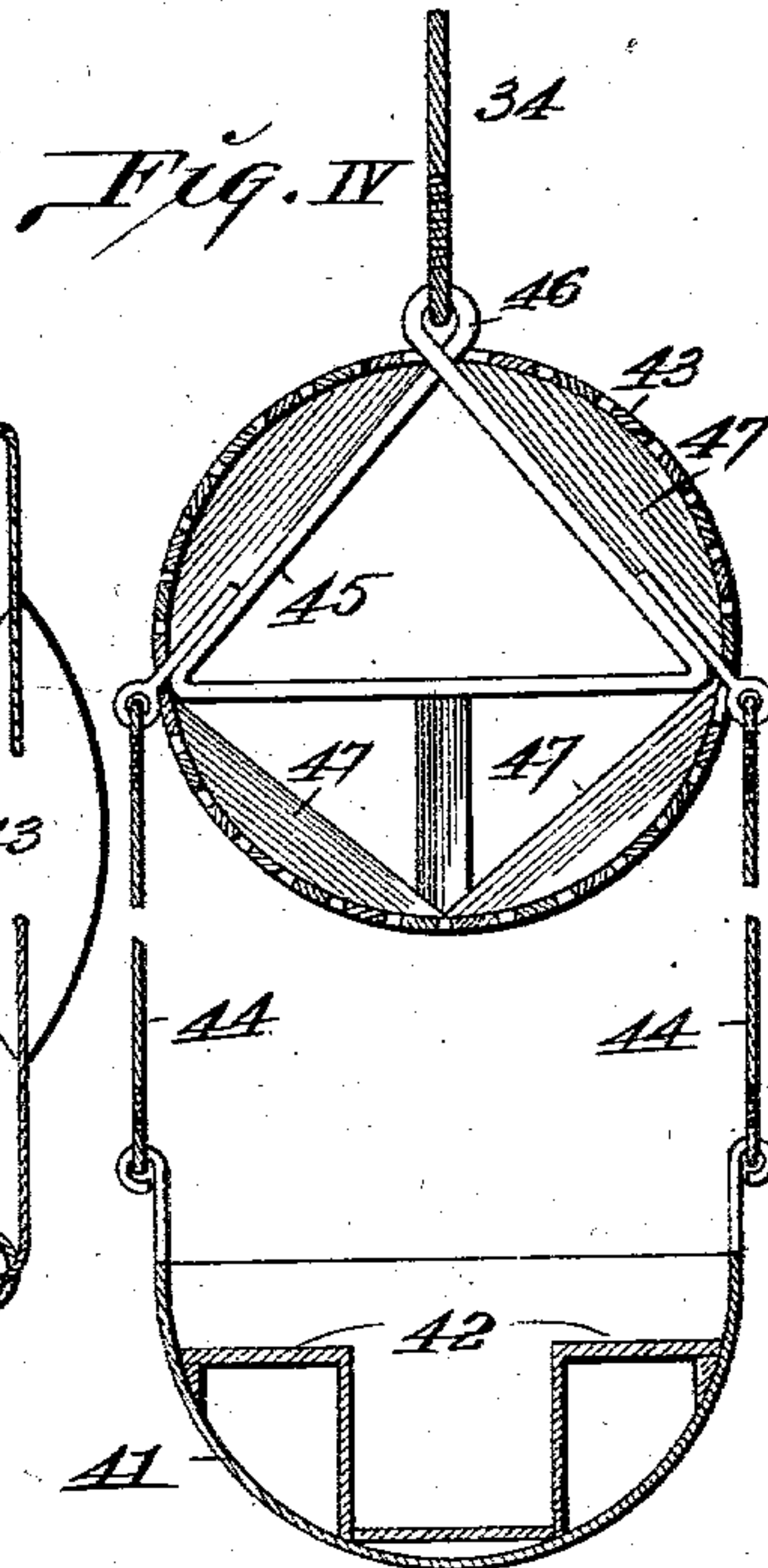
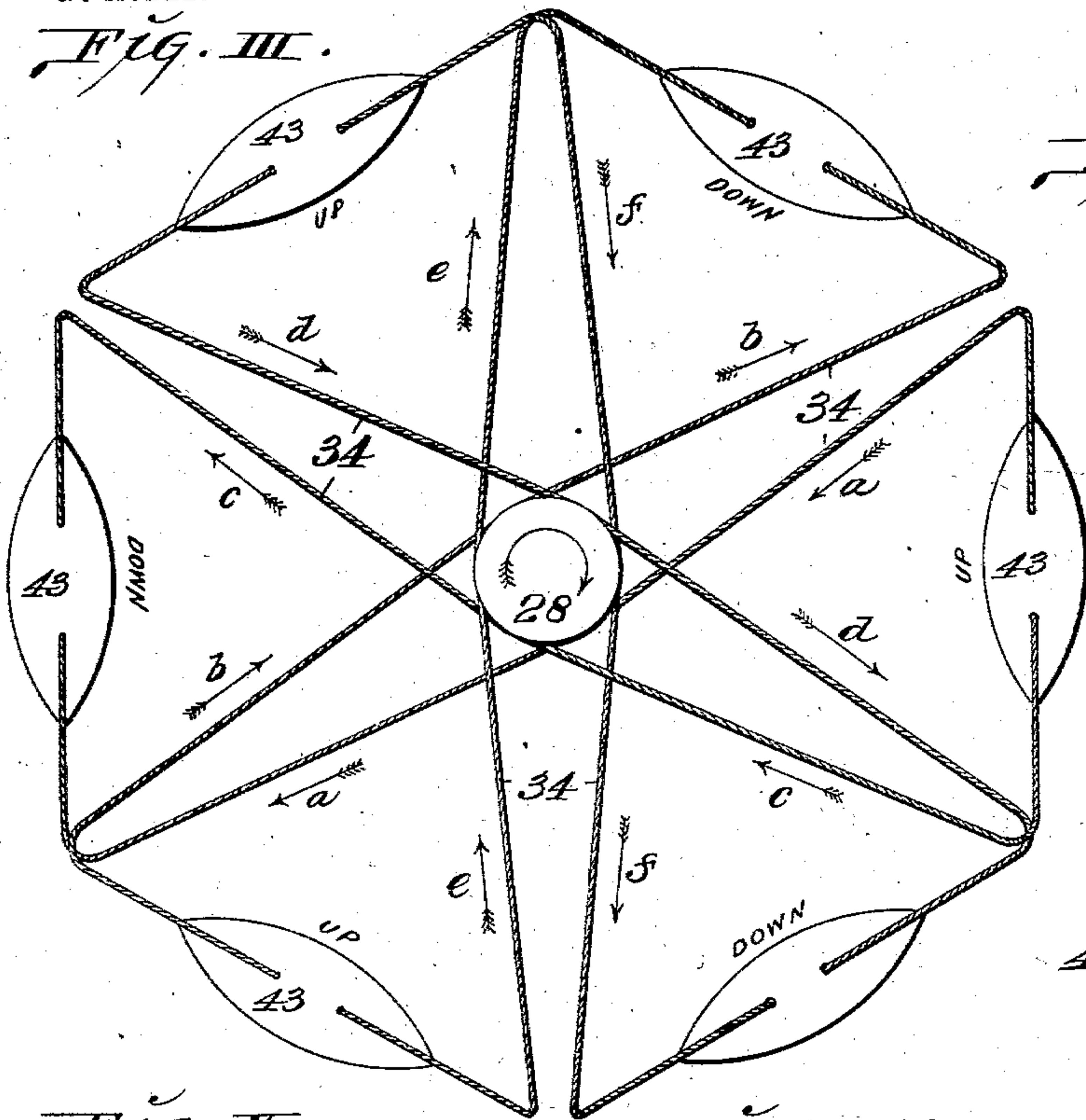


Fig. V.

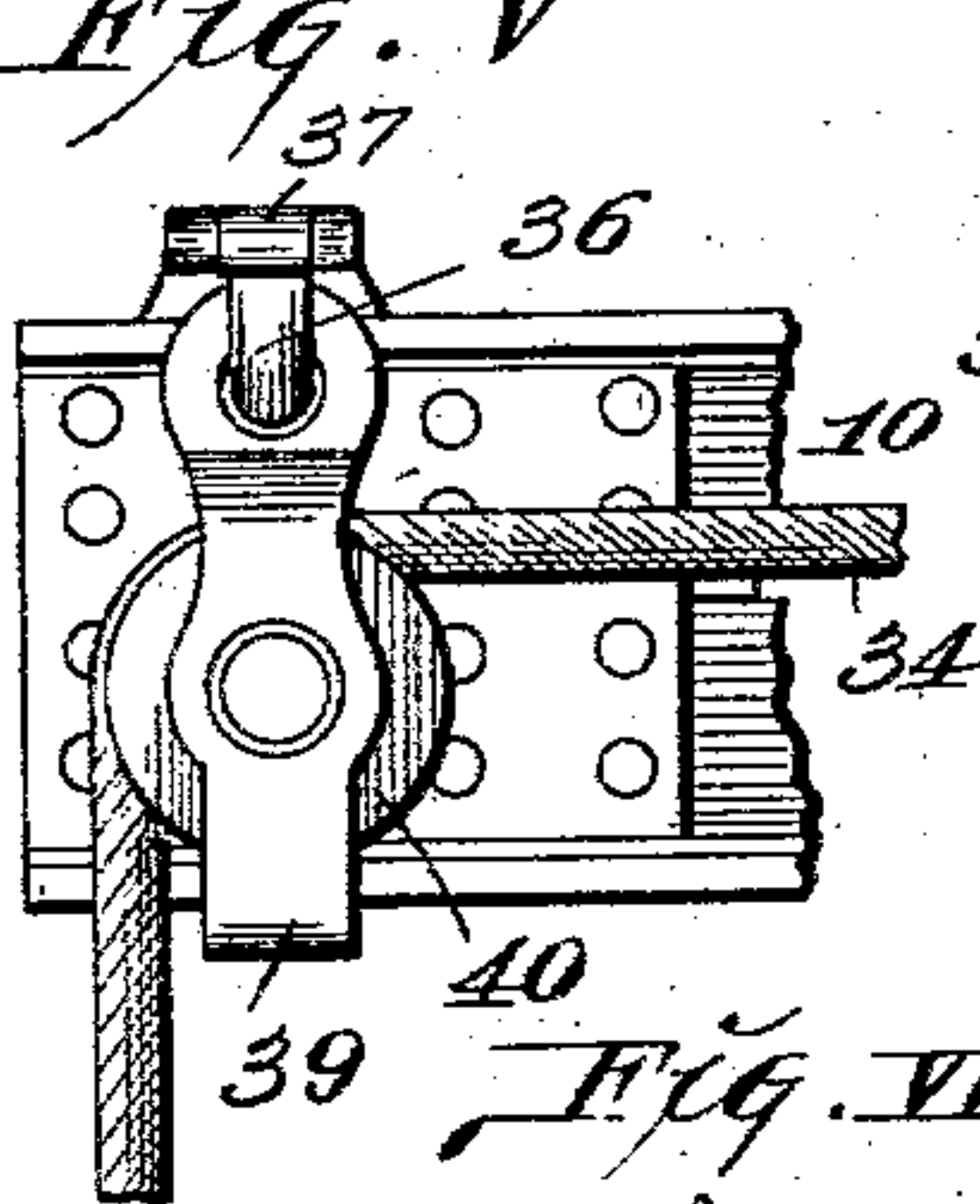


Fig. VI.

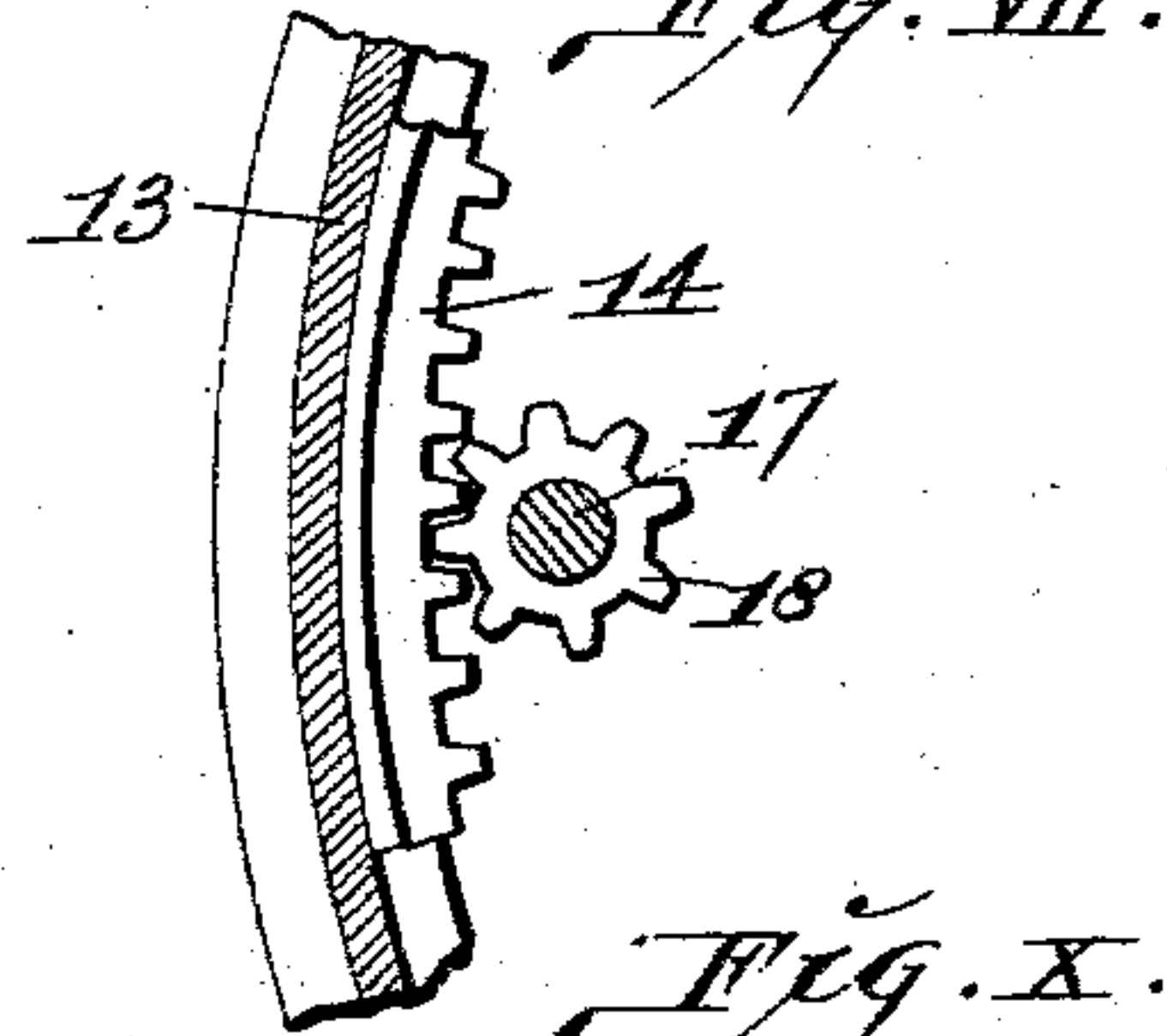
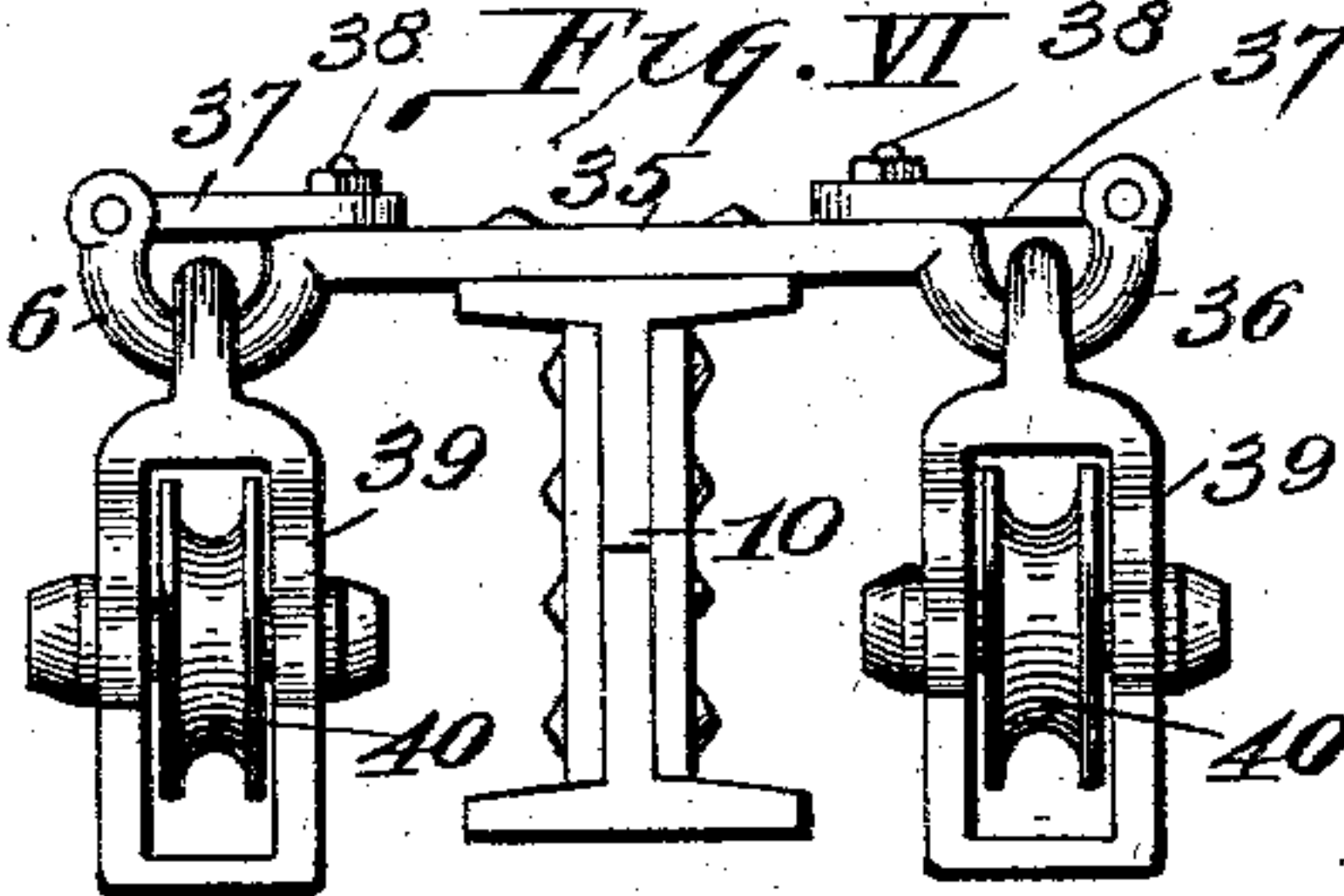


Fig. VIII.

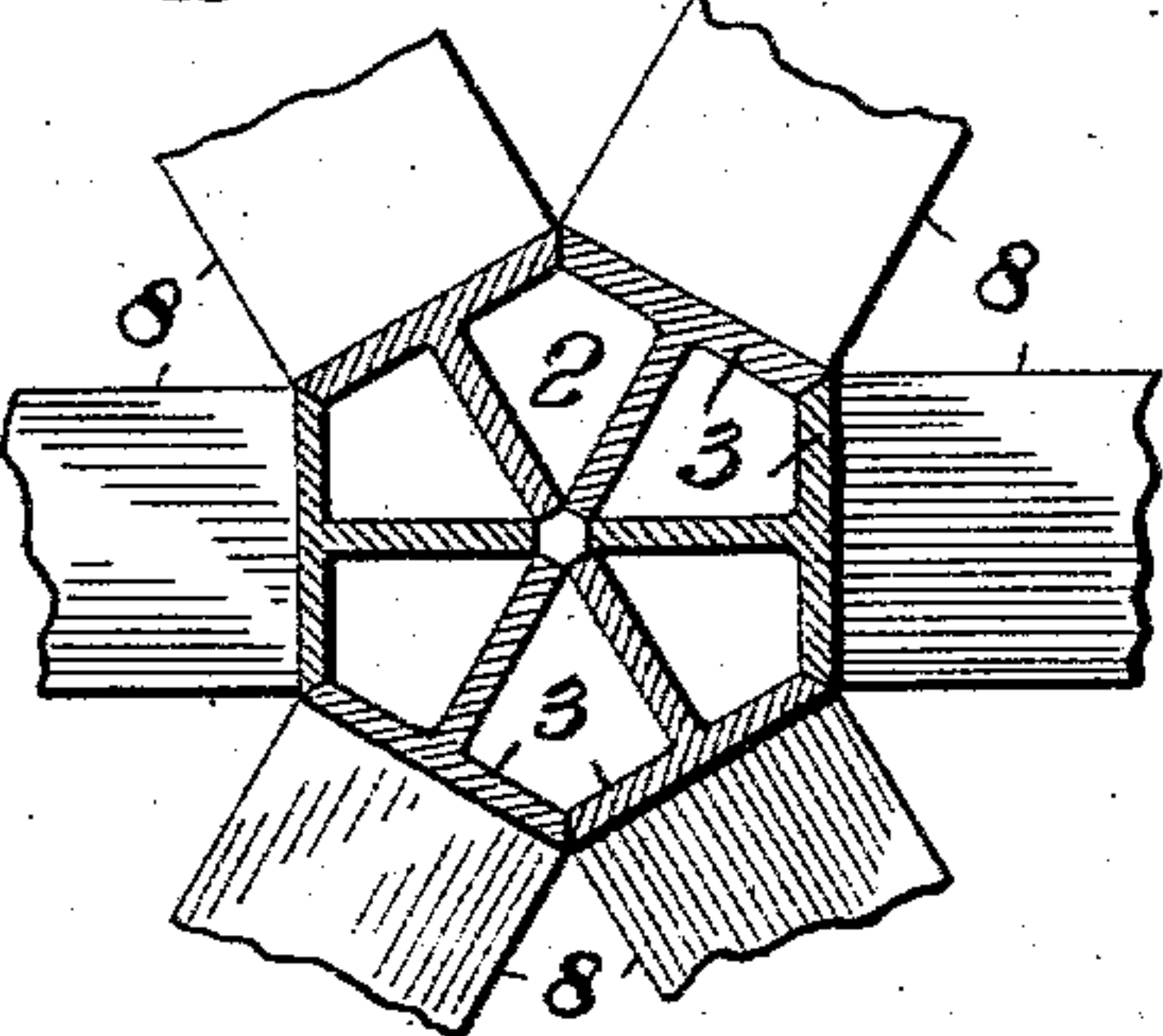


Fig. IX.

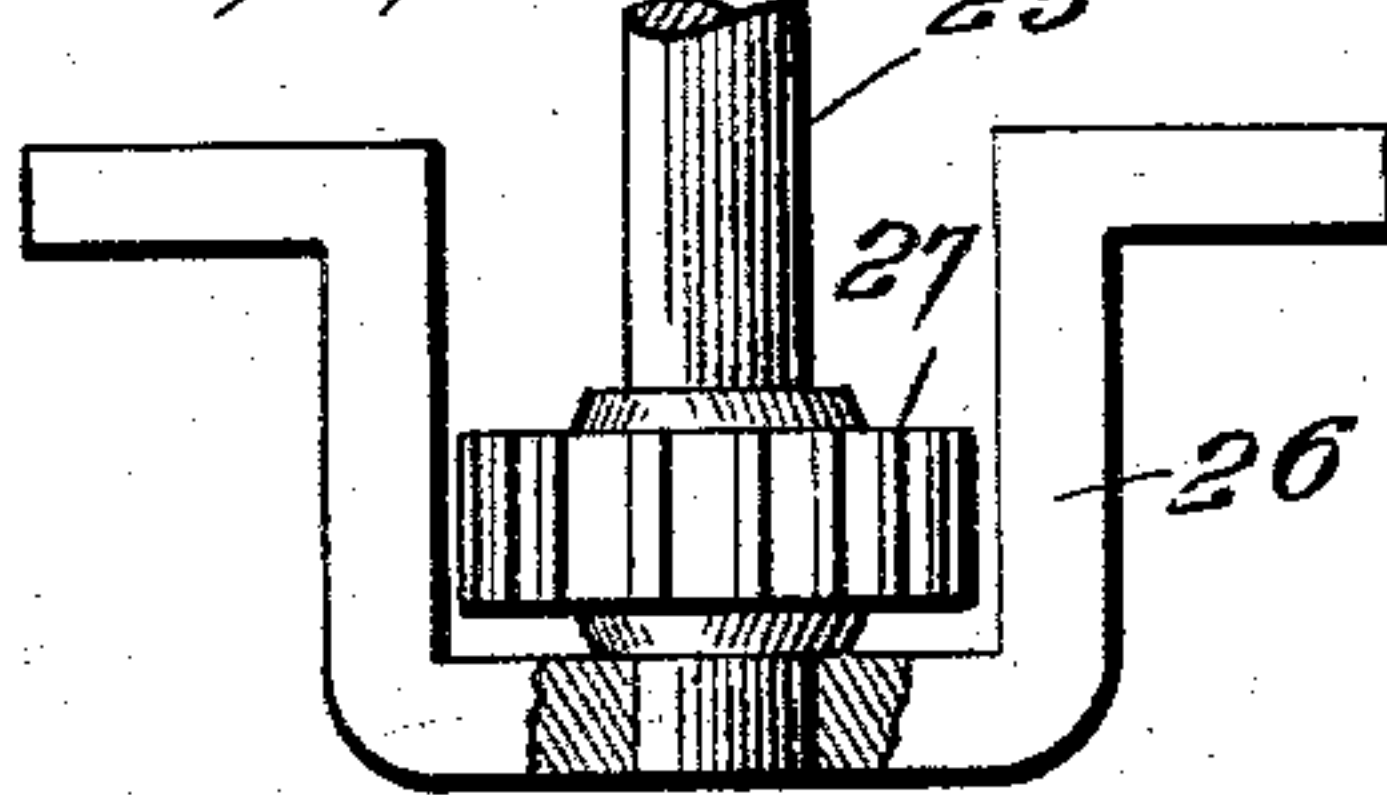
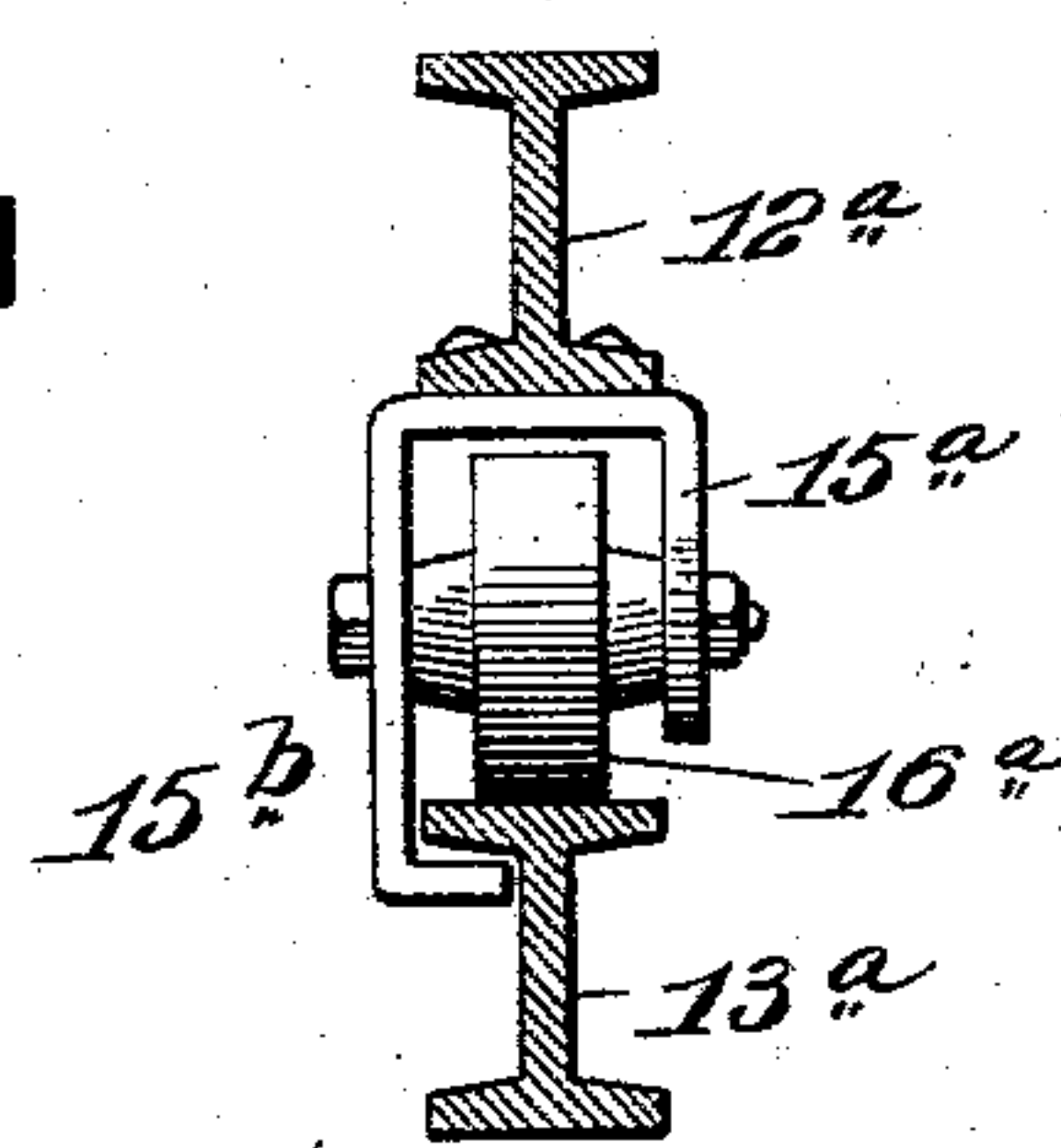


Fig. X.



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UNITED STATES PATENT OFFICE.

MARTIN J. DONER, OF ST. LOUIS, MISSOURI, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-HALF TO ALEXANDER GODRON, OF ST. LOUIS, MISSOURI.

PLEASURE-TOWER.

SPECIFICATION forming part of Letters Patent No. 730,521, dated June 9, 1903.

Application filed February 24, 1902. Serial No. 95,295. (No model.)

To all whom it may concern:

Be it known that I, MARTIN J. DONER, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Pleasure-Towers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a pleasure structure and apparatus in the form of a tower having a turret mounted thereon and cars or baskets suspended therefrom that are adapted to be raised and lowered and revolved around the tower simultaneously with the ascent and descent of the various cars, the whole being designed for use in affording pleasure to occupants of the cars or baskets.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a view in elevation of a structure built in accordance with my invention. Fig. II is an enlarged vertical sectional view of the turret of the tower structure. Fig. III is a top or plan view showing diagrammatically the cables of the structure, the drum on which the cables are wound, and the cars or baskets suspended from the cables. Fig. IV is a vertical cross-sectional view of one of the cars or baskets and the carrier from which the car or basket is suspended. Fig. V is an enlarged detail side view of one of the cable-receiving pulleys. Fig. VI is an end view of one of the turret-arms and the cable-receiving pulleys carried thereby. Fig. VII is an enlarged detail sectional view taken on line VII VII, Fig. II. Fig. VIII is an enlarged cross-sectional view taken on line VIII VIII, Fig. II. Fig. IX is an enlarged detail view, partly in elevation and partly in section, taken on line IX IX, Fig. II, of the drum-driving shaft and the stirrup in which the shaft is mounted. Fig. X is a view illustrating a modification of the turret-supporting rollers and their boxing.

1 designates a tower, which is preferably of metallic construction and may be of any desirable height. At the top of the tower is a turret adapted to revolve thereon.

2 is the mast or axis of the turret, which is preferably composed of a series of T-bars 3,

having their webs arranged to abut against each other centrally and their flanges resting edge to edge, as shown in Fig. VIII, thereby producing a mast of polygonal shape having the essential characteristics of strength, stiffness, and rigidity.

At the lower end of the mast 2 is a conical bearing 4, that is seated in a bearing-plate 5, mounted upon supporting cross-beams 6, fixed to the vertical members of the tower 1.

7 designates the lower sills of the turret, and 8 the upper sills, both preferably of I-beam form to furnish strength and rigidity.

9 designates the uprights of the turret.

Extending in divergent lines from the body of the turret are arms 10, (see Fig. I,) composed of the lower members 10^a, extending outwardly from the location of the lower sills 7 in horizontal lines, and the upper members 10^b, which extend from the location of the upper sills 8 in a downwardly-inclined direction to the outer ends of the lower members.

11 designates trusses that connect the lower turret-sills 7 and the mast 2 of the turret.

12 designates a circular track-ring interposed between the outer ends of the lower sills 7 of the turret and the lower members 10^a of the divergent arms carried by the turret.

13 is a base-ring mounted on top of the tower 1, that serves as a support for the turret and is of channel form, preferably I shape. Positioned within the inner flanges of the base-ring 13 is a circular rack 14. Mounted upon the base-ring 13 are a series of U-shaped bearing-boxes 15, in which are journaled rollers 16, that receive the turret track-ring 12, mounted and adapted to revolve thereon.

17 designates a vertical shaft mounted in bearings attached to the lower and upper turret-sills 7 and 8 and carrying at its lower end a gear-wheel 18, that meshes with the circular rack 14, fixed within the base-ring 13. The shaft 17 is driven by a suitable motor 19, mounted on the turret and having driving connection with said shaft by means of the gears 20 and 21 or any other suitable gearing. Upon the operation of the motor 19 power is applied to the shaft 17 to rotate it, and upon the rotation of the shaft it acts, through the gear-wheel 18, that is in mesh with the fixed circular rack, to cause rotation of the turret on the supporting-rollers 16 and the centrally-

positioned mast 2, that has the described bearing-support. In the rotation of the turret the divergent arms 10 are carried therewith.

22 designates a motor mounted on the turret of the structure, that is connected to the vertical shaft 23 by gears 24 and 25 or other suitable driving connection. The lower end of the shaft 23 is supported in a stirrup 26, suspended from the upper turret-sills 8, and on said shaft within the stirrup is a gear-wheel 27.

28 designates a drum, the surface of which is subdivided into a plurality of divisions by annular ribs 29, the divisions being each grooved, as seen in Fig. II, the grooves extending spirally around the drum in each division. The drum 28 is supported upon a base-ring 30, seated on the lower turret-sills 7, and it is surmounted by a toothed driving-wheel 31, fixed thereto, that receives the engagement of the gear-wheel 27 on the vertical shaft 23, by which the drum is rotated independently of the turret of the structure on the operation of the motor 22. On the drum-driving wheel 31 is a bearing-ring 32, that is fitted to a flanged collar 33, fixed to the mast 2 of the turret.

34 designates a series of cables, each of which is applied to the drum 28 in a division of said drum between pairs of the annular ribs 29, the cables encircling the drum a number of times, preferably three, as seen in Fig. II. Each cable extends outwardly away from the drum 28, as seen in Fig. II, and passes to the outer ends of oppositely-disposed pairs of the turret-carried arms 10, as seen in Fig. I and as illustrated diagrammatically in Fig. III. The course and utility of said cables will hereinafter be more particularly described.

Mounted upon the outer ends of the turret-carried arms 10 are hangers 35, extending transversely of the arms and provided with drop-arms 36, to which keepers 37 are pivotally connected, the keepers being detachably secured to the hanger-arms by bolts 38 or other suitable means of fastening, so that they may be retained in lowered position upon the hanger-arms or raised therefrom on their pivots.

39 designates pulley-blocks swingingly suspended in the drop hanger-arms 36 beneath the keepers 37, so as to be capable of swinging motion thereon, and having mounted therein the pulleys 40. The cables 34 pass over the pulleys 40 individually and extend downwardly therefrom to receive the connection of and support suspended cars or baskets that will now be described.

41 designates the cars or baskets provided with seats 42.

43 designates carriers, from which the cars or baskets 41 are swingingly suspended by ropes 44. The carriers 43, which are attached to the cables 34, are of elongated form and each is provided with a pair of interiorly-

positioned hangers 45, seated between filler-blocks 47. Each hanger is preferably of triangular shape (see Fig. IV) and is provided with an eye 46, adapted to receive the attachment of one of the cables 34.

In Fig. X, I have shown a modification of the rollers on which the turret of the structure is mounted, the modification illustrating means whereby the rollers, and consequently the turret, may be more effectually and securely held from displacement upon the tower. In this modification the U-shaped bearing-boxes 15^a of the rollers 16^a are inverted and attached to the turret-ring 12^a, and the rollers travel upon the lower ring 13^a. At the outer side of each U-shaped bearing is a drop-hook 15^b, adapted to engage beneath the outer upper flange of the lower ring 13^a to serve as a guard against the escape of the rollers 16^a from the ring 13^a, which in this instance serves as the track-rail.

Each of the cables 34 encircles the drum 28 in individual divisions between the annular ribs 29 of the drum, being passed therearound in the manner stated and passing therefrom in opposite directions to divergent arms 10 and over the pulleys 40 downwardly to the carrier 43 of the cars or baskets 42, to which carriers they are attached in the manner stated. The cables and their courses from their attachment to the carriers of the cars or baskets to and around the drum 28 are shown diagrammatically in Fig. III. For the purpose of illustrating the course I have applied lettered arrows to the cables. For illustration, the rope indicated by the arrow *a* passes from one of the car-carriers, designated as "up," over an arm-carried pulley to and around the drum 28 and therefrom to an arm-carried pulley at the opposite side of the turret of the structure and therefrom to a car-carrier designated as "down." Another cable attached to the mentioned car-carrier, designated "up," is indicated by an arrow *d*, that extends over the arm next adjacent to that traversed by the cable indicated by the arrow *a* and therefrom around the drum 28, thence to a pulley on an arm next adjacent to that occupied by the pulley over which the cable designated by the arrow *a* passes after leaving the drum 28 and from said pulley to the car-carrier designated as "down." It will therefore be seen that the two cables attached to two cars oppositely suspended from arms of the turret of the structure are attached to the car-carriers in such manner that upon the rotation of the drum 28 the cables will cause the car at one side of the turret to be raised and carried upwardly while the other is descending, inasmuch as each cable while being wound upon the drum 28 and passing therefrom in raising the car at one side of the turret of the structure is being paid off at the opposite side and permits the car at that side to descend. During the rotation of the turret on the rollers 16, that support it, the drum 28 is rotated inde-

pendently of the rotation of the turret and the cables 34 are wound upon the drum 28, causing the cars 41 to be raised and lowered at the same time that they are swung in a circular path around the tower of the structure in such manner that a spiral movement of each car is produced, thereby producing a pleasurable and sensational passage of the cars in the air similar to that provided in the actuation of an air-ship, which the cars are designed to simulate.

I claim as my invention—

1. A structure of the character named, comprising a tower, a turret mounted on said tower, a series of cars or baskets suspended from said turret, and means for rotating said turret and simultaneously raising and lowering said cars or baskets toward and away from said turret, substantially as set forth.

2. A structure of the character named, comprising a tower, a turret mounted on said tower, cables travelingly suspended from said turret, cars carried by said cables, and means for rotating said turret and operating said cables to raise and lower said cars toward and away from said turret, substantially as described.

3. A structure of the character named, comprising a tower, a horizontally-rotatable turret mounted on said tower, cables travelingly suspended from said turret, cars carried by said cables, and means for rotating said turret and operating said cables to raise and lower said cars toward and away from said turret, substantially as described.

4. A structure of the character named comprising a tower, a turret mounted on said tower, cables travelingly suspended from said turret, cars each connected to two of said cables and means for rotating said turret and operating said cables to raise and lower said cars, substantially as described.

5. A structure of the character named, comprising a tower, a turret mounted on said tower, means for imparting rotation to said turret, a series of cables suspended from said turret, cars connected to said cables, and means independent of said turret-rotating means adapted to operate said cables for the purpose of raising and lowering said cars simultaneously with the rotation of said turret, substantially as described.

6. The combination, in a structure of the character named, of a tower, a turret mounted on said tower, divergent arms carried by said turret, means for rotating said turret, a series of cars or baskets, a series of cables by which said cars or baskets are suspended and which are travelingly mounted on said arms, and means for imparting movement to said cables to raise and lower said cars simultaneously with the rotation of said turret, substantially as described.

7. In a structure of the character named, the combination of a tower, a turret mounted on said tower, means for rotating said turret, a drum revolubly mounted upon said turret,

means for rotating said drum, a series of cables arranged upon said drum and adapted to pass downwardly from said turret, and cars suspended from said cables, substantially as described.

8. In a structure of the character named, the combination of a tower, a turret mounted on said tower, means for rotating said turret, a drum subdivided into divisions and revolubly mounted upon said turret, means for rotating said drum, a series of cables individually arranged in the divisions of said drum and adapted to pass downwardly from said turret, and cars suspended from said cables, substantially as described.

9. In a structure of the character named, the combination of a tower, a turret surmounting said tower, rollers on which said turret is mounted, a circular rack fixed to said tower, a driven shaft carried by said turret, and having engagement with said rack to impart rotation to said turret, a drum revolubly mounted upon said turret, means for rotating said drum, a series of cables arranged upon said drum, and extending downwardly from said turret, and cars or baskets suspended from said cables, substantially as described.

10. In a structure of the character named, the combination of a tower, a turret surmounting said tower, rollers on which said turret is mounted, a circular rack fixed to said tower, a driven shaft carried by said turret and having engagement with said rack to impart rotation to said turret, a central mast mounted in said turret, supporting-beams fixed to said tower, a bearing on said supporting-beams in which said mast is fitted, a drum revolubly mounted upon said turret, means for rotating said drum, a series of cables arranged upon said drum, and extending downwardly from said turret, and cars or baskets suspended from said cables, substantially as described.

11. A merry-go-round or carousel, comprising a suitable supporting-tower; a spider mounted upon and supported by the tower, the arms of said spider extending horizontally beyond the tower; passenger-carriages to be carried by said arms; a drum mounted at the center of the spider; ropes attached to said drum and extending outwardly to the ends of said spider-arms and connected to the passenger-carriages, said ropes being wound upon said drum, as required to raise a part of the carriages, while the other carriages are being lowered; and means for operating the drum to wind up and unwind the ropes; and means for rotating the spider, as required to raise and lower the passenger-carriages, and as required to give said passenger-carriages an upward rotary motion and a downward rotary motion, substantially as specified.

MARTIN J. DONER.

In presence of—

E. S. KNIGHT,

N. V. ALEXANDER.