

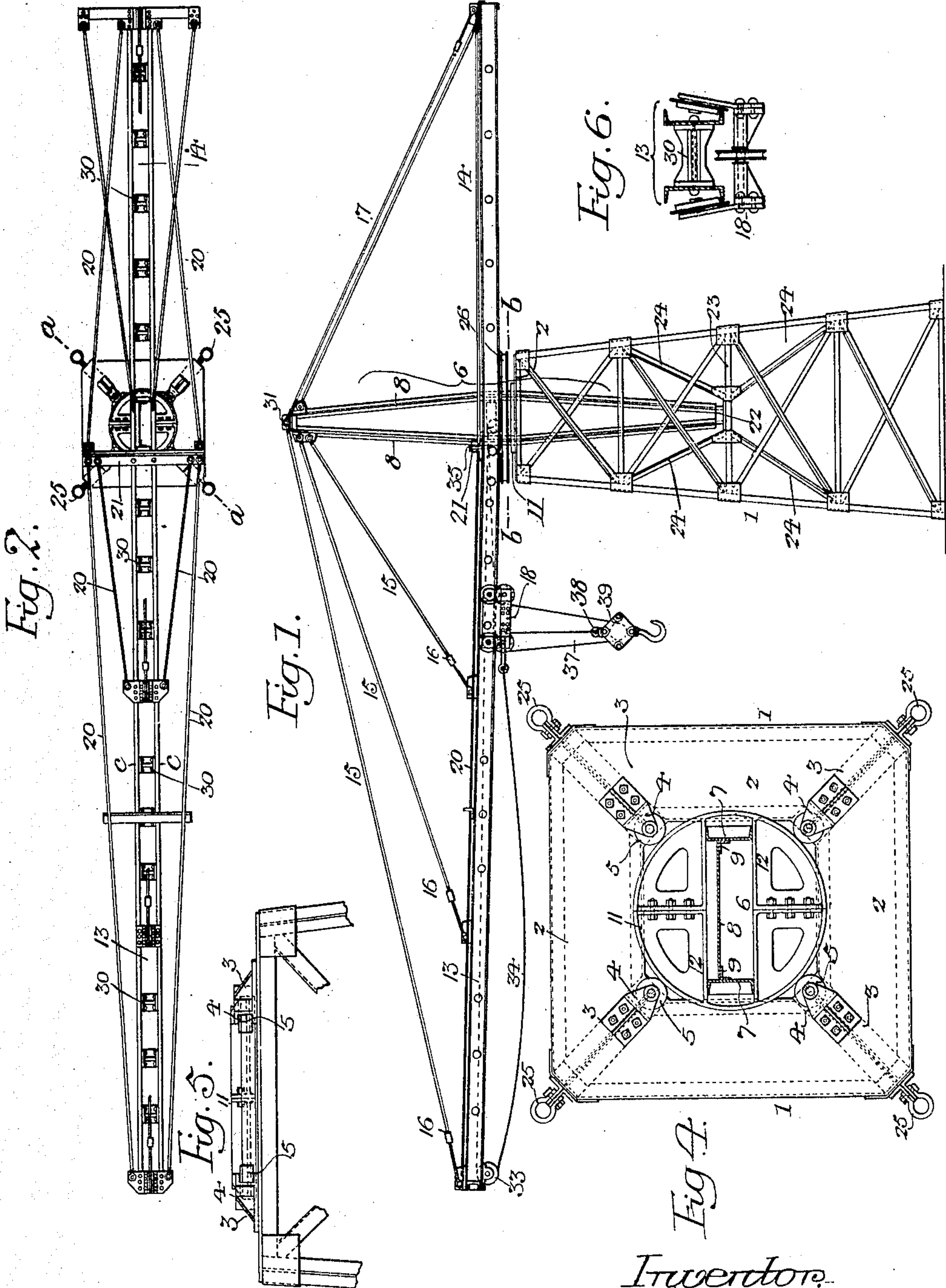
No. 870,922.

PATENTED NOV. 12, 1907.

J. S. ALLEN, JR.
DERRICK.

APPLICATION FILED JULY 13, 1907.

2 SHEETS—SHEET 1.



Witnesses:
William H. Rivoir.
Litus H. Jones.

Inventor:
Jacob S. Allen Jr.
by His Attorneys,
Stowen & Stowen

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2 SHEETS—SHEET 2

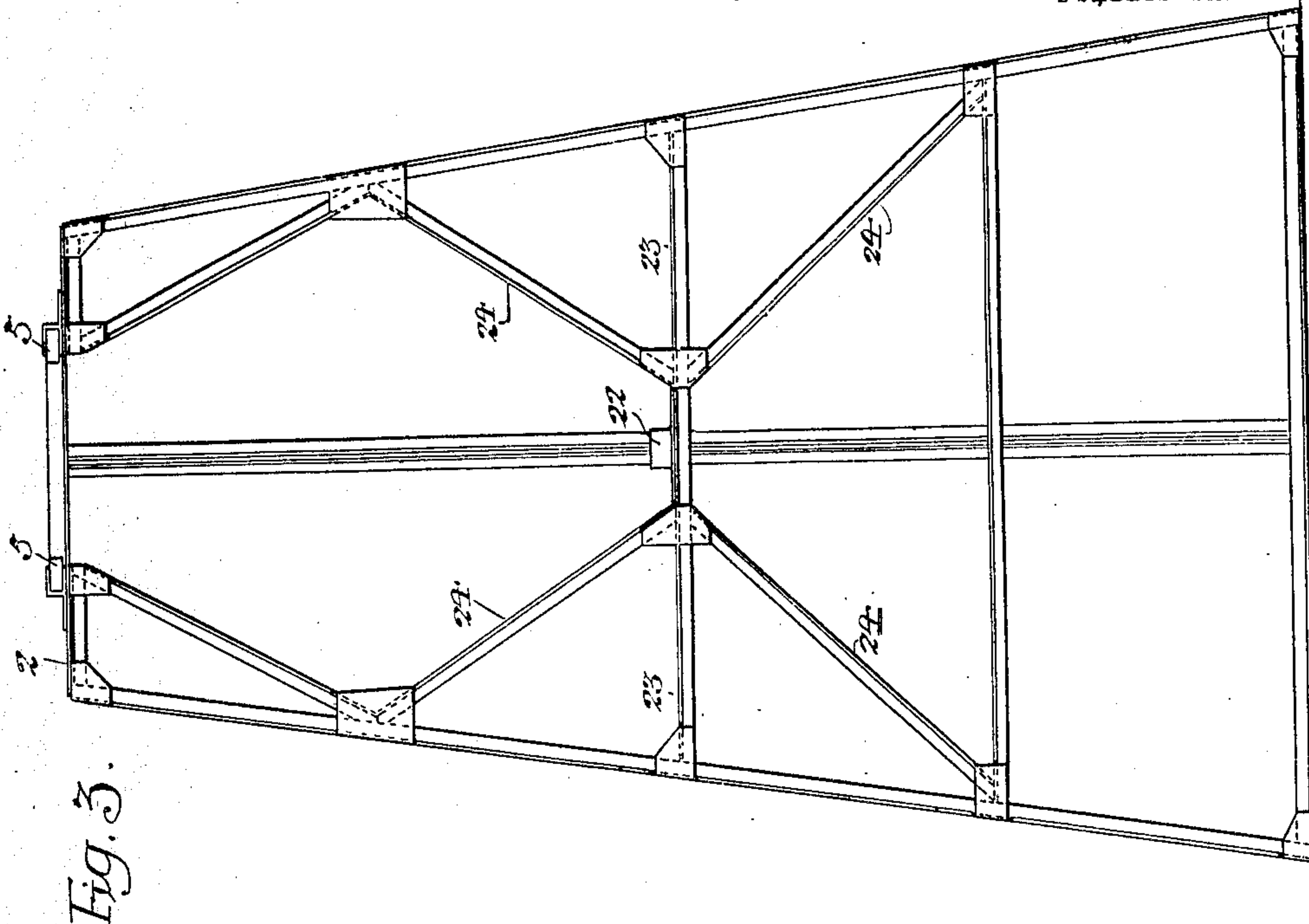


Fig. 3.

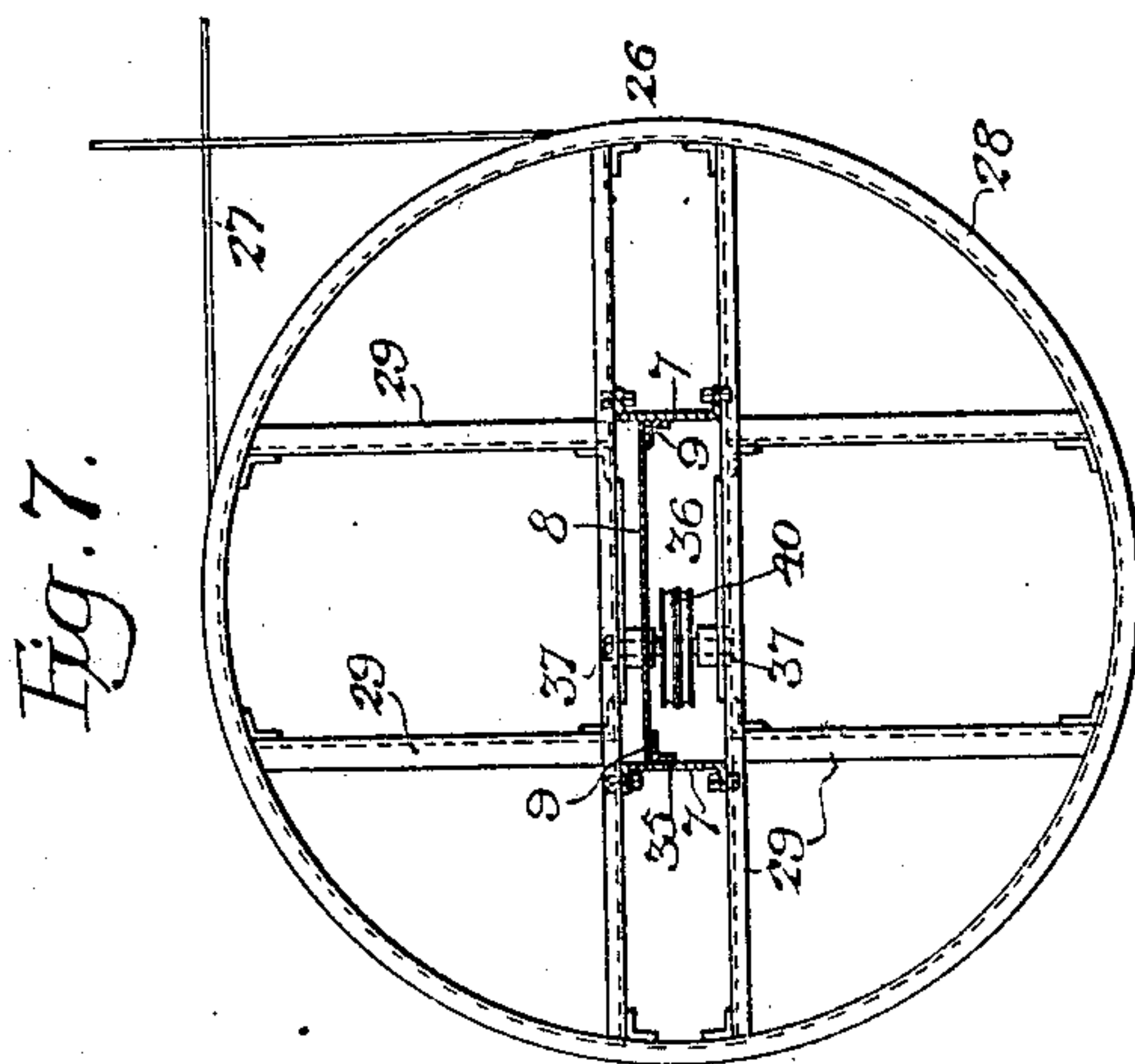


Fig. 2.



Fig. 8.

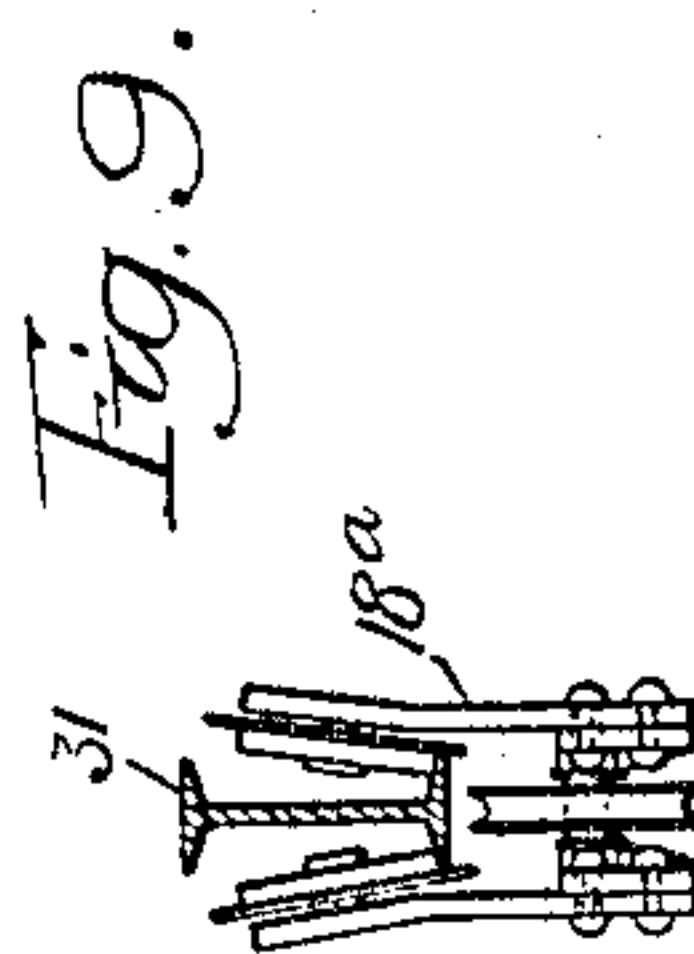


Fig. 9.

WITNESSES:-
William H. Rivoir.
Titus H. Jones.

Inventor:
Jacob S. Allen, Jr.
by his Attorneys,
Horson & Horson

UNITED STATES PATENT OFFICE.

JACOB S. ALLEN, JR., OF PHILADELPHIA, PENNSYLVANIA.

DERRICK.

No. 870,922.

Specification of Letters Patent.

Patented Nov. 12, 1907.

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To all whom it may concern:

Be it known that I, JACOB S. ALLEN, Jr., a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Derricks, of which the following is a specification.

My invention relates to derricks, and consists of certain improvements in structures of the character shown and described in the patent of James L. Parsons, No. 785,518, dated March 21, 1905; the object of my present invention being to simplify the construction of the derrick shown therein; to provide means for readily operating the same, and to increase its strength and stability.

My invention is fully shown in the accompanying drawings, in which:

Figure 1, is a side elevation of the improved derrick made in accordance with my invention; Fig. 2, is a plan view of the same; showing the mast in section; Fig. 3, is a sectional elevation of the tower portion of the structure, taken on the line *a-a*, Fig. 2; Fig. 4, is an enlarged plan view of the tower, showing the mast of the structure in section on the line *b-b*, Fig. 1; Fig. 5, is an enlarged elevation of the top of the tower; Fig. 6, is a sectional view of the main boom, showing the manner of securing and bracing the channel sections forming the same, taken on the line *c-c*, Fig. 2; Fig. 7, is a plan view of the bull wheel on an enlarged scale; Fig. 8, is a side elevation of the bull wheel, and Fig. 9, is a sectional view showing a modified form of boom and carrier.

The tower is indicated at 1, and in the main is of ordinary construction; being made of structural metal suitably braced and supported, and having at the top a flat plate 2 upon which is mounted a series of arms 3, having yokes 4 in which are journaled rollers 5.

The mast is indicated at 6, and is made of channel sections 7, between which is placed a plate 8 secured to said channels by the angle sections 9. The mast carries a thrust bearing wheel 11 made up of sections 12 secured together, which wheel is disposed on top of the tower so that the rollers 5 bear against the flange of same; thus affording a means of readily turning said mast, without friction, with respect to said tower.

The main boom is indicated at 13 and is continued rearwardly to form a counterbalance structure 14. The main boom is braced from the mast head by the tie rods 15, having turn-buckles 16 to take up any slack, and the rear structure is braced by tie rods 17, having similar turnbuckles. As is clearly illustrated in Fig. 1, the main boom has its outer end elevated; the amount of actual elevation being 3 percent and this is desirable in order that the carrier 18 traveling on said boom, and clearly illustrated in Fig. 6, can return toward the tower by gravity. The front and rear sections of the boom are further braced by rods 20 extending from the

ends of the same to cross pieces 21 mounted on the boom adjacent the mast.

The mast 6 is stepped into a suitable shoe 22 disposed, in the present instance, on angle cross-pieces 23 substantially in the center of the tower, and to further brace the tower structure and insure the stability of the same when the boom is disposed in any position with respect to said tower, I provide diagonal struts 24 extending from said shoe, above and below the same, to the corner angles of the tower; such arrangement of the structure being clearly shown in Fig. 3. The upper corners of the tower are provided with suitable clevises 25 whereby guy ropes may be attached. The bull wheel 26 is carried by the boom and mast directly over the tower, and a line 27 leading to a suitable source of power whereby said boom may be moved, passes around the same. Said bull wheel comprises a flanged rim 28 connected together by angle members 29 which cross the same and lie adjacent to the channel members 7 forming the mast.

The boom as shown in Figs. 1 and 2, is made of two sections of channel iron, suitably stayed at various points by means of blocks 30 substantially of the character shown in Fig. 6, and such blocks are placed throughout the length of the same. The top of the mast is provided with suitable angle pieces 31 to which the brace rods are attached. I may, however, employ an I-beam 32 for said boom, of which I have shown a sectional view in Fig. 9. If such structure is employed it will be suitably strengthened by tie rods and braces. For use with such a boom the carrier will be slightly different, as shown at 18^a in Fig. 9. At the end of the main boom is a sheave 33 over which the carrier rope 34 passes to the carrier 18, and thence back over another sheave 35 disposed on one side of the mast, as clearly shown in Figs. 1 and 7; being carried by a spindle or shaft 36 journaled in bearings 37 on the cross braces of the bull wheel. The hoisting rope 37 is connected to the carrier at 38 and from the block 39 it passes back over a sheave 40 mounted on the shaft or spindle 36 alongside the sheave 35. By having roller bearings for the thrust bearing ring or wheel 11 of the mast, I am enabled to turn the mast and boom very readily, and by having the diagonally disposed cross struts 24 within the tower for said mast, the stability of the structure is assured.

I claim:

1. The combination, in a derrick, of a tower, a mast stepped in said tower, a boom carried by said mast and having its outer end raised above the horizontal, a thrust bearing ring carried by said mast, and anti-friction rollers therefor carried by the tower.

2. The combination, in a derrick, of a tower, a mast stepped in the same, a shoe for said mast, and cross struts at the angles of said tower extending to said shoe.

3. The combination, in a derrick, of a tower, a mast

made of channel sections connected by a flat web stepped in the same, a shoe for said mast, cross struts at the angles of said tower extending to said shoe, a bearing ring for said mast, and anti-friction rollers therefor.

- 5 4. The combination, in a derrick, of a tower, a plate carried by the top of the same, a mast stepped in said tower, a bearing wheel carried by said mast, and rollers for engagement with said bearing wheel carried by said plate.
- 10 5. The combination, in a derrick, of a tower, a plate carried by the top of the same, a mast stepped in said tower, a thrust bearing wheel carried by said mast, journal carrying arms carried by said plate, and rollers for engagement with said wheel carried by said arms.
- 15 6. The combination, in a derrick, of a tower, a mast stepped therein, said mast comprising channel sections and a flat sheet secured to said channel sections by angle pieces, a boom carried by said mast, and tension rods secured to the head of said mast and said boom.
- 20 7. The combination, in a derrick, of a tower, a mast stepped therein, said mast comprising channel sections and a flat sheet secured to said channel sections by angle pieces, front and rear booms carried by said mast, and tension rods secured to the head of said mast and said boom, the front boom having its outer end disposed above the horizontal.
- 25 8. The combination, in a derrick, of a tower, a mast stepped in said tower, a thrust bearing wheel carried by said mast, and anti-friction rollers for said wheel carried by the tower.
- 30 9. The combination, in a derrick, of a tower, a mast stepped in the same, a shoe for said mast, and cross struts

above and below said shoe and extending from the same to the angles of said tower.

10. The combination, in a derrick, of a tower, a mast of structural metal sections stepped in said tower, a sectional bull wheel carried by said mast, a sectional thrust bearing wheel carried by the mast below said bull wheel, and rollers carried by the tower for engagement with said wheel.

11. The combination with the tower of a derrick, of a mast stepped therein and supporting a boom, said mast comprising a plurality of channel sections and a flat plate disposed between and secured to the same and lying at right angles to the web of the channel sections.

12. The combination with the tower of a derrick, of a mast stepped therein and supporting a boom, said mast comprising a plurality of channel sections and a flat plate tapering from the center towards its ends disposed between and secured to said channel sections and lying at right angles to the web of the same.

13. The combination with the tower of a derrick, of a mast stepped in the same and supporting a boom, said mast comprising a plurality of channel sections and a flat plate disposed between and secured to said sections, said flat plate being in line with the boom and serving to resist compressive stress due to the load carried by the boom.

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

JACOB S. ALLEN, Jr.

Witnesses:

MURRAY C. BOYER,
JOS. H. KLEIN.