

No. 763,222.

PATENTED JUNE 21, 1904.

C. VAN DRIESSCHE.

CRANE.

APPLICATION FILED JAN. 21, 1904.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.

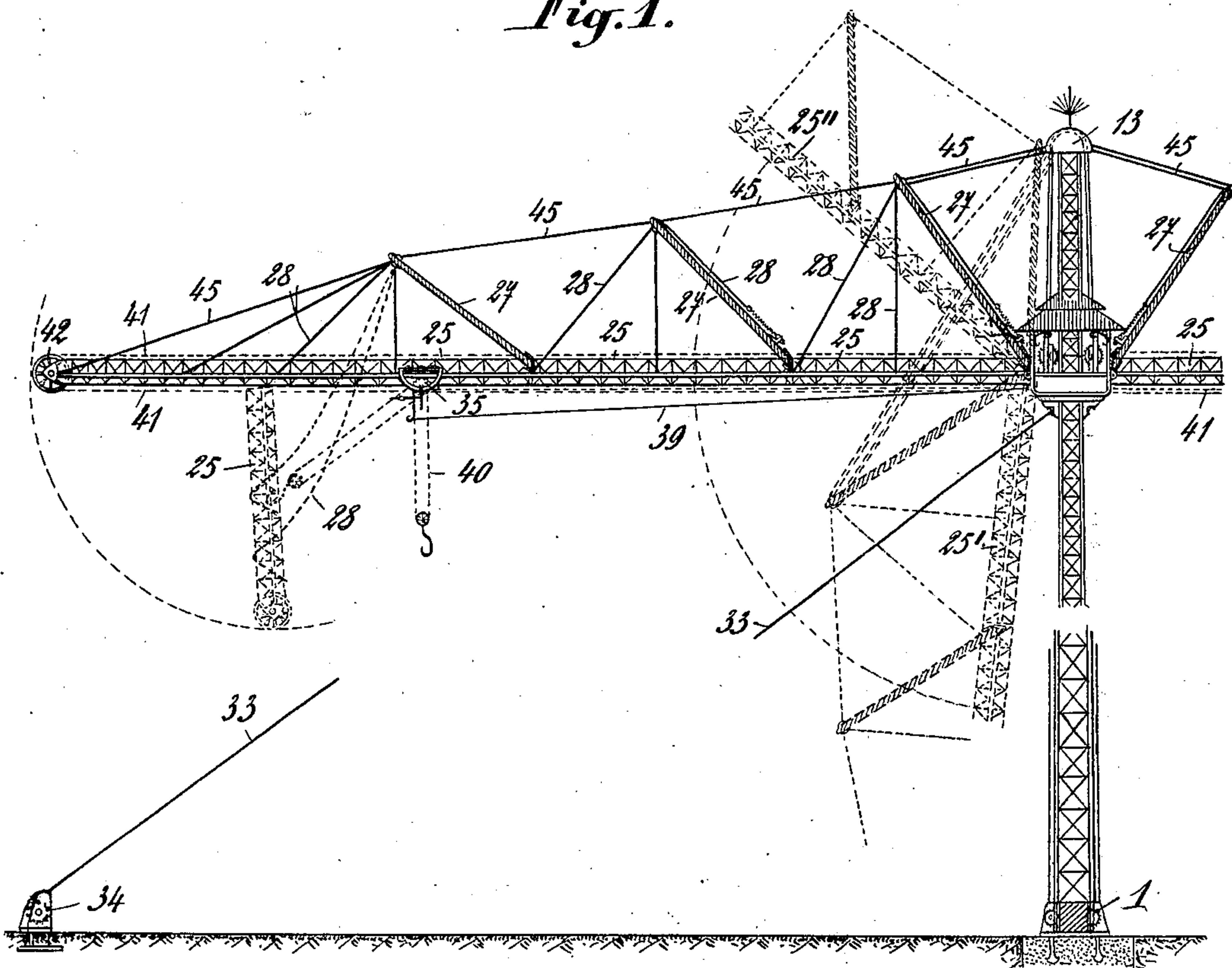
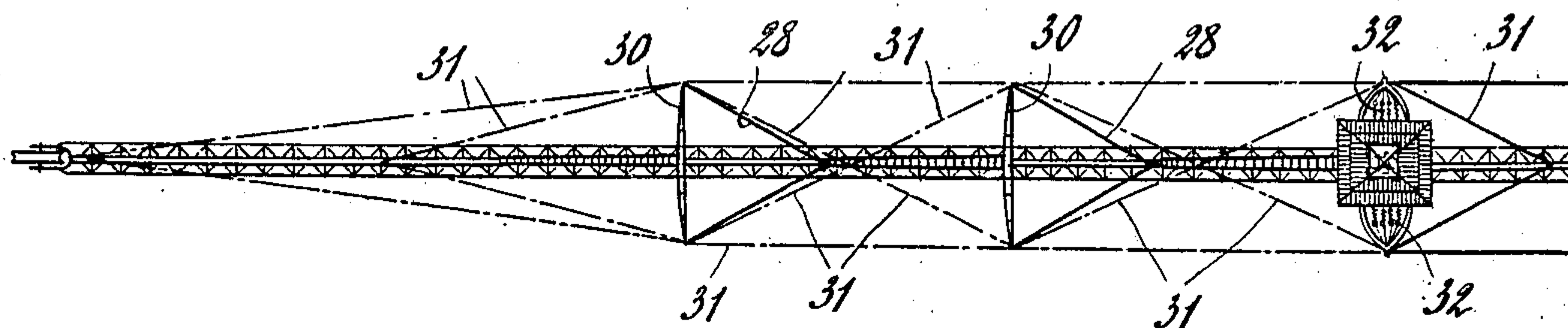


Fig. 2.



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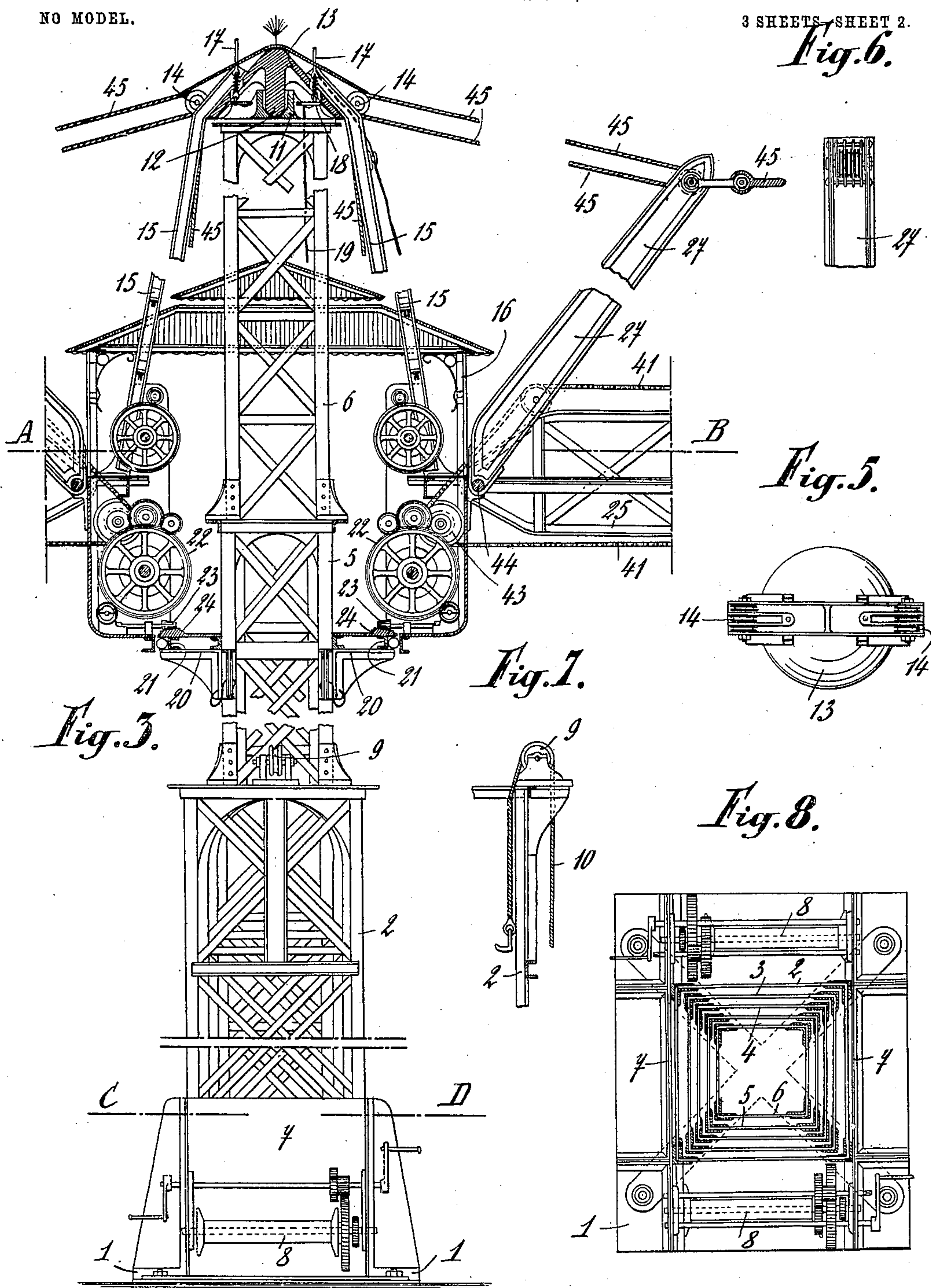
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3 SHEETS, SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 4.

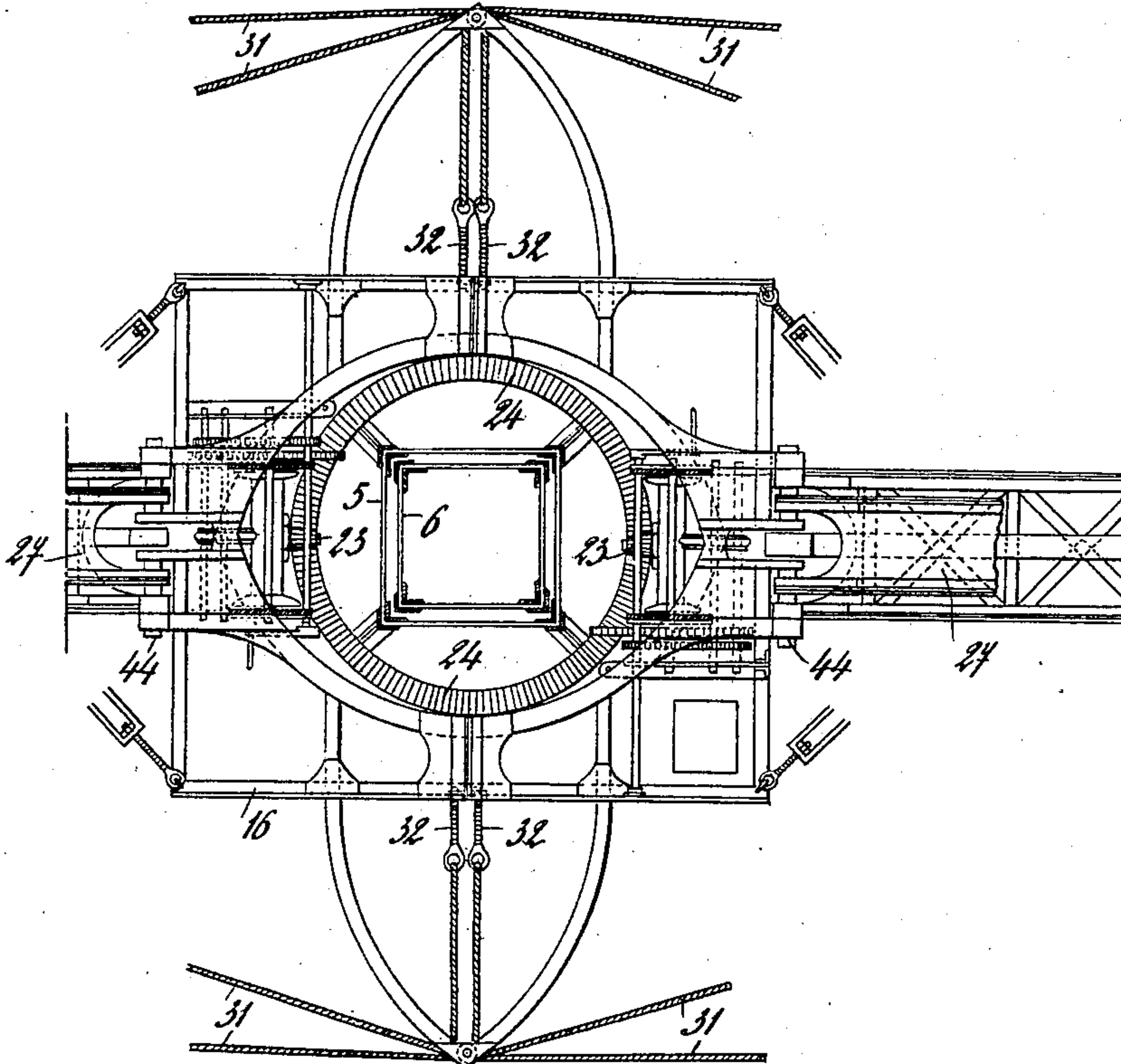


Fig. 9.

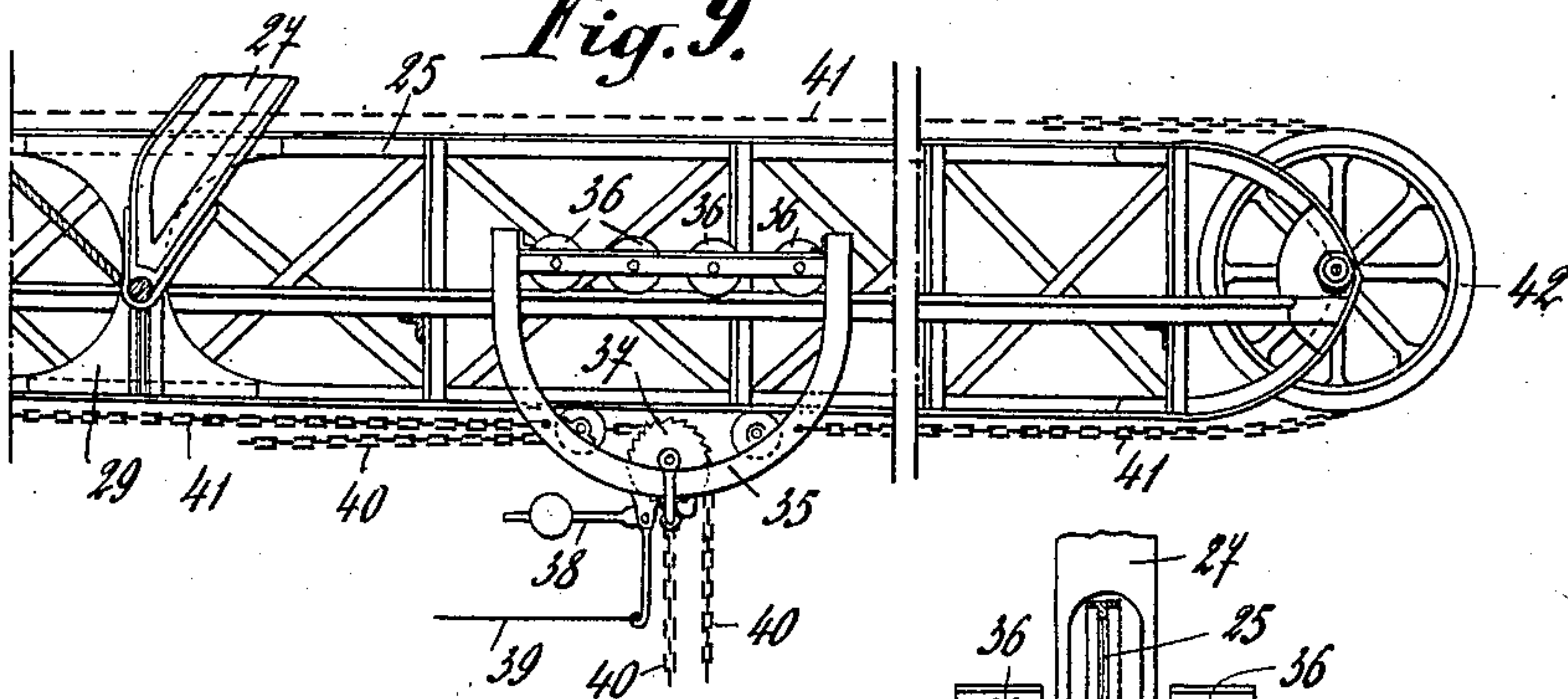
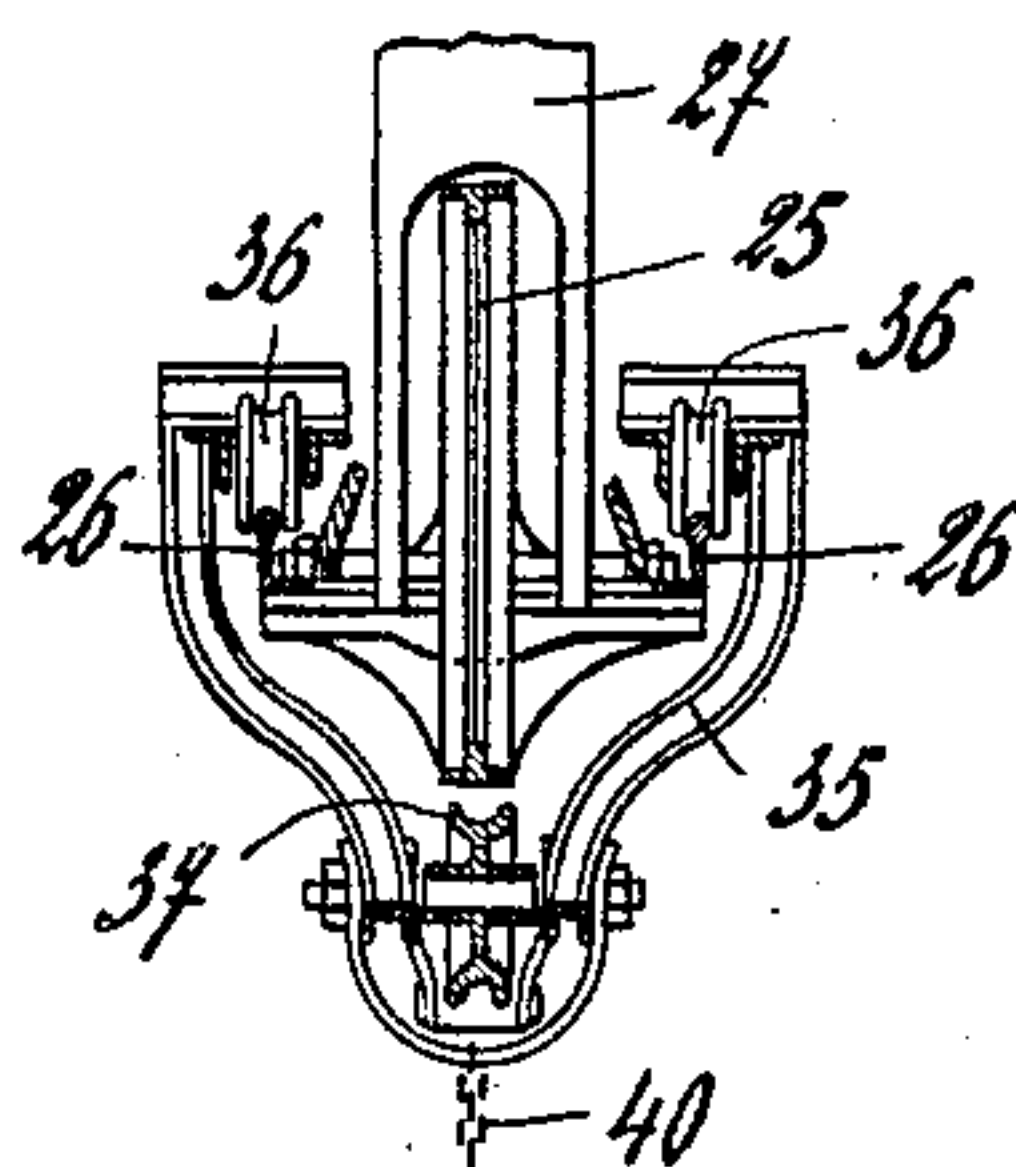


Fig. 10.



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UNITED STATES PATENT OFFICE.

CHARLES VAN DRIESSCHE, OF GHENT, BELGIUM.

CRANE.

SPECIFICATION forming part of Letters Patent No. 763,222, dated June 21, 1904.

Application filed January 21, 1904. Serial No. 190,037. (No model.)

To all whom it may concern:

Be it known that I, CHARLES VAN DRIESSCHE, a subject of the King of Belgium, and a resident of Rue Jan Breydel, Ghent, Belgium, have invented certain new and useful Improvements in Cranes or Raising and Lowering and Transporting Apparatus, of which the following is a specification.

This invention relates to an improved crane or raising and lowering and transporting apparatus of simple, practical, and strong construction adapted to be easily taken apart and transported and designed with the object of enabling great loads to be conveyed to different heights and to different points in a work-place.

The invention comprises the special construction of the parts constituting the apparatus, such as is hereinafter described and shown in the accompanying drawings, in which—

Figure 1 is an elevation of the left-hand half of the apparatus. Fig. 2 is a top view of the same; Fig. 3, an elevation, partially in section and on an enlarged scale, of the upright or post; Fig. 4, a horizontal section on the line A B of Fig. 3. Figs. 5, 6, and 7 are detail views of isolated parts. Fig. 8 is a horizontal section on the line C D of Fig. 3, the constituent parts of the post being supposed to be slipped into one another. Fig. 9 is an elevation, on an enlarged scale, of a part of the transporter-jib with its carriage or wagon. Fig. 10 is a central vertical section of a transporter-carriage.

This improved crane or raising and lowering and transporting apparatus is essentially composed of a metallic upright or post forming a pivot and finished with a cap or cover. From this cap a cab is suspended, from which two jibs or transporter-arms extend. The apparatus may work either by electricity or by hand if the electric energy fails. It comprises the following parts, which will be successively described and examined before passing to the description of their mounting and assembling: first, an extensible post or upright; second, a cap or cover; third, a bearing-platform; fourth, a cab; fifth, two arms or jibs; sixth, two transporter-carriages;

seventh, gins, pulleys, cables, chains, and other accessories.

The post or upright, the socket or base 1 of which is strongly anchored in the soil, is formed of a series of similar concentric parts 2 3 4 5 6, these parts or extending pieces being adapted to fit one in the other to be bolted end to end in order to form the post or upright. The socket or base 1 comprises plates 7, the projecting parts of which hold two winches. (See Figs. 3 and 8.) These two winches 8 and two grooved pulleys 9, Figs. 3 and 7, revolving in movable brackets fitted at the top of the first part 2 of the post and on both sides of the latter, are sufficient to raise and lower the whole installation by means of cables 10, terminating by a lifting-hook.

The cap or cover comprises a cast-metal socket or bush 11, fixed to the upper part of the central extension 6 and intended to receive a pivot 12, fitted with a cover 13, Figs. 3 and 5, to which are fixed two blocks 14, arranged at the ends of the same diameter. Two tie-rods 15, to which are suspended the cab 16 and the trolleys 17 for conveying the electric current, are bolted on the cover 13. These trolleys are constantly in contact with an insulated conducting track or plate 18 of circular form connected with an electric motor in the cab by a cable 19.

The circular bearing-platform is constituted by four sheet-metal plates 20 in the form of a quarter of circle attached to the part 5 of the post or upright, a ball-bearing 21 preventing any friction between the movable parts of the apparatus and the post or upright.

The cab 16 is made in two parts, each formed of a sheet-steel framework connected by bolts. In the interior of the said cab two crabs or winches 22, operated by an electro-motor fed by the cable 19 or by hand if the electric energy fails, are arranged. These winches may be of any suitable construction which by setting in motion a single gearing enables the load to be lifted and the transporter-carriages to advance and retire and also the rotation of the cab on its axis to be obtained in the ordinary manner. This rotation of the cab is obtained by means of bevel-

pinions 23, operated by the electromotor and gearing with a toothed wheel or ring 24, firmly attached to the post or mast.

The two arms or jibs are directly attached 5 to the cab. They are composed, according to the length which it is desired they should have, of a suitable number of trunks or sections, each formed of a strengthened girder 25, the transverse section of which has the 10 form of a cross, (see Fig. 10,) the horizontal part of the girder serving as a support for two rails 26, on which carriages travel. These girders are successively raised or hoisted and assembled end to end with the greatest facil- 15 ity by means of very light supporting shears or gins 27, the cables 28 and 45 of which pass over blocks. These gins are fitted at the end of the girders as they are mounted and serve for strengthening the girders. The latter are 20 connected end to end by means of bolted plates 29, Fig. 9. Four stays or shores 30, Fig. 2, interconnected by means of cables 31, tightened by stretchers 32, serve for strengthening in a horizontal direction the transporter arms 25 or jibs. Four strengthening cables or guys 33 are attached by one of their ends to the 25 post or upright, Fig. 1, and by the other end to winches 34, solidly fixed in the four corners of the work-place.

30 The suspended transporter - carriages 35 travel on the arms, said carriages having four pairs of wheels 36 traveling on rails 26, and they are provided at their lower part with a chain-pulley 37, having a stop or catch arrangement 38, (such as a pawl acting on a 35 ratchet,) operated by a light cable 39, carried to the cab 16. A chain 40 (which may be an ordinary chain, link chain, or the like) passes over the pulley 37. This chain serves for 40 suspending the load, and it is operated by the winch 22, located in the cab. The stop arrangement 38 acts at each contact with the links of the chain, so that the load suspended on the chain 40 is held in the air at any height 45 and place of the circular zone commanded by the lifting and transporting apparatus. An endless chain 41, passing over a free wheel 42 and over a driven wheel 43 and the ends of which are connected to the carriage 35, op- 50 erates the forward and backward movements of this latter. If it is merely a question of lifting and transporting comparatively light loads, the work may, if desired, be done by means of a single arm or both of the arms 55 without troubling about the question of the equilibrium of the loads; but for lifting and transporting heavy loads great care must be taken that the equilibrium is preserved either by lifting two loads approximately equal on 60 the respective arms or (in the case of a single load) by employing a counterweight suspended to one of the carriages 35. The two winches 22 are in this case connected by a suitable means of transmission in such a way

that in proportion as the load is displaced 65 along one of the arms 25 the other load, or where employed, the counterweight, moves automatically exactly in the opposite direction on the other arm.

This improved raising and lowering and 70 transporting apparatus may be very easily and rapidly erected. The socket or base 1 of the post or upright is brought to the work-place, said base containing the various extensions 2 3 4 5 6. It is erected and fixed in position by 75 means of the winches 34 and guys 33. When once the socket or base is fixed, the central extension 6 is raised by means of the winches 8 and cables 10, and it is bolted on the follow- 80 ing extension 5. This extension 6 has been previously provided with its cap 11 13. The circular bearing-platform 20 is then fitted thereon, under which guys 33 are attached. The two halves of the cab 16 are then brought 85 up, placed on each side of the post or upright, and connected one with the other by means of bolts. The two cables 10, which are previously passed over pulleys arranged on the cap, are attached to the cab and the winches 8 operated, raising the cab to the desired 90 height. The cab 16 is firmly attached to the draw-bars 15 and the ball-bearing 21 is mounted—i. e., the balls are put into their box. The two trunks or sections 25 of the 95 arms or jibs—i. e., the sections which are adjacent to the cab—are then hoisted one on each side of the said cab, taking the trunks 25 by the ends, which must touch the cab. This operation is also done by means of the 100 cables 10 and winches 8. When these trunks or sections 25 have reached the desired height, they are connected with the cab 16 by means of pivots or spindles 44. These two sections or trunks thus hang on each side of the post or upright. The first set of cables 45 are then 105 attached to the cap or hood 13, and the shears or gins 27 corresponding to the two first sections 25 are then hoisted up to the level of the cap, taking them by their heads. This operation is also done by means of the cables 110 10. The cables, 45 coming from the winch, are connected with these gins 27, and the feet of the gins are attached to the pivots 44. The gins 27 are then allowed to oscillate on the pivots 44 until they form an angle of forty- 115 five degrees with the suspended arms 25'. The suspension-cables 28 are then attached, and the sections or trunks 25 in question are then raised into a horizontal position. The same operation is successively repeated for 120 all the sections or trunks 25 of the jibs or arms, employing in turn the gins already arranged and bolting these sections together end to end, and then the cables 31 are drawn tight. The carriages 35 are then placed on 125 their rails and the operating-chains 40 and 41 and the cables 39 are put in position. The second section 5 of the post or upright is then

raised, still by means of the cables 10 and winches 8, and then the third section 4 of the post or upright, and so forth, bolting successively each section end to end until the height desired is attained. The apparatus is then ready for use. When the post is only raised to a portion of its height, the guys 33, fixed at the four corners of the work-place, suffice. When it is desired to raise the apparatus to a greater height, other cables similar to the guys 33 and connected to suitable points become necessary for giving the installation a stability enabling it to resist all loads and the most violent gusts of wind. When in course of the operation it becomes necessary to lift loads to a greater height than the level of the arms when in their horizontal position, the arms may be raised to the desired extent above the horizontal by means of suspension-cables 45, running from the winch, the chain 41 being previously fixed. This position of the arms is shown, for instance, at 25" in Fig. 1. Similarly, when the apparatus is not at work the transporter and lifting-arms may be lowered on their points of attachment to the cab until they hang down beside the post or upright in the position shown at 25' in Fig. 1. Thus the parts on which the arms are suspended are relieved and the apparatus is protected against the action of wind.

It will be noticed that the mechanism is of great simplicity.

It is evident that certain details of construction and also that the relative proportions of the various elements of the apparatus may be varied within wide limits, according to the nature of the work which the lifting and transporting apparatus is intended to carry. Thus, for instance, the operating apparatus 22 might be arranged in any suitable manner which enables it to fulfil the multiple part which devolves upon it.

The advantages of the arrangement are numerous. It takes up very little room and is erected quickly. It may be set in motion by a single man, and the costs of installation are very small.

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

1. In combination, in a raising and transporting apparatus, a telescopic supporting-post for varying the height of the apparatus and two transporter-arms composed of a number of sections assembled end to end for varying the zone of action of the apparatus, substantially as described. 55

2. In combination, in a raising and transporting apparatus, a telescopic supporting-post, two transporter-arms composed of a number of sections assembled end to end, and a number of gins with their cables for supporting said sections one by the other continuously, starting from the top of the post, substantially as described. 60 65

3. In combination, in a raising and transporting apparatus, a telescopic supporting-post, two transporter-arms composed of a number of sections assembled end to end, a number of gins with their cables for supporting said arms, a rotating cap at the top of said post for attaching said cables, and a cab rigidly secured to said transporter-arms and turning about said post, said cab carrying the controlling apparatus, substantially as described. 70 75

4. In combination, in a raising and transporting apparatus, a telescopic supporting-post, two transporter-arms composed of a number of sections assembled end to end, a number of gins with their cables for supporting said arms, a rotating cap, a cab for the controlling apparatus, and two transporter-carriages for raising the loads and bringing them along said arms, substantially as described. 80 85

5. In combination, in a raising and transporting apparatus, a telescopic supporting-post, two transporter-arms composed of a number of sections assembled end to end, a number of gins with their cables for supporting said arms, and a number of cross-bars 30 and of strained cables 31 for strengthening said arms in a horizontal direction, substantially as described. 90 95

In witness whereof I have hereunto set my hand in presence of two witnesses.

CHARLES VAN DRIESSCHE.

Witnesses:

G. FLAMM,

ED. VHIRIONES.