

No. 711,400.

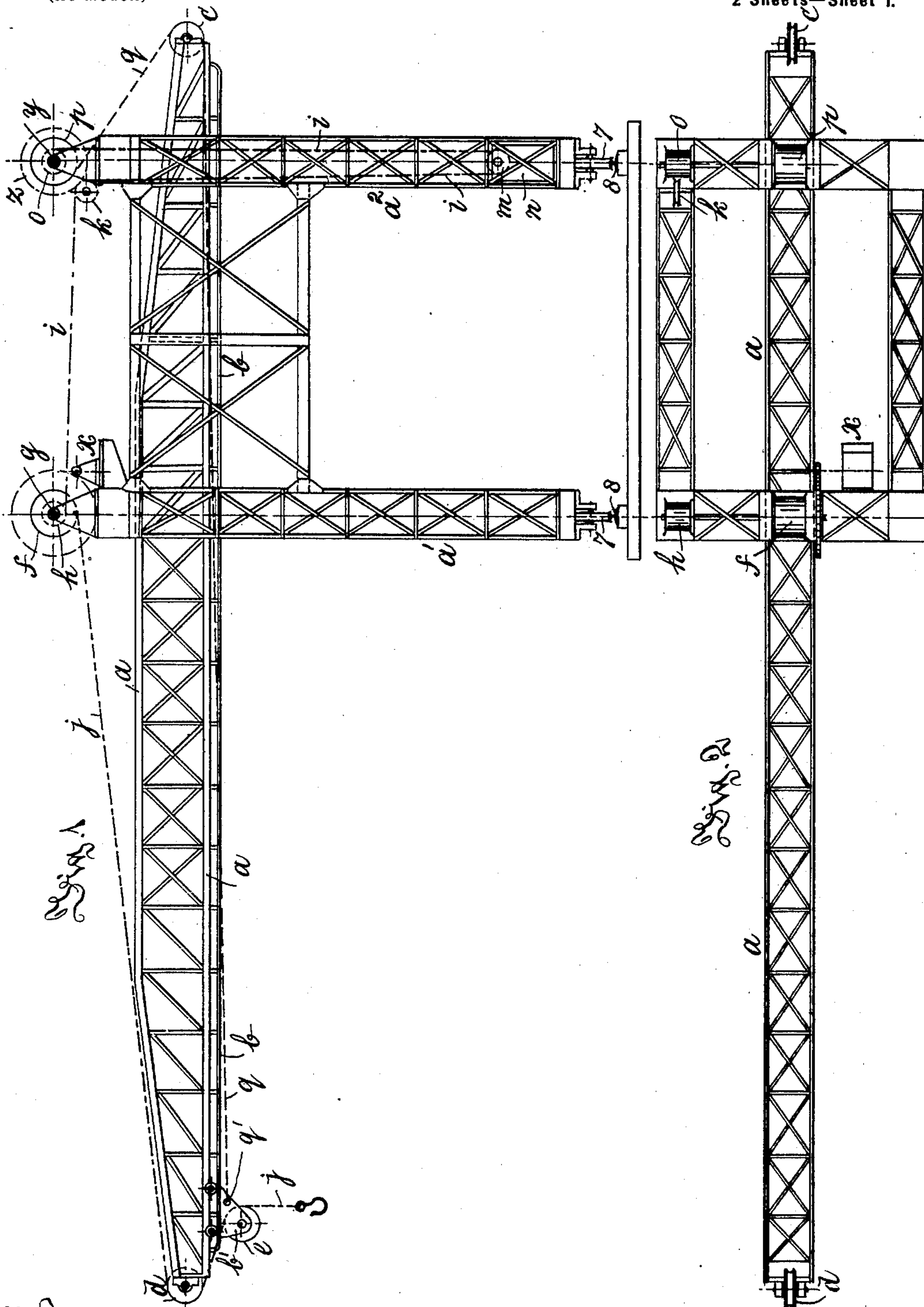
Patented Oct. 14, 1902.

T. D. HOLLICK.
CRANE AND HOISTING APPARATUS.

(Application filed May 26, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
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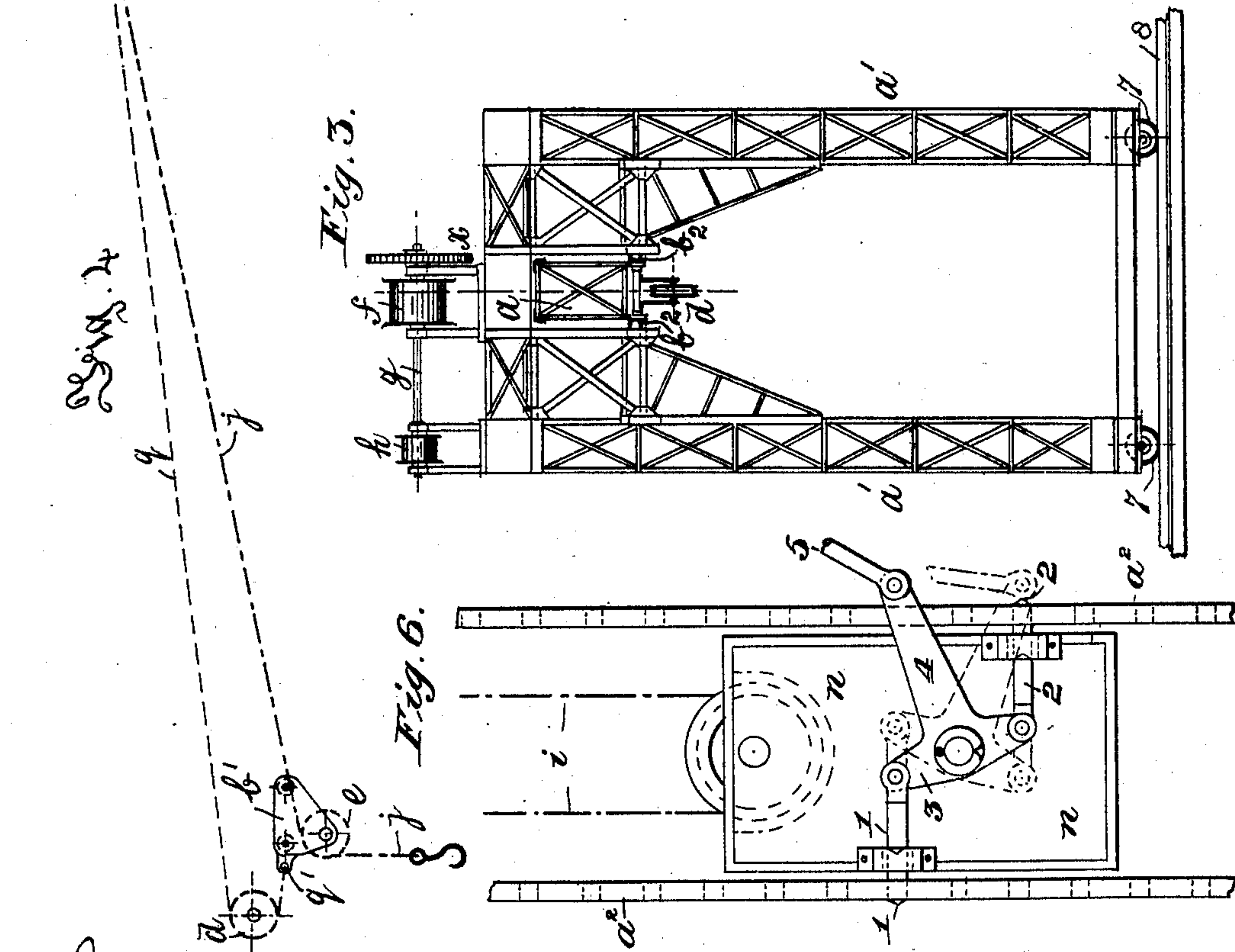
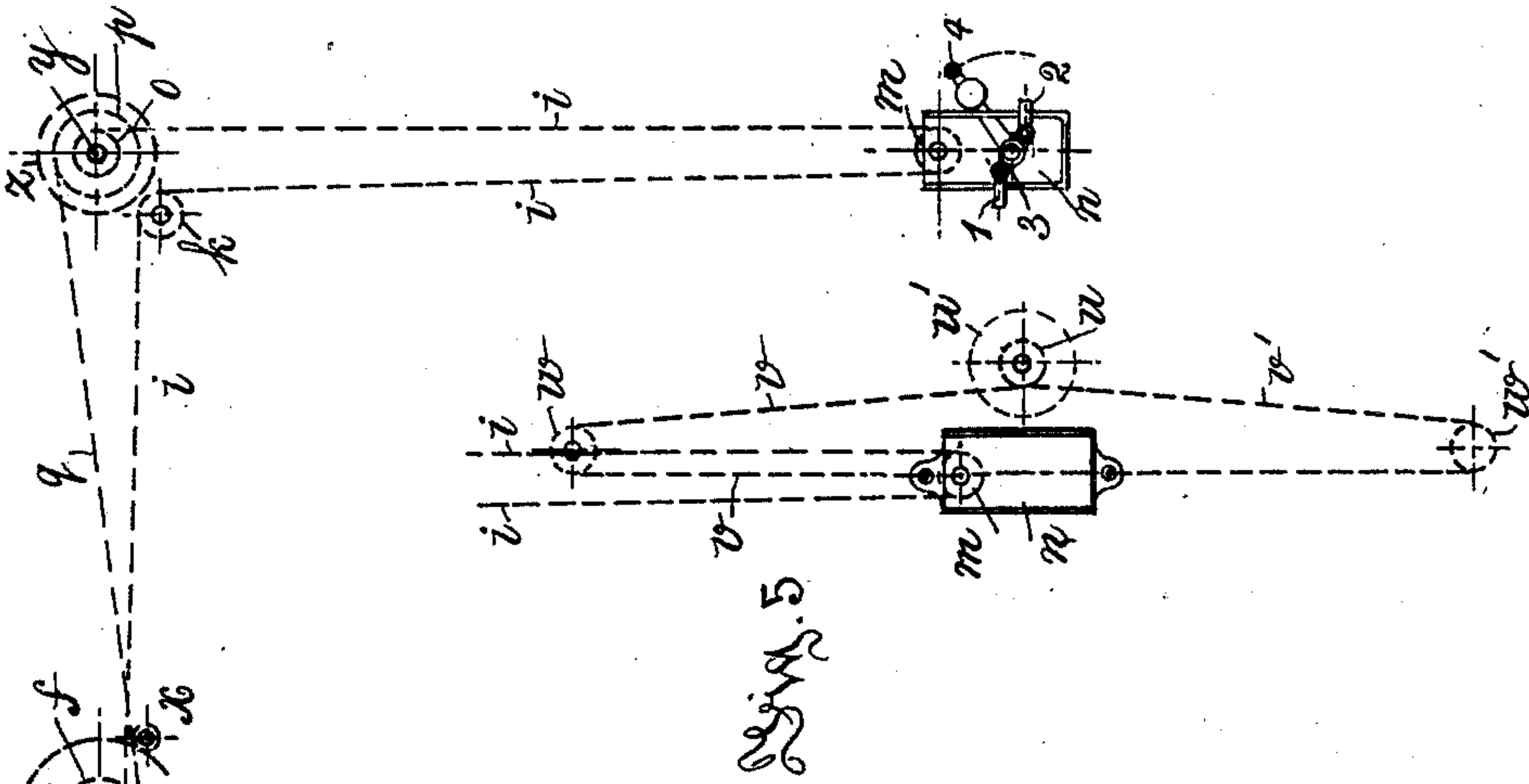
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2 Sheets—Sheet 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

THOMAS DRAKE HOLLICK, OF BRENTWOOD, ENGLAND.

CRANE AND HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 711,400, dated October 14, 1902.

Application filed May 26, 1902. Serial No. 109,020. (No model.)

To all whom it may concern:

Be it known that I, THOMAS DRAKE HOL-
LICK, a subject of the King of Great Britain,
residing at Mountnessing, Brentwood, in the
5 county of Essex, England, have invented new
and useful Improvements in Cranes and
Hoisting Apparatus, of which the following is
a specification.

This invention relates to cranes and hoist-
10 ing apparatus in which the weight to be lifted
and lowered can also be moved from one
point to another; and it has for its object novel
methods of construction and arrangement of
the gear and apparatus by which a load can
15 be hoisted by a chain or rope depending from
a horizontal beam and can be made to move
or traverse in either direction parallel with
the beam and be then lowered when the de-
sired position is reached.

20 By my invention great rapidity and cer-
tainty in the raising, lowering, and traversing
are obtained, while the apparatus is not com-
plicated or liable to get out of order, but is
durable, easily worked, and very effective for
25 the purpose required.

The accompanying drawings are in illus-
tration of my invention.

Figure 1 is a side elevation of my improved
hoisting-crane. Fig. 2 is a plan view. Fig.
30 3 is a front elevation. Fig. 4 is a diagram-
matic view showing a slightly-modified ar-
rangement of the operating ropes or chains
and showing in elevation the counterbalanc-
ing-weight and means for locking the same.
35 Fig. 5 shows another form of locking device,
and Fig. 6 is a detail view of the weight and
locking means shown in Figs. 1 and 4.

Similar characters of reference indicate the
same parts in the several figures.

40 *a*, Figs. 1, 2, and 3, is a strong horizontal
beam carried upon suitable supports, such as
a' a', in the proper position to command the
load to be lifted and at a sufficient height
above the ground, one of the ends projecting
45 in most cases for a sufficient distance be-
yond the support, so as to be situated above
a ship, barge, or the like, from or into which
the load is to be raised or lowered. This
beam is provided with suitable rails or track
50 *b*, along which the wheels of a strong travel-
ing carriage *b'* can move, and a sheave or
pulley *c d* is fitted in fixed bearings at each

end of the beam *a*, and another sheave or
pulley *e* is fitted upon the traveling car-
riage *b'*.

55 A reversible winch worked by gear driven
by steam, electricity, or other convenient
power operated by an attendant is fixed in a
suitable position on or near the crane—as, for
instance, at *x* in the drawings—and from the 60
hoisting-drum *f* of this winch a hoisting rope
or chain *j* is led over and around the pulley
d at the outer end of the beam *a* and thence
down and over the pulley *e*, carried by the
traveling carriage *b'*, its end hanging down, 65
as shown in Fig. 1, and being provided with
a hook or other means for attaching the load
to be raised. Upon the shaft *g* of the hoist-
ing-drum *f* of the winch another drum *h* is
fixed, around which a rope or chain *i* is 70
wound in the opposite direction to that of
the hoisting-rope *j*. This second rope *i* is
led from the drum *h* to a pulley or sheave
k, turning in fixed bearings in any conven-
ient and suitable position, and after pass- 75
ing over this pulley it passes down and then
around a pulley *m*, to which a weight *n* is sus-
pended, so arranged that it can rise and fall
freely through any desired distance. The
rope *i* is then led up and fixed to a drum *o* 80
upon a shaft *y*, turning freely in fixed bear-
ings in a convenient position and provided
with a brake *z* of any ordinary kind, operated
by the attendant by means of rods and levers,
by which its revolution can be retarded or 85
stopped when desired. Upon the shaft *y* of
this last-mentioned drum *o* is fixed a second
drum *p*, upon which a rope or chain *q*, fixed
to it, is wound in the opposite direction to that
around the other drum *o* upon the same shaft 90
y, and this rope *q* is led around the pulley *c*,
which is fixed at the opposite end of the beam
a to that, *d*, around which the hoisting-rope *j*
passes to the pulley *e* on the traveling car-
riage *b'*, as already described. The rope *q* 95
is then brought from the pulley *c* along the
beam *a* and is securely attached at *q'* to the
traveling carriage *b'*.

The weight *n*, described above, may be
either made only sufficiently heavy to keep 100
the ropes or chains taut, or it may be made
sufficient to partly counterbalance the load.
Suitable mechanism is provided for locking
the weight at any desired position of its

travel for a purpose to be hereinafter mentioned. I have shown in Fig. 4 and in detail in Fig. 6 a mechanism comprising two sliding bolts 1 and 2, moving in guides upon the weight n , and when it is desired to lock the weights the ends of these bolts are projected laterally beyond the sides of the same and engage suitable stops or holes disposed along the support a^2 , within which the weight n can travel when the bolts 1 and 2 are withdrawn. These sliding bolts are connected to the transversely-projecting arms 3 of a suitable lever 4, pivoted to the weight n , and this lever may be turned on its fulcrum for operating the locking-bolts by any suitable means—such as the rod 5, which terminates at any convenient point in easy reach of the attendant—or instead of the above locking mechanism an arrangement such as shown in Fig. 5 may be used, in which a separate drum u is provided with a suitable brake u' , worked by the attendant and around which two ropes or chains $v v'$ are wound in opposite directions, one of these, v , passing up sufficiently far and around a fixed pulley w and down to the weight n , to which it is fastened, and the other one, v' , passing down and under a similar fixed pulley w' and thence up to the weight n , to which it is fastened. It is evident that if the brake u' on u is applied the weight cannot move either up or down, while if the brake is released the weight can move freely in either direction.

The method of operation of the improved apparatus is as follows: If it is desired to hoist a load or to lower it without the traveling carriage from which it is suspended moving along the beam, the stop or brake holding the movable weight n is released, and the brake upon the drum-shaft y above is applied. The hoisting-drum f is then driven by the engine or motor in whichever direction is desired for hoisting or lowering the load. If it is desired, on the other hand, to travel the load along the beam a when it has been raised or lowered to the desired height, then the brake or stop holding the movable weight n is applied, and the brake upon the drum-shaft y above is released. The hoisting-drum f is then driven in whichever direction it is desired that the carriage b' and load should travel, and the load will be brought to any desired position in either direction without altering its vertical height below the traveling carriage b' .

The beam a , along which the carriage travels, as described, may, if desired, be made to move in or out in the direction of its length upon rollers or guides at b^2 , Fig. 3, by holding the carriage firmly to the beam a by any convenient device and then proceeding as if for the purpose of moving it in or out along the beam, as described. As the carriage is locked to the beam, the latter is moved in or out, together with the carriage, upon its rollers or guides. Suitable catches or fastenings must be provided by which the beam can either be

allowed to move freely in the direction of its length or held firmly in any desired position.

In a somewhat-modified form of arrangement, as illustrated in diagram in Fig. 4, the hoisting-rope j from the winding-drum f may pass directly to the pulley or sheave e in the traveling carriage b' without first passing around the pulley d at the outer end of the beam a , the other rope q passing direct from the drum p above the movable weight n and around the pulley d at the outer end of the beam a and then back to the traveling carriage b' , to which it is attached at q' .

The several hoisting drums and pulleys are made of suitably-proportioned sizes and diameters. The hoisting-drum f and the drum p above the movable weight n are of similar diameter, and the second drum h on the hoisting-shaft and the second drum on the shaft y above the movable weight are also of the same diameter. By varying the relative diameter of the drums the load may, however, be made to move to any desired extent up and down as the carriage b' travels along the beam a .

The supports $a' a^2$ or equivalent ones which carry the apparatus may themselves be provided with wheels 7 7, as shown in Figs. 1 and 3, running upon transverse rails 8 8, so that the entire apparatus may be moved along into position. The wheels 7 7 may be connected with and actuated in either direction by a steam or other motor.

I do not confine myself to the precise form and dimensions of the several parts nor to the materials of which they are made, and the details of construction and arrangement may be varied more or less according to varying circumstances and the particular purpose to which the apparatus is to be applied. The apparatus may be fixed in any desired position, and the ropes, sheaves, and pulleys may be arranged in any position relatively to each other, the ropes or chains being led in any desired direction and to any required distance over properly-arranged pulleys.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a hoisting-crane, the combination with the horizontal beam and traveling carriage mounted thereon, of a reversible operating-drum, a second drum, flexible means connecting said reversible drum and carriage for suspending the load, a flexible connection between said carriage and second drum, flexible means connecting said two drums, a counterbalancing-weight suspended by said last-mentioned flexible means, and separate locking means for said second drum and said counterbalancing-weight for locking the one and releasing the other for the purposes set forth.

2. In a hoisting-crane, the combination with the horizontal beam and the traveling carriage having a pulley journaled therein, of a reversible operating-drum, a second drum, flexible means secured to said operat-

ing-drum and reeving over said pulley for suspending the load, a flexible connection between said carriage and second drum, flexible means connecting said two drums, a counterbalancing-weight suspended by said last-mentioned flexible means, and separate locking means for said second drum and said counterbalancing-weight for locking the one and releasing the other for the purposes set forth.

3. In a hoisting-crane, the combination with the horizontal beam and the traveling carriage having a pulley journaled therein, of a reversible operating-drum, flexible means secured to said reversible drum and reeving over said pulley for suspending the load, a second drum, a pulley journaled on said horizontal beam, flexible means reeving over said second pulley and connecting said second drum and carriage, flexible means connecting said two drums, a counterbalancing-weight suspended by said last-mentioned flexible means, and separate locking means for said second drum and said counterbalancing-weight for locking the one and releasing the other for the purposes set forth.

4. In a hoisting-crane, the combination with the horizontal beam and traveling carriage mounted thereon, of a reversible operating-drum, a second drum, flexible means connecting said reversible drum and carriage for suspending the load, a flexible connection between said carriage and second drum, flexible means connecting said two drums, a counterbalancing-weight interposed between said drums, a pulley journaled in said weight and suspended by said last-mentioned flexible means, and separate locking means for said second drum and said weight for locking the one and releasing the other for the purposes set forth.

5. In a hoisting-crane, the combination with the horizontal beam and the traveling carriage having a pulley journaled therein, of a reversible operating-drum, flexible means secured to said reversible drum and reeving over said pulley for suspending the load, a second drum, a pulley journaled on said horizontal beam, flexible means reeving over said second pulley and connecting said second

drum and carriage, flexible means connecting said two drums, a counterbalancing-weight interposed between said drums, a pulley journaled in said weight and suspended by said last-mentioned flexible means, and separate locking means for said second drum and said weight for locking the one and releasing the other for the purposes set forth.

6. In a hoisting-crane, the combination with the vertical frame and horizontal beam, of the traveling carriage movable along said beam, a reversible operating-shaft journaled on said frame, a second shaft journaled on said frame to the rear of said first shaft, a pair of winding-drums carried by each of said shafts, flexible means connecting one of said drums on said reversible shaft with said carriage for suspending the load, a flexible connection between said carriage and one of the drums on said second shaft, a guide-pulley journaled in said frame, flexible means reeving over said pulley and connecting the two remaining drums on said shafts, a counterbalancing-weight interposed between said two shafts and suspended by said last-mentioned flexible means, and separate locking means for said second shaft and said weight for locking the one and releasing the other for the purposes set forth.

7. In a hoisting-crane, the combination with the vertical frame, of the horizontally-movable supporting-beam, a traveling carriage movable along said beam, of a reversible operating-drum, a second drum, flexible means connecting said reversible drum and carriage for suspending the load, a flexible connection between said carriage and second drum, flexible means connecting said two drums, a counterbalancing-weight suspended by said last-mentioned flexible means, and separate locking means for said second drum and said counterbalancing-weight for locking the one and releasing the other for the purposes set forth.

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

THOMAS DRAKE HOLLICK.

Witnesses:

ARTHUR E. EDWARDS,
I. L. HILDRETH.