

No. 875,065.

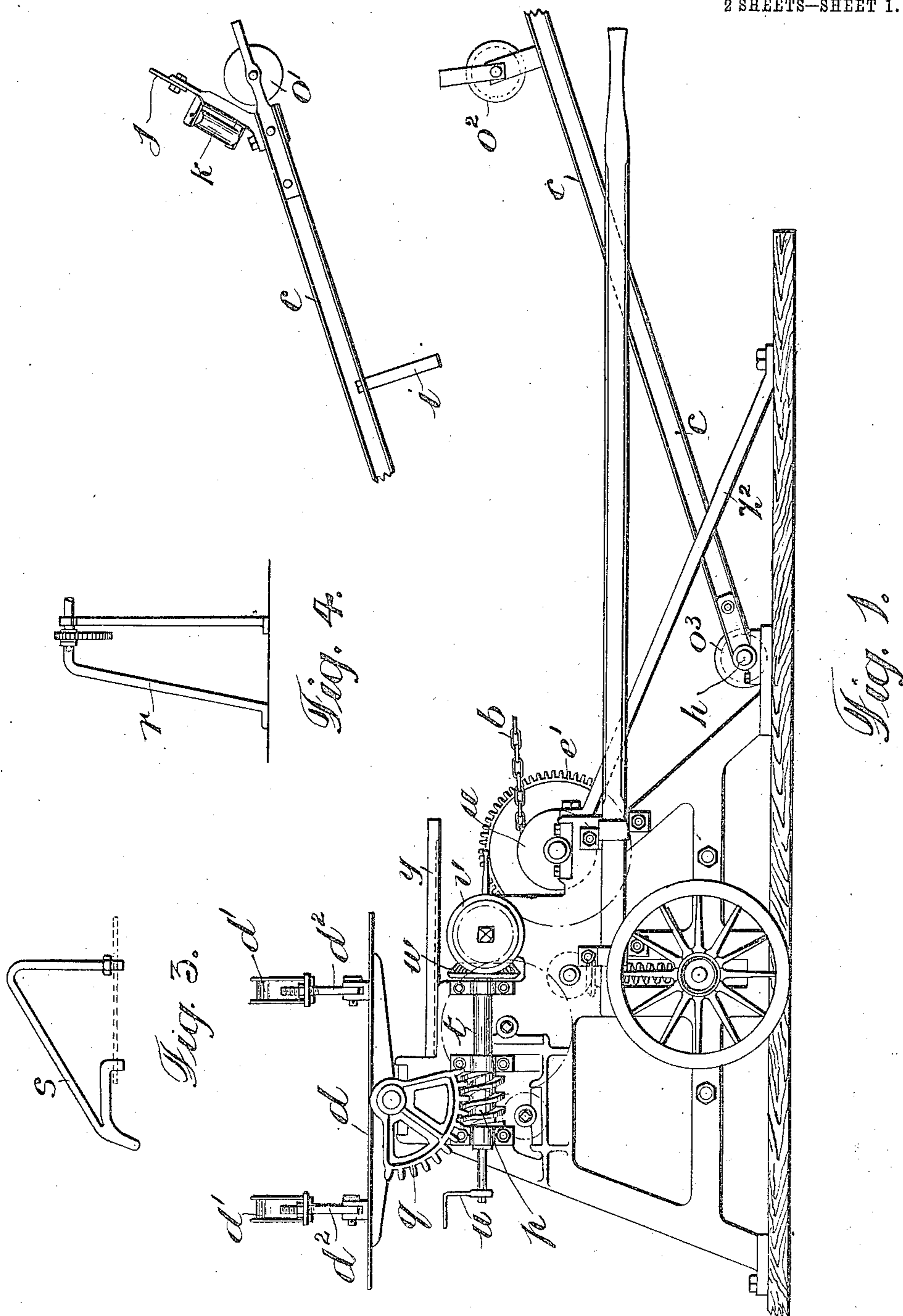
PATENTED DEC. 31, 1907.

J. H. GREEN.

POLE AND LIKE ERECTING MACHINE.

APPLICATION FILED SEPT. 30, 1907.

2 SHEETS—SHEET 1.



Witnesses:  
P. W. Bailey.  
J. C. Pennington.

Inventor:  
John H. Green.  
By his Attorney: Walker Gunn

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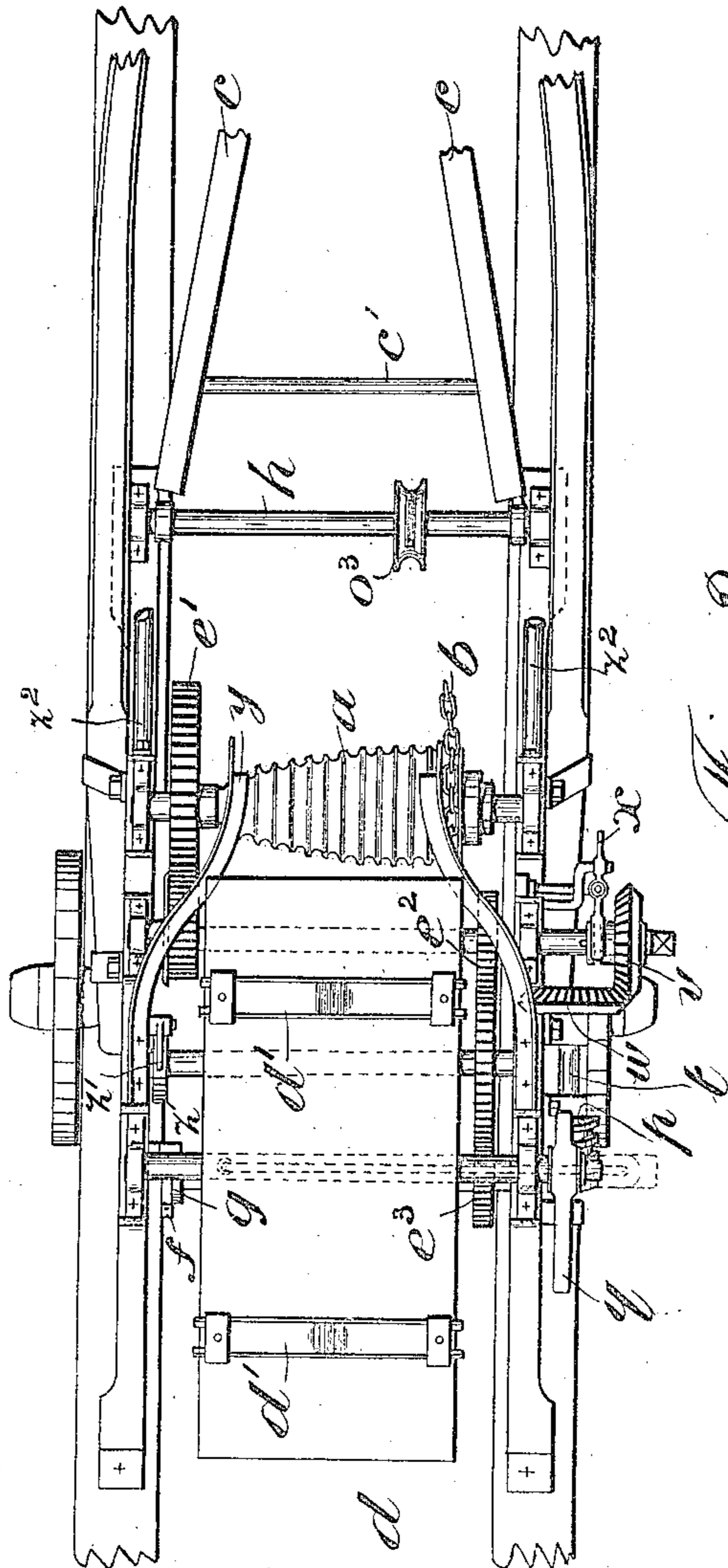
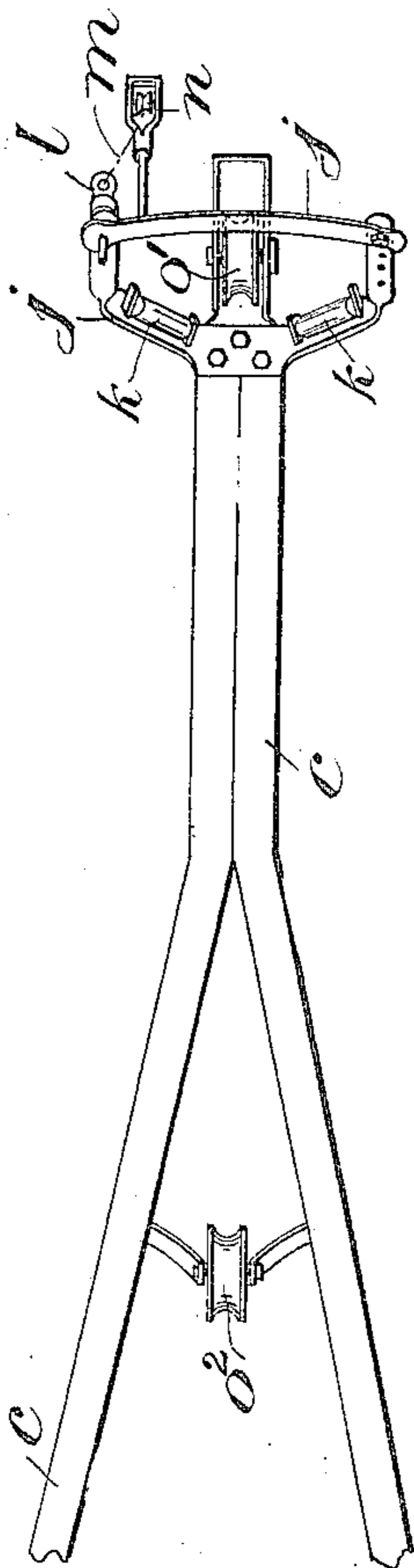
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Inventor:  
John H. Green.  
By his Attorney: Walker Gurnea.

# UNITED STATES PATENT OFFICE.

JOHN HENRY GREEN, OF SALFORD, ENGLAND.

## POLE AND LIKE ERECTING MACHINE.

No. 875,065.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed September 30, 1907. Serial No. 395,204.

*To all whom it may concern:*

Be it known that I, JOHN HENRY GREEN, a subject of the King of Great Britain and Ireland, and resident of Salford, Manchester, England, have invented certain new and useful Improvements in Pole and Like Erecting Machines, of which the following is a specification.

These improvements refer to telegraph and like pole erecting and lowering machines of the type in which the pole is clamped upon an oscillating table and by means of gearing and a barrel, chain and pivoted lifter, the pole is raised from the horizontal to the vertical, or vice versa.

The object of the improvements is to overcome certain practical objections to the machine as at present made, and generally to render it better adapted for the purposes intended.

The improvements will be best described with the aid of the accompanying drawing, whereon

Figure 1 illustrates a side elevation, and Fig. 2 a plan (partly broken away and the broken away part shown above each view) of the pole raising and lowering machine with the improvements applied thereto. Figs. 3 and 4 illustrate certain details hereinafter described.

According to the invention, the barrel *a*, see Fig. 2, around which the chain *b* wraps, instead of being parallel sided as heretofore is made to a special form, whereby as the pole is raised (or lowered) the chain *b* wraps on to (or off) the barrel at a rate which insures an even tension being maintained in all positions of the pole. That is to say, with the lifter *c* having a rate of angular movement different from that of the table *d* on which the pole is clamped, and the table and barrel being operated by or through the same train of gearing, the chain requires to wrap on to the barrel at a rate in keeping with the rate at which the lifter follows the pole. The barrel shown in Fig. 2 represents the shape that has been found best in practice, the chain being secured to the wider end of the barrel and wrapping onto the narrower end as the lifter rises. To insure of the chain wrapping on to it in regular coils the barrel is grooved as shown.

In the machine as at present made two

sets of gear wheels are suggested, but according to these improvements three sets are employed  $e^1, e^2, e^3$  thus affording a treble purchase and making the machine absolutely safe and more powerful in raising heavy poles. The pinion of the third set of wheels (on its shaft) may be slidably mounted and thus allow of its being thrown out of gear, a lever *f* and collar *g* serving to hold it in position and to free it, see Fig. 2.

The lifter *c*, instead of being of wood as heretofore, is now made of angle iron or steel, and, instead of being in one straight length, is bifurcated or forked at its lower end. The two extremities of the forked portion of the lifter lie respectively at or near the opposite ends of the axis *h*, and on opposite sides of the machine, thus causing the lifter to be free from all liability to move sidewise or buckle when in use, and especially when being used for hoisting a pole on to or off the table *d*. The angle iron of which the lifter is made is preferably in two lengths, the portions at the free end of the lifter lying parallel to each other and being firmly riveted together. At its lower end the lifter may be stiffened by a connecting rod  $c^1$ .

For limiting the fall of the lifter and for supporting it firmly when a pole is being placed upon it, a strut *i* is provided formed say of a piece of iron piping.

At its free end the lifter is fitted with a yoke *j* which carries rollers *k*, and the outer part of such yoke, which is adjustably hinged at one end, is held around the pole and secured at its other end by a removable cotter or pin *l*. To this pin is secured one end of a chain *m* which after passing over a small guide pulley *n* extends downwards to a point where, with the lifter vertical, it can be reached from the ground.

When a pole is on the table *d* it rests also upon the rollers *k* in the yoke *j*, and after being clamped to the table the pole is also clamped by the hinged yoke piece to the lifter. When the pole is raised to the vertical and it is desired to release it from the lifter, instead of getting a ladder to reach up to the yoke piece, a strong pull of the chain *m* instantly withdraws the pin *l* and the pole is made free. The yoke *j* is preferably formed with inclined sides to allow for various sizes of poles.

The lifter carries two guide pulleys  $o^1$ ,  $o^2$  for the chain, and there is a third guide pulley  $o^3$  on the lifter axis, see Fig. 2. When requiring to lift a pole on to the table (the lifter then being vertical) the chain passes under the pulley  $o^3$  over pulley  $o^1$  and down again, its free end being looped around the pole. When requiring to tilt the pole to a vertical, after being placed on the table and made secure, the chain is withdrawn from below the pulley  $o^3$  and passed over pulley  $o^2$  only, its free end being then hooked to the machine, or say to the axis  $h$ .

Instead of a whole worm wheel being used for meshing with the worm  $p$  by which the table is rotated, a segmental or quadrant worm wheel  $q$  is used, see Fig. 1 thus lessening the height of the gears, and, when the table is horizontal, allowing of the pole being readily placed thereon or removed therefrom.

To allow for the convenient placing of the pole on the table  $d$  and to protect the gear wheels, a stout iron bar or tube  $r$ , see Fig. 4 is used which at one end rests upon the floor and at the other end fits into the end of the worm quadrant shaft the bar or tube being so bent as to lie at an angle to the machine and form a guide up or down which the pole will slide when being hoisted or lowered.

For use in supporting the pole while being moved on to and off the table, a loose portable frame  $s$ , see Fig. 3, is used, the ends of which fit holes in the table while the frame itself extends beyond and over the side of the machine and acts as a temporary extension of the table.

To allow of the direct rotation of the table  $d$  the worm shaft  $t$  is squared at one end for the reception of a loose handle  $u$ , and the bevel wheel  $v$  is moved out of gear with the wheel  $w$  by a lever  $x$ . The forward movement of the lifter is limited by angle iron bars  $y$  secured to the machine frame, one on each side. To prevent the lifter or pole being accidentally lowered and to give the operator a rest when winding the chain, a ratchet wheel  $z$  and pawl  $z'$  are provided.

The table  $d$  is preferably made of one solid piece of sheet iron, and the holdfasts  $d^1$  for clamping a pole to the table are of V formation so as to fit varying diameters of poles, one end of the holdfast being hinged to the table and the other end being free but capable of being engaged by a holding down bolt  $d^2$  linked to the table.

Other improvements consist in stiffening the machine by iron tubular stays  $z^2$  and further in so proportioning the parts that in all positions of the lifter and pole the machine is stable and safe in use, the several parts being shaped and proportioned as shown in the drawings.

What I claim is:—

1. In a pole erecting or lowering machine, the combination with two side frames, means for holding the frames together and a table axially supported by the said frames of a lifter pivotally supported by the frames, a barrel also axially supported by the said frames, and a chain secured at one end to the barrel and at the other end to the axle of the table after engaging the lifter, and means for simultaneously operating the table and barrel, the said barrel being formed to a shape whereby as the lifter is raised to the vertical about its pivot the chain wraps on to the barrel at a rate corresponding to the angular movements of the lifter, substantially as herein set forth.

2. In a pole erecting or lowering machine, the combination with the two side frames, means for holding the said frames together, a table axially supported by the said frames, a barrel also axially supported by the said frames, a chain secured to the barrel at one end and to the table axle at the other end and a lifter composed of two lengths of angle iron braced together for a portion of their length and for the other portion bent in divergent directions, the ends of the last named portion being pivotally connected to the machine pulleys carried by the lifter and around certain of which the said chain passes, substantially as herein set forth.

3. In combination in a pole erecting or lowering machine two side frames, means for holding the frames together, a table axially supported by the said frames, a lifter with bifurcated portion pivotally supported by the frames and pulleys carried by the lifter, a barrel also axially supported by the said frames, a chain secured at one end to the barrel and at the other end to a fixed part of the machine after passing over certain of the pulleys carried by the lifter, a set of gear wheels and shafts giving a treble purchase and when rotated serving to rotate the barrel, a segmental worm quadrant on the table axis, a shaft alongside the machine frame, and in a bearing carried by the frame, a worm and bevel wheels on said shaft, and a further bevel wheel on one of the gear wheel shafts which is capable of being moved into and out of gear with the bevel wheel on the said worm carrying shaft, substantially as herein set forth.

4. In combination, two side frames, means for holding the frames together, a table axially mounted in said frames, a barrel also axially mounted in the frames, a lifter pivotally mounted upon a connecting member of the frames means for rotating the table and barrel, pulleys carried by the lifter, a chain secured to the barrel at one end and to the table axle at the other after

passing over certain of the pulleys carried  
by the lifter, and a fitment carried by the  
lifter consisting of a pair of arms or horns  
arranged in a plane at right angles to the  
5 lifter, rollers carried by the said arms, a  
bar-like member hinged at one end to one  
of the arms, and means for adjustably  
fastening the other end to the other arm,  
said means comprising a pin, a long releas-

ing chain connected to said pin and a pulley 10  
carried by the lifter over which the chain  
passes, substantially as herein set forth.

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

JOHN HENRY GREEN.

Witnesses:

F. C. PENNINGTON,  
JOHN CAMP.