

No. 885,042.

R. GUTHRIE.

PATENTED APR. 21, 1908.

MACHINE FOR ERECTING POSTS AND POLES.

APPLICATION FILED AUG. 28, 1907.

3 SHEETS—SHEET 1.

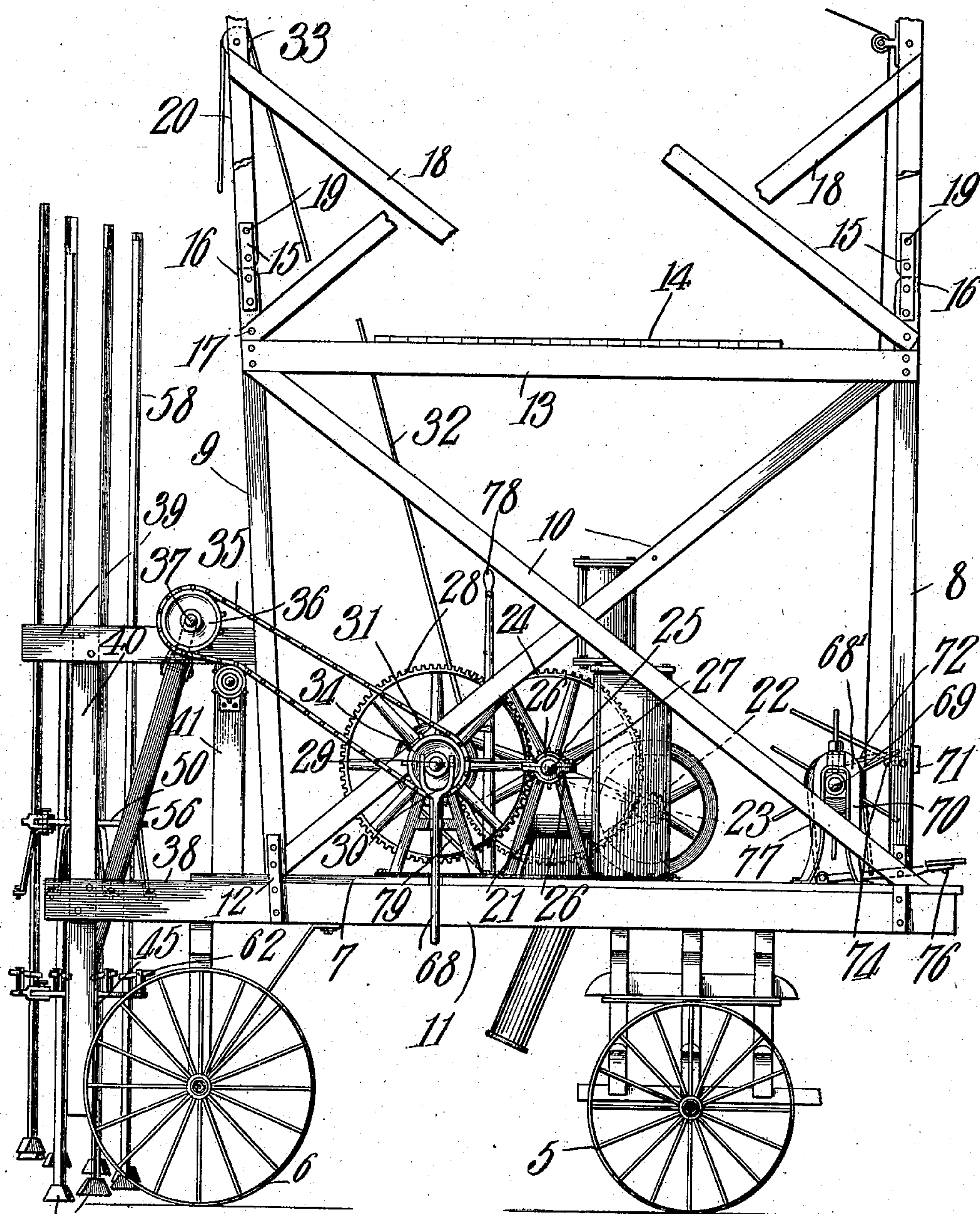


Fig. 1.

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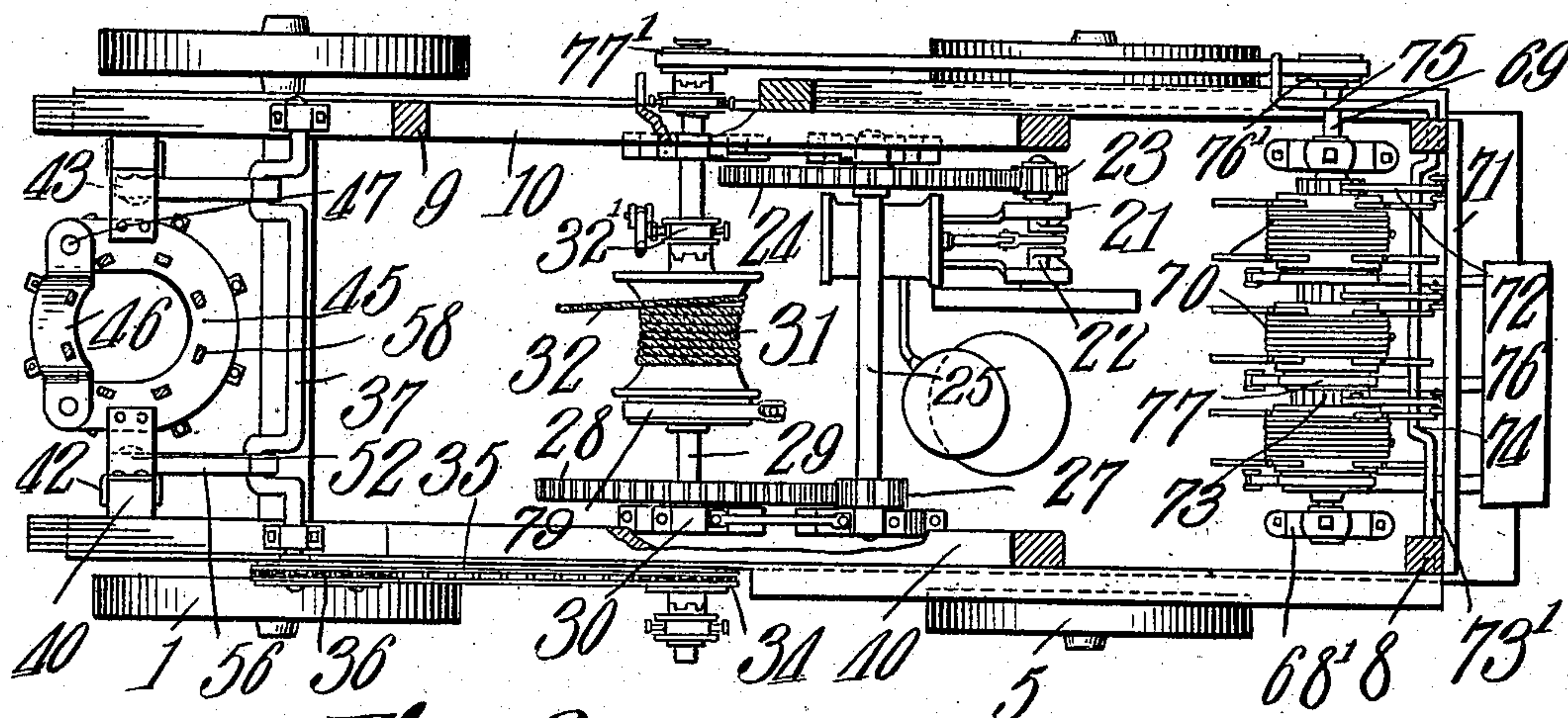


Fig. 2.

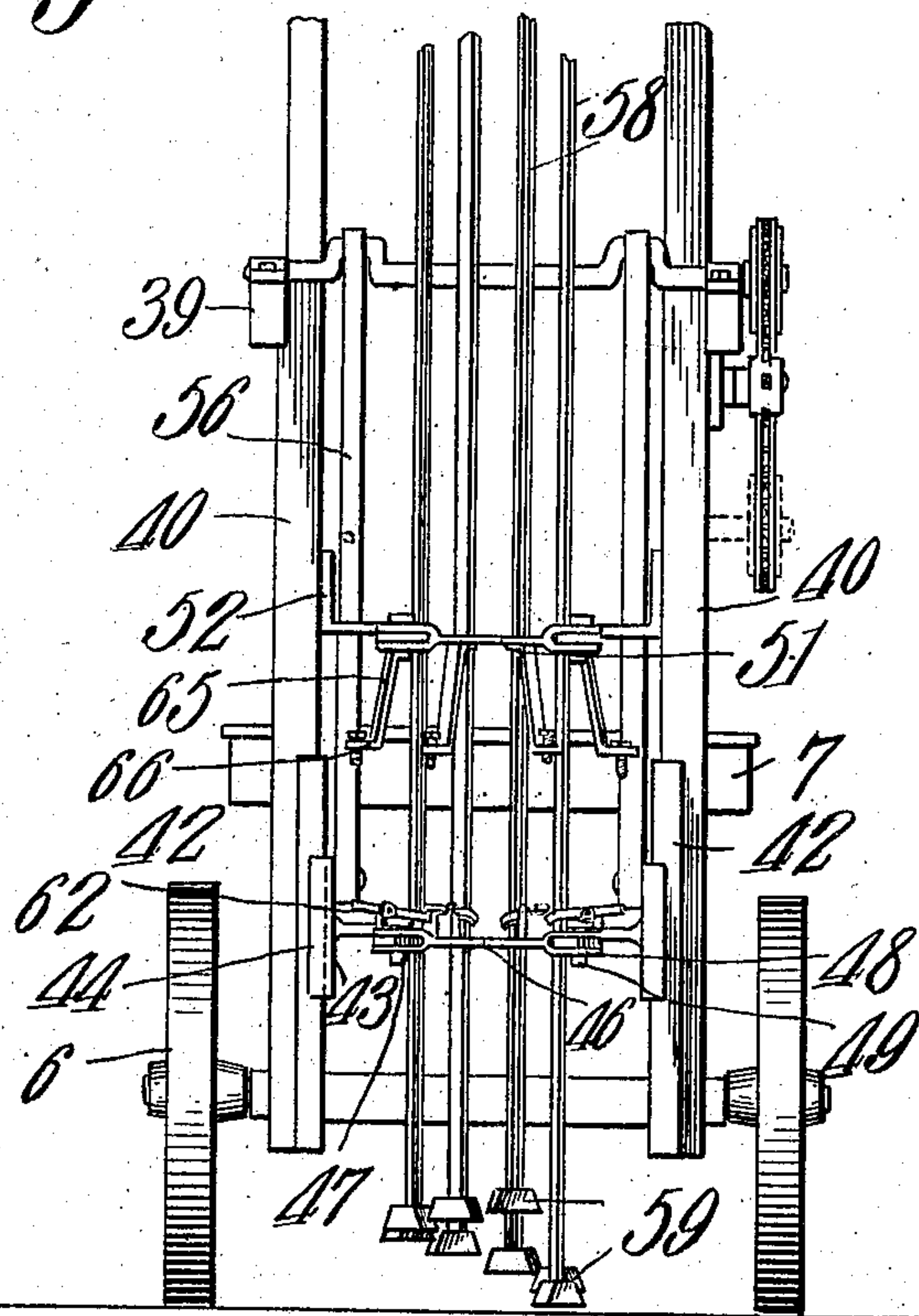


Fig. 3.

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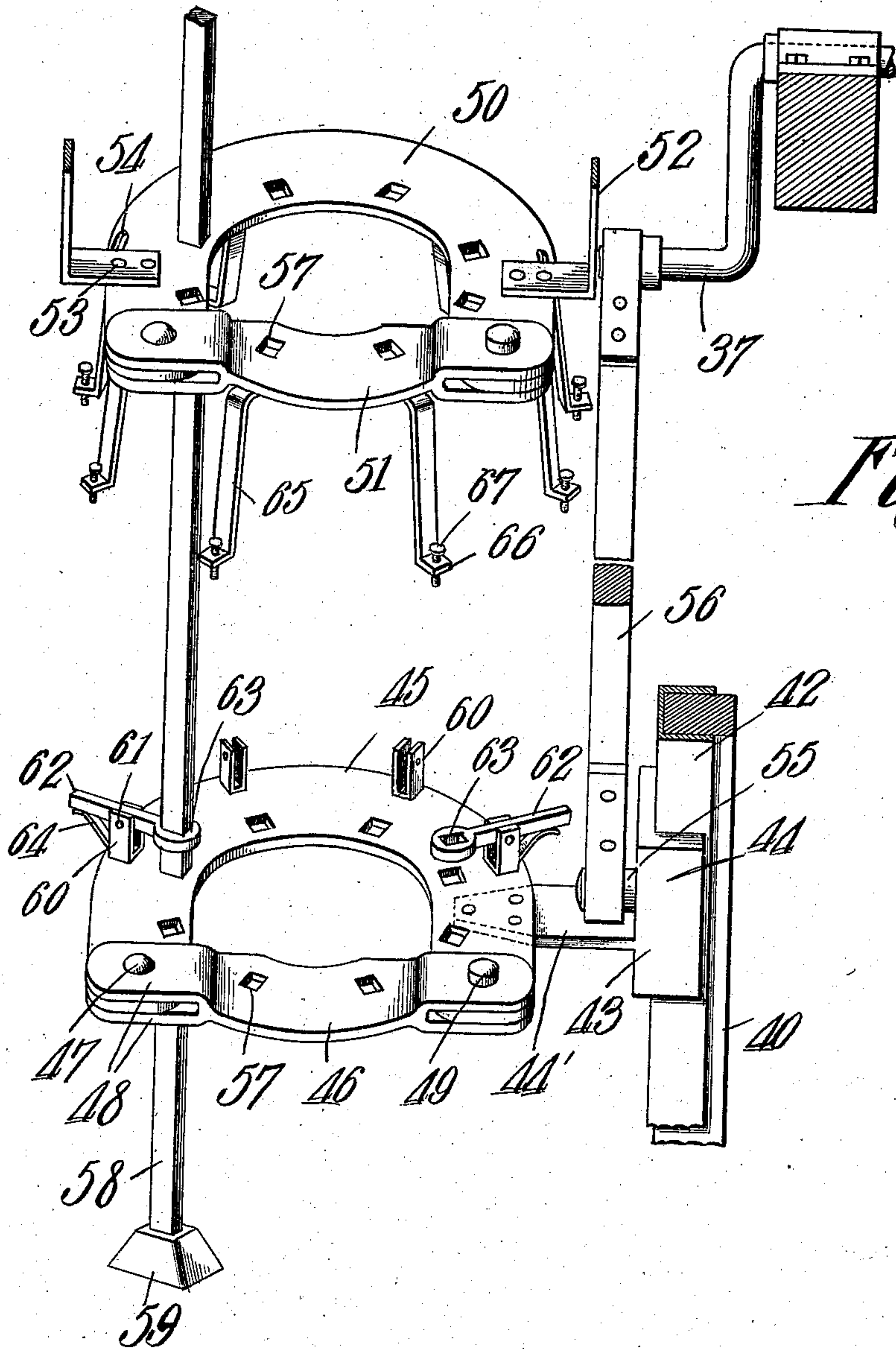


Fig. 4.

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UNITED STATES PATENT OFFICE.

ROBERT GUTHRIE, OF LINCOLN, NEBRASKA.

MACHINE FOR ERECTING POSTS AND POLES.

No. 885,042.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed August 28, 1907. Serial No. 390,522.

To all whom it may concern:

Be it known that I, ROBERT GUTHRIE, a citizen of the United States, residing at Lincoln, in the county of Lancaster and State of Nebraska, have invented a new and useful Machine for Erecting Posts and Poles, of which the following is a specification.

This invention relates to machines for erecting posts and poles such as are employed for supporting telegraph and telephone wires and other overhead conductors.

The object of the invention is to provide a strong, durable and thoroughly efficient machine of the class described by means of which a line of posts or poles may be quickly erected in proper position to receive the overhead wires or conductors.

A further object of the invention is to provide means for lifting the pole and means for guiding the latter into the excavation or hole previously formed to receive the same.

A further object is to provide means for tamping the earth around the pole, and means for locking the pole against accidental displacement during the tamping operation.

A still further object of the invention is to generally improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

In the accompanying drawings forming a part of this specification: Figure 1 is a side elevation of a machine constructed in accordance with my invention. Fig. 2 is a top plan view of the machine partly in section. Fig. 3 is a rear elevation. Fig. 4 is a detail perspective view of the tamping plates and their associated parts.

Similar numerals of reference indicate corresponding parts in all of the figures of the drawings.

The improved mechanism forming the subject matter of the present invention is preferably mounted on a truck including the front and rear traction wheels 5 and 6, to the bolsters of which is secured in any suitable manner a platform 7.

Mounted on the platform 7 is a derrick or superstructure preferably formed in two sec-

tions, the lower portion of the front derrick 8 being connected to the lower portion of the rear derrick 9 by intersecting diagonal braces 10.

One of the vertical bars of each set is secured to the adjacent longitudinal beam 11 of the platform by means of a strap iron or bracket 12 while the opposite ends of said vertical bars are bolted or otherwise rigidly secured to a horizontal bar 13 to form a support for the auxiliary platform 14.

The upper section of the derrick is similar in construction to the lower section and is secured thereto by connecting plates 15 which engage the curved terminals 16 of the vertical bars of the adjacent lower section, as shown.

It will thus be seen that by removing the bolts 17 of the diagonal braces 18 and one of the fastening devices 19 on each plate, the vertical bars 20 and diagonal bars 18 of the upper derrick section may be folded downwardly on the auxiliary platform 14 thereby to permit the truck to pass beneath the bridges, over-head wires and similar obstructions. The ends of the derrick members are curved on the inner faces only, so that the upper members may be turned down. The outer edges are square to prevent folding in an outward direction.

Mounted on the platform 7 is a motor preferably in the form of a gas engine 21 to the driving shaft 22 of which is secured a pinion 23, which latter meshes with a master gear 24 carried by a stub shaft 25.

The shaft 25 is journaled in suitable bearings 26 and is provided with a pinion 27 which meshes with a gear wheel 28.

The gear wheel 28 is secured to a shaft 29 extending transversely across the platform and mounted in suitable bearings 30, similar in construction to the bearings 25.

Mounted loosely on the intermediate portion of the shaft 29 is a drum 31 to which is attached one end of a cord or cable 32 the opposite end of which passes over a block 33 secured to one of the vertical bars 20 of the derrick and thence extends downwardly at the rear of the truck for engagement with the pole or post to be erected. The drum may be connected to the shaft by a clutch 32'.

One end of the shaft 29 is provided with a sprocket wheel 34 which is connected by a sprocket chain 35 with a similar sprocket

wheel 36 secured to a crank shaft 37 extending transversely across the truck at the rear end thereof, as shown, and which constitutes the driving shaft of the tamping mechanism hereinafter referred to.

The rear ends of the sills 11 are extended longitudinally beyond the platform 7 to form a terminal rectangular frame or socket 38, there being a similar socket or frame 39 disposed above the frame 38 and which in conjunction with the lower frame forms a means for supporting the pole or post in vertical position during the tamping operation.

The crank shaft 37 is journaled in one of the longitudinal sills of the upper frame 39 while the latter is supported in spaced relation to the lower frame 38 by standards 40 and 41.

The lower ends of the standards 40 are extended below the adjacent frame 38 and are provided with wear plates or guides 42 on which are slidably mounted for vertical movement blocks or castings 43 having laterally extending flanges 44 which embrace the guides 42, as shown.

The blocks or castings 43 are provided with laterally extending arms 44' the terminals of which are riveted or otherwise rigidly secured to a segmental supporting plate 45, the latter being provided with a pivoted section or gate 46 which may be swung laterally on the pivot pin 47 to open position so as to permit the introduction of the post or pole.

The opposite ends of the pivoted section 46 are bifurcated to form spaced ears 48 which embrace the tamper plate 45, the ears at one end of the pivoted section being pierced by a pin or bolt 49 which engages a correspondingly shaped opening formed in the tamper plate and serves to lock the pivoted section in closed position.

Disposed above and arranged in alignment with the movable plate 45 is a stationary tamper plate 50 also provided with a pivoted section 51 similar in construction to the section 46 to permit the introduction of the post or pole.

The upper plate 50 is secured to the adjacent upright 40 by means of attaching brackets 52, there being bolts or similar fastening devices 53 passing through elongated slots 54 formed in the plate 50 so that said plate may be adjusted with respect to the standards 40 thereby to aline the upper plate with the lower plate 45 and prevent said plates from binding against the pole to be erected.

Secured to or formed integral with the sliding blocks 43 are laterally extending trunnions 55 each of which is pivotally connected with one end of a pitman 56, the opposite end of which is operatively connected to the crank shaft 37 so that when the latter is ro-

tated the lower plate 45 will be reciprocated within the rear frames or pockets 38 and 39 of the truck.

The tamping plates 45 and 50 together with the pivoted sections 46 and 51 are provided with vertically alined openings 57 preferably angular in cross section and in which are slidably mounted for vertical movement tamping members or bars 58.

The bars 58 are angular in cross section to conform to the shape of the openings 57 and are provided with terminal shoes 59 adapted to engage the ground around the pole and tamp or pack the earth around said pole.

Secured to the movable plate 45 are a plurality of sets of spaced lugs 60 between each set of which is pivotally mounted at 61 a gripping dog 62. One end of each dog is provided with an enlarged head having a rectangular socket 63 formed therein for the reception of the adjacent tamping rod 58 while the opposite end thereof is normally and yieldingly held in elevated position by a flat spring 64. It will thus be seen that the walls of the socket 63 will bite into or clutch the rods 58 so that when the tamper plate 45 is moved upwardly the tamping devices will also be elevated.

Depending from the lower face of the stationary plate 50 are a plurality of depending arms or fingers 65 the free ends of which are bent laterally to form ears 66 having threaded openings formed therein for the reception of screws or trips 67.

The trips 67 extend in the path of movement of the gripping dogs 62 so that when the reduced ends of the dogs strike the adjacent screws or trips 67, said dogs may be tilted thereby to release the walls of the socket from engagement with the adjacent tamping rods 38 and thus permit said rods to fall by gravity to lowered position and thoroughly tamp the earth around the base of the pole.

The trips or screws 67 are adjustable vertically in the threaded sockets of the ears 66 so that said trips may engage the pivoted dogs alternately, successively or simultaneously thereby to vary the stroke of the tamping members according to the nature of the work to be performed. It will thus be seen that when the clutch lever is actuated to lock the sprocket wheel 34 on the driving shaft 29 motion will be imparted to the crank shaft 37 to reciprocate the lower plate 45 and thereby actuate the tamping members. As the lower plate 45 moves upwardly between the guides 42 it carries with it the several tamping elements or rods 58 which are released and dropped by gravity in engagement with the ground as soon as the pivoted dogs engage the screws or trips 67. On the downward movement of the plate 45 the dogs 62 will ride over the walls of the tamping rods 58 until the pitman has reached the end of its stroke when an upward move-

ment on the tamper plate will cause the dogs 62 to again grip the tamping rods and elevate the latter, this operation being continued until the earth is thoroughly packed around the base of the pole.

Secured to the forward end of the platform 7 are spaced brackets 68' in which is journaled a shaft 69 carrying a plurality of drums or reels 70 upon which are coiled or wound the wires to be strung upon the cross arms of the poles or posts.

Pivotally mounted on the cross bar 71 at the front of the truck are a plurality of pivotally mounted pawls 72 the free ends of which engage the teeth of ratchet wheels 73 carried by the drums or reels 70 thereby to maintain the wire under tension during the stretching operation or when transferring the truck from one post-hole to another.

As a means for simultaneously releasing the several pawls 72 there is provided an actuating rod 73' which is journaled in the adjacent vertical bars 8 of the derrick and is provided with a plurality of cams or eccentrics 74 which extend beneath the pawls 72 so that by rotating the terminal crank arm 75 the several pawls may be elevated to inoperative position thereby to permit free rotation of the drums on the shaft 69. The pawls 72 being separately pivoted to the cross bars 71 may be elevated independently of each other or simultaneously, as desired, so as to permit rotation of one or all of the wire carrying reels.

Disposed at the forward end of the platform is a foot lever 76 the inner end of which extends beneath the wire carrying reels and is provided with one or more brake straps 77 which engage the drums on the wire carrying device, said foot lever being pivotally mounted on the platform so that by depressing the free end of the lever the straps may be moved into frictional engagement with said drums thereby to regulate the unwinding of the wire from the reels.

Secured to one end of the shaft 69 is a belt pulley 76' which is operatively connected with a similar pulley 77' on the transverse shaft 29, whereby so that power may be transmitted from the engine to the wire carrying reels to rotate the same.

The lever 78 is pivotally mounted on the platform of the truck and is provided with a band brake 79 which engages the sheave or drum 31 thereby to regulate the descent of the pole when lowering the same into the hole or excavation designed to receive the same.

The operation of the device is as follows:—
The truck is moved to a position with the center of the tamper over the center of the post hole. The gates 46 and 51 are opened and cable 32 is attached to the pole. The motor is then started and clutch 32' is thrown in, starting the winding drum 31 into motion.

The hoisting cable 32 has one or more turns around the winding drum and the end is taken off by the operator as the winding proceeds in the same manner as with an ordinary winch or capstan. When the pole has reached the proper height, the clutch 32' will be thrown out. At the same time the lever 78 is actuated and the brake applied to the winding drum. The rope is then slackened or surged and the pole allowed to settle down into the hole. The pole is turned until it assumes correct position and the gates 46 and 51 are closed. The clutch lever 68 is then operated in order to connect the sprocket wheel 34 to the shaft 29, so that motion will be transmitted to the crank shaft 37 for actuating the tampers. During this operation a workman at the top of the derrick is attaching the wires to the pole, and at the same time another workman actuates the wire reel 70 to release or slacken the wires and give a proper drop to the wire between the poles. When this is done the pawl 72 is dropped into locking position and holds the wires under tension until all of the wires are fixed and the hole is filled and tamped. The gates 46 and 51 are then opened and remain open until the next pole is in position. The workman then forces the foot lever 76 down to release the pole 72 so that the wire will unreel when driving forward to the next position.

When passing under relatively low bridges, over-head wires, and the like, the upper section of the supporting derrick may be folded downwardly on the auxiliary platform by releasing the fastening bolts, in the manner before described.

From the foregoing description it is thought that the construction and operation of the device will be readily understood by those skilled in the art and further description thereof is deemed unnecessary.

Having thus described the invention what is claimed is:

1. A machine of the class described including a truck having means for supporting a pole, a tamping device, and a motor carried by the truck for actuating the tamping device.

2. A machine of the class described including a truck having means for supporting a pole, a plurality of tamping members surrounding the pole, and means for actuating the tamping members.

3. A machine of the class described including a truck having aligned frames at one end thereof for the reception of a pole, a tamping device disposed within the frames and adapted to embrace the pole, and means for actuating the tamping device.

4. A machine of the class described including a truck having means for supporting a pole, a tamping device surrounding the pole, a crank shaft, a pitman connecting the crank shaft and tamping device, and means

for rotating the shaft thereby to actuate said tamping device.

5. A machine of the class described including a truck, spaced tamping plates disposed at one end of the truck and adapted to receive a pole, said plates being provided with pivoted sections movable laterally to open position, tamping members extending through the plates, and means for operating the tamping members.

6. A machine of the class described including a truck, relatively stationary and movable plates carried by the truck and having segmental recesses formed therein for the reception of a pole, said plates being each provided with a pivoted section movable laterally to open position, tamping members extending through the plates, and means operatively connected with the movable plate for actuating the tamping members.

7. A machine of the class described including a truck, segmental members mounted on the truck and each provided with a pivoted section movable laterally to open position, tamping rods extending through said members, and means for actuating the tamping rods.

8. A machine of the class described including a truck, vertically disposed guides secured to one end of the truck, a movable plate slidably mounted between the guides, a stationary plate disposed above the movable plate, said stationary and movable plates being provided with pivoted sections movable laterally to open position, tamping members extending through said plates, crank shaft, a pitman forming a connection between the crank shaft and movable plate, and means for rotating the crank shaft thereby to actuate the tamping members.

9. A machine of the class described including a truck, relatively stationary and movable work engaging members carried by the truck and each provided with a pivoted section movable laterally to open position, tamping members extending through the work engaging members, gripping devices carried by one of the work engaging members and adapted to engage the tamping members for elevating the same, means carried by the work engaging member for actuating the gripping devices to release the tamping members, and means for actuating the movable work engaging member.

10. A machine of the class described including a truck, a stationary segmental plate secured to one end of the truck, a movable segmental plate disposed in alinement with the stationary plate, said plates being provided with pivoted sections movable laterally to open position, tamping rods extending through said plates, gripping dogs carried by the movable plate and adapted to engage the rods for elevating the same, and arms depending from the upper plate and

adapted to engage and release the gripping dogs on the upward movement of the movable plate.

11. A machine of the class described including a truck, relatively stationary and movable segmental plates carried by one end of the truck and each provided with a pivoted section movable laterally to open position, said plates being provided with alined openings, tamping rods mounted for vertical movement in said openings, gripping devices carried by the lower plate and adapted to engage the tamping rods for elevating the same, means carried by the upper plate for releasing the gripping devices, and means for reciprocating the movable plate.

12. A machine of the class described including a support, relatively stationary and movable work engaging members carried by the support and each provided with a pivoted section adapted to embrace the work, tamping devices movable vertically of said members, gripping devices carried by one of the members and adapted to engage the tamping devices for elevating the same, means carried by the upper work engaging member for releasing the gripping devices, and means for reciprocating the movable work engaging member.

13. A machine of the class described including a truck, relatively stationary and movable work engaging members carried by one end of the truck and each provided with a pivoted section adapted to embrace the work, a plurality of sets of spaced lugs extending vertically from the lower member, tamping rods movable vertically through the members, gripping dogs pivotally mounted between the lugs and adapted to engage the tamping rods, arms depending from the upper member and adapted to trip the dogs to release the tamping rods, and means for reciprocating the lower work engaging member.

14. A machine of the class described including a truck, relatively stationary and movable work-engaging members carried by one end of the trucks and each provided with a pivoted section adapted to embrace the work, said sections being formed with alined openings, tamping rods movable vertically within the openings, gripping dogs pivotally mounted on the lower member and provided with gripping heads adapted to engage the tamping rods for elevating the latter, arms depending from the upper section and having their free ends bent laterally, screws threaded in the bent ends of the arms and adapted to engage and release the gripping dogs to permit the descent of the tamping rods, and means for reciprocating the movable work engaging member.

15. A machine of the class described including a support, relatively stationary and movable work engaging members each pro-

vided with a pivoted section movable laterally to open position, tamping devices movable vertically of the sections, gripping devices carried by the lower member and adapted to engage the tamping devices for elevating the same, means carried by the upper work engaging member for alternately or simultaneously releasing the gripping devices to permit the descent of the tamping devices, and means for reciprocating the lower work-engaging member.

16. A machine of the class described including a truck, relatively stationary and movable tamping members carried by the truck and each provided with a pivoted section movable laterally to open position, tamping rods movable vertically of the members, spring actuated gripping dogs carried by the movable member and adapted to engage the tamping rods for elevating the latter, arms depending from the upper work engaging member and extending in the path of movement of the gripping dogs for releasing the latter, and means for operating the movable member.

17. A machine of the class described including a truck, relatively stationary and movable work engaging members carried by one end of the truck and each provided with a pivoted section movable laterally to open position, said members being formed with aligned openings, tamping rods movable vertically within the openings, spring actuated gripping dogs carried by the movable member and adapted to engage the rods for elevating the same, means extending in the path of movement of the dogs for releasing the latter to permit the descent of the tamping rods, and means operatively connected with the lower work engaging member for reciprocating the same.

18. A machine of the class described including a truck having one end thereof provided with rectangular frames, vertical guides connecting said frames, relatively stationary and movable work engaging members disposed within the frames and each provided with a pivoted section adapted to embrace the work, tamping devices adjustable vertically of said members, gripping dogs carried by the movable member and adapted to engage and elevate the tamping devices, means depending from the upper work engaging member and extending in the path of movement of the tripping dogs for releasing the latter to permit the descent of the tamping devices, slides mounted for vertical movement on the guides and operatively connected with the lower member, a crank shaft, a pitman connecting the crank shaft and slide, and means for rotating the crank shaft.

19. A machine of the class described including a truck having spaced frames at one end thereof, relatively stationary and movable work engaging members disposed within

the frames and each provided with a pivoted section movable laterally to open position, tamping rods movable vertically of said members, spring actuated gripping dogs carried by the lower member and adapted to engage the tamping rods for elevating the latter, means carried by the upper section and extending in the path of movement of the gripping dogs for releasing the latter thereby to permit the descent of the tamping rods, guides forming a part of the frame, slides mounted on the guides and operatively connected with the lower work engaging member, a crank shaft, a pitman forming a connection between the slides and the crank shaft, a motor, and a connection between the motor, and a crank shaft for operating the latter.

20. A machine of the class described including a truck, relatively stationary and movable members carried by one end of the truck and each provided with a pivoted section adapted to embrace the work, guides extending vertically of the truck, tamping rods mounted for reciprocation in said members, gripping dogs carried by the lower member and adapted to engage and elevate the tamping rods, means depending from the upper member and extending in the path of movement of the dogs for releasing the latter thereby to permit the descent of the tamping rods, slides operatively connected with the lower member and engaging the guides, a crank shaft, a pitman forming a pivotal connection between the crank shaft and guides, a motor, a transverse shaft driven by the motor, a connection between the transverse shaft and crank shaft for rotating the latter, a drum secured to the transverse shaft, and a cable secured to the drum and adapted to engage the work for positioning the same between the relatively stationary and movable members.

21. A machine of the class described including a truck having a platform and provided with longitudinal sills extending beyond the platform at one end of the truck to form a substantially rectangular frame, bars spaced from and disposed parallel with the extended ends of the beams and forming a second frame, vertical guides connecting said frames, relatively stationary and movable work engaging members disposed within the frame and each provided with a pivoted section movable laterally to open position, said frames being formed with aligned openings, tamping rods mounted for reciprocation in said openings, pawls pivotally mounted on the movable member and provided with gripping heads adapted to receive and engage the tamping rods for elevating the latter, arms depending from the stationary member and having their free ends deflected and provided with perforations the walls of which are threaded, screws

engaging the threaded walls of the perforations and extending in the path of movement of the gripping dogs for releasing the latter thereby to permit the descent of the tamping rods, blocks slidably mounted on the guides and operatively connected with the movable member, a transverse crank shaft journaled in the bars of the upper frame, a pitman connecting the crank shaft and sliding blocks, a motor, and means operatively

connected with the motor for rotating the crank shaft thereby to actuate the tamping rods.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ROBERT GUTHRIE.

Witnesses:

R. SPRINGER,
L. J. DUNN.