

(No Model.)

3 Sheets—Sheet 1.

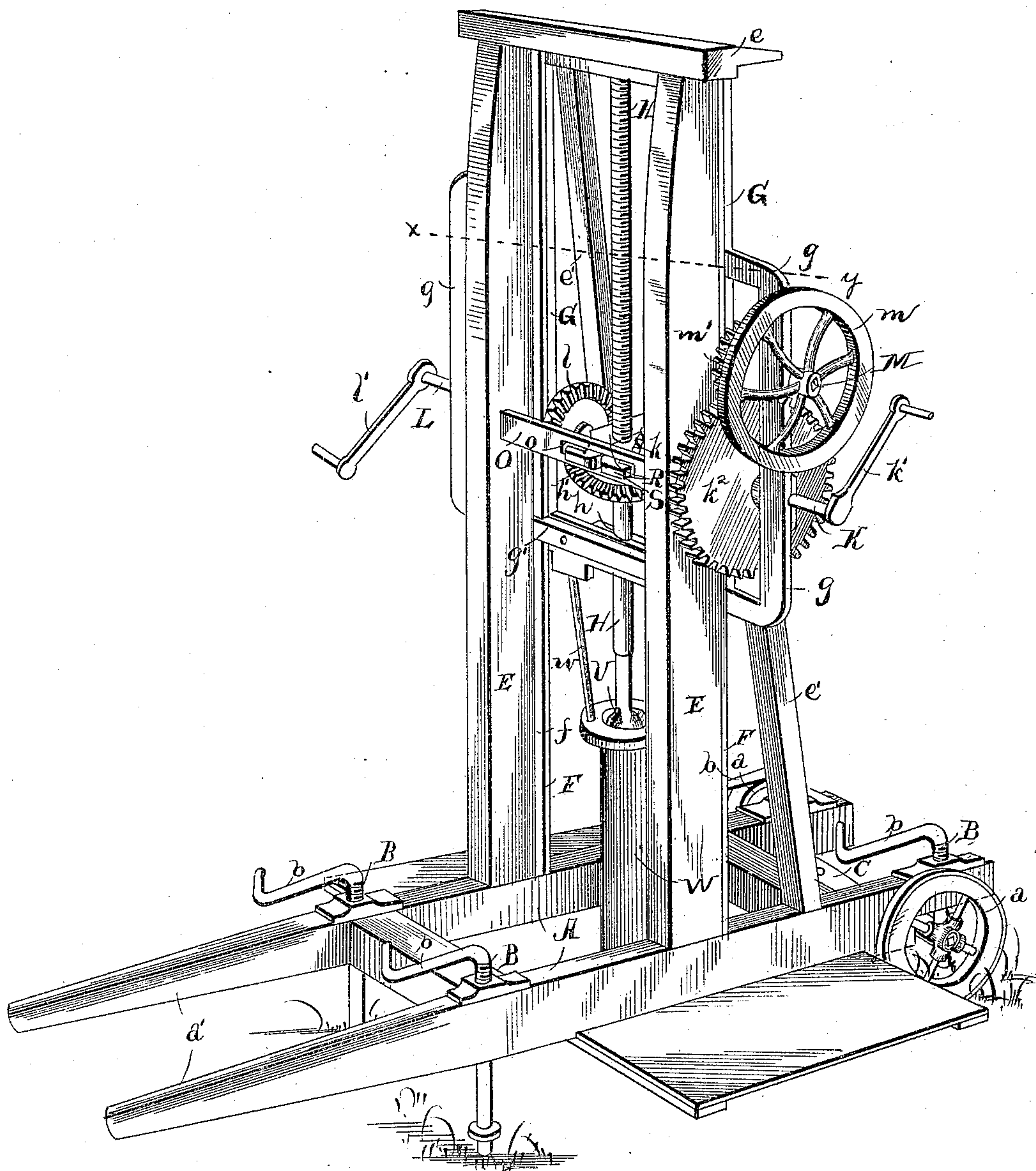
F. E. WREN.

EARTH AUGER.

No. 307,697.

Patented Nov. 4, 1884.

FIG. 1.



WITNESSES

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(No Model.)

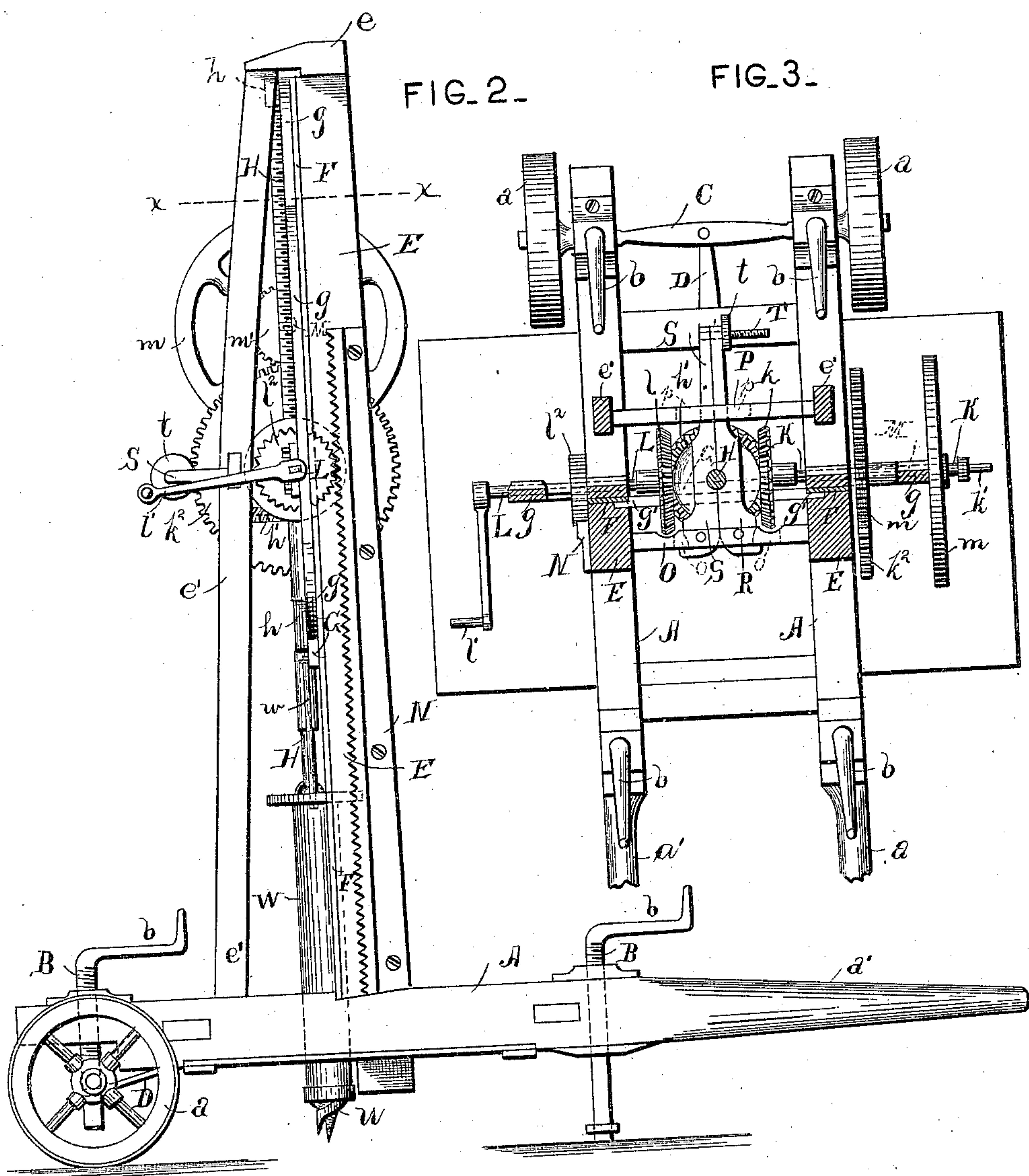
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WITNESSES

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(No Model.)

3 Sheets—Sheet 3.

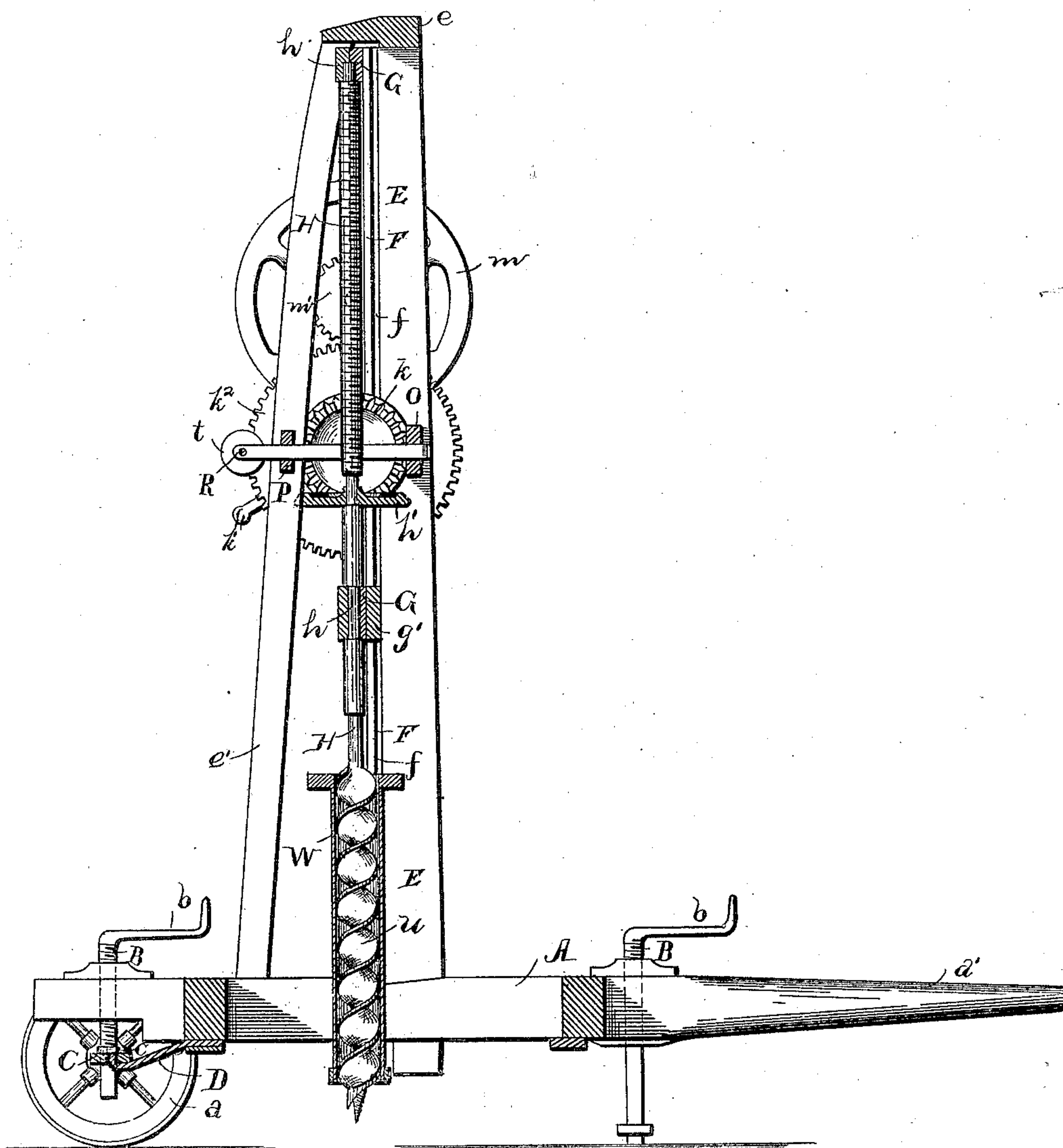
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FIG. 4.



WITNESSES

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# UNITED STATES PATENT OFFICE.

FRANKLIN ELIAS WREN, OF BLOOM CENTRE, OHIO.

## EARTH-AUGER.

SPECIFICATION forming part of Letters Patent No. 307,697, dated November 4, 1884.

Application filed May 13, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, FRANKLIN ELIAS WREN, of Bloom Centre, in the county of Logan and State of Ohio, have invented certain new and useful Improvements in Earth-Augers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in earth-augers, the object of the same being to provide improved mechanism for forcing the auger downward and allowing the auger to be raised; a further object being to provide improved means for attaching a sliding auger-frame to a main frame; a further object being to provide improved means for leveling the supporting platform; a further object being to provide a convenient, durable, effective, and inexpensive machine particularly adapted to bore post-holes.

With these ends in view my invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view of my machine in perspective. Fig. 2 is a view in side elevation. Fig. 3 is a horizontal sectional view through the line  $xy$  of Fig. 1, and Fig. 4 is a longitudinal vertical section.

A represents a truck frame or platform provided at its forward end with a pair of truck-wheels,  $a$ , and terminating rearwardly in a pair of handles,  $a'$ , by lifting which the weight of the machine is thrown upon the wheels  $a$  and the machine conveniently moved from place to place. The frame A is further provided with four screws, B, having cranks  $b$ , by which they are operated for leveling the frame of the truck-platform on uneven ground. The two rear screws pass down through threaded perforations in the frame and form legs. The two forward screws, after passing through threaded perforations in the frame, extend through perforations in the axle C, and are shouldered or provided with collars  $c$ , which bear on the axle, while the screws turn freely in perforations in the axle. The axle C is further supported by a central forwardly-extending spring-bar, D, one end of which is secured firmly to the frame A, and the other bent upward and extending through a perforation at the center of the axle. Thus, turning down the screws at the forward end will raise the front of the frame A from the axle, the bar or brace D springing downward, while the turning downward on either of the front screws will elevate that corner of the frame, the axle having a limited tilting motion. The frame A is further provided with laterally-extending platforms suitable for the operator to stand upon when operating the machine.

The machine-supporting frame consists of two upright posts, E, one on each side of the truck-frame near its center, secured at their upper ends by a cap,  $e$ , and two braces,  $e'$ , fastened securely at their bases to the truck-frame in front of the posts E, and having their upper ends firmly secured to the cap  $e$ . The posts E are faced with flat metal strips F, which project over the cut-away edges, thereby forming grooves  $f$  along the inner front edges of the posts. A rectangular-shaped frame, G, provided with side attachments,  $g$ , is adapted to slide vertically on the faces of the posts E, and is held in contact therewith by lips or projections  $g'$  on its back, which engage and slide in the grooves  $f$ . The auger-shaft H is journaled in suitable bearings,  $h$ , in the upper and lower ends of the frame G, is threaded nearly its entire length, and is provided with a horizontal bevel gear-pinion,  $h'$ , rigidly secured thereto.

Horizontal shafts K and L are journaled in suitable bearings in the frame G, each being provided with a bevel gear-wheel,  $k$  and  $l$ , respectively, rigidly secured to the inside end, and adapted to engage the bevel gear-pinion  $h'$ . The shaft K is further provided with an operating-crank,  $k'$ , on its outer end, and with a spur-wheel,  $k''$ , secured thereon between the frames G and  $g$ . A short shaft, M, carrying a fly-wheel,  $m$ , on its outer end, and provided with a pinion,  $m'$ , meshing with the wheel  $k''$ , is journaled in suitable bearings in the frame G above the shaft K, and serves to regulate the motion of the auger-shaft, overcoming the jerky motion which would naturally be caused by the auger encountering harder and lighter soil at regular intervals during its progress downward. The shaft L is also provided with an operating-crank,  $l'$ , on its outer end, and with a toothed pinion,  $l''$ , secured against rotary motion on the shaft by feather and groove; or the shaft may be square or angular shape



in cross-section, and the pinion  $l^2$  adapted to fit the shaft, the object being to cause the pinion to rotate with the shaft, and at the same time admit of a sliding motion thereon. The post E on the side toward the crank  $l'$  is provided with a rack-bar, N, with which the pinion  $l^2$  engages, when desired. Cross-bars O and P are firmly secured to the posts E and braces  $e'$ , respectively, and are each provided with a slot,  $o$   $p$ , in which the levers R and S are movably secured. The levers are pivoted in the slot  $o$ , and are provided with a threaded recess near their centers, adapted to embrace the auger-shaft when the levers are brought close together. The forward ends of these levers project through the slot  $p$ , the end of the lever R being perforated to receive a screw, T, which latter is firmly set in the end of the lever S, and provided with an adjusting-nut,  $t$ . The edges of the levers R and S which lie adjacent to one another are shaped convex at their rear ends, to allow the said levers to open freely. The auger U is secured to the lower end of the auger-shaft by any approved means, and is incased in a cylinder, W, secured to the lower end of the sliding frame by the rods or straps  $w$ . When the frame G  $g$  is at its uppermost limit, the point of the auger which extends the width of its cutting lips below the bottom of the cylinder W is near the ground.

To operate the machine, the pinion  $l^2$  slides outward out of engagement with the rack-bar, the levers R and S are drawn together by the adjusting-nut  $t$  and caused to embrace the auger-shaft, and the operating-cranks turned in opposite directions. The auger-shaft will now rotate, and the sliding frame G  $g$  will be forced downward by the thread on the auger-shaft engaging the threaded boxing on the levers R S. When the sliding frame reaches its limit at base of frame, or when the hole is made sufficiently deep, the levers R and S are separated, throwing the threaded boxing out of engagement with the shaft, the pinion  $l^2$  is slid into engagement with the rack-bar, and the operating-levers turned in the same direction as before, thereby elevating the frame G  $g$  to its upper limit, while the earth continues to be drawn upward through the cylinder W on the auger twist to the top of the cylinder, and there discharged.

It is evident that many slight changes may be made in the form and arrangements of the several parts above described without departing from the spirit and scope of my invention, hence I do not wish to limit myself strictly to the constructions herein set forth; but,

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

1. In an earth-auger, the combination, with a truck having earth-auger mechanism supported thereon, of wheels located at one end of the truck, cranks provided with screw-shafts that extend through the truck-frame

and are attached to the bearings of the wheels for imparting vertical adjustment to one end of the truck, and screw-threaded standards or legs extending through the opposite end of the truck and provided at their upper ends with cranks, substantially as set forth.

2. In an earth-auger, the combination, with a truck having laterally projecting platforms, and an auger supported on said truck, of wheels connected by an axle, and adjusting-screws passing through the truck and forming bearings for the axle, substantially as set forth.

3. In an earth-auger, the combination, with a truck and an auger supported thereon, of an axle, wheels journaled on said axle, adjusting-screws forming bearings for said axle, and a spring one end of which bears against the lower face of said axle.

4. In an earth-auger, the combination, with a truck and an upright supporting-frame secured to said truck, of an auger and a cylinder surrounding said auger, and adapted to move vertically simultaneously therewith.

5. In an earth-auger, the combination, with a truck and an upright frame secured thereto, of a sliding frame carrying an auger, and a cylinder secured to said sliding frame and partly inclosing said auger.

6. The combination, with the truck and the upright frame provided with a rack-bar and cross-pieces, of the sliding frame, the screw-rod journaled in said frame and carrying an auger, the pivoted levers secured in the cross-pieces and provided with bearings for the screw-rod, the bevel-wheel secured to the screw-rod, the shafts having bevel-wheels thereon for turning the screw-rod, and a sliding wheel adapted to engage the rack for the purpose of elevating the sliding frame, substantially as set forth.

7. In an earth-auger, the combination, with an auger-shaft journaled in a sliding frame, an auger secured to the said shaft, and a cylinder surrounding the auger, of a rack-bar secured to the supporting-frame, and an operating-shaft carrying a sliding pinion, said pinion being adapted to engage the rack-bar and elevate the sliding frame while the shaft rotates the auger forward, substantially as set forth.

8. In an earth-auger, the combination, with an auger-shaft journaled in a sliding frame, an auger secured to the shaft, and a cylinder incasing the auger, of a rack-bar, a fly-wheel and two operating shafts, one of said shafts being adapted to operate the fly-wheel and regulate the motion of the auger, and the other adapted to engage the rack-bar and elevate the auger, substantially as set forth.

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

FRANKLIN ELIAS WREN.

Witnesses:

ROBT. B. KENNEDY,  
CHARLES G. EVERET.