

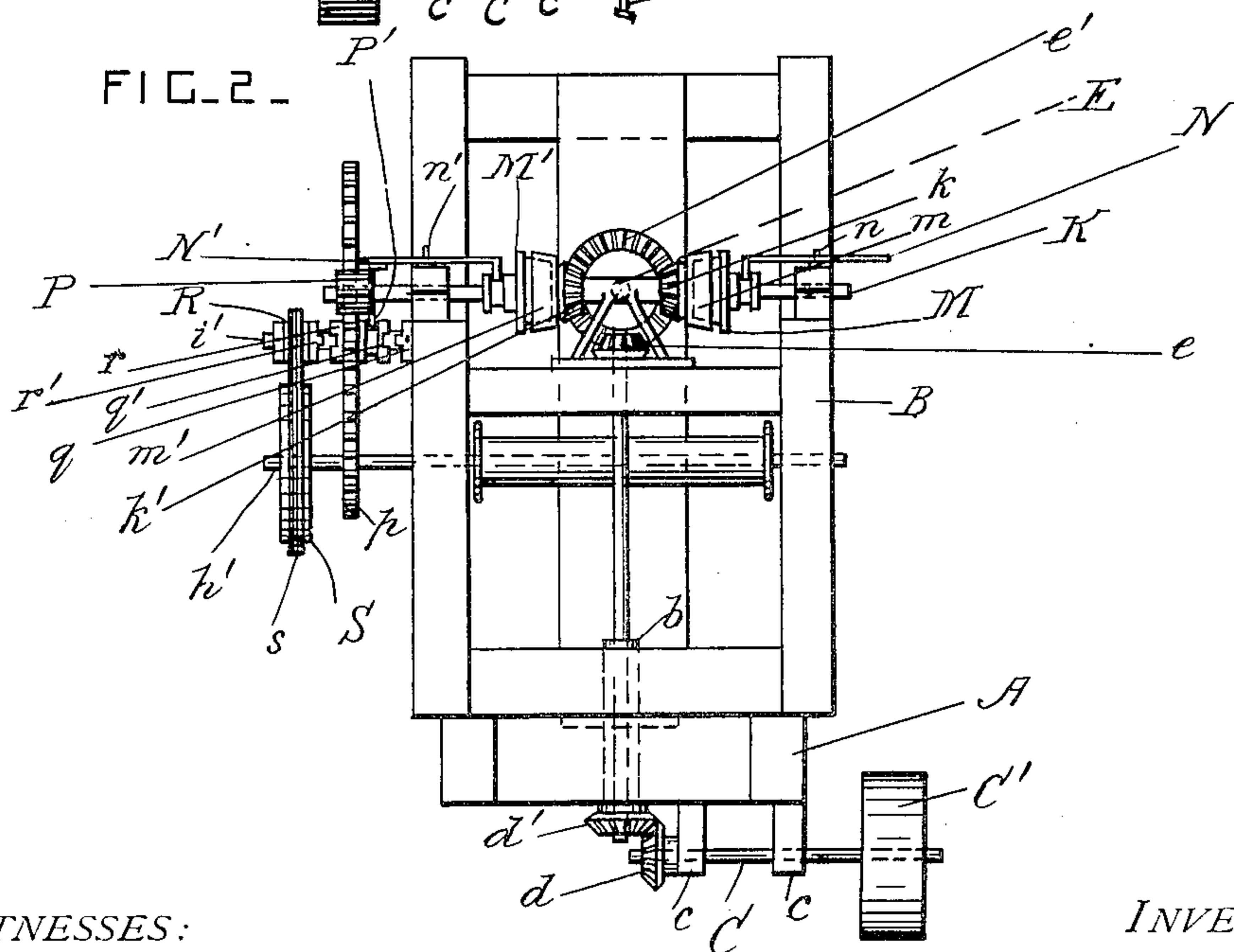
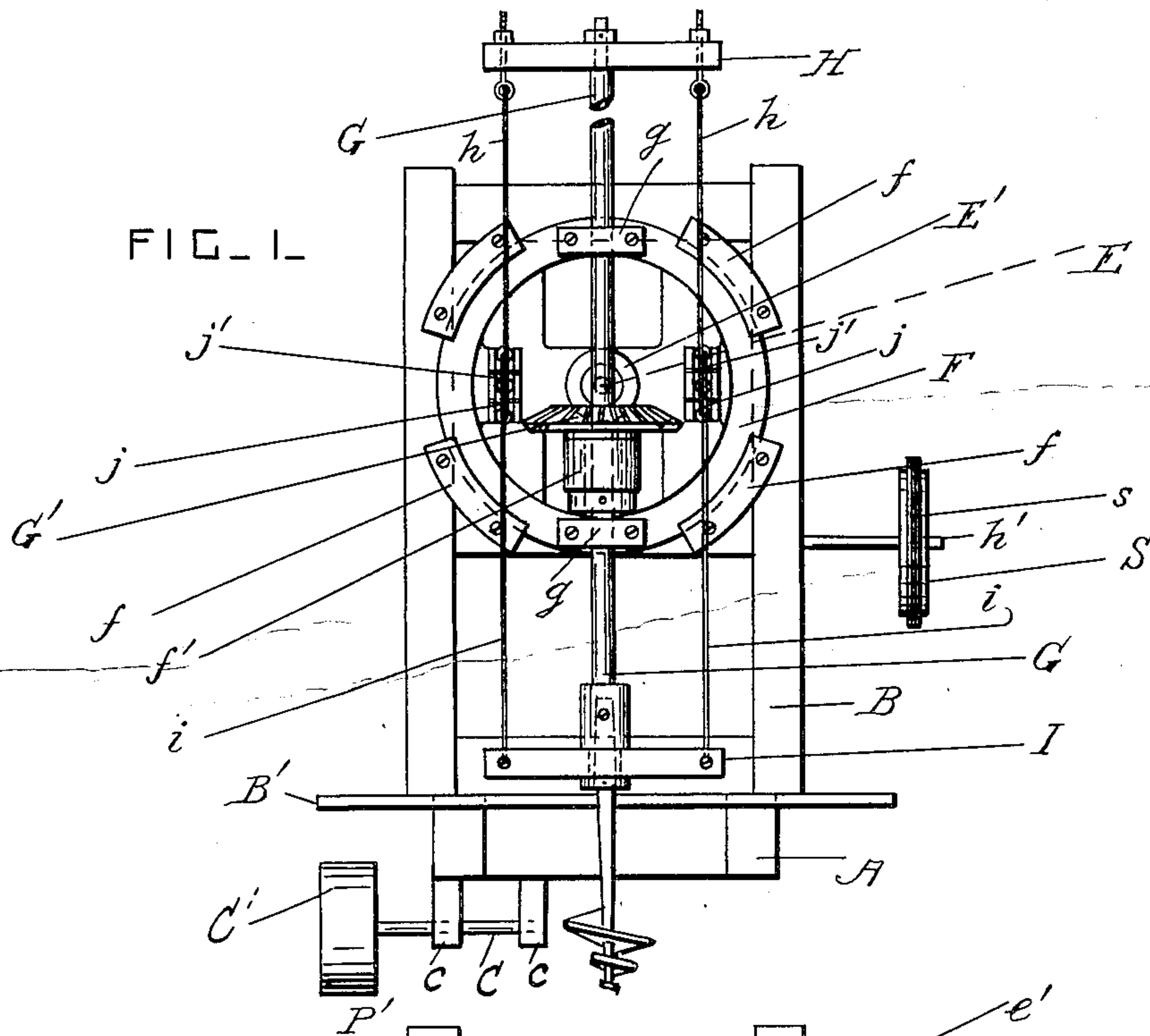
No. 865,457.

PATENTED SEPT. 10, 1907.

L. J. VAN KIRK.  
POST HOLE BORING MACHINE.

APPLICATION FILED FEB. 28, 1907.

2 SHEETS—SHEET 1.



WITNESSES:

L. B. Middleton  
Wm. H. Bates

INVENTOR

By Lyndon J. Van Kirk.  
Herbert W. Jenner.

Attorney

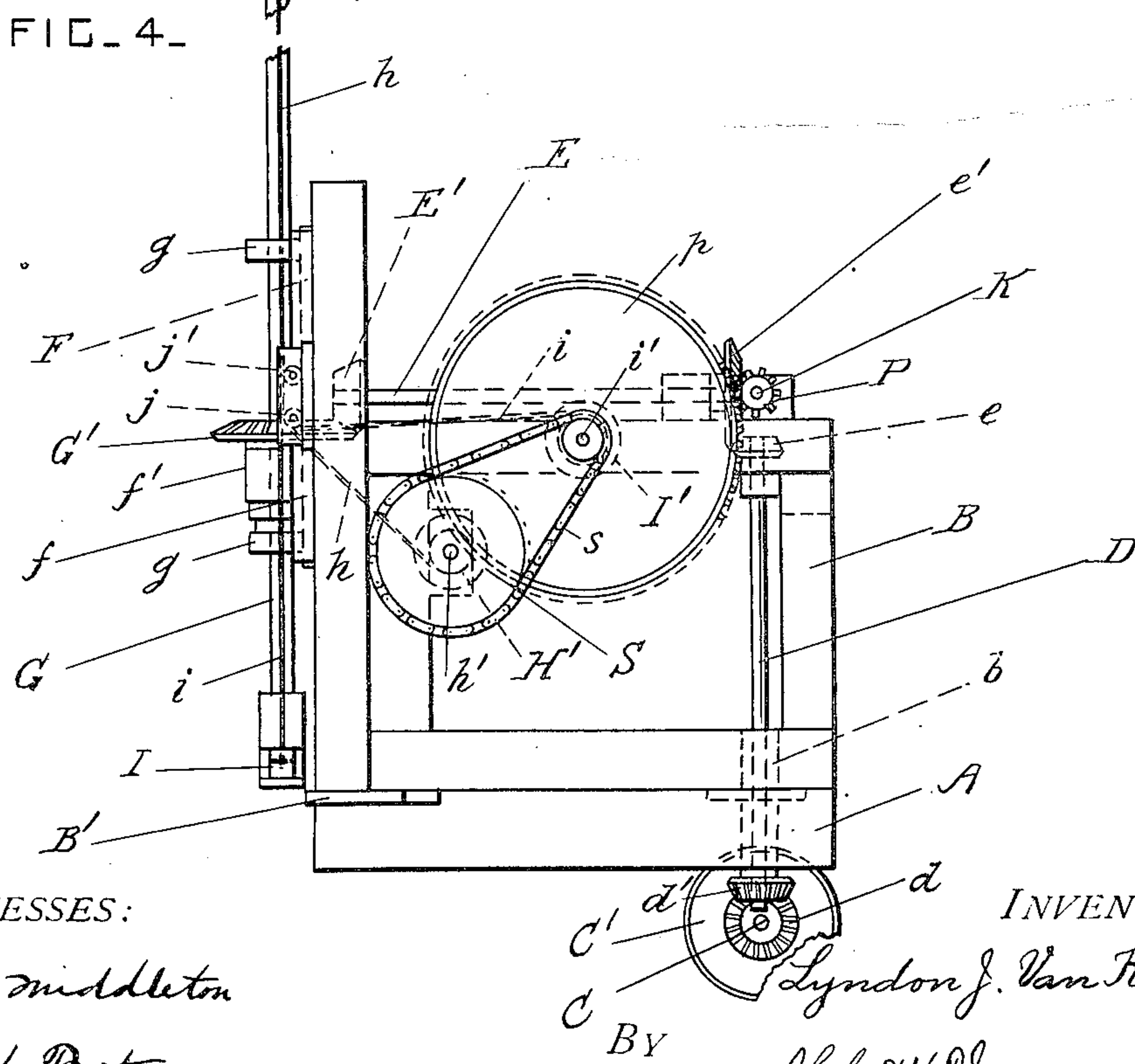
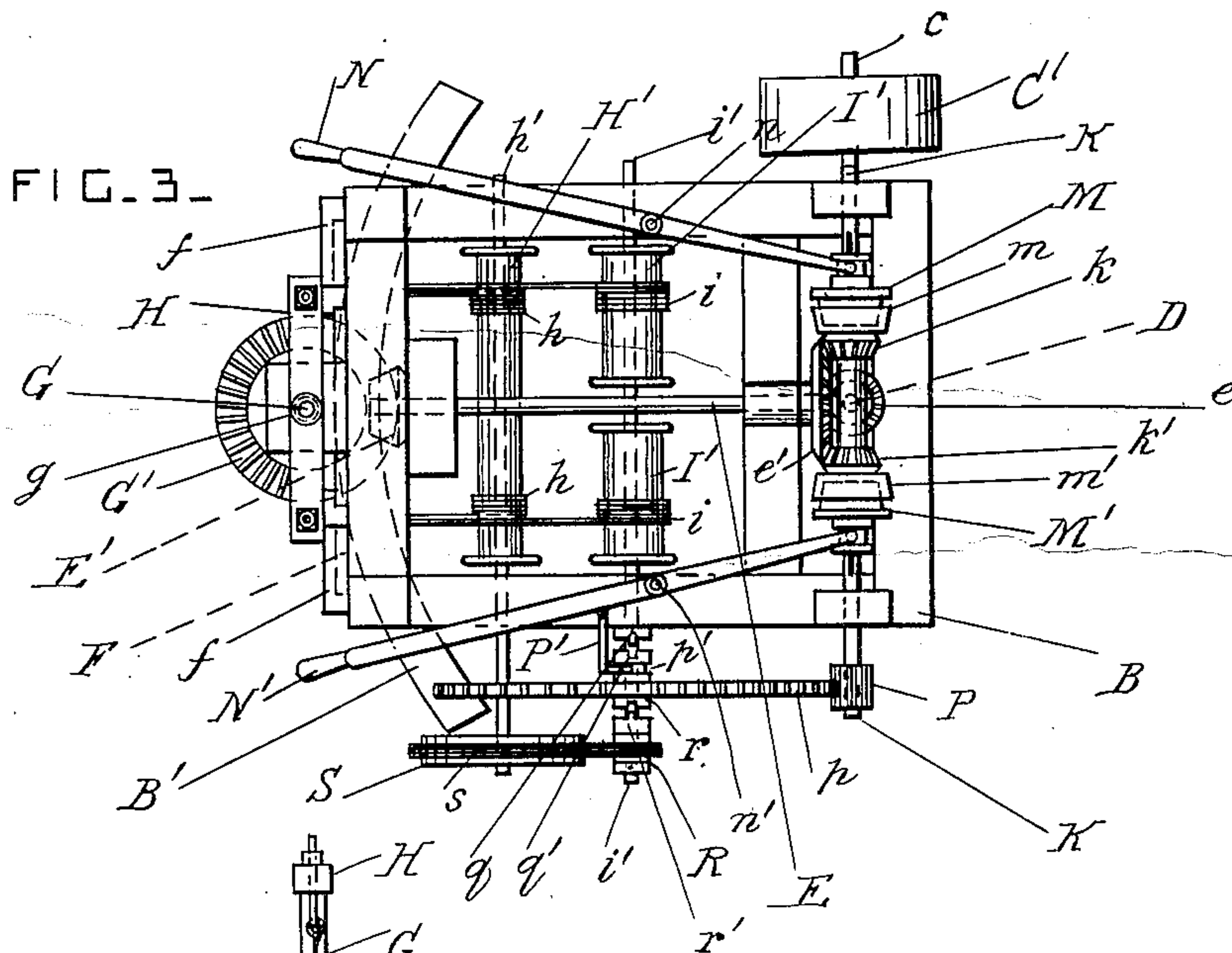
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# UNITED STATES PATENT OFFICE.

LYNDON J. VAN KIRK, OF RUSH LAKE, WISCONSIN.

## POST-HOLE-BORING MACHINE.

No. 865,457.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed February 28, 1907. Serial No. 359,916.

*To all whom it may concern:*

Be it known that I, LYNDON J. VAN KIRK, a citizen of the United States, residing at Rush Lake, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Post-Hole-Boring Machines; 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.

10 This invention relates to machines for boring holes in the earth for posts and for other purposes; and it consists in the novel construction and combination of the parts herein fully described and claimed.

15 In the drawings, Figure 1 is a front view of the machine. Fig. 2 is a rear view of the machine. Fig. 3 is a plan view; and Fig. 4 is a side view of the machine showing the gearing.

20 A is the supporting base of the machine formed of a suitable framework and preferably of a portable construction so that it can be moved about from place to place.

25 B is the main frame of the machine which is pivoted at one end to the base by a suitable tubular pivot *b*. B' is a curved guide-bar secured to the base for the other end portion of the main frame to slide on.

30 C is a horizontal driving-shaft journaled in bearings *c* secured to the base A, and provided with a belt-pulley C' for driving it from any approved motor, such as a gas engine.

35 D is a vertical shaft journaled in the frame B, and *d* and *d'* are two beveled toothed wheels which engage with each other and connect the shafts C and D.

40 The pulley C', shaft C, and wheels *d* and *d'* afford a means for revolving the driving-shaft D, but any other approved means might be used.

E is a longitudinal driving-shaft journaled in suitable bearings in the upper part of the frame B and projecting at its front end. A beveled toothed pinion *e* is secured on the upper end portion of the vertical shaft D and engages with a beveled toothed wheel *e'* secured on the shaft E.

45 E' is a beveled toothed pinion secured on the end portion of the shaft E at the front of the machine.

F is an annular plate which is journaled in curved guides *f* secured to the front of the frame B.

50 G is the boring-shaft which is journaled in bearings *g* secured to the plate F. An earth-auger or other approved boring-tool is secured to the lower end portion of the shaft G in any approved manner.

55 G' is a beveled toothed wheel which is splined to the shaft G and which is held in engagement with the pinion E' by means of a bearing *f'* secured to the annular plate F and in which bearing the hub of the wheel G' is journaled.

The shaft E, wheels G' and E', and wheels *e'* and *e* constitute an intermediate driving mechanism between

the vertical driving-shaft D and the boring-shaft G; and the shaft E and wheel E' afford a means for revolving the driving-wheel G'.

60 The pivotal connection of the main frame with the base permits the said frame to be moved in a horizontal plane to adjust the position of the boring-shaft, and the annular plate F permits the said shaft to be set at any desired angle with the vertical, or to be set truly vertical when the machine is not standing on level ground.

65 H is a crossbar journaled at the top of the boring-shaft and prevented from sliding longitudinally on it by suitable shoulders or collars; and I is a similar crossbar journaled on the lower part of the said boring-shaft.

70 H' is the feed-barrel secured on a shaft *h'* which is journaled in the frame B, and *h* are the feed-ropes which are wound on the barrel H'. These feed-ropes are preferably wire-ropes, or any other equivalent flexible connections, and they pass under guide-sheaves *j* carried by the annular plate F, and have their upper ends secured to the upper crossbar E. The revoluble shaft H', ropes *h*, and crossbar H constitute a feed-mechanism for moving the boring-shaft downwardly towards the earth.

80 I' is the lifting-barrel, or barrels, secured on a shaft *i'* which is journaled in the frame B. Two barrels I' are preferably used so as to clear the shaft E. Wire ropes *i*, or other equivalent flexible connections, are wound upon the barrels I'. These ropes *i* pass over guide-sheaves *j'* also carried by the annular plate F, and their lower ends are secured to the crossbar I.

85 Driving mechanism is provided for revolving the shafts *h'* and *i'* alternately, each said shaft being disconnected from the driving mechanism while the other shaft is being revolved.

90 K is a horizontal shaft journaled in suitable bearings at the rear part of the frame B, and *k* and *k'* are two beveled toothed pinions which run loose on the shaft K and which gear into the wheel *e'* on the longitudinal driving-shaft E. The pinions *k* and *k'* have friction clutch-members *m* and *m'* secured to them respectively, and M and M' are friction clutch-members which are splined to the shaft K and which are slidable into and out of engagement with the clutch-members *m* and *m'* respectively.

100 N is the lifting-lever pivoted to the frame B by a pin *n*, and operatively connected with the clutch-member M.

105 N' is the feed-lever pivoted to the frame B by a pin *n'*, and operatively connected with the clutch-member M'.

110 P is a toothed pinion which is secured on the shaft K, and *p* is a toothed wheel which runs loose upon the shaft *i'* of the lifting-barrels. The wheel *p* is also slidable longitudinally upon the shaft *i'*, and, for the purpose of sliding it, the feed-lever N is provided with a hook-shaped arm P' which engages with an an-



nular groove  $p'$  in the hub of the wheel  $p$ . The lever  $N'$  and its arm  $P'$  constitute a means for sliding the wheel  $p$ ; and the pinion  $P$  and its shaft afford a means for driving the wheel  $p$ , but any other approved means for sliding and driving the wheel  $p$  might be used. The hub of the wheel  $p$  is also provided with a clutch-member  $q$  for engaging with a clutch-member  $q'$  secured on the shaft  $i'$  of the lifting-barrels. On the other side of the wheel  $p$  its hub is also provided with a clutch-member  $r$  which is slidable into and out of engagement with a clutch-member  $r'$  formed on a sprocket pinion  $R$ . The sprocket pinion  $R$  runs loose on the shaft  $i'$  of the lifting-barrels, and suitable collars are provided which prevent it from sliding longitudinally on the said shaft.

$S$  is a sprocket wheel which is secured on the shaft  $k'$  of the feed-barrel, and  $s$  is a drive-chain of any approved construction which passes over the sprocket wheel  $S$  and the sprocket pinion  $R$ .

When the feed-lever  $N'$  is moved so as to place the wheel  $p$  in engagement with the sprocket pinion, and the clutch-member  $M'$  in engagement with the clutch-member  $m'$ , the feed-barrel is revolved slowly and at a suitable speed. When the feed-lever  $N'$  is moved in the reverse direction so as to place the wheel  $p$  in engagement with the clutch-member  $q'$  which is secured on the shaft of the lifting-barrels, the feed-barrel is free to revolve in the reverse direction as the feed-ropes are uncoiled from it; and the lifting barrels are revolved when the lifting-lever  $N$  is moved so as to place the clutch-member  $M$  in engagement with the clutch-member  $m$ .

The lifting-barrels are revolved at a higher speed than the feed-barrel, so as to raise the earth-auger or other tool rapidly out of the hole in the earth.

What I claim is:

1. The combination, with a supporting base, of a frame pivoted at one end to the said base, a vertical driving-shaft passing through the pivot of the said frame and provided with means for revolving it, a boring-shaft arranged at the free end portion of the said frame in a plane parallel to the said driving shaft, disengageable feed-mechanism operated from the said driving-shaft for moving the said boring-shaft longitudinally, and intermediate driving mechanism between the said vertical shaft and the said boring-shaft.

2. The combination, with a supporting frame provided with curved guides, of a plate journaled in the said guides and provided with bearings, guide-sheaves carried by the said plate a boring-shaft mounted in the said bearings, a driving-wheel splined to the said boring-shaft for revolving

it, a crossbar mounted on the said boring-shaft, and flexible connections connected to the said cross-bar and passing over the said guide sheaves for moving the said boring-shaft longitudinally.

3. The combination, with a supporting frame provided with curved guides, of an annular plate provided with bearings and adjustable in the said guides, a boring-shaft slidable longitudinally in the said bearings, crossbars carried by the upper and lower portions of the said boring-shaft, a revoluble feed-barrel journaled in the said frame, a revoluble lifting-barrel also journaled in the said frame, ropes wound on the said barrels and connected with the upper and lower crossbars respectively, guide-sheaves for the said ropes carried by the said annular plate, and driving-mechanism for revolving the said boring-shaft.

4. The combination, with a boring-shaft, and driving-mechanism for the said boring-shaft provided with a beveled toothed wheel; of a supporting frame, a driving-shaft journaled in the said frame, two beveled toothed pinions each provided with a clutch-member and gearing into the said wheel, clutch-members splined to the said driving-shaft and slidable into engagement with the aforesaid clutch-members, a feed-barrel and a lifting-barrel also journaled in the said frame, and disengageable driving-mechanism for connecting the said barrels alternately with the said shaft.

5. The combination, with a supporting frame, of a feed-barrel and a lifting-barrel each provided with a shaft and journaled in the said frame, a driving-shaft also journaled in the said frame and provided with means for revolving it in each direction, a clutch-member secured on the lifting-barrel shaft, a clutch-member loose on the said lifting-barrel shaft, a wheel loose on the shaft between the two said clutch-members and provided with clutch-members for engaging with them alternately, means for sliding the said wheel longitudinally on its shaft, driving-mechanism connecting the said loose clutch-member with the feed-barrel shaft, and means for driving the said wheel from the said driving-shaft.

6. The combination, with a supporting frame, of a feed-barrel and a lifting-barrel each provided with a shaft and journaled in the said frame, a driving-shaft also journaled in the said frame and provided with clutch-mechanism for starting and stopping it, a clutch-member secured on the lifting-barrel shaft, a clutch-member loose on the said lifting-barrel shaft, a wheel loose on the shaft between the two said clutch-members and provided with clutch-members for engaging with them alternately, a single operating lever for sliding the said wheel longitudinally on its shaft and for operating the aforesaid clutch-mechanism on the driving-shaft, driving devices connecting the said loose clutch-member with the feed-barrel shaft, and means for driving the said wheel from the said driving-shaft.

In testimony whereof I have affixed my signature in the presence of two witnesses.

LYNDON J. VAN KIRK.

Witnesses:

MARION H. HEANEY,  
JOHN J. WOOD, Jr.