

No. 664,902.

Patented Jan. 1, 1901.

E. SCOTT & E. GERRY
EARTH AUGER.

(Application filed May 11, 1900.)

(No Model.)

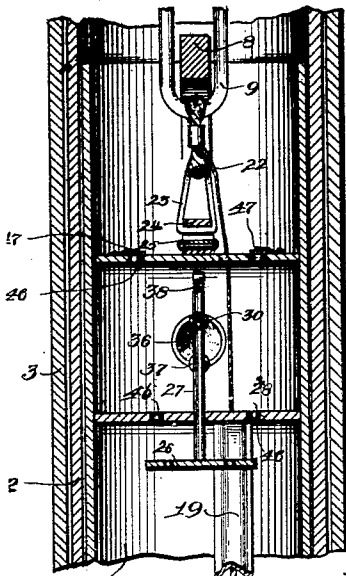


Fig. 5.

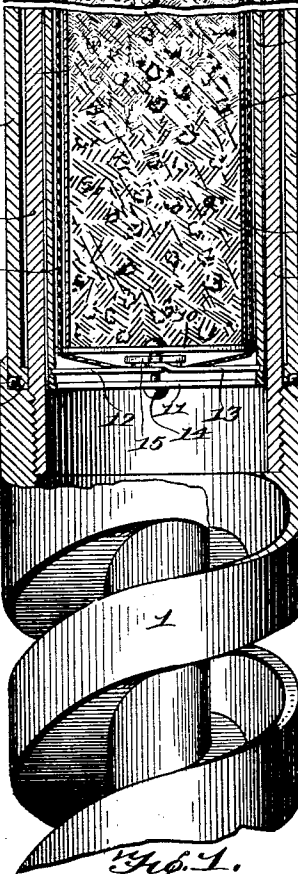
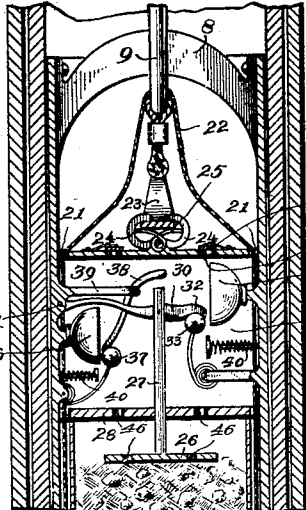


Fig. 1.

By their Attorneys.

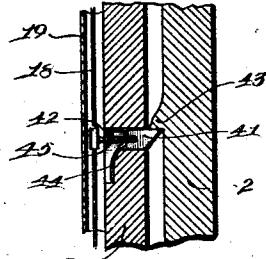


Fig. 6.

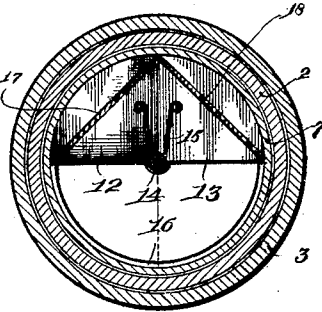


Fig. 2.

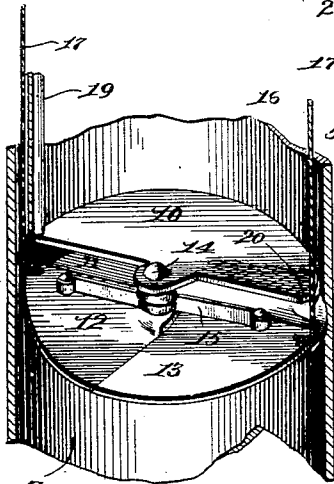


Fig. 4.

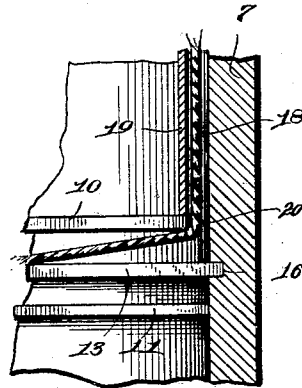


Fig. 3.

E. Scott Inventions
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Witnesses

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UNITED STATES PATENT OFFICE.

ELMON SCOTT AND EDSON GERRY, OF NEW WHATCOM, WASHINGTON.

EARTH-AUGER.

SPECIFICATION forming part of Letters Patent No. 664,902, dated January 1, 1901.

Application filed May 11, 1900. Serial No. 16,335. (No model.)

To all whom it may concern:

Be it known that we, ELMON SCOTT and EDSON GERRY, citizens of the United States, residing at New Whatcom, in the county of Whatcom and State of Washington, have invented a new and useful Earth-Auger, of which the following is a specification.

This invention relates to earth-augers which are especially designed for prospecting mining ground and are provided with means for raising the borings to the surface of the earth, so that they may be inspected, without removing the auger and the operating-shaft from the hole or bore made thereby. It is also designed to provide means for indicating to the operator of the device when the receptacle for containing the borings has become filled, so that said receptacle may not become choked, and thereby interfere with the operation of the device.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a central longitudinal sectional view of an earth-auger constructed in accordance with the present invention. Fig. 2 is a transverse sectional view taken on the line 2 2 of Fig. 1. Fig. 3 is an enlarged detail sectional view taken through the bottom of the dirt-receiving receptacle and at one side thereof. Fig. 4 is a sectional perspective view showing the manner of closing the bottom of the dirt-receiving receptacle. Fig. 5 is a detail sectional view taken at right angles to Fig. 1. Fig. 6 is a detail sectional view taken through adjacent portions of the receptacle and the casing therefor to illustrate the manner of preventing the former from being forced upwardly by the borings.

Corresponding parts in the several figures of the drawings are designated by like characters of reference.

In carrying out the present invention there is employed any preferred form of hollow au-

ger 1, to the upper end of which is removably secured a hollow operating-shaft 2, which is screw-threaded to the auger, as shown in the accompanying drawings; but any other detachable fastening may be used. Inclosing the hollow shaft is a hollow casing 3, which has its lower end provided with an inner downwardly-directed flange 4 to fit within the upwardly-directed outer marginal flange 5 of the auger to form a ball-race for the antifric-tion balls or rollers 6, so that there may be comparatively no friction between the fixed casing and the rotary auger. It of course will be understood that the shaft and the casing are made in sections, which are coupled on as the auger sinks into the earth, and the purpose of the casing is to prevent the earth from caving in above the auger.

Slidably fitted within the hollow shaft is the dirt-receiving receptacle 7, which is normally open at its lower end to receive the borings and is provided at its upper end with a cross-bar 8, that is loosely embraced by a link 9, which is in turn connected to a chain or cable for raising and lowering the receptacle within the hollow shaft.

Fixed within the bottom of the receptacle is a pair of superposed semicircular bottom plates 10 and 11, that are located upon the same side of the receptacle, so that the opposite side thereof may be normally open, as clearly indicated in Figs. 2 and 4 of the drawings. Mounted between the fixed plates is a pair of opposite quadrant-plates 12 and 13, which normally lie within the fixed bottom plates and have their inner ends hingedly connected by means of a common pivot-pin 14, carried by the two bottom plates. Embracing the pivot-pin is a spring 15, which has its opposite ends connected to the upper sides of the respective slides, so as to normally hold them open or within the fixed bottom plates. The outer curved edges of these slides work in a continuous groove 16, extending around the inner wall of the receptacle, so that the plates may be moved to the opposite side thereof, as indicated in dotted lines in Fig. 2, to close the open half of the bottom of the receptacle. The means for closing these slidable plates comprise a pair of chains, cables, or other flexible connections 17 and 18, which extend downwardly at the opposite inner sides

of the receptacle and are housed and protected by means of the semitubular sheaths 19, which are secured to the receptacle. The lower portion of each cable passes downwardly through an opening 20, formed in the top fixed plate 10, and passes beneath the latter to the opposite inner corner of the adjacent slidable plate, to which it is connected. Thus by pulling upwardly upon the cables the plates will be swung around in opposite directions in the groove 16, so as to assume the positions shown in Fig. 4 and indicated in dotted lines in Fig. 2 to close the bottom of the receptacle. When the cables are released, the spring 15 will automatically return the slidable plates to their original position to open the bottom of the receptacle. In order that the cables may be conveniently operated to close the slidable plates, the former pass upwardly through the respective openings 21 in the top of the receptacle and are connected so as to form a loop 22, which embraces the raising and lowering link 9. During the operation of the auger the link 9 hangs loosely below the cross-bar 8, so that the cables 17 and 18 may be slack to permit of the spring 15 holding the slidable plates open, and when the link 9 is elevated it will pull upon the cables sufficiently to close the slidable plates prior to its engagement with the cross-bar 8, whereby the bottom of the receptacle will be closed before the receptacle begins to rise under the influence of the elevating device, which it has not been deemed necessary to show.

In order that there may be no strain upon the cables 17 and 18 when the receptacle is being lowered into the hollow shaft, the link 9 is provided with a pendent stirrup 23, the lower end of which is embraced by the free ends of a pair of opposite pivotal clamping-jaws 24, that are normally forced apart by means of an interposed spring, said jaws being mounted upon the top of the receptacle. When the receptacle is to be lowered, the jaws are engaged with the stirrup, as clearly indicated in Figs. 1 and 5, so that the weight of the receptacle is supported by the stirrup and the jaws will hold thereon, thereby leaving the cables slack and the slidable plates open. When the receptacle is stopped by the dirt in the upper end of the auger, the weight of the receptacle is removed from the jaws 24, whereby the latter will fly apart under the influence of the spring 25 and the cables may be operated by an upward movement of the link 9.

During the operation of the auger the dirt is fed upwardly through the open lower end of the receptacle and into the latter, and in order that the operator of the device may know when the receptacle is sufficiently full there is provided a plunger 26, which has an upwardly-directed stem or rod 27, that passes loosely upward through a horizontal partition 28, which is located in the upper portion of the receptacle, so as to form an upper chamber 29, which is closed on all sides from

the ingress of the dirt in the lower portion of the receptacle. Pivoted intermediate of its opposite ends and to the upper end of the stem or rod 27 is a catch-arm 30, which has one end fulcrumed to one side of the receptacle, as at 31, and its opposite free end 32 forms a catch for engagement with a spring-actuated striker 33, mounted upon the adjacent side of the receptacle, so as to normally hold said striker away from a suitable bell or gong 34. Opposite the gong 34 is another gong 36, and mounted below the latter is a spring-actuated striker 37. Located above the striker is a trip-lever 38, which is fulcrumed intermediate of its ends upon a suitable supporting-arm 39, projecting outwardly from the side of the receptacle. The lower end of the trip-lever bears against the inner side of the striker 37, and its opposite upper end is located above and in the path of the rod or stem 27. When the receptacle is nearly filled with the dirt, the latter forces the plunger upwardly, so that the stem trips the catch 30, whereby the spring-actuated striker 33 strikes the gong 34 to indicate to the operator that the receptacle is filled and ready to be withdrawn. Should the first signal not be heard by the operator, the plunger will move into engagement with the adjacent end of the trip 38, so as to draw the spring-actuated striker 37 away from the gong, and as the plunger is forced along by the dirt the trip releases the striker, which rings the gong 36, thereby giving a second signal that the receptacle should be withdrawn. Each striker is provided with a spring-pressed pin 40, carried by the receptacle and designed to return the striker to its normal position, so as to be engaged by the respective trips when the dirt has been removed from the receptacle.

To prevent the receptacle from being elevated by the upward pressure of the dirt, the former is provided with one or more spring-actuated pins or lugs 41, as shown in Fig. 6, said pin being mounted to slide in a slot or opening 42, formed in the side of the receptacle, and designed to normally project radially outward to underlie an inner annular shoulder 43 upon the hollow shaft. This pin is normally held at its outer limit by means of a spring 44 and is connected to the adjacent cable 17 or 18, as the case may be, by means of a link or short piece of cable 45, so that when the cables are drawn to close the bottom of the receptacle the lug or pin 41 will be drawn inwardly and from beneath the shoulder 43, so as to free the receptacle and permit of the same being elevated out of the hollow driving-shaft.

In the event of water accumulating within the hollow shaft the descent therethrough of the dirt-receptacle is facilitated by providing the top thereof, the partition 28, and the plunger 26 with a plurality of perforations 46, through which the water may pass upwardly as the receptacle descends. These openings also permit of the escape of the air within the

receptacle while the dirt is being fed into the latter. To prevent the water from rushing down into the interior of the receptacle when the latter is being elevated and causing currents to agitate the dirt, the openings in the top of the receptacle are provided with suitable spring-actuated valves 47, which are designed to open upwardly to permit of the upward passage of air and water, but which close upon the upward movement of the receptacle, so as to prevent an inward rush of the water.

What is claimed is—

1. The combination with an earth-auger, of a vertically-movable dirt-receiving receptacle located above and independent of the auger, a normally open closure for the bottom of the receptacle, an elevating device for the receptacle, and means for closing the bottom closure prior to the initial upward movement of the receptacle and by the operation of the elevating device.

2. The combination with an earth-auger, having a hollow operating-shaft, of a vertically-movable dirt-receiving receptacle, which is inclosed within the shaft, a fixed segmental bottom plate partly closing the receptacle, a pair of slidable segmental plates to close the open part of the bottom, and a pair of operating connections fastened to the slidable plates.

3. The combination with an earth-auger, having a hollow operating-shaft, of a vertically-movable dirt-receiving receptacle, which is inclosed within the shaft, a pair of superposed semicircular fixed bottom plates for the receptacle, and located upon the same side thereof, a pair of quadrant slidable plates mounted in a groove in the inner face of the receptacle and between the superposed plates, a spring normally holding the slidable plates between the fixed bottom plates, and opposite flexible operating connections secured to the respective slidable plates to swing the latter into diametrically opposite positions and close the bottom of the receptacle.

4. The combination with an earth-auger, having a hollow operating-shaft, of a vertically-movable dirt-receiving receptacle mounted within the shaft, a pair of superposed fixed semicircular bottom plates at the same side of the receptacle, a pair of quadrant slidable plates mounted between the fixed plates, and having their outer edges traveling in a groove formed in the inner side of the receptacle, a common pivotal connection carried by the fixed plates, a spring coiled upon the pivotal connection and having its opposite ends secured to the respective slidable plates to hold them in open position between the fixed plates, and a pair of opposite flexible connections secured to the inner ends of the respective slidable plates, and passing upwardly through openings formed in the upper fixed bottom plate.

5. The combination with an earth-auger, of a vertically-movable dirt-receiving receptacle

located above and independent of the auger, a closure for the bottom of the receptacle, an elevating device having a vertically-slidable connection with the receptacle, means for limiting the slidable movement in opposite directions, alternate detachable fixed connections between the elevating device and the receptacle at the opposite limits of the slidable movement of the former, means for automatically disconnecting the lower connection and also forming the upper connection at the lowermost limit of the receptacle, and means for closing the bottom closure by the movement of the elevating device from its lower to its upper connection with the dirt-receiving receptacle.

6. The combination with an earth-auger, of a vertically-movable dirt-receiving receptacle located above and independent of the auger, and having a bottom closure, which is open during the operation of the auger, and is closed during the ascent of the receptacle, an elevating device having a lower descending connection with the receptacle, and an independent upper ascending connection therewith, means for automatically releasing the lower connection and applying the upper connection when the receptacle has reached its lowermost limit, and a flexible connection between the bottom closure and the elevating device, said connection being slack when the descending connection is in use, and taut when the ascending connection is in use.

7. The combination with an earth-auger, having a hollow operating-shaft, of a vertically-movable dirt-receiving receptacle, which is mounted within the shaft, a normally open closure for the bottom of the receptacle, a normally slack flexible operating device for the closure, and an elevating device slidably connected to the receptacle, and also connected to the closure-operating device.

8. The combination with an earth-auger, having a hollow shaft, of a vertically-movable dirt-receiving receptacle, which is mounted within the shaft, a normally open closure for the bottom of the receptacle, a flexible operating connection for the closure, a cross-bar at the upper end of the receptacle, a suspending-link loosely embracing the cross-bar and also connected to the closure-operating connection, a stirrup pendent from the link, and a pair of opposite spring-actuated jaws mounted upon the top of the receptacle to embrace the stirrup.

9. The combination with an earth-boring apparatus, having a vertically-movable dirt-receiving receptacle, of means for indicating that the receptacle has been filled with the borings of the apparatus, and comprising a plunger arranged in the path of the incoming borings, a signal, and a trip therefor arranged in the path of the plunger.

10. The combination with an earth-boring apparatus, having a vertically-movable dirt-receiving receptacle, of means for indicating that the receptacle has been filled with the

borings of the apparatus, and comprising a plunger housed within the receptacle and located in the path of the incoming borings, a gong also located within the receptacle, a spring-actuated striker for the gong, and a trip for the striker, said trip being arranged in the path of the plunger to free the striker.

11. The combination with an earth-auger, having a hollow shaft, of a vertically-movable dirt-receiving receptacle mounted within the shaft, and having an intermediate partition dividing the receptacle into an upper and a lower chamber, a plunger located within the lower chamber, and provided with a stem or rod that is slidable through the partition, a pair of gongs mounted within the upper chamber, spring-actuated strikers for the gongs, a trip pivoted at one end to the receptacle, also pivotally connected to the rod or stem, and having its opposite end formed into a catch for engagement with one of the strikers, and a second trip fulcrumed intermediate of its ends, one of the latter being in engagement with the other striker, and its opposite end located within the path of the stem or rod.

12. The combination with an earth-auger, having a hollow shaft, that is provided with an inner annular shoulder, of a vertically-

movable dirt-receiving receptacle mounted within the shaft, a closure for the bottom of the receptacle, means for operating said closure, a spring-actuated pin projecting outwardly through one side of the receptacle to underlie the annular shoulder on the shaft, and a connection between the pin and the means for operating the closure, to withdraw the pin from beneath the shoulder.

13. The combination with an earth-auger, having an outer upstanding marginal flange, of a hollow shaft connected to the inner side of the auger and forming a ball-race between the shaft and the flange, said race having an open upper side, antifriction balls or rollers mounted in the race, and a stationary casing inclosing the shaft, and having its lower marginal edge received within and through the open upper side of the race and supported upon the antifriction balls or rollers.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

ELMON SCOTT.
EDSON GERRY.

Witnesses:
O. B. BARBO,
J. P. REID.