No. 768,117. PATENTED AUG. 23, 1904.

N. ERZIG.

EARTH AUGER.

APPLICATION FILED SEPT. 14, 1903.

NO MODEL.

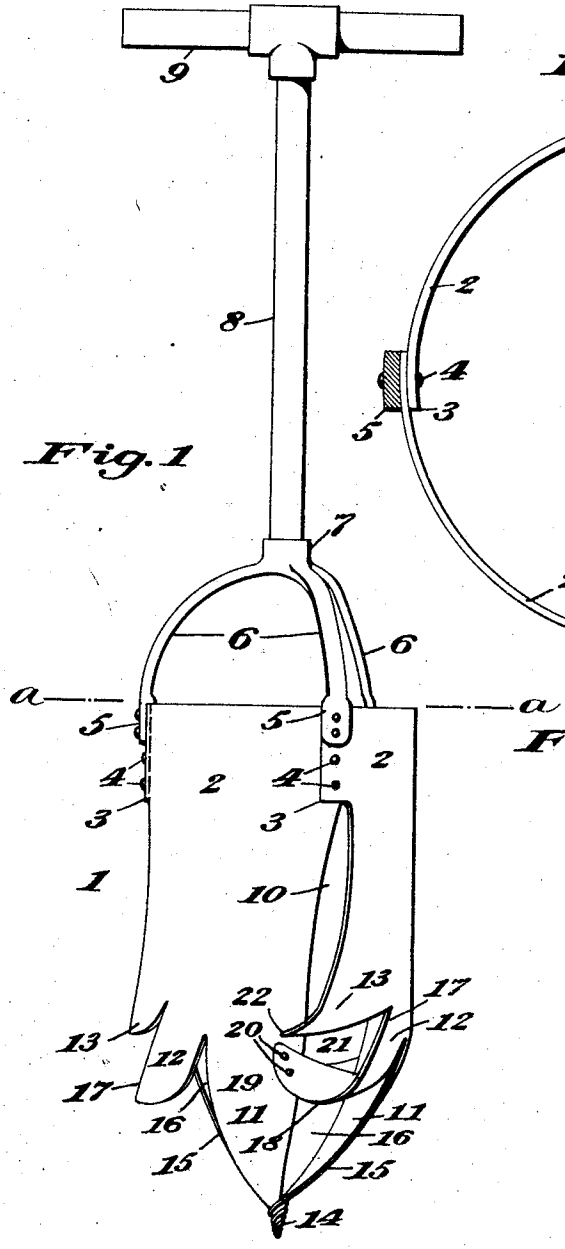


Fig. 1

Fig. 2

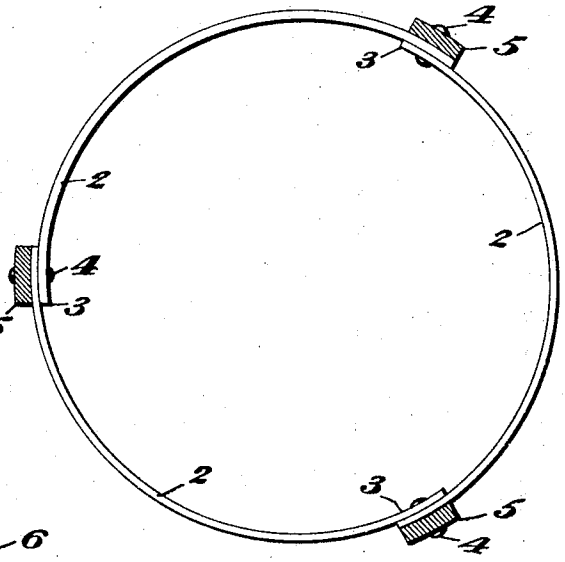
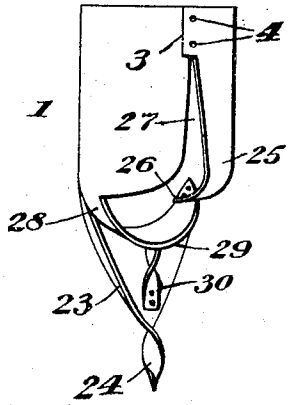


Fig. 3



Witnesses

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UNITED STATES PATENT OFFICE.

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EARTH-AUGER.

SPECIFICATION forming part of Letters Patent No. 768,117, dated August 23, 1904.

Application filed September 14, 1903. Serial No. 173,061. (No model.)

To all whom it may concern:

Be it known that I, NICKOLAUS ERZIG, a citizen of the United States of America, and a resident of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Earth-Augers, of which the following is a specification.

This invention relates to certain improvements in earth-augers, and more particularly in that class of such devices which are provided with spirally-arranged blades which are adapted to cut into the earth and at the same time to draw the auger down into the ground as the device is turned; and the object of the invention is to provide a device of this general character of a simple and inexpensive nature and of a light, strong, and durable construction which shall be adapted for use in forming holes not merely in clay, sand, and like, but also in gravel or in soil containing stones of moderate size, in which earth-augers, as ordinarily constructed, are incapable of use.

The invention consists in certain novel features of the construction, combination, and arrangement of the several parts of the improved earth-auger whereby certain important advantages are attained and the device is made simpler, cheaper, and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings, which serve to illustrate my invention, Figure 1 is a side elevation showing an earth-auger embodying my improvements; and Fig. 2 is a transverse section taken in a horizontal plane at the top of the body portion of the device, as indicated by the line *a a* in Fig. 1 and showing the structure of said body portion. Fig. 3 is a side view showing a modified construction of earth-auger embodying my invention.

Referring first to Figs. 1 and 2, 1 indicates the body portion of the improved earth-auger, which is, as herein shown, formed from sheet-metal sections 2 2, three in number, which sections are exactly similar in form and may be bent or pressed into shape by means of dies or otherwise. Each section 2 has at its upper part a portion or wing 3 projecting from one of its side edges and arranged to overlap the adjacent edge portion of another section 2, and through the lapped portions of the sections 2 2 are passed rivets 4 4 or equivalent devices, by means of which the sections 2 2 are securely held together to produce the body portion 1, which is, as shown in the drawings, of rounded or cylindrical form at its upper part.

8 indicates a handle or stem which may conveniently be formed from a piece of iron pipe or rod of suitable strength, the upper part of which has a cross-piece 9 and the lower portion of which is screwed or otherwise held within a socket 7, from which radiate three downwardly bent or curved arms 6 6, the lower ends 5 of which are somewhat flattened and are held to the lapped portions of the sections 2 2 by means of the rivets 4, as clearly shown in Figs 1 and 2. By this construction of the handle and its connection with the body portion or shell 1 of the device it will be seen that a maximum of strength is attained, since whatever weakness may result from the sectional formation of said shell or body portion is overcome by the connection of the arms 6 6 with the lapped portions of the shell or body portion.

Each section 2 of the shell or body portion is provided upon its lower part with three downwardly-directed blades or knives of graduated lengths and having edges adapted to cut into the soil as the device is turned, and the longer blades or knives 11 11 of the several sections 2 are extended down and curved sufficiently to permit them to converge at the lower extremity of the shell, at which point they are twisted together, as seen at 14, or are otherwise firmly connected, so as to effectively unite the lower ends of the sections with each other, and thus greatly strengthen the whole structure. The lateral edges 15 of said blades or knives 11 also form cutting edges, and the said blades or knives are suitable curves in a horizontal or transverse direction to permit the soil cut by said edges to be deflected into the interior hollow or chamber of the shell, for which purpose there are provided between the blades or knives 11 11 openings leading into said interior hollow, as seen at 16, and of dimensions to permit the

entry within the shell of stones of considerable size, such as are ordinarily encountered in digging in gravel or stony soil.

Adjacent to the blades or knives 11 are produced the intermediate blades or knives 12—one upon each of the sections 2 2—and the said intermediate blades are each directed downward from the lower part of the corresponding section and have their lower ends bent or curved inward, as seen at 19, and lapped upon the outer side of the blade 11 of the adjacent section 2, to which each blade 12 is secured by rivets 20 or the like, as clearly shown in Fig. 1. By this arrangement each blade or knife 12 is given a curved or bent formation, so that, in effect, two cutting edges are produced upon each of said blades—namely, a downwardly-extended cutting edge 17 and an inwardly or laterally curved lower cutting edge 18—said two cutting edges being of course united with each other, since they are produced upon an unbroken edge of the knife or blade 12. By this construction it will be seen that the curved lower portion of each blade 12 is caused to extend across the top of one of the openings 16, between the lower blades or knives 11 11, and also it will be seen that other openings are produced between each blade 12 and the adjacent section 2, to which the extremity of said blade is riveted, such openings thus produced being indicated at 21 on the drawings and being, like the openings 16, of dimensions sufficient to permit the passage through them of the stones which are ordinarily encountered in gravel or stony soil. The curvature of each blade 12 is also such as to deflect into the interior hollow of the shell or body portion 1 the material which passes the cutting edges 17 and 18. Each section 2 is also formed with an upper blade or knife 13 above the curved blade 12, and said blade or knife 13 has a cutting edge extended longitudinally along one edge of the section 2, on which said blade is formed, the said edge of the section being bent or curved to produce between it and the adjacent section 2 an opening 10, extended vertically up one side of the shell and adapted for the entry of the earth into the interior of the shell. The curvature of blades 13 serves to deflect the earth within the shell, and the lower part of each of said blades is bent slightly inward, as shown at 22, so as to prevent the contained earth from falling from the shell when the device is withdrawn from the earth. By this construction of the improved earth-auger it will be seen that the device is of an extremely simple and inexpensive nature, being very readily formed from the three metallic sections of similar form and size and being extremely strong and durable, and it will also be understood that since the device constructed according to my invention is constructed with nine knives or blades, three blades or knives being on each of the three sections, the device will cut very readily into the earth, and at the same time the blades or knives being partially extended across the bottom of the cylindrical shell or body portion will serve to hold the earth within the device and prevent it from falling through the openings when the device is withdrawn from the ground. The openings produced between the several blades or knives are also sufficiently large to receive large gravel and other stones, so as to particularly adapt the device for use in stony ground.

It will also be obvious from the above description that the device is susceptible of some modification without material departure from the principles and spirit of the invention, and for this reason I do not wish to be understood as limiting myself to the precise form and arrangement of the several parts of the device as herein set forth in carrying out my invention in practice. For example, in some cases the device may be constructed of a less number of sections than three, as are shown in Figs. 1 and 2, and in Fig. 3 I have shown the device constructed from a single piece of sheet metal. In this form of the device the sheet-metal shell or body portion has its edges lapped and riveted at its upper part and is formed of a single piece of metal, the lower part of which has three integral blades or knives 23, 28, and 25, the lower longer blade 23, which corresponds to the blades 11 in the structure shown in Fig. 1, being extended down and twisted at its lower extremity, as seen at 24, to produce a point to enter the earth and being braced by a separate metal strip 30, extended down from the intermediate member 28, which is curved and provided with a curved lower cutting edge in a manner similar to the blade 12 of the preceding construction and has its end riveted, so as to extend across the lower part of the shell. The upper blade 25 is similar to the blades 13 of the preceding structure and has a side edge separated by a space 27 from the adjacent edge of the metal piece of which the shell is formed and has its lower part 26 bent inward, as clearly shown on the drawings. By this construction it will also be seen that openings large enough for the passage of ordinary stones and gravel are produced between the blades, so that this device is also well adapted for use in stony soil.

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

1. An earth-auger having a plurality of blades or knives and having between said blades or knives an opening for the passage of stones or the like into the interior of the device one blade being shorter than another and being extended across said opening with its central portion curved downwardly and its extremity directed upward and lapped upon and secured to the longer blade.

2. An earth-auger having three connected blades separated by openings for the passage of stones or the like into the interior of the device, one blade being of greater length than the other two blades and being arranged between such shorter blades, and one of the shorter blades being extended across the opening between it and said longer blade with its central portion curved downward and its extremity directed upward and lapped upon and secured to the longer blade while the other shorter blade has a cutting edge upon one side and extended vertically of the device and has its lower extremity separated from the other blades and directed inwardly to guide stones and the like into the interior of the device.

3. An earth-auger having a plurality of sections connected at their upper parts and each having a plurality of blades or knives extended downward from it and separated by spaces for the passage of stones or the like, each section having a blade or knife extended down and connected at the central lower part of the device with a similar blade or knife on each other section to produce a point to enter the earth and each section having another blade or knife extended across the space between it and the first-mentioned blade of another section with its extremity lapped upon and secured to such blade.

4. An earth-auger having a plurality of sections connected at their upper parts and having at their lower parts longer and shorter blades or knives separated by spaces for the passage of stones or the like, the shorter blade of each section being extended across one of said spaces and having an end portion lapped upon and secured to the longer blade of an adjacent section, and the longer blades of the respective sections being extended downward below said shorter blades and having extremities connected at the central lower part of the device to produce a point to enter the earth.

5. An earth-auger comprising a plurality of curved metal sections, each of which has at its upper part an edge portion lapped upon an edge portion of an adjacent section, a handle for the device having arms the lower ends of which are lapped upon and secured to the lapped portions of the sections, each section having a longer blade or knife extended down and connected to a similar blade or knife on each other section to produce a point to enter the earth and a shorter blade or knife extended across the space between it and the longer blade or knife of an adjacent section with an end portion lapped on and secured to such longer blade or knife.

Signed at Chicago, Illinois, this 20th day of August, 1903.

NICKOLAUS ERZIG.

Witnesses:
J. L. CRIST,
M. W. SEIMETZ.