D. L. NEWCOMB.

Earth-Auger.

No. 167,353. Patented Aug. 31, 1875.

Fig. 2

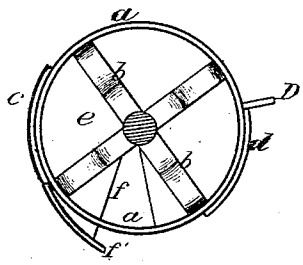


Fig. 1

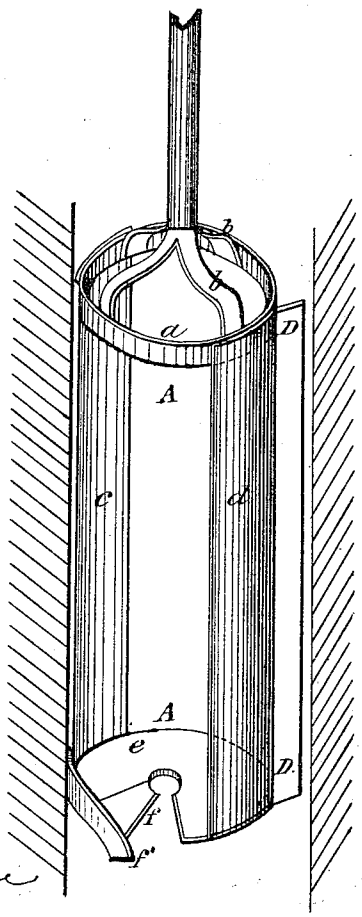
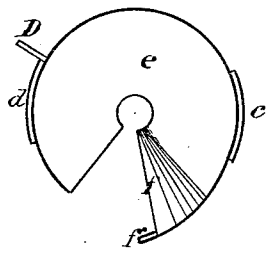


Fig. 3



Witnesses.

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UNITED STATES PATENT OFFICE.

DAVID L. NEWCOMB, OF KENTON, OHIO.

IMPROVEMENT IN EARTH-AUGERS.

Specification forming part of Letters Patent No. **167,353**, dated August 31, 1875; application filed April 28, 1875.

To all whom it may concern:

Be it known that I, DAVID L. NEWCOMB, of Kenton, in the county of Hardin and State of Ohio, have invented certain new and useful Improvements in Earth-Augers, of which the following is a specification:

My invention consists in constructing an earth-auger in such a manner that it will bore a hole larger than its diameter, and so arranged that one of its wings will hug the side of the well closely, while the other is free to turn in the space left between the casing of the auger and the hole, and in providing one of the vertical wings of the casing with a projecting flange of a width equal to the excess of the diameter of the hole and the auger, and of the same length as the casing. This flange serves to keep the space between the auger and the hole free from earth, forcing the same constantly into the casing between the wings, thus avoiding all danger of the auger's becoming packed or wedged in the hole, allowing such auger to be withdrawn with great facility whenever desired or required.

The difficulty encountered in boring wells is not in the actual boring, as most of the augers now employed will do the work effectually, but it is in the withdrawal of the auger from the hole when filled with earth, for the purpose of emptying the same; and this difficulty increases in proportion as the hole becomes deeper, owing to the atmospheric pressure, as well as that of the earth on and around the auger when the latter hugs the sides of the well closely, which thus forms an air-tight, or almost air-tight, packing, and added to this frequently is the weight of a column of water of from five to twenty feet above the auger, so that it is only with the greatest difficulty that it can be withdrawn.

Many devices have been employed to overcome and remedy the defect, such as hollow tubes or hollow shafting, which, however, have proved ineffectual, owing to their liability to become clogged or choked easily. I am also aware that augers constructed with capability of boring a hole of greater diameter than their own have been employed; but their action is such as to leave a space all around the auger, which is easily filled with loose earth, and during the operation becomes packed in between the sides of the well and the casing of the auger, remedying the defect only under certain conditions, while at the same time the boring action of the auger is diminished, and when packed in it will require a great amount of power to extract it, which frequently results in breakage of the shafting or the auger itself, and the object of my invention is to remedy effectually these difficulties.

In order that my invention may be fully understood, I will proceed to describe the same in detail by aid of the accompanying drawings.

Figure 1 is a perspective view of an auger constructed according to my invention, showing its position in relation to the sides of the well or hole when in operation. Figs. 2 and 3 are top and bottom plan views of the same.

A is the auger, composed of the ring *a* and the spider *b*, to which the shafting is attached. *c d* are two vertical wings forming the casing, and these wings are affixed to the ring *a* and the bit *e*. The vertical segmental wing *c* is affixed to the ring *a* and bit *e* in rear of the cutting-lip *f*, while the wing *d* is affixed to the ring *a* and bit *e* in front of the cutting-lip *f*. The cutting-lip *f* of the bit *e* is set at an angle to the vertical segmental wings *c d*, in such a manner that the point or edge *f'* is caused to project downward and outward beyond the periphery of the auger sufficiently to bore a hole the diameter of which will be greater by one and a half inch, more or less, than the diameter of the auger.

It will be seen that by this construction and arrangement, when the auger is rotated and in the act of boring, the power exerted by the cutting-lip *f* on the earth will cause the wing *c* in rear of said lip to hug the side of the hole closely, while the wing *d* in front of the cutting-lip is separated from the side of the well by the space formed by the auger boring a hole of greater diameter than its own, into which water or loose earth enters freely. In order to obviate the packing of the earth in the space above mentioned, thereby wedging the auger air-tight, or almost air-tight, in the hole, I provide a vertical projecting flange, D, affixed to the wing *d* on the right side thereof, and of the same length as the wing *d*. This flange projects outward from the periphery of the auger a distance equal, or nearly so, to the excess of

the diameter of the hole—that is to say, the flange has a width of one and a half inch, more or less, and serves to keep the space between one side of the auger and the side of the hole free from loose earth, forcing the same into the casing during the revolution of the auger.

It is obvious that by these means the difficulty of extracting the auger, when packed tight, is effectually overcome, since no packing can take place, and, when desired or required, the auger may be readily withdrawn, expediting the work, and effecting a great saving in power and repairs arising from the liability to breakage in the withdrawal of augers when packed or wedged in the hole.

Having described my invention, what I claim is—

In an earth-auger constructed substantially as described, the combination of the side piece or wing *d* with the flange D, substantially as specified, and for the purposes set forth.

In witness that I claim the foregoing I have hereunto set my hand.

DAVID L. NEWCOMB.

Witnesses:
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C. USHMAN.