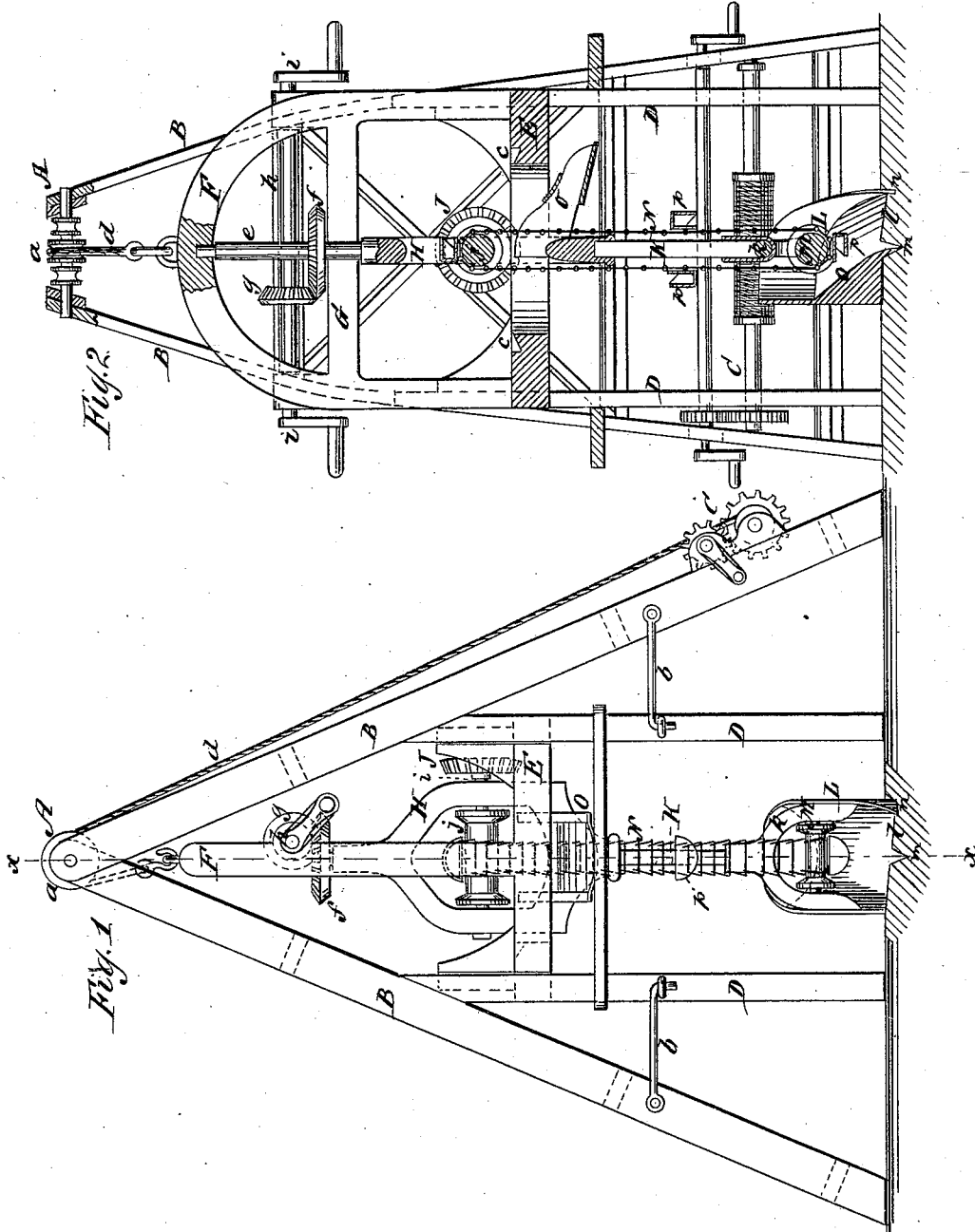


E. & H. COX.
EARTH AUGER.

No. 186,989

Patented Feb. 6, 1877.



WITNESSES:
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EDWARD COX AND HENRY COX, OF EAST ST. LOUIS, ILLINOIS.

IMPROVEMENT IN EARTH-AUGERS.

Specification forming part of Letters Patent No. **186,989**, dated February 6, 1877; application filed October 7, 1876.

To all whom it may concern:

Be it known that we, EDWARD COX and HENRY COX, of East St. Louis, in the county of St. Clair and State of Illinois, have invented a new and Improved Self-Elevating Earth-Auger, of which the following is a specification:

Figure 1 is a side elevation of my improved earth-auger. Fig. 2 is a vertical section on line *x x*, in Fig. 1.

Similar letters of reference indicate corresponding parts.

Our invention relates to a machine for boring and elevating earth; and it consists of a box-auger attached, by a yoke, to a vertical shaft, at the upper end of which a yoke is attached that is made to revolve by bevel-gearing. The upper yoke is provided with a horizontal shaft, having at its outer end a pinion that travels upon a series of cogs formed at the edge of the circular opening in which the yoke is suspended. An endless chain, carrying buckets, passes over a pulley on the horizontal shaft and around a pulley in the yoke that supports the auger. The whole is supported by a derrick, which is provided with a windlass for raising and lowering the apparatus.

The object of the invention is to provide a machine that will bore the earth and at the same time remove the débris.

In the drawing, A is a derrick, having the legs B, the windlass C, and the pulley *a*. D, D, &c., are vertical guide-posts arranged at the corners of a square, and attached to the derrick at their upper ends and braced by the hooked brace-rods *b*. E is a platform that is supported by a yoke, F, and guided by the posts D, and is provided with a circular opening in the center, around which, upon the upper surface of the platform, teeth *c* are formed. The yoke F is supported and raised and lowered by a rope, *d*, that runs from the windlass over the pulley *a*. G is a cross-bar attached to the sides of the yoke, in which the vertical shaft *e* is journaled. A bevel-wheel, *f*, is placed upon this shaft, and receives motion from a pinion, *g*, placed on a shaft, *h*, that runs across the yoke F, in which it is journaled, and is provided at each end with a crank, *i*. To the lower end of the shaft *e* a

yoke, H, is attached, in which a shaft, I, is journaled that carries a pinion, J, which meshes into the teeth *c* on the platform E. A pulley, *j*, is placed on this shaft, between the sides of the yoke. The yoke H is of such width as to nearly fill circular opening in the platform E, and is attached to a vertical shaft, K, having at its lower end a yoke, *k*, for supporting the earth-auger L. This auger consists of a section of a hollow cylinder having a bottom, which is pitched downward toward the cutting-edge *l*, and is provided with a central point, *m*, and a cutting-lip, *n*. The bottom is filled in, as shown at *o*, in Fig. 2, and pitches from all directions toward the center. M is a roller that is pivoted in the yoke *k*, and N is an endless chain that carries the buckets *p* and passes around the pulleys *j* and M. A chute, O, is attached to the lower part of the yoke H, for receiving the earth as it is raised by the buckets *p*.

The operation of our machine is as follows: The derrick is well centered over the place when the earth is to be removed, and the boring apparatus is lowered, by means of the windlass, until the point of the auger enters the earth; the machine is revolved by means of the cranks and gearing at the top of the machine, and the auger is let down by the windlass as rapidly as the earth can be cut and removed. As the auger revolves the pinion meshing into the teeth in the upper surface of the platform revolves and carries the pulley, and consequently the endless chain carrying the buckets. The buckets are thus made to remove the earth from the auger as rapidly as it is cut away and loosened, and deliver it to the chute, which is of sufficient length to carry it outside of the excavation.

When the machine has been operated until the platform nearly or quite reaches the surface of the earth the auger is withdrawn and a section of shaft and chain added, and the operation proceeded with as before.

With this auger the earth is cut away and removed at one operation, thus obviating the necessity of frequently removing the auger and shoveling out the earth.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination, with a derrick, of a box-auger attached to a rotary yoke therein, and an endless chain of buckets, constructed and arranged substantially as shown and described.

2. A hollow, inclined at the bottom, and provided with chute *O*, cutting-edge *l*, point *m*, and cutting-lip *n*, in combination with an

endless bucket-chain, arranged as and for the purpose specified.

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Witnesses:

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