

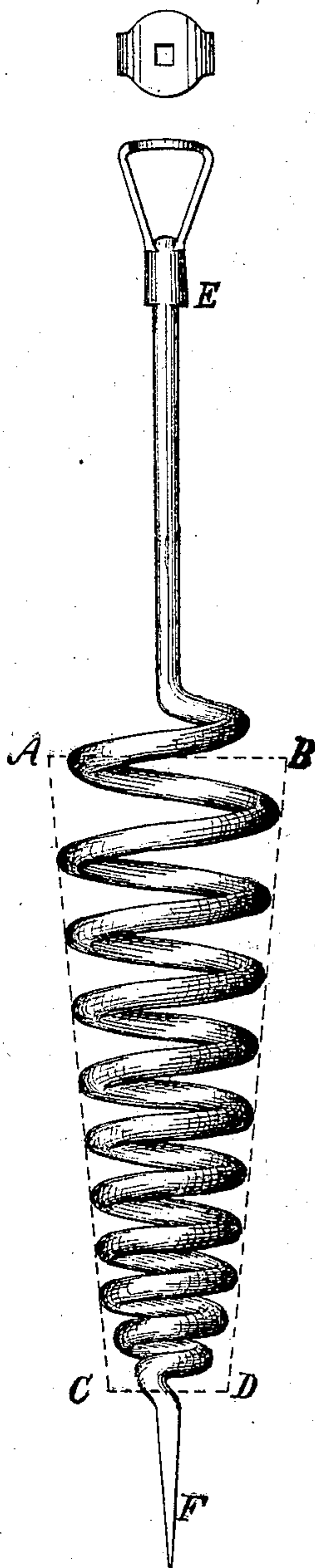
J. B. SMITH, dec'd.

BARBARA SMITH. Adm'x.

Earth-Augers.

No. 136,555.

Patented March 4, 1873.



Witnesses:

Joe. H. P. Co.
E. Davidson

Inventor:

Barbara Smith
Adm'x. of J. B. Smith
by her atty
Wm. C. Baldwin

UNITED STATES PATENT OFFICE

BARBARA SMITH, OF MEMPHIS, TENN., ADMINISTRATRIX OF JOHN B. SMITH,
DECEASED, ASSIGNOR TO RANDLE & HEATH, OF SAME PLACE.

IMPROVEMENT IN EARTH-AUGERS.

Specification forming part of Letters Patent No. 136,555, dated March 4, 1873.

To all whom it may concern:

Be it known that JOHN B. SMITH, deceased, late of the city of Memphis, in the county of Shelby and State of Tennessee, did invent certain Improvements in Well-Augers, or, more specifically, a device for removing gravel and similar obstructions occurring in the boring of wells, and for loosening compact earth in which the ordinary well-auger will not readily penetrate, of which the following is a specification:

The object of this newly-invented device is to facilitate the operation of an ordinary well-auger or earth-borer in gravelly situations, or in extremely compact earth or clay, by penetrating among, and receiving and retaining for removal, gravel, pebbles, and similar objects and substances, by which the ordinary earth-auger would be clogged or choked, or in the mass of which it would fail to take or bite, and to penetrate and loosen, ready for the action of the ordinary well-auger, such tough or compact earth or clay as would otherwise be penetrable with great difficulty by the ordinary well-auger; and consists, essentially, of a spiral coil of metal, forming a basket, the spiral spaces between the rod or rods being less toward the bottom of the basket, and the basket itself, in its general form, approaching a point toward its lower end.

The special character of this device is more particularly shown by the accompanying drawing, which is a perspective view thereof.

A B C D include what will be called the basket, whose vertical section in this instance is the vertical section of the frustum of a cone, terminating at top in a stem, E, coinciding with the vertical axis of the basket, and which is the means of its attachment to the rod or shaft of a well-auger by any of the well-known methods, and of its operation or revolution with the revolution of such rod, and terminating at the lower end in a central point, F, also coinciding in axis with the axis of the basket, and suitably sharpened for easy introduction among such removable gravel as it may meet, and also for probing, entering, and loosening compact clay for the more ready action of the ordinary well-auger to follow after it. The spiral spaces or interstices between the spirally-arranged rods or threads which constitute

the spiral coil forming the basket are made successively greater from the lower end toward the upper end of the basket, in order to accommodate obstructions of different sizes, and the basket itself is made smaller toward the lower end, in order that the constantly-increasing resistance of the mass of obstructions forming the sides of its course or bore, consequent on this constantly-increasing size, may be forced severally into an interstice between the rods or threads so soon as sufficient width of interstice shall be attained in the revolution and progress of the basket, and, being so received within the basket, are there retained, because the interstices then below their point of introduction are insufficient in width to admit their passage in or out.

When this gravel-auger is attached to a boring rod or shaft, as of an ordinary well-auger, by screws, bolts, clamps, or any of the ordinary well-known methods, and so revolved in its proper progressive direction, right or left, the sharpened point F is easily made to insert itself in the mass of gravel which it is intended to remove, or in the compact earth in which it is intended to operate. The spirally-arranged rod composing the coil, following in the track so prepared, loosens the earth, so that it may be entered and removed by the ordinary well-auger, inserted after the withdrawal of the gravel-auger; and in the case of a mass of gravel, such minute objects as would not obstruct the passage or operation of the ordinary auger pass into the body of the basket at the interstices, and also at the bottom opening of the basket, made, for this reason, of suitable small diameter, while gravel of such size as would obstruct the ordinary auger will be forced, by the pressure of the side of the course or bore of the basket, into the basket, so soon as the progressive revolution thereof shall have brought to such gravel an interstice of sufficient width to receive it. When falling within the basket, and too large to fall through the constantly-decreasing interstices below it, it is so retained, and, the basket being withdrawn from the bore, (care being had that it does not revolve in a direction the reverse of its progressive direction, whereby the material within it would be carried to the top of the basket, there to overflow, and so clog the bore,) such obstructions

are removed; which operation being repeated until a way is prepared for the operation of the ordinary auger, the two are alternately worked until the difficult stratum, whether of gravel &c., or of compact earth, is passed through.

It is obvious that the general size and diameter of this gravel-auger, or of the basket which constitutes it, and of the rod of which it is composed, must vary with the size of the earth-auger which it is to precede and assist, that the form of the basket may be conical or ovoid, and that the coil may be arranged with any suitable pitch, either uniform or expanding, the direction of which may be either toward the right or the left, as may be desired.

I claim as the invention of JOHN B. SMITH, deceased—

1. A tapering spiral coil forming a basket, terminating at its upper end in a stem for attachment to a boring-shaft, and at its lower end in a central penetrating-point, substantially as and for the purpose described.

2. The arrangement of the spiral coil in such manner that its spiral interstices increase in width as they proceed from the lower toward the upper portion of the basket, substantially as described, for the purpose specified.

Witnesses: BARBARA SMITH.

R. SEAVEY,

J. M. BOWEN.