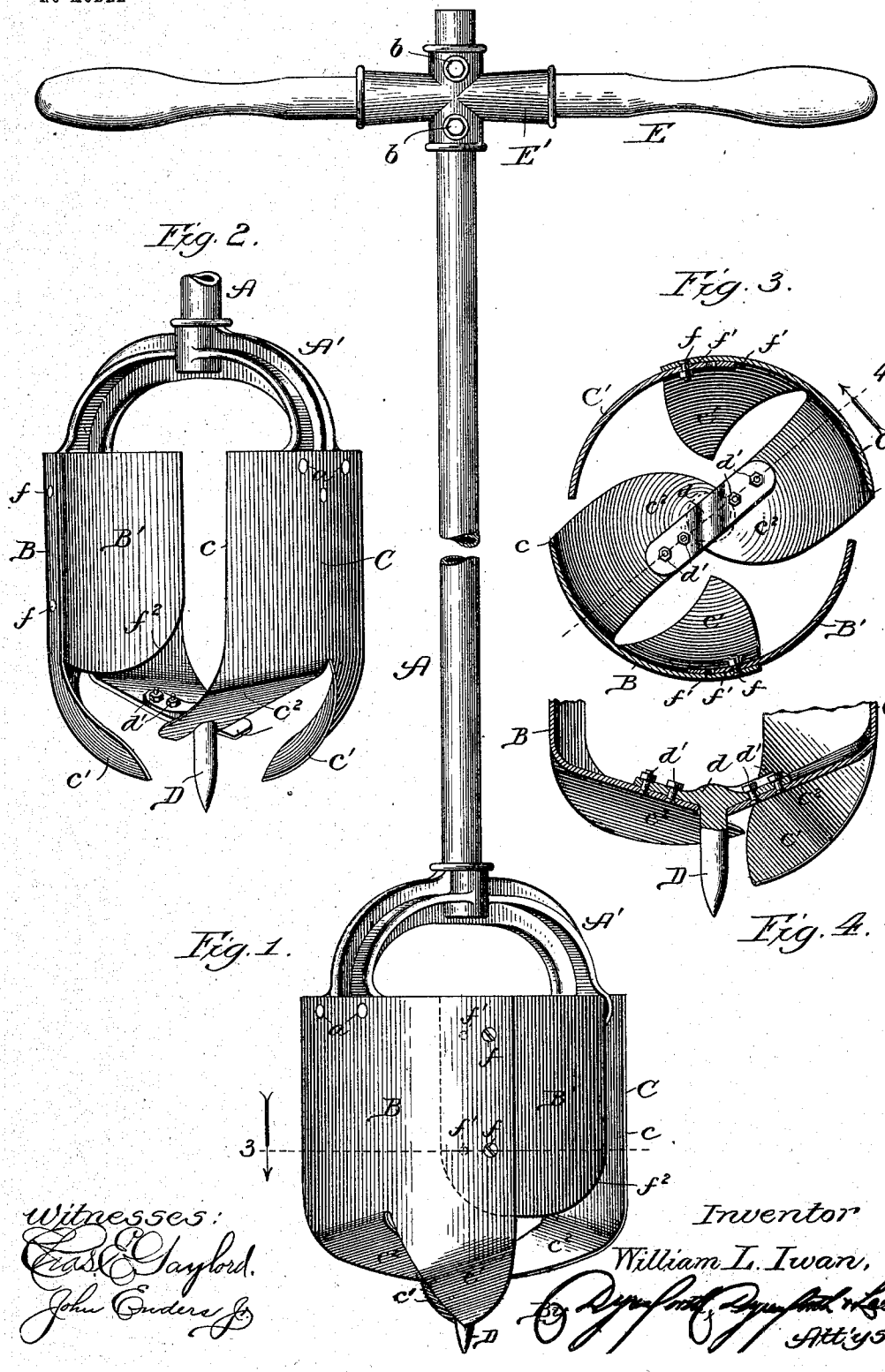
No. 732,859. PATENTED JULY 7, 1903.

W. L. IWAN.

EARTH AUGER.

APPLICATION FILED JUNE 21, 1902.

NO MODEL



Witnesses:
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Att'ys.

No. 732,859. Patented July 7, 1903.

UNITED STATES PATENT OFFICE.

WILLIAM L. IWAN, OF STREATOR, ILLINOIS.

EARTH-AUGER.

SPECIFICATION forming part of Letters Patent No. 732,859, dated July 7, 1093.

Application filed June 21, 1902. Serial No. 112,578. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. IWAN, a citizen of the United States, residing at Streator, in the county of Lasalle and State of Illinois, have invented a new and useful Improvement in Earth-Augers, of which the following is a pecification.

My invention relates to earth-augers of the type illustrated in Patent No. 537,157, April 9, 1895.

My primary object is to provide an auger of the character referred to of improved construction in matters of detail, particular attention being paid to adapting the auger to use in earths of varying cohesiveness, to strengthening the blades and equipping them with a common point for the auger, and to supplying an adjustable handle.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a broken elevational view of my improved auger; Fig. 2, a view of the lower portion of the device viewed from a different point than in Fig. 1; Fig. 3, a plan section taken as indicated at line 3 of Fig. 1, and Fig. 4 a broken vertical section taken as indicated at line 4 of Fig. 3.

A represents a hollow metal handle-stem equipped at its lower end with a head or yoke A′; B C, blades permanently secured, as by rivets *a*, to the yoke A′; B′ C′, blade extensions adjustably and removably connected with the blades B and C; D, an auger-point secured to the blades B and C, and E the handle-bars, having a hollow cross-form head E′ receiving the handle-stem A and adjustably secured thereon by set-screws *b*.

The permanent blades B and C are preferably of the longitudinally-concavo-convex form shown, are provided with chamfered cutting edges *c*, and have downwardly-projecting inwardly-curved bits *c′* and abruptly-curved inwardly-projecting bits c^2. The bits c^2 overlap, as shown, and are cut away or perforated near their points to receive the point D, the latter having a winged head *d* conforming to the inner surfaces of the bits c^2 and removably secured to said bits by bolts *d′*.

The blade-sections or blade extensions B′ C′ are of longitudinally-concavo-convex form, and each has a vertical margin bearing upon the inner surface of the vertical blunt or butt edge margin of the corresponding permanent blade, being secured in place by bolts *f*. Each blade extension has two sets of perforations *f′*, either set of which may be brought into registration with the set of perforations with which the corresponding blade is provided, so that the extensions are adjustable. The lower edges of said extensions are rounded at f^2 to conform somewhat in outline with the curve of the adjacent edges of the bits c^2. As appears from Fig. 3, the sections B′ C′ lie wholly within an imaginary cylinder formed by the cutting edges of the blades during revolution of the auger, so that they will not bind upon the sides of the hole during the operation of boring.

In practice the blade extensions are used when loose or very wet soil is encountered. Thus they are sometimes required at one season of the year and are not required at another season. Obviously they add to the weight of the auger and should be removed when not required. In some cases it is desirable to have their free vertical edges closer to the adjacent cutting edges of the permanent blades than at other times, and this is provided for in the feature of adjustability. Obviously the space between the blunt edges and cutting edges should be left as great as permitted by the nature of the soil to facilitate emptying the auger.

The improved auger is particularly useful for boring wells where loose soil, such as sand and gravel, is encountered, for in such use the blade extensions serve to prevent the material from slipping out as the shovel is being hoisted.

Changes in details of construction within the spirit of my invention may be made. Hence no undue limitation should be understood from the foregoing detailed description.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an earth-auger, the combination of suitable permanent blades, and a removable blade-section serving when employed to close a portion of the space between adjacent edges of the permanent blades.

2. In an earth-auger, the combination of a handle, longitudinally-concavo-convex blades attached therein, and longitudinally-concavo-

convex blade-sections removably connected with said blades and closing a portion of the space between their edges.

3. In an earth-auger, the combination of suitable permanent blades, and blade-sections adjustably and removably connected with said blades and serving when employed to close portions of the spaces between the edges of the permanent blades.

4. In an earth-auger, the combination of a handle, longitudinally-concavo-convex blades attached thereto and provided with vertical cutting edges, downwardly-projecting incurved bits, and sharply-curved inwardly-projecting bits, and longitudinally-concavo-convex blade-sections removably connected with the blunt vertical edge portions of the blades.

5. In an earth-auger, the combination of suitable concavo-convex blades and longitudinally-concavo-convex blade-sections adjustably connected with the blunt vertical edge portions of the blades, for the purpose set forth.

6. In an earth-auger, the combination of a handle, longitudinally-concavo-convex blades attached thereto and provided with vertical cutting edges, downwardly-projecting incurved bits, and sharply-curved inwardly-projecting bits having overlapping end portions, and an auger-point with an attaching-head bearing on the inner surfaces of said last-named bits and secured to said bits.

WILLIAM L. IWAN.

In presence of—
ALBERT D. BACCI,
W. B. DAVIES.