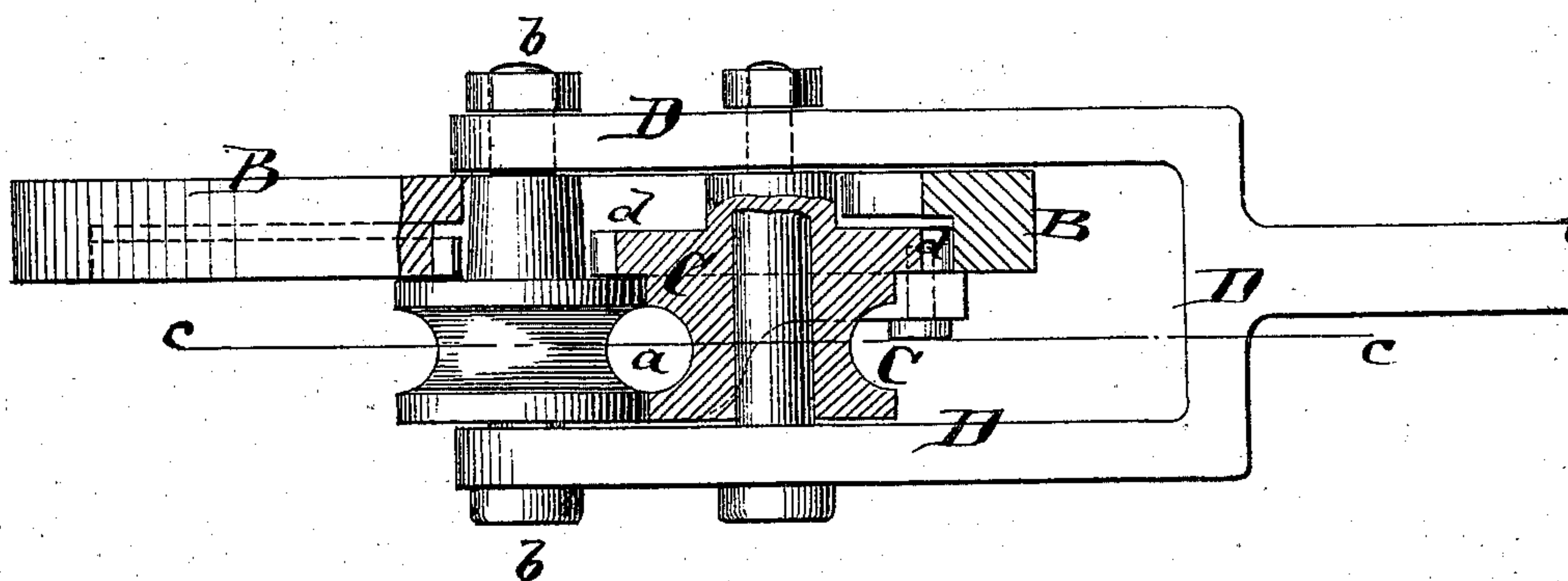
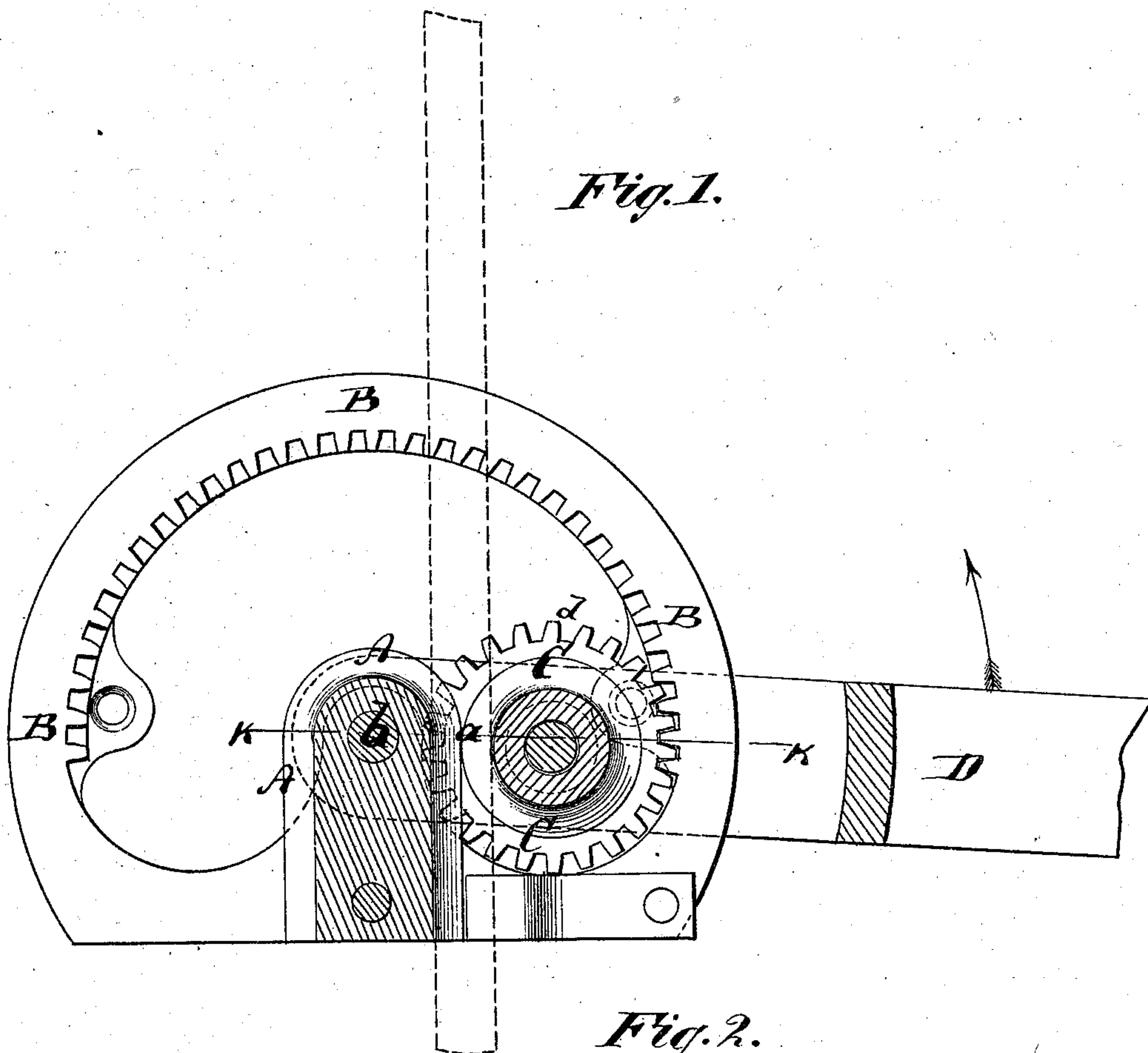


W. A. BUTLER.

Devices for Forming Water-Traps.

No. 143,665.

Patented Oct. 14, 1873.



Witnesses
John Becker
Fred Haynes

Wm A. Butler
by his Attorneys
Brown & Allen

UNITED STATES PATENT OFFICE.

WILLIAM A. BUTLER, OF NEW YORK, N. Y.

IMPROVEMENT IN DEVICES FOR FORMING WATER-TRAPS.

Specification forming part of Letters Patent No. **143,665**, dated October 14, 1873; application filed September 23, 1873:

To all whom it may concern:

Be it known that I, WILLIAM A. BUTLER, of the city, county, and State of New York, have invented an Improved Machine for Forming Water-Traps, &c., of which the following is a specification:

Figure 1 is a longitudinal section of my improved machine, the line *c c*, Fig. 2, indicating the plane of section. Fig. 2 is a section thereof on the line *k k*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to produce a machine by which straight pipe or tubing can be bent into semi-annular form, and whereby, when the two ends of the same tube are bent in opposite directions, S-shaped water or sink traps may be produced. The invention consists in constructing a machine of a central semicircular stationary concave block, around which a stationary internal gearing is placed, a toothed wheel, which is connected with a concave-edged roller, being placed between said stationary gearing and the aforementioned stationary block, and hung in a fork or lever that has its pivot on the axis of the said semicircular block.

In the accompanying drawing, the letter A represents a semicircular block, connected rigidly with a semicircular internal gearing, B. The edge of the block is grooved to be concave, as shown in Fig. 2. C is a roller, placed between the concave block A and the gearing B, and provided with teeth *d d*, that enter the teeth of the internal gearing. The edge of this roller C is grooved in the same manner as that of the block A, and meets or joins said block, so that between the two a circular opening, *a*, is formed, as shown in Fig. 2. The roller C is hung in a fork or lever, D, which

has its pivot *b* in line with the axis of the semicircular block A.

The pipe to be bent is introduced, through the opening *a*, between the block A and the roller C, and then the lever is swung on its pivot *b* in the direction of the arrow shown in Fig. 1, and causes thereby the upper projecting part of the pipe to be bent by the roller C around the semicircular block A, and thus to assume a semicircular, or, rather, semi-annular, form.

The roller C, being geared with the stationary gear B, derives a positive rotary motion from its motion with the lever D, and is thereby caused to rotate in contact with the outer half of the surface of the bending tube, in such manner as to produce a drawing action thereon, pressing the metal forward in the direction of the bend.

If it is desired to bend the tube in the form of an S-shaped sink or water trap, it is only necessary, after one end of the tube has been applied to the machine, to apply the other end, and bend it in the opposite direction to the first.

The tube to be bent may be filled with sand or other material that will yield to its flexure; but this is not always necessary.

What is here claimed, and desired to be secured by Letters Patent, is—

The machine for bending tubes, forming water-traps, &c., consisting of the stationary semicircular grooved block A, grooved and toothed roller C, stationary gearing B, and fork or lever D, all combined and arranged to operate substantially as herein shown and described.

WM. A. BUTLER.

Witnesses:

HENRY T. BROWN,
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