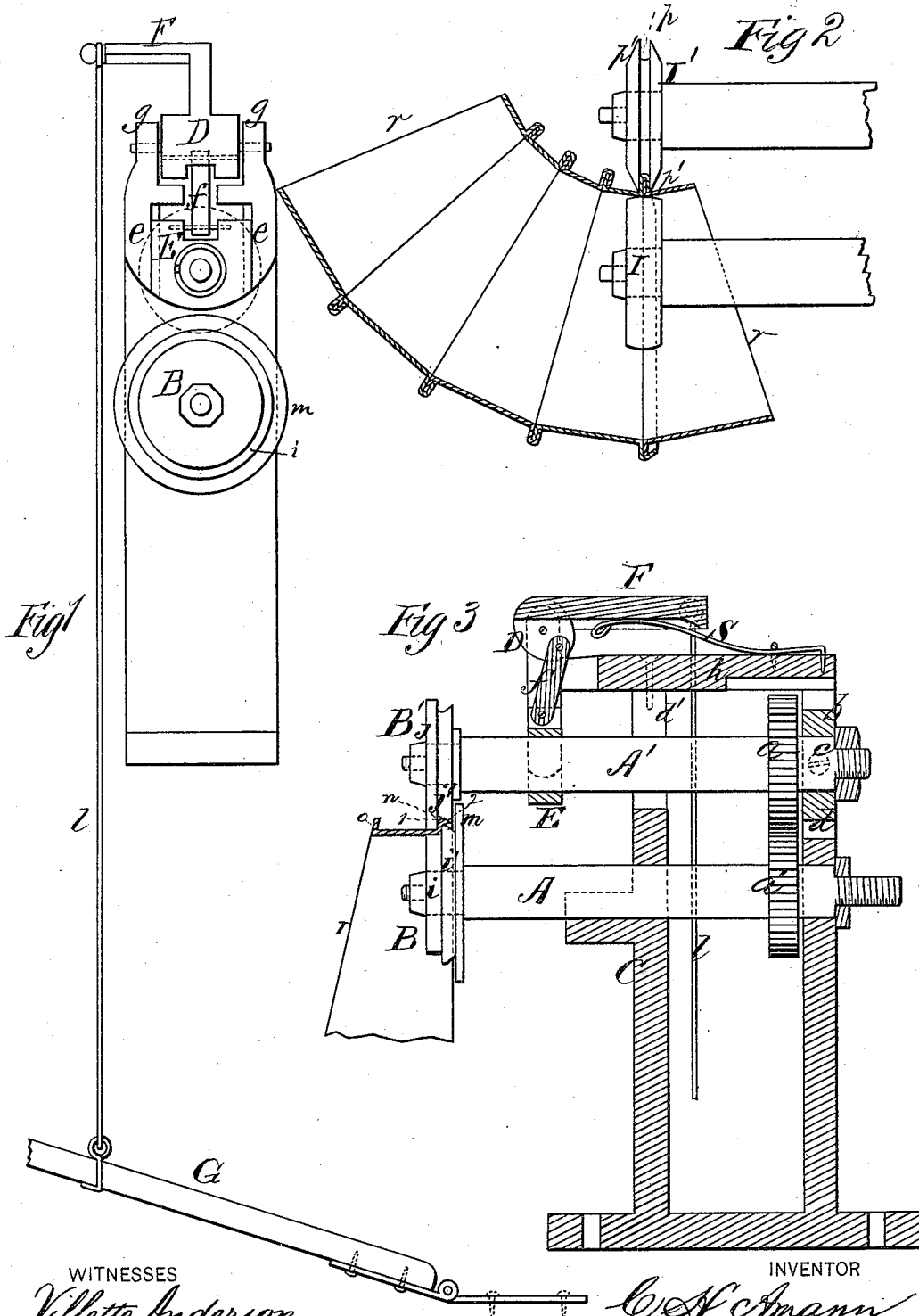


C. H. AMANN.
ELBOW-MACHINE.

No. 178,705.

Patented June 13, 1876.



WITNESSES
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IMPROVEMENT IN ELBOW-MACHINES.

Specification forming part of Letters Patent No. 178,705, dated June 13, 1876; application filed April 8, 1876.

To all whom it may concern:

Be it known that I, CHARLES H. AMANN, of Columbus, in the county of Franklin and State of Ohio, have invented a new and valuable Improvement in Beading-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of an end view of my improved pipe-jointing machine. Fig. 2 is a detail view of a part of the same, and Fig. 3 is a longitudinal vertical section of the same.

This invention relates to improvements in machines for the manufacture of pipe-elbows of curved form; and it consists in the combination of an anvil cone-wheel, composed of two parts of different diameters, the outer and smaller part being right cylindrical, and the inner and larger part in the form of a conical frustum, and of a similar pressure or hammer wheel, the outer and larger part of which is right cylindrical, and the inner and smaller part a conical frustum, the said wheels being applied upon rotating shafts, the one above the other, with their rectilinear and beveled surfaces in contact, whereby a section of pipe passed in between these wheels will have a bead formed on its edge adapted to receive a lip upon a second section. It also consists in a disk or stop rotating with the anvil cone-wheel, and extending beyond the beveled periphery of the anvil or pressure wheel, whereby a means is provided for forming the bead equidistant at all points from the edge of the pipe-section. It also consists in making the anvil-wheel adjustable, and in combining with it a pressure-cam, an operating-lever for the cam, and an actuating-treadle, whereby the necessary pressure for forming the bead is obtained, as will be hereinafter more fully set forth and claimed.

In the annexed drawings, the letter A designates the shaft of the anvil-wheel B, and A' that of the hammer-wheel B', arranged the one above the other, and actuated to rotate in opposite directions by means of intermeshing gears *a a'* and a suitable crank-arm or a pul-

ley-wheel. Shaft A is arranged in fixed bearings in a frame, C, in the customary manner, while shaft A' is adjustable and vertically vibratory in the following manner, to wit: One of its ends is mounted loosely in a bearing-block, *b*, confined by means of a screw or screws, *c*, in a slot, *d*, formed in one of the uprights of the frame; and it extends through a slot, *d'*, in the upper end of the other upright, its free end being suspended in a vertically-movable sash, E, arranged in guides *e e'* upon the frame, from an operating-cam, D, by means of a connecting-rod, *f*, pivoted both to the sash and to the cam, as shown in Fig. 3. Cam D is mounted in suitable bearings, *g*, upon a cross-piece, *h*, and is provided with an arm or lever, F, connected by means of a rod, *l*, to a treadle, G. When this treadle is depressed the sash will be lowered and the hammer-wheel B' forced into violent contact with the anvil-wheel B. If the treadle be released from pressure, wheel B' will be raised up from wheel B by the recoil of a suitable spring, S, arranged between lever F and cross-piece *h*, which spring had been compressed or actuated by the operation of the treadle. Wheels B B' are removably applied upon their respective shafts and are of the following construction: Wheel B is composed of two parts, *i i'*, of different diameters, the latter being the greater. Part *i* is right cylindrical, its periphery being parallel to the axis of shaft A, and part *i'* (the larger) is in the form of a conical frustum, its base or larger diameter being next to part *i*, and its beveled periphery forming an acute angle with the shaft. Wheel B' is likewise composed of two parts, *j j'*, of different diameters, the larger, *j*, being right cylindrical, and the smaller a conical frustum, arranged, the former outside and the latter inside, so that the right-cylindrical parts will be in the same plane, and also the beveled parts, the one with the other. The wheels will be of any suitable metal, and the anvil will be provided with a gage or stop, *m*, of greater diameter than wheel A, and preferably cast with and forming a component part thereof.

The operation of my machine is as follows: The edge of the pipe section is passed between wheels B B' and pressed against stop *m*. The

treadle is then operated, bringing the latter down forcibly upon the former, and bending or swaging the edge of the pipe into the form of a bead, *n*, one of the edges, 1, of which will be at right angles to the axis of the pipe, and the other, 2, at an acute angle to the wall 1. The wheels B B' being set in motion, this bead will be formed all around the edge of the section. A flange, *o*, will then be formed by an ordinary tinner's turning-machine around the edge of a second section, and will be passed under flange 2 of bead *n* into the latter. Wheels B B' will then be removed, and a wheel, I, having a slightly-rounded periphery, substituted for the former, and a wheel, I', having a deep peripheral groove, *p*, and beveled edges *p'*, for the latter. The united sections will be then passed between wheels I I', and the latter brought down through the medium of a treadle and its connections upon the former, when flange 2 of bead *n* will be bent down and over flange *o*, and, by imparting rotary motion to the said wheels, clamp the two sections closely together. These sections being short, and having tapering edges *r*, a symmetrical rounded elbow, H, may be made, by the jointing of successive sections together, admirably adapted for stove-pipes, hot-air conduits for furnaces, and for other analogous purposes.

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

1. The anvil-wheel B, consisting of an exterior right-cylindrical part, *i*, and an inner part, *i'*, of the form of a conical frustum, with its larger base next the part *i*, and of larger diameter than the same, in combination with

the hammer-wheel B', consisting of an outer right-cylindrical part, *j*, and an inner conical part, *j'*, of less diameter, and forming a re-entrant angle with part *j*, substantially as specified.

2. In a pipe-jointing machine, the combination, with the shafts A A' and wheel B', having the exterior right-cylindrical portion *j*, the conical portion *j'*, and the re-entering angle between, of the anvil-wheel B, having the exterior cylinder *i*, the salient part *i'*, and the stop-flange *m*, arranged in contact with the inner face of the wheel B', and adapted to form a bead on a pipe-edge with an oblique flange, 2, substantially as specified.

3. The combination, with an anvil-wheel applied upon a shaft rotating in fixed bearings, and a hammer-wheel on a shaft having movable bearings, of a pressure-cam, a lever, and a treadle for applying the pressure, substantially as specified.

4. The shaft loosely applied in its bearing at one end, and suspended in a vertically-movable sash at the other, a connecting-rod, a rock-cam, and an actuating-treadle, combined and arranged substantially as specified.

5. The spring S, in combination with a cam, a lever, and a vertically-vibrating shaft, A', having hammer-wheel B', and a shaft, A, having anvil-wheel B, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

CHARLES H. AMANN.

Witnesses:

L. A. HARKER,
WM. F. MEARRO.