C. Bigelow,

Grooving Sheet-Metal Pipes.

No. 17,482. Patented June 9, 1857.

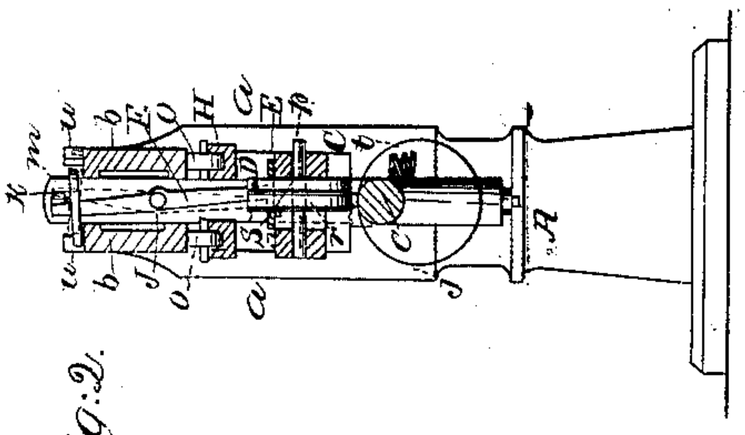

Fig: 2.

Fig: 4.

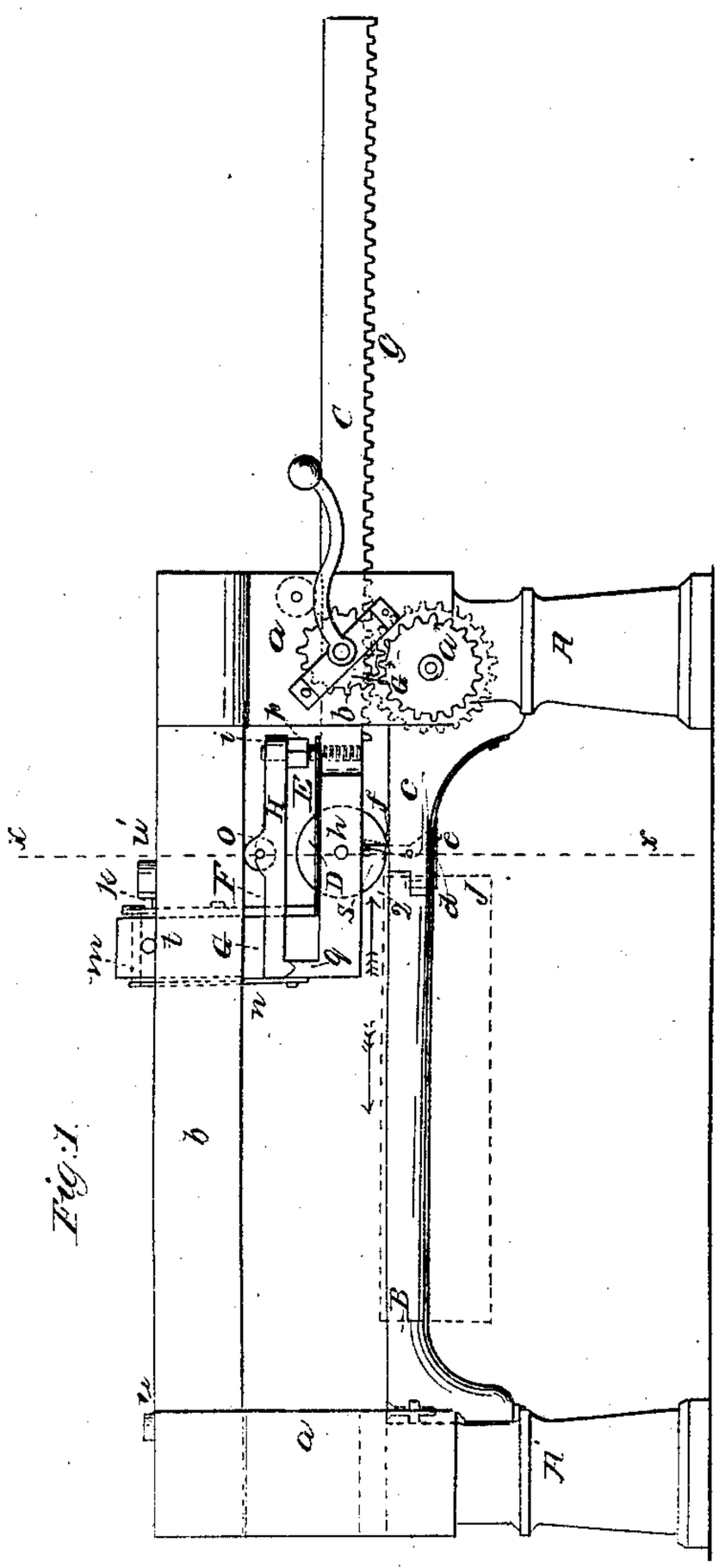

Fig: 1.

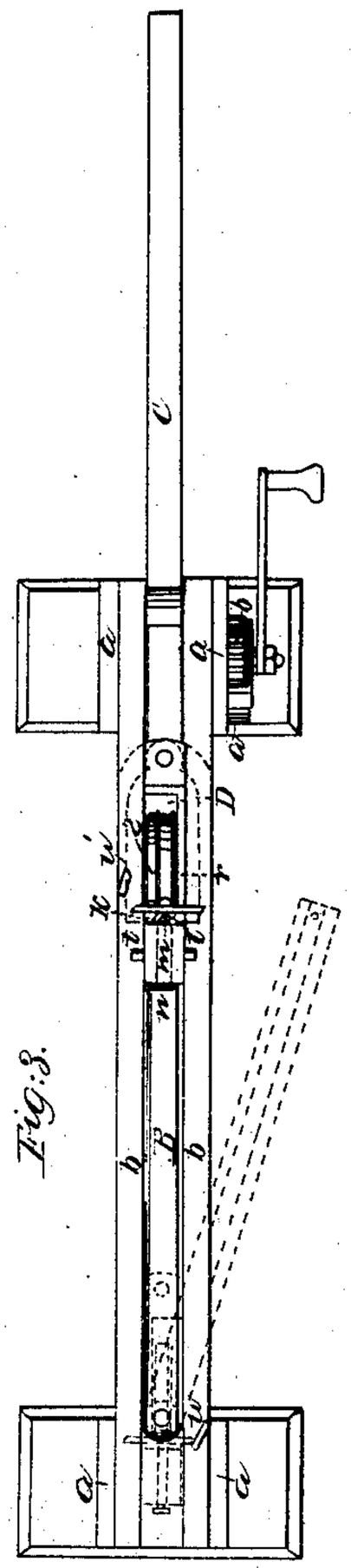

Fig: 3.

UNITED STATES PATENT OFFICE.

CHARLES BIGELOW, OF HASTINGS, MINNESOTA.

IMPROVED MACHINE FOR GROOVING STOVE-PIPE.

Specification forming part of Letters Patent No. **17,482**, dated June 9, 1857.

To all whom it may concern:

Be it known that I, CHARLES BIGELOW, of Hastings, in the county of Dakota, in the State of Minnesota, have invented a new and improved machine for grooving and closing the joints or seams of stove and other sheet-metal pipes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side view of my improvements. Fig. 2 is a transverse vertical section of the same, *x x* in Fig. 1 showing the plane of section. Fig. 3 is a plan or top view of the same. Fig. 4 is a transverse section of a portion of a pipe, showing the joint before being closed.

Similar letters of reference indicate corresponding parts in each of the several figures.

My invention consists in the employment or use of a roller having a grooved or concave and also a flat surface, said roller being fitted within a reciprocating bar, and so arranged that it may be moved or shifted laterally, and the grooved and flat surfaces of the roller made to pass successively over the joint or seam of the pipe, the roller being shifted or moved automatically at each end of its stroke or movement, the grooved surface of the roller passing over the seam while it is moving in one direction, and the flat surface passing over said seam when the roller is moving in the opposite direction. The pipe is placed upon a hinged bar, and the whole is so arranged and operated that the joints or seams are closed in an expeditious and perfect manner and with the greatest facility.

To enable those skilled in the art to make and use my invention, I will proceed to describe it.

A A′ represent two uprights, which may be of cast-iron. The upper parts of these uprights are formed of two vertical plates, *a a*, to which parallel horizontal bars *b b* are attached, said bars connecting the two uprights.

On one of the uprights, A′, a horizontal projection, *c*, is formed, and to the other upright, A, a horizontal bar, B, is attached by a joint. The upper surfaces of the bar B and projection *c* are in the same plane or on the same level, and the outer end of the bar B is connected to the end of the projection *c* by a pin, *d*, which passes into the under side of the bar B, and is retained therein by a spring, *e*, to which the pin *d* is attached. The ends of the bar B and projection *c* are so formed that they will, when connected, overlap each other, as shown clearly in Fig. 1.

In the projection *c* a lever, *f*, is fitted. The lower end of this lever bears against the spring *e*, and the upper end projects a trifle above the upper surface of the projection *c*.

C represents a bar, which has a rack, *g*, formed on its under side. The bar C is fitted between the plates *a a*, and a roller, D, is fitted in one end of the bar C, said roller being placed loosely on a rod, *h*, which passes transversely through the bar C. The roller D is fitted in a mortise in the bar sufficiently wide to allow the roller a certain degree of lateral movement.

E represents a yoke, one end of which is pivoted to the bar C at *i*. The yoke E is fitted over the roller D. The opposite end of this yoke has the lower end of a vertical lever, F, fitted in it. This lever works on a fulcrum-pin, *j*, which is in an upright, G, attached to the end of the bar C. The upper end of the lever F has a cross-bar, *k*, attached to it, and the back part of the upper end of said lever F is beveled and of triangular form, as shown at *l* in Fig. 3. Through the upper end of the upright G a pin, *m*, passes. The outer end of this pin is attached to a spring, *n*, which is secured to the outer side of the upright G.

H represents a bar, which has friction-rollers *o o* placed in it. One end of this bar rests upon a nut, *p*, on the fulcrum-pin *i* of the yoke E. The opposite end rests upon supports *q*, attached to the end of the bar C. The periphery of the roller D has a grooved or concave surface, *r*, and a flat surface, *s*, as shown in Figs. 2 and 3. The upper end of the upright G has a pin, *t*, passing transversely through it, and two oblique blocks or ledges, *u u′*, are placed on the bars *b b*—a ledge on each bar. These are both shown in Fig. 3.

I represents a pinion (shown by dotted lines) which gears into the rack *g* of the bar C. The shaft of this pinion passes through the side of the upright A, and a toothed wheel, $a^{\times}$, is fitted thereon, into which wheel a driving-pinion, $b^{\times}$, gears.

The operation is as follows: The pipe is

formed in the usual way, the sheet-metal plate being bent in cylindrical form, and the edges of the plate bent and locked one within the other, as usual, and as shown in Fig. 4. The pipe (designated by J and shown in red) is placed upon the bar B, and the roller D is moved to the outer end of the bar B. The bar C is then moved in the direction indicated by arrow 1, the groove *r* in the periphery of the roller passing over the joint or seam of the pipe, as shown in Fig. 2. The grooved surface *r* of the roller D grooves or closes the edges of the seam or joint, and when the roller has reached the extent of movement in the direction of the arrow 1 the end of the bar *k* will strike against the ledge *u*, and the lever F will be actuated and the yoke E moved so as to shift the position of the roller D, and the flat surface *s* of the roller will be brought directly over the seam or joint of the pipe. The motion of the bar C is then reversed, as indicated by the arrow 2, and the flat portion *s* of the roller will compress the joint or seam and effectually close it. When the roller D reaches the extent of the movement indicated by the arrow 2, a projection, $s^{\times}$, on the bar C strikes the lever *f*, and the pin *d* will be depressed and withdrawn from the bar B, said bar being thrown outward by a spring, $t^{\times}$, so that the finished pipe can be removed from the bar and another pipe placed thereon. The roller D is shifted when it reaches the end of its movement, (indicated by arrow 2,) so that the grooved surface *r* is brought in proper position to pass over the joint or seam in consequence of the cross-bar *k* striking against the ledge *u'*. The friction-rollers *o o* bear against the under sufraces of the bars *b b*, and by raising or lowering the nut *p* the requisite pressure of the roller D upon the seam or joint may be obtained. The pin *m* prevents the yoke E, and consequently the roller D, from being casually moved.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The roller D, having its periphery or face formed of a grooved or concave surface and a flat surface, the roller being placed within a reciprocating bar, C, and within a yoke, E, arranged and actuated by the lever F and ledges *u u*, as shown, whereby the roller is shifted or moved automatically at the ends of its strokes or movements and made to groove and close the joints or seams of the pipes at one operation.

2. The bar B, when jointed to the upright A and secured to the projection *c* by the pin *d*, as shown, and used in connection with the lever *f* and spring $t^{\times}$, as described, so that said bar may be thrown out automatically from the projection *c*, for the purpose of allowing the finished pipe to be removed readily therefrom and another placed thereon.

CHARLES BIGELOW.

Witnesses:

MICHAEL MCHUGH,

MONTCALM J. STIMSON.