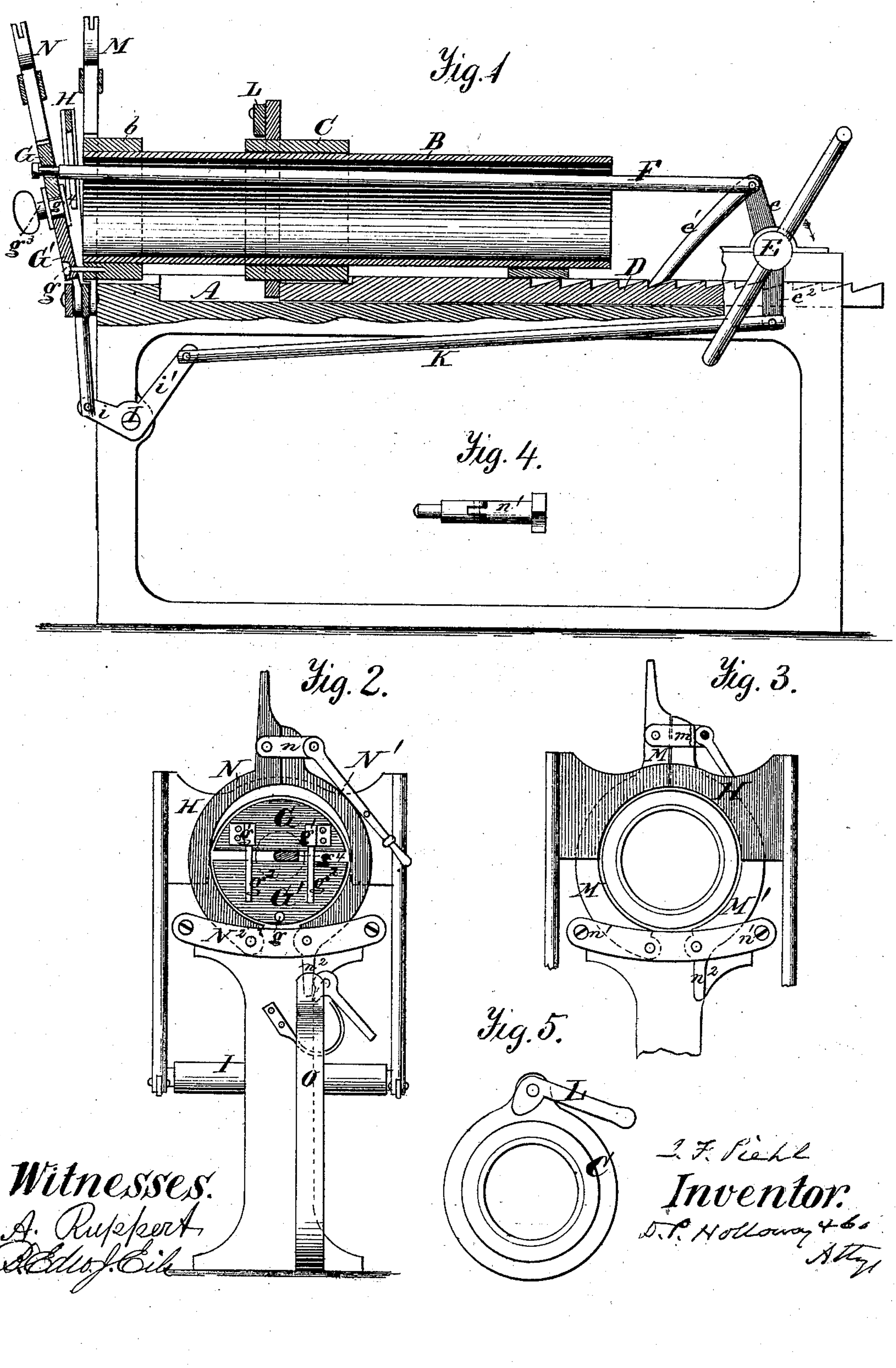
J. F. PIEHL.

Machine for Making Stove Pipe Elbows.

No. 166,029. Patented July 27, 1875.



Witnesses.
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[illegible]

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UNITED STATES PATENT OFFICE.

JOHN F. PIEHL, OF RICHMOND, INDIANA, ASSIGNOR OF PART OF HIS RIGHT TO JOHN H. McINTYRE AND JAMES E. TAYLOR, OF SAME PLACE, AND GEORGE KRICK, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR MAKING STOVE-PIPE ELBOWS.

Specification forming part of Letters Patent No. **166,029**, dated July 27, 1875; application filed December 23, 1874.

To all whom it may concern:

Be it known that I, JOHN F. PIEHL, of Richmond, in the county of Wayne and State of Indiana, have invented a certain Improvement in Machines for Crimping Stove-Pipe Elbows, of which the following is a specification:

This invention relates to a machine for making curved sheet-iron stove-pipe elbows of the character described in another application of even date with this, in which the surplus iron is tucked inward, and the tucks or crimps are afterward folded down by other suitable means.

My invention consists principally in the use, in connection with an overhung mandrel for sustaining the blank pipe or skelp, of a reciprocating tucker or crimper, and an oscillating expansible rest, acting conjointly with suitable clamps, and a feed mechanism to successively form the several tucks or crimps necessary to transform the straight blank pipe or skelp into an elbow.

In the annexed drawings, Figure 1 is a longitudinal sectional elevation of my machine. Fig. 2 is an end elevation of the same. Fig. 3 is also an end view thereof, with the oscillating rest and part of the frame and tucker removed. Figs. 4 and 5 are detail views of parts hereinafter more particularly referred to.

The same letters of reference are used in all the figures in the designation of identical parts.

The shears A of the machine carry a fixed overhung mandrel, B, made tubular, and terminating at the outer overhung end in a collar, *b*, of the size of the blank pipe to be crimped. A sleeve, C, of the same diameter as the collar *b*, slides upon the mandrel, being secured to a rack, D, which slides in ways between the shears underneath the mandrel, being operated in one direction by a pawl, e^1, pivoted to an arm, *e*, of a transverse rock-shaft, E, which turns in bearings fixed on the rear end of the shears or frame. From the same arm *e* a rod, F, extends through the hollow mandrel, and is connected at the other end to the upper section G of the expansible rest, the lower section G′ of which is pivoted to a pin or stud, *g*, projecting from the end of the mandrel. The section G of the rest is provided with ears g^1, receiving upwardly-projecting pins g^2 on the lower section; and the two sections are further connected by a double rest-stud, g^3, the shank g^4 of which is flat, as shown in Fig. 2, constituting a cam by means of which the upper section G of the rest can be forced apart from the lower one. When thus expanded the rest will include a circular area equal to the inside diameter of the pipe to be crimped; but when the cam g^4 is turned down, as shown in Fig. 2, the section G of the rest will sink sufficiently to let the inwardly-projecting tucks or crimps in the elbow pass over and by it, the sections of the rest being less than semicircular to the extent necessary to effect the required contraction. Between the end of the mandrel B and the expansible rest is the vertically-reciprocating and also laterally-oscillating tucker or crimper H, having substantially the form best shown in Fig. 3. Its downwardly-projecting arms are, respectively, pivoted to cranks *i*, at either end of the transverse rock-shaft I. One of these cranks is a bell-crank, the arm i' of which is connected to one end of a rod, K, the other end of which is pivoted to an arm, e^2, of the rock-shaft E.

The blank pipe to be crimped is slipped over the expansible rest onto the collar *b* and sleeve C of the mandrel, and secured on the rest and the collar and sleeve of the mandrel by suitable means. Those I have shown consist, first, of a cam-lever, L, carried on the sleeve C, for securing the inner end of the pipe; secondly, of a clamp consisting of two jaws, M and M′, encircling the collar *b* of the mandrel, near its outer end, and capable of being held closed by a loop, *m*; thirdly, of a similar clamp, N N^1 *n*, with its jaws pivoted to a bar, N^2, directly underneath the lower section G′ of the rest. The bar N^2 is hung on jointed studs n^1, such as shown in Fig. 4, and is provided with a short arm, n^2, which is acted upon by a spring, O, to throw the clamp forward the moment the rest is contracted, the bite of the clamp on the pipe and expanded rest being sufficiently strong to keep the parts together against the stress of the spring when moving toward the mandrel in the act of forming a crimp.

The operation of the machine is as follows:

A blank pipe or skelp is slipped over the rest, and onto the mandrel and its sleeve, and clamped on these parts while in the position shown in Fig. 1. The shaft E is then oscillated by means of its crank, or suitable gearing, in the direction of the arrow, causing the crimper to descend, making an inward tuck or crimp in the pipe. The rest advances at the same time toward the mandrel, and aids the crimper both in tucking and bending the pipe, which turns upward. While a crimp is thus being formed the pawl e^1 is drawn back over the rack D the distance of one tooth, and falls behind the next in series. The rest is now contracted, followed by an opening of the clamps and the automatic retraction of the one encircling the rest, the pipe being held in position only by the cam-lever L. The shaft E is then oscillated in the opposite direction, swinging the rest back, and pushing the pipe forward over the mandrel through the action of the pawl on the connected rack and sleeve at the same time that the crimper rises out of the tuck and above the pipe. The latter is then again clamped, the rest having been previously expanded, and the operation just described repeated.

The machine may be operated by hand or by power. The clamps may also be automatically opened and closed at the proper times by means suitably combined with the other gearing. Clamps of a different construction from those shown and described may also be used.

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

1. The tucker or crimper H, constructed and adapted to form an interior tuck by one operation, substantially as and for the purpose described.

2. The expansible and adjustable rest, composed of the sections G G′, with studs g^3 g^4 and eccentric, forming a support for making the interior crimp, substantially as and for the purpose described.

3. The combination of the expansible rest and the crimper H, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN F. PIEHL.

Witnesses:
D. P. HOLLOWAY,
GEORGE KRICK.