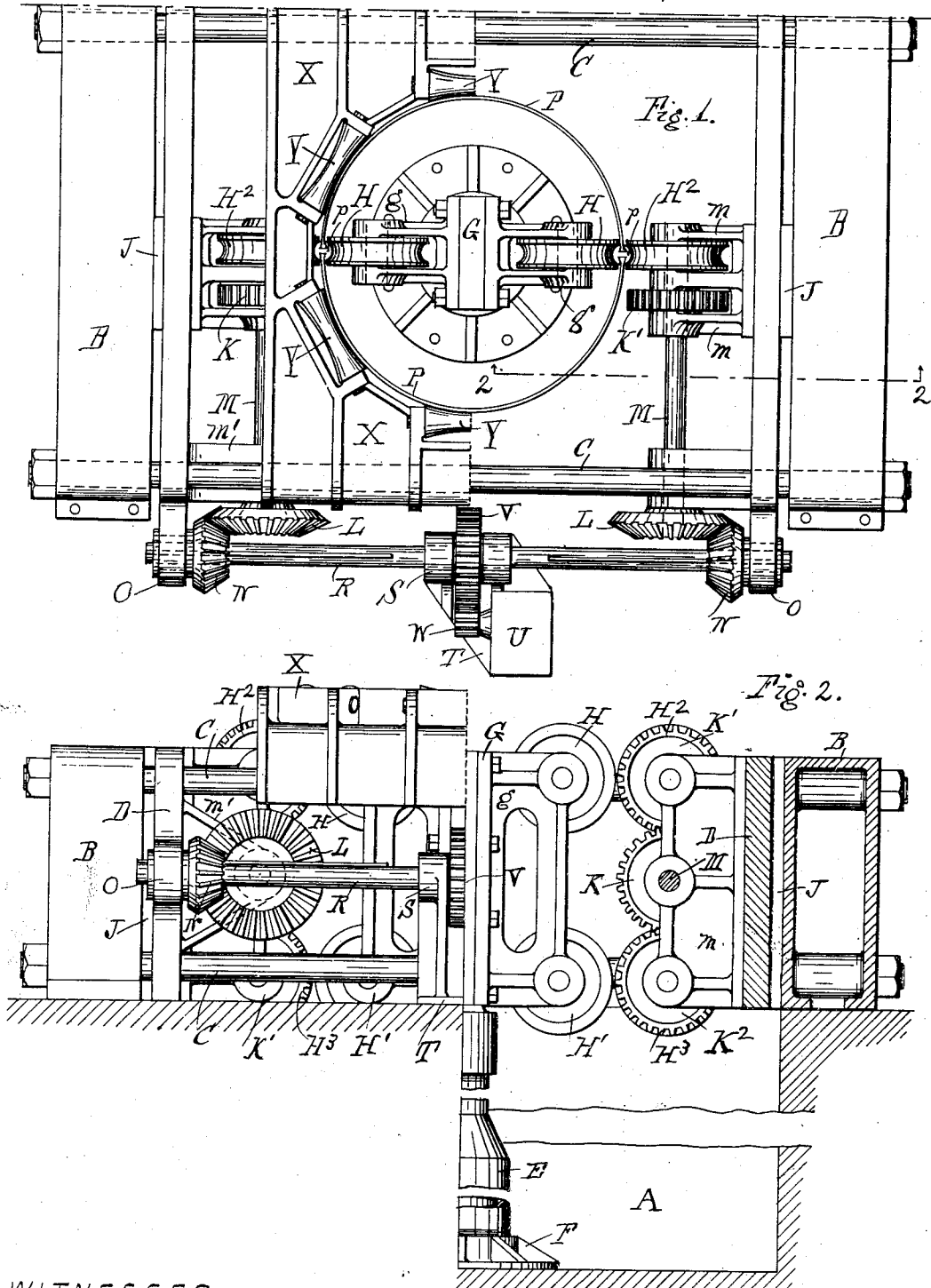


J. FRASER.
MACHINE FOR MAKING PIPES.
APPLICATION FILED NOV. 8, 1909.

1,037,888.

Patented Sept. 10, 1912.



WITNESSES

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MACHINE FOR MAKING PIPES.

1,037,888.

Specification of Letters Patent.

Patented Sept. 10, 1912.

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To all whom it may concern:

Be it known that I, JOHN FRASER, a citizen of the United States of America, residing in Hackensack, in the county of Bergen, in the State of New Jersey, have invented a certain new and useful Improved Machine for Making Pipes, of which the following is a specification.

My invention relates to apparatus for producing sheet metal pipes by squeezing lock-bars on the longitudinal upset edges of metallic plates, which have been previously bent to shape. A machine for producing sheet metal pipes of this character with their longitudinal joints secured by lock-bars instead of rivets, is disclosed in the Patent No. 914,369, granted to myself and Thomas Gray, March 2, 1909. In that the lock-bars were squeezed down onto the upset edges of the bent metal plates by means of reciprocating pressing tools, squeezing down a short length of the lock-bar at each operation. While that mode of operation is commercially practicable, it is somewhat slow and it results in a product not always satisfactory. The underlying reason for the unsatisfactoriness of the product is that the slowness of the process necessitates the working of the bars cold, and consequently only a soft steel of limited range and quite different from the metal of the sheets can be used for the lock-bars and in the finished joints the metal of the bars is left in a state of strain and stress not conducive to the best conditions for a perfect joint.

It is the object of my present invention to construct a machine which will quicken the operation and therefore render it more economical and which will also permit of the working of the lock-bars hot, so as to allow of the use of a wide range of metal, including metal of substantially the same character as that of the sheets and thereby obtain pipes with more perfect joints. This object I attain by constructing the apparatus as hereinafter described.

In the drawings, Figure 1 is a plan view of my improved lock-bar rolling apparatus, one half of the guide frame being omitted; Fig. 2 is a corresponding elevation, with the right half in section on the line 2-2, Fig. 1.

In carrying out my invention I provide a pit A as deep as the longest section of pipe to be made, and on foundations at the mouth of the pit I mount a horizontal frame carrying the tools to operate on the lock-bars.

Owing to the limits of the drawing sheet, the pit A is shown therein very much shortened. In the bottom of the pit is secured a flanged foot piece F supporting the vertical mandrel in the form of a pipe E, which carries at the top, in line with the longitudinal frame, a head G having grooved rolls H, H¹ to cooperate with grooved rolls H², H³ on the frame to roll down the lock-bars *p*, *p* onto the upset edges of the bent plates P, P.

The machine shown in the drawing is constructed to operate on two diametrically opposite lock-bars simultaneously, but of course the machine may be constructed to work on one lock-bar or on more than two, as the diameter of the pipe to be produced or other conditions may require. The rolls on the head G are mounted to turn in bearings in brackets *g*, and the rolls on the frame are mounted to turn in bearings *m*. I prefer to provide two pairs of rolls H, H² and H¹, H³, one pair vertically over the other, for each lock-bar, and to make the spacing of the grooves in the upper pair of rolls a little farther apart than those in the lower pair so that as the pipe is fed downwardly into the pit, the upper pair of rolls will only need to do part of the squeezing of the lock-bars, the lower rolls completing the operation.

The horizontal frame which carries the outer sets of rolls H², H³ may be of any convenient construction. I have shown it as composed of fixed cross-heads B, B, connected by horizontal bars C, C, the whole suitably mounted on foundations at the mouth of the pit. Instead of mounting the outer rolls H², H³ directly on the cross-heads B, B, I mount them on inner cross-heads D, D, which can be adjusted toward or from the central head G upon the bars C, C, and maintained in their adjusted positions by the introduction of filling pieces J of the thickness required for the purpose.

I provide means for positively driving the outer sets of rolls H², H³. Convenient for this purpose is the mechanism and gearing shown in the drawing, and comprising a motor U (Fig. 1) driving a horizontal shaft R through pinion W and gear V. This shaft is mounted on bearings S on a pedestal T (Fig. 2). The outer ends of the shaft pass through and have sliding key and keyway connections with bevel pinions N, N, which turn in bearings O, O, in the inner

adjustable cross-heads D, D. When these inner cross-heads are adjusted, the pinions N, N slide longitudinally on the keyed parts of the shaft R. The pinions N, N mesh with bevel gears L, L, on short horizontal shafts M, M mounted in suitable brackets *m, m*¹ in the adjustable cross-heads D, D. These shafts M, M impart rotary motion to their respective rolls H², H³ through the medium of the gears K, K¹, K².

I prefer to combine with the described construction of rolling mechanism, a pipe guiding frame X, which may be similar to that shown in the patent above referred to, and mounted upon the connecting bars C of the horizontal frame at the mouth of the pit. This frame, only half of which is shown in the drawings, has suitably located guiding rollers Y for the curved sheets to form the pipe.

The operation of the apparatus will be readily understood from the foregoing explanation, and from that it will be seen that the sheets and lock-bars can be fed downwardly through the squeezing rolls with sufficient speed to permit the lock-bars to be thus squeezed onto the upset edges of the

bent sheets, while the lock-bars are hot, all with the advantages hereinbefore explained.

I claim as my invention—

1. An apparatus for closing longitudinal lock-bar pipe joints, comprising a vertical mandrel with rolls for the inner faces of the lock bars in combination with a horizontal frame, adjustable cross-heads on the latter carrying rolls for the outer faces of the lock-bars, and means for driving said outer rolls.

2. Apparatus for closing longitudinal lock-bar pipe joints, comprising a vertical mandrel with inner rolls, and a horizontal frame with coöperating outer rolls, the rolls being in successive pairs differently spaced to complete the rolling down of the lock-bars on the edges of the plates by successive operations, 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 FRASER.

Witnesses:

WALTER ABBE,
HUBERT HOWSON.