2 Sheets—Sheet 1.

J. B. ROOT.

Machine for the Manufacture of Spiral-Jointed Pipe.

No. 221,938. Patented Nov. 25, 1879.

Fig. 1.

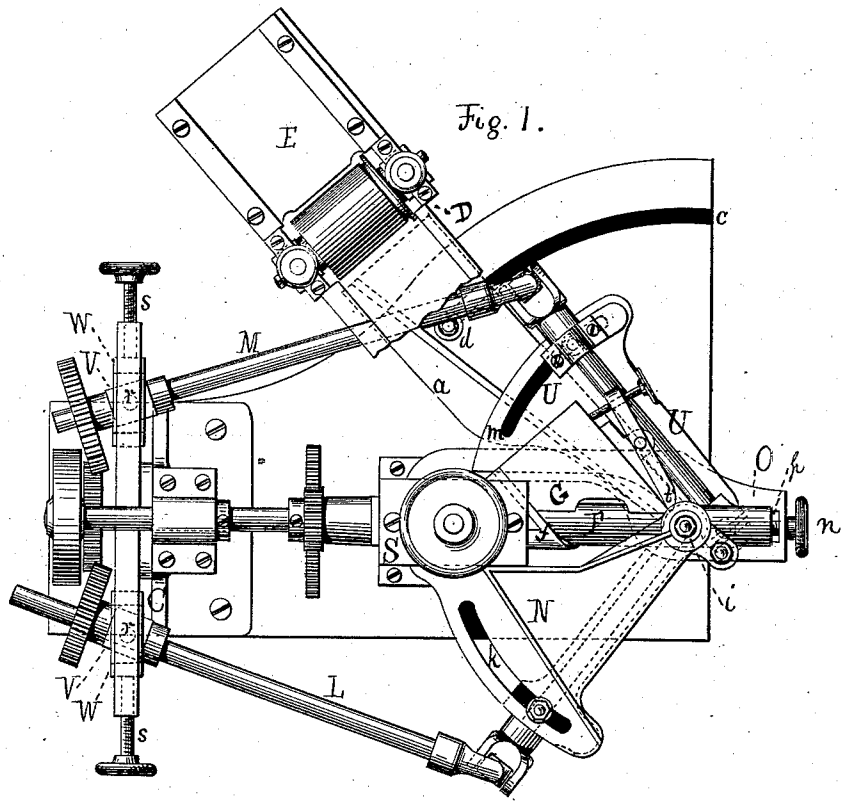
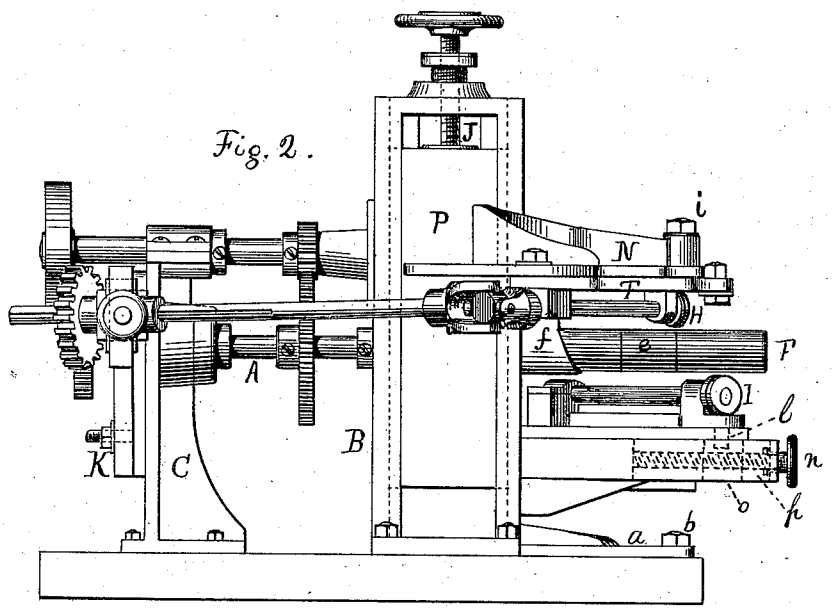


Fig. 2.



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Inventor:
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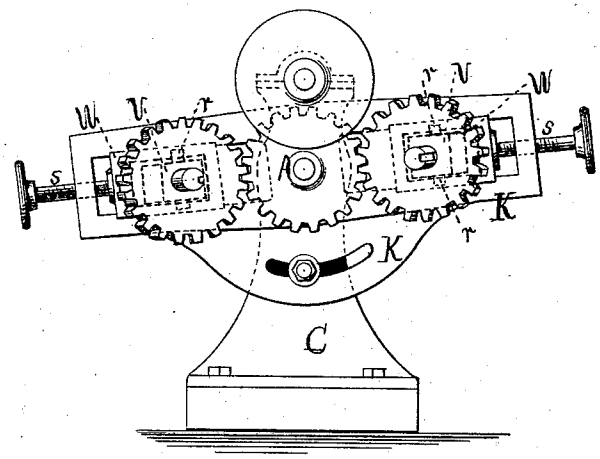


Fig. 3.

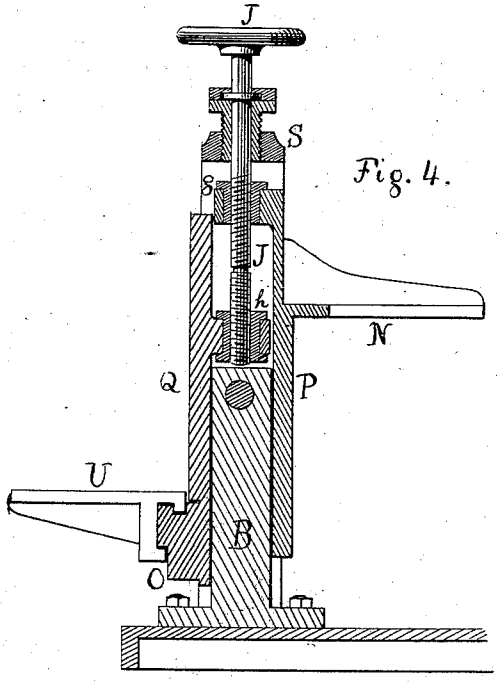


Fig. 4.

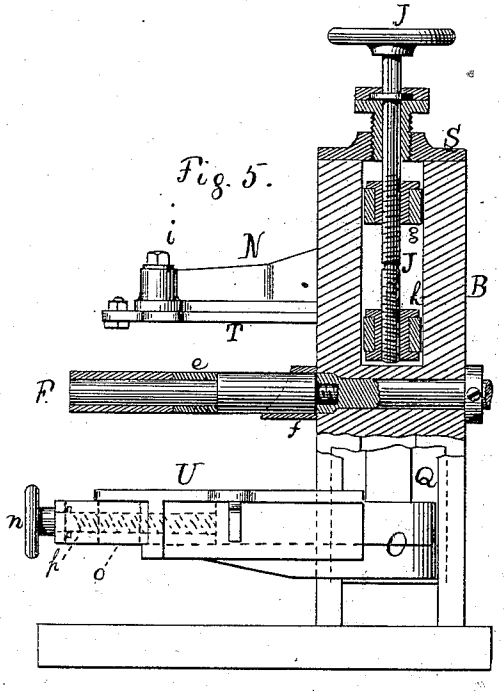


Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN B. ROOT, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR THE MANUFACTURE OF SPIRAL-JOINTED PIPE.

Specification forming part of Letters Patent No. **221,938**, dated November 25, 1879; application filed November 17, 1877.

To all whom it may concern:

Be it known that I, JOHN BENJAMIN ROOT, of the city and State of New York, have invented a useful Improvement in Machines for the Manufacture of Spiral-Jointed Pipe, of which the following is a specification.

The present invention is designed as an improvement upon the machines for the manufacture of spiral-jointed pipe heretofore invented and patented by me, particularly the machine shown and described in the patent granted me on the 17th day of October, 1876, and numbered 183,328.

By the present improvement both the upper and the lower seaming-rolls are made vertically adjustable in opposite directions, to admit of the exchange of a mandrel of one diameter for one of a different diameter, and this adjustment of the two seaming-rolls takes place through equal distances and by a simultaneous movement.

The present improvement also provides special means for changing the direction of the seaming-rolls and otherwise adjusting these rolls, so that their face may always correspond with the direction of the spiral seam that is being formed, whatever the pitch of this seam may be.

The present improvement also provides for detachable mandrels provided with feed-aprons for the more ready conversion of the machine for the manufacture of different sizes of pipe.

The machine is fully illustrated in the accompanying drawings, in which Figure 1 is a plan view, a part of the feed-table being broken away to give a better view of the parts below. Fig. 2 is a rear elevation, the feed-table and one of the secondary shafts being omitted. Fig. 3 is an elevation of the tilting yoke and connected parts, and Figs. 4 and 5 are vertical sections, at right angles to each other, through the main standard.

The principal parts of the machine are as follows: A is the arbor; B, the main stanchion; C and D, secondary uprights; E, the feed-table, provided with the requisite feed-rolls and flanging or beading-rolls for bringing the edges of the blanks into the required form for interlocking; F, the revolving mandrel; G, the feed-apron attached thereto; H and I, the upper and lower seaming-rolls; J, right-and-left-hand screw for giving vertical adjustment to the seaming-rolls; K, pivoted yoke, which serves as an adjustable bearing for the secondary shafts L M, by means of which the seaming-rolls are operated. The feed-table E, which carries the feed and the flanging rolls, as in former inventions, is made vertically adjustable on the upright D, in order that the upper surface of the table may be kept on a level with the upper side of the mandrel, and this upright D, by means of its horizontal arm *a*, pivot *b*, and the curved slot *c* and set-screw *d*, is made adjustable to any desired angle with the revolving mandrel.

The feed-apron G, which is simply a continuation of the feed-table proper, is attached by means of sleeves directly to the mandrel, one of these sleeves *f* serving as a spiral guide to aid in directing the movement of the blank. To the side of this apron is pivoted the tucker *t*, the function of which is to aid in shaping the seam before it is submitted to the action of the seaming-roll.

Each size of mandrel is to be provided with a feed-apron corresponding to its own diameter, and this apron, of course, is removed from or introduced into the machine with the mandrel to which it belongs. The mandrel is readily connected with the arbor by means of a screw entering a screw-threaded socket in the end of the arbor, although any other suitable means may be substituted for this.

The two seaming-rolls are operated by shafts which are mounted on arms N and O, and these arms, in turn, are attached to slides P and Q, which are gibbed to the main stanchion. These slides are provided with internal nuts, *g* and *h*, through which passes the screw J, which has its bearing in the cross-bar S. This screw is a right-and-left-hand screw, and its revolution moves the two slides, and, consequently, the two seaming-rolls, in opposite directions and through equal distances.

The upper seaming-roll is set on a line with the outer edge of the feed-table, being directly above the pivot *b*, about which the feed-table swings in its various adjustments; and in order that the face of the roll may correspond with the angle at which the blank feeds onto the mandrel under the various adjustments of

the feed-table, the shaft which carries this roll is mounted on its supporting-arm N by means of an adjustable bearing, T. This bearing is pivoted at *i*, and is provided with a set-screw working in a curved slot, *k*, which has the pivot *i* for a center. The lower seaming-roll is made adjustable, according to the pitch of the spiral seam, in a similar manner, by means of a pivot, *l*, and set-screw working in a curved slot, *m*, only in this case the bearing which supports the shaft, instead of being attached directly to the arm O, is mounted on an intermediate piece, U, which is gibbed to the arm O in such a mode as to permit the lower seaming-roll to be moved toward or from the main stanchion in the line of the mandrel. This adjustment is necessary in order to accommodate this roll to the various kinds of pipe which the machine is designed to produce, and it is effected by means of the screw *n*, working in the nut *o*. As this screw carries the nut backward or forward in the slot *p* of the arm O, the platform U, and, of course, the lower seaming-roll, are moved correspondingly.

The seaming-rolls are actuated from the arbor through the medium of the secondary shafts L and M, which, at the one end, are provided with spur-wheels meshing with a wheel upon the arbor, and at the other end are connected with the seaming-roll shafts by a gimbal-joint.

Instead of the gimbal-joint shown in the drawings, any other suitable mechanical devices for making a flexible connection between the shafts L M and the seaming-roll shafts may be used.

In order to prevent the parts from binding as the vertical elevation of the seaming-rolls is changed, the bearings of these secondary shafts are constructed and arranged as follows: The intermediate bearings are the blocks V V, which are pivoted at *r r* in the sliding yokes W W. These sliding yokes are mounted in the tilting frame or rocking yoke K, which bestrides the arbor, and are moved back and forth in this main yoke or tilting frame K by the screws S S. This frame K is provided with a curved slot and set-screw working therein, by means of which it can be adjusted at any required angle.

The object in making the small yokes W W adjustable in the tilting frame K is to permit of a change of gears to correspond with the size of mandrel used, to the end that the speed of the seaming-rolls may be regulated to correspond to that of the mandrel.

The shafts L and M are made to slide back and forth in the pivoted blocks which constitute their bearings, this extensibility of the working part of these shafts being necessary in connection with the various adjustments of the seaming-rolls.

The operation of the improvement constituting the present invention will be readily understood from the above description, and the general operation of the machine in other particulars is substantially the same as is set forth in the patents above referred to.

What is claimed as new is—

1. The combination of the secondary shafts which drive the seaming-rolls, the pivoted yoke which carries the bearings of said shafts, and the bearings themselves, pivoted and arranged to slide within said yoke, the parts being constructed and arranged to operate substantially as described.

2. The detachable mandrel provided with a feed-apron, constructed and arranged substantially as described.

JOHN B. ROOT.

Witnesses:

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BENJ. A. SMITH.