Feb. 9, 1926. **1,572,559**

L. H. PURNELL

MACHINE FOR MAKING PIPE ELBOWS

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Fig. 1.

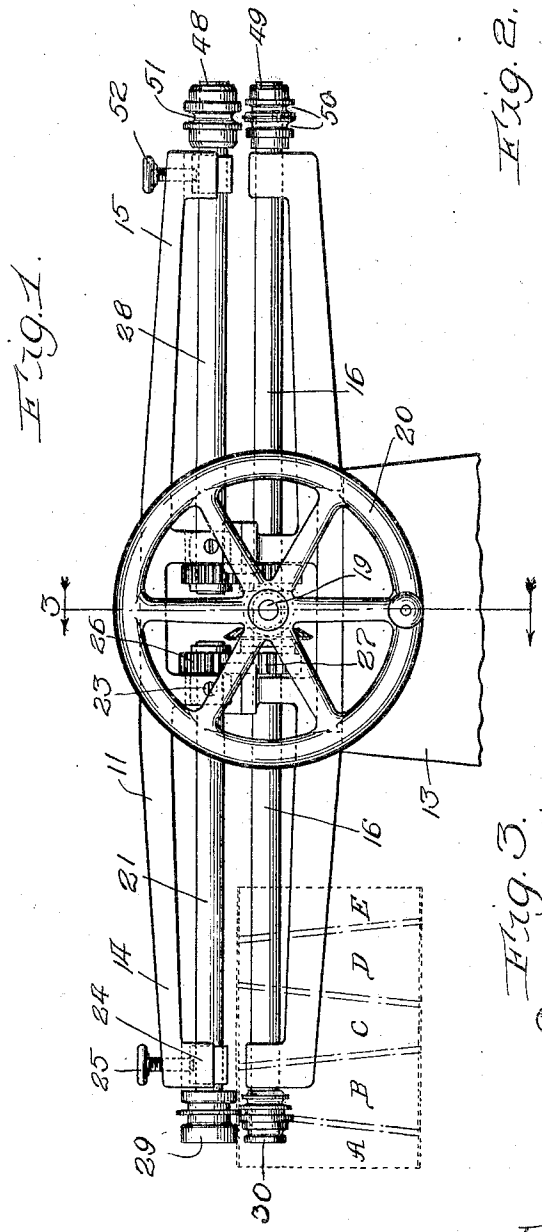


Fig. 2.

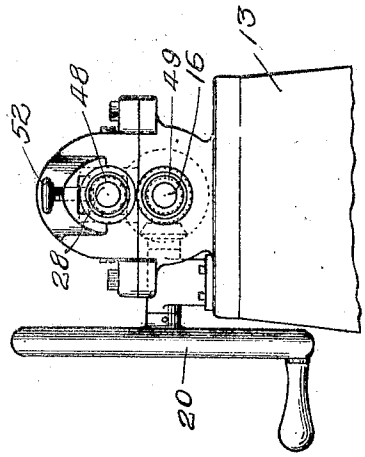
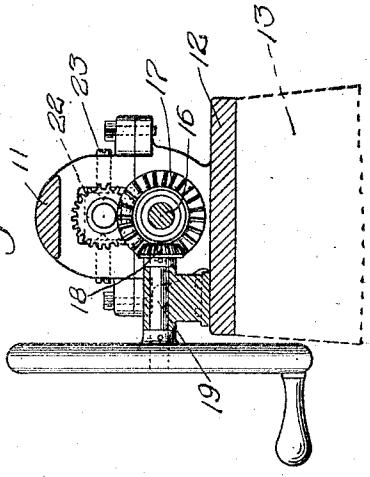


Fig. 3.



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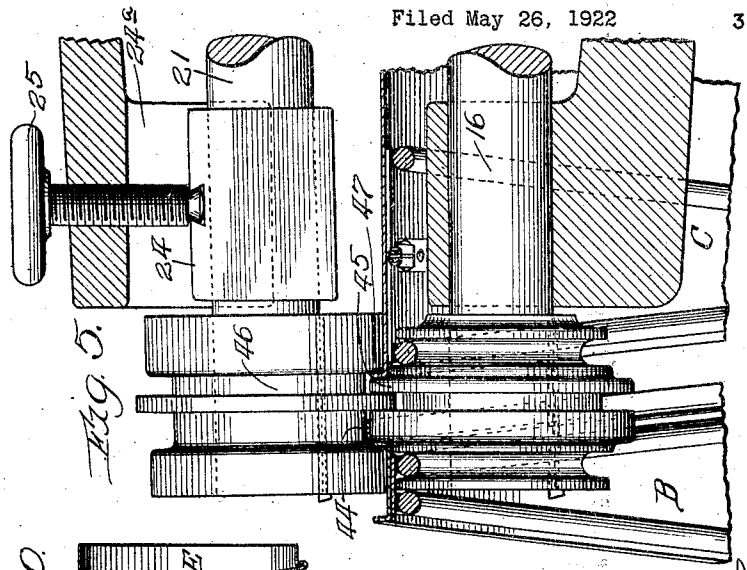


Fig. 5.

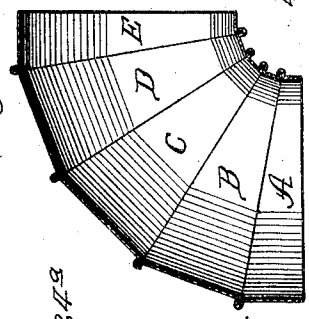


Fig. 10.

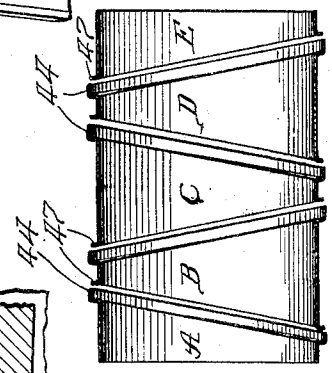


Fig. 6.

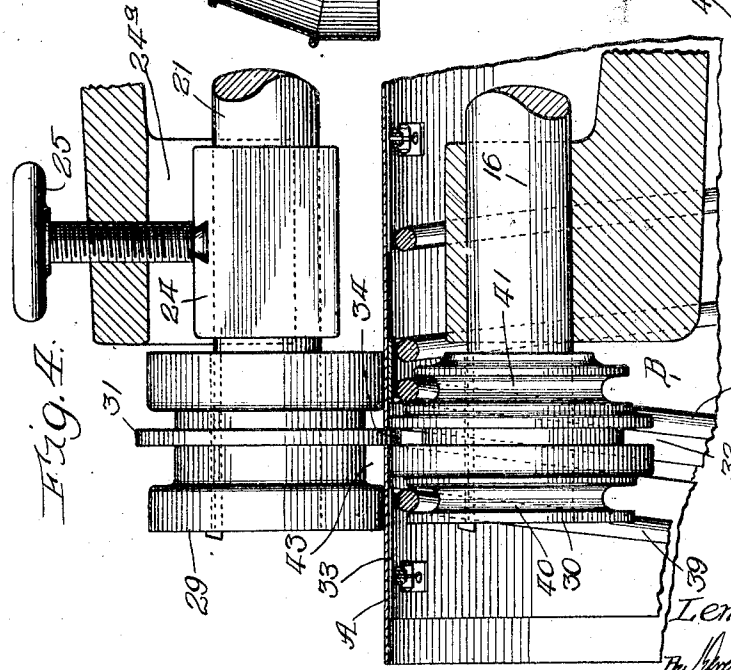


Fig. 4.

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Fig. 7.

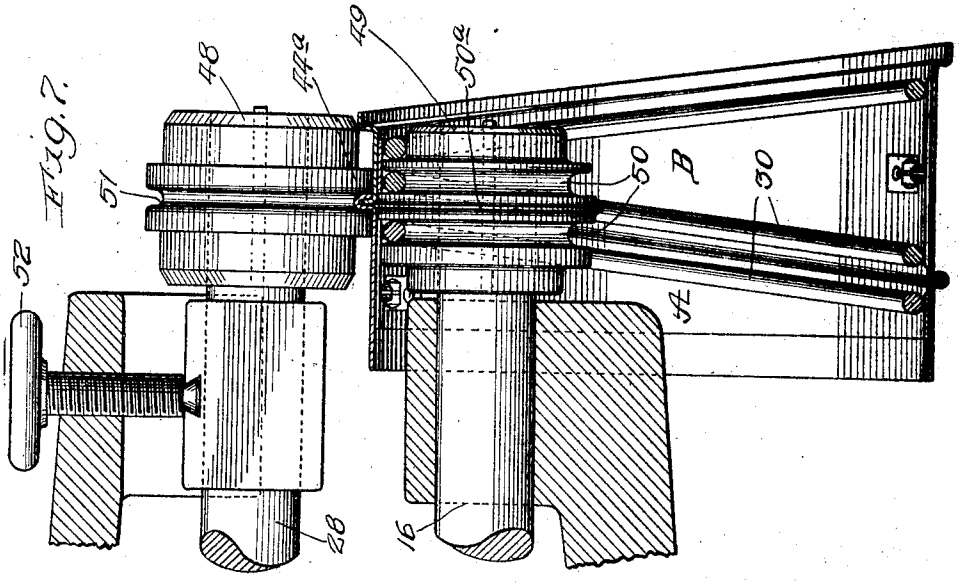


Fig. 8.

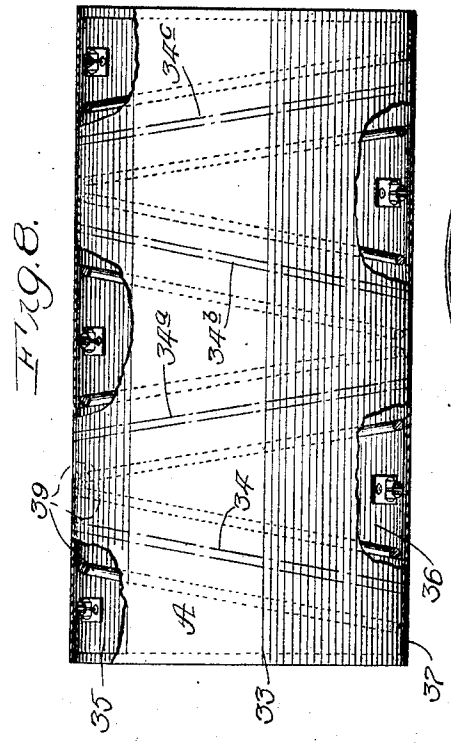
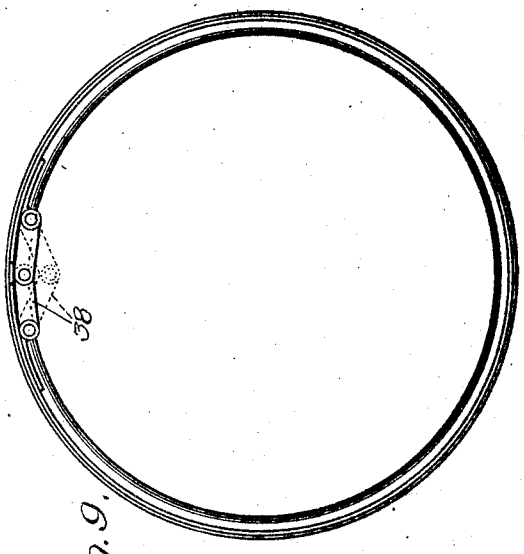


Fig. 9.



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Patented Feb. 9, 1926. 1,572,559

UNITED STATES PATENT OFFICE.

LEMUEL H. PURNELL, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO HENRY G. GOELITZ AND ONE-HALF TO ENOCH PURNELL, BOTH OF OAK PARK, ILLINOIS.

MACHINE FOR MAKING PIPE ELBOWS.

Application filed May 26, 1922. Serial No. 563,845.

To all whom it may concern:

Be it known that I, LEMUEL H. PURNELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Machines for Making Pipe Elbows, of which the following is a specification.

This invention relates to machines for making pipe elbows and the like, and is fully described in the following specification and shown in the accompanying drawings, in which:

Figure 1 is a side elevation of the machine;

Fig. 2 is an end elevation of the same;

Fig. 3 is a vertical section on the line 3—3 of Fig. 1;

Fig. 4 is an enlarged view of the rotary cutters, showing a pipe in operation of being cut;

Fig. 5 is the same showing the rotary cutters pressing close together during the operation of forming the adjacent ends of the newly cut sections;

Fig. 6 is a side elevation of the pipe with the adjacent ends so formed previous to assembling;

Fig. 7 is an enlarged view partly in section of the forming rollers, showing the method of assembling the elbow sections;

Fig. 8 is a longitudinal section through the pipe showing the templets assembled therein previous to cutting;

Fig. 9 is an enlarged end view of the same; and

Fig. 10 is a longitudinal section through a completed elbow.

In the embodiment illustrated, the machine consists of a cast frame 11 having a base 12 mounted upon any suitable block 13, the ends of the frame being formed into open yokes 14 and 15. A shaft 16 is journaled in the frame and supported at its two outer ends by the lower portions of these yokes. This shaft has a beveled gear 17 keyed thereon which meshes with a beveled pinion 18 which is keyed to the shaft 19, the latter being journaled in the main frame 11 and having a hand wheel 20 or other suitable turning means keyed thereon. A shaft 21 is journaled in a journal box 22 which is pivotally mounted between pivot points 23 so as to permit the outer end of the shaft which is guided at 24 to be moved up and down by means of the hand wheel 25. A gear 26 is keyed to the inner end of the shaft and meshes with a gear 27 which is keyed on the shaft 16.

The shaft 28 is mounted and driven in the same manner as the shaft 21.

The shafts 21 and 16 are provided with complementary rotary cutters 29 and 30 respectively, which are keyed thereon. The cutter 29 has a disk like cutter 31 which operates in a groove 32 on the cutter 30 as shown in Fig. 4, so that when a sheet of metal or the like 33 is inserted between the cutters and they are pressed together by the hand wheel 25, a narrow strip of metal 34, substantially the width of a groove 32, will be sheared from the sheet 33.

It will be understood that this cutting operation can be performed upon a sheet of material and that it can be begun at the edge of the material and the cut carried inwardly, or that it can be begun in the center of the sheet by unscrewing the hand wheel 25, inserting the sheet between the cutters 29 and 30 and screwing down on the hand wheel 25 until the disk 31 is forced into the groove 32, thereby beginning the cut when it can be continued by turning the shaft 16 by means of the hand wheel 20.

Assuming now that it is desired to form a pipe elbow of the general form shown in Fig. 10 from a straight piece of pipe, a series of templets 35 and 36 are formed of a size substantially fitting the inner die of the pipe 37, each of which is split along a line running longitudinally of the pipe. The ends of each templet are connected by means of a toggle-joint 38. When this toggle-joint is raised, as shown by the dotted lines in Fig. 9, the sheet metal templet can be inserted and by pressing outwardly on the toggle-joint so as to bring it into the full line position the templet is expanded tightly against the inner diameter of the pipe and held thereby. The angle of the face of these templets is such as to conform to the desired sections of the completed elbow as shown in Fig. 10.

A wire bead 39 is soldered or otherwise secured to the adjacent edges of these templets so that the two adjacent wire beads will be spaced apart a definite distance at all points in the circumference of the pipes.

This spaced distance is equal to the distance between the grooves 40 and 41 and the lower rotary cutter 30.

It will be understood from the foregoing that as the shafts 16 and 21 as shown in Fig. 4 are turned, the pipe 33 will be rotated with the cutters 29 and 30 and that these cutters will follow the parallel beads 39, thereby cutting out a strip 34, separating the section A from the next adjacent section B. As this cut is almost completed, the hand wheel 25 is screwed down farther so as to force the shoulder 42 into the groove 43 until the top of the shoulder 42 presses the flange 44 of the section A against the bottom of the groove 43 as shown in Fig. 5.

At the same time the shoulder 45 is forced into the groove 46 turning up a lateral flange 47 as shown in Fig. 5. The other cuts 34^a, 34^b and 34^c are then made and their edges flanged one after the other in the same manner as that previously described. When placed end to end they would then assume the form shown in Fig. 6 with the templet still in place in each section.

They are then assembled in the same end to end relation as that in which they were cut from the pipe by means of the forming rollers 48 and 49 which are keyed upon the shafts 28 and 16 respectively. The roller 49 has grooves 50 adapted to receive the beads 39 of the templets and to hold the adjacent sections as A and B so that the lateral flange 47 will be pressed against the bottom of the flange 44. The overhanging portion of the flange 44 is then pressed down into the position 44^a as shown in Fig. 7 by means of the groove 51 in the upper roller 48, pressure being applied thereto by means of the hand wheel 52.

This same operation is then performed upon the succeeding sections C, D and E which are now assembled in the same general relation as that shown in Fig. 6. Each is then rotated 180° with respect to the adjacent section, thereby bringing them into the position shown in Fig. 10 and completing the elbow. Care, of course, must be exercised in regulating the pressure applied to the roller 48 to permit the sections to be turned as described.

While I have shown but a single embodiment of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made which do not depart from the spirit and scope of the appended claims in which it is my intention to claim all novelty inherent in the invention as broadly as possible in view of the prior art.

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

1. Mechanism for cutting pipe comprising a templet adapted to be secured to said pipe, a rotary cutter adapted to cut said pipe and to be guided by said templet, and means for driving said cutter.

2. Mechanism for cutting pipe comprising a templet adapted to be secured within said pipe, a rotary cutter adapted to cut said pipe and to be guided by said templet, and means for driving said cutter.

3. Mechanism for cutting pipe comprising a templet adapted to be secured to said pipe, a pair of complementary rotary cutters adapted to cut said pipe and to be guided by said templet, and means for driving said cutters.

4. Mechanism for cutting sheet material comprising a templet adapted to be secured to said material, said templet having a track, a pair of rotary cutters adapted to cut said material, one of which has a groove engaging said track, and means for driving said cutters.

5. Mechanism for cutting pipe comprising a templet adapted to be secured to said pipe, said templet having a track, a pair of rotary cutters adapted to cut said pipe, one of which has a groove engaging said track, and means for driving said cutters.

6. Mechanism for cutting pipe comprising a templet adapted to be secured to said pipe said templet having a track, a pair of rotary cutters adapted to cut said pipe, one of which has a groove engaging said track, means for driving said cutters, and means for varying the distance between said cutters.

LEMUEL H. PURNELL.