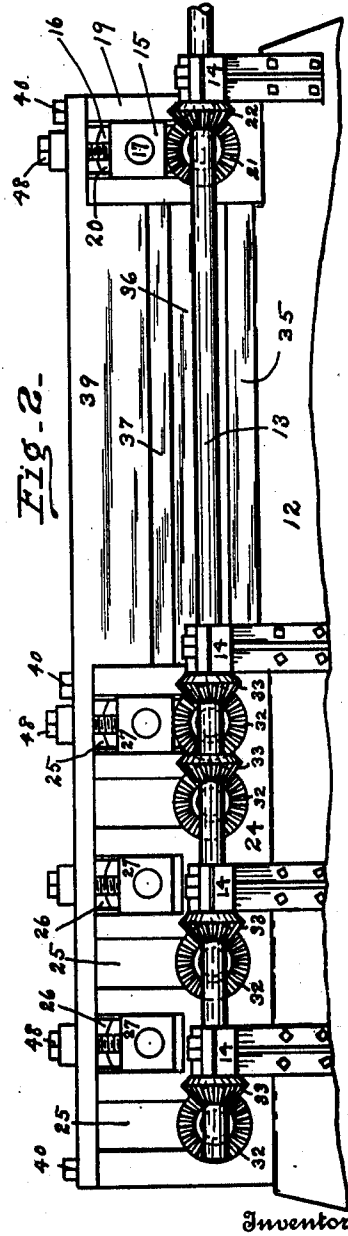
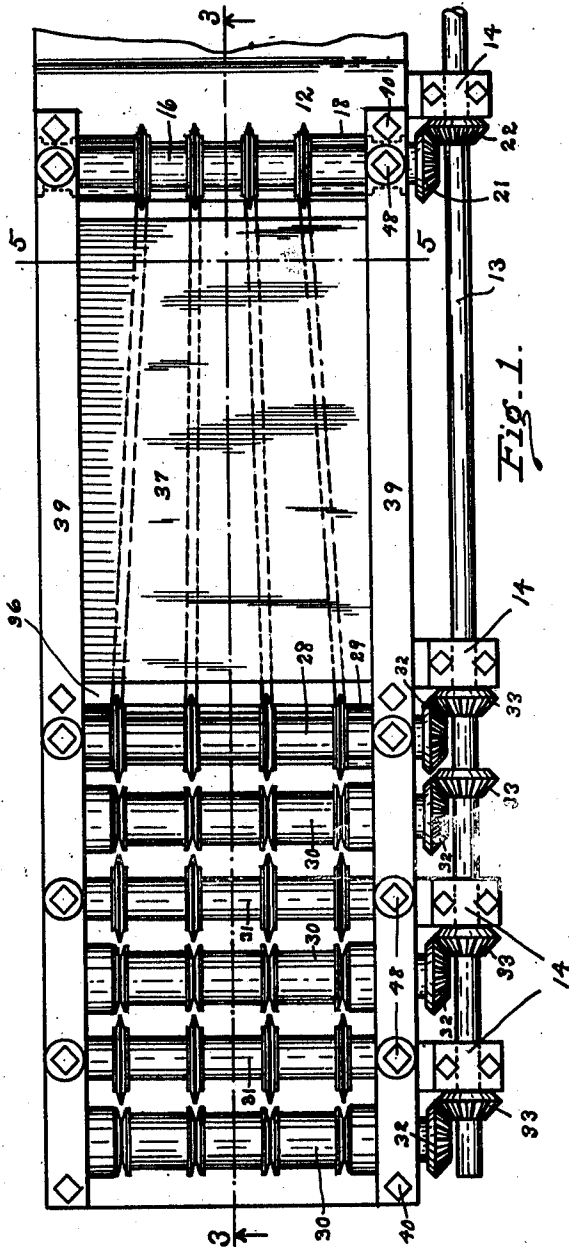


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1,004,274.

Patented Sept. 26, 1911.
3 SHEETS—SHEET 1.



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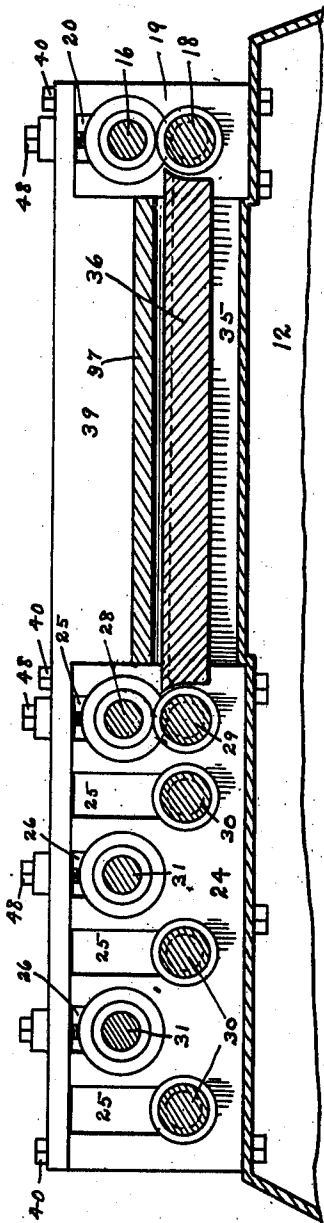


Fig. 3-

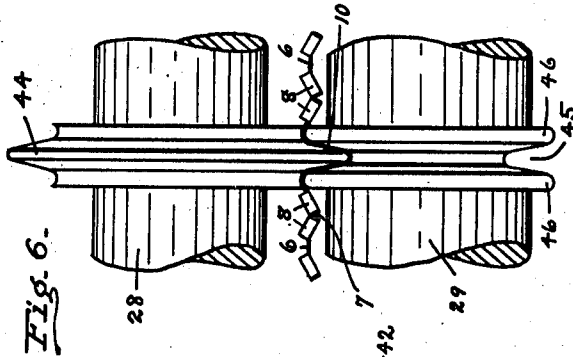


Fig. 6-

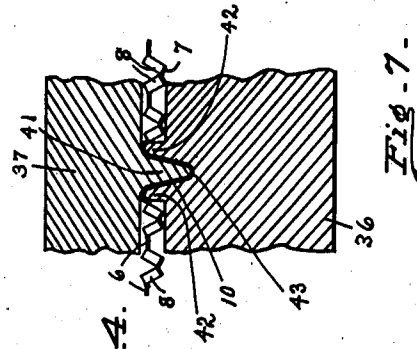


Fig. 7-

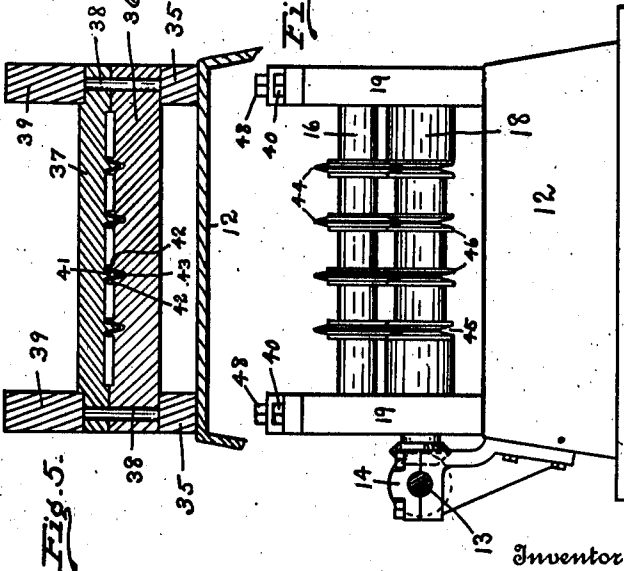


Fig. 5-

Fig. 4-

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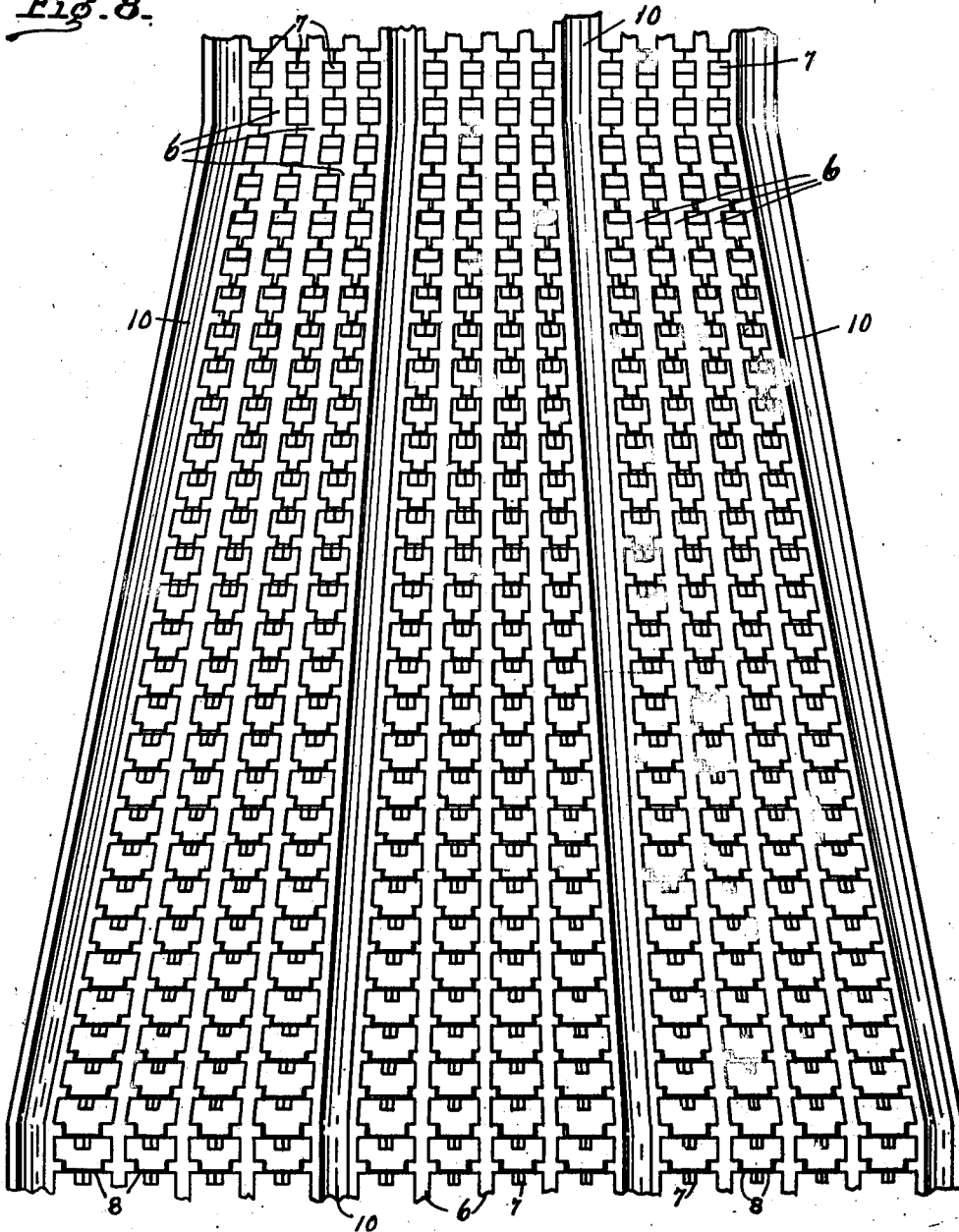
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3 SHEETS—SHEET 3.

Fig. 8.



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EXPANDING-MACHINE.

1,004,274.

Specification of Letters Patent. Patented Sept. 26, 1911.

Application filed July 17, 1911. Serial No. 638,935.

To all whom it may concern:

Be it known that I, THOMAS H. KANE, a citizen of the United States, and a resident of Youngstown, in the county of Mahoning and State of Ohio, have invented a new and useful Expanding-Machine, of which the following is a specification.

This invention relates to means for expanding slitted sheet metal, and its object is to provide a machine which shall be rapid and positive in its operation and which may be constructed at low cost.

In the drawings of the patent to Forsyth, No. 862,897, dated August 13, 1907, expanded metal and the process for producing the same are described. The present invention and the machine shown in the accompanying drawing are not limited to metal which has been slitted and partially formed as shown in the Forsyth patent, but may be employed with sheet metal slitted according to various other systems. The expanded metal of the Forsyth patent is therefore to be considered as only a desirable type of the materials which can be operated upon by the machine shown in the drawings.

In the accompanying drawing, Figure 1 is a plan and Fig. 2 is a side elevation of the machine. Fig. 3 is a section on the line 3-3 of Fig. 1. Fig. 4 is a front end elevation of the machine. Fig. 5 is a section on the line 5-5 of Fig. 1. Fig. 6 is an elevation of a section of a pair of rolls. Fig. 7 is a section on the line 5-5 of Fig. 1 on a larger scale. Fig. 8 is a view showing a sheet of metal in process of expansion.

Similar reference characters refer to like parts throughout the several views.

The sheet metal of the Forsyth patent is first formed with slits, after which the tongues 8 are bent outward. The tongues 8 are split and have small cross bars 7 at their ends, which are bent at right angles to the tongues. The upper portions of the tongues are connected to the longitudinal strands 6. In the present case, the sheet metal is shown formed with wide strands 10, alternating with groups of the narrow strands 6, which strands 10 are ribbed, that is, formed substantially U shaped.

The machine shown in the drawings comprises a base 12 of any desired form and height. A longitudinally extending driving shaft 13 may be mounted in the bearings 14 carried by this base. At the front end of

the base are frames 19 in which are slots 20 to receive the bearings 15 for the journals 17 of the rolls 16 and 18. At one end of one of the rolls, preferably of the lower, is secured a bevel gear 21 which meshes with a gear 22 on the shaft 13.

At the rear end of the base are other frames 24 with slots 25 and 26 for the bearings 27. In these bearings are mounted the journals of the rolls 28, 29, 30 and 31. Secured to the ends of the rolls 29 and 30 are bevel gears 32, which mesh with bevel gears 33 on the shaft 13. The rolls 30 and 31 are straightening rolls and operate in the usual manner.

Resting on the base are bars 35 which support the lower drawing die 36. The upper die 37 rests on the lower and may be positioned by pins 38. See Fig. 5. Bars 39 extend across from the frames 24 to the frames 19 and hold down the upper die, being secured in position by any desired number of bolts 40.

The drawing dies are formed with diverging tongues 41 and 42 and grooves 43 to receive and hold the ribs 10 of the sheet metal. Spaces are left between the ribs 46 to permit the movement of the tongues 8 of the sheet metal.

As shown in Figs. 4 and 6, the upper rolls have collars 44, while the lower rolls are formed with grooves 45 and collars 46. The distances between these ribs 44 on the roll 16 and on the roll 28 will be substantially the same as the distances between the tongues 41 at the front and rear ends respectively of the drawing dies. The height of the upper rolls is controlled by the screws 48, mounted in the bars 39.

If slitted sheet metal is fed to the machine before being ribbed, the first action of the rolls 16 and 18 will be to form ribs from the imperforate strands and to also partially expand the material. These rolls will grip the sheet metal so firmly that the material will be pushed along between the expanding dies, causing the strands to separate still more. After leaving the expanding dies, the material is gripped by the rolls 28 and 29, which force it along between the straightening rolls 30 and 31. After the rear end of the sheet has passed the rolls 16 and 18, the rolls 28 and 29 will alone act as feed rolls and draw the remainder of the sheet through the drawing dies.

If the slitted sheet metal is already ribbed, as shown at the upper end of Fig. 8, then the rolls 16 and 18 will merely act as feed rolls to force the material along between the expanding dies 36 and 37. The other rolls will act in the manner before explained. In this expansion, the split tongues 8 will open and their sides will swing up around their connections with the strands 6, while the small connecting bars 7 will be bent as shown in Fig. 6.

Having now explained this construction, what I claim as my invention and desire to secure by Letters Patent is:—

1. In a machine for expanding slitted sheet metal, the combination of a frame, a pair of rolls at one end of the same, one having a series of collars and the other a corresponding series of circumferential grooves, a second pair of rolls spaced a distance from the first pair and also formed with similar collars and grooves spaced longitudinally of the rolls at greater distances apart, and a pair of expanding dies extending between the pairs of rolls and formed with grooves and ribs diverging from the first to the second set of rolls.

2. In a machine for expanding slitted sheet metal, the combination of a frame, a pair of rolls mounted at one end of the same, the lower roll formed with a series of regularly spaced circumferential grooves, the upper roll formed with a series of collars adapted to extend into the grooves, a pair of drawing dies adjacent the rolls, the lower die having a series of grooves, spaced at one end to correspond to the grooves in the lower roll and adjacent thereto to receive material from the rolls, said grooves diverging from the rolls, and a second pair of rolls

mounted at the opposite ends of the dies and having grooves and collars similar to those of the first pair of rolls but spaced the same as the adjacent ends of the grooves and ribs of the drawing dies.

3. In a machine for expanding slitted sheet metal, the combination of a frame, a pair of stationary drawing dies mounted thereon, one of the dies having diverging grooves and the other die having ribs extending into said grooves, and feed rolls to cause sheet metal to move through between the dies.

4. In a machine for expanding slitted sheet metal, the combination of a frame, a pair of flat and stationary drawing dies mounted on the frame, one of the dies having diverging grooves and the other die having ribs extending into said grooves, and a pair of feed rolls mounted at each end of the dies to cause the sheet metal to move through between the same.

5. In a machine for expanding slitted sheet metal, the combination of a frame, a pair of flat and stationary drawing dies mounted on the frame, one of the dies having diverging grooves and the other die having ribs extending into said grooves, a pair of feed rolls mounted at each end of the dies to cause the sheet metal to move through between the same, rolls to straighten the expanded metal, and means to drive the rolls.

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

THOMAS HENRY KANE.

Witnesses:

H. B. FOLSOM,
T. J. HADDON.