

T. H. KANE.
EXPANDING MACHINE.
APPLICATION FILED JULY 21, 1909.

949,483.

Patented Feb. 15, 1910.

4 SHEETS—SHEET 1.

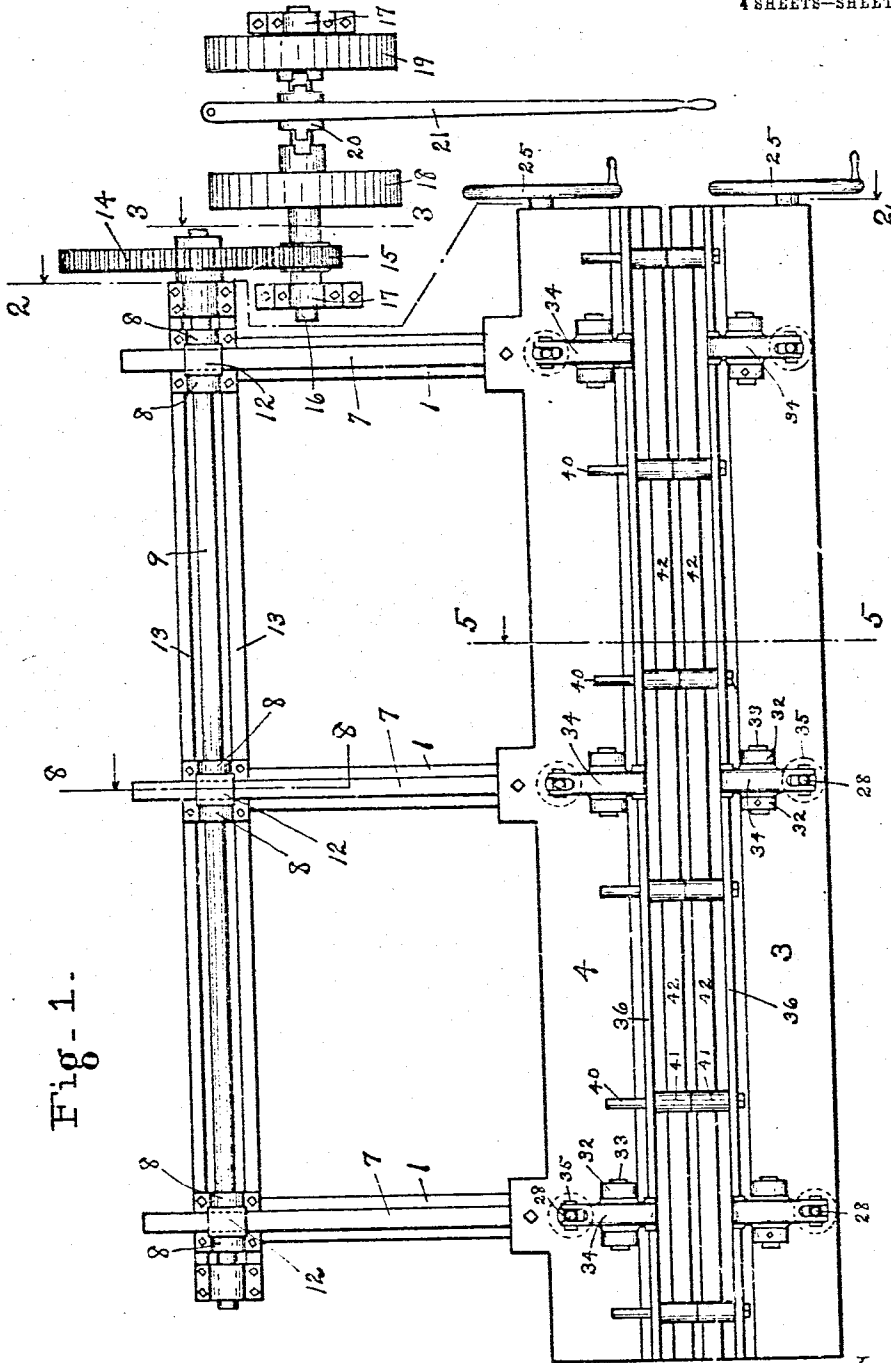


Fig. 1.

Witnesses.
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4 SHEETS—SHEET 2.

Fig. 2.

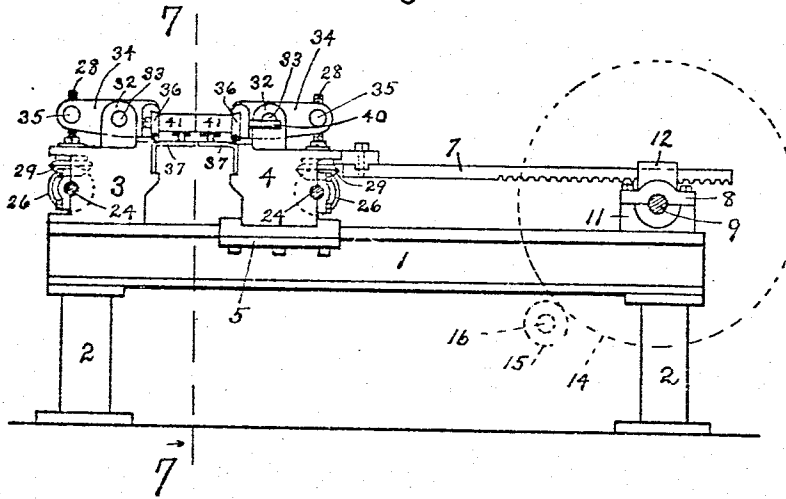


Fig 4

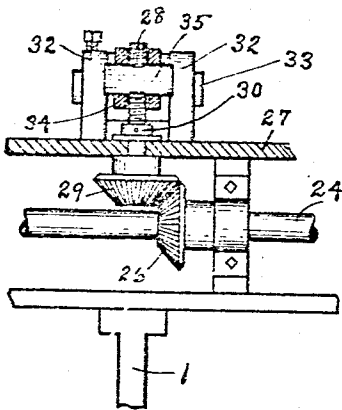
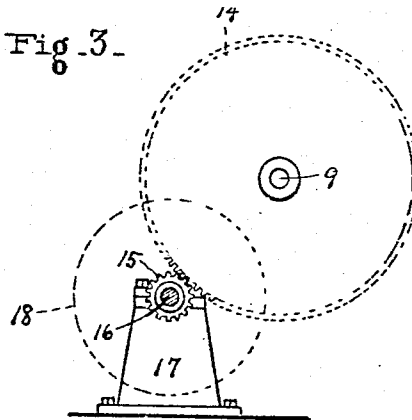


Fig. 3.



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4 SHEETS—SHEET 3.

Fig. 5.

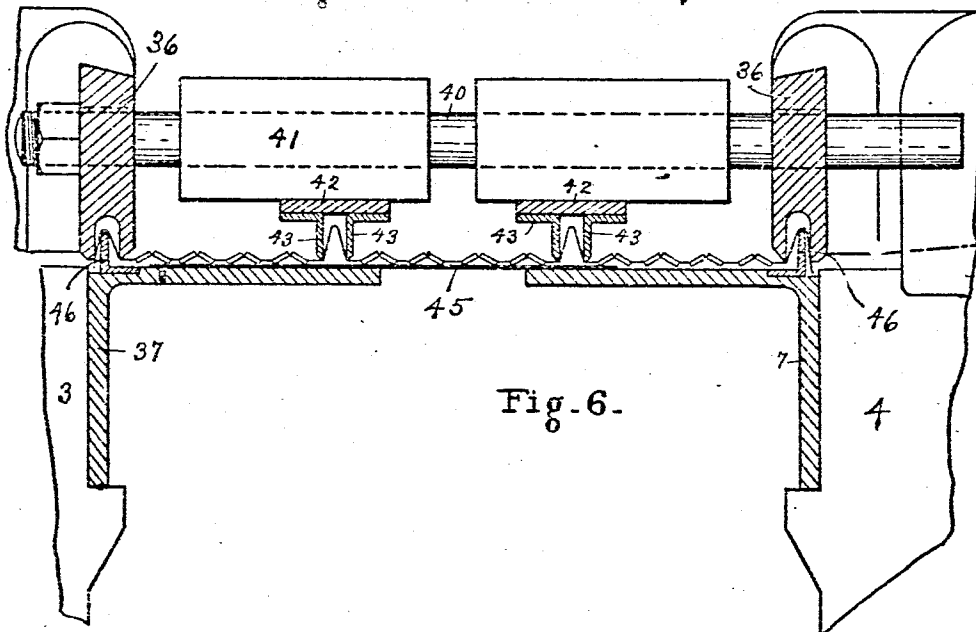
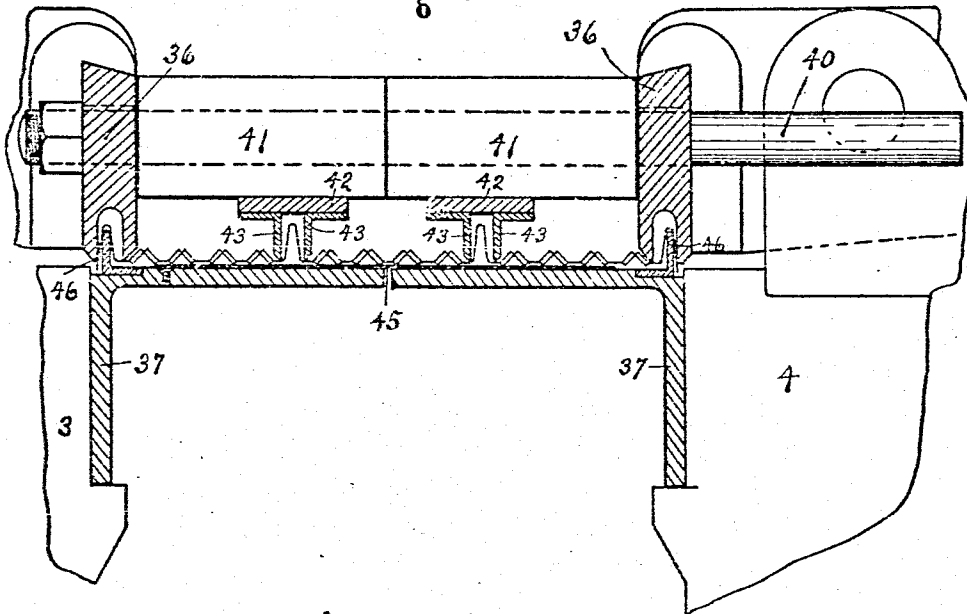


Fig. 6.

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4 SHEETS—SHEET 4.

Fig. 7.

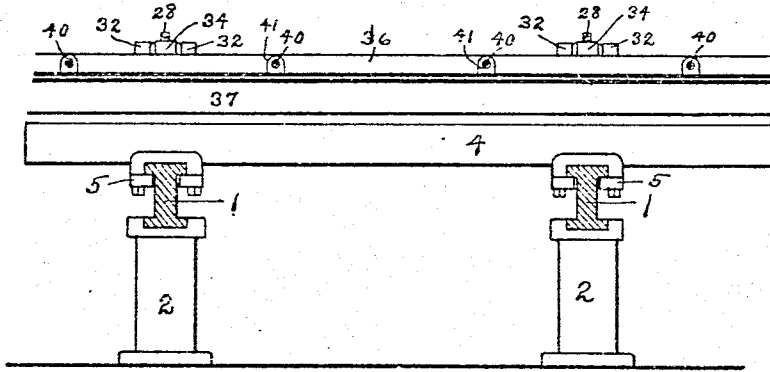
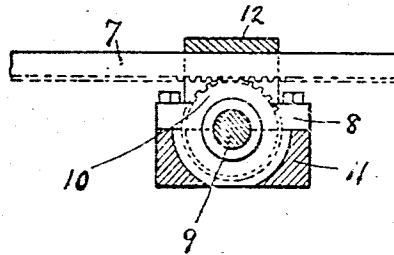


Fig. 8.



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UNITED STATES PATENT OFFICE.

THOMAS HENRY KANE, OF YOUNGSTOWN, OHIO, ASSIGNOR TO TRUSSED CONCRETE
STEEL COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

EXPANDING-MACHINE.

949,483.

Specification of Letters Patent. Patented Feb. 15, 1910.

Application filed July 21, 1909. Serial No. 509,754.

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 Improved Expanding-Machine, of which the following is a specification.

This invention relates to mechanism for expanding slitted metal to form metal lath, sheathing, and other structural material, and its object is to provide a machine which shall be simple and powerful, and in which the operations can be accurately controlled.

In the accompanying drawings, Figure 1 is a plan of the machine. Fig. 2 is a cross section on the line 2-2 of Fig. 1. Fig. 3 is a diagrammatic view on the line 3-3 of Fig. 1. Fig. 4 is a detail view on a larger scale of the grip operating mechanism. Fig. 5 is a cross section on the line 5-5 of Fig. 1 on a larger scale. Fig. 6 is a cross section on the same line with the position of the parts shifted. Fig. 7 is a vertical cross section of the machine on the line 7-7 of Fig. 2. Fig. 8 is a cross section on the line 8-8 of Fig. 1.

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

In patents No. 794,412, Kahn, dated July 11, 1905; No. 885,158, Kahn, dated April 21, 1908; No. 889,312, Kahn, dated June 2nd 1908; No. 862,897, Forsyth dated August 13, 1907, and many others, expanded metal of various forms is shown which requires powerful and accurate machines in its production. In each case, the side edges of the original bar or sheet are pulled from each other a predetermined distance and each sheet must be expanded according to requirements. In the Kane patent No. 920,152, dated May 4th 1909, a process for expanding slitted sheets by ribbing is set forth, which process is adapted to produce the desired result satisfactorily when the dimensions of the slitted portions and of the ribs are in proper proportion. But it sometimes happens that the amount of metal required for the ribs is not great enough to insure the desired expansion of the slitted portions in which cases the grooved sheet must be further expanded.

The machine illustrated in the accompanying drawings is constructed as follows.

Cross beams or ways 1 rest on legs 2 and are connected by the head-block or frame 3.

A tail-block or movable frame 4 has guides 5 (Fig. 7) which fit around the upper flanges of the ways 1 so that the tail-block will always be properly held on the ways. To move this tail-block or frame 4 back and forth any desired mechanism may be employed. It is preferable to use the mechanism shown, consisting of rack-bars 7 connected at their front ends to the tail-block. Bearings 11 mounted in pairs on the ways carry the shaft 9, to which are secured the pinions 10, one for each rack. To the caps 8 of each pair of bearings is attached a guide plate 12 to hold the teeth of the rack-bars in engagement with the teeth of the pinions. The ends of the ways 1 may be connected by the cross-bars 13. On one end of this shaft 9 is secured a gear 14 which meshes with a pinion 15 on the shaft 16, which shaft may be journaled in the pedestals 17. Any desirable reversing mechanism may be employed to drive this shaft, such as the well-known slow-running clutch-pulleys 18 and 19 driven in opposite directions and loose on the shaft 16, which may engage the clutch-sleeve 20 splined to this shaft in the usual manner when the sleeve is moved by the lever 21. It will thus be seen that by sliding the sleeve 20 into engagement with one pulley or the other will cause the tail-block to move from or toward the head block. Belt driven mechanism is desirable as the belts can be so proportioned that they will slip before the machinery is broken in case of accidents.

Mounted on both head and tail-blocks are gripping devices which hold the metal to be expanded, and may be constructed as follows. The head-block 3 and tail-block 4 are hollow and similarly constructed so that but one need be described, the head-block being chosen. Mounted in its outer face is a shaft 24 having an operating device such as a band-wheel 25 on its outer end and bevel pinions 26 secured to it at proper intervals. Revolvable in the upper plate 27 of the head-block are a series of vertical shafts 28 screw-threaded at their upper ends and having bevel pinions 29 secured to their lower ends to mesh with the pinions 26 on the shaft 24. Collars 30 hold the shafts 28 positioned. The openings through the upper plate 27 of the head-block, through which these shafts extend, are slightly larger than the shafts to permit some swinging

movement. Mounted on this plate 27 are lugs 32 which receive the pivots 33 of the levers 34. In the outer bifurcated ends of these levers are mounted pins 35, screw-threaded to receive the screw-threaded upper ends of the shafts 28. Connected to the inner ends of these levers is a jaw-bar 36 which is adapted to grip one edge of the metal to be expanded. Secured to the head-block below this jaw-bar is an angle-bar 37 which forms a shelf upon which the metal to be expanded may rest, and against which the edge of the metal is held by the jaw-bar. The shape of the jaw will, of course, depend upon the type of metal to be expanded, that shown being adapted for ribbed-metal-lath.

Where the ribbed-metal-lath, shown in the Kane patent referred to, is to be expanded still further, it is desirable to provide means to hold the ribs parallel to each other. This may be done by mounting guide rods 40 in the jaw-bars 36 as shown in Figs. 5 and 6. The holes through the jaw-bars are sufficiently large to permit a slight movement of the rods up and down. On these rods are sleeves 41 which carry longitudinally extending plates 42, to which are attached the angles 43 which engage the ribs of the metal-lath.

For expanding the ribbed-metal-lath shown in the Kane patent, the devices shown in Figs. 5 and 6 are desirable. A sheet 45 of metal may be secured to one angle bar 37 and rest on the other to support the reticulated metal. Small angle bars 46 may be secured to the larger bars 37 in order to furnish ridges that may project into the outer ribs of the ribbed-metal so as to insure a strong grip.

The operation of the machine is as follows. The jaw bars being elevated, a sheet of slitted metal is slipped endwise onto the table formed by the angle bars 37, and the shafts 24 are turned to bring the jaw bars 36 down onto the slitted metal. The driving clutch is then thrown into operation and the tail-block 4 will slowly move back, expanding the slitted metal. When the desired expansion has been attained, the clutch is thrown out of engagement, the tail-block stopping, and the shafts 24 are turned back to lift the jaw-bars. The released expanded metal is removed and the shaft 9 is turned in the opposite direction to bring the tail-block to original position.

It will be understood that the angle-bars 37 may be replaced by others of greater or less width, according to the material to be expanded; that jaw-bars of any desired configuration may be employed; that the number of guides 43 may be varied and that the guides and their supporting rods 40 may be entirely omitted.

Many changes may be made in the details

of this machine by skilled metal-workers without departing from the spirit of my invention.

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

1. In an expanding machine, the combination of relatively movable jaw-carriers, horizontal plates carried thereby to receive the article to be expanded, vertically movable jaws to engage the edges of the article, and laterally movable guiding devices to control the movement of intermediate portions of the article.

2. In an expanding machine, the combination of relatively movable jaw-carrying blocks, a shaft mounted in each block, levers mounted on each block, jaws mounted on the inner ends of the levers, manually operated means engaging the outer ends of the levers to move the jaws up and down, plates projecting from the blocks to support the article to be expanded, transverse rods extending through the jaws, and guiding devices mounted on the rods.

3. In an expanding machine, the combination of vertically movable jaws mounted for lateral horizontal movement relative to each other, supporting plates below the jaws, rods extending across between the jaws, sleeves mounted on the rods, and guide members extending parallel to the jaws mounted on the sleeves.

4. In an expanding-machine for sheet-metal, the combination of fixed and horizontally movable sets of jaws, bars extending between the two sets of jaws, and guide members for intermediate portions of the sheet metal, mounted on said bars.

5. In an expanding machine for sheet metal, the combination of a fixed and a laterally movable jaw carrier, a series of levers pivotally mounted intermediate their ends on each jaw carrier, jaws at the inner ends of the levers, screws engaging the outer ends of the levers, and means for simultaneously actuating all the screws and levers of a jaw carrier.

6. In an expanding machine for ribbed sheet-metal, the combination of fixed and movable sets of jaws in longitudinal rows, one set of jaws being mounted for lateral movement, bars extending between the sets of jaws, and longitudinally extending guides, adapted to engage the ribs of the sheet-metal, mounted on said bars.

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

THOMAS HENRY KANE.

Witnesses:

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