

No. 799,892.

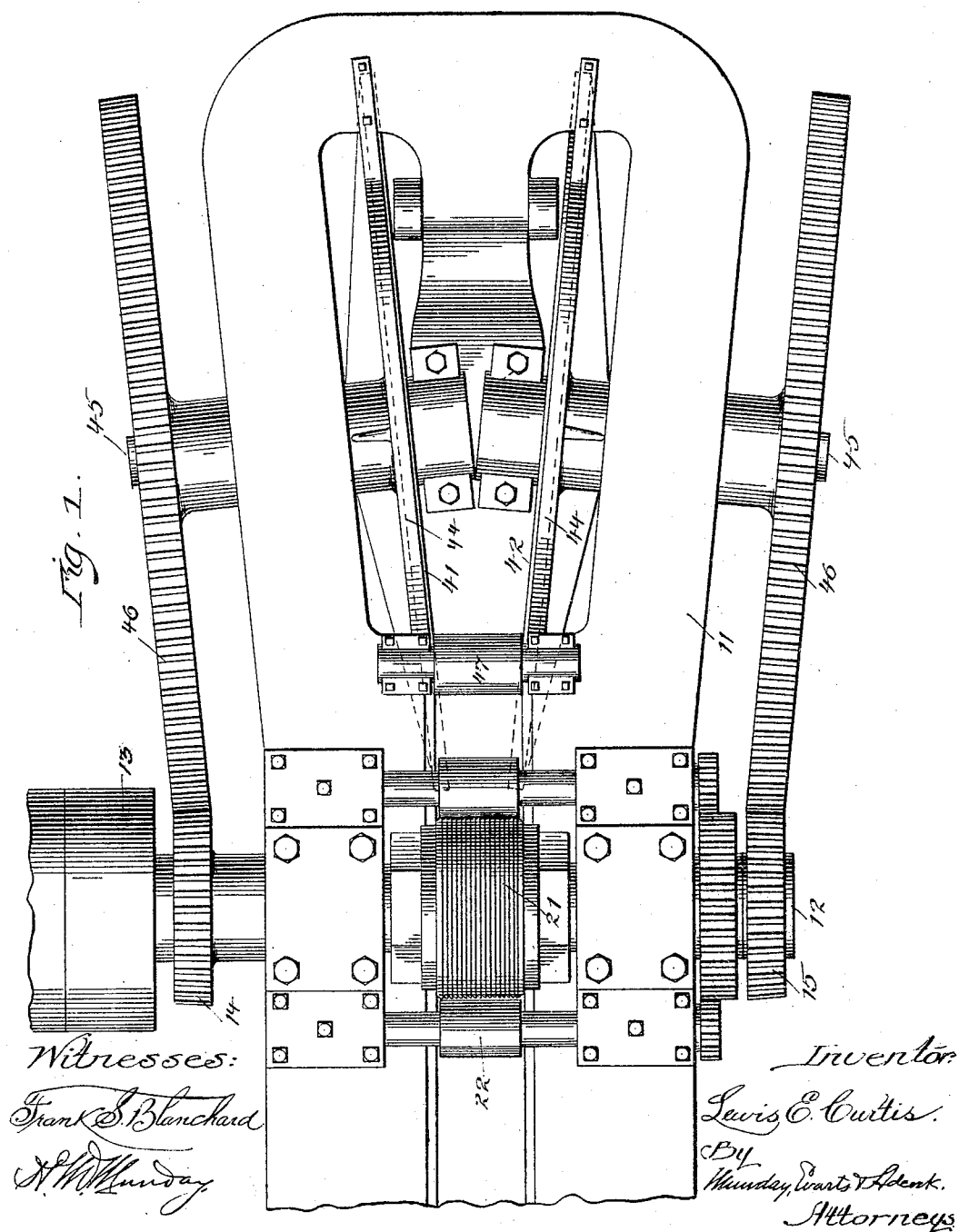
PATENTED SEPT. 19, 1905.

L. E. CURTIS.

MACHINE FOR MANUFACTURING EXPANDED METAL.

APPLICATION FILED APR. 20, 1901. RENEWED FEB. 20, 1905.

5 SHEETS—SHEET 1.



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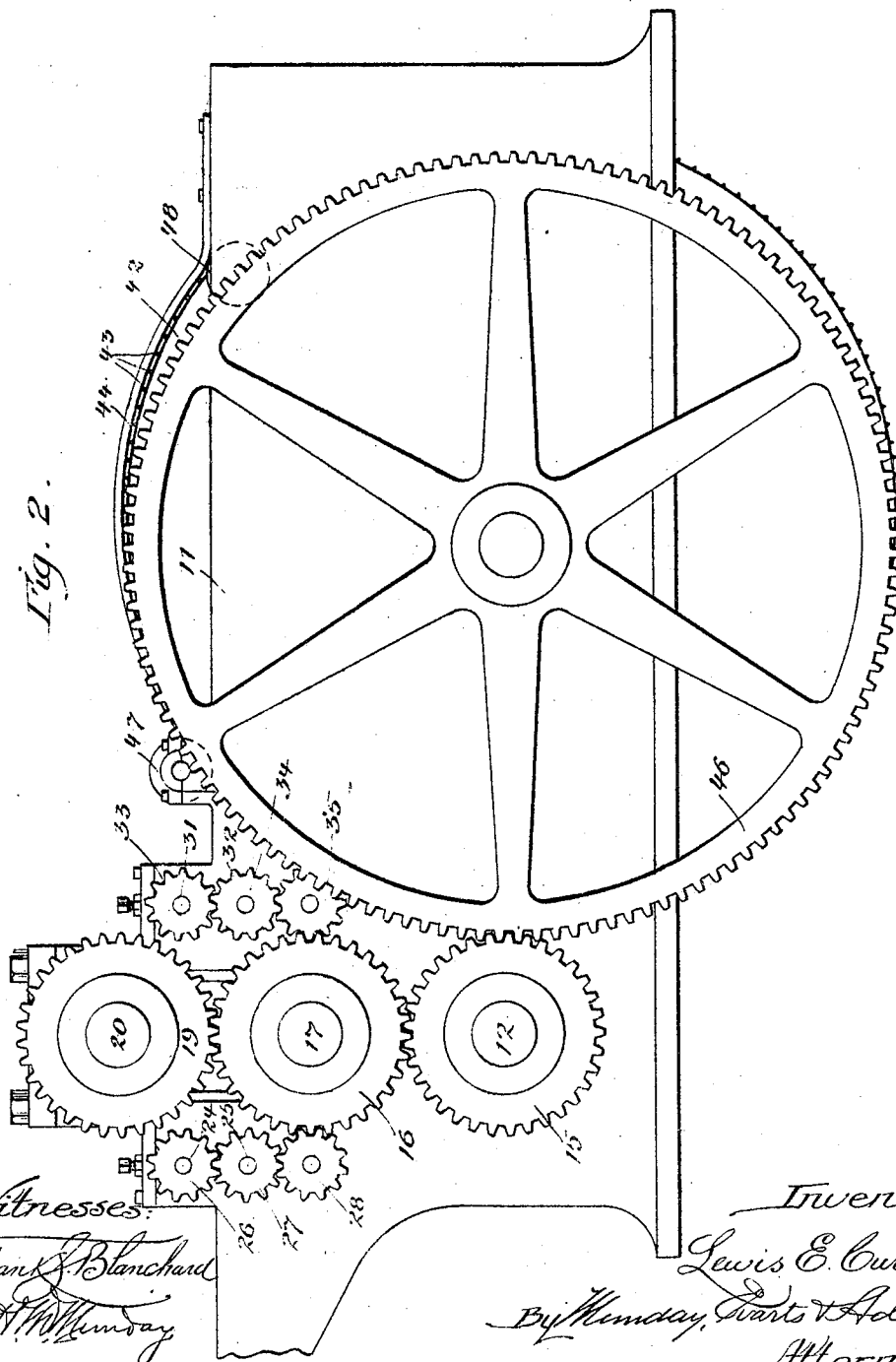
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5 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

Frank J. Blanchard
N. W. Munday

Inventor:

Lewis E. Curtis.
By Munday, Curtis & Adcock
Attorneys.

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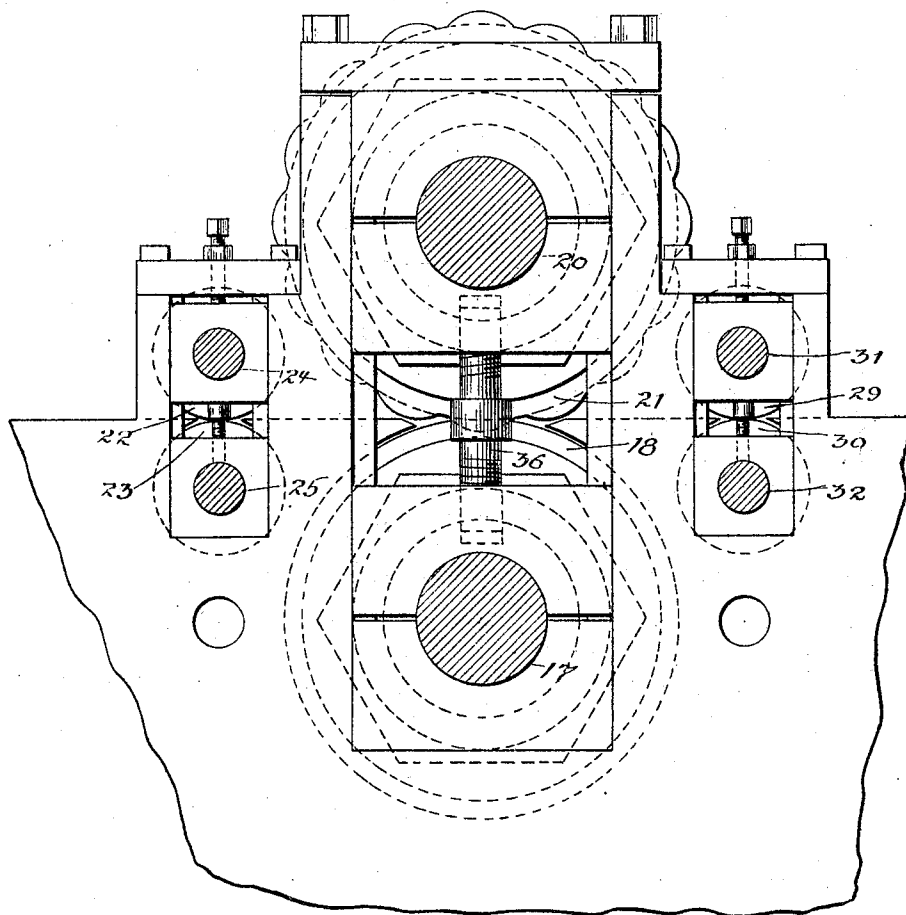
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5 SHEETS—SHEET 3.

Fig. 3.



Witnesses:
Frank J. Blanchard
A. W. Munday.

Inventor:
Lewis E. Curtis
By Munday, Curtis & Adcock,
Attorneys.

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5 SHEETS—SHEET 4.

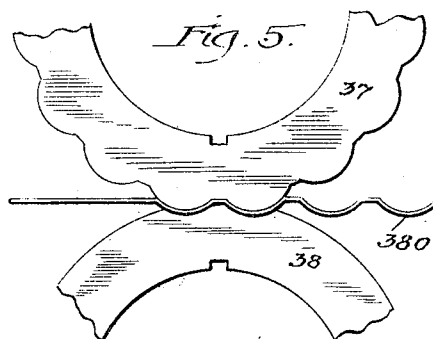
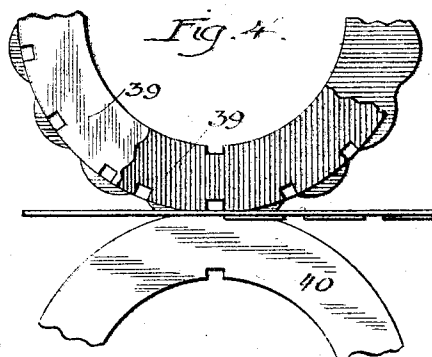


Fig. 6.

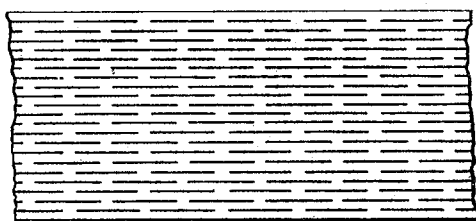


Fig. 7.



Witnesses:

Frank J. Blanchard
A. W. Munday.

Inventor:

Lewis E. Curtis.

By Munday, Everts & Adcock.

Attorneys.

L. E. CURTIS.

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5 SHEETS—SHEET 5.

Fig. 8.

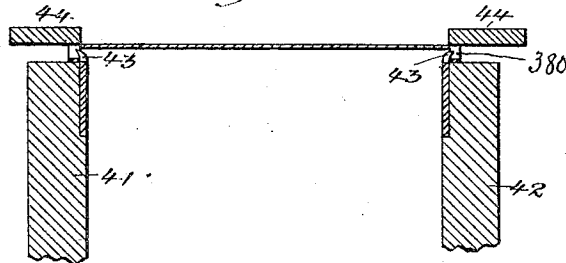


Fig. 9.

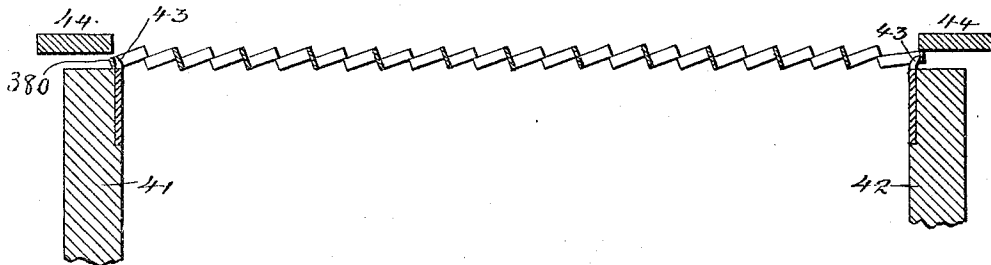
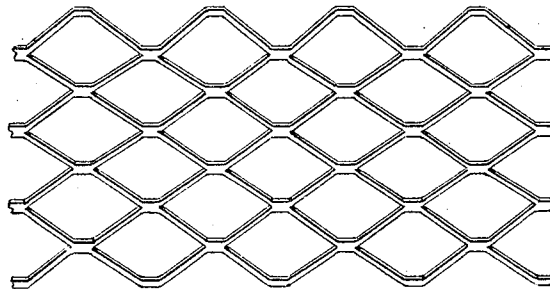


Fig. 10.



Witnesses:

Grand J. Blanchard
S. W. Munday

Inventor:

Lewis E. Curtis.

By Munday, Curtis & Adcock,
Attorneys.

UNITED STATES PATENT OFFICE.

LEWIS E. CURTIS, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO BRECKINRIDGE JONES, TRUSTEE, OF ST. LOUIS, MISSOURI.

MACHINE FOR MANUFACTURING EXPANDED METAL.

No. 799,992.

Specification of Letters Patent.

Patented Sept. 19, 1905.

Application filed April 20, 1901. Renewed February 20, 1905. Serial No. 246,491.

To all whom it may concern:

Be it known that I, LEWIS E. CURTIS, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Machines for Manufacturing Expanded Metal, of which the following is a specification.

This invention relates to the construction of machines for manufacturing expanded metal, and my endeavor therein has been to provide a simple and effective mechanism for opening the sheets after they have been slitted.

The nature of the invention is explained in the description thereof given below and will be fully understood from such description when considered in connection with the accompanying drawings.

In said drawings, Figure 1 is a plan, and Fig. 2 a side elevation of my invention. Fig. 3 is a sectional elevation of the slitting mechanism. Fig. 4 is a partial cross-section of the slitting-rolls. Fig. 5 is a partial end elevation of the same rolls. Fig. 6 is a plan of the slitted sheet before expanding. Fig. 7 is an edge view of the same. Fig. 8 is a partial section of the expanding mechanism at the start of the operation, and Fig. 9 is a similar view at the conclusion of the operation. Fig. 10 shows the product of the machine.

In said drawings, 11 is the frame of the machine and supports both the slitting and the expanding mechanisms. Both mechanisms receive power from shaft 12, driven by belt-pulley 13 and carrying gears 14 and 15 for actuating the expanding mechanism and also carrying a third gear (not shown) meshing with the gear 16 upon the shaft 17 of the lower slitting-roll 18. Gear 16 also meshes with a gear 19 on the shaft 20 of the upper slitting-roll 21. The sheet is fed to the slitting-rolls by feed-rolls 22 and 23 upon shafts 24 and 25, carrying intermeshing pinions 26 and 27, connected with the gear 16 by the intermediate 28, and it is fed from the slitting-rolls by other feed-rolls 29 and 30 on shafts 31 and 32, carrying intermeshing pinions 33 and 34, receiving power from gear 16 through the intermediate 35. One of the screws by which the slitting-roll bearings are adjusted relatively is shown at 36. The slitting-rolls are made up of series of cutting-rings and spacing-rings arranged alternately and pref-

erably constructed in accordance with the patent granted to me April 9, 1901, No. 671,915. I show at Fig. 5 the cutters 37 and 38 employed for cutting the slits nearest the edge of the sheets, the upper one, 37, being adapted to depress the severed edge of the metal, so as to form the loops 380. (Shown particularly at Figs. 5 and 7.) The cutters 39 and 40 (shown at Fig. 4) form all the slits except those nearest the edges. By the cutters 37 the sheet is put into condition to be controlled by the expanding devices now to be described. The sheet after being slitted is received by the feed-rolls 29 and 30 and delivered by them to the expanding devices, which consist of two large wheels or disks 41 and 42, revolving upon shafts placed at angles to each other and to the line of movement of the sheet. This arrangement of the disks, which will be readily understood from Fig. 1, brings the disks close together at the initial or receiving side, where they receive the sheets, and separates them at the farther side, where they discharge the sheets. The disks are armed around their peripheries with hooks or points 43, and at the receiving side their peripheries are close enough together so that the hooks will come inside of and engage the depressed portions or loops 38 upon the edges of the sheet. A guard 44 extends over the tops of each of the disks from the point at which the sheet first encounters the disks to the point at which the expansion is approximately complete and prevent the sheet from slipping off the hooks 43 during its passage between those points. This will be fully understood from Figs. 8 and 9. The disks are arranged relative to the feed-rolls 31 and 32 so that the sheets will first encounter the upper portion of the disks and be engaged thereby before any abrupt change in their line of movement occurs, and they are projected by the feed-rolls into the space between the guards 44 and the peripheries of the disks, so as to enable the hooks 43 to engage the inner edges of the loops 380. When once started in this way, the sheet moves with and is curved conformably to the disks, which have a peripheral speed agreeing with that of the feed-rolls, and the movement continues until the sheet has passed beyond the guards 44 and onto the discharge side of the disks. During the time the sheet is riding on the disks it is

gradually opened by reason of the divergence of the peripheries of the disks, each having a secure hold upon one edge during the operation, so that the sheet is compelled to yield laterally.

The expanding-disks are supported upon shafts 45, arranged at angles, as shown, the angles converging at the meeting ends of the shafts, and are each driven by a large gear 46, meshing with one of the gears 14 or 15. To accommodate the angle of gears 46, the gears 14 and 15 are made slightly beveling, as shown.

An idle roller 47 is preferably placed over the path of the sheet at its entrance under guards 44 to insure its proper entrance under the same, and rollers 48, projecting above the tops of hooks 43, are preferably placed under the path of the sheet near the discharging-point, so they may lift the sheet from the hooks with certainty and insure its discharge as soon as it has moved beyond said rollers 48.

No obstacle to shortening of the sheet during the expansion exists in this construction, because the sheet is free to slip in peripheral direction over the disks, and the points 43, which only engage the inner edges of the depressed strands 38, offer no resistance to this slipping.

It will be noted that the expansion in this machine takes place in the plane of the sheet.

I claim—

1. In a machine for expanding slitted sheets, the combination of two disks mounted to rotate in diverging planes, and provided on their peripheries with means to engage the edges of the sheets.

2. In a machine for expanding slitted sheets, the combination of two disks mounted to rotate in planes diverging from the point at which the sheets are received, and provided

with means to engage the edges of the sheets, and guards for holding the edges down on the disks.

3. In a machine for expanding slitted sheets, the combination of two disks mounted to rotate in planes diverging from the point at which the sheets are received, and provided with hooks to engage the edges of the sheets.

4. In a machine for expanding slitted sheets, the combination of two rotating disks mounted upon shafts arranged at an angle to each other, so that their peripheries at one point are near together and diverge from that point, said disks being provided with means for holding the edges of the sheets, substantially as specified.

5. The machine for expanding slitted sheet metal having in combination two disks mounted to rotate in the same direction but in diverging planes, and provided on their peripheries with means whereby they engage both edges of the sheet.

6. The machine for expanding slitted sheet metal having rotating diverging expanders provided with peripheral means for engaging the edges of the sheets, guards for holding the edges on the expanders, and a roller bearing on the sheet where it enters under the guards.

7. The machine for expanding slitted sheet metal having rotating diverging expanders provided with peripheral means for engaging the edges of the sheets, guards for holding the edges on the expanders, a roller bearing on the sheet where it enters under the guards, and rollers for lifting the sheet from the expanders.

LEWIS E. CURTIS.

Witnesses:

H. M. MUNDAY,
EDW. S. EVARTS.