No. 885,815. PATENTED APR. 28, 1908.

F. J. WENDELL.

METAL SLITTING MACHINE.

APPLICATION FILED JULY 20, 1906.

7 SHEETS—SHEET 1.

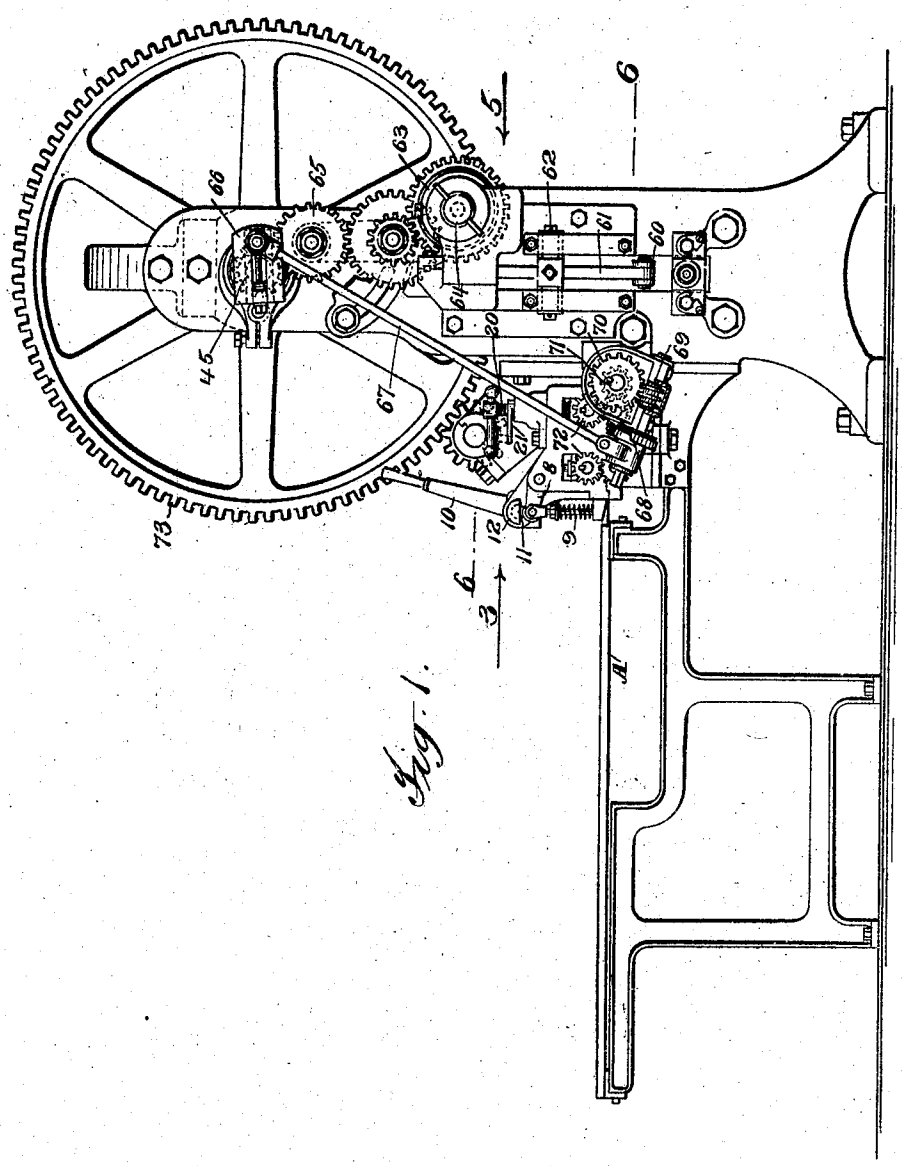


Fig. 1.

Witnesses

Inventor

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Philip Lawrence Rice & Kennedy

No. 885,815. PATENTED APR. 28, 1908.

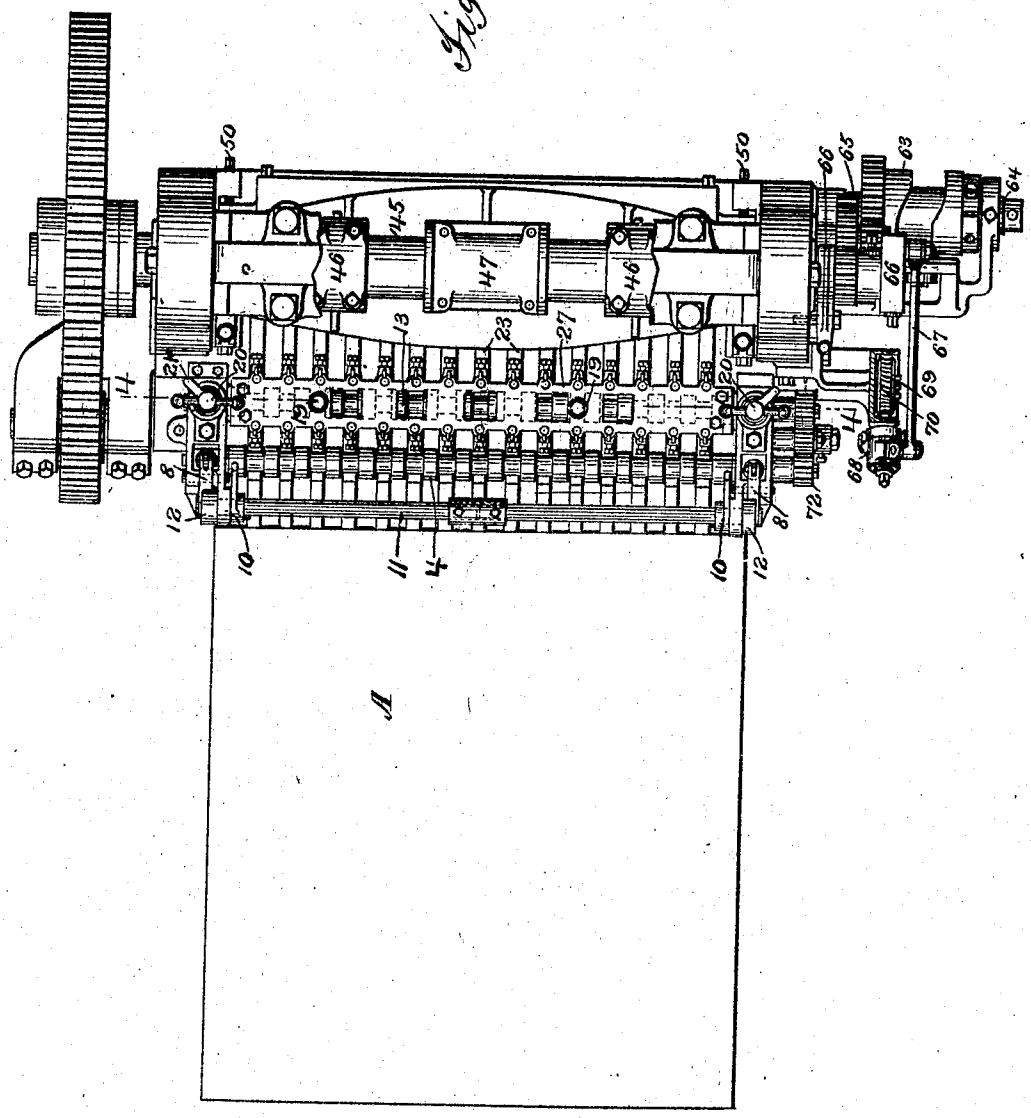
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7 SHEETS—SHEET 2.

Fig. 2.



Witnesses

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7 SHEETS—SHEET 3.

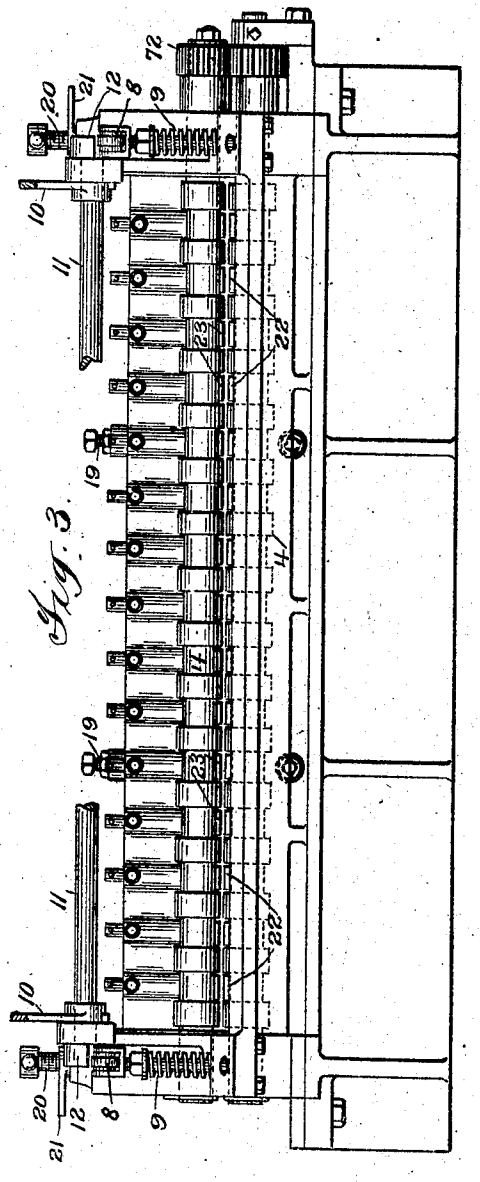


Fig. 3.

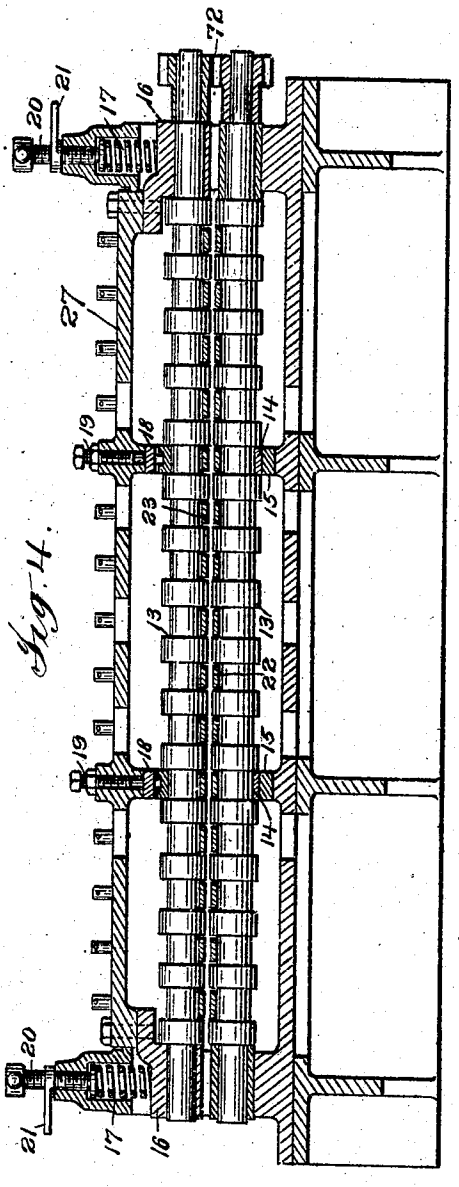


Fig. 4.

Witnesses
Philip V. Tilden.
Italiaan.

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No. 885,815. PATENTED APR. 28, 1908.

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METAL SLITTING MACHINE.

APPLICATION FILED JULY 20, 1906.

7 SHEETS—SHEET 4.

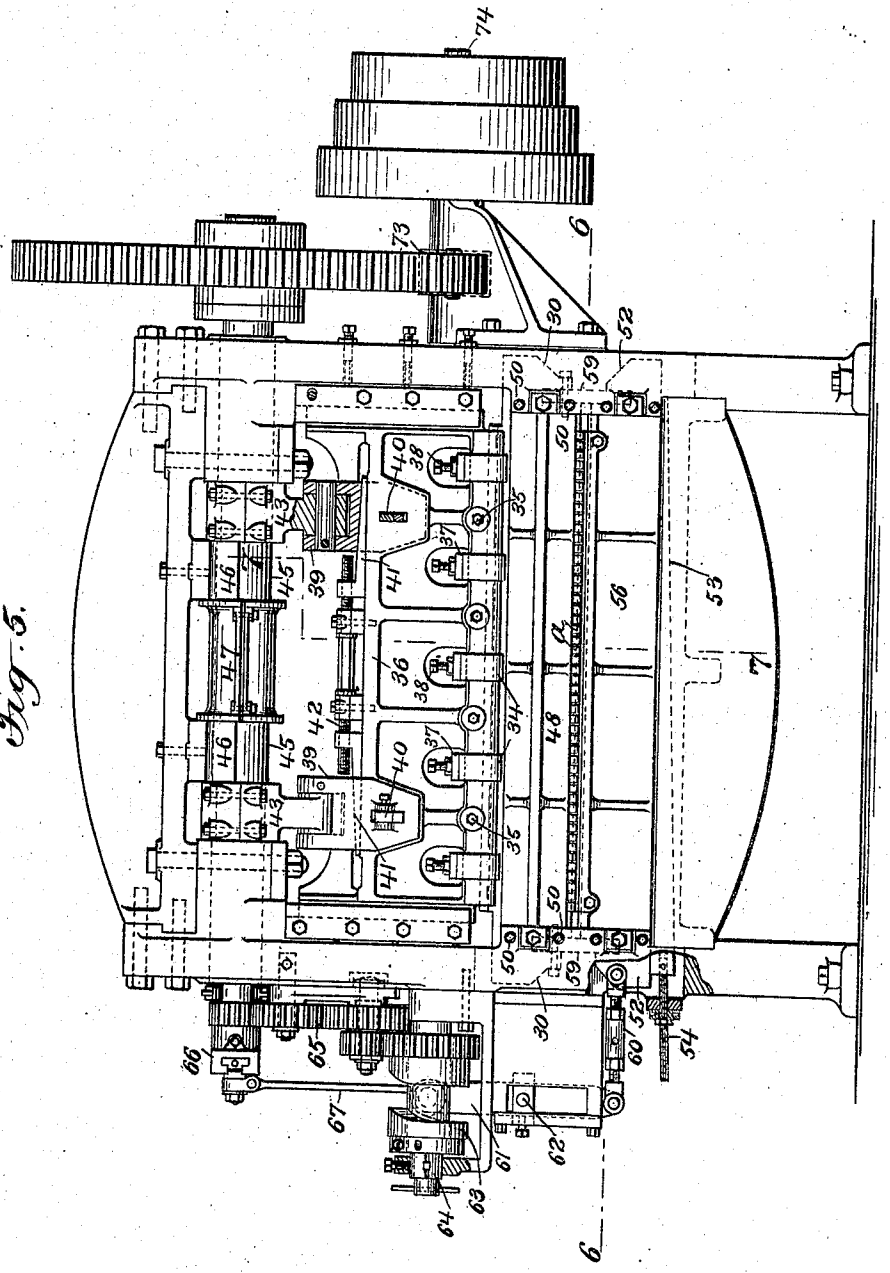


Fig. 5.

Witnesses
Phillip R. Tilden.
[illegible]

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METAL SLITTING MACHINE.

APPLICATION FILED JULY 20, 1906.

7 SHEETS—SHEET 5

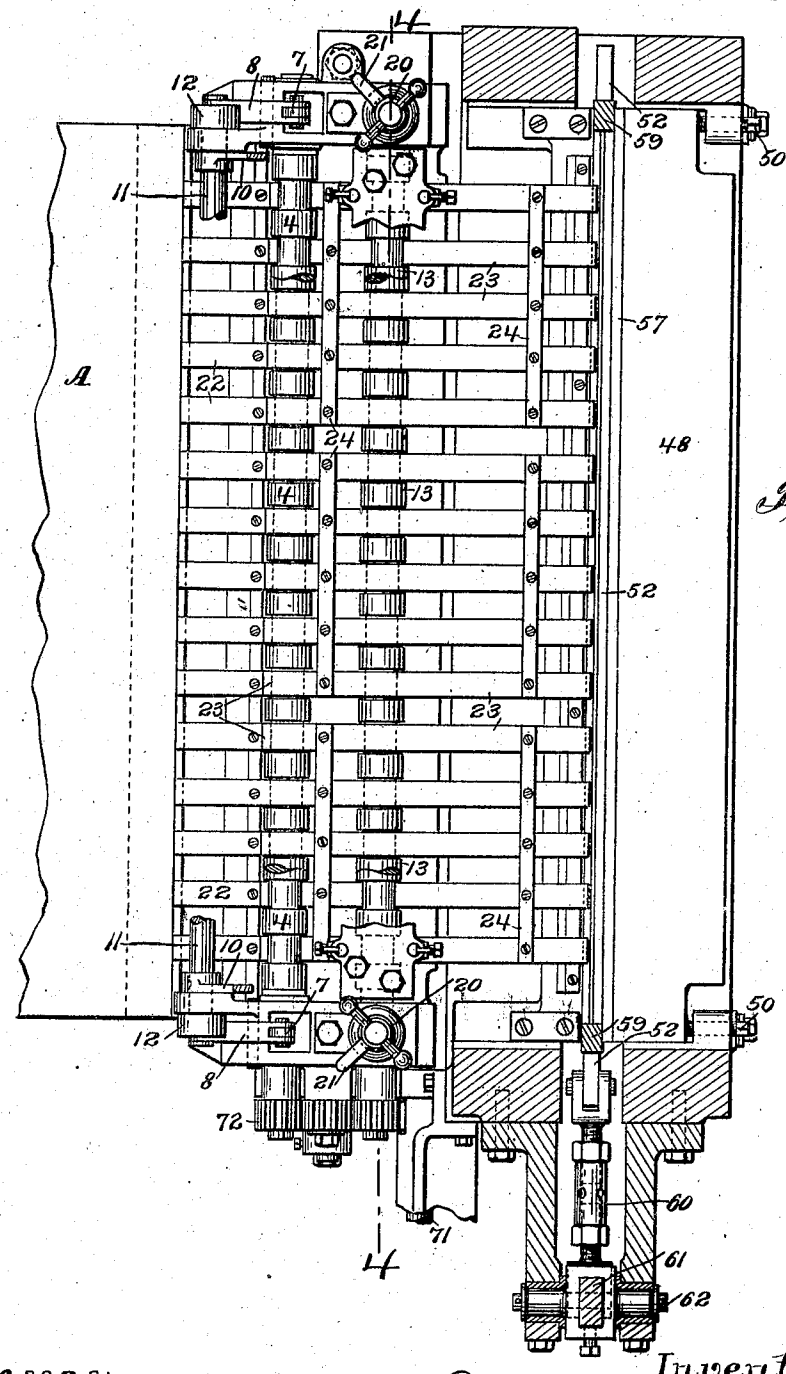


Fig 6.

Witnesses:
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No. 885,815.

F. J. WENDELL. PATENTED APR. 28, 1908.

METAL SLITTING MACHINE.

APPLICATION FILED JULY 20, 1906.

7 SHEETS—SHEET 6.

Fig. 8.

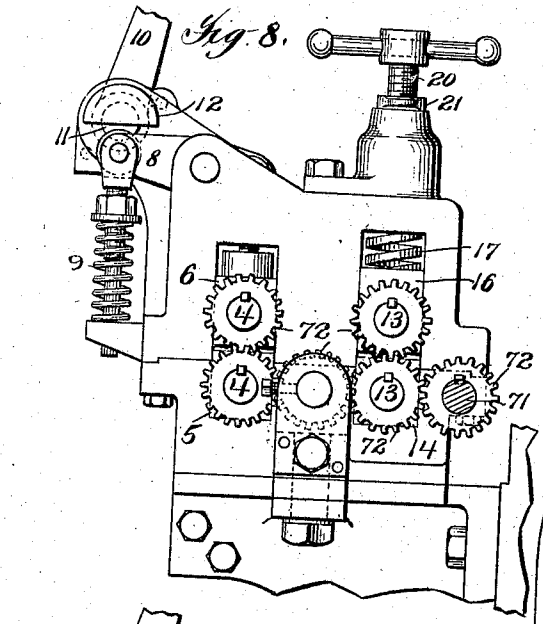


Fig. 7

Witnesses

Inventor

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No. 885,815. PATENTED APR. 28, 1908.

F. J. WENDELL.

METAL SLITTING MACHINE.

APPLICATION FILED JULY 20, 1906.

7 SHEETS—SHEET 7.

Fig. 9.

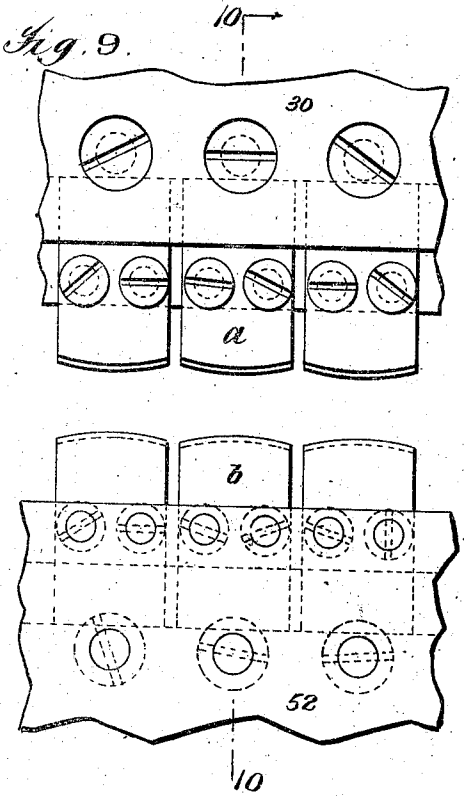


Fig. 10.

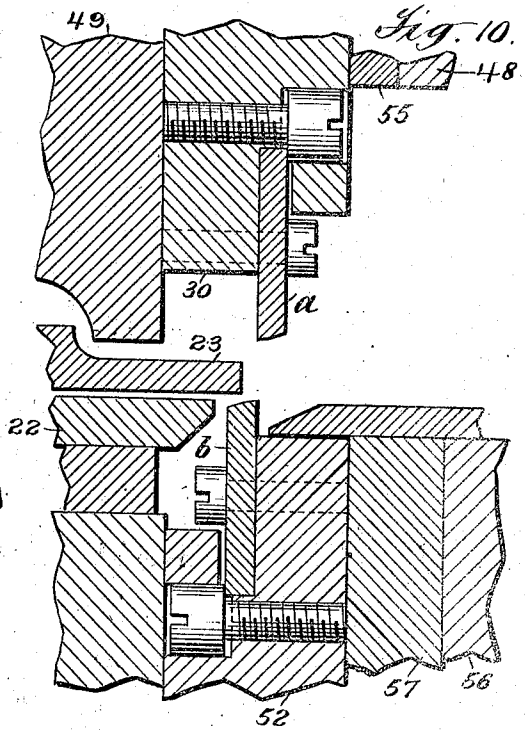
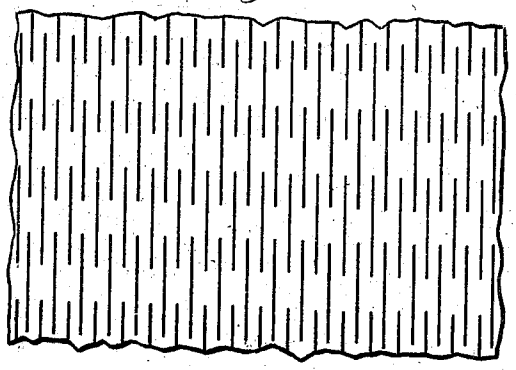


Fig. 11.



Witnesses
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E. Galiani.

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Philip & Cowper, Rice & Kennedy

UNITED STATES PATENT OFFICE.

FERDINAND J. WENDELL, OF NEW YORK, N, Y., ASSIGNOR TO THE ROEBLING CONSTRUCTION COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

METAL-SLITTING MACHINE.

No. 885,815 Specification of Letters Patent. Patented April 28, 1908.

Application filed July 20, 1906. Serial No. 326,979.

To all whom it may concern:

Be it known that I, FERDINAND J. WENDELL, a citizen of the United States, residing at New York city, county of Kings, and State of New York, have invented certain new and useful Improvements in Metal-Slitting Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to an improved machine for slitting sheet metal.

The invention is especially applicable to machines for slitting metal which is to be stretched or expanded to make what is known as extended or expanded metal, but machines embodying the invention may be used to slit metal for other purposes.

In the accompanying drawings forming a part of this specification, there is illustrated a machine embodying all the features of the invention in their preferred form, and this machine will now be described in detail, and the features forming the invention then specifically pointed out in the claims.

In the drawings—Figure 1 is a side elevation of the machine. Fig. 2 is a plan view of the same. Fig. 3 is a front elevation with parts omitted. Fig. 4 is a cross section on the line 4 of Fig. 6. Fig. 5 is a rear end elevation. Fig. 6 is a horizontal section on the line 6 of Figs. 1 and 5. Fig. 7 is a vertical section on the line 7 of Fig. 5. Fig. 8 is a detail side elevation of the feeding roll portion of the machine. Fig. 9 is a detail front view of the knives. Fig. 10 is a section on the line 10 of Fig. 9. Fig. 11 is a plan view of one form of slit metal produced by the machine.

In the drawings, A is the table over which the sheets are fed by hand to the first pair of feed rolls 4. The lower roll is mounted in stationary bearings 5, and the upper in vertically moving bearings 6, these bearings 6 being connected at each side of the machine by connecting rods 7 to pivoted levers 8, which hold the roll in feeding position under pressure by a spring pressed rod device 9. The bearings 6 with rolls 4 are thrown up by hand levers 10, one at each side of the machine, these levers being fast on rock shaft 11, which carries two cams 12, one at each side of the machine. When one of the levers 10 is operated, these cams lift the upper roll 4 for the ends of the sheets to be inserted between the rolls, and after the end of a sheet has been inserted, the hand lever is released and the sheet will be fed forward to the second pair of rolls 13, and then advanced by the two pairs of rolls. The lower roll 13 is mounted in bearings 14 which are preferably adjustable to take up wear, a wedge adjustment 15 being shown. The upper roll 13 is mounted in bearings 16 spring pressed by springs 17. The roll 13 is shown as stiffened between its ends by bearing blocks 18 adjustable by screws 19. The tension of the springs 17 is adjusted by hand screws 20, and lock nuts 21. The feeding surfaces of the rolls 4 and 13 are formed of disks and strips or fingers are located between the disks of each of the rolls. The lower fingers 22 are fast to the bed at both ends, but the upper fingers 23 are spring pressed downward. These fingers are shown as connected by cross bars 24 and as pressed down onto the metal by adjustable spring plungers 25, 28 at opposite sides of rolls 13. The bearings 16 are connected by bar 27 extending across the machine and carrying the parts 18, 19, and the bearings 16 are extended to form boxes 31 which carry the plungers 25, 28, so that the springs 17 hold all these under spring pressure. Spring plungers 29 bear on the fingers 23 close to the slitting knives. The fingers 22, 23 form a channel through which the metal to be cut passes, but may be omitted, although in that case some means will preferably be used to hold the metal under spring pressure during the slitting action of the knives.

The upper knife consists of a cross bar 30 on which are mounted a series of beveled knives *a*. The cross bar 30 is secured by screws 32 to a plate 33, this plate being held between a pair of long jaws 34 which extend across the machine. These jaws are connected by means of bolts 35 to a web 36 which also extends across the machine. The bolts 35 pass through enlarged openings in the long jaws so as to allow for adjustment, and the jaws are connected at their tops by a series of cross bars 37 through which pass adjusting screws 38, by which

wear may be taken up. The web 36 is connected to U-shaped blocks 39 by keys 40, which are shown as wedge shaped to permit of an adjustment which is obtained by means of wedges 41 connected to right and left hand screw 42 mounted on the web 36. Wear on the knives and other parts may thus be taken up. The blocks 39 are hung on arms 43 which depend from eccentric straps 44 on the main eccentric shaft 45, so as to move the upper knives *a* vertically. This eccentric shaft is mounted in suitable bearings in the frame and is shown as having stiffening saddles 46 secured to the under side of the upper cross web of the frame to stiffen the shaft. Collar 47 is located between these saddles 46 to prevent sidewise movement of the shaft. The bar 30 is mounted between a pair of cheek blocks 48, 49, the bar 48 being adjustable in and out by means of screws 50 and the block 49 being shown as adjustable by wedge 51. The block 48 carries adjustable bearing plates 55 for plate 30.

The upper knives *a* co-act with a corresponding set of stationary lower knives *b*, the two knives *a*, *b* preferably being beveled in opposite directions, as shown in Figs. 9 and 10, so as to bend the metal down slightly during the slitting operation. This depends, however, upon the character of the machine by which the metal is to be handled after slitting. The lower knives *b* are carried by bar 52. This bar 52 has an inclined bottom and rests on a long wedge 53 which is adjustable by screw 54. The bar 52 rests in a recess in the frame and is held in position in the recess by means of an adjustable cheek block 56, this cheek block being provided with a pair of adjustable bearing plates 57.

The upper knives *a* have a vertical reciprocating movement to produce the cut, and both sets of knives *a* and *b* have a sidewise movement together to stagger the cuts. The knife bars 30, 52 are connected for the sidewise movement by a block 59 connected to block 30 which takes into a recess in the lower block 52, so that the two blocks move together. The lower block 52 is connected by an adjustable link 60 to a cam lever 61 pivoted at 62, and actuated by a cam groove in a cam 63 mounted on a short shaft 64. This cam 63 may be changed so as to vary the number of side movements of the knives for a certain length of feed, so as to produce different cuts of the metal.

The driving mechanism may be of any suitable form. As shown, the eccentric shaft 64 is driven through a train of gearing 65 from eccentric shaft 45, these gears 65 being arranged so that they can be changed to give different speeds to the cam shaft 64. The eccentric shaft 45 has a grooved crank arm 66 thereon which, by means of the connecting rod 67, adjustable in the groove, drives a pawl and ratchet mechanism 68, which operates on worm shaft 69, and thus drives a worm wheel 70 mounted on a shaft 71 and fast on this shaft is a gear which is the first of a train of gears 72 through which the feeding rolls 4 and 13 are driven. The shaft 45 is shown as driven through gears 73 from power shaft 74, but may itself be the power shaft.

No special description of the operation of the machine is required, it being understood from the foregoing that the sheet metal is advanced step by step by the feeding rolls 4 and 13, one row of slits being formed by the knives *a*, *b*, the knives then shifted sidewise and another row of slits formed, and the knives then returned to their first position for the next row of slits, if the cam 63 be of the form shown, thus producing the metal illustrated in Fig. 11. By substituting other cams for the cams 63, the knives may be shifted in the same direction two or more times before returning to their first position, and by substituting proper gearing, the speed of the feeding rolls and the sidewise movement of the cutters may be varied relatively to each other, so as to produce metal slit in different forms.

It will be understood that the invention is not to be limited to the exact form or arrangement of parts shown, but that modifications may be made while retaining the invention defined by the claims.

What is claimed is:—

1. The combination of a series of metal slitting knives, and means for moving both series of the knives sidewise and advancing the metal between the slitting operations.

2. The combination with two series of co-acting metal slitting knives, of means for moving one series of knives toward and from the other for slitting, and means for moving both series of knives sidewise and advancing the metal between the slitting operations.

3. The combination with two series of co-acting metal slitting knives connected to move sidewise together, of means for causing a relative movement of the knives toward and from each other for slitting, and a cam and connections for moving the knives sidewise between the slitting operations.

4. The combination with two series of co-acting metal slitting knives connected to move sidewise together, of means for causing a relative movement of the knives toward and from each other for slitting, a cam and connections for moving the knives sidewise between the slitting operations, and metal feeding devices for advancing the metal between the slitting operations.

5. The combination with the feeding rolls 13 formed of disks, of the spring pressed fingers 22, 23 between the disks.

6. The combination with feeding rolls 13, of spring pressed bearings for one of the rolls, and spring pressed plungers carried by

the bearings and acting at one side of the rolls.

7. The combination with feeding rolls 13, of spring pressed bearings for one of the rolls, and spring pressed plungers carried by the bearings at opposite sides of the rolls.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

FERDINAND J. WENDELL.

Witnesses:
C. J. J. SAWYER,
J. A. GRAVES.