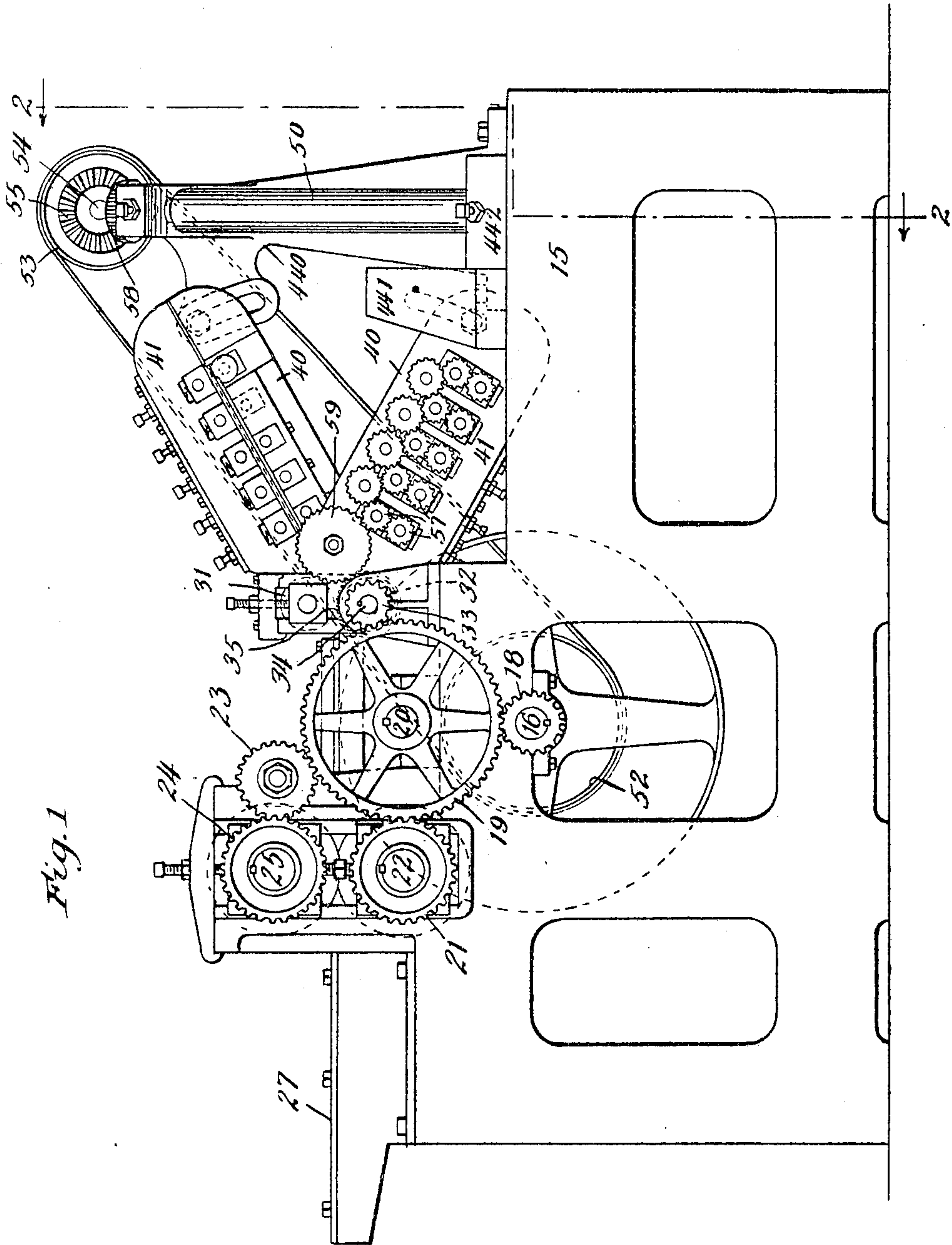


O. BRADFORD.
MACHINE FOR EXPANDING SLITTED SHEET METAL.

APPLICATION FILED MAY 1, 1905.

2 SHEETS—SHEET 1.



Witnesses:
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No. 799,299.

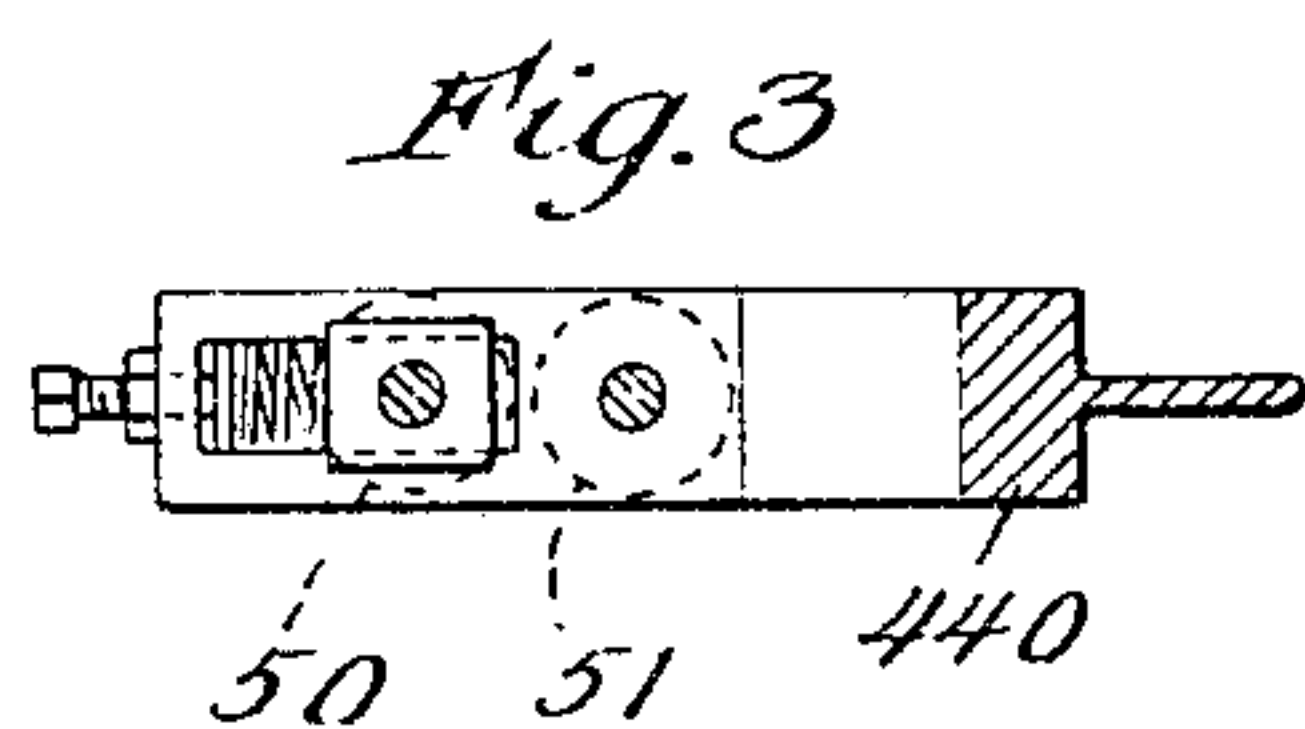
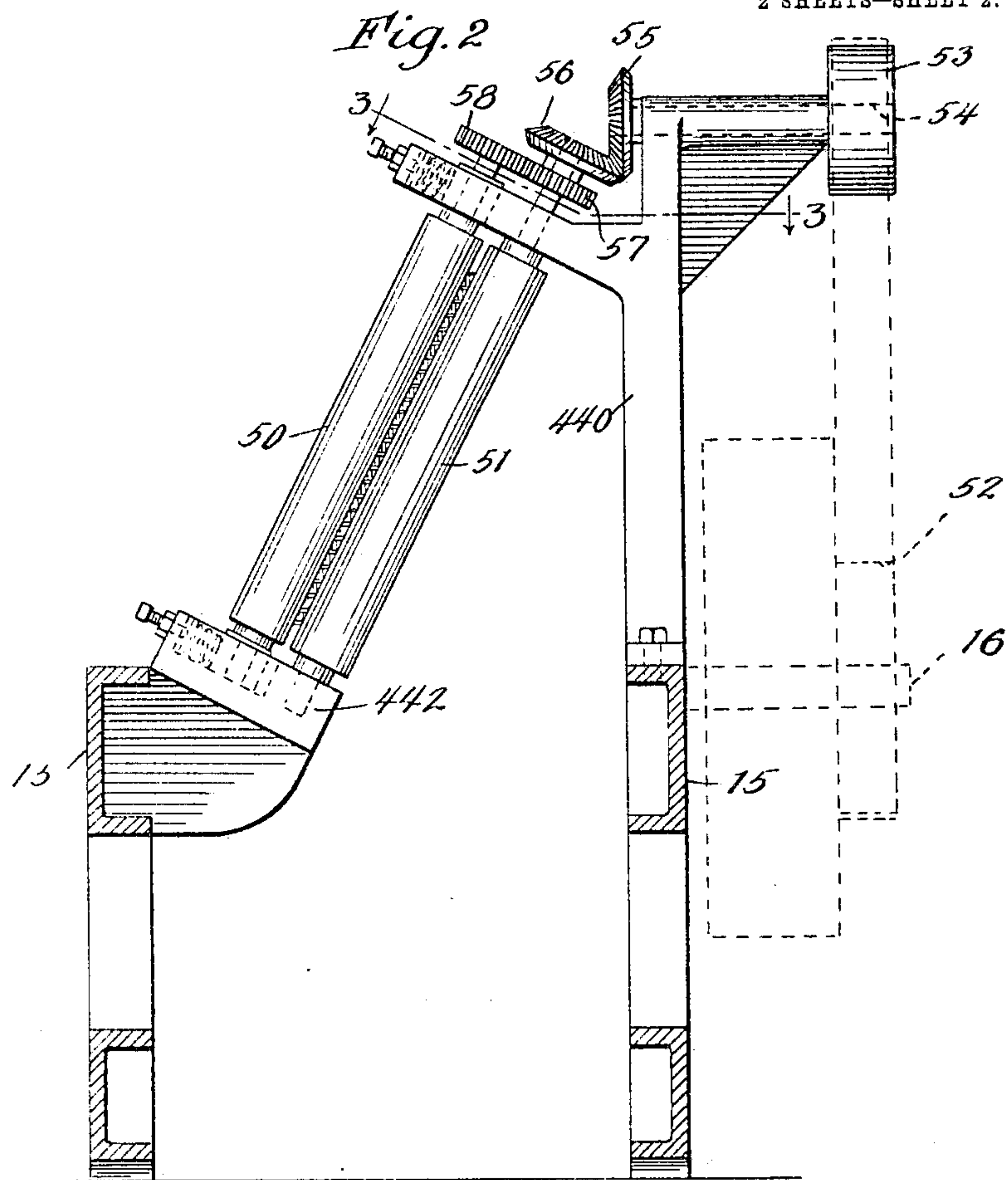
PATENTED SEPT. 12, 1905.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

OSCAR BRADFORD, OF CHICAGO, ILLINOIS.

MACHINE FOR EXPANDING SLITTED SHEET METAL.

No. 799,299.

Specification of Letters Patent.

Patented Sept. 12, 1905.

Application filed May 1, 1905. Serial No. 258,186.

To all whom it may concern:

Be it known that I, OSCAR BRADFORD, 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 Expanding Slitted Sheet Metal, of which the following is a specification.

This invention is an addition to the machine for expanding slitted sheet metal shown in the application of Lewis E. Curtis, Serial No. 109,421, filed May 29, 1902. In the Curtis machine the slitted sheet is fed longitudinally along two tables or plates over one and under the other. These tables diverge from each other both in respect to the line of feed and with respect to the original plane of the sheet, one table inclined upward, so that it carries one longitudinal half of the sheet upward from the plane of the sheet, and the other being inclined downward, so that it carries the other longitudinal half of the sheet downward from the original plane. Feeding devices are provided for each table and grip the unexpanded portions of the sheet thereon, and these unexpanded portions continually diminish in width as the sheet approaches the ends of the tables, so that the grip of the feeding devices becomes gradually weakened. By reason of the divergence of the tables the expanded portion of the sheet hangs between them in space, and consequently it sometimes happens that the weight of the sheet will sometimes draw it out of the embrace of the upper feeding devices as it nears the delivery end of the tables, so that the upper edge may not be properly expanded or opened. Sometimes also the sheet is winding or shifts while it is being fed, so that one side or the other at the rear end of the sheet may escape from the grasp of the feeding devices, and thus fail to be properly opened. In my present invention I aim to prevent this evil, which occurs uniformly at the rear end of the sheet, by placing a pair of driven rolls where they will receive the advance edge of the sheet as it issues from the expanding-machine, and so control the sheet as to prevent either edge of it from escaping from the feed devices. These rolls are driven at a speed corresponding to the speed at which the sheet issues from the expander, and they are arranged in an inclined position corresponding to the position occupied by the sheet when discharged from the expander.

The nature of my invention is fully disclosed in the accompanying drawings, in which—

Figure 1 is a side elevation of the Curtis expanding-machine provided with my invention, and Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a section on the line 3 3 of Fig. 2.

In said drawings, 15 represents the side frame of the machine, and the drive-shaft is shown at 16 and communicates power to the machine through the pinion 18, meshing with the gear 19 on shaft 20. The gear 19 meshes with gear 21 on the journal 22 of the lower slitting-roll and also with an intermediate pinion 23, meshing with the gear 24 on the journal 25 of the upper slitting-roll. The sheets are fed to the slitting-rolls from table 27, and from the rolls they pass into the bite of a pair of feed-rolls 31 and 32, by which they are fed to the expanding devices. Gear 19 also meshes with a pinion 33 on the journal 34 of the lower one of said feed-rolls. Said journal 34 also carries gears 35, through which it may drive the upper feed-roll, and whereby also it may drive the gear 59 and through the latter actuate the train of gears 57, whereby the rolls which act upon the sheet while it is moving over the expanding-tables are actuated.

The expanding-tables are each composed of two castings 40 and 41, bolted together and suitably supported, the supports at the discharge end being formed by standards 440 and 441, and each table is provided with upper and lower series of feed-rolls adapted to grasp the sheet between them and compel it to move forward. The tables are adapted to carry the longitudinal halves of the sheet in diverging directions, the rollers upon each table retaining control of the sheet until it passes off the diverging edges of the same, and the expansion takes place in lines diagonal of the sheet, extending both ways from the center to the edges at the time it thus passes off the sheet. When the sheet is delivered from these expanding devices, it occupies an inclined position, one edge being lifted and the other depressed, and hence the controlling-rollers, which form the subject-matter of my invention, are placed in the same position. These rolls are shown at 50 and 51, and they may be supported from the standards 440 and the bracket 442, as shown more particularly at Fig. 2. The upper one of the rolls is prefer-

ably made adjustable, so that the pressure upon the sheet can be adjusted to suit the necessities of the stock being operated upon. To drive them, any suitable means may be employed which will actuate them at the same speed as that possessed by the sheet at the time it leaves the expanding-tables. A desirable construction of such actuating means adapted to drive the rolls continuously is illustrated and may consist of a pulley 52 on the drive-shaft 16, a pulley 53, belted to the pulley 52 and mounted on a shaft 54, a bevel-gear 55 on said shaft 54, a bevel-gear 56, meshing with the gear 55 and mounted on the journal of one of the controlling-rolls, and spur-gears 57 and 58 for carrying power from one roll to the other. These controlling-rolls are located in such proximity to the expanding devices as to insure the entrance between them of the initial end of the expanded sheet, and when the sheet is once entered between them they will control the sheet during the remainder of the time it is being expanded and prevent either edge of it from becoming disengaged from the feed devices of the expanding-tables. Not only do the controlling-rolls prevent the sheet from escaping from the feed-rolls, but they are also adapted to remove in some measure the kinks and bends from the expanded sheet—in other words, to perform the work usually devolved upon what are called “leveling-rolls,” and thus leaving the sheet in a flat and marketable condition.

I do not wish, of course, to be limited to the use of a single pair of rolls for this purpose.

I claim—

1. The combination with a machine for expanding slitted sheet metal, of continuously-driven controlling-rolls receiving the sheet from the expanding-machine and acting to hold it in position so that its edges cannot get free of the feeding devices of the expanding-machine before the expansion is fully completed.

2. The combination with a machine for expanding slitted sheet metal, of continuously-driven controlling-rolls adapted to receive the sheet as it passes from the expanding-machine and to control its position therein.

3. The combination with a machine for expanding slitted sheet metal, of continuously-driven rolls adapted to receive the sheet from the expanding-machine and acting both to control its position in the expanding-machine and also to level the sheet.

4. The combination with a machine for expanding slitted sheet metal consisting of continuously-driven controlling-rolls arranged in an inclined position and driven at a speed uniform with the speed of the sheet at the time it leaves the expanding-machine.

OSCAR BRADFORD.

Witnesses:

H. M. MUNDAY;

EDW. S. EVARTS.