

A. PRIDDLE.

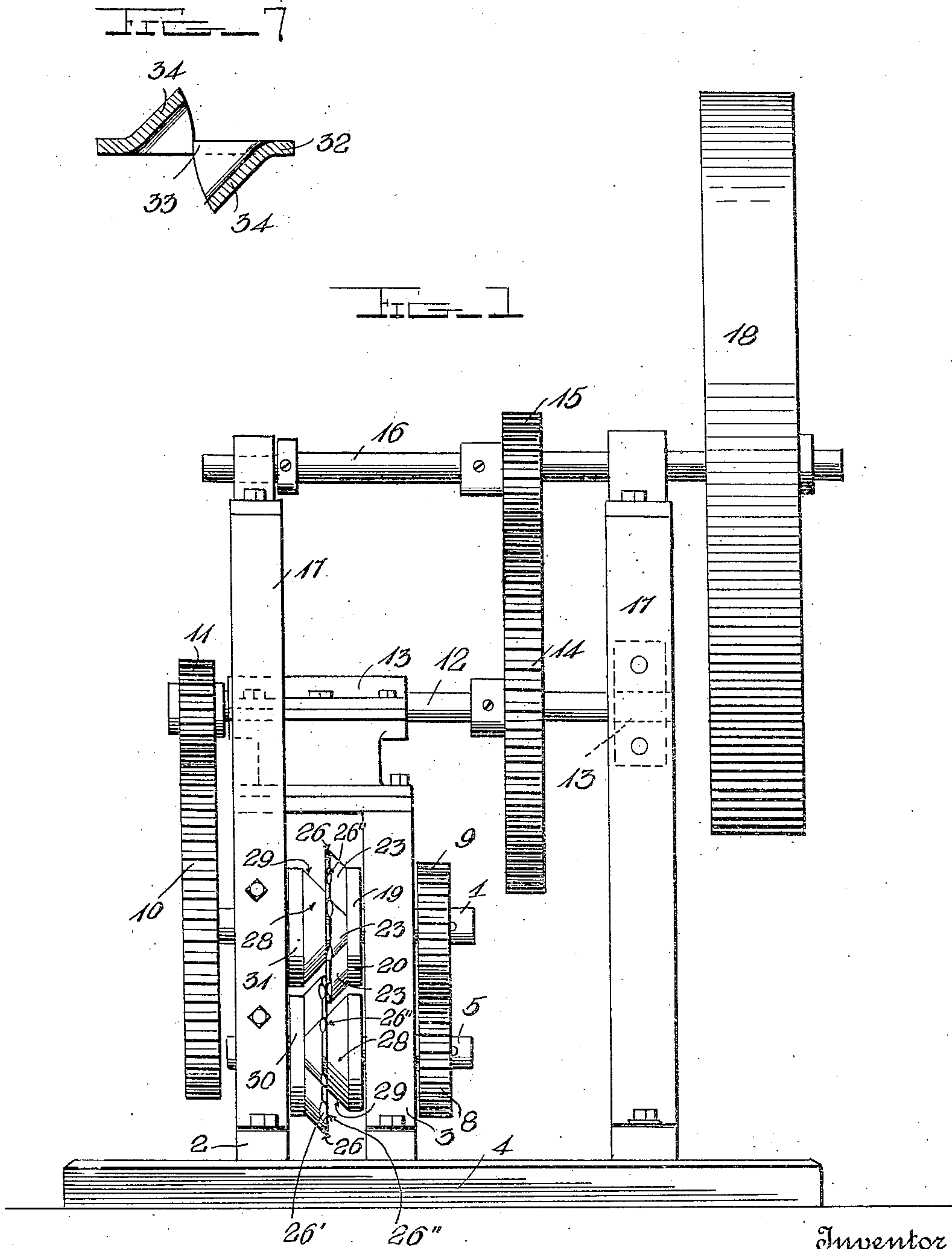
MACHINE FOR SLITTING AND FLANGING METAL BARS.

APPLICATION FILED AUG. 13, 1908. RENEWED SEPT. 16, 1909.

955,431.

Patented Apr. 19, 1910.

2 SHEETS—SHEET 1.



Witnesses

E. J. J. J. J.

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Inventor

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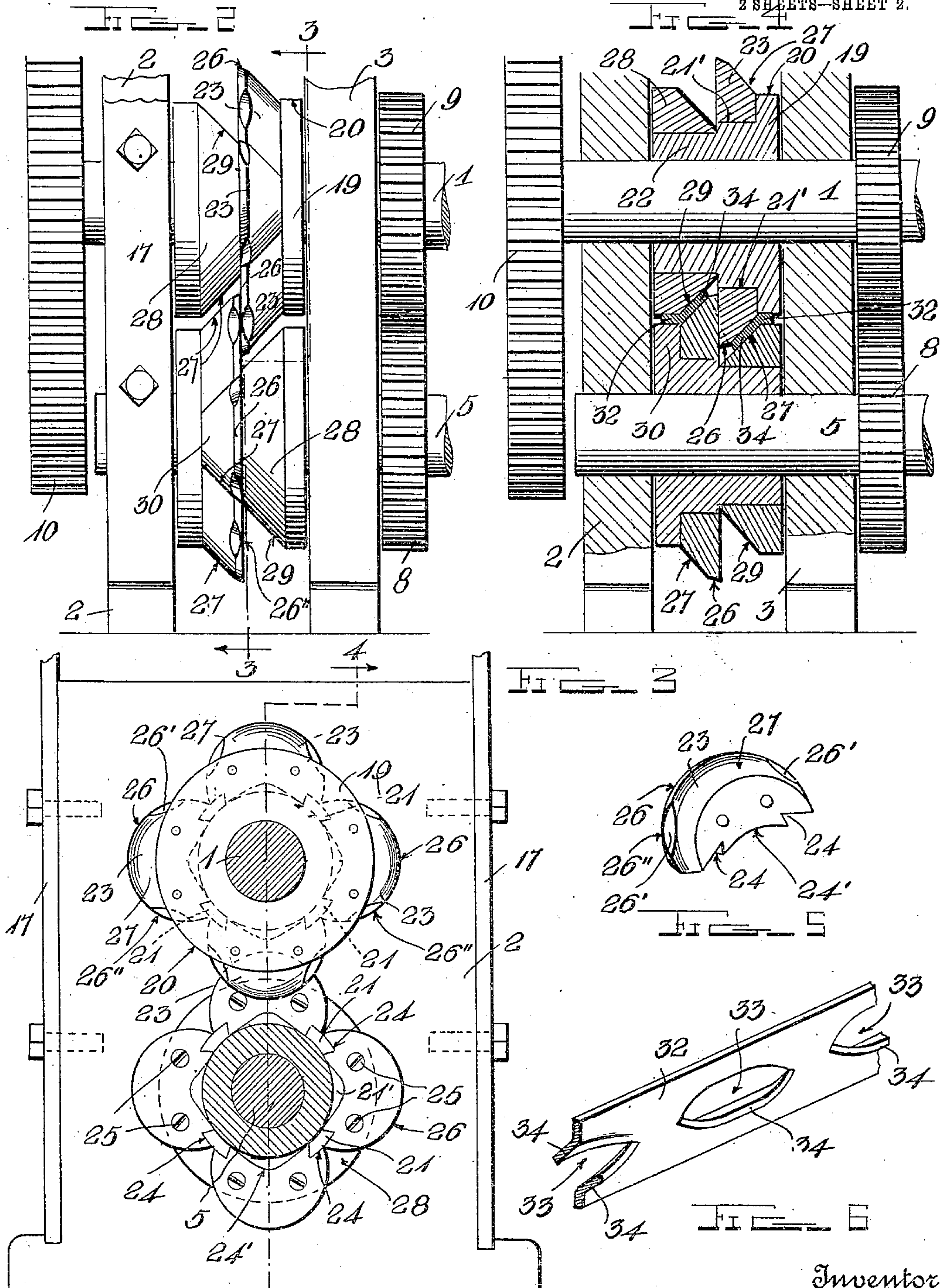
Attorneys

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UNITED STATES PATENT OFFICE.

ARTHUR PRIDDLE, OF SAN FRANCISCO, CALIFORNIA.

MACHINE FOR SLITTING AND FLANGING METAL BARS.

Specification of Letters Patent. Patented Apr. 19, 1910.

955,431.

Application filed August 13, 1908, Serial No. 448,369. Renewed September 16, 1909. Serial No. 518,073.

To all whom it may concern:

Be it known that I, ARTHUR PRIDDLE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Machines for Slitting and Flanging Metal Bars; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in machines for slitting and flanging metal bars, and contemplates the production of a simple and economical machine of this kind wherein the slitting operation is accomplished by two sets or series of rotary coöperating blades and the flanges formed by opposite beveled surfaces of the cutting knives and flange forming rings loosely mounted upon the knife carriers.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a front elevation of a machine provided with my improvements, Fig. 2 is a similar view on an enlarged scale of the slitting and flange forming means, together with associated parts, Fig. 3 is a vertical section taken on the line 3—3 of Fig. 2, looking in the direction indicated by the arrows, Fig. 4 is a vertical transverse central section taken on the line 4—4 of Fig. 3, Fig. 5 is a detail perspective view of one of the cutting knives, and Fig. 6 is a detail perspective view of the product of the machine, Fig. 7 is a detail transverse sectional view through the completed bar.

In the embodiment illustrated, which is for illustrative purposes only and, therefore, not drawn to any particular scale, a transverse shaft 1 is shown journaled in suitable bearings 2 and 3, bolted or otherwise mounted upon a suitable base 4. A second transverse shaft 5 is journaled beneath the shaft 1 in said bearings 2 and 3, and these shafts are driven by means hereinafter described. The shaft 5 is provided at one end with a gear or pinion 8, which meshes with a similar gear or pinion 9, arranged at the adjacent

end of the transverse shaft 1. A large gear 10 is mounted on the opposite end of the shaft 1 and meshes with a suitable pinion 11, fixed to the adjacent end of a transversely disposed shaft 12, mounted in suitable bearings 13 above the shafts 1 and 5, the opposite end of the shaft 12 being equipped with a relatively large gear 14, which meshes with a pinion 15, keyed to a driving shaft 16, journaled in the upper ends of upright approximately inverted U-shaped frames 17 and carrying a power wheel 18 at one end.

In carrying out the present invention a knife carrier 19 in the form of a cylindrical roller or hub, is mounted upon the shaft 1 between the bearings 2 and 3, said roller being provided at one face or side with an annular outstanding rim or flange 20, and upon the side of its body adjacent said rim with a plurality of outstanding circumferentially spaced dove-tailed lugs 21, the purpose of which will be disclosed and which alternate with substantially arc-shaped lugs 21', the opposite side of the body forming a cylindrical extension 22.

The cutting knives 23, which are preferably of approximately arc-shaped form are provided with recessed ends 24 to receive the ends of the lugs 21, and with recesses 24' arranged between the recesses 24 and shaped to fit the lugs 21' which alternate with the lugs 21. These knives are screwed preferably by flat-head machine screws 25 to the inner face of the rim 20, and are arranged in position with the greater portion of their beveled outer or cutting edges 26, disposed or projecting beyond the edge of the flange or rim 20. The rear faces of the knives are beveled at a suitable inclination from the outer projecting portions of their beveled cutting edges to the edge of the flange 20, as at 27, (see Fig. 4). A flange forming ring 28 is loosely mounted upon the cylindrical extension 22 of the knife carrier 19 and is provided with an inclined flange-forming surface 29, which is beveled on an incline corresponding with the beveled surface of the cutting knives.

A second knife carrier 30 similar to the carrier 19 is mounted upon the shaft 5 beneath said first mentioned knife carrier, but is arranged in a reverse position thereto, with its outstanding rim or flange 20 disposed beneath the straight edge 31 of the

ring 28. By arranging the knife carriers in this manner the beveled surfaces 27 of the knives of one carrier will be disposed in parallel relation with the flange forming surface 29 of the ring 28 of the other carrier. The slitting knives 23 are arranged to meet in exactly the same relative positions, and the comparatively broad cutting edges 26, of said knife 23 of the respective carriers are gradually reduced in thickness at 26', to form sharp cutting edges 26'' at their points of intersection where they leave the bar which greatly facilitates the cutting at the ends of the slits in the metal bar and their exit therefrom to form a clean cut slit without any jarring of the machinery or jagged tearing of the bar such as would result were these knife edges not provided at these points.

20 In the operation of the machine for slitting and flanging a metal bar power is transmitted from the power or driving wheel 18 to the transverse shaft 5 by means of the pinion 15 which meshes with the large gear 14 and imparts motion to the shaft 12 to which it is fixed and which through the pinion 11 imparts motion to the large gear 10 on the shaft 1, and through the gears 8 and 9 effects rotation of the knife carrying shafts 1 and 5 in opposite directions. The bar 32 to be operated upon is passed between the cutting knives of the carriers 19 and 30, and said bar in passing between each pair of cooperating knives is formed with a longitudinal slit as 33, and the flanges 34 of said bar shown at opposite sides of the slit are shown by the beveled surfaces 27 and flange forming surfaces 29 of the knives and rims 26 and 28, respectively, as clearly shown in Fig. 4 of the drawings.

The cutting knives may be made of any suitable material depending upon whether or not the bars are to be operated upon while in a hot or cold state. It is also to be understood that the cutting knives may be of any desired number or of any desired size according to the distance apart, and the length of the slits and flanges to be formed. The transverse shaft 5 may be driven by any other means than those shown, as this constitutes no part of this invention, and are provided only to complete an operative device.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention as defined in the appended claims.

65 Having thus described my invention, what

I claim and desire to secure by Letters Patent is:—

1. In a machine of the class described, supporting shafts, knife carriers provided with annular outstanding rims, two series of approximately arc-shaped cooperating rims, two series of approximately arc-shaped cooperating slitting knives screwed to the inner faces of the carrier rims with the greater portion of the outer edge of each knife projecting beyond the edge of the carrier rim with means for rotating the shafts in reverse directions.

2. In a machine of the class described, the combination with supporting shafts, of carriers provided with annular outstanding rims and each with a series of circumferentially disposed dove-tailed lugs at the inner edge of said rim fixedly mounted upon said shafts, two series of approximately arc-shaped cooperating slitting knives formed with recessed ends to receive the ends of said lugs screwed to the rims of said carriers with the greater portion of the outer edge of each knife projecting beyond the rim of its carrier, and means for rotating said shafts.

3. In a machine of the class described, supporting shafts, knife carriers fixedly mounted thereon, two series of approximately arc-shaped cooperating cutting knives screwed to said carriers, each of said knives having a straight cutting edge and an inclined flange forming surface, and flange forming rings each provided with an inclined flange forming surface loosely mounted upon said carriers with the inclined surface of the ring of one carrier disposed in parallel relation with the beveled surfaces of the knives of the other carrier and adapted to cooperate therewith to form flanges upon the opposite sides of the slit portions of the reinforcing bar.

4. In a machine of the class described, supporting shafts, cylindrical knife carriers provided with outstanding annular rims fixedly mounted thereon, two series of approximately arc-shaped cooperating cutting knives screwed to the inner faces of the carrier flanges with the greater portion of the outer edge of each knife projecting beyond the edge of its carrier rim, each of said knives being beveled at a suitable inclination from the projecting portion of its outer edge to the edge of its carrier rim to provide a flange forming surface, and flange forming rings loosely mounted upon the carrier and provided with inclined surfaces to cooperate with the beveled surfaces of the knives to form flanges upon opposite sides of the slit portions of the reinforcing bar with means for rotating said shafts in reversed directions.

5. In a slitting and flanging machine, two series of cooperating slitting knives, and flange forming rings for cooperating with the knives to upset the walls of the slits.

6. In a machine for slitting and flanging metal bars the combination of two series of coöperating arc-shaped slitting knives, said knives adjacent their extreme cutting ends
5 having sharpened cutting edges gradually increasing in thickness.

7. An arc-shaped cutting knife for slitting metal bars provided near the opposite ends of its curved portion with sharpened cutting
10 edges gradually increasing in thickness toward the middle of said knife.

8. A cutting knife having a curved dull

edge provided near opposite ends with sharpened cutting edges gradually increasing in thickness toward the center of the 15 knife.

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

ARTHUR PRIDDLE.

Witnesses:

BENJ. G. COWL,

EDNA W. THOMAS.