March 24, 1931. W. O. FORMAN 1,797,950

SCRAP CHOPPER

Filed Nov. 2, 1929 2 Sheets-Sheet 1

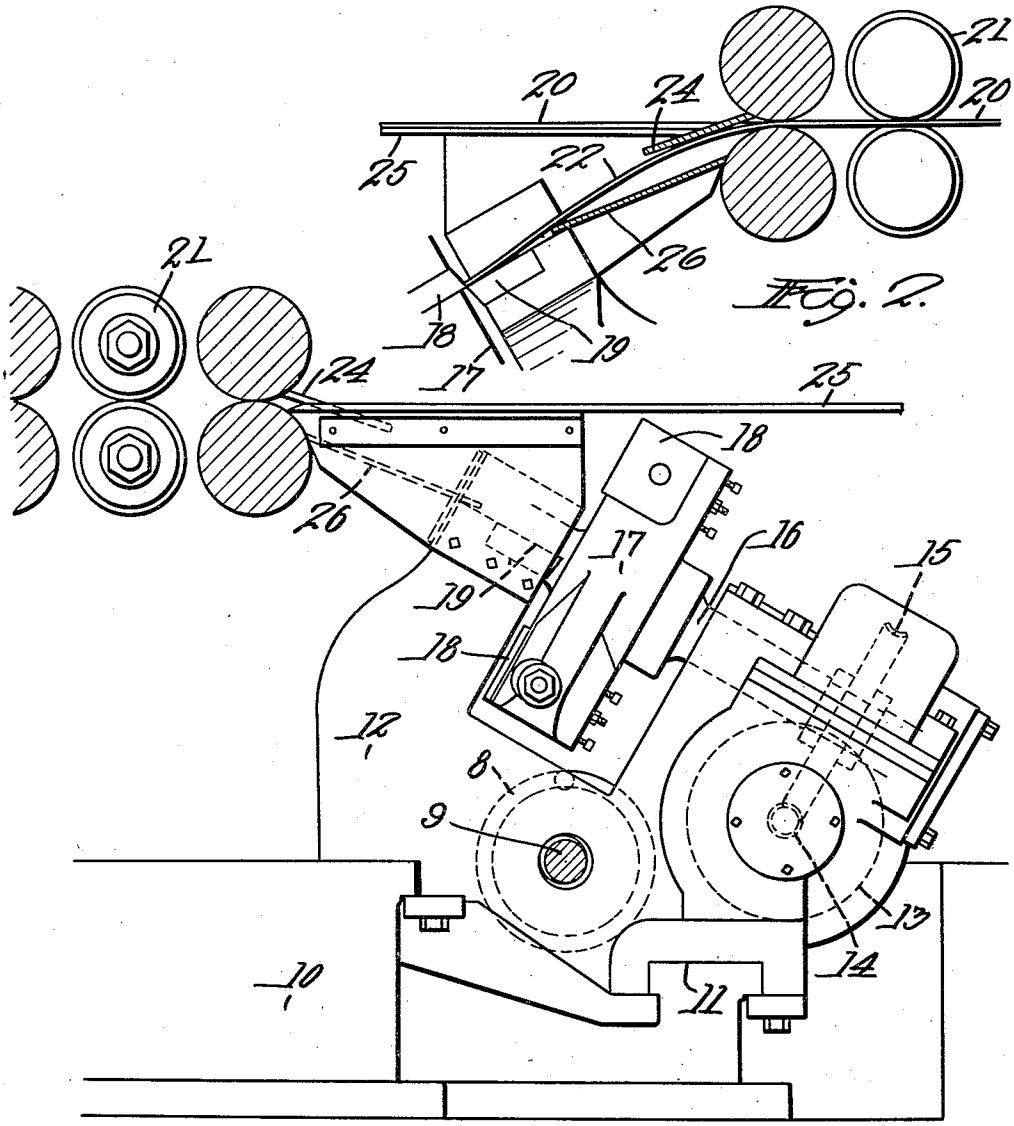


Fig. 1.

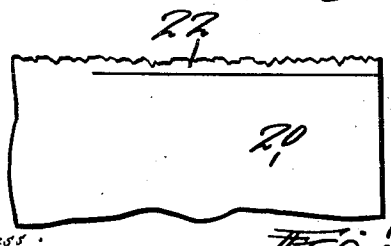


Fig. 3.

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SCRAP CHOPPER

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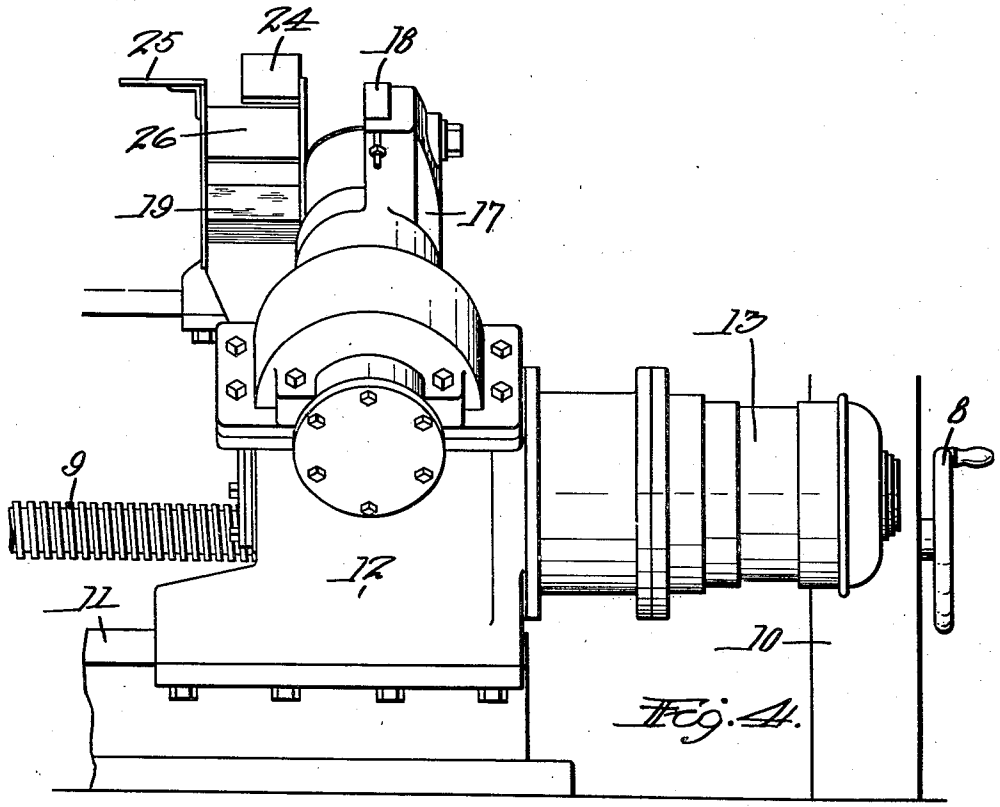


Fig. 4.

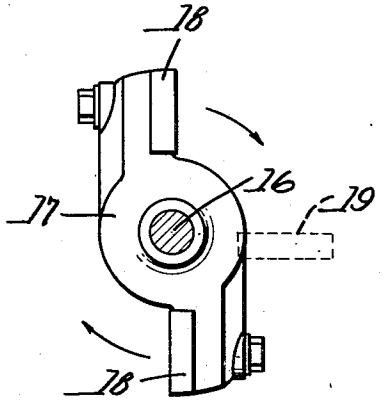


Fig. 5.

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UNITED STATES PATENT OFFICE

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SCRAP CHOPPER

Application filed November 2, 1929. Serial No. 404,454.

This invention relates to a machine for chopping up the scrap produced at the sides of sheets or packs of metal while said sheets or packs are passing through a machine for trimming their edges.

The principal objects of the invention are to provide a chopper involving a fixed knife and one or more rotary knives mounted on a rotor, the fixed knife being located in position to receive the scrap from the sheets or packs directly from the machine; to provide means for operating the rotor by a motor which will take up very little space and to provide a construction in which the chopper on one side of the shearing machine is adjustable to provide for sheets of different widths.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is a side view of a part of a sheet trimming machine showing the scrap chopper on one side in side elevation;

Fig. 2 is a similar view of the other side of the machine showing the means for guiding the scrap into the chopper and showing the act of cutting the scrap;

Fig. 3 is a plan of a portion of a sheet to be trimmed showing the scrap that is introduced into this chopping machine;

Fig. 4 is an end view of the chopper, and

Fig. 5 is an end view of the rotor showing how it acts to chop the scrap.

On the bed plate 10 of the machine is a rest 11 or transverse guide for supporting the frame 12 of the chopper unit. I have shown this part of the construction for the side of the machine on which the adjustable chopper is located. The adjustable unit is moved along the guide 11 by means of traverse screw 9 and hand wheel 8. A steel scale suitably graduated is provided for properly positioning this movable chopper.

On the other side of the trimming machine the frame 12 is bolted directly to the member 11 which in that case would not be a guide. On this frame 12 is carried the motor 13 directly. The motor is mounted on large sized ball bearings effectively sealed to prevent scale from entering and the thrust is taken by a roller thrust bearing.

The shaft of this motor is provided with a worm 14 operating a worm wheel 15 on the chopper shaft 16. A flexible coupling is used between the motor and the worm shaft. This chopper shaft is arranged at an inclination preferably and is provided with a rotor 17 fixed directly thereon. The chopper rotor and rotor shaft may conveniently be formed of a steel casting and in a single piece. The rotor is provided with one or more arms radiating therefrom. I have shown two in the present case each having a chopping blade 18 and therefore cutting the scrap against a stationary blade 19 twice during each rotation of the shaft 16.

Of course, the sheet metal plates 20 are fed through the shearing machine 21 at a desired rate of speed and the scrap 22 is sheared off the edge at a certain rate. The lenghts into which the scrap can be chopped in this chopper depends on the ratio of the speed of the sheering machine 21 to the speed of the motor 13.

The scrap is deflected by a blade or scrapper 24 to force it down below the table 25 on which the sheared sheets are delivered from the machine and comes into contact with another deflector or guide 26. The two plates 24 and 26, the details of which are not described herein because that is not a part of this invention, force the scrap down in an inclined direction on the stationary hardened steel blade 19. The blade 19 is inclined toward its cutting edge in the same plane as that in which the scrap is fed to it so the scrap will be flat on this blade or nearly so. The blades 18 come around by the operation of the motor to cut up the scrap into small pieces as for example, from four to eight inches in length. The chopped pieces of scrap fall out of the machine over the edge of the blade 19 and can be disposed of in any desired way. This inclination is parallel to the axis of the shaft 16 or preferably in the same plane.

It will be understood that the entire chopping device for a shearing machine consists of two separate units, each driven by an end mounting type motor 13, one of the units be-

ing stationary and the other adjustable, the latter being the one illustrated.

Although I have illustrated and described only one form of the invention I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims.

Therefore, I do not wish to be limited in this respect but what I do claim is:—

1. The combination with an edge trimming machine, of a stationary blade, means for guiding the scrap from the edge of the sheet being trimmed directly over said stationary blade, downwardly in an inclined direction, the fixed blade being inclined in the same direction toward its edge and a rotor located laterally at the side of the blade and of the path along which the scrap travels having a plurality of cutting blades rotating and cooperating therewith to chop the scrap into small pieces.

2. The combination with an edge trimming machine, of a stationary blade, means for guiding the scrap from the edge of the sheet being trimmed directly over said stationary blade, downwardly in an inclined direction, the fixed blade being inclined in the same direction toward its edge and a rotor having a plurality of cutting blades rotating on an axis parallel to the inclined upper surface of the stationary blade and cooperating therewith to chop the scrap into small pieces.

3. In a scrap chopper, the combination of a stationary blade over which the scrap is adapted to be fed toward and over its cutting edge, a shaft located with its axis in the plane of the surface of said blade which receives the scrap and a rotor on said shaft having cutting blades thereon having their cutting edges in position to cooperate with the stationary blade to chop up the scrap.

4. In a device for deflecting side scrap, the combination with a pair of delivery rolls through which the sheets or packs and side scrap are delivered, of a blade at the end of the pair of rolls for bending the scrap downwardly as it issues from between the rolls, a blade for the lower roll in position to prevent the passage of any pieces of scrap around the bottom roll, a chopper in position to receive the scrap from the first named blade, said chopper comprising a stationary blade over which the scrap is fed, the upper surface of said blade being located on a line substantially tangent to the delivery side of the lower roll, and a rotor having a plurality of cutting blades rotating on an axis parallel to the inclined upper surface of the stationary blade and cooperating therewith to chop the scrap into small pieces.

In testimony whereof I have hereunto affixed my signature.

W. O. FORMAN.