

Sept. 10, 1940.

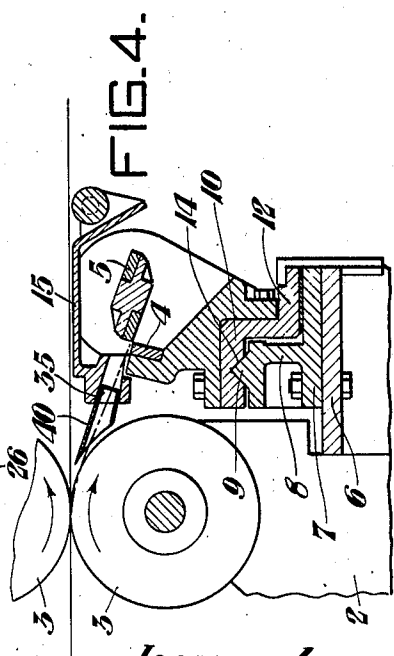
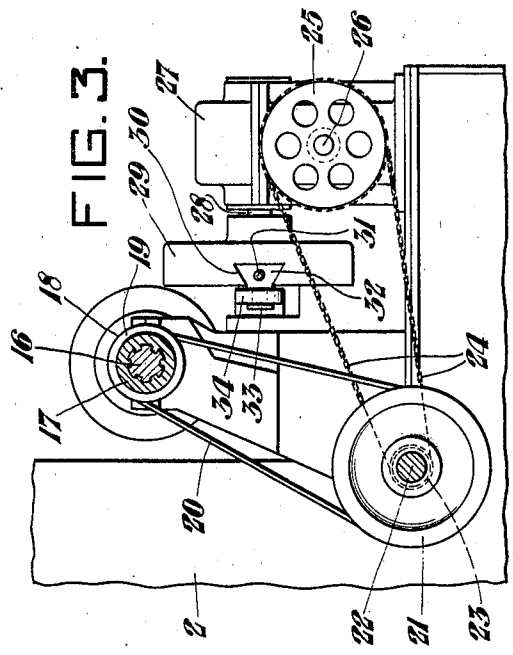
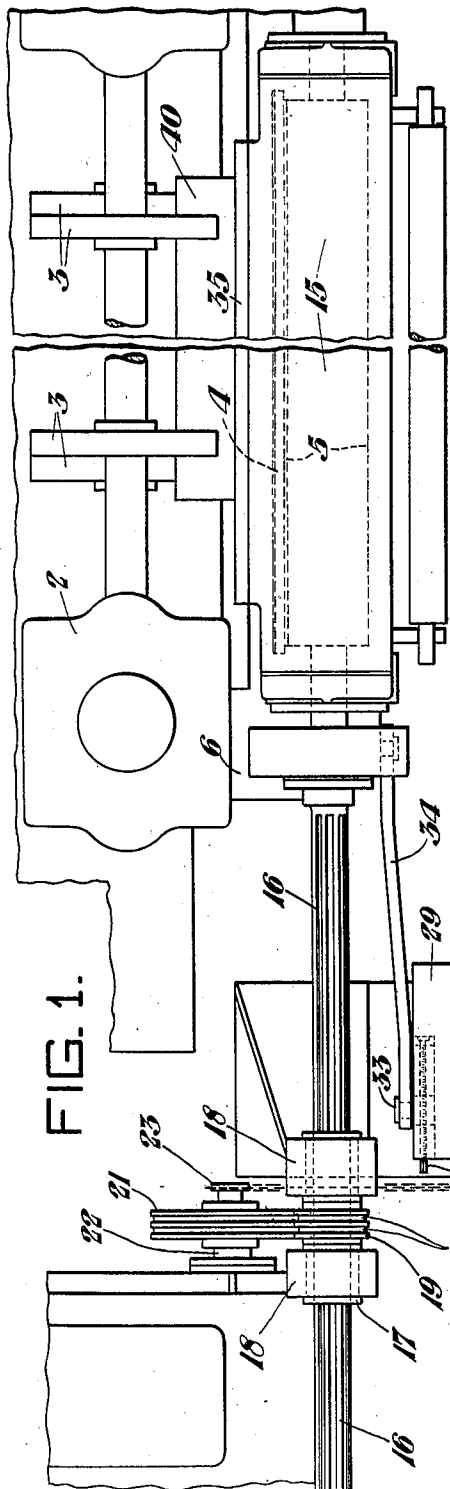
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2,214,160

SCRAP CHOPPER WITH A BLADE HAVING A COMBINED ROTARY AND RECIPROCATING MOTION

Filed July 22, 1938

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

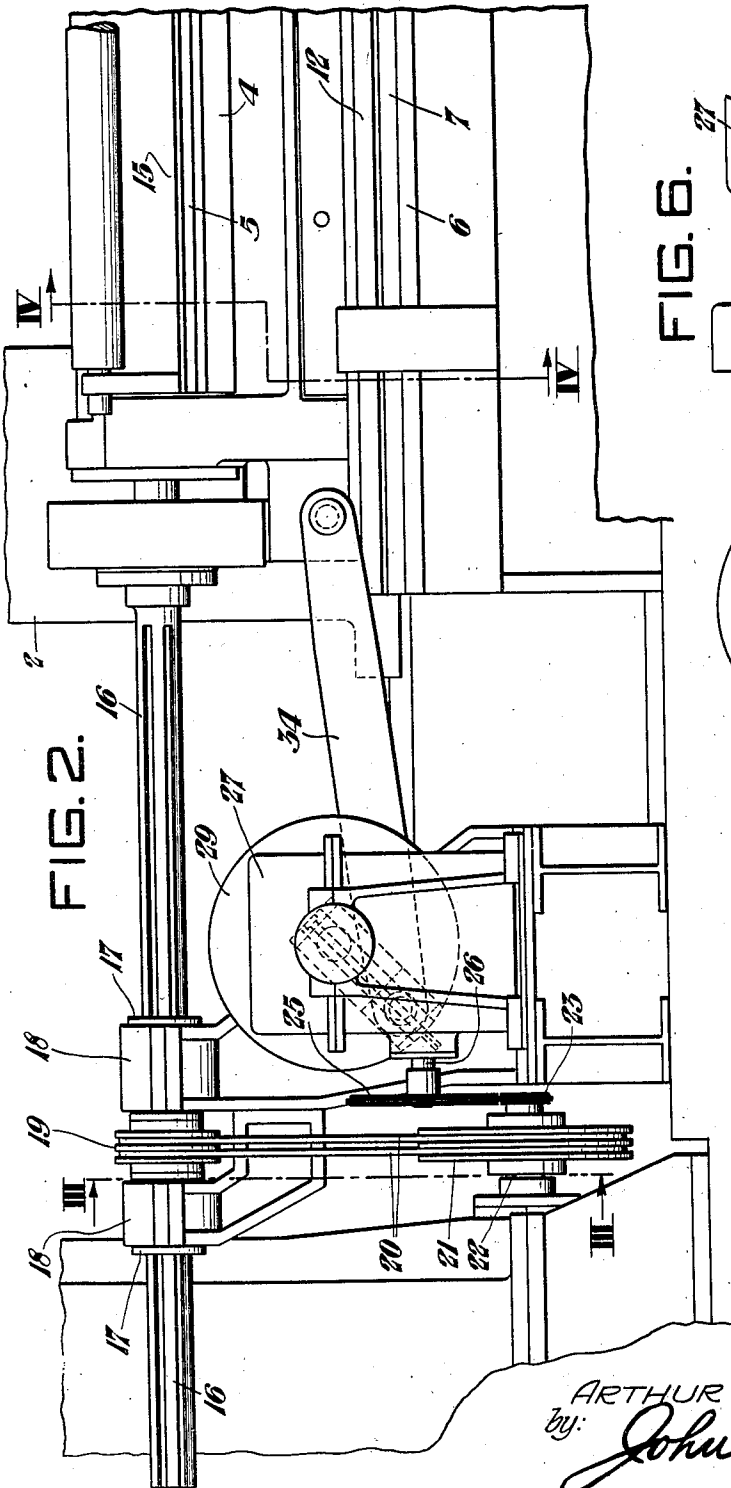


FIG. 2.

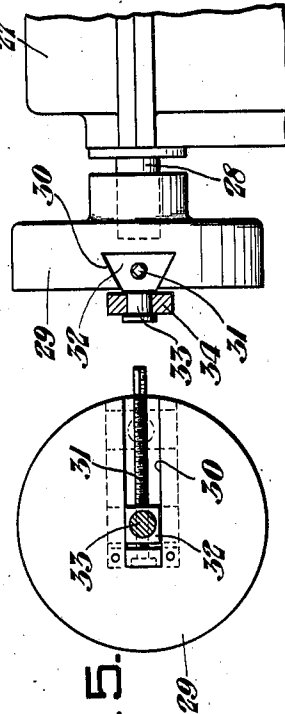


FIG. 5.

FIG. 6.

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UNITED STATES PATENT OFFICE

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SCRAP CHOPPER WITH A BLADE HAVING A COMBINED ROTARY AND RECIPRO- CATING MOTION

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Application July 22, 1938, Serial No. 220,817

3 Claims. (Cl. 164—68)

The present invention relates to a reciprocating scrap chopper.

5 An object of this invention is to provide a cutting mechanism for metallic scrap material in which the cutting may be done over a considerable length of the knife.

Another object of this invention is to control the reciprocating movement of the scrap chopper.

10 Other objects and advantages will become apparent from the description, when read in connection with the accompanying drawings, in which:

Figure 1 is a plan of the present invention;

15 Figure 2 is a side elevation of the showing in Figure 1;

Figure 3 is a section on line III—III of Figure 2;

Figure 4 is a section on line IV—IV of Figure 2;

20 Figure 5 is a side elevation of the scrap chopper adjustment head; and,

Figure 6 is an end view of the showing in Figure 5.

25 In the drawings, the numeral 2 represents a conventional type of side-trimming shear provided with conventional type of cutting knives 3 adapted to trim the edges of strip and the like material.

30 The scrap chopper of the present invention, which is used in conjunction with a conventional type of side-trimming shear 2, comprises a stationary cutter knife 4 and a rotary cutter knife 5. Mounted upon a base 6, and secured thereto, is a bed-plate 7 having an upwardly extending flange 8 and tongue member 9, upon which a slide plate 10 is adapted to move back and forth. The slide plate 10 is provided with a flange 12 adapted to slide on the base plate 7 and a groove 14 adapted to slide on said tongue member 9.

40 Rigidly secured, in any desired manner, to the side plate 10 is a housing 15 which supports the stationary and rotary cutter blades, in any conventional manner. A spline shaft 16, receiving power from a main drive shaft 17, drives the rotary cutter knife 5 and is mounted in suitable bearings 18, of conventional design, between which is supported a pulley-wheel 19 having grooves to receive the V-belts 20 to receive power from the pulley-wheel 21, which is mounted on a power shaft 22. A sprocket-wheel 23 mounted upon the end of said shaft 22 is connected by sprocket chain 24 to a sprocket-wheel 25 mounted on a shaft 26 of a speed reducer unit 27.

55 A low speed shaft 28 extends from the speed reducer and has keyed or otherwise secured

thereon a face plate 29. The face plate 29 is provided, on one face thereof, with a groove 30 within which is adapted to slide, upon an adjusting screw 31, a block 32. Extending from said block 32 is a crank-pin 33 on which is pivotally mounted a connecting-rod 34, said connecting-rod being pivotally connected at its other end to said housing 15.

6 The reciprocating housing 15 is provided on the side adjacent the cutting knives 3 with a transversely extending elongated opening or guideway 35. Rigidly secured, in any conventional manner, within the guideway 35 is a box-like member or guide 40 extending upwardly from the reciprocating housing 15 to a point adjacent the edge of the cutting knives 3 in order that the scrap material coming from the edges of the sheet or plate will be positively guided into contact with the scrap chopper.

7 The operation of the present invention is as follows:

8 As strip material is fed to the trimming shear 2, the knives 3 shear or cut off the edges of the strip or material to the desired width, and the scrap from the edges passes through a box-like guide member 40 into the guideway 35 into contact with the scrap chopper. The scrap material is then cut up into short lengths or pieces by the rotation of cutter blades 5 coating with the stationary cutter blade 4. The speed reducer unit, receiving power through the chain and sprocket mechanism 23, 24 and 25, drives the shaft 28 carrying the face plate 29, and, due to the movement of the crank pin 33 mounted on the adjustable slide block 32, moves the connecting-rod 34 and the housing 15 containing the rotary and stationary cutter blades back and forth across the path of the scrap material coming from the side-trimming shear 2. This reciprocating movement of the scrap chopper permits cutting of the scrap material over a considerable length of the knife, and greater service is obtained from the knives between the periods necessary for grinding. By adjusting the screw 31, the extent of the reciprocating movement of the scrap chopper is controlled in that movement of the adjusting screw 31 produces a movement of said block 32 thereon with the result that the connecting-rod 34, which is pivotally connected to the crank pin 33 and the housing 15 regulates the reciprocating movement of the scrap chopper and affords an opportunity of varying, over a wide range, the points to which the scrap material will be engaged by the coating rotary cutter and stationary cutter blades.

In the scrap chopper now in use, the blades have no reciprocating movement and the scrap material contacts the cutter blades at substantially the same point all the time, which results in the knives becoming dull at the point of cutting. This requires considerable expense incident to resharpening of the knives. Under the present invention, these difficulties are overcome.

10 In a construction as hereinabove described, the reciprocating chopper unit is located very close to the cutting knives 3 and, due to this decrease in the distance between the cutting knives and the scrap chopper unit, "whipping" movement of the
15 material is minimized and "cobbling" of the scrap material is prevented thereby. This eliminates any tendency to burn the cutting knives 3 due to the possibility of "cobbling" of the scrap material.

20 While I have shown and described a specific embodiment of the present invention, it is to be understood that various changes in design may be made without departing from the scope of the present invention, as defined in the appended claims.

25 I claim:

1. The combination with a side-trimming shear effective to cut off an elongated piece of scrap from material fed thereto, of means for chopping said scrap into smaller pieces comprising a carriage movable transversely of the line of
30 travel of the scrap ejected by said shear, coacting fixed and rotary cutter blades supported by said carriage and movable therewith transversely of the scrap, whereby wear on the cutter blades is

distributed over a considerable portion of the length thereof so that the frequency of resharpening said cutter blades is minimized.

2. The combination with a side-trimming effective to cut off an elongated piece of scrap
5 from material fed thereto, of means for chopping said scrap into smaller pieces comprising a carriage, means for adjustably reciprocating said carriage transversely of the line of travel of the scrap ejected by the shear, coacting fixed and
10 rotary blades supported by the carriage and movable therewith transversely of the scrap, whereby wear on said cutter blades is distributed over a considerable portion thereof so that the frequency of resharpening said cutter blades is mini-
15 mized.

3. The combination with a side-trimming shear effective to cut off an elongated piece of scrap from material fed thereto, of means for chopping said scrap into smaller pieces comprising
20 a carriage movable transversely of the line of travel of the scrap ejected by said shear, coacting fixed and rotary cutter blades supported by said carriage and movable therewith transversely
25 of the scrap, whereby wear on the cutter blades is distributed over a considerable portion of the length thereof so that the frequency of resharpening said cutter blades is minimized, the parts being so constructed and arranged that the rotary
30 blade of the scrap chopper turns on an axis substantially parallel with the plane of the material being cut.

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