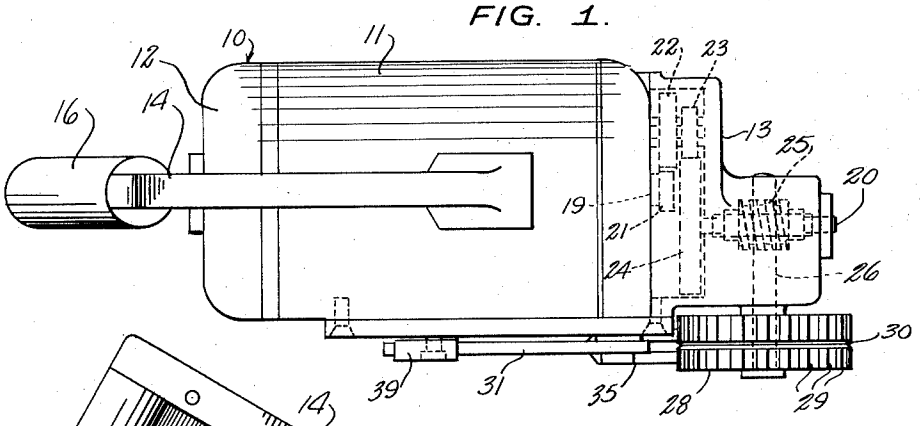
Oct. 9, 1951 W. N. BIRD ET AL 2,570,195

PORTABLE SHEET MATERIAL CUTTER

Filed Jan. 24, 1950

FIG. 1.



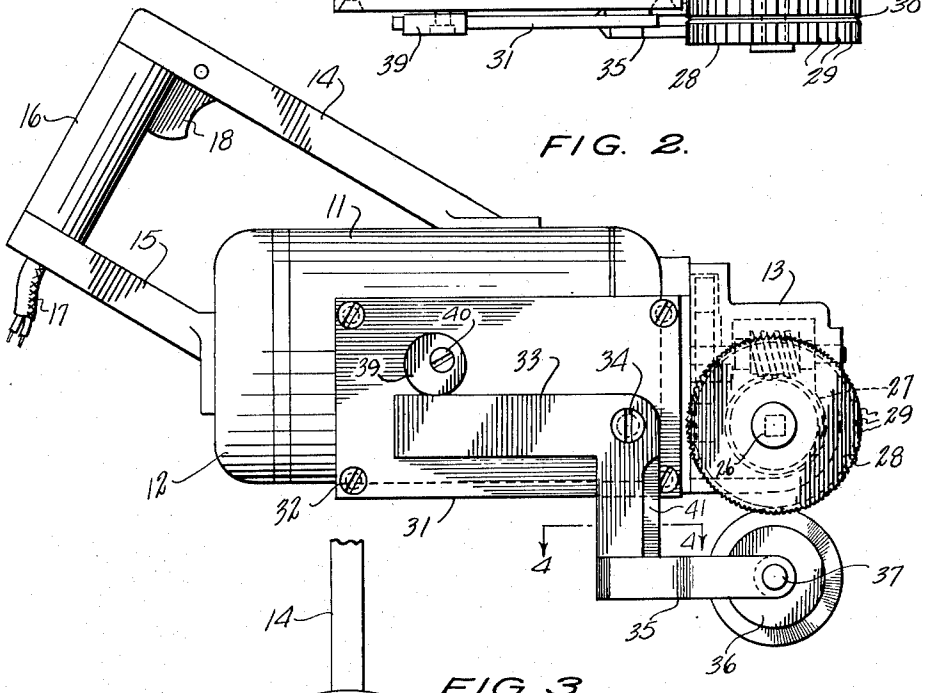
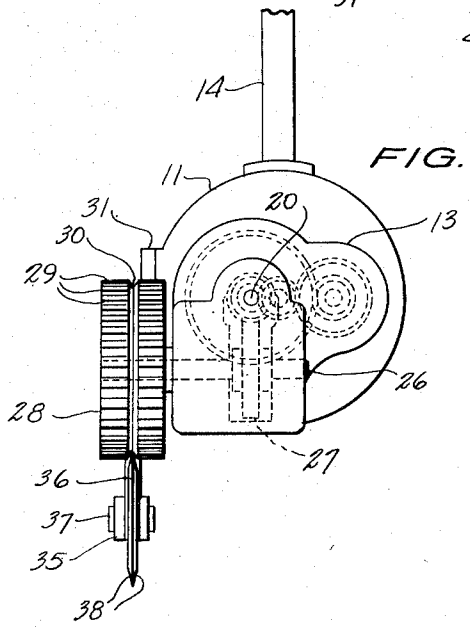


FIG. 2.

FIG. 3.



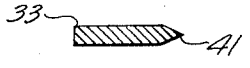


FIG. 4.

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PORTABLE SHEET MATERIAL CUTTER

Warren N. Bird and Andrew J. Comstock,
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Application January 24, 1950, Serial No. 140,222

2 Claims. (Cl. 30—264)

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This invention relates to sheet material cutters and more particularly to a portable, power operated cutter for cutting sheet material such as asphalt roofing and shingles, building paper and linoleum.

It is among the objects of the invention to provide an improved power operated hand tool for cutting sheet material such as asphalted roofing paper or shingles, building paper or felt and linoleum, which tool is of small size and light weight so that it is easy to handle and does not cause excessive fatigue of the operator, has ample power for fast cutting action and is self-propelling and easy to guide even on arcs of short radius, and which is simple and durable in construction, economical to manufacture and not subject to clogging or other malfunctioning in use.

Other objects and advantages will become apparent from a consideration of the following description and the appended claims in conjunction with the accompanying drawing wherein:

Figure 1 is a top plan view of a portable cutter illustrative of the invention;

Figure 2 is a side elevation of the cutter illustrated in Figure 1;

Figure 3 is a front end elevation of the cutter illustrated in Figures 1 and 2; and,

Figure 4 is a cross sectional view on the line 4—4 of Figure 2.

With continued reference to the drawing the cutter comprises a motor unit, generally indicated at 10, including a substantially cylindrical motor housing 11, a cap 12 secured to and covering one end of the housing 11 and a reduction gear housing 13 secured to and covering the opposite end of the motor housing. A pair of handle brackets 14 and 15 are secured one to the housing 11 and the other to the cap 12 and extend in spaced apart, substantially parallel relationship to each other at an inclination to the longitudinal center line or axis of the motor and a handle 16 is connected between the brackets 14 and 15 at the ends of the latter remote from the motor unit. An extension cord 17 leads through the handle 16 to the motor and a switch 18 is carried by the bracket 14 adjacent the handle 16 so that it can be operated by one finger of a hand gripping the handle 16.

A motor shaft 19 projects from one end of the motor housing 11 into the reduction gear housing 13 and a shaft 20 is journaled in the housing 13 for rotation about an axis substantially parallel to the axis of rotation of the motor shaft. A reduction gear train is drivingly connected between the motor shaft 19 and the shaft 20 and may include a small spur gear 21 secured on the motor shaft and meshing with a larger spur gear 22 journaled on an idler gear shaft and drivingly connected to a smaller spur gear 23 which in turn meshes with a large spur gear 24. A worm 25 is secured on the shaft 20 and a shaft or axle 26 is journaled in the reduction gear housing 13 for rotation about an axis disposed substantially at right angles to the axis of rotation of the shaft 20 and worm 25. A worm wheel 27 secured on the axle 26 meshes with the worm 25 so that the axle 26 will be driven when the motor is placed in operation by closing the switch 18.

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A roller 28 is mounted on the axle 26 outside of the reduction gear housing 13 and this roller has a substantially cylindrical periphery provided with uniformally spaced, transversely extending serrations 29 and an annular peripheral groove 30 of V-shaped cross section disposed substantially at the mid-width location of the roller periphery.

A flat plate 31 which may conveniently be of rectangular shape, is secured to the side of the motor housing 11 adjacent the roller 28 by suitable means such as the screws 32 and a bell crank lever 33 is pivotally secured at its angle to this plate by suitable means, such as the pivot screw 34. The screw 34 is located near the end of the plate 31 adjacent the roller 28 and the bell crank lever has two legs disposed substantially perpendicular to each other. A fork 35 is secured to the bell crank lever 33 at one end of the bell crank lever and extends past the roller 28. A cutting disc 36 is journaled in the fork 35 at the end of the fork remote from the bell crank lever by a pivot pin or axle 37 and this disc is marginally bevelled on both sides, as indicated at 38 in Figure 3 to provide a peripheral cutting edge which is opposed to the annular groove 30 in the roller 28. An eccentric cam 39 is rotatably mounted on the plate 31 by suitable means, such as the pivot screw 40 and contacts the bell crank lever 33 near the end of the bell crank lever opposite the fork 35 to move the disc 36 toward the roller 28.

With the disc 39 adjusted so that its cutting edge extends slightly into the groove 30 of the roller 28, if the motor be placed in operation to drive the roller 28 and if a piece of sheet material be placed between the roller and the disc the adjacent surface of the piece of sheet material will be gripped by the serrations 29 of the roller and the sheet material will be drawn past the roller and the cutting disc and severed by the disc.

The leg of the bell crank lever **33** to which the fork is attached is made thin and is also sharpened or bevelled along its edge adjacent the disc **36**, as indicated at **41** so that this leg of the bell crank lever will pass easily through the cut in the material made by the cutting disc **36**. The fork **35** is made as short as possible so that the two can be guided around an arc in the material being cut.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are, therefore, intended to be embraced therein.

What is claimed is:

1. A portable power operated hand tool comprising a motor housing, a reduction gear housing on one end of the motor housing, a motor shaft extending into said reduction gear housing, a worm journaled in said reduction gear housing for rotation about an axis substantially parallel to the axis of rotation of said motor shaft, a reduction gear train between said motor shaft and said worm, an axle journaled in said reduction gear housing for rotation about an axis substantially at right angles to the axis of rotation of said worm, a worm gear secured on said shaft within said housing and meshing with said worm, a roller secured on said axle outside of said reduction gear housing and having a transversely serrated cylindrical periphery and an annular peripheral groove substantially at the mid-width location of the cylindrical periphery, a flat plate secured to the side of said motor housing adjacent said roller, a bell crank lever pivotally secured at its angle to said plate, a fork secured at one end to said bell crank lever at one end of the latter and extending past said roller, a cutter disc journaled in said fork and peripherally opposed to the groove in said roller, and a cam rotatably mounted on said plate and engaging said bell crank lever near the other end of the latter for moving said disc toward said roller.

2. A portable power operated hand tool for cutting sheet material comprising a motor unit including a motor housing, a reduction gear housing at one end of said motor housing and a motor shaft projecting into said reduction gear housing, a handle secured to said motor housing, an axle journaled in said reduction gear housing for rotation about an axis substantially at right angles to the axis of rotation of said motor shaft, a reduction gear train connected between said motor shaft and said axle, a roller secured on said axle outside said reduction gear housing, said roller having a substantially cylindrical periphery provided with transversely extending serrations and an annular radial groove, a bell crank lever pivotally connected at its angle to said motor housing, a fork secured at one end to said bell crank lever at one end of the latter and extending from said bell crank lever past the periphery of said roller, a cutting disc journaled in said fork at the end of the latter remote from said bell crank lever and having a peripheral cutting edge opposed to the groove in said roller, and adjustable means carried by said motor housing and engaging said bell crank lever near the other end of the latter to force said cutting disc toward said roller.

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No references cited.