March 2, 1965 G. F. OHLENROTH 3,171,313

ENDLESS SAW BAND WITH LIFT MEANS AND COLLAPSIBLE FRAMEWORK

Filed May 17, 1963 2 Sheets-Sheet 1

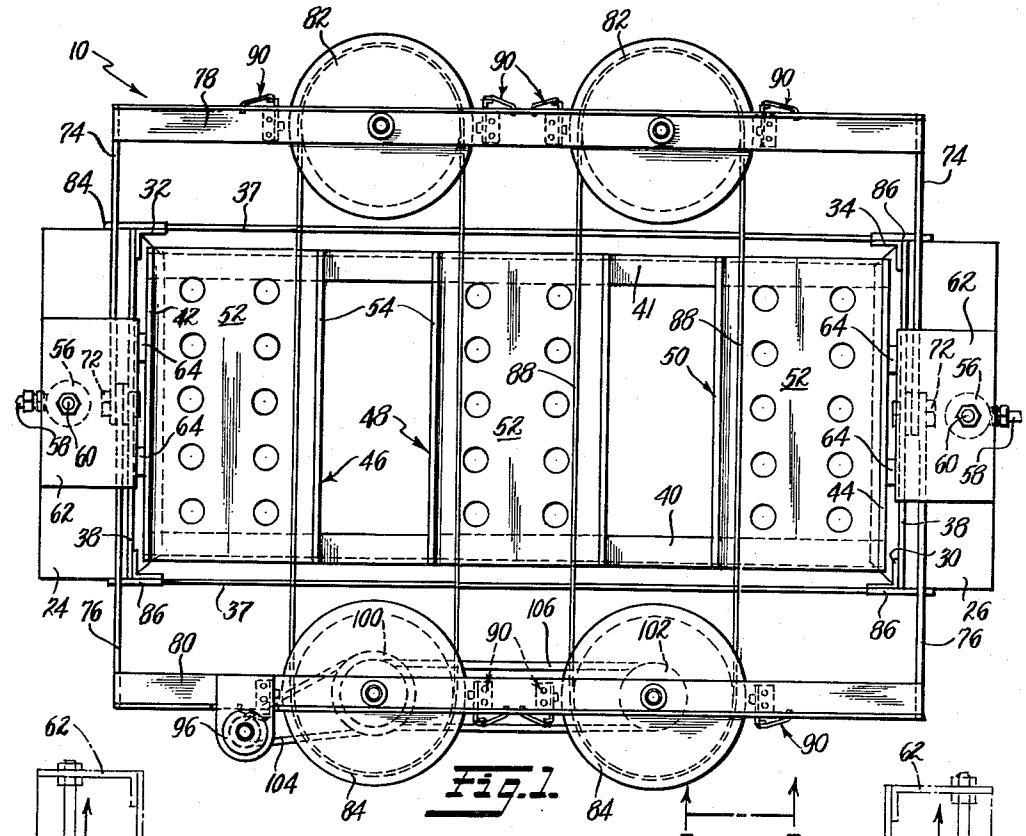


Fig. 1.

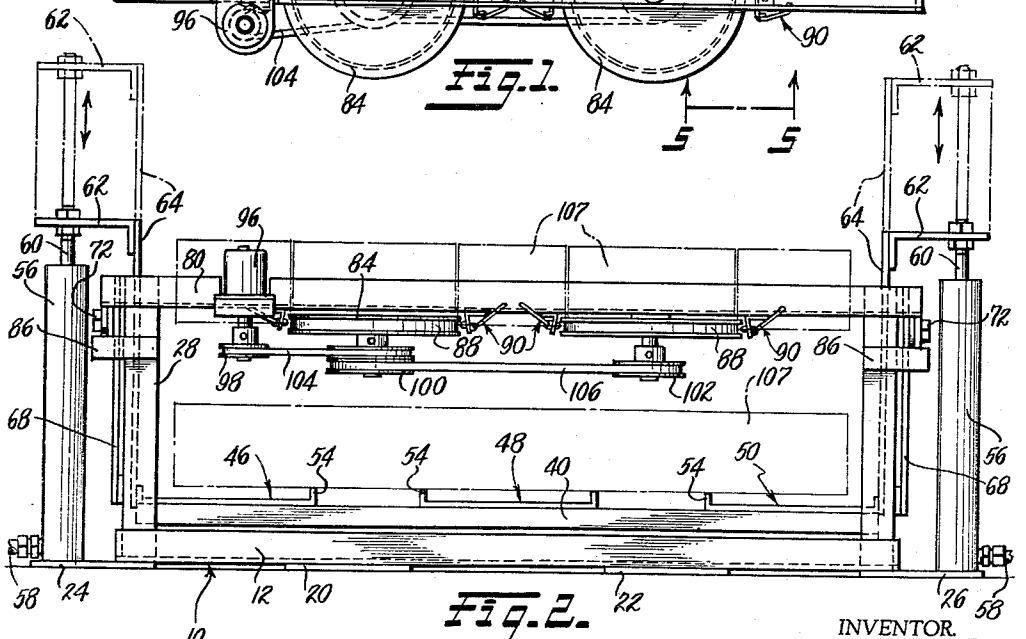


Fig. 2.

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Fig. 5.

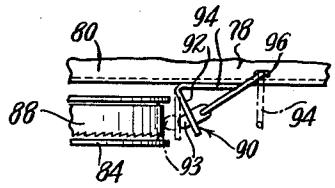


Fig. 4.

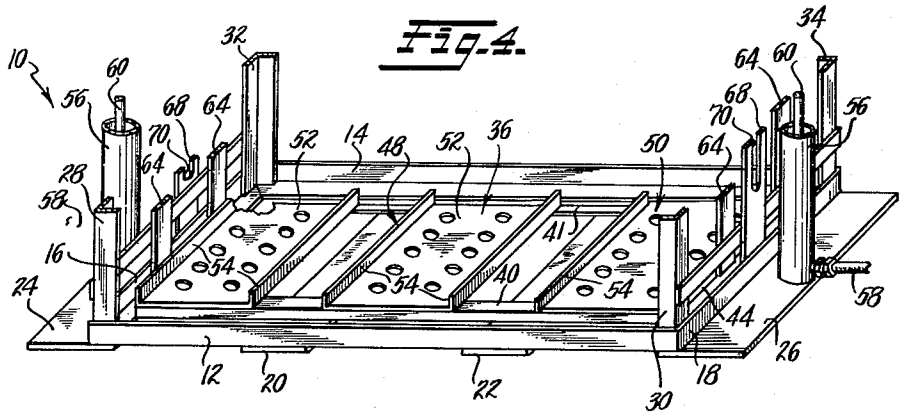
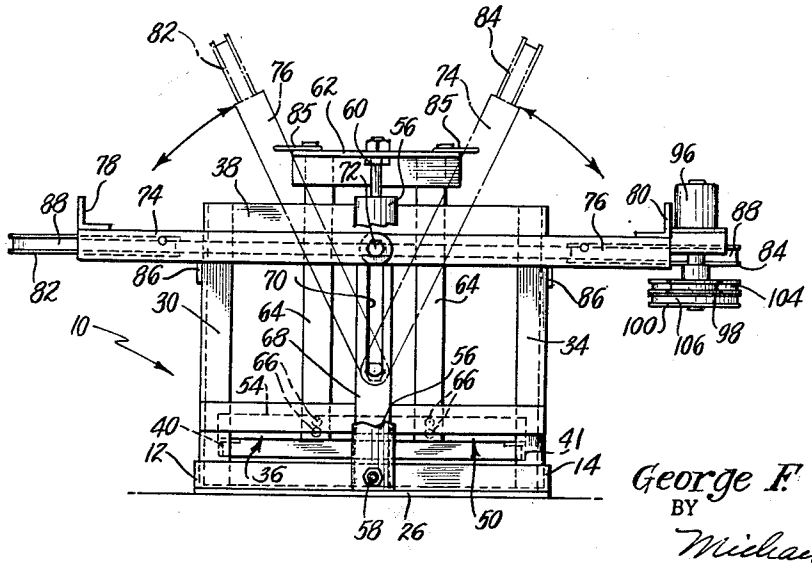


Fig. 3.



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ENDLESS SAW BAND WITH LIFT MEANS AND COLLAPSIBLE FRAMEWORK

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7 Claims. (Cl. 83—201.13)

This invention relates to a cutting machine.

More specifically the invention relates to a mobile cutting apparatus particularly adapted to cut up large masses of materials into smaller easily handled smaller sections.

The invention is particularly designed to process junked automobile bodies from which useful portions such as seat cushions, trimmings and the like have been removed and to cut the remainder in one pass of the body through cutting blades into small segmental portions which may be subsequently conveniently handled.

In general the invention comprises a collapsible apparatus which may be transported to a place whereat the apparatus is to be utilized, the apparatus including a lift to raise an automobile body from substantially ground level up against band saws running in a horizontal plane to make vertical cuts through the body to separate it into segments, as the lift rises.

It is an object of the invention to provide a cutting apparatus which shall be particularly useful in handling massive bodies, as automobile bodies, to be cut up into segments.

It is a further object of the invention to provide means to facilitate the positioning of the body on the lift and to provide a structure whereby a complete cut may be made through the body without injury to the apparatus itself.

Further objects will become apparent after consideration of the following specifications and claims when taken in consideration with the accompanying drawings in which:

FIG. 1 is a plan view of the cutting machine, hidden parts being shown in dotted lines.

FIG. 2 is a rear elevational view of the machine with hidden parts and a portion of a lift mechanism shown in dotted lines, the body to be cut being shown in broken lines before and after cutting the body into segments.

FIG. 3 is a side elevational view with hidden parts shown in dotted lines and a cutter belt support and drive mechanism in a collapsed condition, a motor and pulley drive mechanism being omitted for the sake of clarity.

FIG. 4 is a perspective view of the lower portion of the cutting machine and

FIG. 5 is a detail of detent mechanism for a band saw.

Now referring to the drawings in greater detail, at 10 is indicated a box frame comprised of front and rear angle irons 12 and 14 and side angle irons 16 and 18, all the angle irons being welded or otherwise secured to each other. To strengthen the box frame, cross bars 20 and 22 are provided, suitably secured to the under horizontal flanges of the angle irons 12 and 14. Fastened to the under flanges of the angle irons 16 and 18 are mounting plates 24 and 26. The box frame construction is thus formed and reinforced in order to make a light transportable yet strong supporting structure for the lift and cutting mechanism to be described. In fact the whole cutting machine is constructed to be as light and strong as possible wherefore bars and angle irons and perforated members are utilized wherever possible rather than heavy solid plates.

Welded or otherwise suitably secured to the angle irons, at the corners of the frame, are four upright angle irons 28, 30, 32 and 34, the flanges of these angle irons forming guides for the corners of a lift 36. The upper ends of the upright irons are connected by front and

rear rails 37. At the ends of the frame the upright irons are connected together at the upper ends of the upright irons by rails 38.

The lift is made up of front and rear angle irons 40 and 41, and side angle irons 42 and 44 all suitably secured to each other, the horizontal flanges of the angle irons being uppermost and the vertical flanges of the irons being outermost of the machine. Welded or otherwise secured to the upper horizontal faces of the angle irons of the lift are the channel bars 46, 48 and 50 whose webs 52 are preferably perforated for lightness and clearance of debris and whose flanges 54 are upstanding to provide clearance for the band saws, as will be described.

In order to raise and lower the lift, motors are provided. In the exemplification of the invention, the motors are fluid motors, each indicated as 56, of the single acting type. These motors are suitably fastened, one each, centrally of the width of the machine on the mounting plates 24 and 26. Both cylinders are connected by hose lines 58 to a single valve and a source of supply, not shown, to simultaneously admit fluid pressure and to release fluid pressure from the cylinders. The fluid may be either hydraulic or gaseous. Each piston 60 of the motors has fixedly secured to the upper end thereof a flanged cross plate 62 to which are attached the upper ends of hangers 64. The lower ends of the hangers are affixed to the lift by any suitable means, as by welding or screws 66. Thus when the fluid motors are energized, the lift will be raised and when deenergized, the weight of the lift and appurtenant elements will cause the lift to sink until the lift comes to rest in the box frame. If desired, the corners of the lift where they engage the flanges of the uprights may be provided with shoes or rollers or both. These have not been shown for the sake of simplicity.

Mounted on each plate, intermediate the motor and lift is a guide bar 68 slotted as at 70 to accommodate a slidable pivot bolt 72 on which there is pivoted the perforated ends of a pair of lever arms 74 and 76. The outer end of each lever arm 74 is connected rigidly with the outer end of the corresponding lever arm at the other end of the machine by a front support which may be a channel bar 78. Similarly the outer ends of lever arms 76 are rigidly connected by a similar support bar 80. The front support bar 78 supports a number of grooved pulleys 82, one for each pair of flanges 54 on adjacent channel bars, as for example the adjacent flanges on channel bars 46 and 48. The rear support bar 80 similarly supports grooved pulleys 84. The pulleys 82 and 84 all lie in one plane, parallel to the lift, when the bolts 72 reach the upper limits of the slots 70. At that time, the arms 74 and 76 are in alignment. The arms 74 and 76 slidably pivotally engage projections 86 extending from each of the upright angle irons. Thus, by manual operation the arms 74 and 76 can be swung from an inoperative position wherein the companion pulleys 82 and 84 are brought near each other for compacting the width of the machine, whereby it may be readily transported through city streets, or to an operative position wherein the pulleys extend substantially beyond the front and rear boundaries of the lift and with the pulleys in parallelism to one another. In either position of the arms, catch mechanism may be utilized to hold parts in place, or the nuts on the bolts 72 can be tightened for this purpose. In the compacted position of the machine, the two arms 74 and 76 of a pair may, for example, be latched to the cross plates 62 by latches 85 to hold them with the pulleys substantially within the front and rear confines of the lift boundaries and independently of any support offered by the projections 86.

Trained about each pulley 82 and its companion pulley 84 is a band saw blade 88 which may be of any con-

ventional type as a wire saw or a band with saw teeth on the lower edge thereof. When the arms 74 and 76 are extended, each wire or band saw is held taut within the associated grooved pulleys. When the pivot bolts 72 are to be lowered in the slots, the band saw is held to the pulleys by releasable clamps 90, one on each side of every pulley. Each clamp comprises a spring finger 92 whose one end is fixed on the support bar 78 or 80 and whose opposite end is provided with a clamping pin 93 opposite the groove in a pulley and normally forcing the saw blade against the pulley. Pivotally attached to the spring finger is a hook 94 the free end of which is adapted to be engaged in a perforation 96 in the associated support angle bar to hold the finger free of the blade. Obviously when the machine is set up for operation, the hooks 94 are all engaged with the perforations.

In order to drive the pulleys there is provided a conventional electric motor 96 and its control, the motor being mounted on the rear support bar 80 with its armature shaft projecting below the bar and mounting a belt pulley 98. The band saw pulley 84 next adjacent the motor has a spindle extending below the bar 80 on which is mounted a double belt pulley 100. The other band saw pulley 84 (or band saw pulleys, if more be provided) has a belt pulley 102 on its spindle, said spindle also extending downwardly below the bar 80. Drive belting 104 and 106 interconnect the belt pulleys, in a conventional manner.

The runs of the band saw are so located relative to the flanges 54 that when the lift is at the upper limit of its motion as determined by the stroke of the fluid motors, the runs of a band saw embrace the flanges and are positioned below the level of the tops of the flanges but above the floor level of the channel bars 46, 48 or 48, 50, as the case may be. The result is that the body or material to be cut supported on the lift is cut completely therethrough. The body is designated as 107 in FIG. 2 and is shown in broken lines both in uncut and cut condition. When the lift is allowed to drop, the cut segments can be very easily removed.

The flanges 54 not only permit complete severance of a body, but facilitate the emplacement of an automobile body on the lift through the intermediary of a fork elevator. The tines of the fork which support a body can pass in the space afforded between the top levels of the flanges 54 and the top surfaces of the webs 52 are in the lateral spaces between the channel bars 46, 48 and 48, 50.

By reason of the above disclosed structure, it is possible to transport the machine in a collapsed condition, as shown in FIG. 3, on a normal width transport without interference with normal traffic flow. It is furthermore possible to easily set the machine up for operation at any destination whereat electric power is available for driving the motor 80 and for driving the motor which drives the compressor supplying fluid to the fluid motors 56. Although not shown, the second motor and fluid compressor may be a conventional unit either mounted on plate 24 or 26 or carried along as a separate unit with the cutting machine.

Having described the invention, what is claimed as new is:

1. A cutting mechanism comprising a support, a lift movable vertically in said support, cutting mechanism mounted on said support, said cutting mechanism comprising a pair of pulleys and an endless band cutter trained about said pulleys, a collapsible framework mounting said pulleys, said framework comprising a pair of

longitudinally extending parallel supporting bars each supporting one pulley of the pair of pulleys, end arms fixed to each supporting bar with the arms of one bar extending toward and overlapping the arms of the other bar, a pivot bolt extending through the overlapped areas of the arms, a slotted upright at each longitudinal end of the machine, said bolt passing through the arms and the slot of the adjacent upright, means for securing the arms in position with the bolt in an adjusted position of the slot, projections on the support pivotally slidably supporting the arms, means for operating the lift, and means for driving the pulleys.

2. A cutting machine comprising a support, a lift moveable vertically in said support, cutting mechanism comprising an endless saw band in a fixed plane parallel to the supporting surface of the lift and having cutting edges moveable in said plane and overlying the lift and fixed in said plane during cutting, means for operating the lift to feed the material on the lift into the saw blades and beyond the plane of said band, said lift comprising channel bars with the flanges of the channel bars extending upwardly parallel with the runs of the band but out of vertical alignment with runs of the band, said flanges being moveable through the plane of the band, and means for driving the endless band.

3. The structure of claim 2, wherein there are a plurality of saw bands lying spaced from each other in said plane, the runs of said bands all lying in the same plane and parallel to each other.

4. A cutting machine as defined in claim 2 wherein the support is provided with a mounting plate at each longitudinal end thereof and the means for operating the lift comprises a pair of fluid operated motors with pistons, one motor affixed to each mounting plate and drive connections between each piston and the lift.

5. A cutting machine as defined in claim 4 wherein each driving connection includes a cross plate secured to the upper end of a piston and a pair of hangers interconnecting the cross plate and the lift.

6. A cutting mechanism comprising a support, a lift moveable vertically in said support, cutting mechanism comprising a pair of pulleys and an endless saw band trained about said pulleys, a collapsible foldable framework mounting said pulleys, said framework in operative position of parts having portions extending laterally beyond the support, and means supporting said framework on the support for collapsing movement thereof to bring the extreme lateral portions of the framework closer to each other and within the confines of said support.

7. The structure of claim 6 wherein the collapsible framework comprising two parallel bars each supporting a plurality of said pulleys, there being a plurality of saw bands trained about said pulleys, an electric motor mounted on one of said bars, and drive means interconnecting said motor with the pulleys on the same bar.

References Cited by the Examiner

UNITED STATES PATENTS

2,806,490	9/57	Kennedy	143—27 X
2,851,072	9/58	Gerjets	143—25
2,921,492	1/60	Worth	143—47.2
2,978,777	4/61	Carlsson	83—926.2
3,072,158	1/63	Duarte	143—47.8
3,100,414	8/63	Watkins	83—437
3,142,321	7/64	Orescan	143—21

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