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Rothi et al.

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[54] **ROOFING REMOVAL PROCESS AND MACHINE**

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[52] **U.S. Cl.**.....**299/10,** 15/93 R, 30/170, 172/19, 173/24, 299/37

[51] **Int. Cl.**.....**E04d 15/00**

[58] **Field of Search**.....299/37, 10; 30/170; 15/93 R; 172/19, 20

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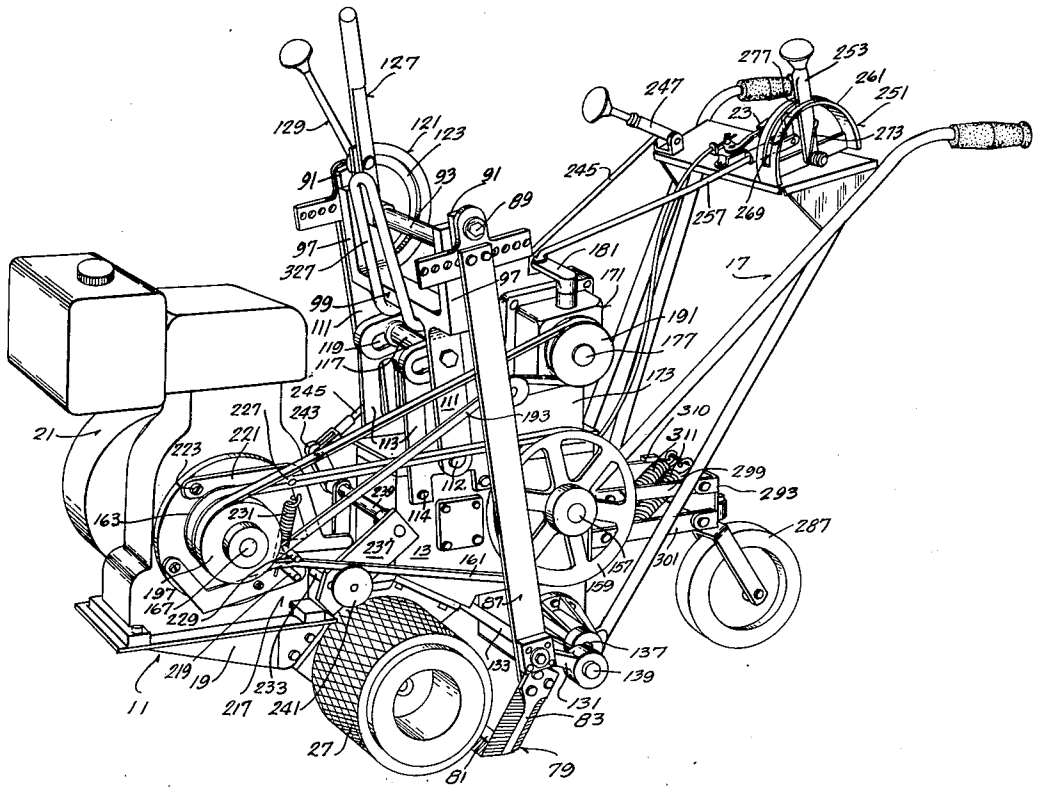
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[57] **ABSTRACT**

Disclosed herein is a method for stripping roofs and a roof stripping machine which includes a double-edged blade reciprocal along the path of advance of the roof stripper and means for independently advancing the stripper forwardly and rearwardly at speeds independent of blade reciprocation and of the rate of blade reciprocation and simultaneously with such reciprocation.

36 Claims, 10 Drawing Figures



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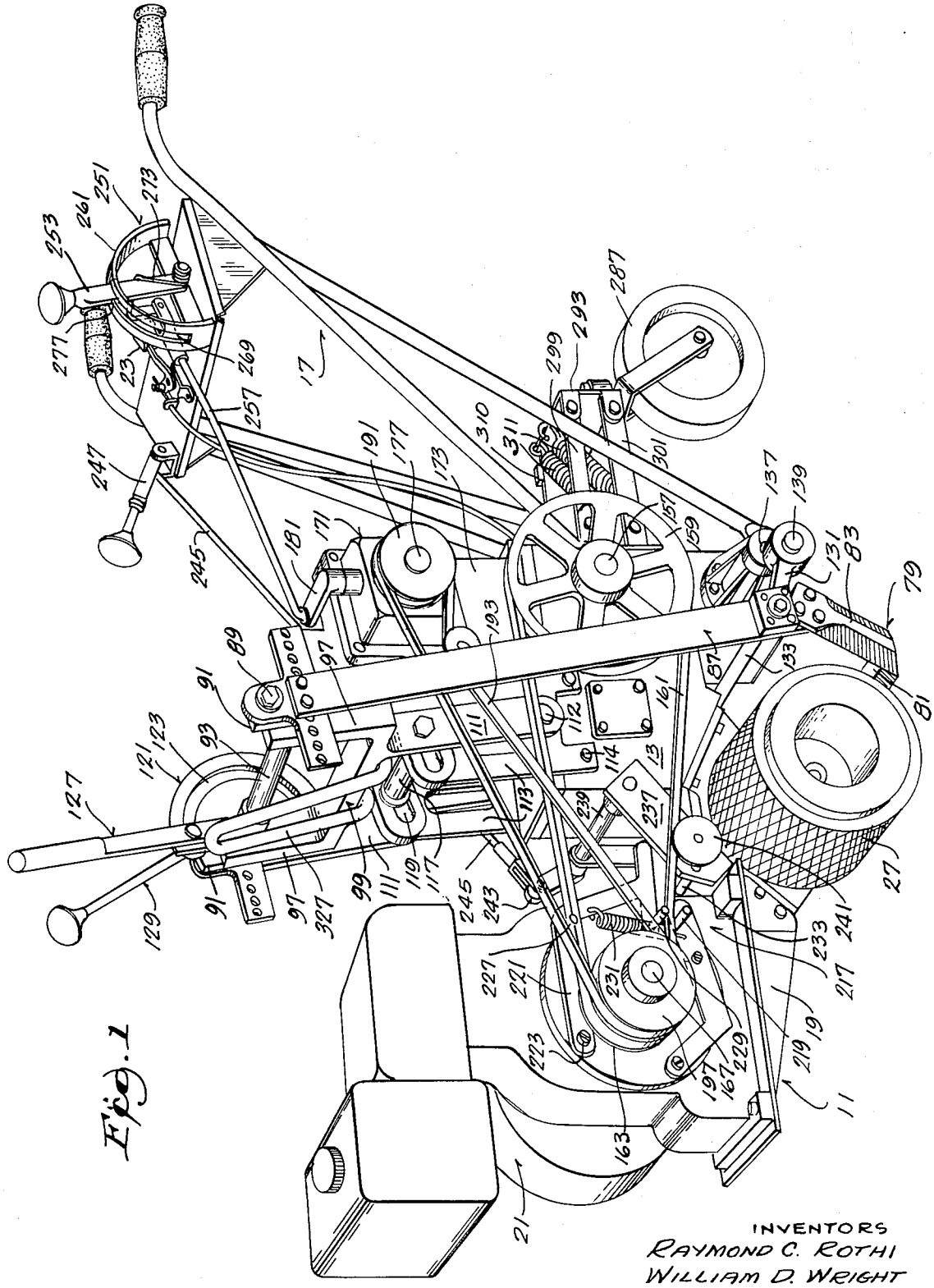


Fig. 1

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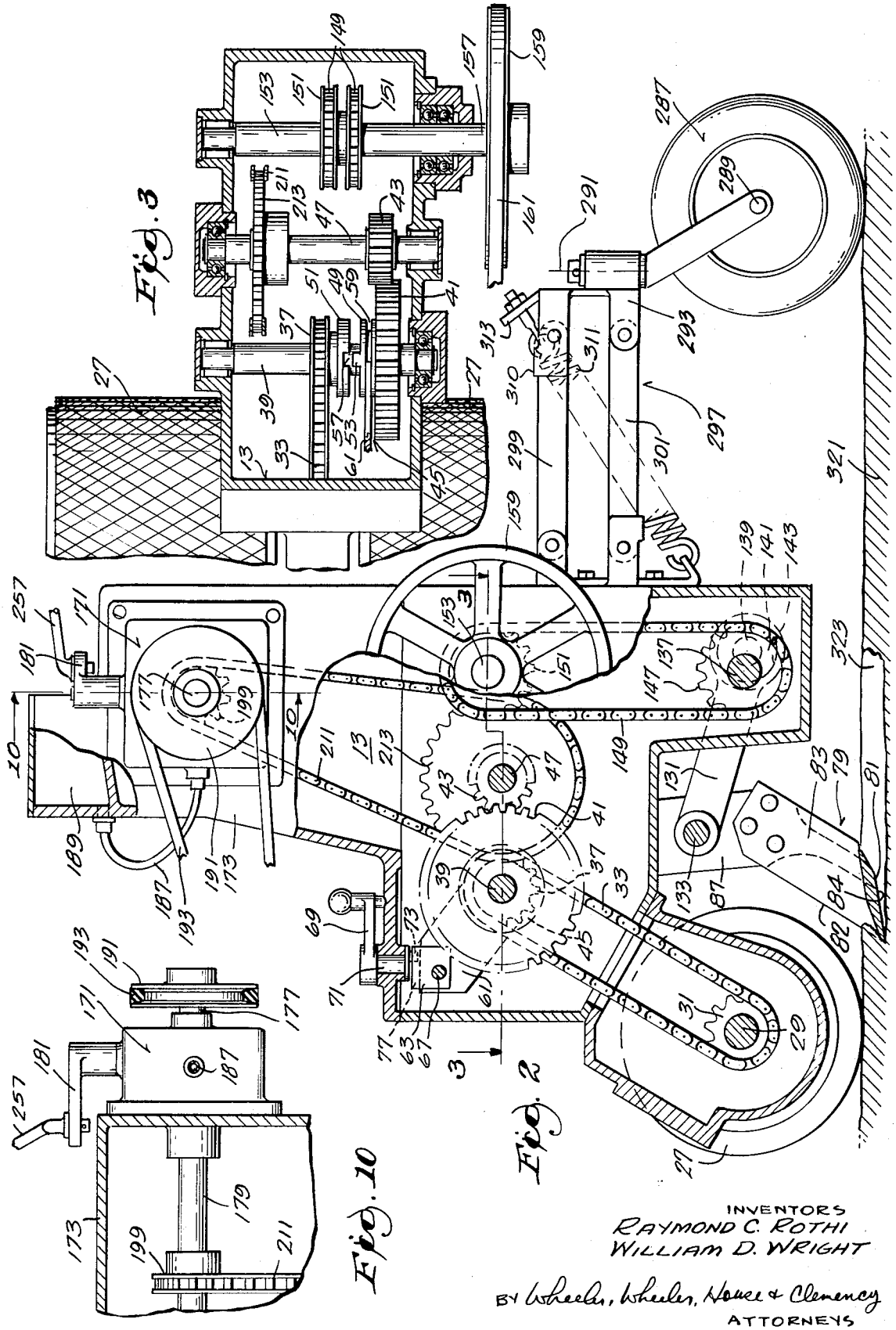


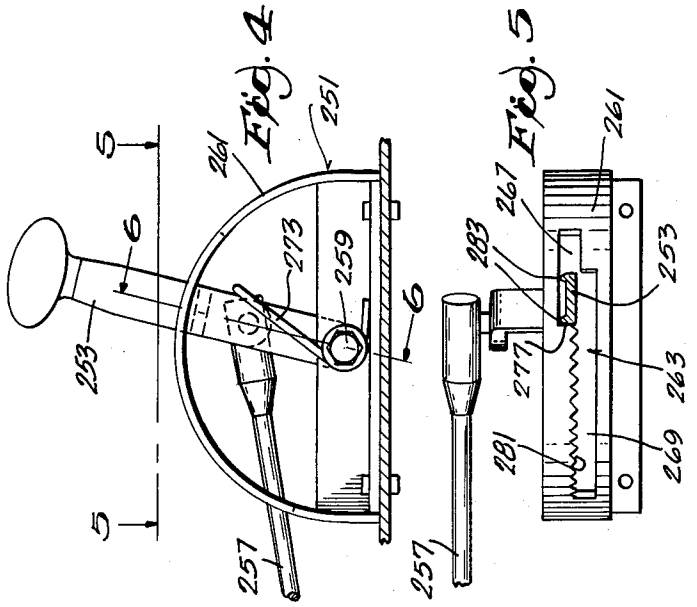
Fig. 3

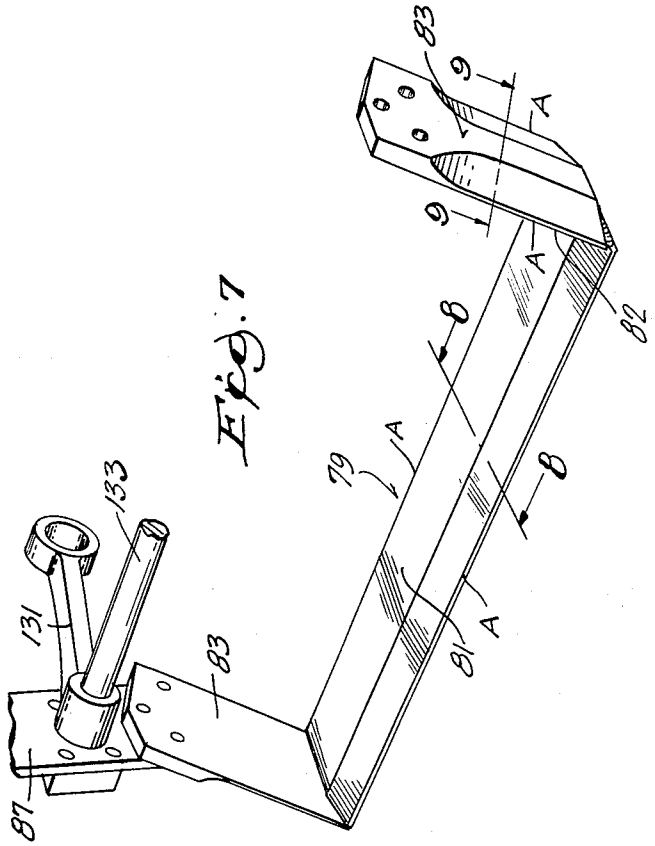
Fig. 2

Fig. 10

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ROOFING REMOVAL PROCESS AND MACHINE

BACKGROUND OF THE INVENTION

In the past, stripping of roofing material from roofs to reduce the weight of the roof in preparation for the application of new roofing material has involved many long and tedious hours of manual labor. For many years prior to the invention disclosed herein, there was no known machine commercially available for removing roofing material from a roof.

SUMMARY OF THE INVENTION

The invention involves the discovery that, with appropriate structural modifications, machines which are similar to sod cutters can be effectively employed. In this last regard, it has been found that a double-edged blade which is simultaneously translated horizontally and reciprocated horizontally can be effectively utilized to strip a roof if the roof is previously cut to provide an opening or hole having sufficient depth and area to locate the blade therein at the desired cutting depth.

Accordingly, the invention provides, in part, a method of stripping roof material comprising the steps of cutting an opening in a roof, locating in the opening a cutting blade situated below the top of the roof material and simultaneously reciprocating and translating the blade in the horizontal direction.

Also in accordance with the invention, there is provided a machine for stripping roofs which includes a wheel arrangement for supporting and horizontally advancing the machine, a cutting blade which, in the preferred construction is double-edged, a structure for supporting the cutting blade and for horizontally reciprocating the blade at the same time the machine is horizontally advancing, and independently operated power delivery control mechanisms interposed between an engine and each of the wheel arrangement and the blade reciprocating drive.

In this last regard, the power driven control mechanism between the engine and the drive wheel or wheels affords speed and direction control, including neutral, independently of the engine and without affecting the drive to the reciprocating blade. It is preferred that the power delivery control mechanism be a hydrostatic transmission unit with appropriate controls. Also included, in series with the hydrostatic unit is a clutch which affords disconnection of the drive wheels from the hydrostatic unit to afford free wheeling of the machine when the engine is not running.

The power delivery control mechanism interposed between the engine and the blade permits discontinuance of blade operation without affecting power delivery to the drive wheel, thereby affording powered transport of the machine without reciprocating operation of the blade.

Employment of a sharp edge at the rear of the blade, as well as at the front thereof, together with provision for traction or drive in reverse is particularly useful in connection with stripping of roofs having upstanding walls along the outer roof edges. In this regard, the ability to run in reverse and to cut in reverse is particularly helpful in removing the machine from against such walls.

In general, one of the principal objects of the invention is the provision of a superior method for stripping roofing material from a roof.

Another principal object of the invention is the provision of a machine for stripping roofing material from a roof.

A still further object of the invention is the provision of a roof stripping machine having independently controlled traction and blade actuation.

A still further object of the invention is the provision of a roof stripping machine which has a throttle control for an engine whereby to control the power available to the reciprocating blade and which machine also employs an auxiliary control capable of regulating the speed of advance of the machine independently of the throttle control.

Still another object of the invention is the provision of a roof stripping machine having a novel caster wheel arrangement for supporting the machine.

Other objects and advantages will become known by reference to the following description and accompanying drawings in which:

DRAWINGS

FIG. 1 is a perspective view of a roof remover embodying various of the features of the invention.

FIG. 2 is a fragmentary view partially broken away and in section of portions of the roof remover shown in FIG. 1.

FIG. 3 is a fragmentary view, partially in section, taken along line 3—3 of FIG. 2.

FIG. 4 is a fragmentary view of a control mounted on the roof remover shown in FIG. 1.

FIG. 5 is a sectional view taken along line 5—5 of FIG. 4.

FIG. 6 is a sectional view taken along line 6—6 of FIG. 4.

FIG. 7 is a perspective view of the roof removing blade incorporated in the roof remover shown in FIG. 1.

FIG. 8 is an enlarged sectional view taken along line 8—8 of FIG. 7.

FIG. 9 is an enlarged sectional view taken along line 9—9 of FIG. 7.

FIG. 10 is a fragmentary sectional view taken along line 10—10 of FIG. 2.

DETAILED DESCRIPTION

Shown in the drawings is a machine or roof remover 11 for removing roofing material, which machine is in accordance with the invention. As shown in FIG. 1, the machine or roof remover 11 includes a frame 13 which also serves as a gear box. Extending from the frame 13 is a handle structure 17 which supports certain controls which will later be described. Mounted on a forwardly extending shelf or member 19 supported from the frame 13 is an internal combustion engine 21 which is controlled by a throttle control or lever 23 carried on the handle structure 17. Supporting the frame 13 on the ground are a pair of axially aligned traction wheels 27 (only one being shown), which wheels 27 are fixed to a cross shaft 29 (See FIG. 2) rotatably supported by the gear box or frame 13. Internally of the gear box 13, the cross shaft 29 is fixed to a sprocket 31 which is connected by a chain 33 to a sprocket 37 fixed on a second cross shaft 39 also rotatably supported in the gear box 13. Carried on the cross shaft 39 for rotative and axial movement relative thereto, is a gear 41 which meshes with another gear or pinion 43 fixed on still another cross shaft 47 rotatably supported in the gear box 13.

Means are provided for interrupting the deliver of power from the gear box **13** to the traction wheels **27** by means of a clutch **45** or disconnect switch (See FIG. 3) interposed between the gear **41** and the sprocket **37**. More particularly, the gear **41** and the sprocket **37** on the cross shaft **39** respectively include hubs **49** and **51** which are located in facing relation to each other and which include interengageable lugs **53** and recesses **57**. In order to engage and disengage the clutch **45**, the hub **49** of the gear includes an annular groove **59** receiving an actuating fork **61** which extends from a block **63** slideably mounted on a cross rod **67**.

Lateral shifting of the fork **61** on the rod **67** to engage and disengage the clutch **45** is provided by a lever **69** which is located exteriorly of a portion of the top surface of the gearcase and which is connected to a shaft **71** extending downwardly into the gearcase. The shaft **71** carries an eccentric or offset pin **73** which is received in a fore and aft slot **77** on the block **63** from which the yoke or fork **61** extends. Thus, pivotal movement of the lever **69** in a horizontal plane causes horizontal shifting of the yoke **61** on the rod **67** to effect shifting of the clutch **45** between its engaged and disengaged positions.

Actual severance of the roofing material to be removed is afforded by a U-shaped knife or blade **79** which includes a horizontally extending web **81** and,at each of the ends of the web, a vertically extending leg **83**. Means are provided for reciprocating the blade in the direction of vehicle travel and for raising and lowering of the blade **79** and for changing the angle of attack of the blade **79**. More particularly, in the disclosed construction, such means includes, on each side of the machine, a side leg or member **87** which, at its lower end, is connected to the upper end of one of the blade legs **83** and which, at its upper end (See FIG. **1**), is mounted for rocking movement about a pivot **89**. On each of the opposite sides of the machine, each pivot **89** is carried by an arm **91** which is fixed to a cross shaft **93**. In order to afford rocking of the arms **91** to vary the height of the pivots **89**, the cross shaft **93** is journaled, at locations adjacent to each of the arms **91**, on the outer portions of the upper arms **97** of an H-shaped supporting member **99**. In turn, the H-shaped supporting member **99** includes lower arms **111** which, at their bottom ends, are each pivotally connected at **112** at the opposite sides of the machine to separate support plates **113** fixed at **114** in upstanding relation to the frame or gear box **13**.

The angular position of the H-shaped member **99** relative to the gear box **13** can be adjustably fixed to vary the angle of blade attack by a clamp (not shown) which includes a handle (not shown) and a cross member **117** which extends through the lower legs **111** of the H-shaped supporting member **99** and through arcuate slots **119** in each of the support plates **113**. Thus, the H-shaped supporting member can be rocked about its pivotal connections **112** to the support plates **113** and fixed in any desired position by the clamp to obtain the desired angle of blade attack.

Adjustment of the height of the blade **79** or change in the depth of cut is accomplished by rocking the cross shaft **93** whereby to raise and lower the pivots **89** about which the legs **87** and blade **79** rock. In this regard, there is fixed to the H-shaped supporting member **99** a quadrant member **121** having an arcuate slot **123** extending about the axis of the cross shaft **93**. Fixed to the cross shaft **93** to effect rocking movement thereof and of the arms **91** to raise and lower the pivots **89**, and therefor the blade **79**, is a handle which can be locked in the desired position by a clamp **129** extending through the arcuate slot **123** and connected to the handle **127**.

Reciprocating movement of the blade **79** is afforded, at each side of the machine **11**, by pitmans or arms **131** which are connected, at their forward ends, to each other by a cross shaft **133** and, through bearings, to the lower ends of the side legs **87**.

At each side of the machine, the pitmans or arms **133** are reciprocated (See FIG. **2**) by a rotatable shaft **137** which is journaled within another portion of the gear box **13** and which supports an eccentric pin **139** extending in parallel relation to the shaft axis and into a bushing **141** which is rotatably received in a socket **143** at the other end of the pitmans or arms. In turn, the shaft **137** has fixed thereon, internally of the gearcase **13**, one or more sprockets **147** around which there is trained one or more chains **149** which are also trained (See also FIG. **3**) around one or more other sprockets **151** fixed on still another cross shaft **153** journaled in the gear box. This last mentioned cross shaft **153** extends exteriorly of the gear box **13** and has mounted on the projecting end **157** thereof a sheave or pulley **159** (See also FIG. **1**) which, in turn, is connected by a flexible endless belt **161** to a pulley or sheave **163** mounted on the output shaft **167** of the engine **21**. Accordingly, as thus far described, operation of the engine **21** will cause reciprocation of the blade **79** and variation in engine speed will cause similar variation in the rate of blade reciprocation.

The construction of the machine as thus far described, is essentially that of a prior art cutter before modification in accordance with the invention.

In accordance with the invention, means are provided for controlling the rate and direction of movement of the frame **13** independently of reciprocation of the blade **79** and independently of the rate of blade reciprocation. In addition, means are provided for discontinuing reciprocation of the blade **79** notwithstanding continued operation of the engine **21** and without affecting the delivery of power from the engine **21** to the traction wheels **27**.

While various arrangements may be used, the means for controlling the rate and direction of travel of the roof remover independently of reciprocation of the blade or independently of the rate of blade reciprocation includes a hydrostatic transmission unit **171** which is mounted on an upright extension **173** of the frame or gear box **13** and which includes (See FIG. **1**) an input shaft **177**, an output shaft **179** (See FIG. **10**), and a control arm or lever **181** (See FIGS. **2** and **3**).

The hydrostatic transmission unit **171** is of conventional construction and is operable upon rotary input in one rotative direction through the input shaft **177** to effect variation in both the direction and rate of output shaft rotation in accordance with the location of the control arm **181**. More particularly, when the control arm **181** is in centered position, the transmission unit **171** is in neutral and the output shaft **179** does not rotate regardless of the rotation of the input shaft **177**. Movement of the control arm **181** in one direction

from centered position effects rotation of the output shaft **179** in one direction and at an increasing rate as the distance from the centered position increases. Movement of the control arm **181** in the other direction from centered position effects rotation of the output shaft in the opposite direction at a rate which increases with increasing distance from the centered position. Make-up oil, as necessary, is supplied to the hydrostatic unit **171** through a conduit **187** (See FIG. 2) connected to a reservoir **189** located in the upper part of the gear box extension **173**.

Rotary input to the hydrostatic transmission unit **171** is provided through a pulley **191** fixed to the input shaft **177** and operatively connected to an endless belt **193** which is also trained around a second pulley or sheave **197** which is connected to the engine output shaft **167** independently of the pulley or sheave **163** which delivers power to the reciprocating blade **79**.

Fixed on the output shaft **179** of the hydrostatic unit **171** interiorly of the gear box extension **173** is a sprocket **199** which is connected through a chain **211** to a sprocket **213** fixed on the before-mentioned cross shaft **47** within the gear box **13**, whereby to complete the power delivery train from the engine **21** to the traction wheels **27**.

From the foregoing, it will be noted that the drive to the traction wheels **27** can be controlled, independently of the drive to the cutting blade **79**, by both the clutch **45** and the hydrostatic transmission unit **171**. It should also be noted that as a consequence of use of the hydrostatic transmission, the roof remover **11** can be operated either forwardly or rearwardly at variable speeds, or when in neutral, without travel, regardless of the power output of the engine **21**. This arrangement is very desirable as it permits delivery of relative large amounts of power to the blade **79** while simultaneously affording close control of the rate of vehicle movement, whereby to assist effective heavy duty cutting.

As already noted, the roof remover **11** also includes means for controlling delivery of power to the cutting blade **79** independently of the delivery of power to the traction wheels **27**. While various arrangements can be employed, in the disclosed construction, there is provided a combination brake and belt tensioning device **217** operable upon the belt **161** which delivers power solely to the cutting blade **79**.

Structurally, the belt braking and tensioning device **217** is essentially the same as previously employed in prior sod cutters to control power delivery from the engine to both the traction wheels and the cutting blade. More particularly, in the disclosed construction, the belt braking and tensioning means **217** includes a fixed braking pin **219** which is located below the lower run of the belt **161** and an arm **221** which is pivotally mounted to the engine at **223** and which carries a first pin **227** engageable with the top surface of the upper run of the belt **161** and a second pin **229** engageable with the upper surface of the lower run of the belt **161** in opposing relation to the fixed pin **219**. The arm **221** is biased into a braking position with the pins **219**, **227** and **229** against the belt in such manner as to capture the belt **161** between the pins **219** and **229** and to somewhat disengage the belt **161** from the pulley **163** by a tensioning spring **231** fixed at one end to the movable arm **221** and anchored at the other end to the engine **21**.

Movement of the arm **221** in the counterclockwise direction about the pivot **223** as seen in FIG. **1** and away from its braking position just described is afforded by engagement with the arm **221** by a pin **233** which extends from an arm or lever **237** projecting from a cross shaft **239** pivotally mounted on the gear box **13**. Also carried by the lever **237** is an idler wheel **241** engageable with the belt **161** to effect tightening thereof around the pulley **163** upon clockwise movement of the lever **237**. Such movement of the lever **237** also engages the pin **233** with the arm **221** to move the arm **221** away from its braking position against the action of the spring **231**. Such clockwise movement of the lever **237** is afforded by common movement with the cross shaft **239** which is connected through a bell crank lever **243** to a rod **245** which, in turn, is connected to an operating lever **247** having an over-center mounting on the handle structure **17**. Such over-center mounting of the handle or lever **247** permits retention of the biased components of the device **217** in a non-braking position, notwithstanding action of the spring **231**. When the operating lever **247** is in its forwardmost position, the arm **221** is urged to its braking position by the spring **231** and the idler wheel **241** is not in operative engagement with the belt **161**. When the operating lever **247** is rocked rearwardly in the clockwise direction, the arm **221** is retracted from its braking position by operation of the pin **233** against the arm **221** and the idler wheel **241** is swung into a position tightening the belt **161** around the pulley **163**.

Also mounted on the handle structure **17** is a control **251** for the hydrostatic transmission unit **171**. This control **251** comprises, as seen best in FIGS. **4**, **5**, and **6**, a handle **253** which is connected to the control arm **181** of the hydrostatic transmission unit **171** by a rod **257** and which is pivotally mounted at **259** to a guide member **261** fixed to the handle structure **17**. The handle **253** is movable through a slot **263** which is provided in the guide member **261** and which has laterally offset,but communicating,legs **267** and **269** in the sense that the leg **267** affords movement of the handle **253** from an upright neutral position in the clockwise direction rearwardly to effect rearward drive and in the sense that the leg **269** is laterally offset from the rearwardly extending leg **267** and affords movement of the handle **253** from the upright neutral position in the counterclockwise direction to effect forward drive. Thus, shifting between forward and reverse drive cannot be accomplished by shifting the handle **253** in a single plane as it is necessary to laterally shift the handle **253** on its pivot **259** to locate the handle **253** for travel from either of the laterially offset slot legs **267** and **269** to the other.

In accordance with the invention, in order to return the transmission unit from rearward drive to neutral in the absence of a retaining force, the handle **253** is biased toward the neutral position and against a shoulder **277** at the forward end of the slot leg **267** by a spring **273** located around the pivot **259**. This arrangement has the very beneficial advantage of automatically returning the drive to neutral if the operator should, for any reason, fail to retain his hand in operating control of the handle **253** when the machine **11** is in reverse drive. Thus, rearward movement of the machine toward a disabled operator is prevented.

In addition, means are provided for biasing the lever toward the right in FIG. 6, i.e., along the pivot 259 toward the slot leg 267. This arrangement serves to prevent unwanted control handle movement into the forward leg 269 when returning from a rearward drive setting to neutral and of engaging the handle lever with a serrated slot edge when the handle is in the forward slot leg 269 to retain the handle in any selected forward drive position.

More specifically, a spring 279 is located about the pivot 259 in position to laterally displace the handle 253 toward the slot 267 as compared to the slot 269. In addition, the slot 269 includes the just mentioned serrated edge 281 which cooperates with a pair of ribs 283 on the handle 253 to retain the handle in any selected forward drive setting.

Also in accordance with the invention, the frame or gear box 13 is supported (See FIGS. 1 and 2) at its rearward end so as to provide maneuverability and to afford temporary variation in depth of cut by a semipneumatic tire or caster wheel 287 carried for rotation about a horizontal axis 289 and for turning through 360° about a vertical axis 291 on the rearwardmost link 293 of a parallel linkage 297 having, on each side, upper and lower links 299 and 301 respectively, which are pivotally connected at their forward ends to the gear box 13 and, at their rearward ends, are pivotally connected to the rear link 293. The linkage 297 is retained to support the blade 79 in proper position for cutting action by a pair of springs 311 which as shown, are connected, at their lower ends, to the frame or gear box 13 below the pivotal connection of the lower links 301 and are connected, at their upper ends, to an ear 313 extending from the upper part of the rear link 293. The springs 311 urge the rear link 293 upwardly until a stop 310 formed thereon engages the upper surface of at least one of the links 299, thereby to support the rear of the machine and to prevent lowering of the machine by its own weight. In operation, the arrangement for spring support of the rear of the frame or gear box 13 can be overcome by the operator to tilt the machine 11 about the traction wheels 27 so as to change the depth of cut by temporarily varying the force applied to the handle structure 17 as may be desired.

Also in accordance with the invention, the roof remover is adapted to cut in response to both forward and rearward movement. In this regard, both the transversely horizontal web 81 and the sides 83 of the cutting knife or blade 79, as shown best in FIGS. 7 through 9, are sharpened along both the forward and rearward edges to provide cutting edges indicated at A whereby to afford cutting capability when the device is traveling either rearwardly or forwardly. This is of particular significance when the machine cannot be advanced further, as when the machine is approaching a bordering wall around a roof and it is therefor desired to extricate the machine and in particular to cause the blade to be removed from under the previously cut strip of roofing material. More particularly, the rearward cutting capacity coupled with the rearward drive capability and the caster support of the frame at the rear, facilitates such rearward turning movement of the machine so as to transversely arcuately sever the previously cut strip and afford extrication of the blade.

Also in accordance with the invention, the web 81 of the blade 79 is located relative to the blade legs 81 so as to facilitate cutting into the roof at an angle to the horizontal and thereby to prevent the blade 79 from camming out of the roofing surface to the removed. In this regard, the angle between the front edge 82 of the side legs and the flat undersurface 84 of the web 81 is approximately 47°, although some degree of variation can be employed. In addition, when in static condition, it is preferable that the bottom surface 84 of the web be at an angle of about 11° to the horizontal roof line.

It is believed that the best performance will occur when the angle between the flat bottom surface 84 of the web and the horizontal roof line is within a range of from about 4° to about 20°.

Connected to the frame 13 is a lifting hook 327 affording hoisting of the roof remover 11 to the top of buildings.

In operation, in accordance with the method of the invention, the roof 321 (as shown in FIG. 2) is initially prepared by cutting therein an opening 323 sufficiently large and deep to permit receipt and initial reciprocation of the cutting blade 79 at the desired depth. Thereafter, with the blade 79 reciprocating, the machine 11 is advanced at the desired speed by operation of the hydrostatic transmission unit 171. As already noted, the engine throttle control 23 can be adjusted to apply whatever level of power is desired to the blade 79 for the cutting operation, while simultaneously permitting independent control of the rate of forward or rearward travel. As also already noted, the machine 11 can be rearwardly extricated at the end of a cut by operating the machine in reverse and simultaneously withdrawing and turning the machine through an arc of about 90° to transversely sever the previously cut strip.

When desired, the blade drive can be stopped by operating the belt braking and tensioning device 217 and the machine 11 can be power driven as desired from place to place. If the engine should become inoperative for one reason or another, the machine 11 can be free-wheeled for manually powered travel by disengagement of the clutch 45. In addition, if the operator fails to maintain his hand in operating control of the lever 253 while the machine is moving rearwardly, the lever 253 will automatically return to its neutral position by action of the spring 273 and thereby prevent further rearward advance of the machine toward the operator. Thus, there is provided a machine which is particularly well adapted for effective removal of roofing material.

Various features of the invention are set forth in the following claims.

What is claimed is:

1. A method of stripping roofing material from a roof comprising the steps of reciprocating a blade having horizontal and vertical cutting edges relative to the roofing material, translating the blade into the roofing material while continuing said reciprocating of the blade so as to cut the roofing material both horizontally and vertically to form a strip of roofing material severed from the roof, translating the blade in the opposite direction from the previous translation while maintaining said reciprocating of the blade, and simultaneously turning the blade across the previous path of the blade

so as to cut the roofing material with the rear of the blade.

2. A method of stripping roofing material from a roof comprising the steps of reciprocating a cutting blade having a web with a cutting edge and a supporting leg with a cutting edge relative to the roofing material, simultaneously translating the blade into the roofing material to cut the roofing material by the web and the leg of the blade, translating the blade in the opposite direction from the previous translation while maintaining said reciprocating of the blade, and simultaneously turning the blade across the previous path of the blade so as to cut the roofing material with the rear of the blade.

3. A roof remover comprising a frame, an engine mounted on said frame, a blade having sharpened forward and rearward edges and being mounted on said frame for horizontal reciprocating movement in response to operation of said engine at speeds in accordance with engine speed, a drive wheel mounted on said frame, and power delivery means on said frame for delivering power to said drive wheel from said engine independently of power delivery to said blade by said engine and for selectively driving said drive wheel in forward drive and in reverse drive.

4. A roof remover in accordance with claim 3 wherein said power delivery means includes a control lever movable between neutral, forward drive and reverse drive conditions, and means operable, when said lever is in a reverse drive condition, for returning said lever to neutral upon removal of a manually applied force acting in opposition to said lever returning means.

5. A roof remover in accordance with claim 3 wherein said power delivery means includes a control lever movable between neutral, forward drive and reverse drive conditions, and means operable, when said lever is in said forward drive condition, for releasably retaining said lever in a selection position.

6. A roof remover in accordance with claim 3 wherein said power delivery means includes a pivotally mounted control lever movable between neutral, forward drive and reverse drive conditions, and means operable, when said lever is in a reverse drive condition, to prevent pivotal movement of said lever in one plane from rearward drive condition to forward drive condition.

7. A roof remover in accordance with claim 3 wherein said power delivery means includes a guide member having therein a slot with communicating laterally offset legs, a lever pivotally mounted with respect to said guide member and extending through said slot, means biasing said lever in the direction toward the end of one leg adjacent said other leg, and means biasing said lever along its pivotal axis toward said one leg.

8. A roof remover in accordance with claim 3 including means for selectively driving said blade by said engine independently of the operation of said drive wheel by said engine.

9. A roof remover in accordance with claim 8 wherein said means for selectively driving said blade by said engine includes an endless belt and a device mounted on said frame and including components movable between a first position effecting braking of said belt and a second position in non-braking relation to said belt, said second position effecting tensioning of said belt to afford effective power delivery thereby.

10. A roof remover in accordance with claim 9 wherein at least some of the said components are biased to said first or belt braking position and including a control handle having an over-center mounting affording movement between a belt tensioning position and a belt braking position, whereby to effectively overcome said biasing when said handle is in said belt tensioning position.

11. A roof remover in accordance with claim 3 including a parallel bar linkage pivotally connected about vertically spaced pivots to said frame on the other side of said blade from said drive wheel and including a rearwardly located link and a caster wheel mounted from said link for swinging about an axis perpendicular to said pivots and for rotation about an axis parallel to said pivots.

12. A roof remover in accordance with claim 11 and further including spring means connected to said frame and to said link for retaining said caster wheel in position.

13. A roof remover comprising a frame, an engine mounted on said frame, a blade mounted on said frame for horizontal reciprocating movement in response to operation of said engine at speeds in accordance with engine speed and adapted for removing roofing material, a drive wheel mounted on said frame, and power delivery means on said frame for delivering power to said drive wheel from said engine independently of power delivery to said blade by said engine and for selectively driving said drive wheel in forward drive and in reverse drive, said power delivery means including a hydrostatic transmission unit including means for providing neutral, forward drive and rearward drive conditions and for controlling the rate of forward and rearward drive independently of the speed of said engine.

14. A roof remover in accordance with claim 13 wherein said power delivery control means includes a disconnect switch interposed between said drive wheel and said hydrostatic transmission unit.

15. A roof remover in accordance with claim 13 wherein said power delivery means includes a control lever movable between neutral, forward drive and reverse drive conditions, and means operable, when said lever is in a reverse drive condition, for returning said lever to neutral upon removal of a manually applied force acting in opposition to said lever returning means.

16. A roof remover in accordance with claim 13 wherein said power delivery means includes a control lever movable between neutral, forward drive and reverse drive conditions, and means operable, when said lever is in said forward drive condition, for releasably retaining said lever in a selection position.

17. A roof remover in accordance with claim 13 wherein said power delivery means includes a pivotally mounted control lever movable between neutral, forward drive and reverse drive conditions, and means operable, when said lever is in a reverse drive condition, to prevent pivotal movement of said lever in one plane from rearward drive condition to forward drive condition.

18. A roof remover in accordance with claim 13 wherein said power delivery means includes a guide member having therein a slot with communicating laterally offset legs, a lever pivotally mounted with respect to said guide member and extending through said slot, means biasing said lever in the direction toward the end of one leg adjacent said other leg, and means biasing said lever along its pivotal axis toward said one leg.

19. A roof remover in accordance with claim 13 including means for selectively driving said blade by said engine independently of the operation of said drive wheel by said engine.

20. A roof remover in accordance with claim 19 wherein said means for selectively driving said blade by said engine includes an endless belt and a device mounted on said frame and including components movable between a first position effecting braking of said belt and a second position in non-braking relation to said belt, said second position effecting tensioning of said belt to afford effective power delivery thereby.

21. A roof remover in accordance with claim 20 wherein at least some of the said components are biased to said first or belt braking position and including a control handle having an over-center mounting affording movement between a belt tensioning position and a belt braking position, whereby to effectively overcome said biasing when said handle is in said belt tensioning position.

22. A roof remover in accordance with claim 13 including a parallel bar linkage pivotally connected about vertically spaced pivots to said frame on the other side of said blade from said drive wheel and including a rearwardly located link and a caster wheel mounted from said link for swinging about an axis perpendicular to said pivots and for rotation about an axis parallel to said pivots.

23. A roof remover in accordance with claim 22 and further including spring means connected to said frame and to said link for retaining said caster wheel in position.

24. A roof remover comprising a frame, an engine mounted on said frame, a blade mounted on said frame for horizontal reciprocating movement in response to operation of said engine at speeds in accordance with engine speed, said blade being U-shaped and including a web and an upstanding leg at each end of said web, said web and said legs including forwardly and rearwardly located cutting edges, a drive wheel mounted on said frame, and means on said frame for driving said drive wheel by said engine independently of operation of said blade by said engine.

25. A roof remover in accordance with claim 24 wherein said drive wheel driving means includes a hydrostatic transmission unit including means for providing neutral, forward drive and rearward drive conditions and for controlling the rate of forward and rearward drive independently of the speed of said engine.

26. A roof remover in accordance with claim 24 including means for selectively driving said blade by said engine independently of the operation of said drive wheel by said engine.

27. A roof remover in accordance with claim 24 including a parallel bar linkage pivotally connected about vertically spaced pivots to said frame on the other side of said blade from said drive wheel and including a rearwardly located link and a caster wheel mounted from said link for swinging about an axis perpendicular to said pivots and for rotation about an axis parallel to said pivots.

28. A roof remover comprising a frame, an engine mounted on said frame, a throttle control connected to said engine, a blade mounted on said frame for reciprocating movement, a drive wheel mounted on said frame, a parallel bar linkage pivotally connected about spaced pivots to said frame and on the other side of said blade from said drive wheel and including a rearwardly located link, a caster wheel mounted from said link for swinging about an axis perpendicular to said pivots and for rotation about an axis parallel to said pivots, a hydrostatic transmission unit mounted on said frame and including a pump driven by said engine, an output shaft connected to said drive wheel and means including a lever movable between neutral, forward drive and reverse drive conditions to control the rate and direction of movement of said drive wheel independently of the speed of said engine, and means for releasably driving said blade by said engine independently of the operation of said drive wheel by said engine and including an endless belt and a device mounted on said frame and including components movable between a first position effecting braking of said belt and a second position in non-braking relation to said belt, said second position effecting tensioning of said belt to afford effective power delivery thereby.

29. A roof remover in accordance with claim 28 wherein said power delivery control means includes a clutch interposed between said drive wheel and said hydrostatic transmission unit.

30. A roof remover in accordance with claim 28 wherein said blade has forwardly and rearwardly located cutting edges.

31. A roof remover comprising a frame, an engine mounted on said frame, a blade mounted on said frame for horizontal reciprocating movement in response to operation of said engine at speeds in accordance with engine speed, said blade having forward and rearward cutting edges, a drive wheel mounted on said frame, and power delivery means on said frame for selectively driving said drive wheel in forward drive and in reverse drive.

32. A roof remover in accordance with claim 31 including means for selectively driving said blade by said engine independently of the operation of said drive wheel by said engine.

33. A roof remover in accordance with claim 32 wherein said means for selectively driving said blade by said engine includes an endless belt and a device mounted on said frame and including components movable between a first position effecting braking of said belt and a second position in non-braking relation to said belt, said second position effecting tensioning of said belt to afford effective power delivery thereby.

34. A roof remover in accordance with claim 33 wherein at least some of said components are biased to said first or belt braking position and including a control handle having an over-center mounting affording movement between a belt tensioning position and a belt braking position, whereby to effectively overcome said

biasing when said handle is in said belt tensioning position.

35. A roof remover in accordance with claim 31 wherein said power delivery means comprises a hydrostatic transmission unit including means for providing neutral, forward drive and rearward drive conditions and for controlling the rate of forward and rearward drive independently of the speed of said engine.

36. A roof remover in accordance with claim 35 wherein said power delivery control means includes a clutch interposed between said drive wheel and said hydrostatic transmission unit.

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