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Moore

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[45] **Feb. 26, 1974**

[54] **CHAIN SAW SAFETY METHOD AND APPARATUS**

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[73] Assignee: **McCulloch Corporation,** Los Angeles, Calif.

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[21] Appl. No.: **294,866**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 190,574, Oct. 19, 1971.

[52] **U.S. Cl.**..... **30/383,** 83/DIG. 1, 192/130

[51] **Int. Cl.**..... **B27b 17/02,** B27b 17/10

[58] **Field of Search**..... 188/82.3, 82.4, 82.7–82.8; 192/130; 30/381, 382, 383; 83/788, 814, 815, 571, 573

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Primary Examiner—Donald R. Schran

Attorney, Agent, or Firm—Burns, Doane, Swecker & Mathis

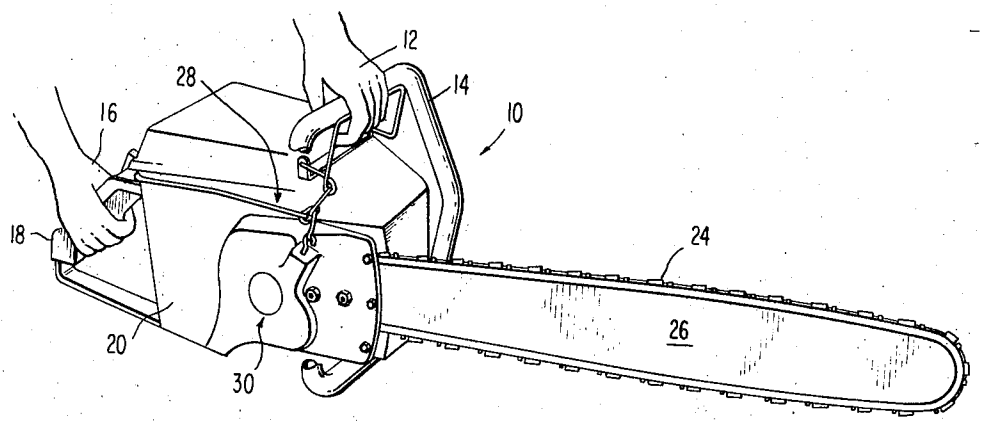
[57] **ABSTRACT**

A method and apparatus for preventing injury to an operator of a chain saw of the type having a frame, a frame handle, a control handle, a guide bar, a cutting chain and power means mounted on the frame and operably connected to the cutting chain for driving the cutting chain on the guide bar.

The apparatus includes a first lever pivotally mounted adjacent to the frame handle and a second lever pivotally mounted adjacent to the control handle. A self-locking brake is biased toward actuation and upon actuation is operably sufficient to instantly stop movement of the cutting chain and stall out the chain saw power means. Actuation of the self-locking brake is controlled by engaging the first and second levers against the frame and control handles respectively. This engagement is translated through a linkage system to overcome the aforementioned bias and disengage the self-locking brake. Upon release of either the first or second levers, or both, from engagement with the frame or control handles respectively the brake will be immediately actuated.

The method includes the steps of controlling the actuation of a self-locking brake and actuating the brake in the event an operator's hand slips from either the frame handle or the control handle. If such an event occurs the method includes braking the cutting chain to an immediate stop and thus minimizing the possibility of injury to the operator.

10 Claims, 8 Drawing Figures



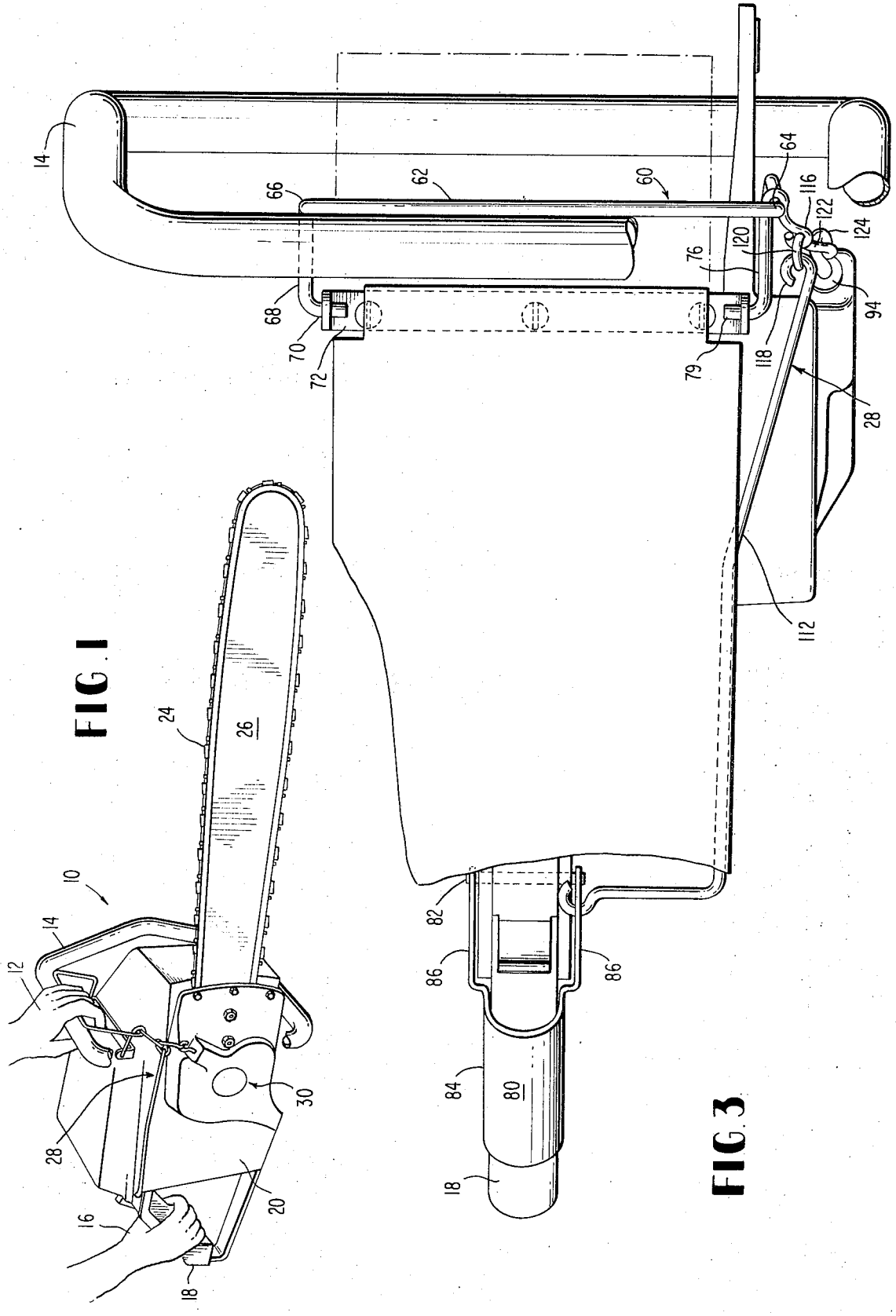

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FIG. 1

FIG. 3

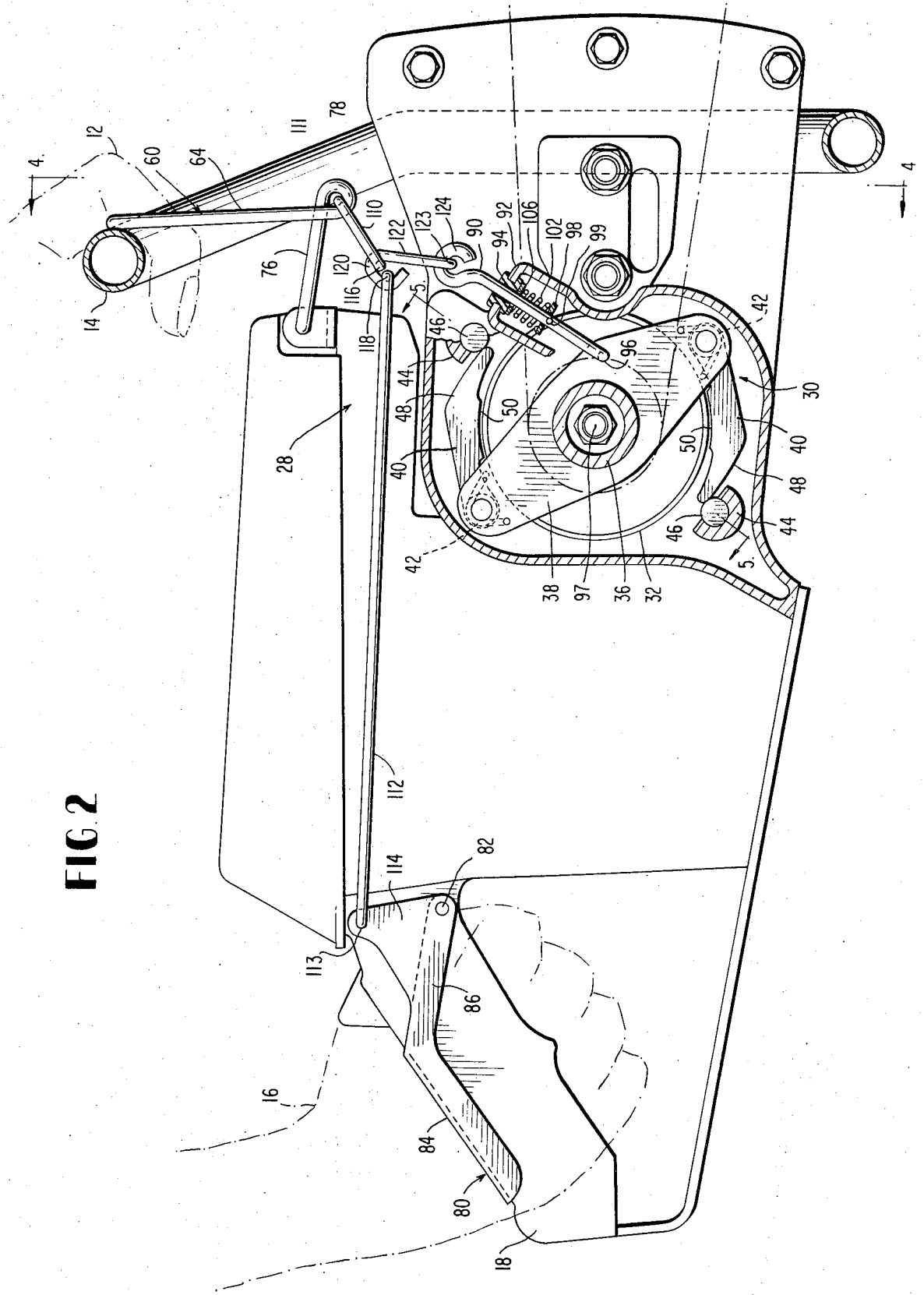

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FIG. 2

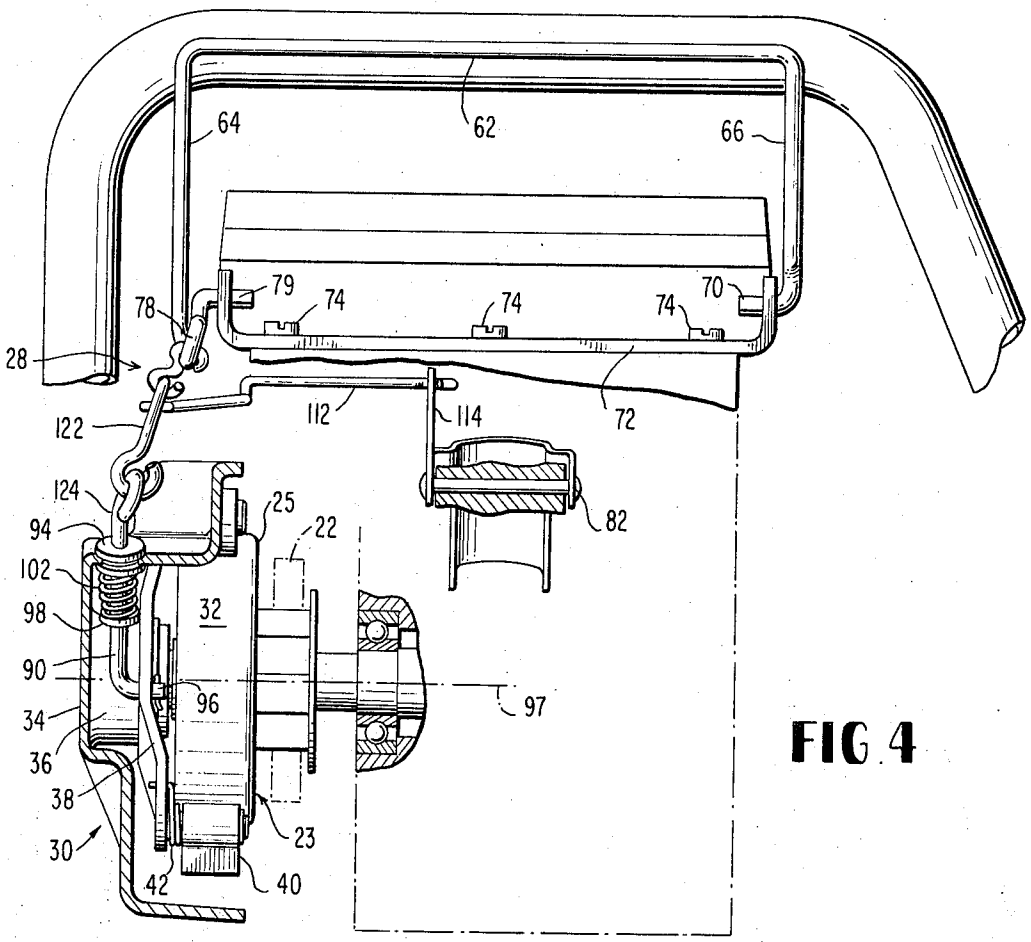

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FIG. 4

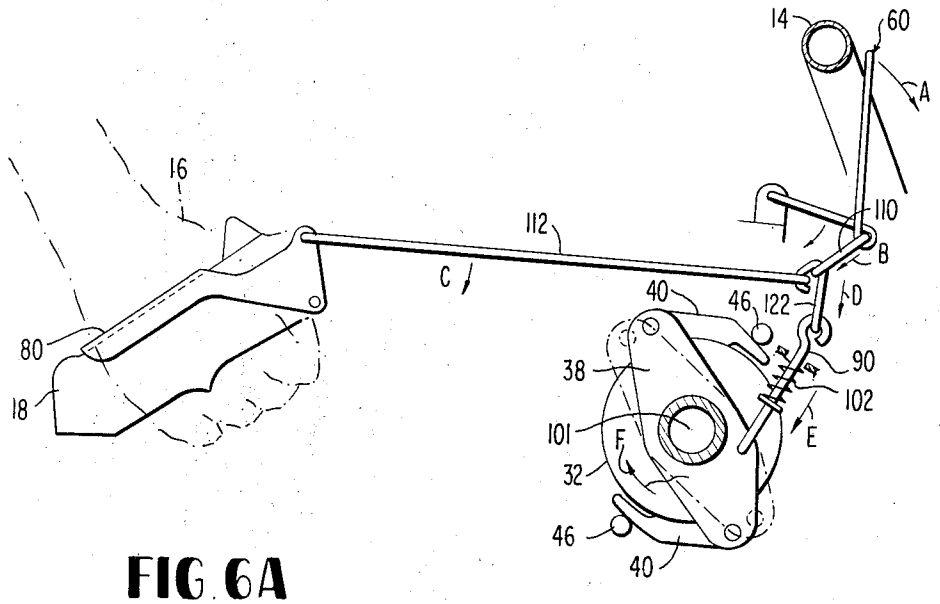

14
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A
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110
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B
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FIG. 6A

FIG. 6B

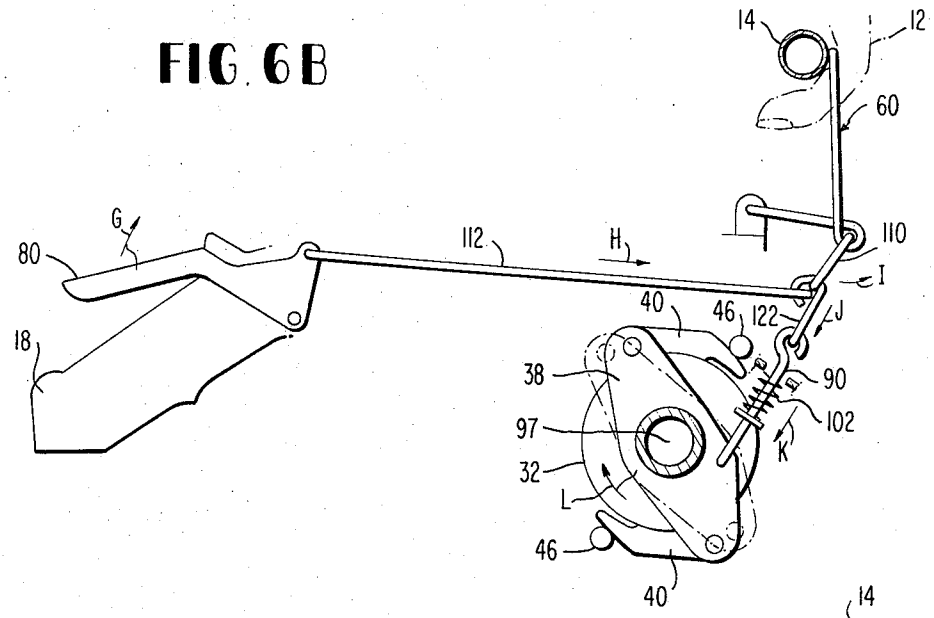
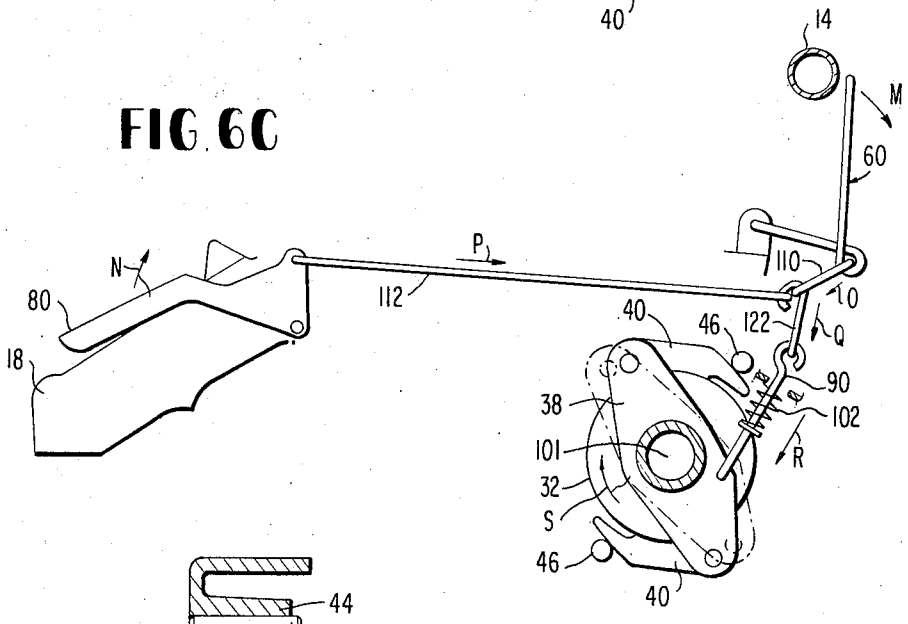


FIG. 6C



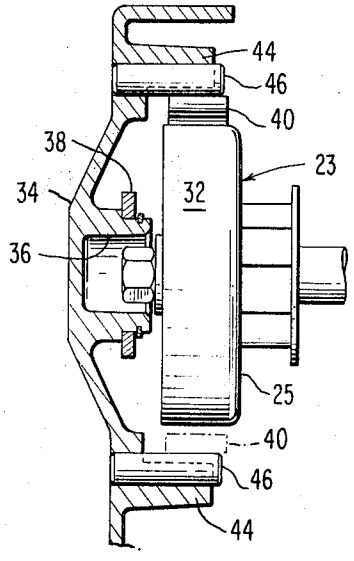


FIG. 5

CHAIN SAW SAFETY METHOD AND APPARATUS

OTHER RELATED APPLICATIONS

This application is a continuation-in-part of applicant's copending U.S. application Ser. No. 190,574 filed Oct. 19, 1971 entitled "Chain Saw Safety Method and Apparatus".

BACKGROUND OF THE INVENTION

This invention relates to a chain saw safety method and apparatus. More particularly the invention relates to a method and apparatus for minimizing the possibility of an operator being injured in the event the operator's hand slips from either a frame handle or a control handle of a chain saw toward the chain saw cutting chain.

Typically a chain saw is designed to be utilized by an operator grasping the machine with both hands. An operator's one hand normally grips a frame handle while the other hand engages a control handle for at least actuating a trigger throttle mechanism of the type suitable for ultimately controlling the speed of the cutting chain.

In some instances of cutting operation an operator may choose to apply downward and forward pressure on the frame handle to achieve a more rapid cutting rate. In such event, there is at least a possibility of the operator's hand slipping from the frame handle toward and potentially into the rapidly moving cutting chain. In other instances of cutting operation the cutting chain may engage a limb or the like at the tip of the guide bar. In such an event vertical movement of the cutting chain over the guide bar tip may induce the bar to kick upwardly in a manner commonly referred to as "kick back." The abrupt action of kick back may cause an operator's hand to slip from either the frame handle or even possibly the control handle and into the cutting chain. Experience indicates that if an operator's hand does so accidentally slip into a rapidly moving cutting chain the hand, and often the operator's entire arm, may be badly mutilated and/or possibly severed.

At least one previously known device which may be useful for alleviating the above noted problem includes a lever arm mounted on the frame handle which when held against the handle operates a clutch mechanism in combination with a standard chain saw clutch so that the cutting chain will not be operably connected to the drive shaft unless the lever on the frame handle is maintained in a depressed posture. Therefore if the operator's hand should slip from the frame handle the clutch will be disengaged and the cutting chain will ultimately slow down and stop.

While a device, such as the above noted, may provide a degree of safety, it will readily be recognized that this known system merely serves to disengage a clutch so that momentum may carry the cutting chain at least momentarily forward. Continued movement of the cutting chain presents a potential source of injury to an operator. Further, such a device is an integral part of the normal drive system of the chain saw and thus is in continuous use presenting wear and replacement difficulties.

Another previously known device which constitutes a refinement over the above described system includes a clutch tripping device in combination with a band brake which is normally biased toward actuation but held from engagement by the simultaneous depression of a lever connected to a frame handle and a lever connected to a control handle. While such a device is a notable advance over the first mentioned system, room for significant improvement remains.

In this connection it would be highly desirable to provide a simplified system which would positively, quickly and reliably lock a cutting chain from movement in the event that an operator's hand accidentally slips from a frame handle and/or a control handle of a chain saw. Further, it would be desirable to provide a novel actuation assembly including a linkage system for interconnecting a lever at a frame handle and a lever at a control handle of a chain saw so that upon release of either lever, or both, translation of the cutting chain will be reliably and immediately stopped. Moreover, it would be desirable to provide a novel self-locking brake assembly, suitable upon actuation, to immediately freeze translation of a chain saw cutting chain.

OBJECTS AND SUMMARY OF THE INVENTION

Objects of the Invention

It is therefore a general object of the invention to provide a novel chain saw safety method and apparatus which will obviate or minimize problems of the type previously described.

It is a specific object of the invention to provide a novel method and apparatus to prevent injury to a chain saw operator's hand in the event the operator's hand accidentally slips from either a frame handle or a control handle, or both, of a chain saw toward a rapidly moving cutting chain.

It is another object of the invention to provide a novel chain saw safety method and apparatus which is rapid in response to instantaneously lock out translation of a chain saw cutting chain in the event an operator's hand slips from either a frame handle or a control handle, or both, of a chain saw.

It is yet another object of the invention to provide a method and apparatus utilizing a novel articulated linkage assembly for actuating a self-locking brake means in the event an operator's hand slips from a frame handle or a control handle of a chain saw.

It is a further object of the invention to provide a method and apparatus utilizing a novel chain saw brake system which is self-locking and operatively serves to immediately stop rotation of a chain saw cutting chain upon actuation.

It is yet a further object of the invention to provide a novel chain saw safety apparatus which is highly durable, reliable and rapid in operation to effectuate stoppage of cutting motion of a chain saw cutting chain in the event an operator's hand should slip from either a frame handle or a control handle of a chain saw.

BRIEF SUMMARY

A preferred embodiment of the invention intended to accomplish at least some of the foregoing objects comprises a method and apparatus for preventing injury to an operator of a chain saw of the type having a frame, a frame handle, a control handle, a guide bar, a cutting chain and power means mounted on the frame and operably connected to the cutting chain for driving the cutting chain on the guide bar.

The apparatus includes a self-locking brake assembly operably connected to the cutting chain for stopping translation of the cutting chain upon the guide rail. A

brake actuation system is connected to the brake assembly and includes a first lever pivotally mounted adjacent to the frame handle and a second lever pivotally mounted adjacent to the control handle. A first link is connected at one end to the first lever and a second link is connected at one end to the second lever. A linkage system is connected at one end to the other ends of the first and second links and is connected at the other end thereof to the brake assembly for maintaining the brake in an actuated posture unless the first and second levers are simultaneously held against the frame handle and the control handle respectively.

The method includes the steps of controlling actuation of a self-locking brake such that in the event an operator's hand accidentally slips from the frame handle and/or the control handle a self-locking brake will be actuated for braking the cutting chain to an immediate stop. By this method the possibility of the cutting chain injuring the operator's hand is minimized.

THE DRAWINGS

Further objects and advantages of the invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a pictorial view of a hand held portable chain saw wherein an operator may grasp a frame handle with one hand and a control handle with another hand for manipulation and operation of the saw and simultaneously effect actuation of the subject safety method and apparatus;

FIG. 2 is a side elevational view, partially broken away, of a chain saw including a self-locking brake and an actuation assembly connected thereto including a first lever mounted adjacent to the chain saw frame handle and a second lever mounted adjacent to the chain saw control handle;

FIG. 3 is a partial plan view of the chain saw including the safety system actuation assembly disclosed in FIG. 2;

FIG. 4 is a cross-sectional view taken along section line 4—4 in FIG. 2;

FIG. 5 is a cross-sectional view taken along section line 5—5 in FIG. 2; and

FIGS. 6A–C are schematic views of the subject safety system in various modes of operation as follows:

FIG. 6A discloses a self-locking brake in an actuated posture in response to translation of a biased rod in the event a first lever is permitted to pivot away from engagement with the chain saw frame handle notwithstanding the fact that a second lever is in engagement with the chain saw control handle;

FIG. 6B discloses a self-locking brake in an actuated posture in response to translation of a biased rod in the event a second lever mounted adjacent to the chain saw control handle is permitted to pivot away from engagement with the handle notwithstanding the fact that a first lever is in engagement with the chain saw frame handle; and

FIG. 6C discloses a self-locking brake in an actuated posture in response to translation of a biased rod upon release of both a first and second lever which are mounted adjacent to a frame handle and a control handle respectively of the chain saw.

DETAILED DESCRIPTION

Referring now to the drawings wherein like numerals designate like parts and more specifically to FIG. 1 thereof, a portable chain saw **10** is shown. The chain saw **10** is of the type suitable to be held by a single operator (not shown) with one hand **12** grasping a frame handle **14** and another hand **16** grasping a control handle **18.** The operator's forward hand **12** is primarily used as a manipulation means to lift and apply cutting pressure to the saw while the rear hand **18** is utilized to stabilize the saw and to control the rate of travel of the cutting chain by manipulation of a trigger throttle (not shown).

The portable chain saw **10** is designed with a body frame **20** suitable to enhouse a power means (not shown) which typically comprises a small single-cylinder two-cycle internal combustion engine. The power drive within the interior of the frame housing **20** may be operably connected to a cutting chain sprocket **22,** note FIG. **4,** by a centrifugal clutch assembly **23.** For a more detailed illustration of typical centrifugal clutch assemblies reference may be had to any one of the U.S. Pat. Nos. 2,974,399, to Moore et al, Collins, 3,385,411 or Hazzard 3,425,411, all assigned to the assignee of the subject application.

The chain sprocket **22** drives cutting chain **24** which is supported for endless translation upon a guide rail or guide bar **26.** The cutting chain serves in a conventional manner to rip or tear a kerf through a material to be severed in a well known manner of chain saw cutting operation.

The portable chain saw as depicted in FIG. **1** also includes a chain saw safety system comprising an actuation assembly **28** and a cutting chain braking assembly **30.** Referring now to FIGS. **2–5,** there will be seen various detailed views of these chain saw safety system assemblies.

With particular reference now to FIGS. **2, 4** and **5,** there will be seen variant detailed views of the self-locking braking assembly **30.** More particularly a power means within the interior of the chain saw frame **20** serves to drive through a centrifugal clutching system **23** of the chain saw, as previously discussed. The exterior peripheral surface **32** of the centrifugal clutch drum **25** may synergistically serve as a braking surface for the cutting chain **24** in that the clutch drum is directly connected through sprocket **22** to the cutting chain.

In order to utilize the potential braking surface **32** of the clutch drum **25** a portion **34** of the housing **20** is extended to surround the clutch drum. The housing portion **34** is provided with a cylindrical boss **36** which coaxially inwardly extends toward the clutch drum. The boss **36** serves to pivotally carry a yoke **38** in a posture spaced from but contiguous to the outer face of the clutch drum **25.**

A pair of arcuately wedge-shaped brake shoes **40** are pivotally mounted at the extremities of the yoke **38** and are biased away from engagement with the brake surface **32** by the provision of springs **42.** Also normally inwardly projecting from the frame portion **34** are a pair of frame lugs **44** which serve to surround and carry bearing rods **46** at diametrically opposed positions radially outwardly from the exterior surface **32** of the centrifugal clutch drum **25.**

The arcuately wedge-shaped brake shoes **40** are each provided with an exterior camming surface **48** and an interior arcuate surface **50.** The camming surfaces **48** are suitable to engage the bearing rods **46** and to conse-

quently pivot the brake shoes **40** toward the braking surface **32**. The interior arcuate surfaces **50** of the brake shoes **40** serve to intimately engage the braking surface **32** in a frictional manner to stop rotation of the drum upon actuation of the brake shoes. In this connection frictional contact between the brake shoes **40** and the braking surface **32** may be enhanced by lining the arcuate surfaces **50** of the brake shoes with a conventional brake lining material, as desired.

In operation the clutch drum **25** is normally rotated in a clockwise direction as viewed in FIG. **2**. Rotation of the yoke **38** in a clockwise direction will serve to force the camming surfaces **48** of the clutch shoes **40** into increasing engagement with the bearing rods **46**. This engagement will serve to pivot the brake shoes **40**, against the bias of springs **42**, until the arcuate surfaces **50** are in intimate frictional engagement with the brake surface **32**. Once the shoes **40** engage the surface **32** there will be a tendency for the clutch drum **25** to carry the shoes in a clockwise direction. Clockwise rotation of the brake shoes, however, serves to increase the wedging-camming action against the bearing rods **46** and thus merely increases the frictional engagement between the arcuate surfaces **50** and the exterior surface **32** of the centrifugal clutch drum. Such a brake arrangement is commonly referred to as being "self-locking" and will serve to rapidly and reliably stop rotation of the clutch drum **25** upon actuation of the brake shoes **40**.

Referring now to FIGS. **2–4**, there will be seen an actuation assembly **28** suitable for use in connection with the braking assembly **30**.

The actuation system **28** includes a first lever **60** pivotally mounted adjacent to the frame handle **14** of the chain saw **10**. The first lever **60** includes a transverse member **62** having an axis extending generally parallel with the axis of an upper portion of the frame handle **14**. The transverse member **62** has connected respectively to the ends thereof a first and second normally extending arm **64** and **66**, note FIG. **4**.

Arm **66** is provided with a normal extension **68**, note FIG. **3**, having an end portion **70** extending at right angles thereto for insertion within an aperture in pivot bracket **72**. The pivot bracket **72** is attached to the chain saw frame **20** by the provision of conventional threaded fasteners **74**, note FIG. **4**. The arm **64**, in a similar manner, is provided with a normally extending leg **76** which is connected to leg **64** by a loop **78**, note FIG. **2**. The free leg **76** is fashioned with a a normally directed segment **79** suitable to be received within an aperture in the pivot bracket **72**.

By the provision of the foregoing arrangement of arms the first lever **60** is mounted for limited pivotal movement away from and toward engagement with the upper portion of the frame handle **14**.

The actuation assembly **28** further includes a second lever **80**. The second lever is pivotally mounted upon the control handle **18** for movement away from and toward the handle. The lever **80** is fashioned with a generally U-shaped plate **84** designed to conform to the top surface of the control handle **18**. One end of the plate **84** is bifurcated into a pair of legs **86** for connection with a pivot pin **82** which extends through the control handle, note FIG. **4**.

The actuation assembly **28** further includes a longitudinally translatable rod **90**, note FIG. **2**, which is intimately received for translation through an aperture in a mounting frame **92** by the provision of a rubber grommet **94** or the like. One end **96** of the rod **90** is normally bent for extension through an aperture in the yoke **38**. The aperture in the yoke is radially offset from the pivot axis **97** thereof to effect pivotal movement of the yoke.

The rod is provided at approximately a mid-span portion thereof with a bearing washer **98** which is held in position by a normally extending pin **99**. An abutment washer **100** is coaxially mounted upon the rod against the grommet **94** and a compression spring **102** is mounted between the washers **98** and **100** to bias the rod **90** toward the yoke to induce a clockwise rotation thereof and the brake shoes **40** into engagement with the braking surface **32** of the centrifugal clutch drum.

In order to overcome the normal bias of rod **90**, which effects braking action of the cutting chain, a linkage system is provided which interconnects the first and second levers **60** and **80**, respectively, with the rod **90**. More specifically, a first link **110** is pivotally mounted at one end **111** through the loop **78** in the first lever **60**. A second link **112** is pivotally mounted at one end **113** to an extended section **114** of the second lever **80**. The other ends **116** and **118** of the first and second links **110** and **112**, respectively, are linked together at a pivotal junction by one end **120** of a third link **122**. The other end **123** of the third link is looped around a hook portion **124** of the longitudinally translatable rod **90**. Thus an articulated linkage assembly is provided between the first lever **60**, the second lever **80** and the longitudinally movable rod **90**.

The dimensional relationship of the first and second levers **60** and **80**, the first and second links **110** and **112**, the third link **122** and the longitudinally movable rod **90** are such that upon pivotal engagement of the first and second levers **60** and **80** into abutting engagement with the frame and control handles **14** and **18** respectively the longitudinally translatable rod **90** will be pulled against the normal bias of compression spring **102** to rotate the yoke **38** counterclockwise and draw the arcuately wedge-shaped brake shoes **40** out of engagement with the outer braking surface **32** of the cylindrical clutch drum.

OPERATION

Turning now to FIGS. **6A–C**, there will be seen three schematic views of the actuation and brake assemblies in various modes of operation.

More particularly, and referring to FIG. **6A**, in the event an operator's hand should slip from the frame handle **14**, the first lever **60** will pivot away from the handle. The operator's rear hand **16**, however, may remain clasped about the control handle **18** and the second lever **80** therefore is maintained in a depressed posture.

As the first arm **60** pivots away from the frame handle **14**, as indicated by arrow A, the first link **110** is free to move downwardly in a manner as illustrated by arrow B. The second link **112** is also free to pivot about the connection thereof with the second lever **80** in a downward direction indicated by arrow C. The combined pivotal and translational movement of the second link **110** in a general direction B and the pivotal movement of the second link **112** in a general direction C permits movement of the third link **122** in a general direction D toward the brake assembly. Movement of the

third link **122** in turn permits the rod **90** to translate longitudinally in the direction of arrow E toward the yoke **38** under the bias of compression spring **102.** The yoke **38** in turn will pivot about the central axis **97** in a clockwise direction as indicated by arrow F for an initial position shown in phantom to an actuated position shown in full lines. The arcuately wedge-shaped clutch shoes **40** will cam against the bearing rods **46** and into intimate frictional engagement with the braking surface **32** of the centrifugal clutch drum **25** to immediately stop movement of the clutch drum and the cutting chain.

FIG. **6B** discloses an alternate possible mode of actuation. In this view the first lever **60** is engaged against the frame handle **14.** The second lever **80,** however, is permitted to pivot upwardly as indicated by arrow G as would be the case in the event an operator's rear hand should slip from the control handle **18.** Upward movement of the second lever **80** permits the second link **112** to generally translate as indicated by directional arrow H. This translation in turn will permit the first link **110** to pivot generally in the direction of arrow I.

The combined translational motion of the second link in the general direction H and the pivotal motion of the first link as generally indicated by the directional arrow I will permit the third link **122** to generally pivot and translate downwardly as indicated by directional arrow J. Movement of the third link in the direction of arrow J will in turn permit longitudinal movement of rod **90** in the direction of arrow K under the influence of the compression spring **102.**

Downward movement of the rod **90** will permit the yoke **38** to pivot about the axis **97** in a clockwise direction as indicated by direction arrow L. Such clockwise movement will induce the arcuately wedge-shaped brake shoes **40** into increasing engagement with the bearing rods **46** to actuate the brake shoes into frictional engagement with the exterior braking surface **32** of the centrifugal clutch assembly. The brake shoes will then immediately stop rotation of the clutch drum and the cutting chain.

Thus, from FIGS. **6A** and **6B** it will be appreciated that if an operator's hand should slip from either the frame handle **14,** note FIG. **6A,** or the control handle **18,** note FIG. **6B,** the clutch drum and cutting chain will be instantly stopped by a self-locking brake so that the possibility of injury to an operator's hand will be minimized.

Whereas the cutting chain will be braked to an immediate stop if an operator's hand should slip from either the control frame handle or the control handle, as illustrated and discussed in connection with FIGS. **6A** and **6β,** if the operator's hand should simultaneously slip from both handles, the cutting chain will also immediately be stopped. The possibility of this occurrence is illustrated in FIG. **6C.**

In the event that an operator's hand should slip from the frame handle **14,** the first lever **60** will be permitted to pivot in a general direction as indicated by arrow M. If the operator's other hand should slip from the control hand **18,** the second lever **80** will be permitted to rotate upwardly as generally indicated by arrow N.

Rotational movement of the first and second levers **60** and **80,** respectively, in the general direction of arrows M and N, will permit the first and second links **110** and **112** to move generally in the direction of arrows O and P respectively. Such movement of the first and second links permits the third link **122** to move in the general direction of arrow Q. In turn, the longitudinally movable rod **90** is permitted to move in the direction of arrow R under the influence of compression spring **102** to pivot the yoke **38** about the axis **97** in a clockwise direction as indicated by directional arrow S.

The arcuately wedge-shaped brake shoes **40** will pivot against bearing rods **46** to bring friction surface **50** of the brake shoes **40** into engagement with braking surface **32.** The clutch and thus the cutting chain will thereupon be instantly frozen against rotation, as previously discussed, by the self-locking brake assembly.

SUMMARY OF THE MAJOR ADVANTAGES

It will be appreciated by those skilled in the art that the above described invention discloses a method and apparatus for minimizing disastrous accidents of the type which may occur when an operator's hand accidentally slips from a chain saw frame handle or control handle into the cutting chain.

The cutting chain is braked to an immediate stop by a novel self-locking brake assembly which may be symergistically associated with a conventional contrifugal clutch drum.

A highly significant aspect of the subject invention is the provision of levers adjacent to both the frame and control handles of the chain saw for actuating the self-locking brake upon the operator's hand slipping from either the frame or control handle to instantly actuate the brake. The actuation assembly includes a unique linkage arrangement which is rugged, reliable and rapid acting to permit a self-locking brake which is normally biased into engagement to rapidly lock upon slippage of an operator's hand from either the frame or the control handle.

Still further, the subject chain saw safety system is maintained in a disengaged posture under normal operations and therefore it does not continuously coact with the cutting chain drive train which potentially may create servicing and wear difficulties.

Although the invention is disclosed with reference to a preferred embodiment it will be appreciated by those skilled in the art that additions, deletions, modifications, substitutions and other changes not specifically described and illustrated in this embodiment may be made which will fall within the purview of the appended claims.

What is claimed is:

1. A chain saw adapted to be held by an operator using both hands comprising:

a frame having,
  a frame handle, and
  a control handle;
a guide rail connected to said frame;
a cutting chain operably carried by said guide rail;
power means mounted on said frame and operably connected to said cutting chain for driving said cutting chain on said guide rail;
brake means operably connected to said cutting chain for stopping movement of said cutting chain on said guide rail; and
brake actuation means connected to said brake means for controlling the application of said brake means including,

a first lever pivotally mounted adjacent to said frame handle,

a second lever pivotally mounted adjacent to said control handle,

a first link connected at one end to said first lever,

a second link connected at one end to said second lever,

linkage means connected at one end to the other ends of said first and second links and connected at the other end to said brake means for maintaining said brake means in an actuated posture unless the first and second levers are held against the frame handle and the control handle, respectively.

2. A chain saw as defined in claim **1** wherein said linkage means comprises:

a rod mounted for longitudinal translation toward and away from said brake means and connected at one end thereof to said brake means;

means for normally biasing said rod toward said brake means to maintain said brake means in an actuated posture; and

a third link pivotally connected at one end thereof to the other end of said rod and pivotally connected at the other end thereof to the other ends of said first and second links.

3. A chain saw as defined in claim **2** wherein said means for biasing comprises:

a compression spring coaxially surrounding said rod and abutted against a frame stop at one end thereof and connected to a generally midspan portion of said rod at the other end thereof.

4. A chain saw as defined in claim **1** wherein said brake means comprises:

a self-locking brake.

5. A chain saw as defined in claim **1** wherein said brake means comprises:

a generally cylindrical brake drum operably connected to said cutting chain;

at least one arcuately wedged-shaped brake shoe operably carried adjacent the periphery of said drum and normally biased away from engagement therewith; and

at least one stationary frame lug fixedly connected to said frame and positioned adjacent said at least one brake shoe.

6. A chain saw as defined in claim **5** wherein:

said at least one arcuately wedge-shaped brake shoe comprises a pair of diametrically spaced brake shoes, pivotally supported upon a yoke connected therebetween; and

said at least one stationary frame comprises a pair of frame lugs each one positioned on said frame adjacent a corresponding one of said pair of brake shoes.

7. A chain saw as defined in claim **6** wherein:

said other end of said linkage means is connected to the yoke of said brake means for pivoting said yoke and actuating said spaced brake shoes into and out of wedging engagement between said frame lugs and said brake drum.

8. A chain saw safety device operable to be attached to a chain saw of the type having a frame, a frame handle, a control handle, a guide rail, a cutting chain and power means mounted on the frame and operably connected to the cutting chain for driving the cutting chain upon the guide rail wherein the improvement comprises:

brake means operably connected to said cutting chain for stopping movement of said cutting chain upon said guide rail; and brake actuation means connected to said brake means for controlling the application of said brake means including,

a first lever pivotally mounted adjacent to said frame handle,

a second lever pivotally mounted adjacent to said control handle;

a first link connected at one end to said first lever,

a second link connected at one end to said second lever; and

linkage means connected at one end to the other ends of said first and second links and connected at the other end to said brake means for maintaining said brake means in an actuated posture unless both of said first and second levers are held against the frame handle and the control handle respectively.

9. A chain saw as defined in claim **8** wherein said linkage means comprises:

a rod mounted for longitudinal translation toward and away from said brake means and connected at one end thereof to said brake means;

means for normally biasing said rod toward said brake means to maintain said brake means in an actuated posture; and

a third link pivotally connected at one end thereof to the other end of said rod and pivotally connected at the other end thereof to the other ends of said first and second links.

10. A chain saw safety device as defined in claim **9** wherein said brake means comprises:

a generally cylindrical brake drum operably connected to the cutting chain;

at least one arcuately wedge-shaped brake shoe operably positioned adjacent to but normally spaced from the outer periphery of said drum;

at least one stationary frame lug fixedly connected with the frame and positioned adjacent said at least one brake shoe to serve as an abutment when said shoe is actuated against said drum; and

a yoke pivotally mounted upon the frame and lying adjacent to said brake drum, said yoke being operable to carry said at least one arcuately wedge-shaped brake shoe and being connected to said longitudinally translatable rod, whereby actuation of said longitudinally translatable rod pivots said yoke for actuating said at least one arcuately wedge-shaped brake shoe between said at least one stationary frame lug and the outer periphery of said generally cylindrical brake drum to immediately stop rotation of said drum and movement of the cutting chain.

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