United States Patent [19]

McRoskey et al.

[11] **3,797,163**

[45] **Mar. 19, 1974**

[54] **TOY CHAIN SAW WITH SOUNDERS FOR SIMULATING IDLING AND CHAIN SAW DRIVING NOISES**

[75] Inventors: **Leonard H. McRoskey; John W. McRoskey,** both of Los Angeles; **Delbert D. Swartz,** Torrance, all of Calif.

[73] Assignee: **Republic Tool & Manufacturing Corp.,** Los Angeles, Calif.

[22] Filed: **Mar. 31, 1972**

[21] Appl. No.: **240,062**

[52] **U.S. Cl.** ..... **46/39,** 46/243 M, 46/177

[51] **Int. Cl.** **A63h 33/30**

[58] **Field of Search** .... 46/39, 243 M, 243 MV, 177

[56] **References Cited**

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3,036,402	5/1962	Hamilton	46/39
3,190,031	6/1965	Tengelitsch	46/39
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Primary Examiner—F. Barry Shay

Attorney, Agent, or Firm—Whann & McManigal

[57] **ABSTRACT**

A miniaturized toy chain which closely simulates the appearance, operation and running sounds of a full sized chain saw, but which is completely safe having a harmless ball chain running in a groove within the periphery of an elongated blade which protrudes forwardly from a housing or body portion. The operational sequences, including starting the small electric motor which powers the toy by pulling a pull cord, initiating the rotation of the ball chain by squeezing a trigger on a handle provided on the housing and stopping the motor by operating an on-off switch, realistically simulate the operational sequence of a conventional chain saw. A sound emitter is provided within the housing to appropriately simulate both the idling and running sounds of an internal combustion engine of the type generally used in conventional chain saws.

15 Claims, 13 Drawing Figures

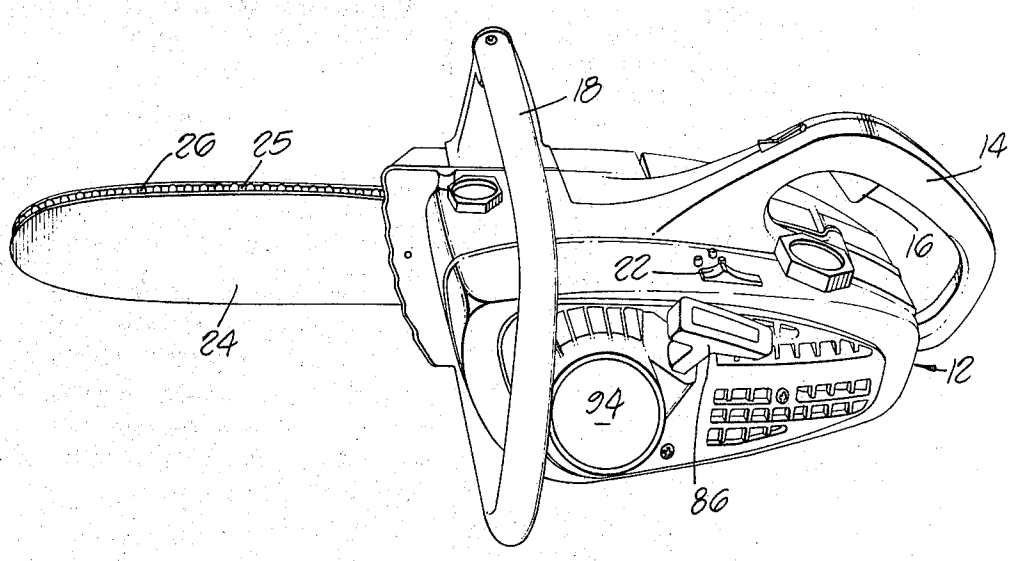


FIG. 1.

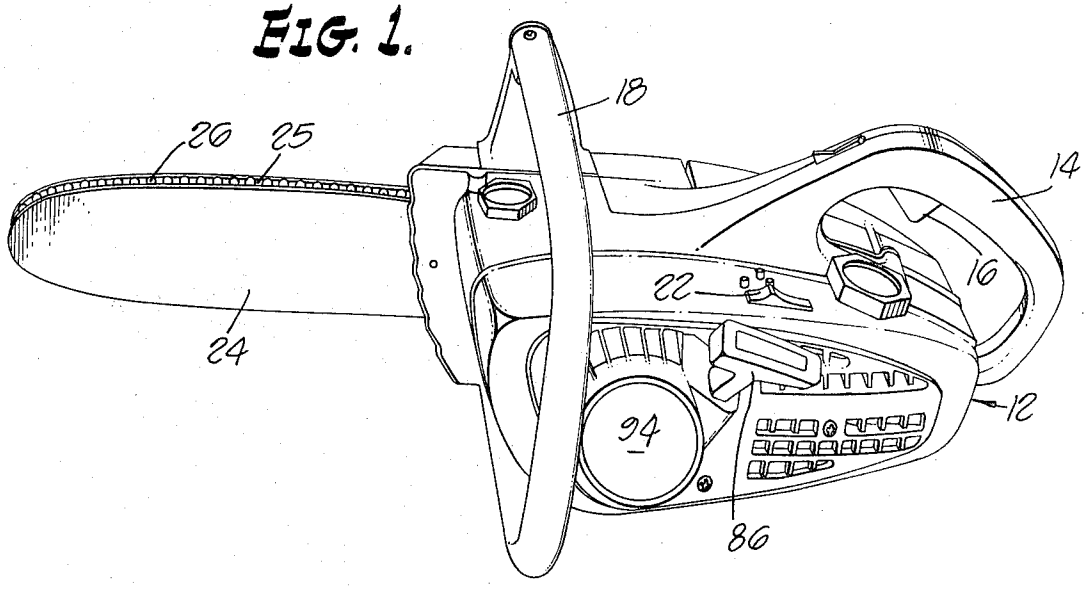
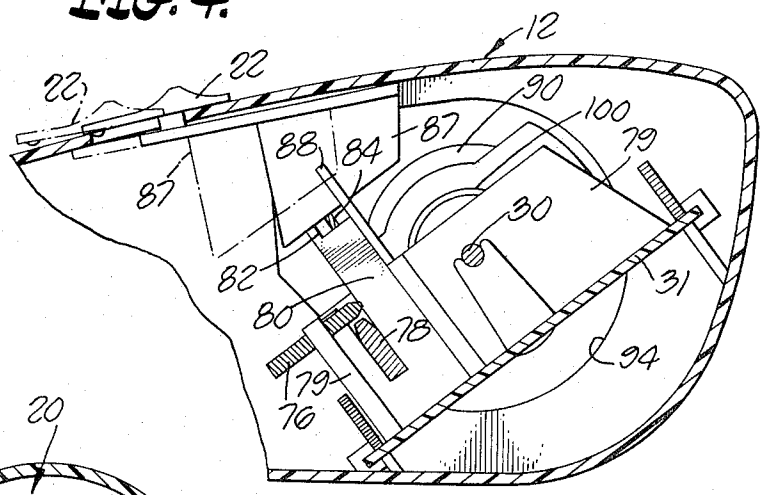


FIG. 4.



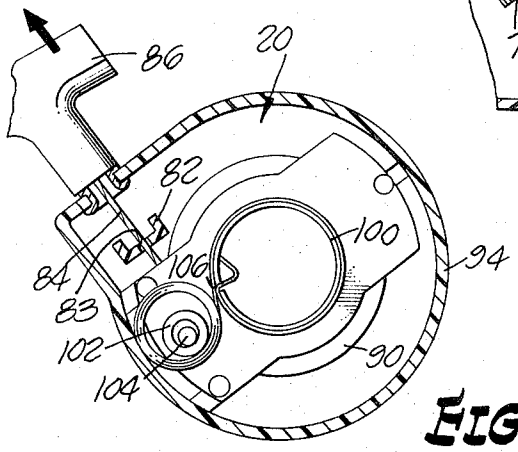


FIG. 6.

FIG. 2.

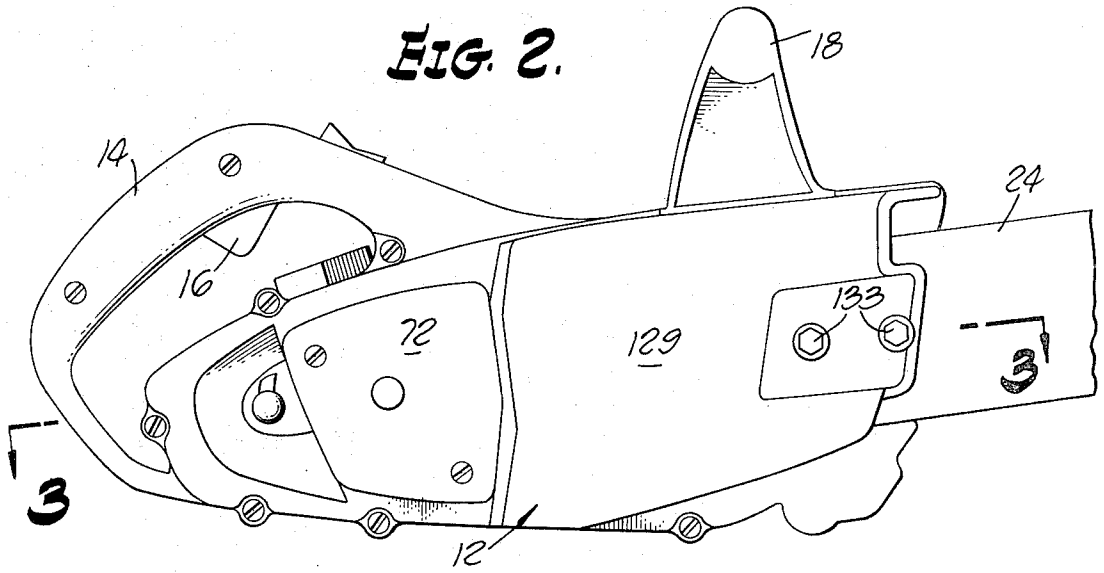
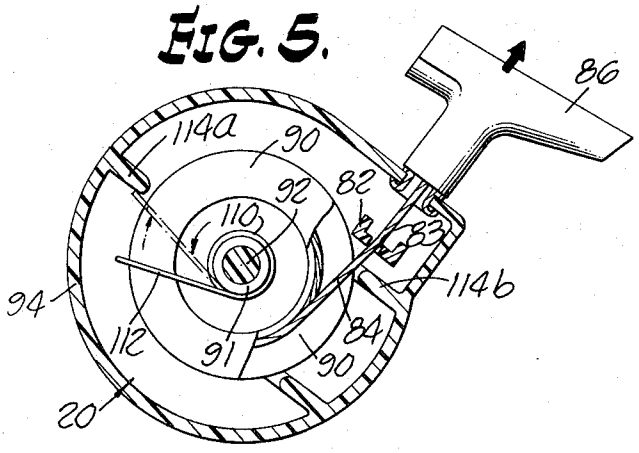


FIG. 5.



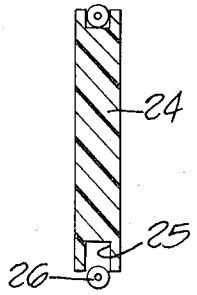


FIG. 8.

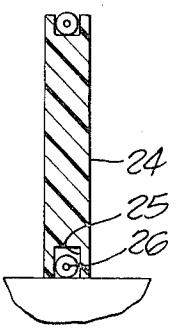


FIG. 9.

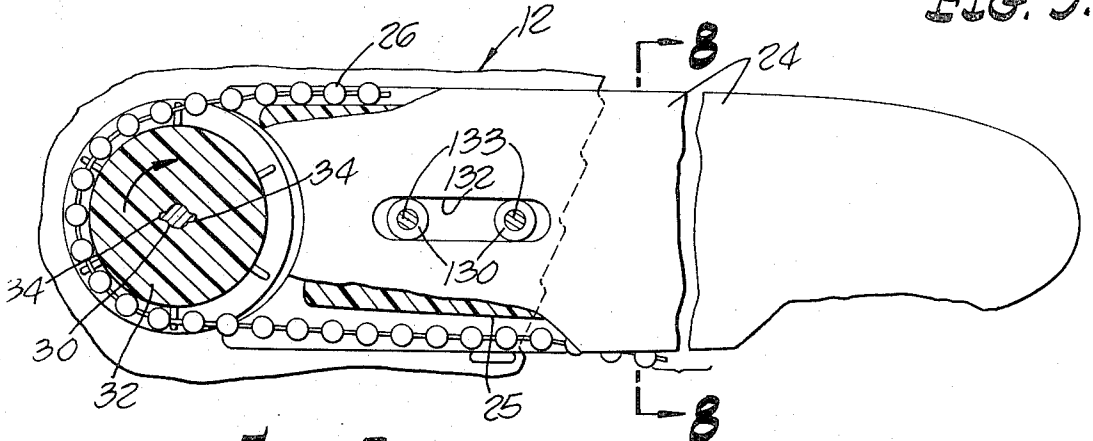
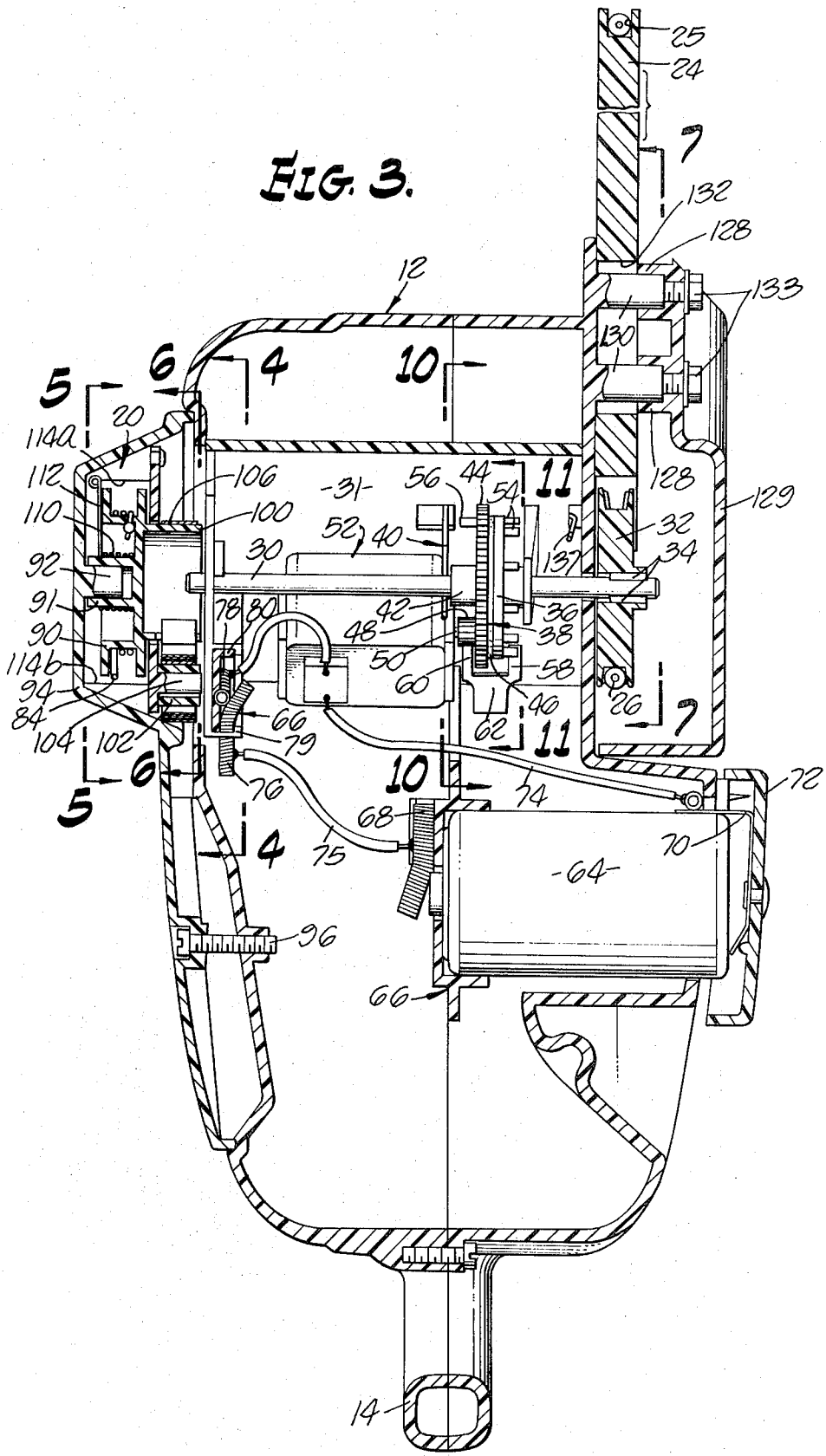


FIG. 7.

FIG. 3.


25
24
7
132
128
133
12
130
10
4
6
5
20
114a
112
110
92
91
90
114b
94
84
104
102
106
100
-31-
56
44
54
11
52
40
30
78
80
42
48
50
60
36
38
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128
129
32
137
34
26

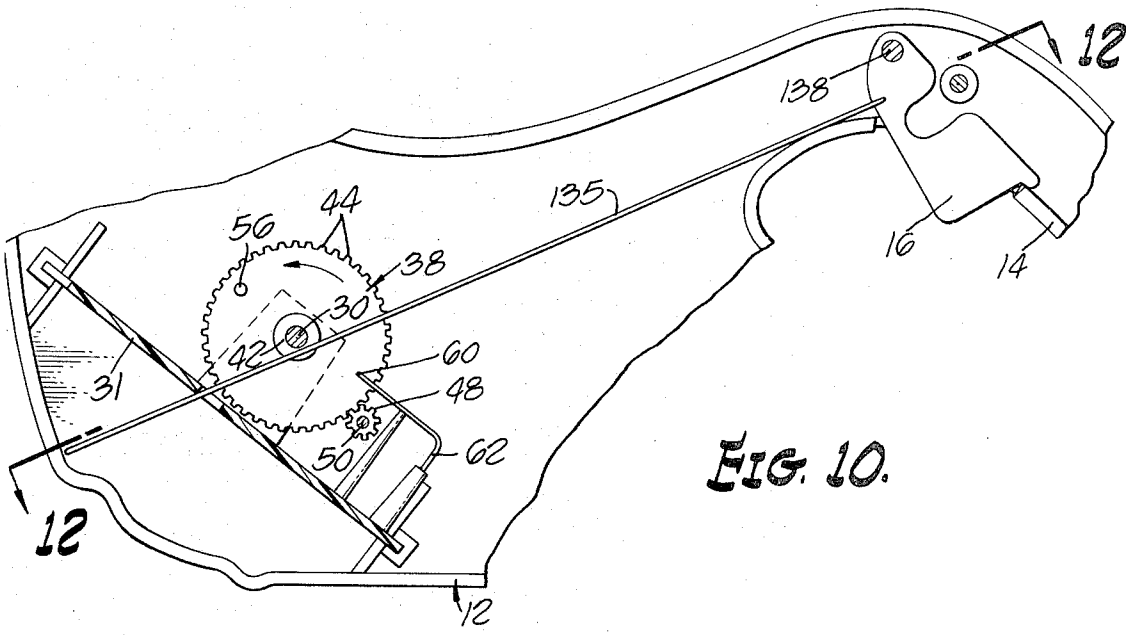


FIG. 10.

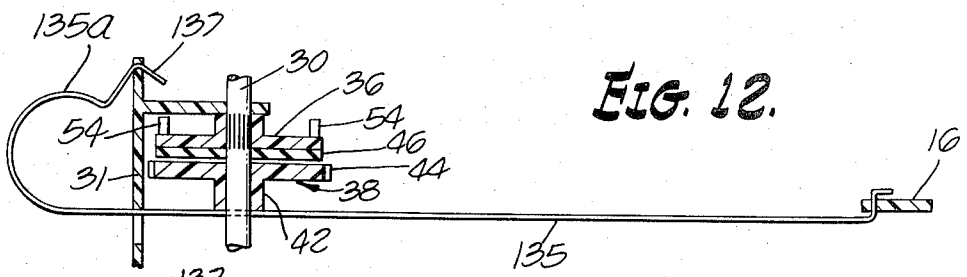


FIG. 12.

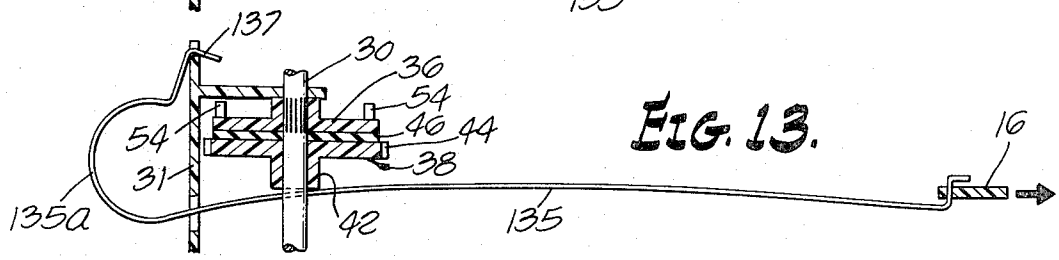


FIG. 13.

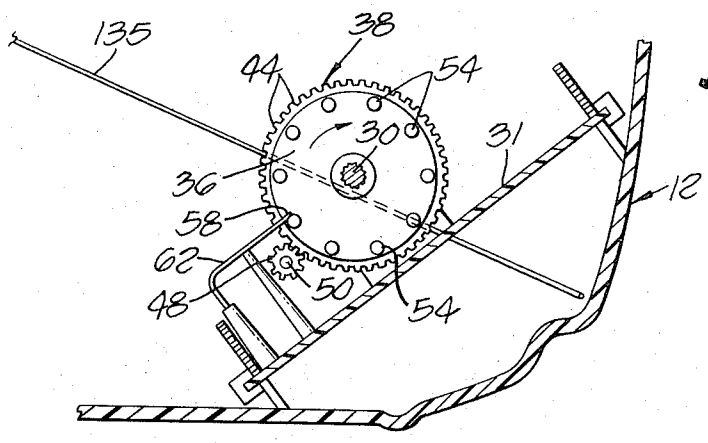


FIG. 11.

TOY CHAIN SAW WITH SOUNDERS FOR SIMULATING IDLING AND CHAIN SAW DRIVING NOISES

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to toys and more particularly to a portable toy chain saw which closely simulates the appearance and running sounds of a conventional chain saw.

2. Description of the Prior Art

Of great fascination to children are the numerous types of hand-held power tools which have become popular during the last several years. Particularly fascinating are power saws, such as chain saws, which are capable of quickly and effortlessly cutting through large tree limbs and heavy pieces of timber. Because such saws have come into popular usage in urban as well as rural areas for tree trimming and the like, children have become quite familiar with the unique operating sounds of the saws and will follow the sound in order to locate the work site so that they may observe the saw at work.

Being natural imitators, children obtain great satisfaction and enjoyment from having miniaturized toys which simulate the power tools used by their fathers and other adults with whom they come into contact. Particularly satisfying to the child are toys which accurately simulate the operating sounds of the full size power tool. This is especially true of a tool such as the chain saw which emits highly unique operating sounds. Recognizing these facts, several manufacturers of toys have in the past attempted to design toy chain saws which simulate the sound and appearance of conventional chain saws.

Typical of prior art toy chain saws are those described in the patent to Carter U.S. Pat. No. 3,491,479, Tengelitsch U.S. Pat. No. 3,190,031 and Hamilton U.S. Pat. No. 3,036,402. In the devices described in these patents, several techniques have been used to simulate the appearance, sound and operation of full size chain saws. In the device disclosed in the patent to Carter, for example, a non-automatically retracting pull-cord is used to wind a spring which in turn drives a ball chain in a manner which simulates the appearance of the saw chain of a full sized saw. The spring is arranged to drive a ratchet mechanism which cooperates with an escapement element to simulate the running sound of a conventional saw. In Tengelitsch a chain-like belt is driven by a small electric motor with the operating sounds being produced by a reed contacting a series of pins on the driving wheel of the mechanism. Also provided is a chamber for containing sawdust and a means for ejecting sawdust from the tool as the belt is driven. In Hamilton a pull cord is used to wind a spring which may be controllably unwound so as to drive a drive wheel which, in order to simulate the running sounds of a chain saw, is provided with a plurality of pins adapted to strike a reed carried within the housing.

While all of the described prior art devices have performed satisfactorily, each has failed in some manner to accurately simulate the appearance, sound or operational sequences of a conventional chain saw. In the toy of our invention, for example, we have succeeded, where prior art devices have failed, in accurately simulating the starting, running and stopping operational sequence of a conventional chain saw. Further, the unique construction of the toy of our invention provides new and novel means for appropriately and accurately simulating both the idling and running sounds of the chain saw. Additionally, because of the unique design of the toy of our invention, we have succeeded in limiting the number of moving parts required to an absolute minimum, thereby increasing the durability and reliability of the toy without sacrificing any aspect of the simulation of each detail of the full sized operating chain saw.

SUMMARY OF THE INVENTION

It is an object of our invention to provide a power operated miniaturized toy chain saw which closely simulates the appearance of a conventional full sized chain saw, which is operated in a manner similar to a conventional chain saw and which emits sounds closely resembling the operating sounds of a conventional chain saw.

It is another object of our invention to provide a toy chain saw as described in the previous paragraph which has a simulated saw chain in the form of a ball chain which is driven within a groove formed in the periphery of an elongated forwardly protruding blade support by a driving means carried within the housing so as to simulate the rotation of the saw chain of a conventional chain saw, but which is completely harmless and totally safe for children of all age groups to operate.

It is still another object of our invention to provide a toy chain saw of the type described which is operated in a manner closely simulating the operation of a conventional chain saw having an automatically retractable pull-cord to start an electric motor which drives the driving means, a trigger to operate the drive means so as to initiate rotation of the ball chain, and a switch to stop the motor.

It is a further object of our invention to provide a toy chain saw which contains a sound emitter which appropriately simulates both the idling and accelerated running sounds which are emitted during operation by a gasoline motor of the type generally used in conventional chain saws.

It is still another object of our invention to provide a toy chain saw which has a novel manually operable saw chain driving system comprising a rotatable shaft carried within the housing, a first member affixed to the shaft, a second member mounted for rotation on the shaft and adapted to drivably engage the first member and a trigger operated mechanism for moving the second member into driving engagement with the first member.

It is a further object of our invention to provide a toy chain saw which is driven by a small electric motor and which has a novel switching arrangement for starting and stopping the motor, which switching arrangement is activated by pulling a pull-cord carried by the housing of the toy and which is deactivated by the manipulation of a mechanical switch closing mechanism carried by the housing.

It is another object of our invention to provide a toy chain saw in which the mechanism for driving the simulated saw chain includes a novel spring arrangement carried within the housing of the toy which may be placed under tension by the operation of a trigger mechanism and which, when so placed under tension, will engage a second member of the driving mechanism, causing it to slide axially along its supporting

shaft and move into driving engagement with a first member of the driving mechanism, causing the shaft to rotate and in turn the saw chain to rotate.

It is still another object of our invention to provide a toy chain saw in which the sound emitting element includes a bifurcated spring carried within the housing of the toy, the prongs of which are positioned so as to be struck by the rotating members of the driving mechanism as they rotate during operation of the toy.

It is still another object of our invention to provide a toy chain saw, bearing the previous objects in mind, which is extremely durable, simple to operate, has a minimum number of parts and is inexpensive to manufacture.

In summary, the toy chain saw of our invention comprises a simulated saw chain adapted to move around a saw chain blade support member, an electric motor, a switch mechanism for interconnecting the motor with a source of electricity, a simulated pull-cord starter for operating the switch mechanism, a sound emitter for simulating the idling sounds of an internal combustion engine whenever the electric motor is running and for simulating the running sounds of a full size chain saw when the saw chain is moving around the blade and a manually operable mechanism for connecting the electric motor to the saw chain to move it around the blade support.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of the toy chain saw of our invention.

FIG. **2** is a fragmentary side elevational view of the toy of our invention showing the side of the toy not visible in FIG. **1.**

FIG. **3** is a cross-sectional view taken along line **3—3** of FIG. **2** illustrating the arrangement of the driving mechanisms, switches, sound emitter, and the battery which are all housed within the body of the toy.

FIG. **4** is a fragmentary cross-sectional view taken along line **4—4** of FIG. **3** illustrating the construction of the start-stop switch of the invention.

FIG. **5** is a cross-sectional view taken along line **5—5** of FIG. **3** illustrating the construction of the pull cord switch operating mechanism of the invention.

FIG. **6** is a cross-sectional view taken along line **6—6** of FIG. **3** showing the pull cord mechanism as it appears looking in the opposite direction from that of FIG. **5.**

FIG. **7** is a fragmentary cross-sectional view taken along line **7—7** of FIG. **3** illustrating the ball chain drive mechanism of the toy of our invention.

FIG. **8** is a cross-sectional view of the simulated chain saw blade of the toy taken along line **8—8** of FIG. **7** and illustrating the relative positions of the grooves in the periphery of the blade and the ball chain which simulates the saw chain.

FIG. **9** is a view similar to FIG. **8** but showing the lower edge of the simulated blade resting against an object and illustrating the ability of the ball chain to move harmlessly into the groove in the blade so as to preclude damaging the object.

FIG. **10** is a fragmentary sectional view taken along line **10—10** of FIG. **3** illustrating the novel trigger operated ball chain drive activating arrangement of my invention.

FIG. **11** is a fragmentary sectional view taken along line **11—11** of FIG. **3** illustrating the arrangement of the drive gears and sound emitter of the toy.

FIG. **12** is another view of the trigger operated ball chain drive activating arrangement taken along line **12—12** of FIG. **10** shown in its normal state.

FIG. **13** is a view similar to that of FIG. **12,** but showing the trigger operated ball chain drive activating arrangement as it appears when the trigger is squeezed, causing the spring member to deform so as to move the motor driven gear into driving engagement with the shaft driving gear.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGS. **1** and **2** of the drawings, the toy chain saw of our invention can be seen to include a housing or body **12** which is preferably constructed of a moldable plastic material and which is shaped so as to closely simulate, in precise detail, the shape and appearance of a full-size chain saw. Integrally formed with the housing is a hollow rear handle or grip **14** which houses the trigger mechanism **16.** A forward grip **18** is provided in the form of a generally U-shaped tubular bar which encircles the forward portion of the housing and is affixed thereto by means of suitable support brackets. The forward grip is preferably constructed of metal so as to provide the correct "feel" to the user of the toy.

As is best shown in FIG. **1,** an automatically retractable pull-cord starting mechanism **20** is carried on one side of the housing and, as will be discussed later, can be withdrawn in the same manner as a pull-cord starter on a conventional chain saw. If the on-off switch **22** which is slidably affixed to the top of the housing is in the "on" position, pulling the pull-cord will cause a small electric motor carried within the housing to start and the toy will initially emit a sound closely simulating the idling sound of a gasoline motor.

Affixed to and protruding forwardly from housing **12** is a simulated saw chain blade member **24** having a peripheral groove **25** in which an endless ball chain **26** may travel.

FIG. **3** illustrates the arrangement of various operating elements housed within body **12** which comprise manually operable means for connecting the electric motor and the saw chain so as to move the saw chain around the blade member and for producing the sounds of a running chain saw. The ball chain driving means for driving the simulated saw chain comprises a series of cooperating members carried on a shaft **30** which is rotatably supported on a platform **31** disposed within housing **12.** At one extremity of the shaft is a sprocket **32** which is adapted to drivably engage ball chain **26.** Sprocket **32** is located in a coplanar relationship with blade member **24** and is driven by shaft **30** by means of a plurality of spines **34** formed on the periphery of the shaft. Affixed to shaft **30** and spaced inwardly from sprocket **32** are first and second wheel-shaped members **36** and **38** which form respectively the driven and driving members of a clutch mechanism or means for interconnecting the electric motor and the shaft. A manually operated clutch operating means in the form of a wire, indicated by the numeral **40,** is provided to operate the clutch means in a manner which will be described hereinafter.

Driving member **38**, which is freely rotatable on shaft **30**, is provided with a hub portion **42** and a plurality of gear-like teeth **44** about its periphery. As can be seen by referring to FIGS. **12** and **13**, member **38** is axially movable on shaft **30** and is adapted to be moved by the clutch operating means into driving engagement with a friction pad **46** positioned between members **36** and **38**. Turning for the moment to FIGS. **3** and **10**, driving gear or second member **38** can be seen to be driven by a pinion **48** affixed to shaft **50** of a small electric motor **52** carried by platform **31**. When member **38** is in the position illustrated in FIG. **12** it is freely rotatable on shaft **30**, which, in this position, is stationary.

First and second members **36** and **38** are provided with pin-like elements **54** and **56** respectively which extend axially outwardly from their non-mating faces in a manner such that as the members rotate, as is illustrated by FIG. **3**, the pins will strike the fingerlike extremities **58** and **60** of a flexible bifurcated leaf spring **62** which is affixed to housing **12** and which comprises the sound emitting means of our invention. The details and operation of the sound emitting means and the method by which different sounds are produced to simulate the running sounds of a gasoline engine will be discussed at greater length in the subsequent section entitled Operation.

Electric motor **52** is powered by a battery **64** to which it is operatively connected by an electric circuit which includes a switching means comprising a switch **66** of the type described in my previously issued U.S. Pat. No. 3,400,236 entitled Improved Electric Switch, Battery **64** is removably supported within the housing by a bracket **66** which carries a flexible contact **68** adapted to engage one terminal of the battery. The other terminal of the battery is contacted by a flexible spring contact member **70** carried by a cover portion **72** which is removably affixed to housing **12**. A conductor **74** interconnects the motor with contact member **70** and a conductor **75** interconnects contact **68** with the fixed flexible contact **76** of switch **66** which contact is carried by a wall member **79** affixed to platform **31**. As can be seen by referring to FIG. **4**, the movable contact **78** of switch **66** is carried by a member **80** which is mounted on wall member **79** for sliding movement in a plane perpendicular to platform **31**. When member **80** is in its lowermost position as shown in FIG. **4**, the switch is in an open position. In order that the switch may be opened and closed by the operation of pull-cord mechanism, member **80** is provided with a leg portion **82** which is U-shaped in cross section and which extends outwardly, i.e., into the plane of the paper as viewed in FIG. **4**, into proximity with the pull-cord mechanism. As illustrated in FIGS. **5** and **6**, leg portion **82** has a slot **83** in its outer extremity which is adapted to slidably receive the cord **84** of pull-cord mechanism **20**. A clip or ferrule (not shown) is appropriately located on cord **84** so that when the cord is substantially withdrawn by pulling the pull-cord handle **86** in the direction of the arrows, the ferrule will engage leg portion **82** tending to urge it outwardly relative to platform **31**.

Referring again to FIG. **4**, on-off switch **22** can be seen to have a keel-like member **87** which depends into the housing. As indicated by the phantom lines, when switch **22** is in its rearward or left position as viewed in FIG. **4**, keel member **87** is retracted so that member **80** can be moved outwardly due to the urging of the ferrule on the pull-cord contacting leg **82**, into a position where movable switch contact **78** engages switch contact **76**. In this position the electric motor will be interconnected with the battery enabling the motor to drive driving member **38** of the clutch mechanism. If switch member **22** is in its off position as illustrated by the solid lines in FIG. **4**, keel member **87** will be in engagement with leg portion **82** so as to block upward movement of member **80** and switch contact **78**. Pulling the cord of the pull-cord mechanism with switch **22** in the off position, therefore, cannot start the electric motor. Similarly, if the motor is running, movement of switch **22** forwardly into the position shown by the solid lines will cause switch **66** to open thereby stopping the motor. An upwardly extending post-like element **88** is provided on member **80** and is adapted to engage keel member **87** and act as a guide to ensure smooth cooperation between the parts.

Referring again to FIGS. **5** and **6** as well as to FIG. **3**, the pull-cord mechanism can be seen to include a cord carrying drum **90** having a central hub portion **91** which is rotatably supported on an outwardly extending axle **92** formed in the pull-cord mechanism housing **94** which in turn is removably affixed to housing **12** by fasteners **96**. Protruding inwardly through an aperture in a longitudinally extending bracket **98** which is carried by housing **94** and which serves to hold the drum captive within the housing, is a cord drum hub **100**. Adjacent hub **100** is a bearing **102** rotatably carried on a post **104** which extends inwardly from bracket **98**. As can best be seen in FIG. **6**, a first means for resisting withdrawal of the pull-cord is provided in the form of a coil spring member **106** part of which is carried on hub **100** and part of which is carried on bearing **102**. Spring **106** which has one end held captive within drum **100**, passes around drum **100** and then is oppositely coiled loosely about bearing **102**. In operation, as the pull-cord handle is pulled outwardly, drum **106** will be caused to rotate in a clockwise direction causing spring **106** to feed onto the drum against forces tending to maintain it in a coiled position about bearing **102**. The degree of resistive force provided by spring **106** is such that it will provide a relatively significant resistance to the withdrawal of the cord thereby simulating the resistance experienced when pulling the cord of a conventional saw against the compression of the gasoline engine. Further, the tension of spring **106** is such that it will cause a positive and reliable rewinding of the pull-cord onto drum **102** when handle **86** is released by the user.

Referring again to FIG. **5**, to further simulate the starting sound and feel of the chain saw, we provide a second resistance means for resisting withdrawal of the pull-cord in the form of a torsion spring **110**. Torsion spring **110** is carried by hub **91** and has a radially extending arm **112** which is of a length so as the drum rotates it will engage a plurality of inwardly extending fingers **114** formed on housing **94**. As indicated by the arrows, as the drum rotates in a clockwise direction due to the withdrawal of the cord, arm **112** will reach a point as indicated by the phantom lines, at which its extremity engages finger **114***a*. At this point further removal of the cord can be achieved only by overcoming the opposing forces offered by the torsion spring. As the cord continues to be withdrawn, however, arm **112** will flex sufficiently to allow it to slide past the rounded extremity of finger **114***a* thus causing a relaxation of

the forces opposing withdrawal of the cord. The cord may then be further withdrawn against only the opposition of spring **106** until arm **112** engages finger **114***b* where the cycle will repeat. In this way we realistically simulate the compression sounds and the variable forces resisting withdrawal of the pull-cord in a conventional chain saw due to the gasoline engine passing through its compression and exhaust cycles as the pull-cord is pulled.

OPERATION

As illustrated in FIGS. **2, 3** and **7,** blade member **24** is adjustably clamped between body portion **12** and a pair of generally cylindrically shaped hollow hub-like protrusions **128** which are located near the forward end of a cover plate **129.** To locate cover plate **129** relative to housing **12** hub-like protrusions **128** are adapted to telescopically receive a pair of guide pins **130** provided on body portion **12.** Guide pins **130** are constructed so as to protrude through an elongated slot **132** in blade member **24** and are internally threaded to receive threaded fasteners **133.** With the blade members in position over guide pins **130,** fasteners **133** can be threaded into guide pins **130** so as to securely clamp the blade member in position between body **12** and hub-like protrusions **128.** This construction allows the toy to be conveniently shipped with the blade removed from the body and also provides means for easily adjusting the tension on the ball chain by moving the blade forwardly or rearwardly relative to the body.

When the toy is assembled, the tension on the ball chain appropriately adjusted, and a battery inserted into place within the housing, it is ready for use. To start the toy on-off switch **22** is first moved rearwardly into the on position. This moves keel member **86** into a position which will allow upward movement of switch contact carrying member **80.** The pull-cord handle is then pulled outwardly to a point at which the ferrule carried on the cord engages leg portion **82** of member **80** causing it to move upwardly relative to platform **31.** This closes switch **66** causing the motor to start running. At this juncture the ball chain driving means is in the position shown in FIG. **12** and as member **38** is driven by pinion **48** it will freely rotate on shaft **30.** As member **38** rotates, pin **56** which protrudes therefrom, will periodically strike finger **60** of sound emitting spring means **62** producing a sound closely similar to that emitting by a gasoline engine in its idling mode. Member **38** will continue to rotate freely on stationary shaft **30** until the novel and important clutch operating means of my invention is activated by squeezing the trigger **16** which is carried by handle **14.** Referring to FIGS. **10, 11, 12** and **13,** the clutch operating means can be seen to comprise an elongated wire-like element **135** having an at rest configuration as illustrated in FIG. **12.** One end of element **135** is affixed to trigger **16** and the other end, **135***a*, which is generally C-shaped, is affixed to one edge of platform **31** by means of a radially extending hook-like portion **137** which rests in a notch in the edge of the platform. The lower end of element **135** passes under shaft **30** and rests against hub **42** of driving member **38.**

When trigger **16,** which is pivotally mounted at **138,** is squeezed inwardly relative to handle **14,** forces on element **135** in the direction of the arrow in FIG. **13** will result. These tensional forces will cause element **135** to deform inwardly as illustrated in FIG. **13** which in turn will result in forces being exerted against hub **42** of member **38** causing member **38** to move axially on shaft **30** into driving engagement with friction pad **46.** This will, of course, set shaft **30** and interconnected ball driving sheave **32** into rotation causing ball chain **26** to rotate about the periphery of support member **24.**

As depicted in FIGS. **3** and **11,** the rotation of driven member **36** will cause the plurality of pins **54** which extend axially therefrom to strike finger **58** of the sound emitting means. Whereas member **38** is normally provided with only one pin **56** which may strike finger **60** to simulate the idling sound of an internal combustion engine, member **36** is provided with a plurality of pins which more frequently strike finger **58** to simulate the running sound of the chain saw.

In summary, after moving switch **22** into its "on" position and pulling the pull-cord outwardly, which causes the motor to start and the toy to emit an idlying sound, the child can place the blade member against an object "to be cut" as illustrated in FIG. **9.** With the toy held in this position the child can then squeeze trigger **16** inwardly causing the pull chain to rotate about the blade support member and the toy to emit a sound simulating the running sound of a conventional saw. To stop the rotation of the ball chain, the trigger is released which will allow member **38** to return to a free wheeling mode and the sound to revert to an idling sound. To stop the toy completely, the child need only move the on-off switch forwardly, which causes member **86** to move switch carrying member **80** downwardly thereby opening switch **66** and causing the motor to be disconnected from the battery.

It is important to note that when the blade of the toy is placed against an object as illustrated in FIG. **9,** the chain moves from the position shown in FIG. **8** inwardly into groove **25.** Groove **25** being deeper than the diameter of the ball chain prevents the chain from scarring, scratching or otherwise damaging objects against which the blade may be placed and also renders the toy completely safe for use by children of all ages.

We claim:

1. A toy chain saw including a housing having a saw chain blade support member connected thereto comprising:

a. a simulated saw chain adapted to move around said saw chain blade support member;

b. an electric motor carried by said housing;

c. switch means for interconnecting said electric motor with a source of electricity;

d. means for closing said switch to energize said motor;

e. means including a sounding device in said housing for simulating the idling sounds of an internal combustion engine whenever said electric motor is operating and for selectively simultaneously simulating the sound of a running saw chain; and

f. manually operable means carried by said housing for connecting said saw chain and said electric motor in driving relation so as to move said saw chain around the blade support member and for actuating said sounding device for said simultaneous simulation of the sound of a running saw chain.

2. A toy chain saw as defined in claim **1** in which said means for closing said switch to energize said motor comprises a simulated pull-cord starter mechanism.

3. A toy chain saw as defined in claim 2 including switch opening means for opening said switch to deenergize said electric motor.

4. A toy chain saw as defined in claim 3 in which said switch opening means is adapted to lock said switch means in an open position so as to preclude the closing of said switch by the operation of said pull-cord switch closing means.

5. A toy chain saw including a housing having a saw chain blade support member connected thereto comprising:

a. a simulated saw chain adapted to move around said saw chain blade support member;
b. a rotatable shaft operatively coupled with said simulated saw chain;
c. an electric motor carried by said housing;
d. switch means for interconnecting said electric motor with a source of electrical energy;
e. a simulated pull-cord starter adapted to close said switch means so as to energize said motor;
f. means including a sounding device in said housing for simulating the idling sounds of an internal combustion engine whenever said electric motor is operating and for selectively simultaneously simulating the sound of a running saw chain;
g. means including a sounding device in said housing for simulating the working sounds emitted by a full size chain saw which the saw chain is moving around the blade support member and for selectively simultaneously simulating the sound of a running saw chain; and
h. manually operable means for interconnecting said rotatable shaft and said electric motor in driving relation so as to rotatably drive said saw chain around the blade support member and for operating said means for actuating said sounding device for said simultaneous simulation of the sound of a running saw chain.

6. A toy chain saw as defined in claim 5 in which said manually operable means defined in (h) comprises:

a. a clutch means carried by said shaft having cooperating members adapted to be moved into and out of engagement for selectively driving said shaft; and
b. means for manually operating said clutch means.

7. A toy chain saw as defined in claim 6 in which said clutch means comprises a first said cooperating member affixed to said shaft and a second said cooperating member rotatably carried by said shaft, said second member being adapted to be driven by said electric motor and to driveably engage said first member.

8. A toy chain saw as defined in claim 6 in which said means for manually operating said clutch means comprises an elongated flexible member adapted to pressurally engage said second member and so constructed and arranged that tensional forces exerted on said flexible member will cause it to deform in a manner as to cause movement of said second member axially on said shaft into driving engagement with said frist member.

9. A toy chain saw as defined in claim 6 in which said means for simulating the idling sounds of an internal combustion engine comprises a flexible member disposed adjacent said second member and engageable thereby when said second member is driven by said electric motor.

10. A toy chain saw as defined in claim 6 in which said means for simulating the sounds of a running chain saw comprises a flexible member disposed adjacent said first member and engageable thereby when said first member is rotatably driven by said second member.

11. A toy chain saw comprising:

a. a housing;
b. a chain support member affixed to said housing;
c. an endless chain carried by said chain support member and movable about the periphery thereof;
d. a shaft rotatably supported by said housing;
e. means affixed to said shaft adapted to drivably engage said endless chain;
f. a first member affixed to said shaft;
g. a second member carried by said shaft and rotatable thereon, said second member being adapted to drivably engage said first member;
h. an electric motor carried by said housing adapted to rotate said second member relative to said shaft;
i. means for moving said second member into driving engagement with said first member; and
j. sound-emitting means in said housing cooperatively associated with said first and second members for simulating the running sounds of an internal combustion engine.

12. A toy chain saw as defined in claim 11 including a switch means for interconnecting said electric motor with a source of electrical energy and a pull-cord switch closing means carried by said housing for closing said switch means so as to energize said electric motor.

13. A toy chain saw as defined in claim 11 in which said second member is axially movable on said shaft and said means for moving second member into driving engagement with said first member comprises an elongated spring member operatively associated with said second member and so constructed and arranged that longitudinal forces exerted on said spring member will cause axial movement of said second member on said shaft.

14. A toy chain saw as defined in claim 13 in which said spring member is operatively connected to a trigger means carried by said housing, said trigger means being movable to exert longitudinal forces on said spring member.

15. A toy chain saw as defined in claim 11 in which said sound-emitting means comprises a flexible spring member mounted within said housing, said flexible member having a first finger engageable by said first member to produce a sound similar to that of a chain saw being driven by an internal combustion engine and a second means engageable by said second finger for producing a sound similar to that of an internal combustion engine running at idling speed.

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