United States Patent

La Pointe

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[54] COMPOUND ACTION SHEARS

[72] Inventor: **Gabriel M. La Pointe,** Worcester, Mass.

[73] Assignee: **Parker Mfg. Company,** Worcester, Mass.

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[52] **U.S. Cl.** **30/238,** 81/416

[51] **Int. Cl.** **B25b 7/06,** B26b 13/28

[58] **Field of Search**.....30/271, 254, 252, 191, 192, 30/193, 187, 250, 238, 181, 237, 239; 81/416

[56] **References Cited**

UNITED STATES PATENTS

884,281	4/1908	Lindal	30/239
3,196,540	7/1965	Porsky	30/254
1,670,201	5/1928	McGary	30/271 X
122,603	1/1872	Hall	30/238
2,227,531	1/1941	Cantrell	30/238 X
2,384,822	9/1945	Drmic	30/250
3,324,549	6/1967	Sharp	30/193 X

Primary Examiner—Andrew R. Juhasz

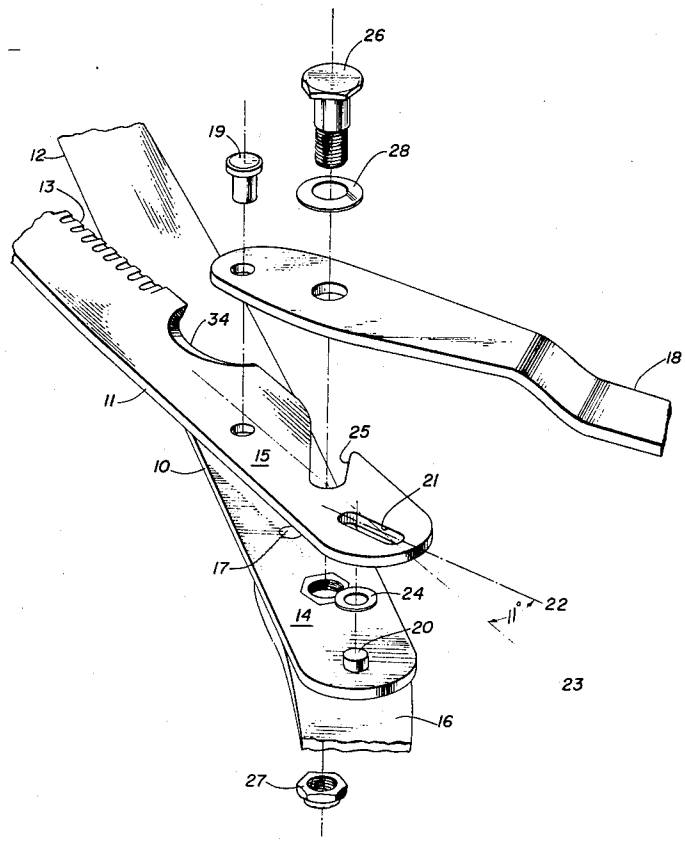
Assistant Examiner—Michael Koczo, Jr.

Attorney—Norman S. Blodgett

[57] **ABSTRACT**

Hedge shears having increased cutting efficiency and operator shock isolation are provided by this invention. Improved cutting efficiency is provided by a cam actuated force multiplier interconnection of the blades. Shock isolation is provided by the use of resilient means to limit the blade travel.

5 Claims, 4 Drawing Figures



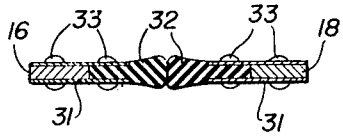


FIG. 3

FIG. 1

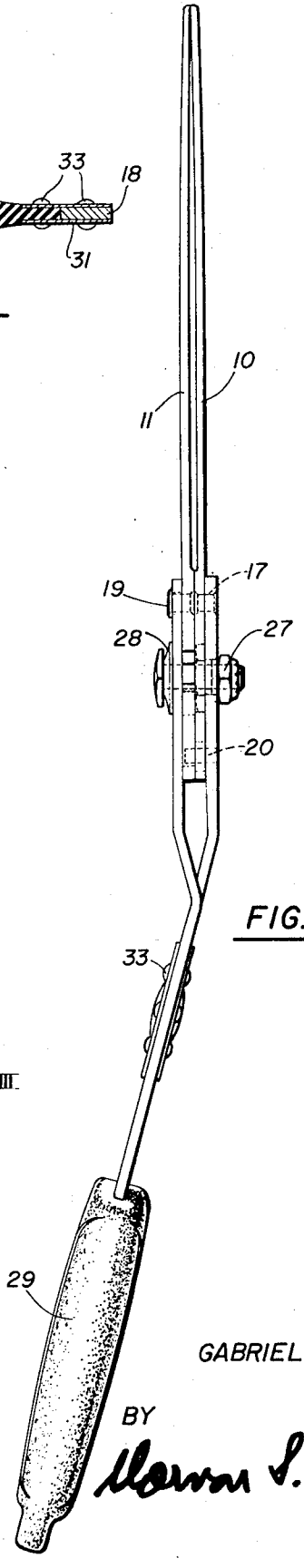


FIG. 2

GABRIEL M. LAPOINTE
INVENTOR.

BY

Norman S. Blodgett

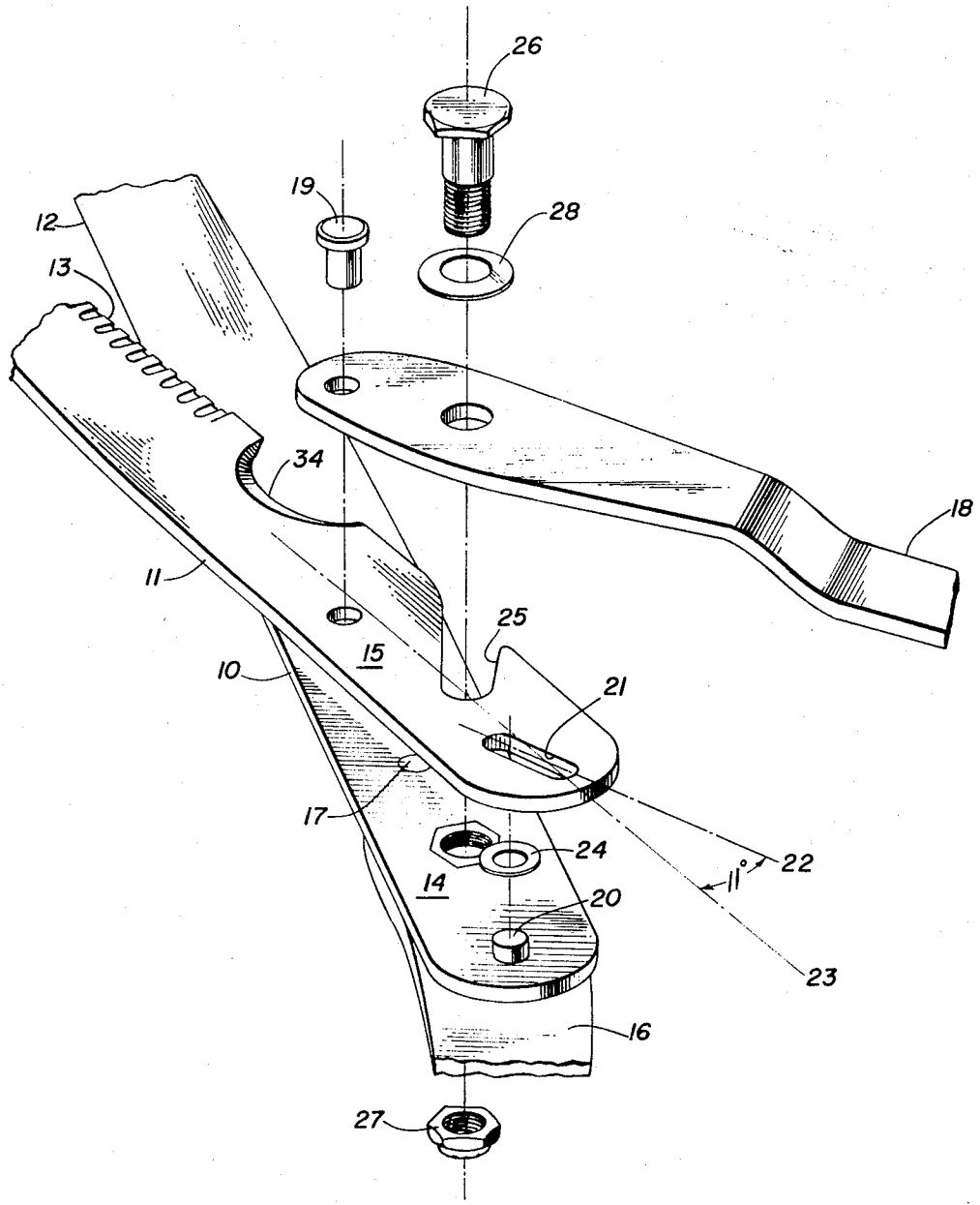


FIG. 4

COMPOUND ACTION SHEARS

BACKGROUND OF THE INVENTION

This invention relates to hedge shears and, more particularly, to improvements in the structure of hedge shears resulting in increased efficiency, improved operation and longer life.

Hedge shears commonly available comprise a pair of crossed blade-handle members pivoted at a central point. Such constructions have many disadvantages. All of the wear takes place at the pivot point. There is no provision for the multiplication of the effort expended in the operation of such shears. There is no common provision to isolate the hands of the operator from the shock resulting from the final contact of the blades when the limit of their travel is reached. The blades of the prior art devices are also commonly of the blade and anvil variety and thus the beneficial results obtained from the use of a serrated blade cannot be enjoyed. The shears of the prior art are also frequently subject to jamming due to the nature of their construction which gives rise to frictional contact between the operating parts.

SUMMARY OF THE INVENTION

The shears of the present invention overcome the disadvantages of the prior art. The blades of the shears of the present invention are interconnected in such a manner that the force applied in actuating the handles undergoes a mechanical multiplication upon encountering resistance to the cutting action of the blades. This is accomplished by the interconnection of the blades by a particular cam arrangement as will be described further in greater detail. The present invention eliminates the heretofore employed common pivot point, spreading the resultant wear and providing a longer effective life. Resilient stop means are provided to limit the travel of the blades of the shears thus effectively isolating the user from the shock normally encountered when the blades reach the limit of their travel. The multiplication of the force applied and the ability to use a serrated blade in the present construction permit a unique design which no longer requires frictional contact of the blades. This eliminates the consequent tendency of the shears to jam or otherwise be hard to operate. Cutting of small branches is made possible by the provision of an arcuate notch in one of the blades. These and other features of the present invention will become more apparent by consideration of the drawing and the following detailed description.

DESCRIPTION OF THE DRAWING

The character of the invention, however, may be best understood by reference to one of its structural forms, as illustrated by the accompanying drawing, in which:

FIG. 1 is a top plan view of the shears of the present invention, showing the blades in closed position,

FIG. 2 is a side elevational view of the shears of FIG. 1,

FIG. 3 is a cross-sectional view of the shears of the present invention taken along the lines III—III of FIG. 1 and illustrating the handle stop members, and

FIG. 4 is an exploded view showing the relationship of certain of the elements of the shears of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawing, there is shown a compound action shears according to the present invention. The shears have a first blade **10** and a second blade **11**. Each blade has a forward or cutting portion **12,13** and a rear or base portion **14,15**. As illustrated, the cutting portion **13** of the second blade **11** is preferably serrated. The cutting portions of both blades can be serrated, if desired. A first handle **16** is fixedly attached to the base portion **14** of the first blade **10** by means of a rivet **17**. A second handle **18** is pivotally attached to the base portion **15** of the second blade **11** by means of a rivet **19**. The base portion **14** of the first blade **10** is provided with a stud **20**. The

base portion **15** of the second blade **11** is provided with an elongated slot **21**. This slot **21** is oriented in the base portion **15** of the second blade **11** so that the long axis **22** of the slot intersects the centerline **23** of the second blade **11** at an angle of about 11° in order that in operation the maximum severing effect of the combined action of the cutting portions **12,13** of the blades **10,11** can be achieved. The slot **21** of the base portion **15** of the second blade **11** receives the stud **20** of the base portion **14** of the first blade **10**. To permit ease of action, a washer **24** can be provided on the stud **20** between the base portions **14,15** of the blades **10,11**. The base portion **15** of the second blade **11** is also provided with an elongated recess **25** positioned forward of the slot **19**. This recess **25** is inclined toward the rear of the base portion **15** of the second blade **11**. A bolt **26** interconnects the first handle **16**, the base portion **14** of the first blade **10** and the second handle **18**. The recess **25** in the base portion **15** of the second blade **11** fits around the bolt **26**. The bolt **26** is held in position by a nut **27**. A washer **28** can be provided between the head of the bolt **26** and the second handle **18**.

The first handle **16** and the second handle **17** are provided with grips **29**. These grips **29** can be provided with eyelets **30**, if desired, for hanging the shears. The travel of the blades **10,11** in operation is limited by a pair of stops **31** on the handles **16,17**. These stops **31** have a resilient portion **32** to cushion the shock of impact. The stops **31** are fastened to the handles **16,17** by rivets **33** or the like.

To aid in cutting small branches, the second blade **11** can be provided with a sharpened arcuate nipper **34** which coacts with the cutting portion **12** of the first blade **10**.

In operation, the shears are held by the grips **29**. Opening the handles **16,18** away from each other permits movement of the blades **10,11** away from each other. The stud **20** of the base portion **14** of the first blade **10** travels in the slot **21** of the base portion **15** of the second blade **11**. The recess **25** in the base portion **15** of the second blade **11** permits motion of the second blade **11** relative to the bolt **26** which interconnects the base portion **14** of the first blade **10**, the first handle **16** and the second handle **18**.

When the grips **29** are moved toward each other, the resilient portions **32** come into contact, limiting the inward travel and serving to cushion the shock transmitted to the operator.

During the cutting operation, the cutting edges **12,13** of the blades **10,11** are moved toward each other by the pivotal movement caused by moving the handles **16,18** together. First blade **10** pivots about the bolt **26**. When an object to be severed is encountered by the cutting portions **12,13** of the blades **10,11**, the stud **20** of the first blade **10** rides in the bearing surface of the slot **21** of the second blade and the second blade **11** is caused to pivot about the rivet **19**, thereby effecting a compound severing action resulting in increased transverse contact pressure between the cutting surfaces **12,13** of the blades **10,11**.

It is obvious that minor changes may be made in the form and construction of the invention without departing from the material spirit thereof. It is not, however, desired to confine the invention to the exact form herein shown and described, but it is desired to include all such as properly come within the scope claimed.

The invention having been thus described, what is claimed as new and desired to secure by Letters Patent is:

1. Compound action shears comprising, first and second blade means disposed in parallel relationship, each of said blade means having a cutting portion and a base portion, stud means positioned in the base portion of the first blade means, elongated slot means positioned in the rear of the base portion of the second blade means so that the long axis of the slot means intersects the centerline of the second blade means at an angle of about 11° and adapted to receive the stud means of the first blade means, first handle means disposed adjacent the base portion of the first blade means, first fastening means fixedly interconnecting the first handle means and the first blade

means, second handle means disposed adjacent the base portion of the second blade means, second fastening means pivotally interconnecting the second handle means and the second blade means, bolt means interconnecting the first handle means, first blade means and the second handle means, elongated recess means located in the base portion of the second blade means forward of the elongated slot means to receive the bolt means.

2. Compound action shears according to claim 1, including first and second stop means secured to the first and second handle means respectively to limit relative travel of the handle means.

3. Compound action shears according to claim 2, in which the first and second stop means include resilient portions.

4. Compound action shears according to claim 1, in which the cutting portion of the second blade means is serrated.

5. Compound action shears according to claim 4, in which at least one of the blade means includes an arcuate cutting means.

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