United States Patent [19]

Brackett

[11] **3,743,339**

[45] **July 3, 1973**

[54] **GUTTER AND TROUGH DEBRIS CLEANING IMPLEMENT**

[76] Inventor: **Horace D. Brackett,** 3317 King Fisher Drive, Decatur, Ga. 30034

[22] Filed: **Dec. 29, 1971**

[21] Appl. No.: **213,406**

[52] **U.S. Cl.** ..... **294/19 R,** 15/236 R

[51] **Int. Cl.** **E04d 13/06**

[58] **Field of Search** ..... 294/19 R, 22, 104; 15/22 A, 144 R, 144 B, 236; 56/332, 333, 337

[56] **References Cited**

UNITED STATES PATENTS

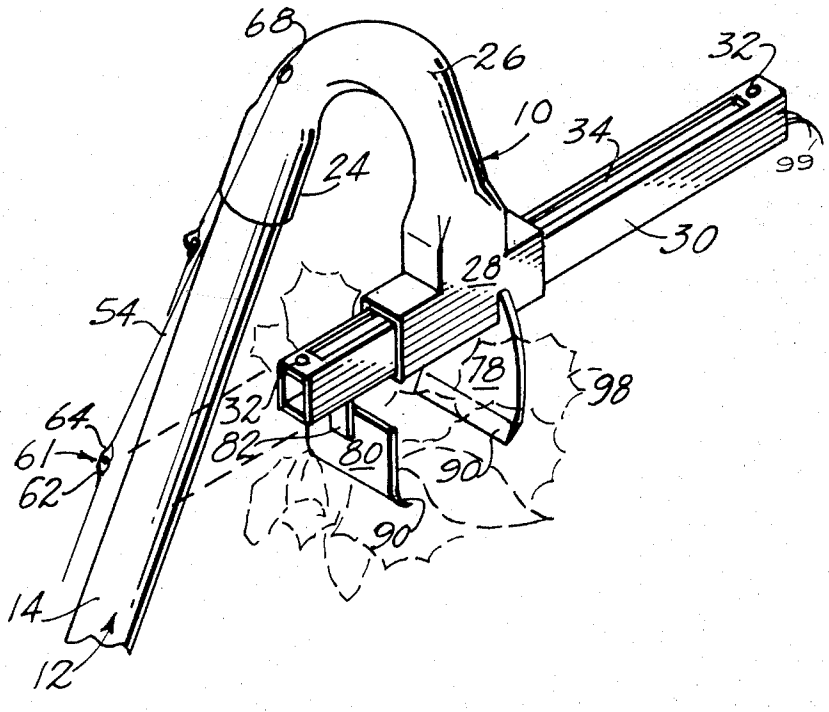
747,376	12/1903	Christman	294/22
2,720,409	10/1955	Griffith	294/19 R
2,465,024	3/1949	Ludt	294/19 R
2,936,193	5/1960	Mannen	294/19 R

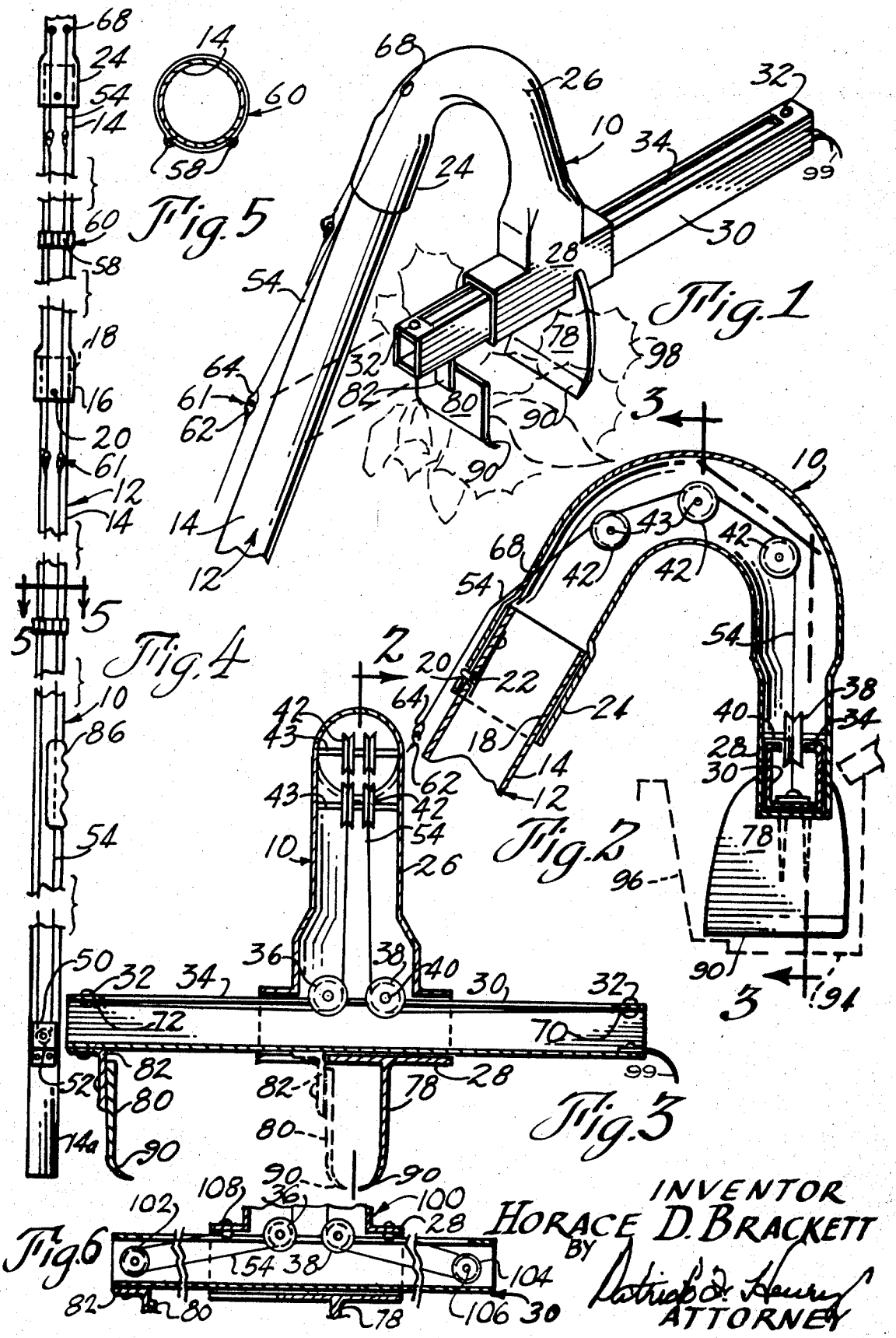
Primary Examiner—Evon C. Blunk
Assistant Examiner—Johnny D. Cherry
Attorney—Patrick F. Henry

[57] **ABSTRACT**

A long, adjustable implement with a sliding jaw movable against a stationary jaw to clamp and trap trash and debris which has collected inside of a gutter from a remote distance on the ground. The jaws are mounted on a bent neck which is part of an adjustable pole of detachable lightweight aluminum tubes in which is a cable and pulley system actuating the movable jaw when it is positioned inside the gutter trough. The tubes are separable for the purpose of adjustment to make the implement shorter or longer and the cables are easily detached and re-attached to permit the adjustment of the tubes. The cable and pulley system includes in the hollow neck several plastic pulleys guiding the cable. The movable jaw is mounted on an elongated carriage inside of a bearing surface on the end of the neck.

11 Claims, 6 Drawing Figures





INVENTOR
HORACE D. BRACKETT
BY
Patrick D. Henry
ATTORNEY

GUTTER AND TROUGH DEBRIS CLEANING IMPLEMENT

BACKGROUND OF THE INVENTION

1. Field of the Invention

The general field of the invention is that of grappling implements, remotely controlled clamping implements and the like. (Class 294, Subclass 19 and Class 294, Subclass 103 may be pertinent areas).

2. Description of the Prior Art

The prior art includes U.S. Pat. No. 2,896,239 issued to Bugbird on an "APPARATUS FOR CLEANING LEAVES FROM HIGH GUTTERS" which is a brush affair with a roller means traveling along the edge of the gutter and does not include a linearly movable clamping means for effectively clamping the debris. U.S. Pat. No. 2,720,409 to Griffith is an elongated eave gutter cleaning device with a pair of spoon-like and pivoted clamping members actuated by a pull cable on a lever system. It is necessary to position this on a pile of debris within the limitations of the opening of the pivoted jaws with limitations as to actuation and clamping. When working from the ground at a distance from the gutter and not being able to see exactly what is going on inside, it is difficult to hold the long pole from the ground and manipulate it at such a distance, even lightweight aluminum or magnesium tubing. One main problem is in getting the trash and debris in the position where it can be clamped and then being able to clamp it with sufficient area to hold it long enough to get it out of the gutter.

SUMMARY OF THE INVENTION

By getting the clamping means down into the trough from above and then sliding it substantially along the bottom of the trough it is possible to sweep a greater distance of trash and clamp it quite positively for removal. The use of a cable and pulley system provides sufficient power and force simply by pulling on the cable, and in lieu of more involved cable and link systems which are more costly to manufacture and difficult to operate for the same amount of force. Furthermore, the arrangement of the cable and pulley system being at least partly inside of the tubes and the neck that extends into the gutter trough reduces the chance of catching on the gutter or surrounding projections and protects the system from dirt and corrosion.

A primary object of this invention is to provide a remotely controlled clamping arrangement which employs a linearly movable jaw that slides along the bottom of a gutter trough.

Another object of this invention is found in the arrangement of the cable and pulley system operating the jaw whereby a relatively short pull on the cable will actuate the movable jaw for a full length at a minimum of force plus the ease and dependability of detaching the tubular sections to shorten or lengthen the pole and at the same time detaching and reattaching the cable system.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the upper end of the implement positioned in a gutter and dotted lines with leaves and other trash therein.

FIG. 2 is a cross-sectional view taken substantially along lines 2—2 in FIG. 3.

FIG. 3 is a cross-sectional view taken substantially along lines 3—3 in FIG. 2.

FIG. 4 is an elevation view of the adjustable pole with portions thereof broken away.

FIG. 5 is a cross-sectional view taken substantially along lines 5—5 in FIG. 4.

FIG. 6 is a cross-sectional view of the upper end similar to FIG. 3 but with a modified pulley and cable system.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The implement is designated generally by reference numeral **10** and comprises an elongated pole designated generally by reference numeral **12** and comprising a series of detachable members **14** each one of which is a section made from an aluminum or magnesium tube having the lower end **16** thereof enlarged to receive the upper end **18** of the next lower succeeding tube **14.** The enlarged end **16** has a hole **20** receiving a spring biased pin **22** which retains the sections **14** in connected relationship and makes it easy to detach the section **14** by depressing the pin **22** out of the hole **20.**

The uppermost section **14** is inserted in the enlarged portion **24** of a hollow neck **26** constructed from bent tubing or molded from plastic and the like with a box-like support portion **28** supporting for slidable movement therein a carriage **30** which is an elongated box-shaped member which may be manufactured from aluminum or magnesium plate in one piece or fastened together or from molded plastic. Neck **26** bends almost but not parallel to the section **14,** certainly much more than **90** degrees thereto (FIG. 2). Member **30** has a slot **34** therein so that it can move substantially linearly inside the support **28** and pass clear of two plastic pulleys **36, 38** mounted on respective pulley shafts **40** inside the neck **26** near the support **28.** Pulleys **36, 38** may be made from nylon, steel or other material.

As seen in FIG. **2,** there are other plastic pulleys **42** arranged in pairs on respective shafts **43** in three sets inside the curved portion of the neck **26.** The lowermost section **14** which is designated **14*a*** in FIG. **4** carries in the lower end a support block **50** in which is mounted a small pulley **52** made from plastic, including nylon, or other material, the same as the other pulleys **36, 38** and **42.** A continuous cable **54** is driven around the pulley **52** and extends therefrom outside the tubes **14** through small bearings **58** molded as part of a circumferential ring or collar **60** which may be molded from plastic such as nylon or polypropeyelene. Cable **54** is detachable at each section by means of a hook and loop engagement arrangement designated generally by reference numerals **61** and comprising a hook **62** on one end of a cable and a loop **64** on the end of the cable of the next succeeding tube **14.** Both parts of the cable extend through a hole **68** in the neck **26** down inside the neck across the respective pulleys **42** on the respective sides inside the neck **26.** The cable **54** extends around the pulleys **36, 38,** and has one end **70** attached by a rivet **32** and the other end **72** attached by a rivet **32** so that motion of the cable in one direction or the other causes a corresponding motion of the member **30** inside the support **28** in a corresponding direction.

There is a fixed jaw **78** in the form of a curved plate attached to the support **28** and a movable jaw **80** in the form of a curved plate attached by a small member **82**

to the sliding member **30.** Actuation of the cable **54** by means of a plastic handle **86** which is fastened to one portion of the cable near the bottom section **14a** causes the jaw **80** to move inwardly or outwardly with respect to the jaw **78** depending upon whether the cable is pushed up by handle **86** or pulled down. Each jaw **78, 80** has a curved bottom lip **90** as shown in FIGS. **2** and **3** which rakes across the bottom **94** of a typical gutter trough **96** raking leaves **98** and other debris toward the fixed jaw **78.** The distance between the jaw **78, 80** could be at least several feet but since most gutters have a support member or some other impediment across the top at a distance of two feet or so it is not practical for most gutter use to make the member **30** any longer than that nor to make the distance of travel between the jaw **78, 80** correspondingly any longer. Thin, flexible spring fingers **99** rake across the bottom of the trough **96** as the jaw **80** is extended.

In FIG. **6** the pulley and cable system has been modified by adding pulleys **102, 104** mounted on shafts **106** on the carriage **30.** Cable **54** extends around pulleys **102, 104** and attaches at respective ends to a rivet **108** on opposite sides of support **28.** This changes th travel of cable **54** and mechanical advantage.

While I have shown and described a particular embodiment this is by way of illustration and does not constitute any sort of restriction or limitation on the scope of the invention since there are various alterations, changes, deviations, eliminations, additions, combinings, combinations, changes and departures which may be made in the embodiment shown and described without avoiding the scope of my invention as defined only by a proper interpretation of the appended claims.

I claim:

1. In a trough cleaning implement for remote operation from a distance including operation from the ground to clean the gutters on a house:

a. a plurality of detachable sections connected together to form an elongated continuous member held in the hands near one end and having the other end thereof positioned at a remote distance,

b. a curved member on the end of said elongated member that is remote from the end held in the hands, said curved member curving more than 90° from the longitudinal line of said continuous member,

c. a movable jaw member mounted on the end of said curved member and being actuated relative thereto inside the trough,

d. a fixed member against which said movable jaw member pushes trash and debris to grasp the trash and debris for removal,

e. said movable jaw moving transversely to the curved member.

2. The device claimed in claim **1** wherein there is a cable and pulley system extending on said elongated member and said cable being operated by hand to move said movable jaw member.

3. The device claimed in claim **2**: said curved member having a support thereon on which is mounted a jaw-carrying member having a plate-like jaw extending therefrom.

4. The device claimed in claim **3** wherein: said elongated member sections each having the lower end thereof enlarged to receive the upper end of the next succeeding section, and means for preventing detachment therebetween.

5. The device claimed in claim **3** wherein: said cable is detachable between each section so that sections may be removed or added and said cable re-attached.

6. The device claimed in claim **5,** wherein: there is a gripping means on said cable for actuating same.

7. The device claimed in claim **6** wherein there is a collar on some of said sections having a bearing therein through which said cable passes.

8. The device claimed in claim **2** wherein there is a pulley mounted on the lowermost section of said elongated member and a cable passes around said pulley, at least two pairs of pulleys inside said curved member around which said cable passes, and at least one pulley inside said support around which a respective end of said cable passes, one end of said cable being fixed near one end of said sliding member and the other end of said cable being fixed near the other end of said sliding memeber.

9. The device in claim **1**: there being a cable and pulley system on said elongated member, said cable being continuous and traveling transversely across at said curved member to drive said movable member transversely in one direction or the other in response to the manual operation of the cable by hand on said elongated member.

10. The device in claim **9**: said ends of said cable being attached near opposite ends of said movable member.

11. The device in claim **9**: said ends of said cable being attached on opposite sides of said curved member.

* * * * *