United States Patent

[11] 3,601,835

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[54] **GUTTER CLEANER**
10 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** **15/105**
[51] **Int. Cl.** **E04d 13/06**
[50] **Field of Search** 294/104, 2, 1, 23, 19; 15/105, 236

[56] **References Cited**

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ABSTRACT: This gutter cleaner is designed to facilitate the safe and efficient removal of dead leaves and other debris from roof-mounted rain gutters by an operator controlling the same from ground level. It comprises a normally vertically disposed frame having a stationary jaw member at its lower portion and an inspection mirror secured adjacent its upper portion to permit the ground-level operator to view the inside of the gutter being cleaned. A complementary movable jaw member is pivotally mounted on the frame and disposed in a closed position to register with the stationary jaw member to form grasping jaws. The movable jaw member is remotely controlled by actuating means such as an attached lever arm and nonrigid line or rope leading to the operator. The assembly is mounted on the elongated rod or pole which is preferably sectioned so that the length thereof can be adjusted to accommodate various gutter heights.

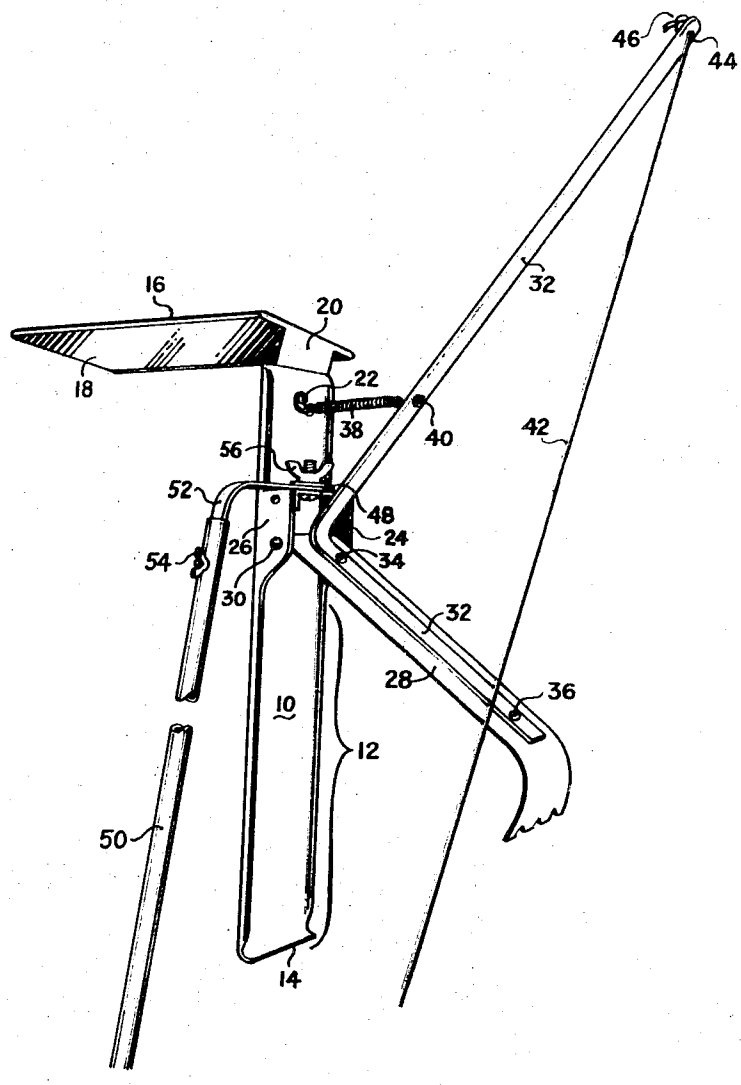
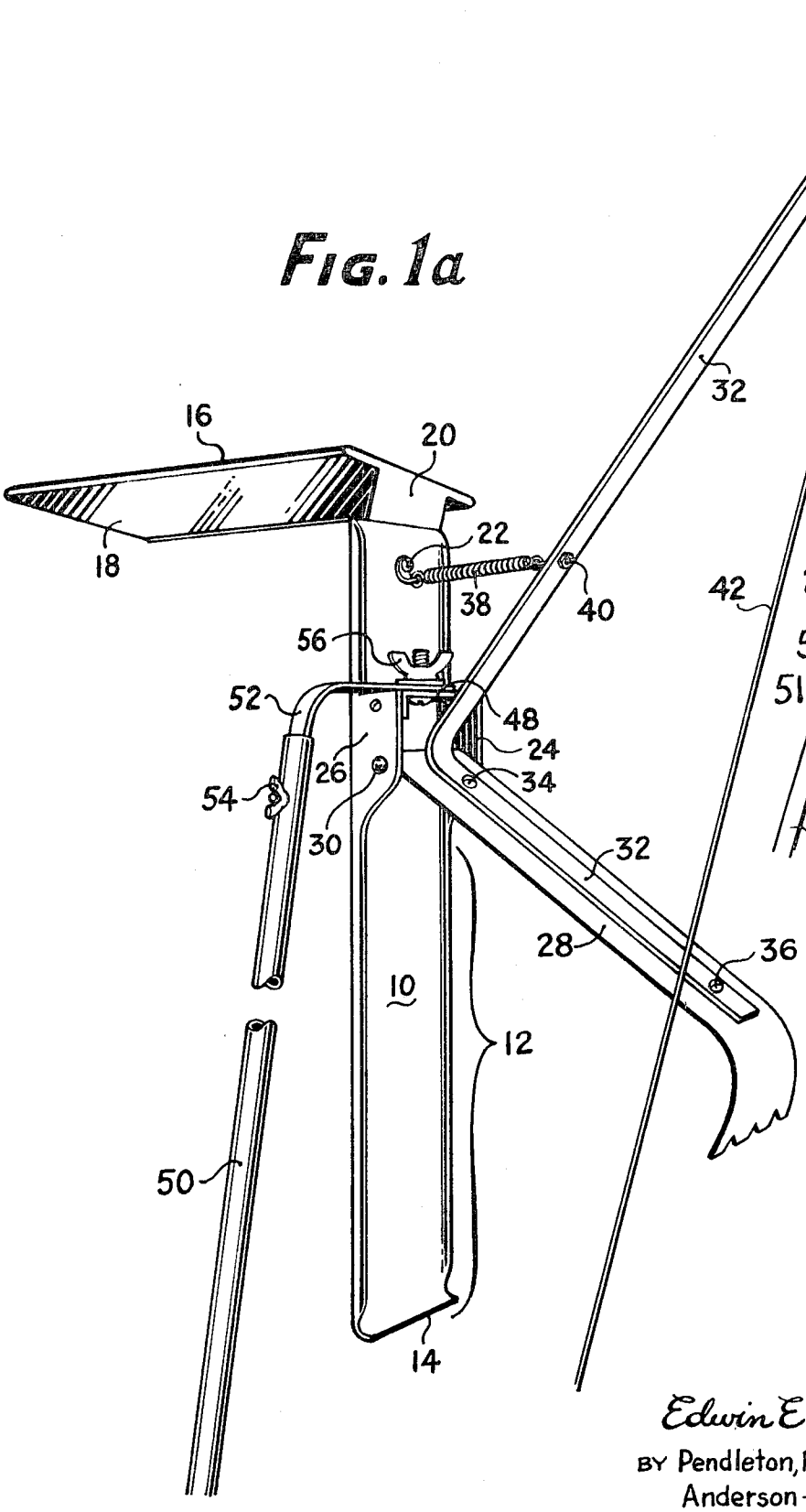


FIG. 1a



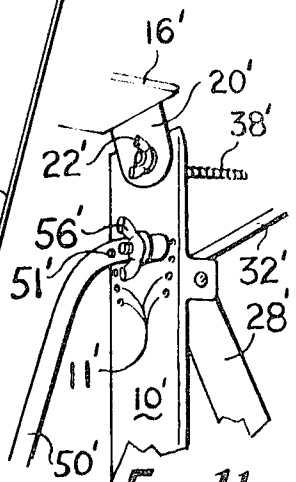


FIG. 1b

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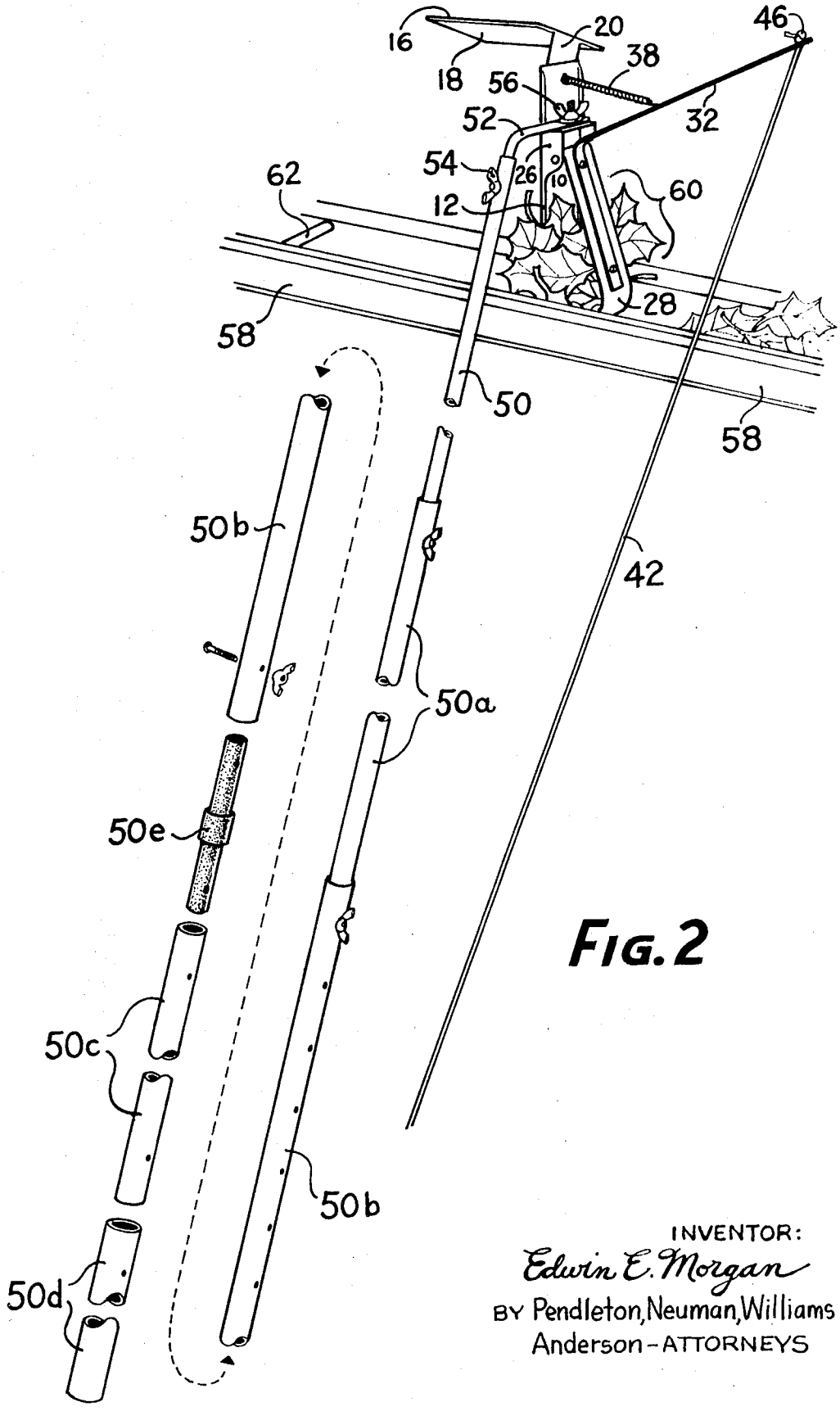

FIG. 2

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GUTTER CLEANER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to an improved apparatus primarily designed for detecting and removing accumulated leaves and other debris from roof-mounted rain gutters. More specifically, it relates to a low-cost, safe, convenient-to-use gutter cleaner which is manipulated and controlled from ground level and copes with problems associated with prior art devices of a similar type.

While the invention is labeled as a "gutter cleaner" and the embodiment portrayed is specifically designed for such purposes, it should be understood that the invention is not necessarily limited to this application. It may also be employed for removing debris or moving other articles located in elevated or otherwise remote or hidden locations, as will be apparent to those skilled in the art in the light of this disclosure.

2. Description of the Prior Art

A problem very familiar to homeowners particularly in wooded locations is the seasonal deposition and accumulation of dead leaves and other debris in eave gutters and the resultant plugging, corrosion, icing, leakage and other problems associated therewith. Homeowners are thus confronted with the unpleasant, hazardous and time-consuming task of periodically climbing high ladders and manually removing the debris, oftentimes marring the gutters and building structure in the process and sometimes damaging adjacent bushes and plant life. While screens and the like for covering the gutters are available, they, too, often prove unsatisfactory and, in addition, are costly and present problems of their own.

One proposed solution is the eave gutter-cleaning device disclosed in P. H. Griffith U.S. Pat. No. 2,720,409, issued Oct. 11, 1955. It discloses spoonlike jaws mounted at the end of a telescoping sectioned pole which is held and actuated by the operator from ground level. Unfortunately, the device has a number of shortcomings which render the construction costly, inconvenient and difficult to use and sharply limited in its practical application.

For example, because both spoonlike jaws are movable and are closed by spring tension, they cannot rest on the bottom of the gutter. Instead, the operator is forced to suspend and support the substantial weight of the entire head at the end of the elongated pole, preferably without touching the gutter. At the same time he must actuate it, an unwieldy maneuver and a tiresome feat which is beyond the desires or capability of the average homeowner, particularly when confronted with gutters at the second-floor eave level. This problem is aggravated by the considerable weight and limited capacity of the device which is designed for fabrication from an aluminum casting. Moreover, the spoonlike jaws are biased in the closed direction. This limits the closing action to the spring forces, which may be inadequate under certain conditions, particularly after years of use when the springs may lose considerable resilience. Another difficulty is the inability of the operator to view the inside of the gutter. Accordingly, he must grope blindly from a remote location, seeking to find and remove the debris. Moreover, because the entire device is fabricated from metal and the operator is standing on the ground, there is the constant danger of electrical shock or electrocution, particularly where fallen power lines may have charged the metal gutter system, or the operator may accidentally brush the device against uninsulated or defectively insulated electrical lines.

OBJECTS OF THE INVENTION

It is therefore a general object of the present invention to cope with the hazardous and inconvenient gutter-cleaning task which periodically confronts the homeowner. It is another general object to provide a gutter cleaner which is low in cost, efficient, convenient and safe to use and overcomes the shortcoming of prior art devices for cleaning eave gutters and the like from the ground level.

It is a more specific object to provide a gutter-cleaning apparatus which permits the operator to view the inside of the gutter from a remote ground-level position. It is another specific object to provide a remotely actuated gutter cleaner which can be rested on the gutter and thus steadied while actuating the same so that the operator does not have to support the entire weight thereof at the end of an elongated pole. It is another specific object to provide a gutter cleaner which can be fabricated from inexpensive, lightweight sheet metal such as aluminum, said gutter cleaner having a large pickup capacity. It is still another specific object to provide a design for a gutter cleaner which lends itself to insulation against electrical hazards. It is a further specific object to provide a gutter cleaner in which the closing forces of the jaws are within the control of the operator and not necessarily dependent on spring action. It is a still further object to provide a pole-mounted gutter cleaner which can be mounted for "left-hand" or "right-hand" pickup.

These and other objects will become apparent as the detailed description proceeds.

SUMMARY OF THE INVENTION

These objects are achieved in a particular embodiment by a gutter cleaner having a frame wherein the lower portion thereof also serves as a stationary jaw member which can be rested and supported on the inner surface of the rain gutter during operation thereof. The upper portion of the same frame serves as a support for a reflecting means such as a flat mirror which is swivelly mounted and disposed so as to permit viewing the inside of the gutter from a position beneath the same, e.g., ground level. A movable jaw member is pivotally mounted on the frame and disposed in a closed position to register with the stationary jaw member to form grasping jaws.

The movable jaw member is actuated by means of a lever arm which is resiliently biased so as to hold the movable jaw member in the open position. A nonrigid line, such as a strong cord or rope extending from the end of the lever arm to the operator at ground level, permits actuation so as to close the jaws and clutch the debris therebetween.

The jaws of the gutter cleaner are mounted at the end of a telescoping or multisectioned elongated member such as a pole or rod which can be adjusted in length to accommodate different gutter heights. To cope with electrical hazards, the elongated member may be fabricated from electrical insulating material, e.g., wood, fiber-glass-reinforced plastic, or the like, or a single intermediate section thereof, which may be in the form of a spacer or separator, may be fabricated from electrical insulating material. The pole is adjustably secured to the frame of the gutter-cleaning head so that it may be interchangeably orientated on either side thereof, whereby the device may be operated in at least two directions.

While the present design advantageously lends itself to fabrication from lightweight metals in stock sizes, particularly tubular and sheet aluminum and magnesium, the latter terms also encompassing lightweight alloys based thereon, manifestly other materials may also be employed. For example, components which are under considerable stress, e.g., the actuating lever arm, may be fabricated from stronger metals, e.g., steel. Likewise, the device or components thereof may be fabricated from high-strength synthetic plastics, e.g., Delrin (thermoplastic acetal resin sold by E. I. du Pont de Nemours & Co.), including reinforced plastics, e.g., fiber-glass-reinforced plastics, the particular plastics being well within the skill of the art. Such latter embodiments have the advantage of not requiring supplemental electrical insulation.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention and its advantages will be more clearly understood from the following description of a specific embodiment read in conjunction with the accompanying drawings, wherein:

FIG. 1*a* is a perspective view of the upper portion of one embodiment of the gutter cleaner, illustrating its simplicity of construction;

FIG. 1*b* is a fragmentary perspective view on a reduced scale of another embodiment, illustrating still further construction simplifications; and

FIG. 2 is another perspective view on a reduced scale, illustrating the use of the embodiment of FIG. 1*a* in a gutter-cleaning operation, said figure also illustrating the multiple sections of the adjustable pole.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring to FIG. 1*a*, the gutter comprises normally substantially vertically disposed frame member **10** having turned edges to enhance the structural strength thereof. Lower portion **12** of frame **10** constitutes a stationary jaw member, the bottom edge **14** of which is rested on the inner surface of the gutter for support. Thus, the entire cleaning head is solidly supported, and the operator is freed of the strain of holding it in place. This is highly advantageous, particularly when cleaning second-floor gutters.

Holder **16** for mirror **18** is swivelly mounted at an upper portion of frame **10** by means of downwardly depending flange **20** and screw **22** and nut (hidden in this perspective view). If there is no requirement that the position of the mirror be adjustable, the mirror holder **16** and flange **20** could be fabricated as one continuous integral portion of frame **10**, as those skilled in the fabrication arts will readily recognize.

Integrally formed side channels **24** and **26** provide the support means for pivotally mounted movable jaw member **28** which rotates about pivot pin **30**. Movable jaw member **28** is moved by means of lever arm **32**, one end portion of which is secured to jaw member **28** by means of rivets **34** and **36** or equivalent fastening means. Lever arm **32** and jaw member **28** are resiliently biased to an open position by the tension of steel spring **38**, the latter being secured to frame **10** by screw **22** and to lever arm **32** by nut-and-screw combination **40**.

Lever arm **32** is actuated by nonrigid line **42**, e.g., a conventional "clothesline" rope, which is passed through aperture **44** and a knot **46** formed therein. Line **42** can thus be pulled by the operator at ground level to overcome the tension of biasing spring **38** and to apply the requisite closing forces on movable jaw **28**. While movable jaw **28** and lever arm **32** are fabricated as separate pieces which are secured together, the lever arm can also be formed as one continuous integral piece with the movable jaw, as those skilled in the fabrication arts will readily recognize.

Side channels **24** and **26** also provide support for inverted U-shaped bracket **48**, which is riveted in place therebetween and to which is secured elongated pole **50**. In the illustrated embodiment, pole **50** is fastened to U-shaped bracket **48** by means of intermediate bent flat member **52** and screw- and wingnut assemblies **54** and **56** at the respective ends thereof.

Manifestly, if desired, flat member **52** and wingnut assembly **54** can be eliminated by flattening, bending and aperturing the end of pole **50** to correspond to flat member **52** and securing the same to U-shaped bracket **48** by screw- and wingnut assembly **56**. Still further simplification could be achieved, if desired, by eliminating bracket **48** and further bending the flattened end of pole **50** and fastening the same directly to the outside (or even inside) vertical side of channel **26** or of channel **24**, as desired.

In still another embodiment as illustrated in FIG. 1*b*, the end of pole **50'** is flattened, bent and fastened (from either side) by a screw- and wingnut combination **56'** to the vertical flat side of frame **10'**. As should be apparent, elements in FIG. 1*b* which perform substantially the same function as in FIG. 1*a* are identified by the same reference numerals but with a prime mark thereafter. In the embodiment of FIG. 1*b* the contacting surfaces of the pole **50'** and frame **10'** have aligned holes or apertures (or a series of spaced holes to provide flexibility as to the point of attachment). The angular relationship of pole **50'** and frame **10'** is adjustable by means of detents **51'** on both flattened sides of pole **50'** and a series of registering apertures or indentations **11'** on frame **10'**.

Alternatively, the contacting surfaces of pole **50'** and frame **10'** may be correspondingly striated, corrugated or the like to prevent undesired relative movement once the wingnut is tightened. Similarly, the contacting surfaces of mirror-holder flange **20'** and frame **10'** could also be striated, corrugated or the like, including a detent and indentation combination, to hold the mirror securely. In fact, fastener **22'** on frame **10'** could be used to secure the flattened end of pole **50'** to frame **10'**, in addition to the mirror-holder flange **20'** and spring **22'**. Similar alternative constructions could be incorporated into the embodiment of FIG. 1*a* , as those skilled in the art will recognize.

Referring to FIG. 2, the apparatus is shown in place in gutter **58** wherein a load of dead leaves **60** is being grasped between stationary jaw **12** and movable jaw **28**. Stationary jaw **12** is resting on the bottom of the gutter whereby the device is supported and stabilized, and the operator need only hold pole **50** with one hand as he is tensioning line **42** with the other hand.

As can been seen in FIG. 2, pole **50** actually includes telescoping sections **50*a–d*** and intermediate electrical insulated insert **50*e***, the latter insulating the operator from any electric potential above the insert. Each of the sections is assembled by means of screw and wingnut assemblies which are inserted through aligned holes, as indicated. Where adjustments in height less than a whole section are desired, these may be made by means of the plurality of spaced holes which are drilled at measured intervals, as illustrated in section **50*b***.

Since pole **50** may be secured to either side of frame **10**, frame **10** can be set against either side of a gutter support, such as illustrated by support **62**. While the device is being used in FIG. 2 to detect and remove dead leaves, the same device, or a modified embodiment thereof, can also be used to remove or replace or clean downspout screens and the like. It also can be used to retrieve, for example, a ball or other item which may inadvertently fall into the gutter.

From the above description, it is apparent that the objects of the present invention have been achieved. While only certain embodiments have been described or illustrated, many alternative modifications and equivalents, including structural simplifications which would reduce cost, will be apparent from the above description to those skilled in the art. These and other alternatives and equivalents are considered within the spirit and scope of the present invention and coverage thereof is intended by the claims of any patents based on this application and any continuations or divisions thereof, even though not necessarily encompassed by the strict verbiage thereof.

Having described the invention, what is claimed is:

1. A gutter cleaner comprising in combination:
   a. a normally substantially vertically disposed frame having a stationary jaw member at its lower portion;
   b. reflecting means on said frame at an upper portion thereof and disposed to permit viewing an area of a gutter adjacent the stationary jaw member from a beneath position;
   c. a complementary movable jaw member pivotally mounted on said frame and disposed, when in a closed position, to register with said stationary jaw member to form grasping jaws;
   d. actuating means associated with said movable jaw whereby the opening and closing thereof may be controlled from a remote beneath position; and
   e. an elongated member secured to said frame to permit the placement of the frame and associated reflecting means and jaw structure in a roof-mounted gutter from a position beneath thereof.

2. The gutter cleaner of claim 1 wherein said reflecting means comprises a swivelly mounted mirror.

3. The gutter cleaner of claim 1 wherein said actuating means comprises a lever arm secured to said movable jaw and a nonrigid line extending from the end thereof.

4. The gutter cleaner of claim 3 including resilient means biasing said lever arm so as to hold the movable jaw member in an open position.

5. The gutter cleaner of claim 4 wherein said resilient means comprises a metal spring.

6. The gutter cleaner of claim 3 wherein at least said frame, said movable jaw member, said lever arm and a portion of said elongated member are fabricated from aluminum metal.

7. The gutter cleaner of claim 3 wherein at least said frame, said movable jaw member, said lever arm and a portion of said elongated member are fabricated from magnesium metal.

8. The gutter cleaner of claim 1 wherein said elongated member comprises a plurality of interconnectable sections.

9. The gutter cleaner of claim 1 wherein said elongated member includes at least one electrical insulating section.

10. The gutter cleaner of claim 1 wherein said elongated member is adjustably secured to said frame whereby said elongated member may be interchangeably secured on either side thereof.