July 28, 1959 H. C. BUGBIRD 2,896,239

APPARATUS FOR CLEANING LEAVES FROM HIGH GUTTERS

Filed Oct. 21, 1957

Fig. 1

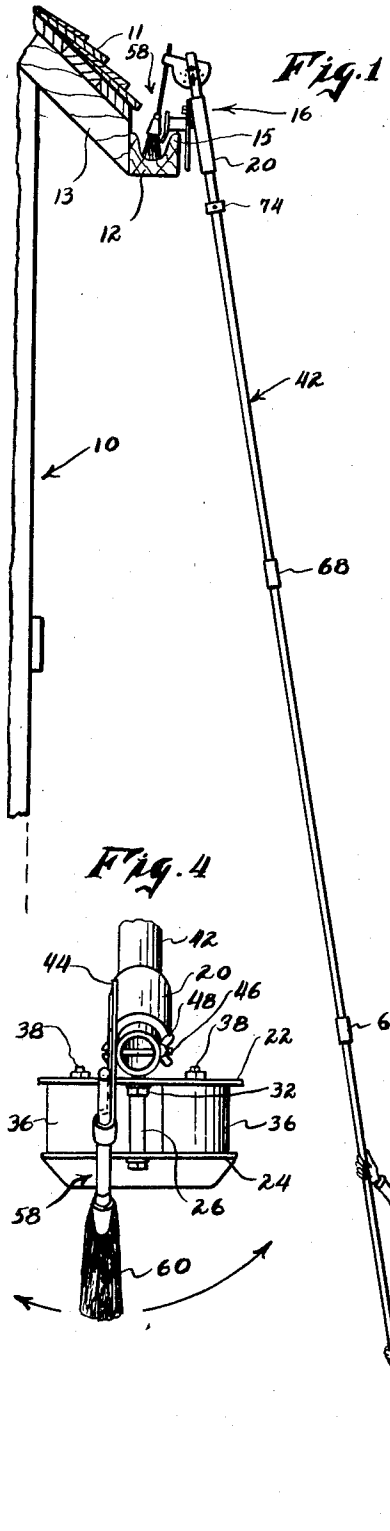

Fig. 2

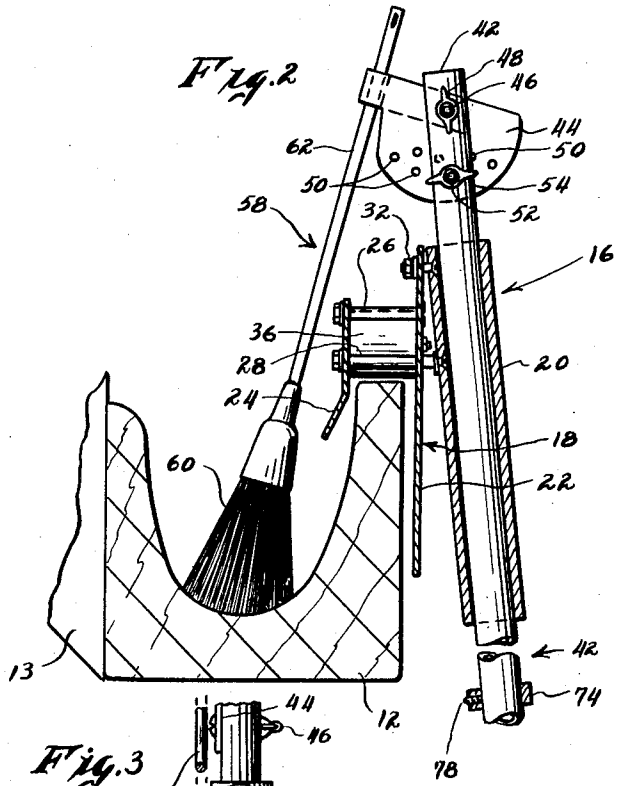

Fig. 3

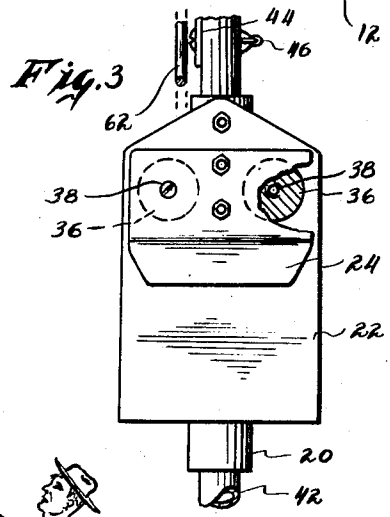

Fig. 4

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United States Patent Office 2,896,239 Patented July 28, 1959

2,896,239

APPARATUS FOR CLEANING LEAVES FROM HIGH GUTTERS

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Application October 21, 1957, Serial No. 691,516

9 Claims. (Cl. 15—144)

This invention relates to apparatus for removing leaves from roof gutters; and more especially to apparatus by which the leaves may be removed by an operator standing on the ground.

It is an object of the invention to provide an improved apparatus for removing leaves from roof gutters, and suitable for gutters which are quite high from the ground. For lower gutters the leaves are quickly and conveniently removed by apparatus such as shown in my co-pending patent application Serial No. 331,083, filed January 13, 1953, now Patent No. 2,817,867, dated December 31, 1957.

Another object of the invention is to provide gutter cleaning apparatus having a cleaning tool at the upper end of a long reach rod, and with a special carriage at the level of the gutter for steadying the upper end of the reach rod so that the rod can be conveniently manipulated from the ground.

This invention provides a carriage which moves along the front edge of the gutter, preferably on rollers, with a bearing in which a reach rod is movable with both angular and reciprocating movement. This combination of movements permits an operator on the ground to shift a brush, or other cleaning tool, so as to thrust the leaves or other matter out of the gutter with a "spoon-like" movement which lifts the material and throws it over the front edge of the gutter.

Other objects, features and advantages of the invention will appear or be pointed out as the description proceeds.

In the drawing, forming a part hereof, in which like reference characters indicate corresponding parts in all the views;

Figure 1 is a view showing a roof gutter in section and showing the leaf removing apparatus of this invention and the manner in which it is operated from the ground;

Figure 2 is a greatly enlarged, sectional view of the upper part of the leaf removing apparatus shown in Figure 1;

Figure 3 is a fragmentary view, partly in section, of the apparatus shown in Figure 2 when viewed from a location on the inside of the gutter; and

Figure 4 is a top plan view of the apparatus shown in Figure 2.

Figure 1 shows a house **10** which is at least two stories high and which has a roof **11**. A hanging gutter **12** is attached to eaves **13** of the roof; and the gutter has a front edge **15**. The apparatus for removing leaves, or other foreign matter, from the gutter is indicated generally by the reference character **16** in Figure 1. Although this apparatus will be described as operated for removing leaves, it will be understood that it can be used for removing sticks, dirt, toys or other items that may get into the gutter.

The leaf removing apparatus **16** includes a carriage consisting of a frame **18**, rollers **36** and a bearing **20** which is here shown as a cylindrical sleeve. The carriage frame **18** includes a front flange **22** extending downwardly in front of the gutter **12**; a rearward flange **24** spaced from the front flange **22**; and tie rods **26** and **28**. These tie rods **26** and **28** connect the flanges **22** and **24** together as an integral frame and hold them in spaced relation to one another so that the space between the flanges **22** and **24** is somewhat greater than the width of the front edge of the gutter **12** with which the apparatus is intended to be used. The tie rods **26** and **28** preferably consist of tubes clamped between the flanges **22** and **24** and rivets extending through the tubes for holding the flanges in firm contact with the ends of the tubes.

The lower tie rod **28** extends forwardly beyond the front flange **22** and connects with the bearing **20** to hold the bearing **20** at an acute angle to the front flange **22**. The upper end of the bearing **20** is secured to the front flange **22** of the carriage by fastening means, here shown as a bolt **32**. Other kinds of connections can be used for securing the front flange **22**, rear flange **24**, and bearing **20** together as a rigid and unitary structure.

In order to provide the carriage with stability on the front edge of the gutter, the frame **18** is provided with riders at locations spaced apart in the direction in which the frame **18** travels along the gutter **12** during the operation of the apparatus. In the preferred construction, the riders consist of rollers **36** rotatable on axles **38** extending between the front and rear flanges **22** and **24** of the carriage **18**. These rollers **36** rotate freely on their axles **38**, and the rollers **36** preferably extend close to both the front flange **22** and rear flange **24**, the rollers **36** being enough shorter than the distance between the flanges **22** and **24** to provide ample running clearance between the flanges and the rollers.

A reach rod **42** extends through the bearing **20** and has a bracket **44** at its upper end. This bracket **44** is connected to the reach rod **42** by a bolt **46** on which there is a wing nut **48**; and the bracket **44** is movable about the bolt **46** as a pivot. There are a number of holes **50** in the bracket **44** at angularly spaced locations about the axis of the bolt **46**. Another bolt **52** extends through the reach rod **42** and through one of the holes **50**. The selected hole **50** through which the bolt **52** extends depends upon the angle at which the bracket **44** is to be set with respect to the reach rod **42**. In the construction illustrated there is a wing nut **54** on the bolt **52**. The bolts **46** and **52**, together with the holes **50** and the brackets **44** are merely representative of means for adjustably connecting the bracket **44** to the upper end of the reach rod **42**.

At the inner end of the bracket **44** there is a tool **58** for cleaning the gutter **12**. This tool **58** preferably includes a brush **60** at the lower end of a holder **62** connected to the inner end of the bracket **44**. This holder **62** is gripped tightly by a clamping portion of the bracket **44** with a friction grip sufficient to maintain the holder **62** in any set position with respect to the bracket **44**; but the holder **62** can be moved longitudinally in the bracket **44** when pushed with sufficient force to overcome the gripping friction. Thus the holder **62** of the tool and the clamping portion of the bracket **44** provide bearing means connecting the tool to the bracket for vertical adjustment of the tool in the bracket.

No angular adjustment of the holder **62** with respect to the bracket **44** is necessary because the bracket itself is angularly adjustable about the axis of the bolt **46** to give the holder **62** the desired angular relation with respect to the gutter **12**. The tool **58** is merely representative of cleaning tools. For removing leaves only a tool with a wire loop instead of a brush is sufficient, but the brush **60** with its bristles will clean dirt from the bottom of the gutter more effectively than other tools which do not have the flexibility of bristles.

The reach rod **42** is preferably made in sections which can be detached for convenient storage. Figure 1 shows

the reach rod 42 made in three sections joined together by connectors 68 and 69. The lower of the reach rod 42 is gripped and manipulated by an operator 72. Near the upper end of the upper section of reach rod 42 there is a collar 74 which limits the longitudinal movement of the bearing 20 on the reach rod. When the apparatus is initially being raised into position to engage the gutter, the bearing 20 rests on the collar 74.

In the operation of the apparatus of this invention, the operator 72 first raises the apparatus 16 into position to engage the front edge of the gutter 12. By having the front flange 22 extend downwardly for a greater distance than the rear flange 24, the apparatus can be brought more conveniently into engagement with the gutter by resting the carriage against the front of the gutter and then pushing it gently upwardly until the inner flange 24 is high enough to move inwardly across the top of the front edge of the gutter. The outer flange 22 then strikes against the front of the gutter and holds the apparatus against further inward movement while the operator 72 lowers the reach rod 42 and brings the rollers 36 into engagement with the front edge of the gutter.

The operator then moves the reach rod 42 downwardly in the bearing 20 until the tool 58 comes in contact with the bottom of the gutter 12. The carriage is then moved along the gutter by means of the reach rod 42. This requires the operator to exert a force in the direction in which the gutter extends, and because of the long distance between the operator and the carriage, together with some flexing of the reach rod 42, the force exerted to move the carriage along the gutter is somewhat variable. At times this may result in a tilting of the bearing 20 in directions to lift one of the rollers 36 out of contact with the front edge of the gutter; but in spite of such fore-and-aft pitching of the carriage, the operator can keep the tool 58 in contact with the bottom of the gutter by merely permitting the reach rod 42 to slide downwardly in the bearing 20 as much as necessary to compensate the pitching movement of the carriage.

When the tool 58 has moved along the length of the gutter far enough to accumulate a substantial quantity of leaves or other foreign material ahead of it, the tool is rotated about the longitudinal axis of the reach rod 42 and at the same time moved upwardly to throw the leaves out of the gutter over the front edge immediately ahead of the carriage. Because of the slope of the reach rod 42 with respect to the vertical, the tool 58 has a combined upward and forward movement as it rotates about the longitudinal axis of the reach rod. Greater maneuverability of the tool is made possible by the fact that the operator can move the reach rod 42 upwardly or downwardly at the same time that the tool is being used to throw leaves or other matter over the front edge of the gutter.

When used with gutters having roof straps which extend across the top of the gutter trough, the reach rod 42 is pushed upwardly as far as necessary in order to permit the tool 58 and inner flange 24 to clear the roof strap. The initial upward movement of the reach rod 42 lifts the tool 58, but when the collar 74 contacts with the lower end of the bearing 30, then further upward movement of the reach rod 42 lifts the entire carriage assembly so that the inner flange 24 is raised as much as necessary. As in the case of the initial engagement of the apparatus with the gutter 12, the front flange 22, extending downwardly below the level of the rear flange 24 holds the apparatus in position over the gutter while it is being shifted across the roof strap.

It will be understood that the carriage can be moved by the reach rod whether or not the rollers 36 are in contact with the gutter; but such movement with the rollers out of contact with the gutter does not give the operator of the same control or the same stability for the carriage for most effective sweeping with the tool.

The collar 74 is preferably connected to the reach rod 42 by a set screw 78 (Figure 2), or other detachable fastening means which permits the collar 74 to be shifted longitudinally around the reach rod 42 for gutters of different depth; and also for the purpose of permitting the reach rod 42 to be removed from the bearing 20 when the upper end of the reach rod is detached from the connector 68 (Figure 1) at its lower end.

The preferred embodiment of the invention has been illustrated and described; but changes and modifications can be made and some features can be used in different combinations without departing from the invention as defined in the claims.

What is claimed is:

1. Apparatus for removing leaves and other debris from roof gutters including a carriage adapted to be supported from a front edge of a roof gutter and movable along the length of the gutter, the carriage having riders adapted to contact with the front edge of the gutter at regions spaced from one another lengthwise of the gutter to provide stability for the carriage in the direction of the length of the gutter, and abutments on the carriage in positions to extend downwardly inside and outside of the front edge of the gutter for limiting displacement of the carriage on the gutter in directions transverse of the direction of movement of the carriage along the gutter, a bearing secured to the carirage and in position to be located in front of the gutter with the longitudinal axis of said bearing extending downwardly when the riders are in contact with the front edge of the gutter, a reach rod extending through the bearing and projecting from both ends thereof, the reach rod being rotatable in the bearing about the longitudinal axis of the reach rod, a handle portion at the lower end of the reach rod, a bracket at the upper end of the reach rod, and a leaf-removing tool connected to the bracket and adapted to extend downwardly into the gutter at an acute angle to the reach rod whereby rotation of the reach rod in the bearing swings the leaf-removing tool through an arc about the reach rod axis.

2. The apparatus for removing leaves from roof gutters described in claim 1 and in which the reach rod is movable in the bearing also in the direction of the longitudinal axis of the reach rod whereby the tool is movable up and down in the gutter in a direction parallel to the longitudinal axis of the reach rod in addition to the swinging movement of the tool about that axis.

3. Apparatus for removing leaves from roof gutters as described in claim 1 and in which the riders that are adapted to contact with the front edge of the gutter are rollers having peripheral surfaces adapted to roll along the gutter.

4. The apparatus for removing leaves from roof gutters as described in claim 1 and in which the abutments on the carriages are flanges extending downwardly, one of the flanges being in position to extend in front of the gutter and the other flange being in position to extend behind the front edge of the gutter and to extend part day down into the gutter, both of said flanges being adapted to extend for a substantial distance below the front edge of the gutter when the riders are in contact with the front edge of the gutter.

5. The apparatus for removing leaves from roof gutters as described in claim 4 and in which the flange which is adapted to extend part way down into the gutter diverges at its lower end away from the other flange and from the reach rod to permit tilting of the carriage for less slope of the reach rod when operating on gutters near to the ground.

6. The apparatus for removing leaves from roof gutters as described in claim 4 and in which the carriage riders are rollers and said rollers extend at least as far forward as the flange of the carriage that is in front of the gutter so that the flange in front of the gutter is

adapted to contact with the front of the gutter when the roller slides transversely inwardly during movement of the carriage on the front edge of the gutter.

7. The apparatus for removing leaves from roof gutters as described in claim 2 and in which the tool is connected to the bracket by bearing means for vertical adjustment in the bracket and means connecting the bracket to the reach rod for angular adjustment with respect to the reach rod in a direction transverse of the direction of movement of the carriage along the gutter.

8. The apparatus for removing leaves from roof gutters as described in claim 2 and in which there is a collar on the reach rod at some distance below the bearing through which the reach rod slides with longitudinal movement, the collar having an upper face which moves into contact with an end of the bearing to support the carriage on the upper end of the reach rod when initially raising the carriage into position to be placed on the front edge of a gutter.

9. The apparatus for removing leaves from roof gutters as described in claim 4 and in which the flange that is in front of the gutter extends downwardly for a substantially greater distance than the flange which is in position to extend down into the gutter whereby said flange that is in front of the gutter remains in contact with the front of the gutter when the carriage is pushed upwardly far enough for the rear or inner flange to pass across the top of a roof strap by which the gutter is supported.

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