

June 26, 1923.

V. CAMARATA ET AL

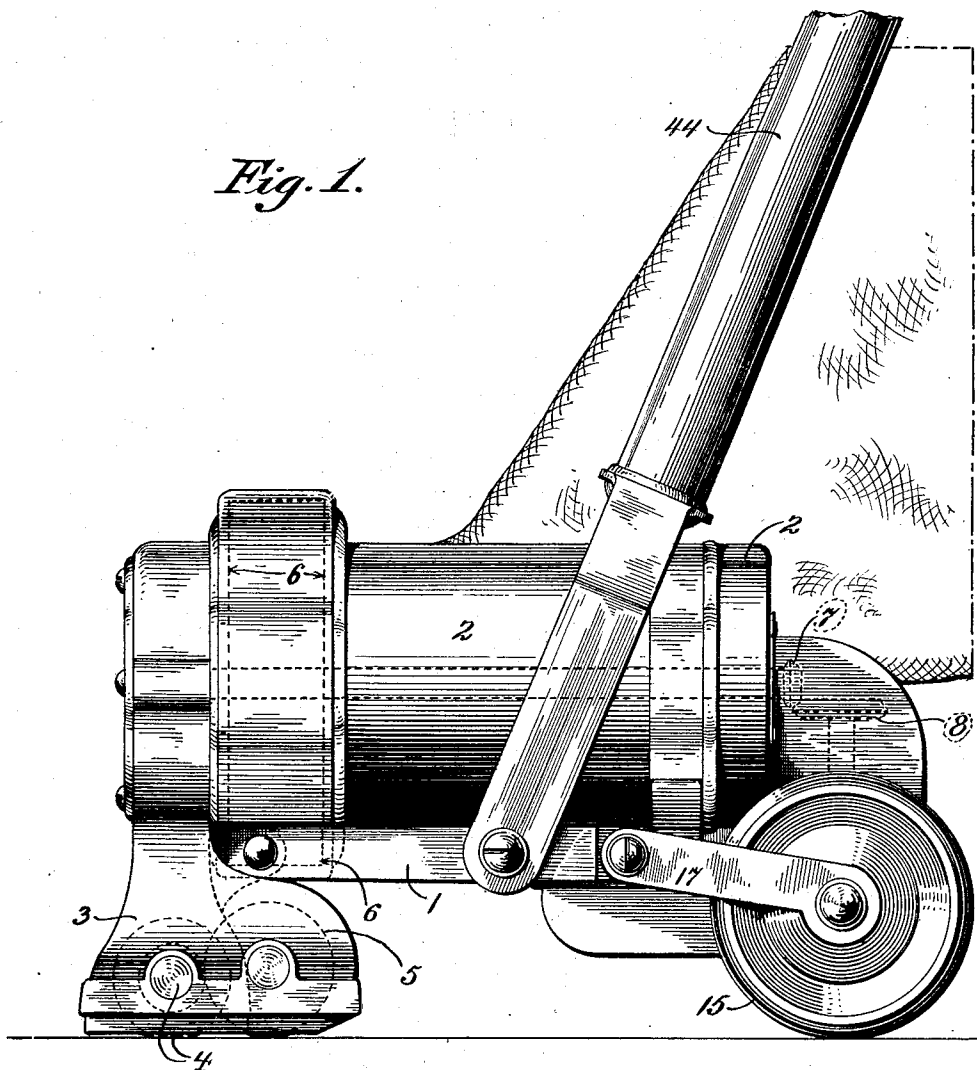
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VACUUM CLEANER

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5 Sheets-Sheet 1

Fig. 1.



Witnesses:

Lynett Brodton
George A. Gruss

Inventors
Vincent Camarata
John Codrick
Raymond P. Danley

By *Joshua R. H. Lott*
Their Attorney

June 26, 1923.

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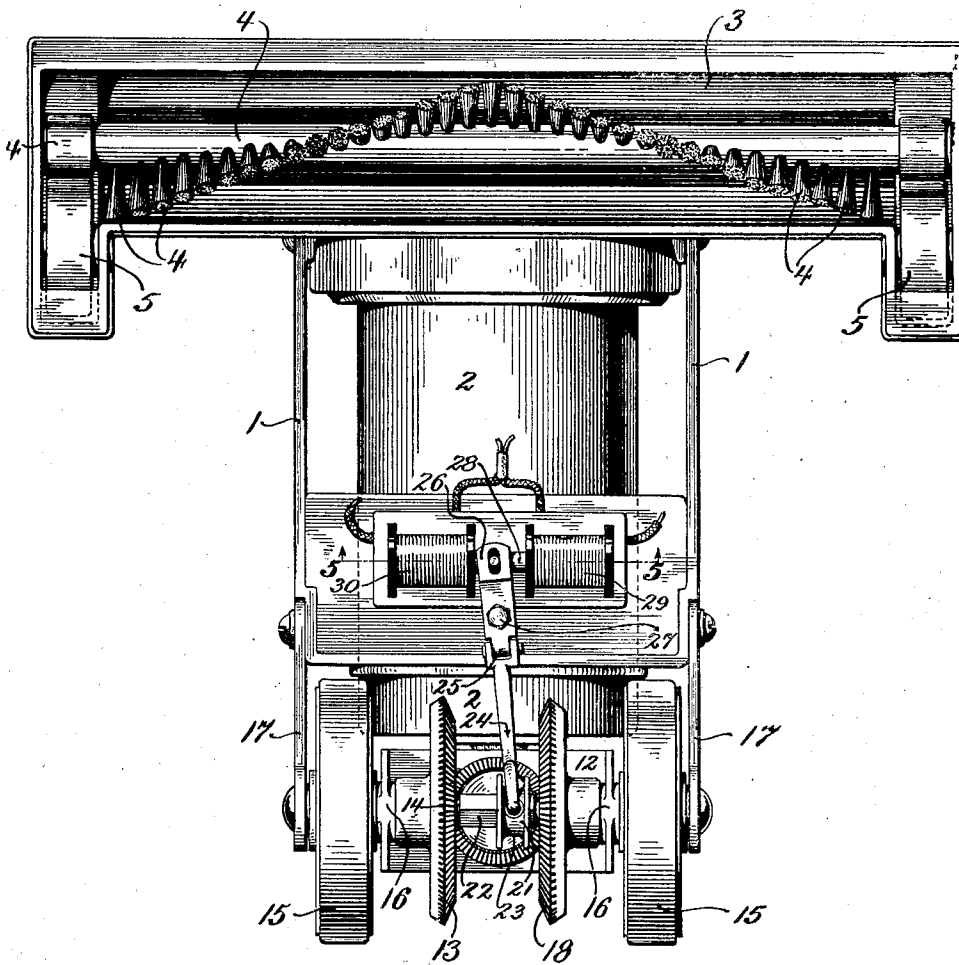
V. CAMARATA ET AL

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Fig. 2.



Witnesses:

Lynn T. Brodton
George A. Kruse

Inventors
Vincent Camarata
John Codrick
Raymond P. Danley

By

Joshua R. H. Fott
Their Attorney

June 26, 1923.

V. CAMARATA ET AL

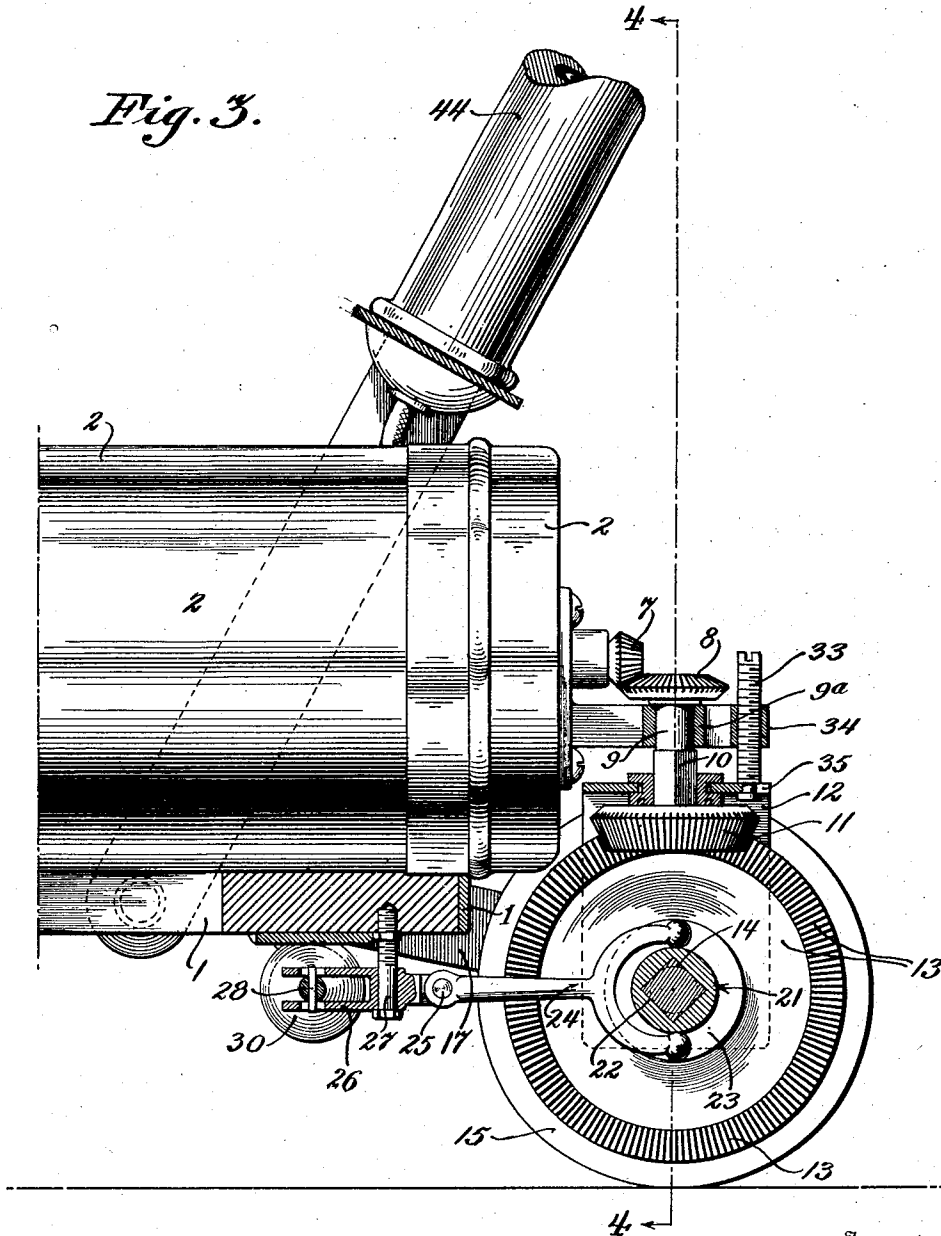
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Fig. 3.



Witnesses:

Lynn T. Proctor
George A. Guss

Inventors

Vincent Camarata
John Codrick
Raymond P. Darley

By

Joshua R. H. H. H.
Their Attorney

June 26, 1923.

1,459,946

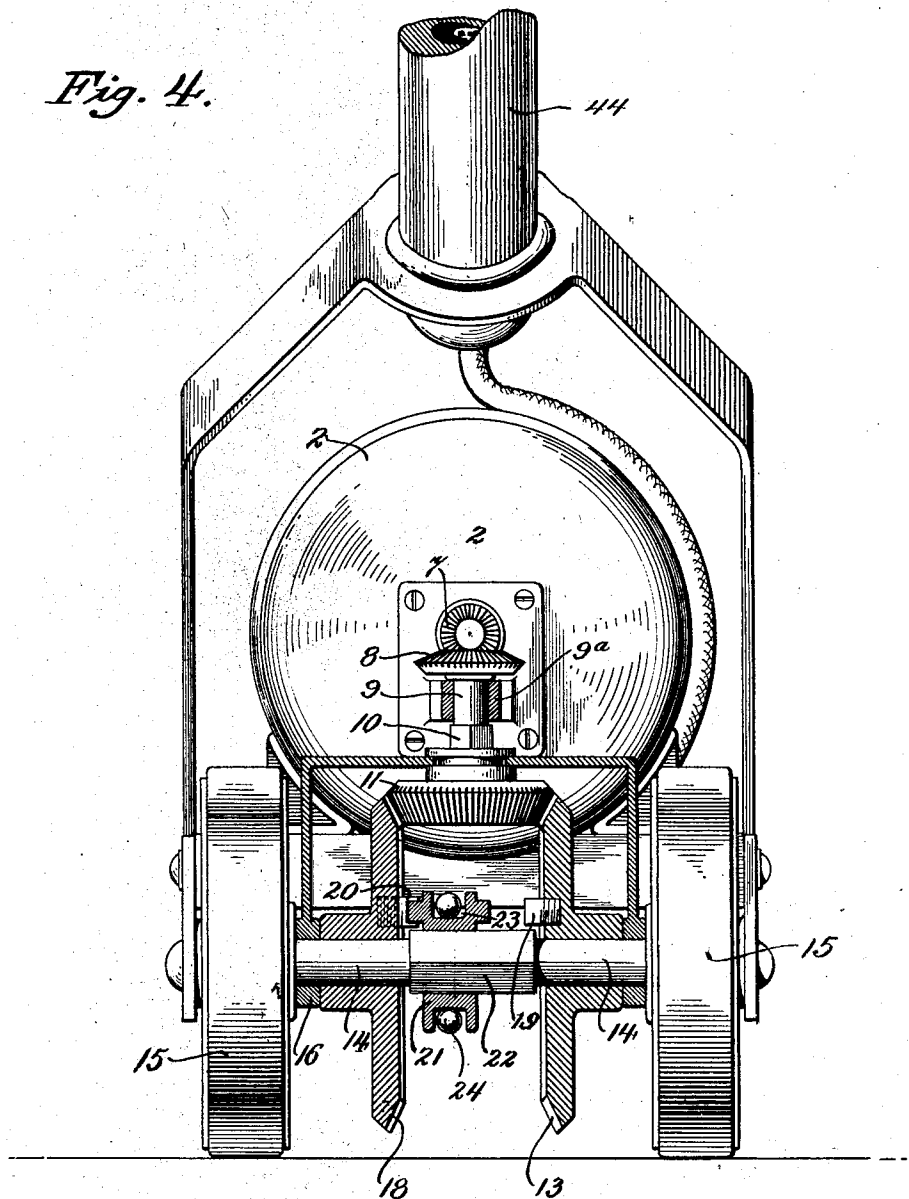
V. CAMARATA ET AL

VACUUM CLEANER

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5 Sheets-Sheet 4

Fig. 4.



Witnesses:

Lynn T. Brodton
George A. Gruss

Inventors

Vincent Camarata
John Codricle
Raymond P. Darley

By

Joshua R. H. H. H.
Their Attorney

June 26, 1923.

V. CAMARATA ET AL

1,459,946

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Fig. 5.

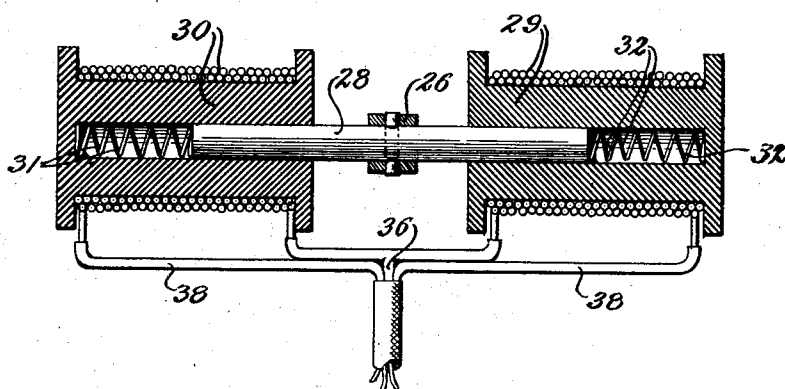
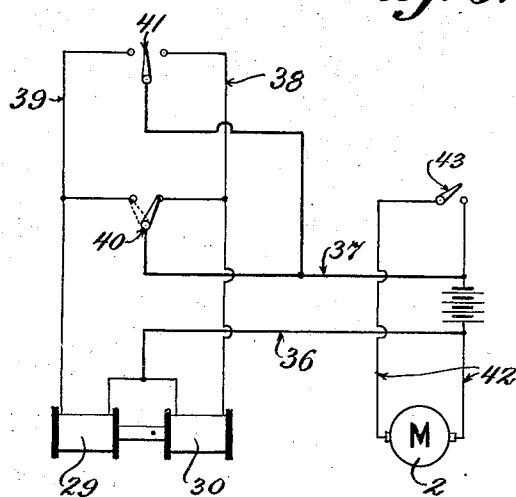


Fig. 6.



Witnesses:

Samuel Brodton
George A. Gross

Inventors

Vincent Camarata

John Codrict

Raymond P. Danley

By

Joshua K. F. Fols
Their Attorney

UNITED STATES PATENT OFFICE.

VINCENT CAMARATA, JOHN CODRICK, AND RAYMOND P. DANLEY, OF PHILADELPHIA, PENNSYLVANIA.

VACUUM CLEANER.

Application filed November 20, 1922. Serial No. 602,173.

To all whom it may concern:

Be it known that we, VINCENT CAMARATA, JOHN CODRICK, and RAYMOND P. DANLEY, citizens of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Vacuum Cleaners, of which the following is a specification.

Our invention relates to vacuum cleaners particularly of a self-propelled type and has for its object to provide a simple and efficient means for moving and controlling the vacuum cleaner at the will of the operator.

This object, and other advantageous ends which will be described hereinafter, we attain in the following manner, reference being had to the accompanying drawings in which—

Figure 1 is a side elevation of a vacuum cleaner having our invention applied thereto,

Figure 2 an inverted view of Figure 1,

Figure 3 a fragmentary central section through the rear part of the vacuum cleaner, certain parts being shown in full,

Figure 4 a section on line 4—4 of Figure 3,

Figure 5 a section on line 5—5 of Figure 2, and

Figure 6 a diagram of the electrical connections.

Referring to the drawings, 1 is a frame, 2 a motor mounted on the frame, 3 a nozzle having mounted therein a brush 4 including bristles mounted on a shaft having roller parts which frictionally engage wheels 5 and receive rotation therefrom. The wheels 5 are rotatably mounted in the rear of the nozzle and act as a pivot for raising or lowering the same. A fan 6 is operatively connected to one end of the motor shaft to produce suction through the nozzle. The other end of the motor shaft has a fixed bevel gear 7 meshing with a bevel gear 8 fixed to a shaft 9 having an angular part 10 adapted to slide in a bevel gear 11 rotatably mounted in a U-shaped member 12. The shaft 9 is rotatably mounted in a bracket 9^a secured to the motor. A clutching bevel gear 13, which meshes with the bevel gear 11, is rotatably mounted on a shaft 14 having propelling wheels 15 fixed thereto. Shaft 14 is mounted in bearing 16 in the U-shaped member and

held against sidewise movement by bracing strips 17 pivotally connected to the shaft and frame. A clutching bevel gear 18 meshes with bevel gear 11 and is rotatably mounted on shaft 14 for reversing the propelling wheels. Clutching gears 13 and 18 include pins 19 and 20 adapted to engage a clutching member 21 slidably mounted on an angular part 22 of shaft 14. The clutching member 21 has an annular groove 23, which receives a yoke 24 pivoted at 25 for vertical movement, to an arm 26 pivotally mounted, for horizontal movement, on the frame at 27. Arm 26 is operatively connected by a pin and slot connection to a core 28 common to a pair of solenoids 29 and 30 and held in a neutral position by springs 31 and 32 in the solenoids. The solenoids may be secured to a frame in any suitable manner.

The mechanism for adjusting the nozzle vertically comprises a screw 33 fitting within a threaded hole in an extension 34 of bracket 9^a and held in a slot 35 in the U-shaped member against vertical movement.

The electrical connections for controlling the solenoids comprise main lines 36 and 37. Line 36 leads into the solenoids which have outlet lines 38 and 39 connected to the main line 37 by means of double switches 40 and 41. The connections 42 to the motor make a separate circuit which is completed by a switch 43. The double switch 40 may be mounted in a handle 44 of the vacuum cleaner. Switch 41 is adapted to be used in an extension line at a distance from the operator to enable another person to control the vacuum cleaner, for example, when a child operates the vacuum cleaner, a more competent person may control it at a distance.

When the vacuum cleaner is in use, switch 40 completes a circuit which energizes solenoid 29 and causes its core to move against the action of the spring 31, thereby actuating clutch member 21 to engage clutching gear 13. A forward movement of the propelling wheels will be imparted from the motor shaft through gear 7, gear 8, shaft 9, gear 11, gear 13, clutch member 21 and shaft 14. To impart a reverse movement to the propelling wheels, switch 40 is moved to complete a circuit and energize solenoid 30, thereby causing the core to move against the action of the spring 32 and, through intermediate

mechanism, cause clutch member 21 to engage clutching gear 18 and effect the reverse movement.

When it is desired to adjust the nozzle vertically, adjusting screw 33 is turned to move the motor toward or from the propelling wheels, thus adjusting the nozzle by swinging it up or down on wheels 5 which act as a pivot.

While we have described our invention as taking a particular form, it will be understood that the various parts of our invention may be changed without departing from the spirit thereof, and hence we do not limit ourselves to the precise construction set forth, but consider that we are at liberty to make such changes and alterations as fairly come within the scope of the appended claims.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. A vacuum cleaner comprising a frame; a motor; a nozzle; propelling wheels adjustably mounted on the frame and operatively connected to the motor; reversing means operatively connected to the motor and propelling wheels, and means for controlling the propelling wheels and reversing means at the will of the operator.

2. A vacuum cleaner comprising a frame; a motor; a nozzle; propelling wheels adjustably mounted on the frame and operatively connected to the motor; wheels mounted on the frame between the propelling wheels and nozzle; means for adjusting the frame relatively to the propelling wheels; reversing means operatively connected to the motor and propelling wheels, and means for controlling the propelling wheels and reversing means at the will of the operator.

3. A vacuum cleaner comprising a frame; a motor; a nozzle; a shaft adjustably mounted on the frame; propelling wheels fixed to the shafts; clutching gears rotatably mounted on the shaft and operatively connected to the motor; a clutching member slidably keyed to the shaft; and means for moving the clutching member into engagement with the clutching gears at the will of the operator.

4. A vacuum cleaner comprising a frame; a motor; a nozzle; a shaft mounted on the frame; propelling wheels fixed to the shaft; clutching gears rotatably mounted on the shaft and operatively connected to the motor; a clutching member slidably keyed to the shaft; solenoids for moving the clutching member into engagement with the clutching gears, and means for controlling the solenoids at the will of the operator.

5. A vacuum cleaner comprising a frame; a motor; a nozzle; a shaft adjustably mounted on the frame; propelling wheels fixed to the shaft; clutching gears rotatably mounted on the shaft and operatively connected to the motor; a clutching member slidably keyed to the shaft; solenoids for moving the clutching member into engagement with the clutching gears, and means for controlling the solenoids at the will of the operator.

6. A vacuum cleaner comprising a frame; a motor; a nozzle; a shaft mounted on the frame; propelling wheels fixed to the shaft; clutching gears rotatably mounted on the shaft and operatively connected to the motor; a clutching member slidably keyed to the shaft; solenoids for moving the clutching member into engagement with the clutching gears; means normally holding the clutching member out of engagement with the clutching gears, and means for controlling the solenoid at the will of the operator.

7. A vacuum cleaner comprising a frame; a motor; a nozzle; a shaft mounted on the frame; propelling wheels fixed to the shaft; clutching gears rotatably mounted on the shaft; a common gear for rotating the clutching gears and operatively connected to the motor; a clutching member slidably keyed to the shaft, and means for moving the clutching member into engagement with the clutching gears at the will of the operator.

8. A vacuum cleaner comprising a frame; a motor; a nozzle; wheels mounted near the nozzle; a shaft adjustably mounted on the frame; propelling wheels fixed to the shaft; clutching gears rotatably mounted on the shaft; a clutching member slidably keyed to the shaft; means for moving the clutching member into engagement with the clutching gears; a U-shaped member rotatably mounted on the shaft; a common gear rotatably mounted in the U-shaped member and meshing with the clutching gears; a shaft slidably keyed to the common gear and operatively connected to the motor, and means for adjusting the common gear relative to its shaft to cause adjustment of the nozzle.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

VINCENT CAMARATA,
JOHN CODRICK,
RAYMOND P. DANLEY.

Witnesses:

ELIZABETH GARBE,
CHAS. E. POTTS.