

Oct. 4, 1938.

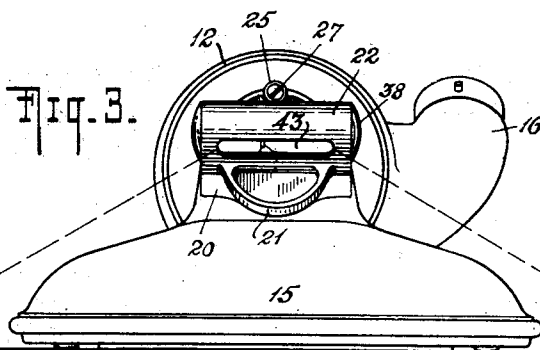
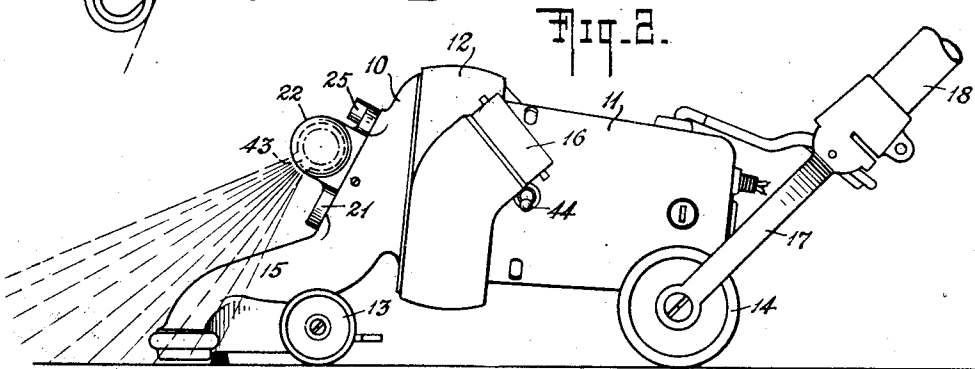
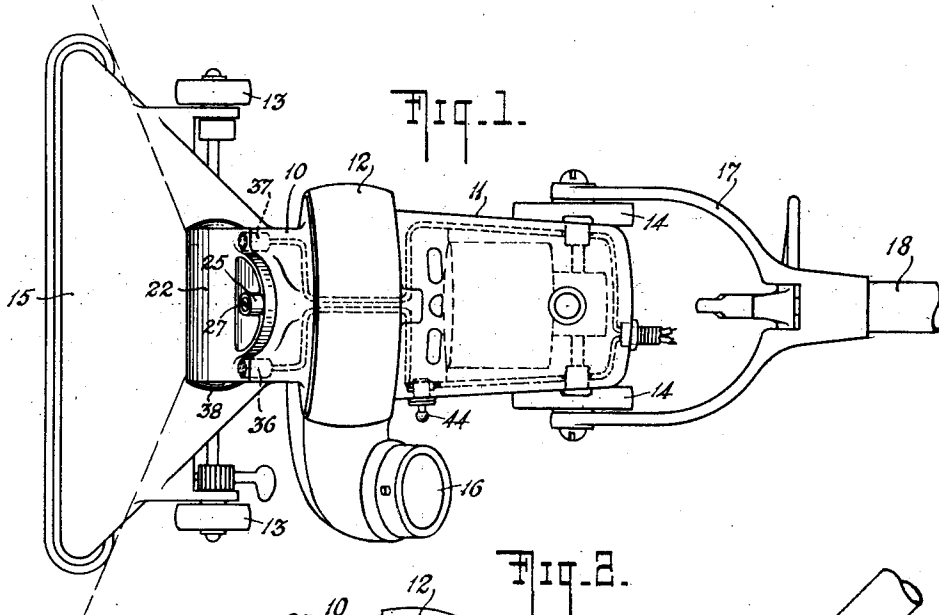
B. P. SMITH

2,132,007

VACUUM CLEANER WITH HEADLIGHT

Filed April 27, 1935

2 Sheets-Sheet 1



WITNESS

*L. V. Rasmussen*

INVENTOR

BERNARD P. SMITH

BY

*Bonnie R. Smith*  
ATTORNEYS

Oct. 4, 1938.

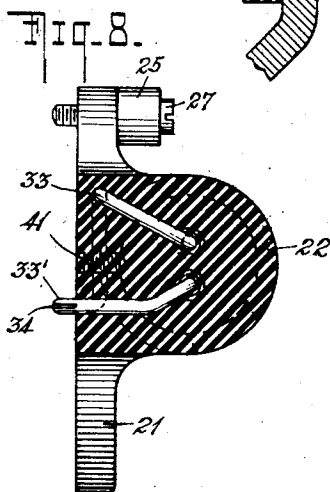
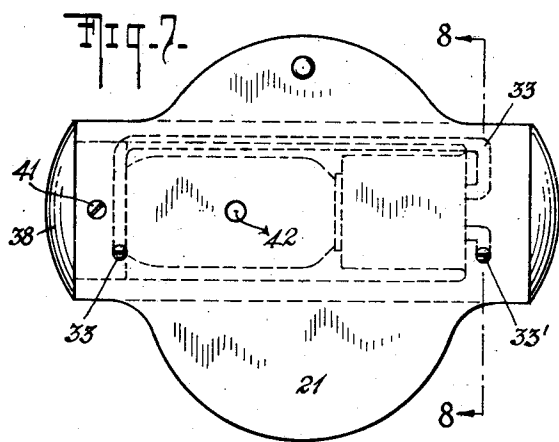
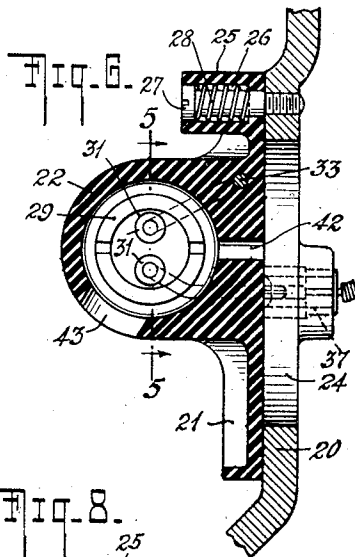
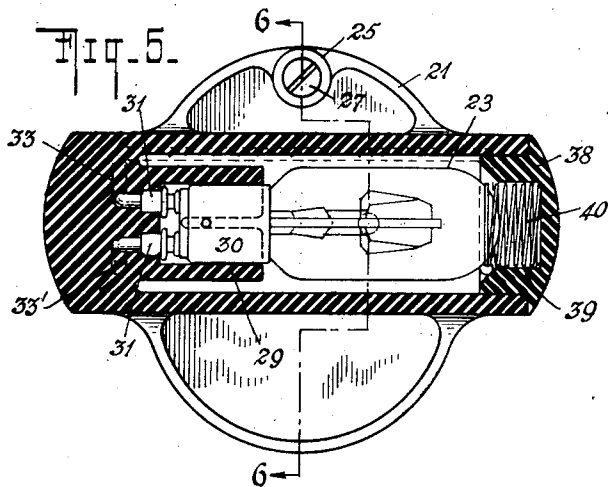
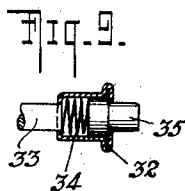
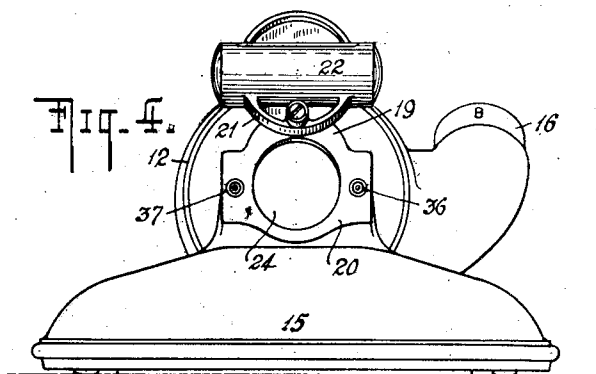
B. P. SMITH

2,132,007

VACUUM CLEANER WITH HEADLIGHT

Filed April 27, 1935

2 Sheets-Sheet 2



WITNESS

*E. V. Rasmussen*

INVENTOR

BERNARD P. SMITH

BY

*Rosen & Helmer*  
ATTORNEYS

# UNITED STATES PATENT OFFICE

2,132,007

## VACUUM CLEANER WITH HEADLIGHT

Bernard P. Smith, Newark, N. J., assignor to The Regina Corporation, Rahway, N. J., a corporation of New Jersey

Application April 27, 1935, Serial No. 18,517

10 Claims. (Cl. 240—2)

The invention relates to vacuum cleaners of the usual household type consisting of an ambulant frame, motor, suction fan, suction nozzle, dust bag, and a handle attached to the frame for guiding the cleaner over the surface to be cleaned.

More particularly, my invention relates to a vacuum cleaner provided with means for illuminating the surface to be cleaned immediately in advance of the cleaner and including the forwardly projecting nozzle of the apparatus. Such means of illumination comprises a headlight secured to the frame in such position as to serve most efficiently the purpose hereinabove indicated.

Among the objects of the invention is the provision of such illuminating means which is of compact and simple construction, inexpensive in cost of manufacture and attachment to an existing type of vacuum cleaner and which in the course of use of the cleaner for any of its intended purposes will not interfere with such use.

More specific objects of the invention are to provide a mounting for the headlight which is capable of easy manipulation for the purpose of swinging the same out of position so as to make possible the attachment to the vacuum cleaner of the various accessories, particularly a suction hose to be used in cleaning articles of furniture, draperies, etc., in accordance with the normal application of such accessories to the ambulant frame of the cleaner.

A still further object of the invention is to provide a headlight mounted upon the forward portion of the fan and motor casing of the horizontal type so that such headlight and the mounting thereof will not increase the over-all height of the vacuum cleaner and thereby interfere with the normal use of such apparatus in cleaning under articles of furniture and places ordinarily inaccessible by vacuum cleaners of the vertical motor type or cleaners of the horizontal motor type to which may have been applied accessories including a means of illumination superimposed upon the casing.

In accordance with my invention, there is also provided a means of circulating air drawn into the vacuum cleaner by the suction fan through the headlight casing surrounding the electric light bulb secured therein for the purpose of providing a continuous stream of cold air effective to cool such bulb and to retain it at a normal temperature and without excessive heating thereof.

Further and more specific objects of the invention will appear to those skilled in the art from the following description, taken in conjunction with the accompanying drawings, in which Fig. 1 is a plan view of a vacuum cleaner to which my invention has been applied, showing only the base portion of the propelling handle and without showing the dust bag used in conjunction with the cleaner; Fig. 2 is a side elevation of the cleaner; Fig. 3 is an end view of the cleaner from the suction nozzle side thereof showing the headlight and mounting in position upon the frame; Fig. 4 is a view similar to Fig. 3 showing the headlight mounting turned about its pivot to enable the suction pipe used for cleaning surfaces remote from the ambulant frame to be applied to the fan casing opening; Fig. 5 is a vertical section through the headlight casing along the line 5—5 of Fig. 6; Fig. 6 is a section on the line 6—6 of Fig. 5; Fig. 7 is a rear view of the headlight mounting, showing more clearly the electrical wiring therethrough; Fig. 8 is a section on the line 8—8 of Fig. 7; and Fig. 9 is a detailed enlarged section of one of the contact elements between the electric light bulb and the electrical wiring within the headlight mounting.

Referring more particularly to the drawings, in which similar reference characters identify similar parts in the several views, 10 is the ambulant frame of the vacuum cleaner comprising a housing 11 for the horizontal motor and a suction fan housing 12. The frame 10 and motor housing 11 are mounted on pairs of wheels 13 supporting the forward end of the frame and a pair of wheels 14 supporting the rear portion of the frame and more particularly the motor casing 11. A downwardly turned suction nozzle 15 protrudes forwardly from the ambulant frame. From the fan casing 12 extends a dust discharge pipe 16 to which is connected the usual dust bag (not shown) used with this type of vacuum cleaner. Pivotaly mounted upon the shaft, near the ends of which are secured the wheels 14, is the forked member 17, to which is connected the tubular handle 18. The various other details of construction of the vacuum cleaner per se are not herein described, said structural details and accessories being no part of this invention.

Upon the front face of the ambulant frame 10 and upon an upturned projecting portion 19 of a housing 20 forming such front face immediately forward of the fan casing is pivotally secured a mounting frame 21 of substantially elliptical configuration, which mounting frame is

preferably cast integrally with a housing 22 within which is secured, as hereinafter described, the electric light bulb 23. The housing 21 and its projecting portion 22 may be made of any suitable material but I prefer to make such element of "Bakelite" or similar phenolic condensation product or composition material.

The casing 21 is secured to the housing 20 immediately above and on the center line of the opening 24 which is adapted to receive the end of a suction pipe of the type used for cleaning surfaces or materials remote from the vacuum cleaner and therefore from its suction nozzle, suction being applied to the surfaces to be cleaned through such suction pipe by means of the fan and motor of the vacuum cleaner.

For the purpose of mounting the casing 21 in the position indicated, I provide such casing with a projection 25 having an aperture 26 through which and the projection extends a securing bolt 27 surrounded by a compression spring 28. From an examination of Fig. 6, it will be noted that in order to turn the casing 21 from its position there indicated, in which it covers the opening 24, to the position of such casing indicated in Fig. 4, in which the opening 24 is uncovered by the casing and made available for application thereto of the suction pipe, it is only necessary to grasp the casing 21 at the two ends of the housing 22, exert a slight pull thereon so as to compress the spring 28 within the projection 25, and then rotate the casing 21 about the securing bolt 27.

A structural feature which is an important element of my invention is that the protruding portion constituting the housing 22, acting as the hood for the electric light bulb and a casing therefor, is so positioned with respect to the remaining portion of the casing 21 that the greater part of portion 22 lies substantially above the horizontal center line of the casing, so that the housing 22 may be grasped at the ends thereof by two fingers and the casing 21 withdrawn from contact with the front face of the ambulant frame without binding. In other words, if the protruding portion or bulb housing 22 of the casing 21 were not precisely or substantially in the position thereof indicated, but, for instance, were lower upon the casing 21, when such projecting portion was grasped by the fingers, the casing 21 in the course of its removal from contact with the portion 20 and therefore disengagement of its conductors, would be given a slight pivotal movement about a point near its upper extremity, which movement would result in a binding of the casing, making it difficult to rotate the same about the securing bolt 27.

Turning now to a description of the mounting of the electric light bulb 23, it will be noted from Figs. 5-8 that the housing 22 is formed with an internally projecting socket element 29, within which is adapted to be seated the socket member 30 of the bulb. Within the socket element 29 are provided two contact members 31, 31 of the construction shown in enlarged detail in Fig. 9 and including a metallic housing 32 within which is secured the end of a conductor 33. A spring 34 is mounted within the housing 32, one end of which is in contact with the end of the conductor 33 and the other end of which is effective to press contact element 35 outwardly from the housing and against the contact in the base of the socket 30 of the electric light bulb.

From the upper contact element 31, a conductor 33 is led through a preformed recess within the housing 22 across the top thereof and down-

wardly near the other end of the housing to a contact 36 in the front face of housing 20. From the lower contact element 31 a conductor 33' leads to the contact 37 on the housing 20. It will be noted (see Fig. 8) that the ends of the conductors 33 and 33' are provided with a slit 34 for insuring absolute contact when such conductors are inserted into the depressed portions of the housing 20 provided with the contacts 36 and 37. Such contacts, being depressed, leave the surface of the housing 20 smooth and unobstructed.

The end of the housing 22, remote from the end thereof provided with the internal socket 29, is provided with a cap or plug 38 of the same material of which the member 22 is constituted. The cap 38 is provided with a recess 39 within which is placed a compression spring 40.

An important feature of my invention is the novel manner in which the bulb 23 is secured within the housing 22. The socket of the lamp 23 is of the sliding-fit type and in accordance with my construction it is only necessary to slide the socket of the light bulb 23, which is of the double contact type, into the socket projection 29 and thereafter apply the cap 38 with the spring 40 positioned within the recess 39 to the housing 22, thereby pressing the light bulb 23 inwardly, by means of such spring. The cap 38 may then be secured within the housing 22 by means of a screw 41 projecting through the side of the member 22 and adapted to contact the peripheral surface of the cap and thus secure the latter in its seat.

The novel mounting of the electric light bulb 23 just described, constituting a comparative loose fitting thereof within the housing 22, provides with may be termed a floating support of the bulb, as the latter is supported between two spring mountings, one of such supporting mounts consisting in the resilient contact elements 31 and the other in the spring 40. The bulb is thus snugly fitted in a position in which it is capable of withstanding the repeated shocks to which it is necessarily subjected during the vibration attendant the operation of the vacuum cleaner. The bulb being floated, as it were, upon its resilient supports will have a longer life than if it were secured within the housing in any ordinary manner.

For providing the necessary ventilation to keep the light bulb 23 cool during the operation of the vacuum cleaner, and while such bulb is lighted, I provide an aperture 42 extending through the housing 22 from the bulb chamber through the rear wall of such housing, to the opening 24 in the front face of the frame. During the operation of the vacuum cleaner, therefore, and whenever the bulb is in lighted condition, a continuous stream of cold air is drawn inwardly through the opening 43 in the housing 22, such air circulating around the electric light bulb and cooling the same and then through the opening 24, such air being drawn into the apparatus by means of the suction fan. The amount of air necessary to cool the bulb, and which is drawn through the aperture 42 is extremely small and hence does not interfere with the normal operation of the vacuum cleaner.

It will be noted that the member 22, housing the electric light bulb, extends downwardly so as to substantially cover such bulb and protect it from injury, should such member come into contact with any protruding object. Such member, serving as a hood, will also protect the electric

light bulb from injury from any falling object. The opening 43, as shown clearly in Fig. 3, is of sufficient length to illuminate the surface forwardly of the ambulant frame and to a certain extent on each side of the suction nozzle. The position of such light aperture is such that it is effective to permit the casting of light upon and forwardly of the suction nozzle so that the operator of the vacuum cleaner has at all times a full and clear view of the suction nozzle as well as of the surface over which such suction nozzle and the vacuum cleaner proper are being propelled.

In Fig. 1 is shown in dotted lines the electrical wiring for the illuminating means from which it will be seen that the wiring from the two contact elements 36 and 37 are passed through the fan casing near the inner side surfaces thereof and along the inner surface of the motor casing 11. On the side of the motor casing is mounted a switch 44 controlling the circuit to the headlight. The provision of this switch makes it possible to use the vacuum cleaner without the headlight at such times as no artificial illumination is necessary in conjunction with the use of the cleaner, or at such times as the apparatus is used for remote cleaning purposes when the headlight casing is swung out of position to permit the attachment of the suction pipe.

While I have shown and described a particular embodiment of my invention, it is obvious that various changes therein, particularly in details of construction and in the arrangement of the several parts may be made without departing from the invention.

I claim:

1. A vacuum cleaner having an ambulant frame, electric motor, suction fan, and suction nozzle having an opening, the axes of the motor and suction fan being substantially horizontal, a support for a headlight mounting secured on the forward face of the frame, a pivot structure for said headlight mounting positioned near the upper edge, and centrally, of said support, and a headlight mounting constituting a pivoted cover for the opening in said suction nozzle, and capable of being displaced from its position upon such forward face by being pivoted about said support, said mounting having a pair of contact prongs extending into the nozzle housing, and including a housing for an electric light bulb, the greater portion of the body of such housing extending substantially above the horizontal center line of said mounting, said pivot structure comprising a projection from the support having an aperture, a bolt extending through said aperture, and a spring surrounding said bolt.

2. A vacuum cleaner as claimed in claim 1 in which the headlight mounting is pivotally secured on the forward face of the frame near the upper extremity thereof.

3. A vacuum cleaner as claimed in claim 1, in which the forward face of the frame is provided with an aperture adapted to have associated therewith the end of a suction hose, the headlight mounting being pivotally secured adjacent and above said aperture, whereby said mounting may be swung from a position in which it covers such aperture to a position in which such aperture is uncovered.

4. A vacuum cleaner as claimed in claim 1, in which the housing for the electric light bulb

completely surrounds the bulb, except at a region substantially near the bottom of said housing.

5. A vacuum cleaner as claimed in claim 1, in which the forward face of the frame is provided with a plurality of contacts adapted to be engaged by corresponding contacts on the rear face of the headlight mounting.

6. A vacuum cleaner having an ambulant frame, electric motor, suction fan, and suction nozzle having an opening, the axes of the motor and suction fan being substantially horizontal, a support for a headlight mounting secured on the forward face of the frame, a pivot structure for said headlight mounting positioned near the upper edge, and centrally, of said support, and a headlight mounting constituting a pivoted cover for the opening in said suction nozzle, and capable of being displaced from its position upon such forward face by being pivoted about said support, said mounting having a pair of contact prongs extending into the nozzle housing, and including an integrally formed housing for an electric light bulb, the greater portion of the body of such housing extending substantially above the horizontal center line of said mounting, said pivot structure comprising a projection from the support having an aperture, a bolt extending through said aperture, and a spring surrounding said bolt.

7. A vacuum cleaner having an ambulant frame, electric motor, suction fan, and suction nozzle, including a mounting for an illuminating device, said mounting being provided with an aperture for the circulation of air about said illuminating device, said aperture extending through the mounting to the suction chamber of the cleaner.

8. A vacuum cleaner having an ambulant frame, electric motor, suction fan, and suction nozzle, including a mounting for an illuminating device, said mounting being provided with an aperture extending through the mounting to the suction chamber of the cleaner, whereby a small proportion of the air being drawn into the cleaner by the suction fan is drawn over the illuminating device, thereby maintaining the same in a cooled condition during the operation of the apparatus.

9. A mounting for the headlight of a vacuum cleaner having a suction nozzle, comprising a casing carrying a headlight and means for pivotally securing said casing to the forward face of the cleaner frame, comprising a projection on said casing constituting a housing having an aperture, a bolt extending through said housing and through said aperture into the cleaner frame, and a spring within said housing surrounding said bolt abutting at one end against the head of said bolt and at the other against the base of said projection, said casing including a pair of contact prongs extending into the nozzle housing, whereby said casing may be first raised from the face of the cleaner frame and then pivoted about said bolt upon compression of the spring and moved from its position overlying the forward face of the frame to a position in which its major part is removed from contact with said face, the casing thus constituting a cover plate for the opening in the suction cleaner nozzle.

10. A mounting for the headlight of a vacuum cleaner as claimed in claim 9 in which the contact prongs extending from said casing are adapted to connect with corresponding contacts on the face of the cleaner frame.

BERNARD P. SMITH.