

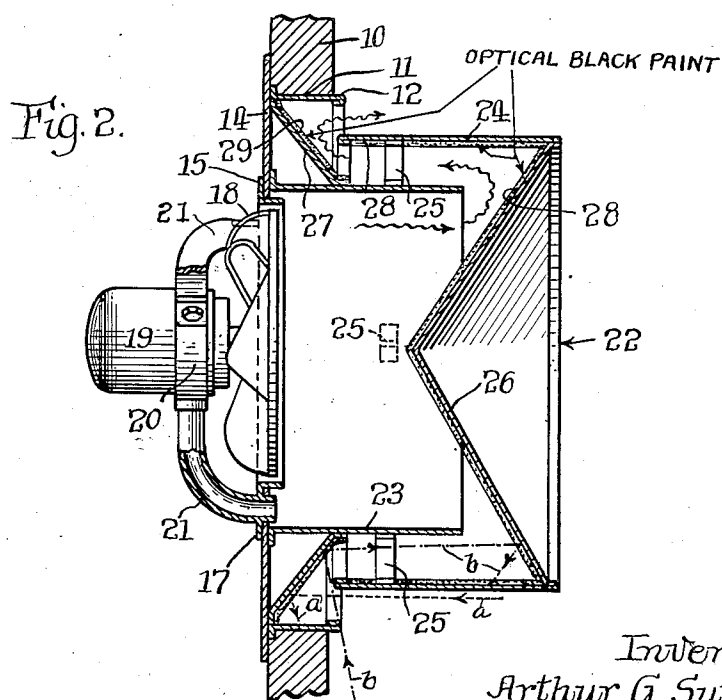
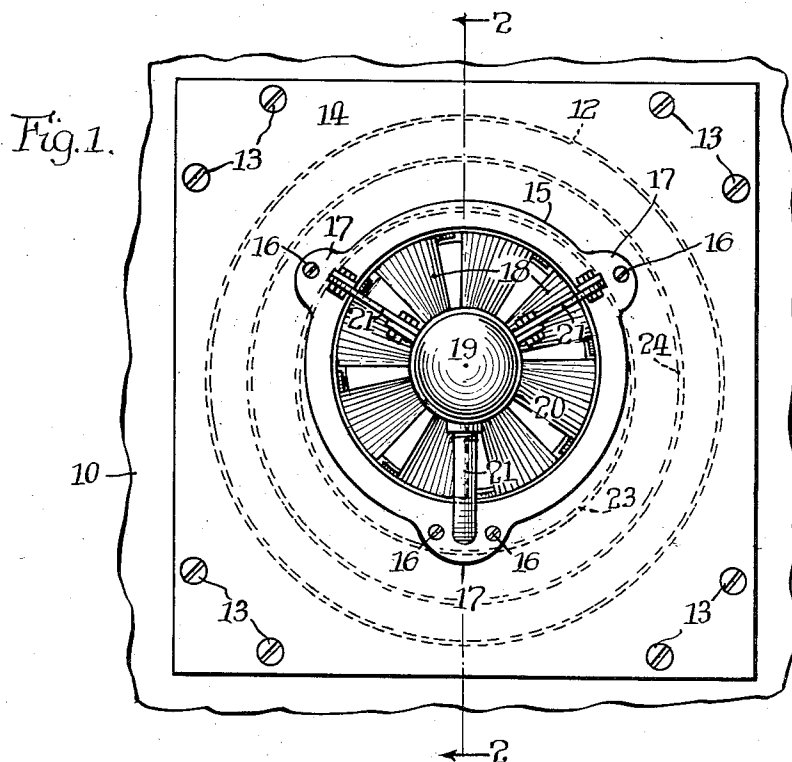
Sept. 15, 1936.

A. G. SUTCLIFFE

2,054,526

DARKROOM VENTILATOR

Filed May 22, 1935



Inventor:
Arthur G. Sutcliffe,
By Fisher, Clapp, Soans & Pond,
Attys.

UNITED STATES PATENT OFFICE

2,054,526

DARKROOM VENTILATOR

Arthur G. Sutcliffe, Chicago, Ill., assignor to Ilg
Electric Ventilating Co., Chicago, Ill., a cor-
poration of Louisiana

Application May 22, 1935, Serial No. 22,746

5 Claims. (Cl. 98—43)

This invention relates to ventilators, and more particularly ventilators of that type where a motor-propelled fan is mounted in or opposite an opening in a wall of a room to drive off vitiated air and odors from the room. Ventilators of this type are extensively used in kitchens, chemical laboratories, and similar locations, and an object of the present invention has been to adapt a ventilator of this type to the use of photographic dark rooms. Of course, the problem involved in the use of such a ventilator for a dark room is to effectively exclude light from entering through the ventilator opening in the wall; and after numerous experiments I have devised a light excluding ventilator which, by practical test, has been found to satisfactorily serve the purposes of dark room ventilation.

One practical embodiment of the ventilator is illustrated in the accompanying drawing, in which:—

Fig. 1 is a front elevation, viewed from the interior of the dark room.

Fig. 2 is a vertical axial section taken on the line 2—2 of Fig. 1.

Referring to the drawing, 10 may designate a wall of the dark room, through which is formed a hole 11 preferably lined by a sheet metal ring 12. Attached to the inner or dark room side of the wall 10 as by screws 13 is a sheet metal panel 14 having a central opening opposite the opening 11, in which is mounted a fan and motor supporting ring 15 that may be attached to the panel 14 as by screws 16 passing through ears 17 on the ring 15. 18 designates the propeller fan of a well known type that is directly driven by an electric motor 19, which motor is supported in a ring or saddle 20 in turn supported from the ring 15 by radial arms 21, the lowermost of which may be made tubular as indicated in Fig. 2, to provide a motor cooling feature, which, however, is not related to the present invention.

Opposite the discharge side of the fan is a hood structure designated as an entirety by 22, the function of which is to provide a duct for the discharge of air to the outside of the dark room, and at the same time block the admission of light rays to the dark room through the fan opening.

Describing the preferred structure of this hood, 23 designates a flue section that is attached at its inner end to the pane 14 and projects some distance beyond the outer side of the wall 10, this flue section at its inner end encircling the fan-supporting ring and fan so that the air delivered by the latter flows directly therethrough. Surrounding and spaced from the projecting por-

tion of the flue 23 is a cowl, the circumferential wall 24 of which may conveniently be supported on the flue 23 by spaced brackets 25. An outer end closure of the cowl consists of a cone-shaped plate or disc 26, the apex of which is directed toward and preferably extends into the outer end of the flue 23, as shown. The inner end of the circumferential wall 24 preferably terminates substantially in the plane of the outer surface of the wall 10, and encircling the flue 23 and attached at its base to the panel 14 is a conical deflector ring 27 that lies opposite the inner end of the cowl but is sufficiently spaced therefrom to provide the discharge end of the air duct, as indicated by arrows in Fig. 2, showing the flow of the air. It will be observed that the spaced coaxial walls of the flue and cowl form an air duct for the discharge of air to the exterior of the dark room, the air flowing first through the flue 23, thence through the duct between spaced walls of the flue and the cowl, and thence past the conical deflector ring 27 to an annular outlet opening between the inner end of the cowl and the lining ring 12.

At the bottom of Fig. 2, I have illustrated by dotted lines *a* the course of a light ray entering the air exit opening of the hood in a direction substantially parallel with the circumferential wall 24, the ray striking the inclined surface of the conical ring 27 and being deflected against the lining ring 12. By dot and dash lines *b* I have indicated the course of a light ray entering the air exit opening approximately in the plane of the latter, the ray being first deflected from the conical ring 27 through the air duct between the walls 23 and 24, and impinging on the cone 26, by which it is again deflected outwardly against the wall 24. Light rays intermediate those shown by the lines *a* and *b* will some of them follow the general course of the line *a* and others the general course of the line *b*, but in neither case can any of the rays enter the outer open end of the flue 23. All direct light rays are thus barred from entry to the fan opening.

The device as thus far described gives satisfactory results as a light excluding ventilator, and is also fairly efficient with the conical deflector ring 27 omitted, since the main cone 26 throws back outside of the flue 23 practically all light rays that strike it. The efficiency is improved however by using the deflector ring 27 which of itself excludes a large fraction of the light rays entering the air discharge opening.

I have also found that the device may be rendered still more efficient by coating the internal surfaces of the walls 24 and 26 of the cowl and the external wall of the deflector ring 27 with what is known as optical black paint, and such coating is indicated at 28 on the cowl walls and at 29 on the deflector ring walls. This optical black paint has a dull finish and checks the transmission of suffused light.

Practical tests have shown that the device when made as herein shown and described affords good ventilation without imposing any abnormal load on the fan motor, and at the same time completely and effectively screens the fan opening against the admission of light from outside the dark room. Believing myself to be the first to provide, in cooperation with a ventilator fan, a hood opposite the fan that provides an ample discharge duct for the air and at the same time effectively blocks the admission of light rays through the fan opening, I do not limit myself to the structural details herein described, but reserve all such variations, modifications and mechanical equivalents as fall within the spirit and purview of the appended claims.

I claim:

1. A light-excluding ventilator for a dark room having an opening in a wall thereof, comprising a ventilating fan and fan motor adapted to be mounted across said opening, and a hood opposite the discharge side of the fan, said hood having spaced inner and outer walls forming between them a duct for the outflow of air propelled by the fan through said inner wall, and inclined end walls opposite the respective open ends of said duct serving to deflect back and outwardly light rays entering said duct.
2. A light-excluding ventilator for a dark room having an opening in a wall thereof, comprising a ventilating fan and fan motor adapted to be mounted across said opening, and a hood covering the discharge side of the fan, said hood having parallel spaced inner and outer circumferential walls forming between them an annular duct for the outflow of air propelled by the fan through said inner wall, and oppositely inclined end walls opposite the respective open ends of said duct so located as to deflect back and outwardly light rays entering said duct.

3. A light-excluding ventilator for a dark room having an opening in a wall thereof, comprising a panel adapted to be secured to a wall of the room over said opening, a ventilating fan and fan motor mounted on said panel opposite said opening, an air discharge flue secured to said panel opposite said fan and projecting beyond the outer side of said wall, a cowl surrounding and spaced from said flue, said cowl having an outer end closure in the form of a cone with its apex directed toward said flue, and a conical deflector ring encircling said flue opposite the inner end of said cowl; said cone and ring cooperating to bar the admission of light rays to said flue.

4. A light excluding ventilator for a dark room having an opening in a wall thereof, comprising a panel adapted to be secured to a wall of the room over said opening, a ventilating fan and fan motor mounted on said panel opposite said opening, an air discharge flue secured to said panel opposite said fan and projecting beyond the outer side of said wall, a cowl mounted on and surrounding and spaced from said flue, said cowl having an outer end closure in the form of a cone with its apex directed toward said flue, and a conical deflector ring encircling said flue and at its base attached to said panel, said ring lying opposite the inner end of said cowl and cooperating with the conical end closure of the latter to deflect outwardly light rays seeking to enter said flue.

5. A light-excluding ventilator for a dark room having an opening in a wall thereof, comprising a panel adapted to be secured to a wall of the room over said opening, a ventilating fan and fan motor mounted on said panel opposite said opening, an air discharge flue secured to said panel opposite said fan and projecting beyond the outer side of said wall, a cowl mounted on and surrounding and spaced from said flue, said cowl having an outer end closure in the form of a cone with its apex extending into the outer end of said flue, and a conical deflector ring encircling said flue and at its base attached to said panel, said ring lying opposite the inner end of said cowl and cooperating with the conical end closure of the latter to deflect outwardly light rays seeking to enter said flue.

ARTHUR G. SUTCLIFFE.