

(No Model.)

M. R. DAVIS.

SCREEN ATTACHMENT FOR SUCTION OR EXHAUST FANS.

No. 585,188.

Patented June 29, 1897.

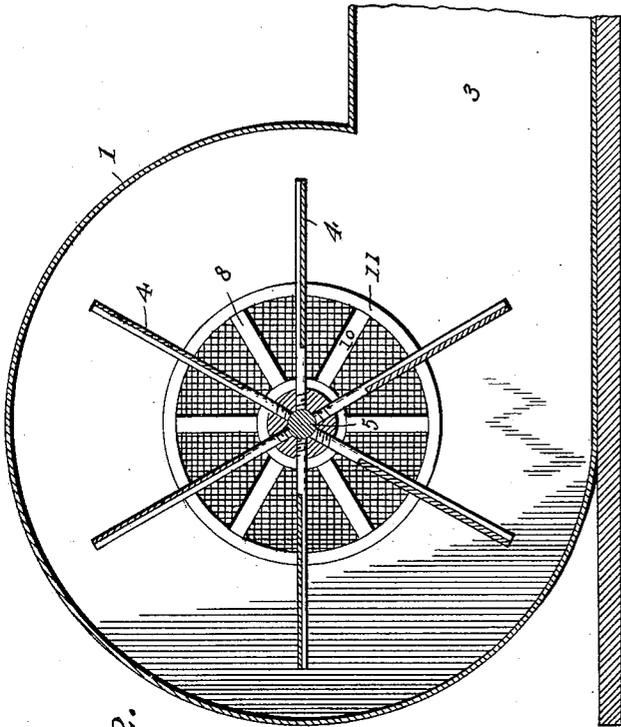


Fig. 2.

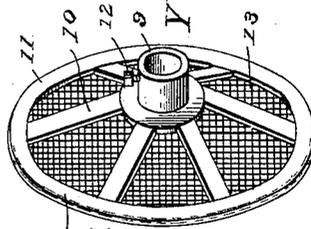


Fig. 5.

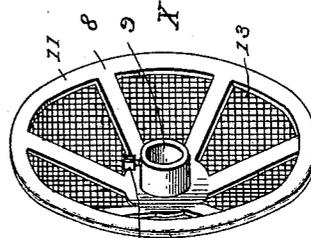


Fig. 4.

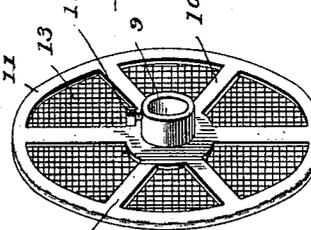


Fig. 3.

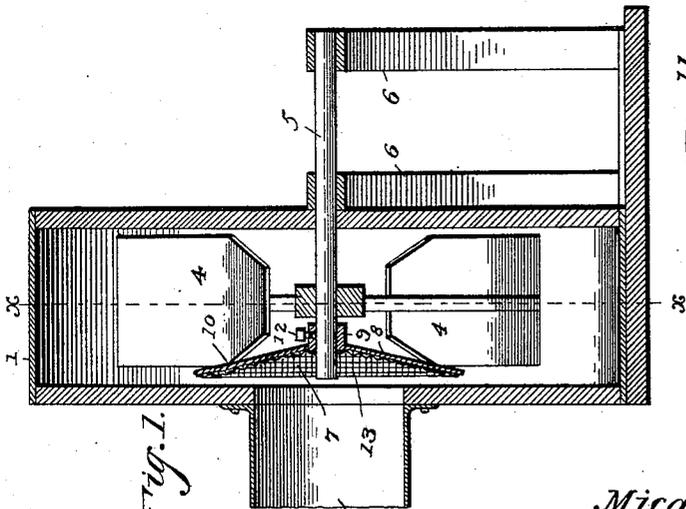


Fig. 1.

Witnesses

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# UNITED STATES PATENT OFFICE.

MICAJAH R. DAVIS, OF BELLS, TEXAS.

## SCREEN ATTACHMENT FOR SUCTION OR EXHAUST FANS.

SPECIFICATION forming part of Letters Patent No. 585,188, dated June 29, 1897.

Application filed June 27, 1894. Serial No. 515,859. (No model.)

*To all whom it may concern:*

Be it known that I, MICAJAH R. DAVIS, a citizen of the United States, residing at Bells, in the county of Grayson and State of Texas, have invented a new and useful Screen Attachment for Suction or Exhaust Fans, of which the following is a specification.

The invention relates to a screen attachment for suction or exhaust fans.

This object of the present invention is to provide a screen attachment for suction or exhaust fans adapted to be arranged inside of the fan-casing, directly opposite the inlet or suction opening thereof, for the purpose of protecting the fan or fan-wheel against breakage from rocks, chips of wood or metal, &c., contained in the material that the fan may be used to handle; but the invention is more especially intended for use in connection with exhaust or suction fans that are employed to handle and distribute seed-cotton, and in this use prevents damage to delicate materials, such as seed-cotton, which is ordinarily greatly damaged in pneumatic cotton-handling apparatus by coming in direct contact with the fan-blades, which crack or hull the seeds to some extent, and being afterward fed to the gin such seed-hulls are carried by the gin-saws through the ribs of the gin-stand, and are thus left in the lint-cotton, which greatly depreciates the value of the cotton.

To this end the invention therefore contemplates an improved attachment of the character noted that adapts a suction or exhaust fan for handling fibrous substances without injury therefrom or thereto, and is therefore particularly intended for use in connection with such apparatus as set forth in my former patent, No. 506,771.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a vertical sectional view of an exhaust or suction fan equipped with the herein-described improvement. Fig. 2 is a detail sectional view on the line *xx* of Fig. 1. Figs. 3, 4, and 5 illustrate different forms of the screen

attachment as adapted for different classes of work.

Referring to the accompanying drawings, 1 designates the circular fan-casing of an ordinary exhaust or suction fan of that class employed for handling cotton and the like, and said fan-casing is provided at one side with the central inlet or suction opening 2 and also with the usual tangential outlet-neck 3. The fan-casing 1 accommodates therein the ordinary rotary fan 4, mounted on the transverse fan-shaft 5, that extends through the side of the casing opposite to the opening 2 and is journaled in suitable bearing-supports 6, arranged at one side of the fan-casing. The inner end of the fan-shaft 5 projects to a point near the opening 2 and, as is common in this class of fans, is unsupported at this end, so as not to interfere with the free inlet of the materials or substances drawn into and expelled from the fan-casing by the fan. The said inner end of the fan-shaft 5 is adapted to have removably attached thereon the circular screen attachment 7, that allows a free passage of air therethrough to the fan, while at the same time serving to intercept foreign substances or other matter which it is undesirable to have passed to the fan-blades. The said circular screen attachment 7 is provided with a circular screen-frame 8, that consists of a central hub 9, a radial series of flat brace-arms 10, extended integrally from said hub, and an integral rim 11, connecting the outer ends of said arms 10. The said hub 9 of the circular screen-frame 8 is adapted to receive in the threaded opening therein the fastening set-screw 12, that is adapted to impinge on the shaft 5, so as to hold the attachment fast thereto for rotation therewith.

A screen-disk 13 is soldered or otherwise permanently fastened to one side of the frame 8, so as to be disposed directly opposite and adjacent to the inlet or suction opening 2 of the fan-casing.

When the screen attachment is properly adjusted in position on the fan-shaft, the peripheral rim thereof is adapted to rest directly against the side edges of the blades of the fan 4, so that the fan itself will form a brace for the attachment, and the screen-disk 13, which

may be of wire-netting or any suitable screen material, is arranged on what might be properly termed the "outer" side of the screen 8, so that any strain placed on the screen by heavy materials coming in contact therewith will be withstood by the flat brace-arms 10, which serve to hold the screen-disk to its shape and strengthen the entire attachment.

In operation it will of course be understood that the fan creates a suction within the fan-casing by driving or expelling the air out through the outlet-neck 3. This produces a partial vacuum at the center of the fan, so that the air will rush through the inlet or suction opening 2 and will carry into the fan-casing the materials handled by the fan. By reason of disposing the screen attachment directly at one side of the center of the fan and opposite the inlet or suction opening the incoming air will necessarily pass through the screen to the fan, while any material carried in suspension will be intercepted by and lodged against the screen, and such material is passed off the periphery of the screen by centrifugal force and will be carried along the walls of the casing out to the neck 3.

As illustrated in Fig. 3 of the drawings, the screen attachment is shown as perfectly flat for ordinary purposes, while in Figs. 4 and 5 of the drawings the forms X and Y, respectively, are illustrated as being conical in shape to provide for retarding or accelerating the centrifugal action of the screen attachment in directing the materials that lodge thereon against the walls of the fan-casing as the particular character of the work may de-

mand, the form X being illustrated as adapted for attachment to the fan-shaft, with its point or apex disposed toward the inlet or suction opening, while the form Y is the reverse, with its point or apex adapted to be disposed away from the inlet or suction opening.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

In an attachment for suction or exhaust fans, the combination of a circular metallic screen-frame adapted to be detachably secured to the fan-shaft at one side of the fan directly opposite the inlet-opening of the fan-casing, and consisting of a central attaching-hub, a series of radial flat brace-arms extended integrally from one end of the hub, and a circular flat rim integrally connecting the outer ends of the brace-arms and adapted to rest directly against the side edges of the blades of the fan, and a screen-disk secured flat against one side of the brace-arms and the rim of said screen-frame, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MICAJAH R. DAVIS.

Witnesses:

J. WATSON,  
S. W. PORTER.