

No. 743,693.

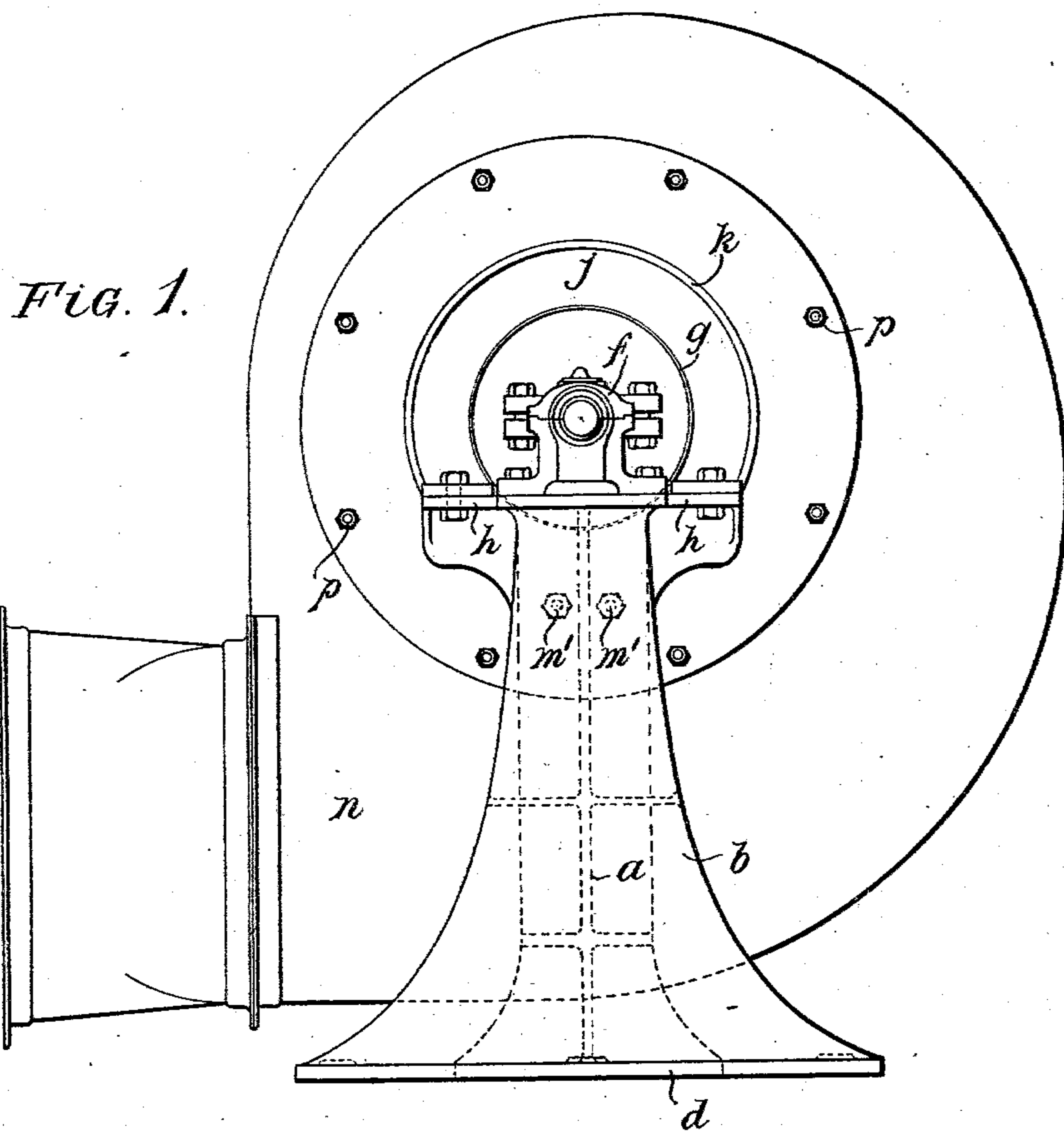
PATENTED NOV. 10, 1903.

S. C. DAVIDSON.  
MEANS FOR SUPPORTING OR CARRYING THE INCLOSING CASINGS OF  
CENTRIFUGAL FANS.

APPLICATION FILED APR. 11, 1903.

NO MODEL.

5 SHEETS—SHEET 1.



WITNESSES:

*Fred White*  
*Thomas Wallace*

INVENTOR:

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By his Attorneys:

*Arthur C. O'neal*

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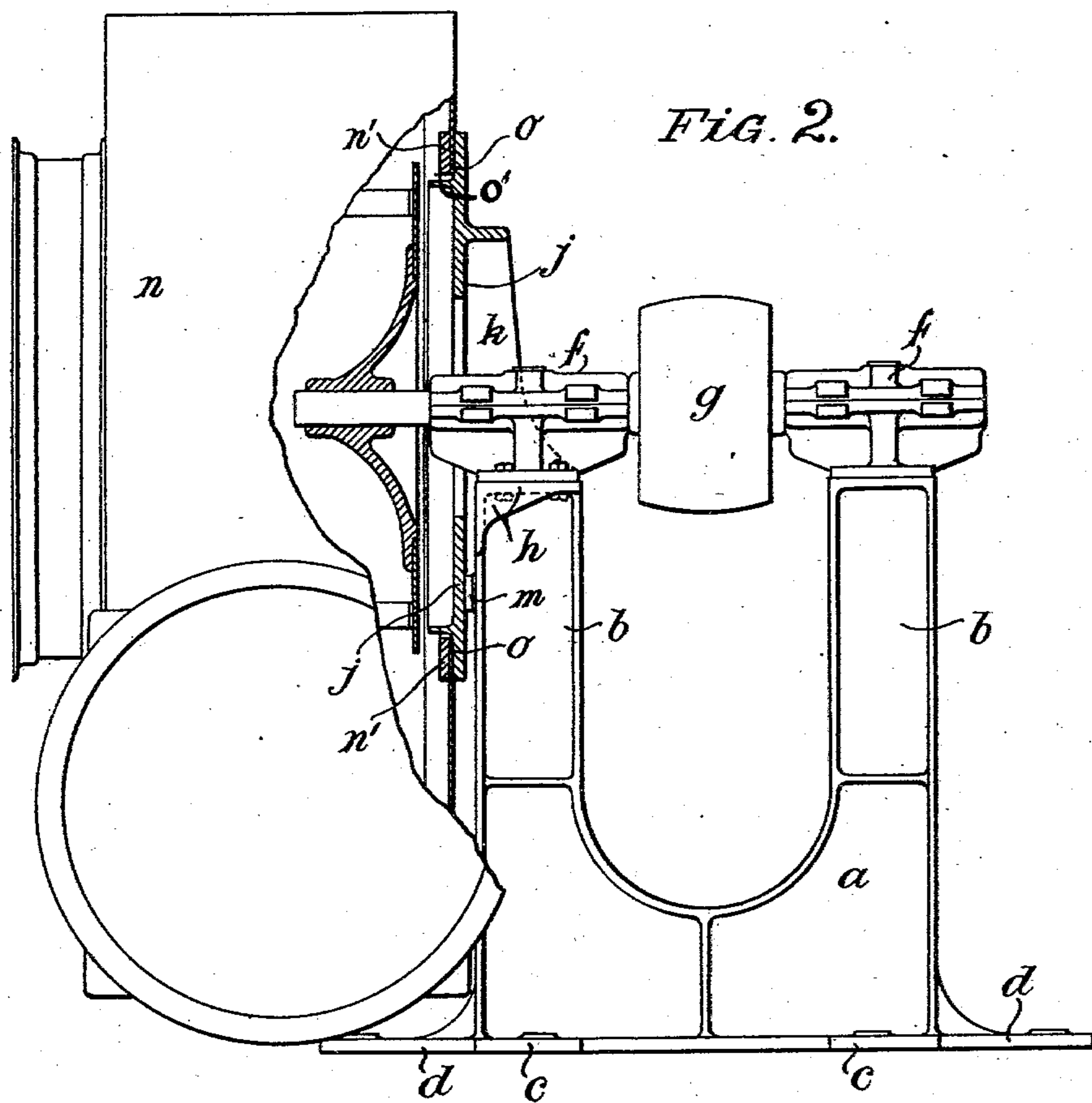
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WITNESSES:

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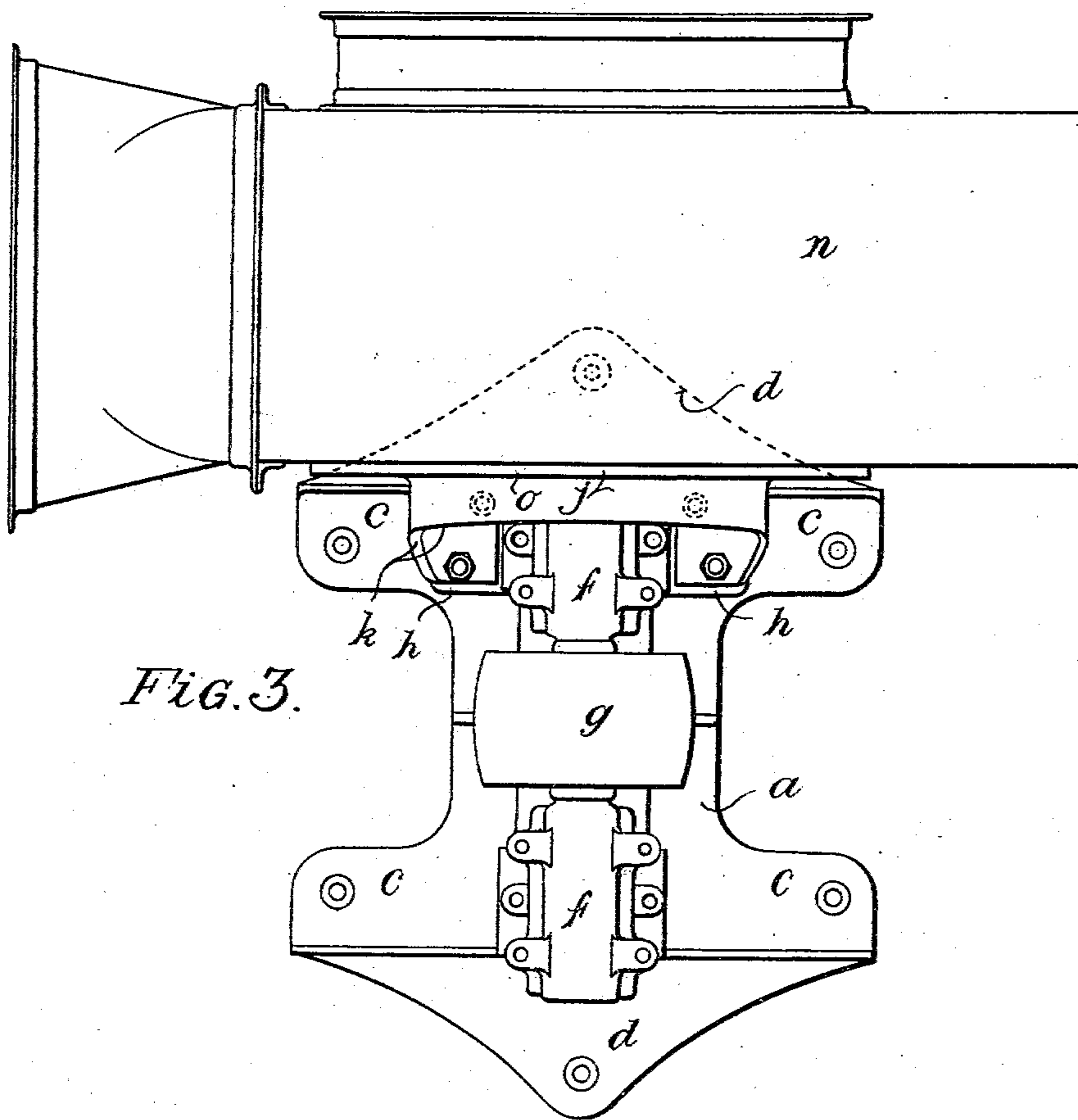
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WITNESSES:

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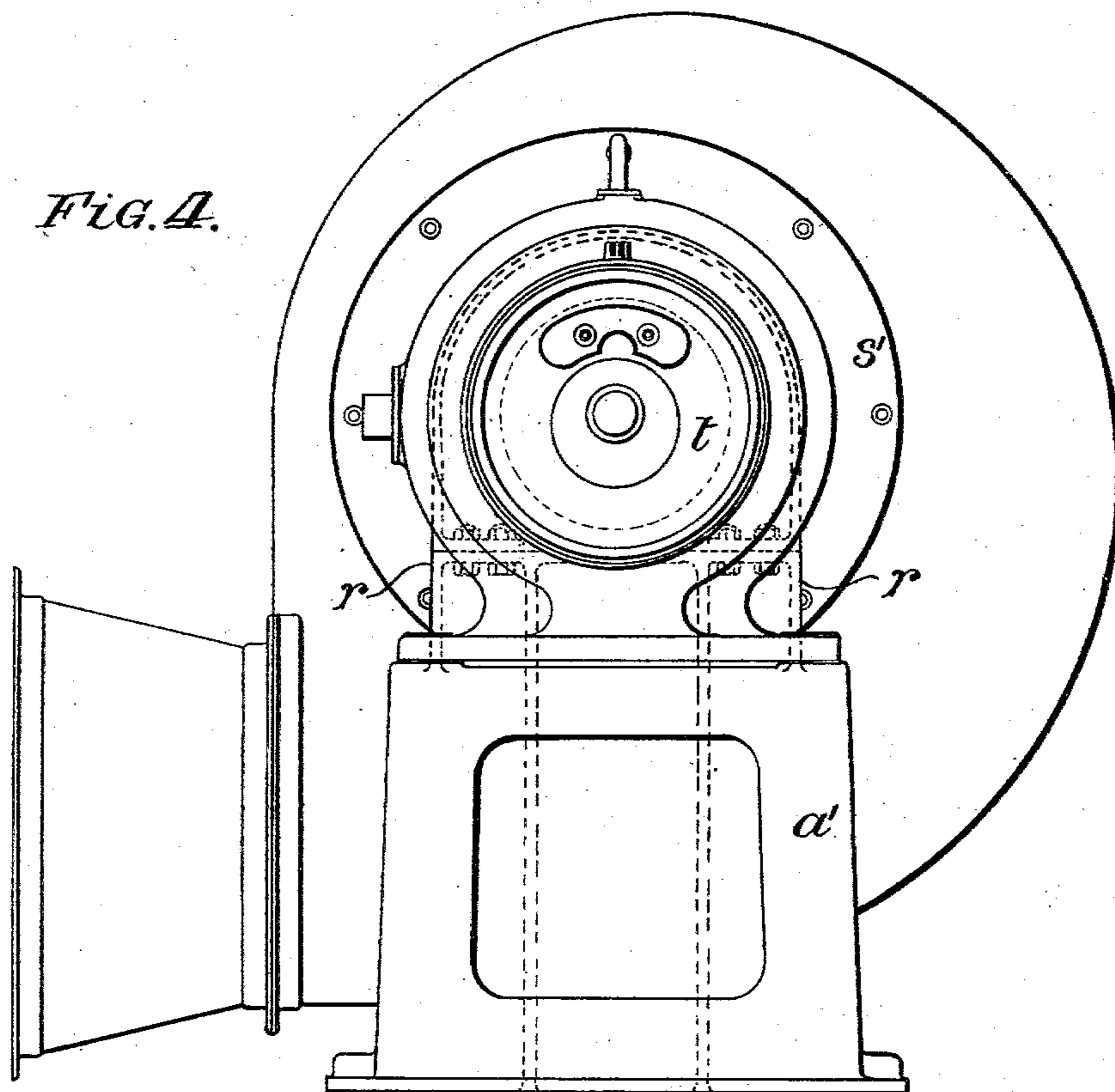
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5 SHEETS—SHEET 4.



WITNESSES:

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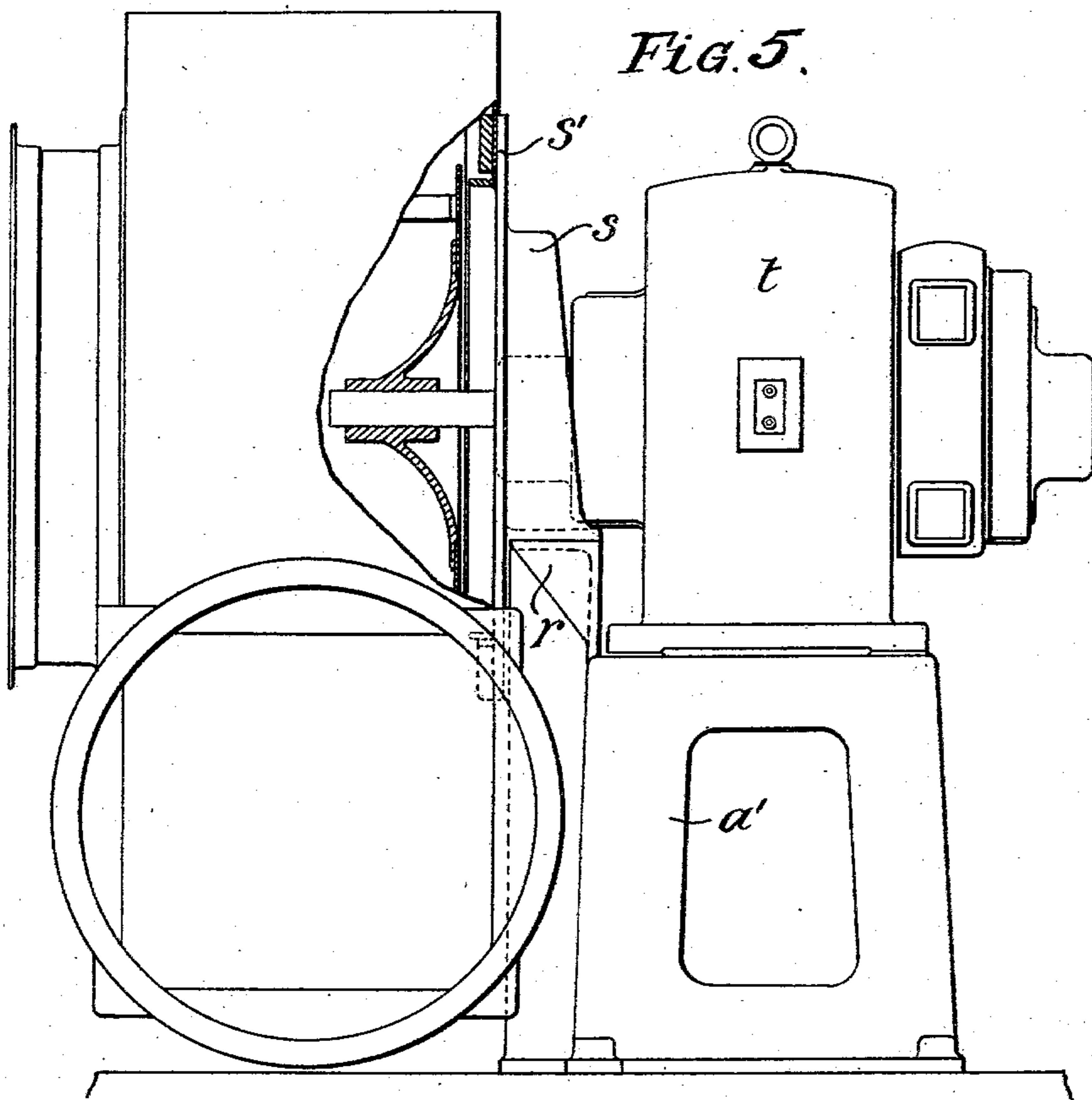
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5 SHEETS—SHEET 5.



WITNESSES:

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## UNITED STATES PATENT OFFICE.

SAMUEL CLELAND DAVIDSON, OF BELFAST, IRELAND.

MEANS FOR SUPPORTING OR CARRYING THE INCLOSING CASINGS OF CENTRIFUGAL FANS.

SPECIFICATION forming part of Letters Patent No. 743,693, dated November 10, 1903.

Application filed April 11, 1903. Serial No. 152,143. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL CLELAND DAVIDSON, merchant, of Sirocco Engineering Works, Belfast, Ireland, have invented certain new and useful Improved Means for Supporting or Carrying the Inclosing Casings of Centrifugal Fans, Pumps, and Turbines, of which the following is a specification.

My invention relates more particularly to an improved means for connecting or attaching the "housing" or inclosing casing of centrifugal fans, pumps, or turbines (hereinafter referred to as "fans") to the pedestal carrying the bearings in which the spindle of the fan rotates, so that said housing or casing may be so firmly connected therewith and carried thereby that it will be held rigidly as an otherwise unsupported projection from said pedestal and without feet or base-pedestal for the fan-casing to stand upon, which not only simplifies and cheapens the construction of the fan as a whole, but also permits of the fan-casing being so adjusted upon the pedestal that its discharge-nozzle may point in any required direction, which are advantages of much practical utility in regard to centrifugal fans.

According to this invention the fan is mounted in bearings upon a pedestal or support, which pedestal or support is fitted with an annular or equivalently-gapped bracket, detachable and disposed in a plane at right angles to the fan-shaft, and the fan casing or portion thereof which carries the discharging-nozzle of the fan is so fitted to the said bracket or pedestal that it can be adjusted to any position around the fan-shaft to alter the position of the discharge-nozzle and enable the same to be pointed in any direction.

Reference to the accompanying drawings will more fully explain the nature of my invention and how same is carried into effect.

Figures 1, 2, and 3 are respectively a side elevation, a front part sectional elevation, and plan of one form of my invention. Figs. 4 and 5 are a side elevation and a front elevation, respectively, showing my invention applied to a fan fitted together with an electric motor on a pedestal.

Referring to Figs. 1, 2, and 3, *a* is a stand or pedestal for the bearings of the fan-shaft. Said bearing is substantially of *H* form in

horizontal cross-section and has its vertical ends *b b* approximately parallel with each other, with flanges *c c* and *d d* at foot of same projecting at right angles therefrom to provide a sufficient surface area of base both laterally and axially (in relation to the shaft) for the pedestal to stand upon and enable it to carry with ample firmness and steadiness the shaft, fan, and casing when mounted thereon and so that the center of gravity of the combination as a whole will fall well within the pedestal-base in order that the pedestal of itself will support the fan and casing without requiring any holding-down bolts from the pedestal-base to the floor on which it stands, and also that when such holding-down bolts are applied thereto the fan can be driven at high speeds free from oscillatory vibration, notwithstanding that the fan-casing is unsupported beyond being attached to the pedestal. *f f* are the bearings mounted upon said pedestal, and *g* the driving-pulley between same. I construct said pedestal *a* with shoulders *h h*, projecting at right angles to the fan-shaft on each side of the bearing on one end or it may be on both ends of said pedestal. The upper horizontal and outer vertical surfaces of said shoulders are substantially flat and at right angles to each other. Upon the pair of shoulders thus formed on one end of the pedestal is mounted a detachable bracket *j*, constructed as or formed with an approximately annular or equivalent rim *o*, which is disposed transversely to the axis of the fan-spindle and concentrically therewith. Said detachable bracket extends over and is attached to the horizontal surface of the shoulders *h h* of the pedestal and is constructed with strengthening-flanges *k*, substantially at right angles, so as to bear against the vertical face *m* of the pedestal-shoulders, to which it is secured by bolts *m'*. There are thus two sets of bolts acting at right angles to one another and holding the detachable bracket to the pedestal practically as rigidly as if the bracket and pedestal were cast in one integral piece. The fan-spindle projects through a central orifice or circular opening in said detachable bracket sufficient for the fan to be mounted thereon so as to rotate on the opposite side of the bracket from the bearing-pedestal, and said orifice may when required be fitted with an air-tight

or water-tight gland around the fan-spindle. With a closed-end fan, such as is shown, however, in order to reduce the flow of air into the casing around the shaft a flange  $o'$  is  
 5 formed concentrically with the shaft, this flange extending into the casing into close proximity with the disk of the fan. In any event it will be seen that I provide a single removable plate for performing the double  
 10 function of reducing the inflow of air to the fan-casing and of supporting the casing from the pedestal. The fan-casing  $n$  is made with an annular flange  $n'$ , through which it is attached to the annular rim  $o$  of the bracket  $j$  by  
 15 bolts  $p$ , of which eight are shown pitched at equal spaces from one another around said rim, and as the fan is otherwise unsupported it will be obvious that it can be so mounted upon said bracket that its discharge-nozzle  
 20 will deliver in any one of the eight corresponding positions, thus affording many alternative directions for the delivery-nozzle or for the motive-fluid-supply pipe of an inward-flow turbine if the invention is applied to such. This permits of one pedestal  
 25 and one standardized form of casing being used for any direction of the fan-discharge, whereas if the casing be made according to ordinary construction, with self-contained  
 30 feet or a supporting base-plate, the center of the fan-shaft will for each direction in which the fan-discharge nozzle is pointed usually be at a different height from the floor, thereby involving a different constructive form of the  
 35 casing and a different height of bearing-pedestal for each direction of the fan-discharge; and when one such fan has been constructed for a certain direction of discharge it must consequently remain a fixture for same,  
 40 whereas with my hereinbefore-described improved construction the same fan-casing can be adjusted on the annular bracket so as to give any direction of discharge by merely turning it round on the detachable bracket  
 45 to the required position. For the purpose of provided a finer adjustment clamps may be substituted for the nuts and bolts referred to.

Referring now to Figs. 4 and 5,  $a'$  is the bearing pedestal or base of an electric motor  
 50  $t$ , on which base the detachable bracket  $s$  is mounted. The base  $a'$  is formed or fitted with shoulders  $r$ , to which the detachable bracket  $s$  is securely bolted, the outer rim  $s'$  of said bracket being formed as a flat plane at right  
 55 angles to the shaft on which the fan is mounted, and with an annular rim, as in the construction previously described, so that the general arrangement and connection of the bracket to the motor-base and to the fan is  
 60 similar to that described in respect of its application to a bearing-pedestal.

The arrangement in which a fan is mounted at each end of a bearing-pedestal or a fan at one end and an electric or water motor at  
 65 the other is not illustrated, as the manner in which same can be effected will be sufficiently obvious from the drawings shown.

In the specification of my previous American patent, No. 681,389, dated August 27, 1901, I have described and shown an arrangement of bracket constructed as an integral  
 70 part of the casing of a motor or engine on the shaft of which a rotary fan or pump is directly mounted and which bracket permits of the fan being turned round thereon, so as to effect its  
 75 discharge in any required direction; but my present invention embodies a detachable bracket for a similar purpose and a pedestal designed to give greater utility and so arranged that they can be bolted up to one  
 80 another with a rigidity practically equal to that obtained by casting them together as one integral piece, which latter construction is attended with considerable difficulty for molding and other disadvantages, which are ob-  
 85 viated by the employment of a detachable bracket and pedestal constructed in accordance with my herein-described arrangement, and cost of production is also cheapened.

What I claim, and desire to secure by Letters Patent, is—

1. The combination with a fan, a shaft therefor, a casing surrounding said fan, and a pedestal for supporting said shaft and casing, of a single plate adapted to reduce the  
 95 flow of air around the shaft into the casing, and to support the latter from the pedestal, said plate having an outer portion fixed to the fan-casing, and supporting the latter thereby, and a portion inwardly of said outer  
 100 portion for reducing inflow of air to said casing, and bolts connecting said plate to said pedestal, whereby the strength of the supporting means for the casing is increased by the means for reducing the inflow of air, and  
 105 the two form a single integral structure.

2. The combination of a fan, a shaft therefor, and a casing surrounding said fan, with a pedestal for supporting said shaft and casing, having substantially horizontal bearing-  
 110 faces on its upper side, and a substantially vertical bearing-face below its top, a plate having an opening through its middle for the passage of the shaft, and having an annular face bolted to the casing, said plate having  
 115 angular extensions fixed to the horizontal bearing-faces of said pedestal, and a portion extending opposite said vertical bearing-face, and a bolt passing through said portion and said vertical bearing-face.  
 120

3. The combination of a fan, a shaft therefor, a pedestal-bearing for said shaft, and a casing for said fan, with a means for mounting said casing upon said pedestal comprising a plate having an opening through its  
 125 middle for the passage of the shaft, and having an annular face bolted to the casing, said plate being formed with angular extensions bolted to the pedestal at either side of said shaft, and an arc-shaped flange extending  
 130 around the upper part of said plate, and downwardly to said extensions.

4. The combination of a centrifugal fan having a disk closing one end thereof, a shaft

for said fan supporting said disk, bearings  
for said shaft, a casing within which said fan  
rotates, formed with an opening for the pas-  
sage of said shaft, and a pedestal for sup-  
5 porting said shaft-bearings and casing, with  
a means for mounting said casing upon said  
pedestal comprising a plate having an open-  
ing at its middle for the passage of said shaft,  
an annular face bolted to the casing, a con-  
10 centric angular flange projecting from said  
plate into said casing through its said open-

ing into close proximity to said disk, and  
having angular extensions bolted to said  
pedestal.

In witness whereof I have hereunto signed 15  
my name in the presence of two subscribing  
witnesses.

SAMUEL CLELAND DAVIDSON.

Witnesses:

HUGH G. COULTER,  
GEORGE G. WARD.