

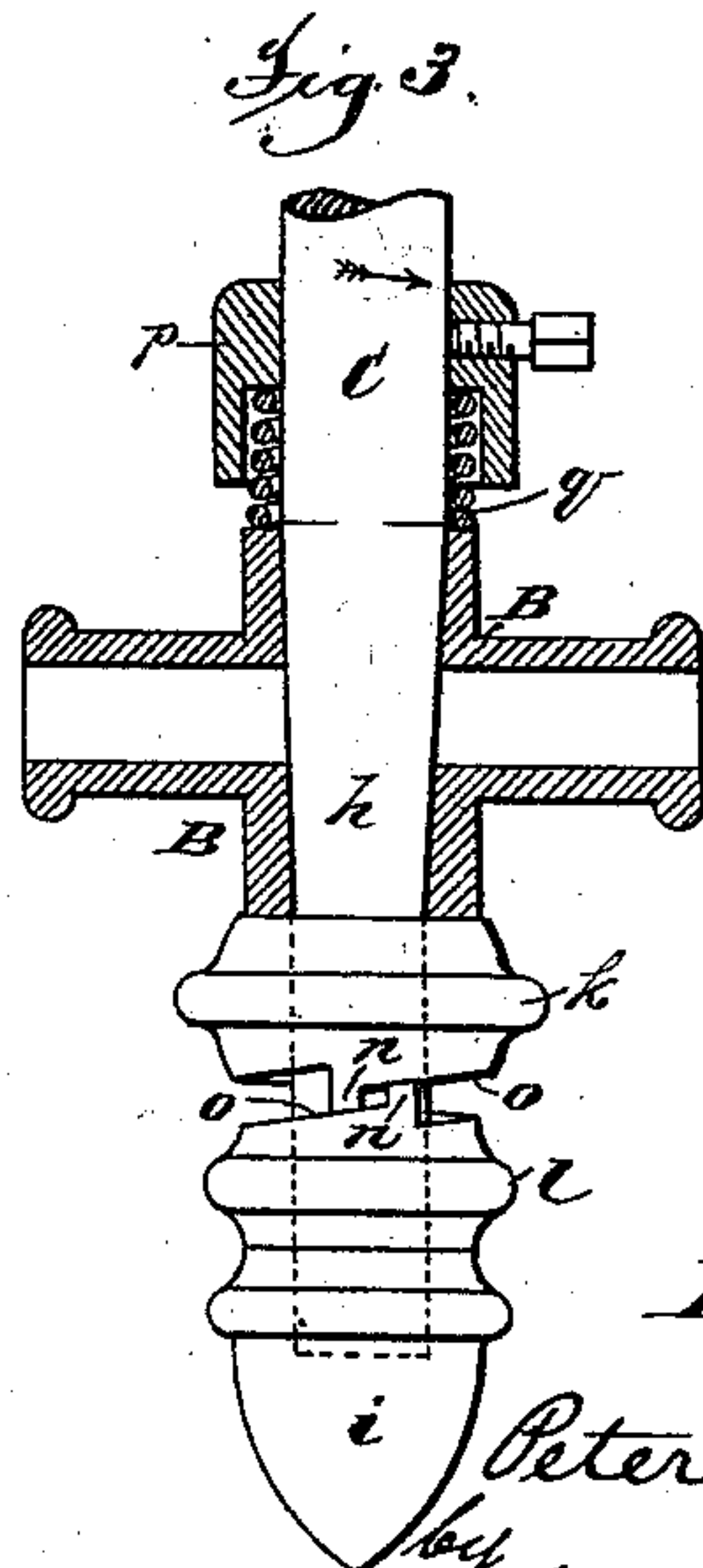
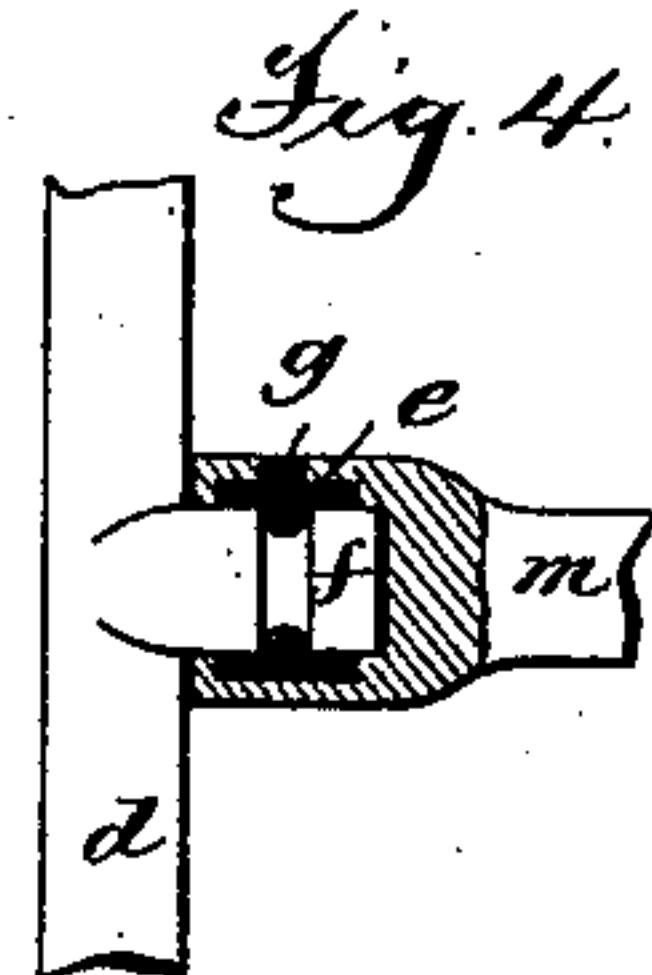
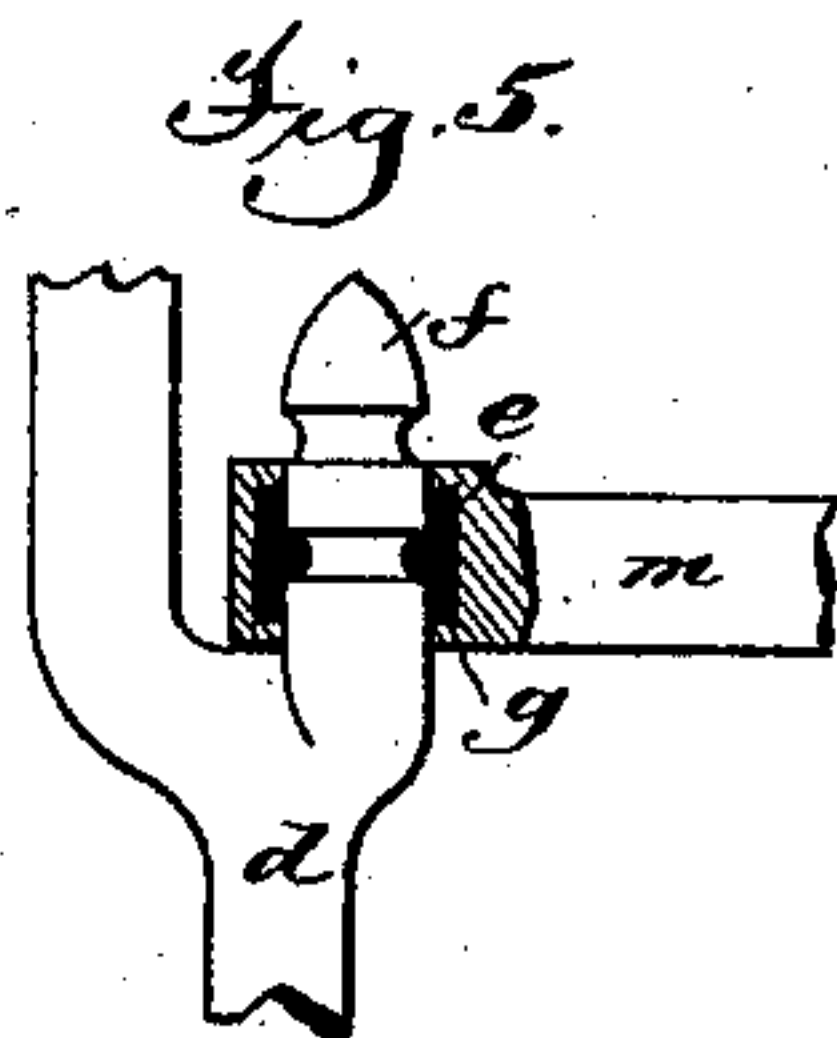
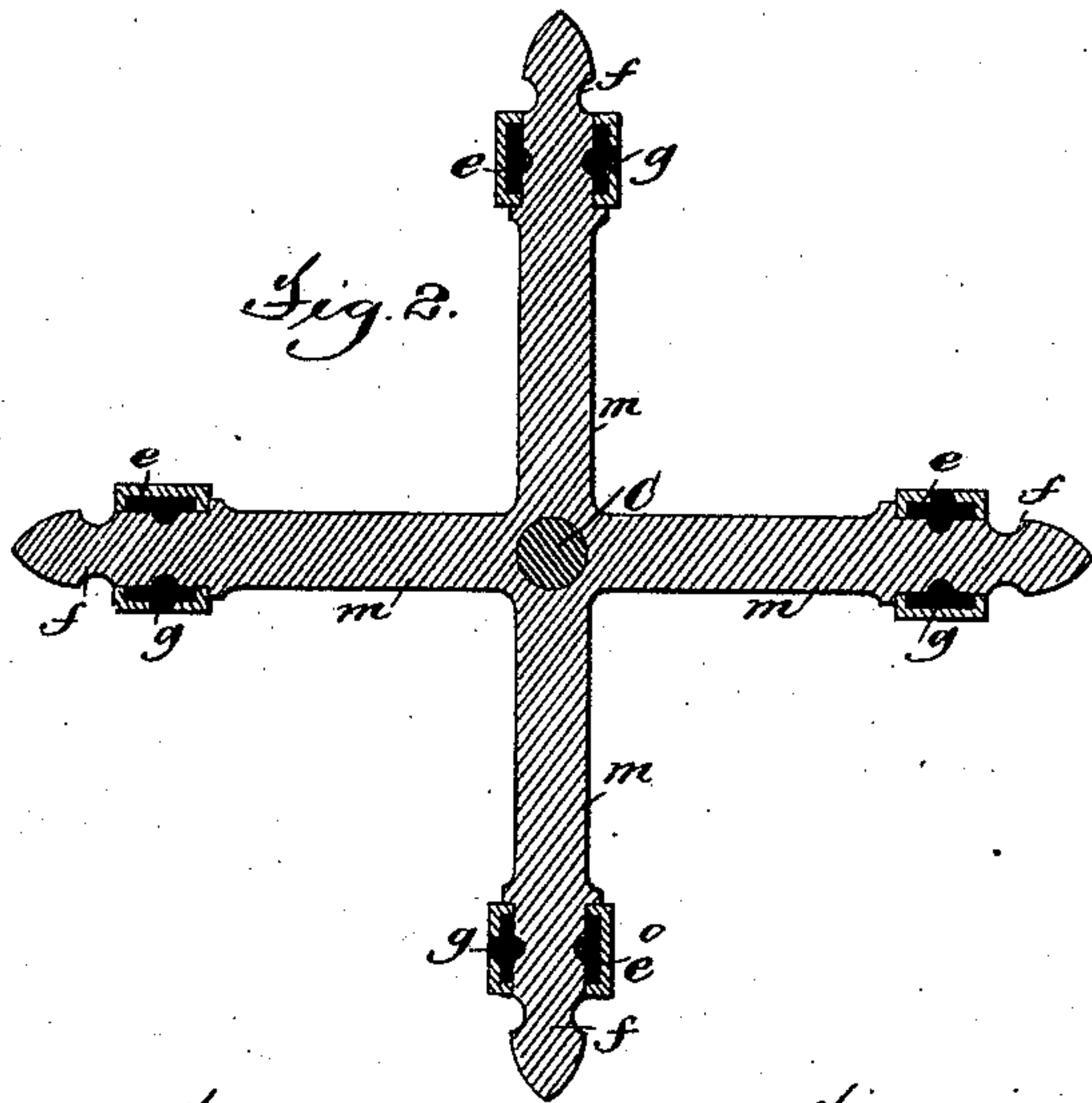
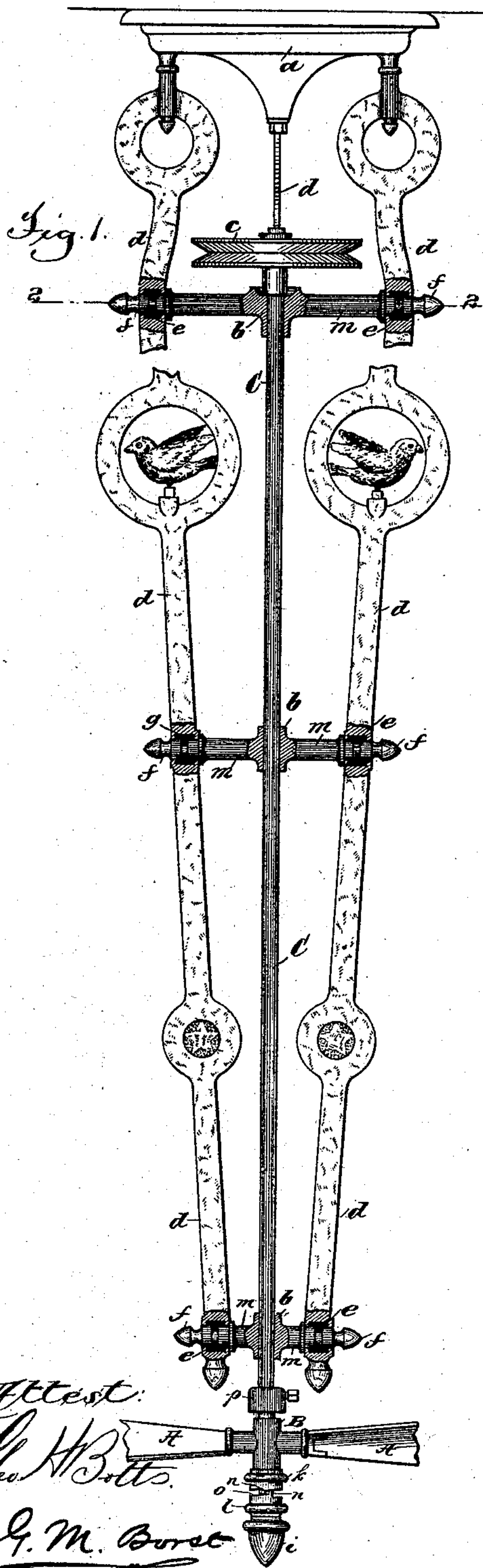
(No Model.)

P. MURRAY, Jr.

POWER FAN.

No. 412,404.

Patented Oct. 8, 1889.



Attest:

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Attys:



# UNITED STATES PATENT OFFICE.

PETER MURRAY, JR., OF NEWARK, NEW JERSEY.

## POWER-FAN.

SPECIFICATION forming part of Letters Patent No. 412,404, dated October 8, 1889.

Application filed November 22, 1887. Serial No. 255,847. (No model.)

*To all whom it may concern:*

Be it known that I, PETER MURRAY, Jr., a citizen of the United States, residing at Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Power-Fans, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates, generally, to that class of power-fans which are used for cooling and ventilating restaurants and other places.

The invention relates particularly, however, to improvements in the means for putting the fan into and out of operation.

Where these fans are employed for cooling and ventilating a room, and particularly where the room is large, so that a number of the fans are required, it is frequently desirable to stop or start one or more of the fans without stopping or starting the others. It is therefore desirable that each fan should be provided with means by which its movements can be controlled independently of the others.

The present invention relates especially to means for accomplishing this result.

In the accompanying drawings, Figure 1 is a sectional elevation of a fan and its support embodying the present invention. Fig. 2 is a horizontal section taken on the line 2 of Fig. 1. Fig. 3 is an enlarged sectional view of the fan-hub, showing particularly the means for starting and stopping the fan; and Figs. 4 and 5 are sectional details illustrating modifications, which will hereinafter be explained.

Referring to said figures, it is to be understood that the fan proper is of the ordinary or substantially the ordinary form, consisting of two or more horizontally-arranged blades A, which project radially from the hub B, in which they are supported in such manner that they can readily be adjusted to different angles of inclination. The hub B is mounted to turn freely in a suitable frame or hanger depending from the ceiling of the room. The shaft C is provided at its upper end with a grooved or other pulley c, around which the belt for driving the fan passes. The hanger shown in the present case is composed of a number of arms d, (four, as shown in the

present case,) which are arranged with relation to each other as best shown in Fig. 2, and are secured at their upper ends to a cap-piece a, which is constructed as described in my application for Letters Patent filed March 28, 1887, Serial No. 222,628, so as to provide means for adjusting the hanger into proper position with relation to the ceiling. The four arms d composing the hanger are cast separate, and are secured to each other by means of horizontal frame-pieces m, which also afford bearings b for the shaft C. The arms d of the hanger are provided with openings e, which are formed to receive the projecting ends f of horizontal pieces m, which fit snugly into the openings e. The ends f and the insides of the openings e are recessed, as best shown in Fig. 2, so as to form chambers around the ends f, into which, after the parts are assembled, Babbitt or other soft metal g is run, so as to effect a firm union between the arms d and horizontal pieces m, and thus make a rigid hanger for supporting the shaft C and the fan. This manner of constructing the hanger possesses many practical advantages, as by this means the castings which compose the hanger are reduced to a very simple form, so as to be easily and cheaply made. The parts are capable of being easily and quickly assembled, and when assembled and secured by the metal g the whole hanger becomes in effect a single casting, and is thus rendered exceedingly strong and rigid.

The manner of uniting the arms d and the horizontal pieces m may be somewhat varied without materially changing the character of the hanger. For example, as shown in Figs. 4 and 5, the recesses e may be formed in the ends of the horizontal pieces m and the projecting portions f upon the arms d.

The hub B is mounted to turn freely upon the shaft C, so that the shaft can be continuously driven without necessarily imparting any motion to the hub or the fan-blades. The lower end h of the shaft C, which forms the journal for the hub B, is preferably tapered slightly, and the opening in the hub through which the shaft passes is correspondingly tapered. The lower end of the shaft is provided with a head or enlargement i, and



interposed between this head and the lower end of the hub are a pair of loose collars *k l*. The upper edge of the collar *k* and the lower edge of the collar *l* are made flat, while the meeting edges of the two collars are inclined in opposite directions, so as to form coacting inclined planes or cams *o*, and each of these inclines is provided at its ends with a projecting stud or shoulder *n*, as best seen in Fig. 3. These collars are arranged so as to have a slight frictional connection with the shaft C; but this frictional connection is not great, and can readily be overcome by grasping and holding either one of the collars while the shaft is in motion.

The operation of the apparatus thus organized is as follows: The belt being upon the pulley *c* so as to set the shaft C in motion in the direction indicated by the arrow, it is only necessary in order to start the fan to grasp and hold the collar *l*. The collar *k*, continuing to revolve with the shaft, will cause the shoulders *n* to ride up the inclines *o*, as indicated in Fig. 2, and thus raise the hub B onto the tapered portion *h* of the shaft, so as to clutch the hub to the shaft and set it and the fan-blades in motion. To stop the fan it is only necessary to grasp and hold the collar *k*. The collar *l*, continuing to revolve with the shaft C, will cause the shoulder *n* to ride down the inclines *o*, and thus lower the hub B off the tapered portion *h* of the shaft and unclutch it from the shaft. The resistance of the air offered to the blades will then arrest the fan, although the shaft C will still continue to revolve. In order to insure the unclutching operation in case the weight of the hub and fan-blades should not be sufficient to cause the hub to move downward, the

shaft C will preferably be provided above the hub with a collar *p*, between which and the upper end of the hub is interposed a spring *q*, which will force the hub downward whenever the collar *k* is lowered.

The portion *h* of the shaft C, instead of being tapered, may be straight, the necessary friction to drive the hub being created by forcing the upper end of the hub against a fixed collar upon the shaft C or into engagement with a locking device. My invention is not, therefore, limited to an apparatus in which the shaft C is tapered.

What I claim is—

1. In a power-fan, the combination, with the shaft C, having the head *i*, of the hub B, mounted to turn freely upon said shaft, and the loose collars *k l*, having the coacting inclines or cam-surfaces *o*, substantially as described.

2. In a power-fan, the combination, with the shaft C, having the head *i*, of the hub B, mounted to turn freely upon said shaft, and the loose collars *k l*, having the coacting inclines or cam-surfaces *o* and engaging shoulders *n*, substantially as described.

3. In a power-fan, the combination, with the shaft C, having the tapered end portion *h*, of the hub B, mounted to turn freely upon said tapered portion, and the loose collars *k l*, having the coacting inclines or cam-surfaces *o*, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

PETER MURRAY, JR.

Witnesses:

J. J. KENNEDY,  
T. H. PALMER.