No. 637,368. Patented Nov. 21, 1899.

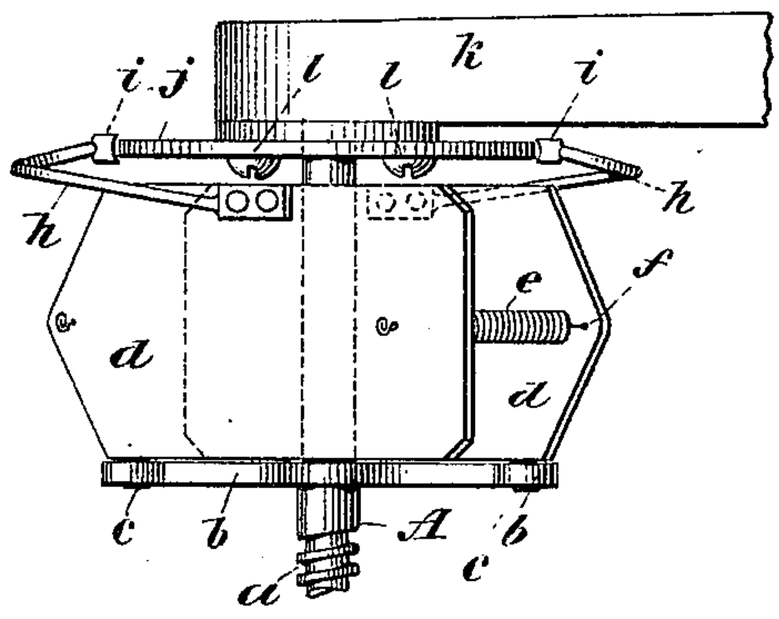
G. A. BRACHHAUSEN.

GOVERNOR.

(Application filed July 18, 1899.)

(No Model.)

Fig. 1.



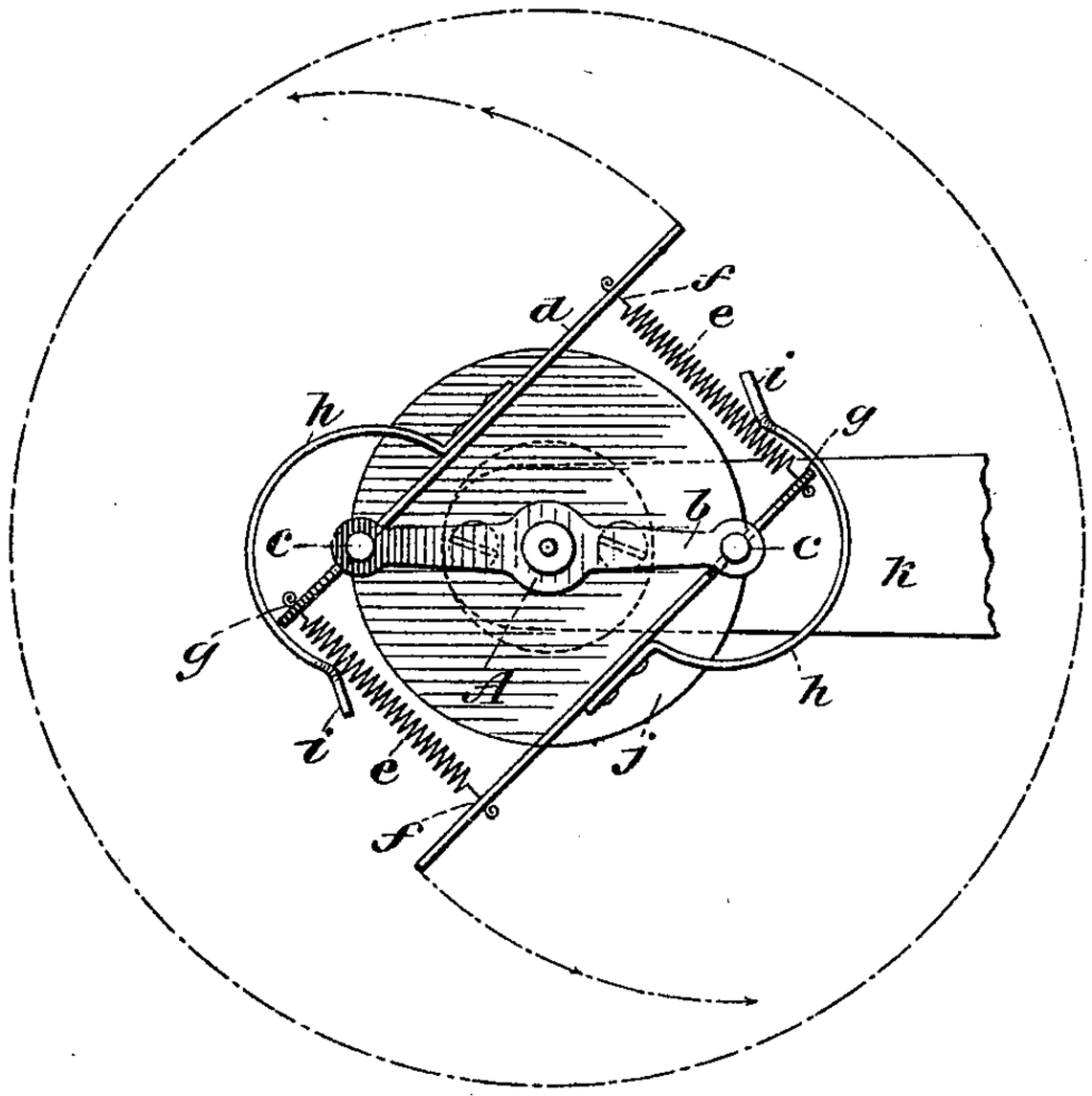


Fig. 2.

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GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 637,368, dated November 21, 1899.

Application filed July 18, 1899. Serial No. 724,221. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV A. BRACHHAUSEN, a subject of the Emperor of Germany, residing in Rahway, Union county, New Jersey, have invented certain new and useful Improvements in Governors, of which the following is a specification.

My invention relates to governors or fly-fans more particularly adapted for automatic mechanical musical instruments, though obviously the governor may be used in any instrument in which it may be found available.

In governors heretofore employed, especially in mechanical musical instruments, considerable difficulty has been encountered by reason of the fact that the ordinary automatic expansion of the governing elements or fly-fans is under certain conditions insufficient to regulate the speed of the governor and maintain the elements controlled by the governor at a given rate of speed.

The object of my present invention is to overcome the difficulties heretofore found in governors and to provide a simple and efficient governor which will maintain the device to which it is applied at a given rate of speed under various circumstances and conditions.

To these ends my invention consists in the novel arrangement and combination of parts to be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side view of a governor embodying my invention. Fig. 2 is a top view of the same.

In the drawings, A represents the ordinary driving spindle or shaft of a governor, which is provided with a worm *a*, that coöperates with the usual train of gear to operate the governor. Rigidly connected to the shaft A is an arm *b*, which is provided with pivot-pins *c*, to which the governing elements or fly-fans *d* are pivoted. These fly-fans are normally maintained in the position represented in the drawings by coiled springs *e*, each of which has one end connected to the outer end of a fly-fan or blade *d*, as represented at *f*, the opposite end of each of these coiled springs being secured to the opposite fly-fan, as indicated at *g*. In this manner the governing elements or blades *d* are maintained normally in a parallel and overlapping position, as represented in Fig. 2 of the drawings, and when the governor is rotated the blades are forced outwardly from the overlapping position to present a greater surface area for contact with the atmosphere—that is to say, the blades in their normal position overlap each other so as to occupy in length a space slightly greater than one blade, whereas when they are expanded they are moved from the normal overlapping position to a position where the lengthwise space occupied by the blades is substantially that of the length of both blades. To each of the blades *d* is connected a brake *h*, which consists of a curved arm having a brake-shoe *i* at its free end, which free end extends beyond or to one side of the pivot of the fly-fan to which it is attached. Each of these brakes is likewise bent laterally, as indicated in Fig. 1 of the drawings, so that the brake-shoe *i*, formed at the end thereof, is brought into line with the contact-face of a part *j*. This part *j* is shown in the present instance as a fibrous washer which is fixed to a stationary portion *k* of the instrument, as indicated at *l*. It will be observed from Fig. 2 of the drawings that the brakes are normally out of contact with the contact-face of the part *j*, with which they coöperate, and are only brought into contact with said part when the blades rotate on their pivots to a considerable extent or when they have nearly reached the outward limit of expansion. It will therefore be understood that under normal conditions the automatic expansion of the blades or fly-fans is not interfered with by the brakes and that the said brakes are only brought into action when an abnormal expansion of the blades is produced. It will likewise be observed that after the brakes are once brought into action a further expansion of the governing elements will increase the frictional contact between the brakes and the coöperating contact-face of the part *j*. In other words, the brakes will be applied with greater force as the governing elements approach the limit of their expansion.

It has been found in practice not to be desirable to depend wholly upon a braking action to control the speed of a governor, inasmuch as it has been found difficult to maintain a given rate of speed by this means. It will be

seen that in accordance with my invention the brakes are not brought into action except when the governing elements have nearly reached the limit of their expansion, and therefore the braking action does not interfere with the governor during the normal action thereof.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A governor having overlapping automatically-expanding governor-blades which are adapted to be moved from the normal overlapping position to present a greater surface area to the atmosphere, brakes carried by said blades and a fixed part having a surface with which said brakes coöperate, the brakes being normally out of contact with said surface and adapted to be brought into contact therewith when the blades reach substantially the limit of their expansion.

2. A governor having overlapping automatically-expanding governor-blades which are pivoted parallel to the axis of rotation of the governor and are adapted to be moved from the normal overlapping position to present a greater surface area to the atmosphere, brakes carried by and adapted to move with said blades around their pivots and a fixed part having a surface with which said brakes cooperate, the brakes being normally out of contact with said surface and adapted to be brought into contact therewith when the blades reach substantially the limit of their movement around their pivots.

3. A governor having overlapping automatically-expanding spring-pressed governing-blades which are pivoted parallel to the axis of rotation of the governor and are adapted to be moved from the normal overlapping position to present a greater surface area to the atmosphere, brakes carried by said blades and projecting beyond the pivots thereof and adapted to move with the blades around their pivots and a fixed part having a fibrous surface with which said brakes coöperate, the brakes being normally out of action and adapted to be brought into action when the blades reach substantially the limit of their movement around their pivots.

GUSTAV A. BRACHHAUSEN.

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