

R. HITCHCOCK.

Winding Clocks by Currents of Air.

No. 37,397.

Patented Jan'y 13, 1863.

Fig. 1

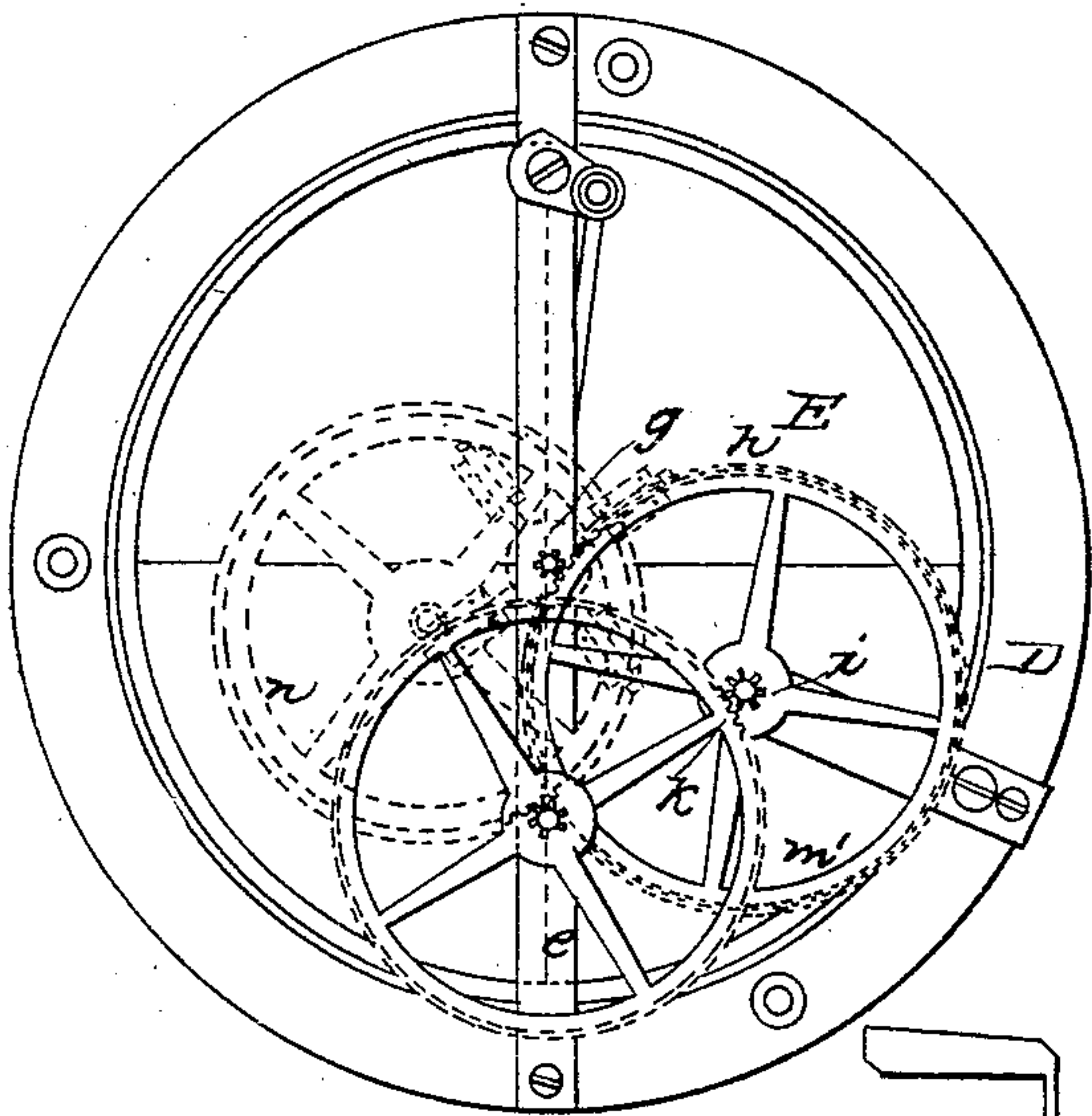


Fig. 2

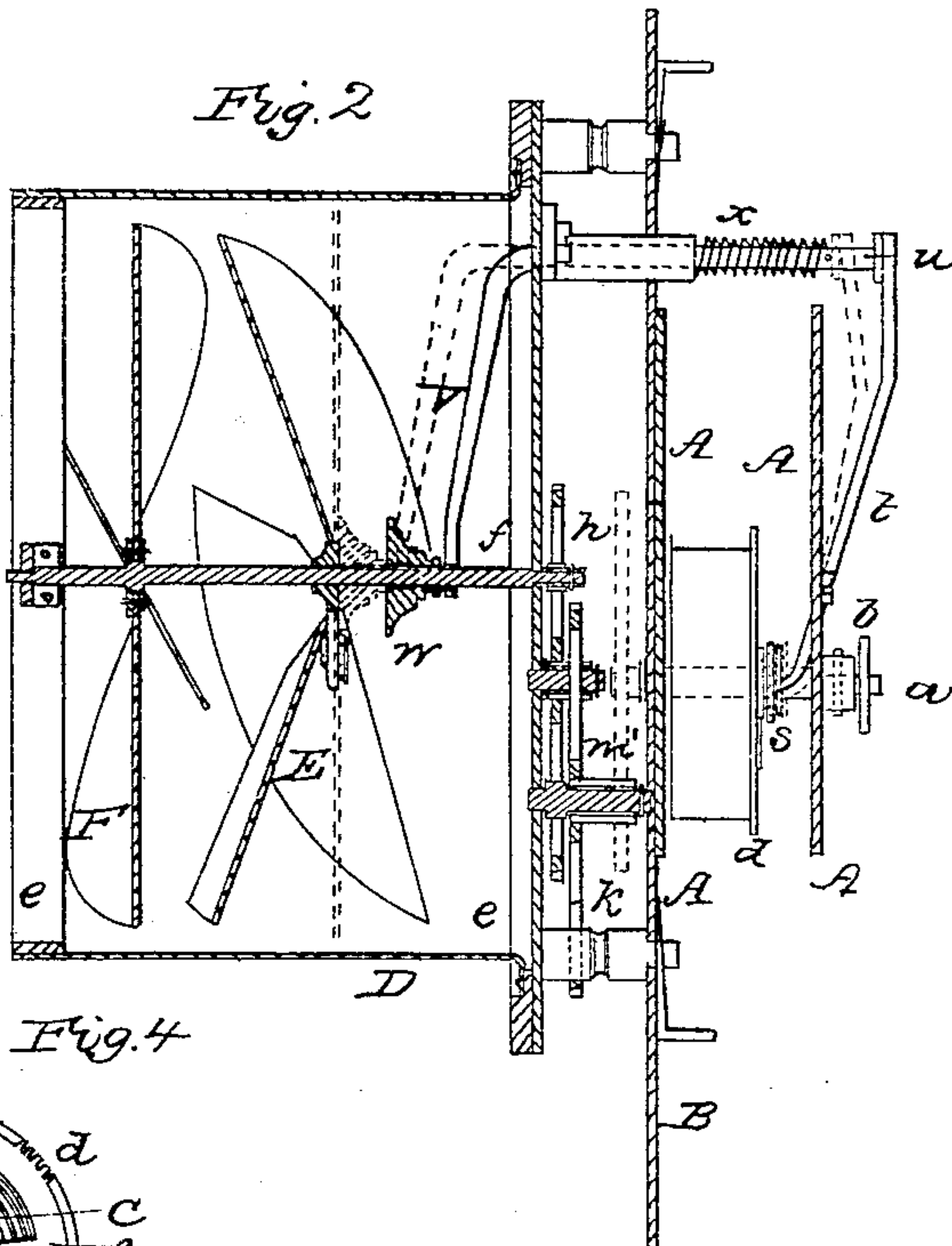


Fig. 4

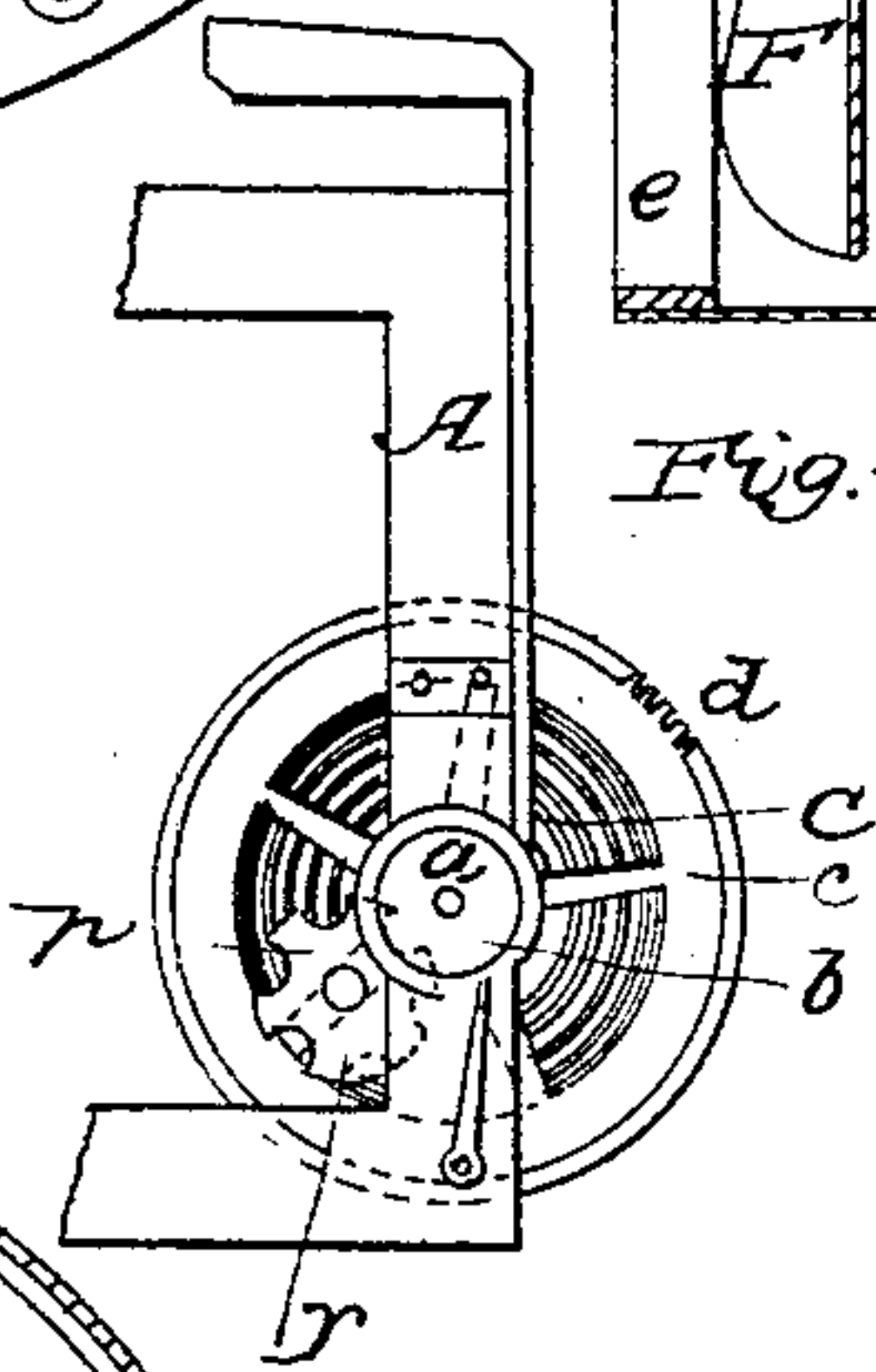


Fig. 3

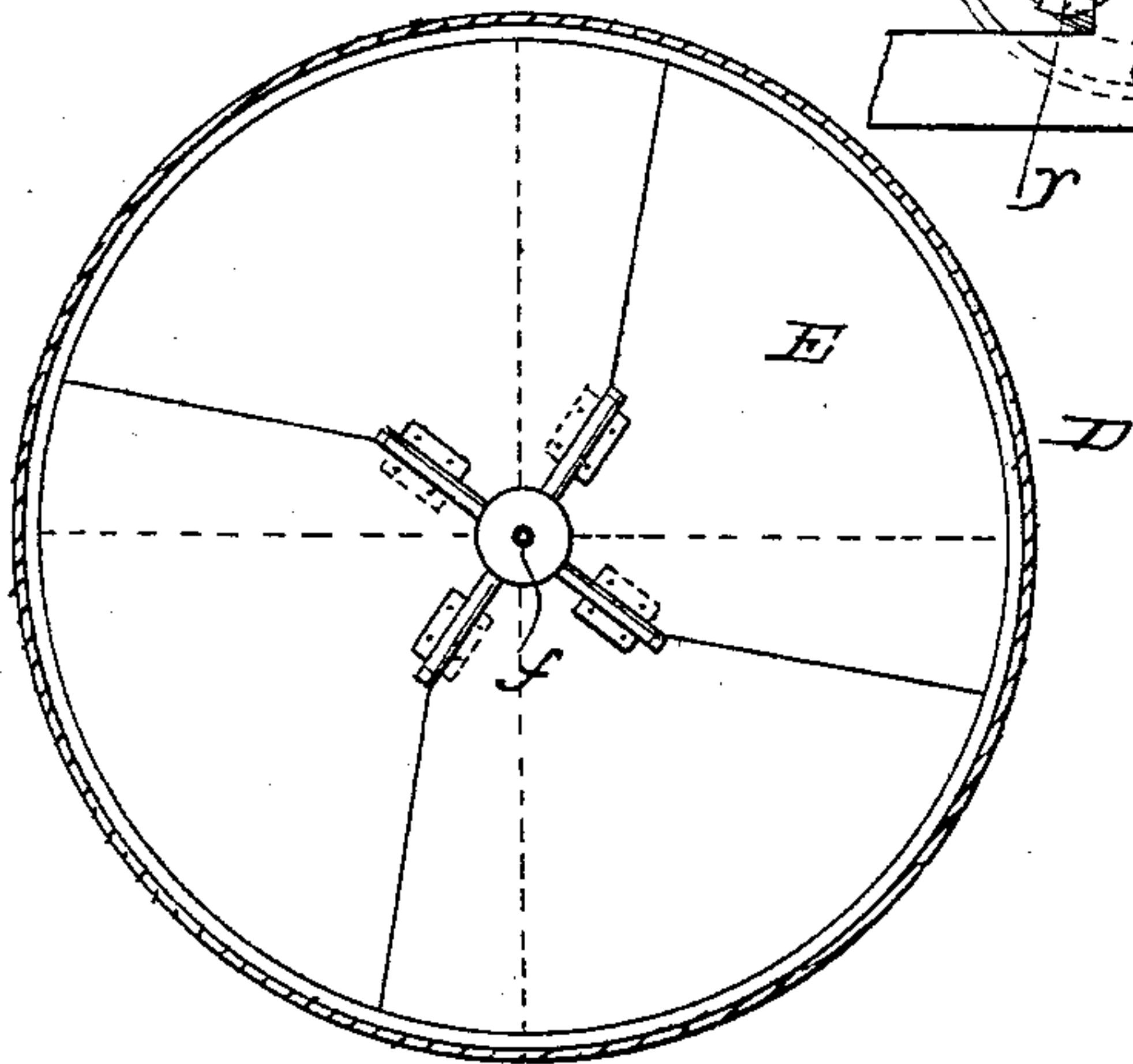


Fig. 6

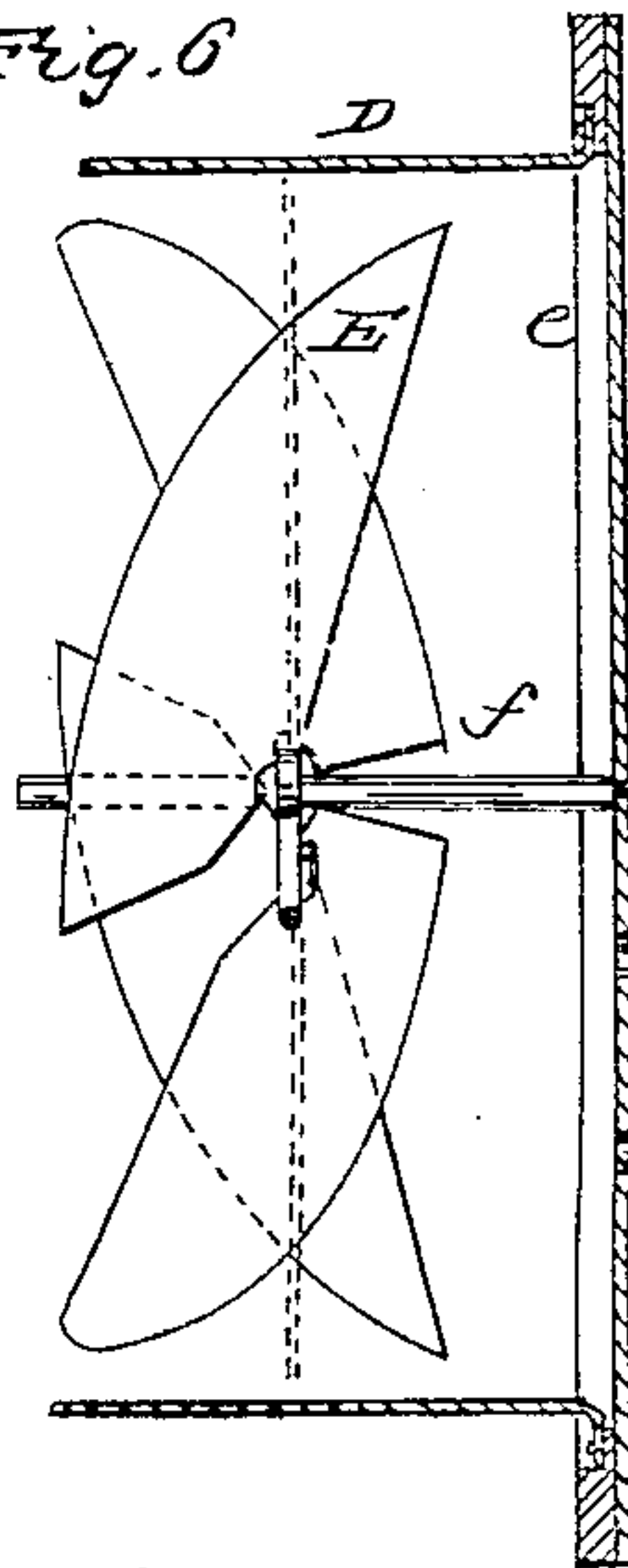
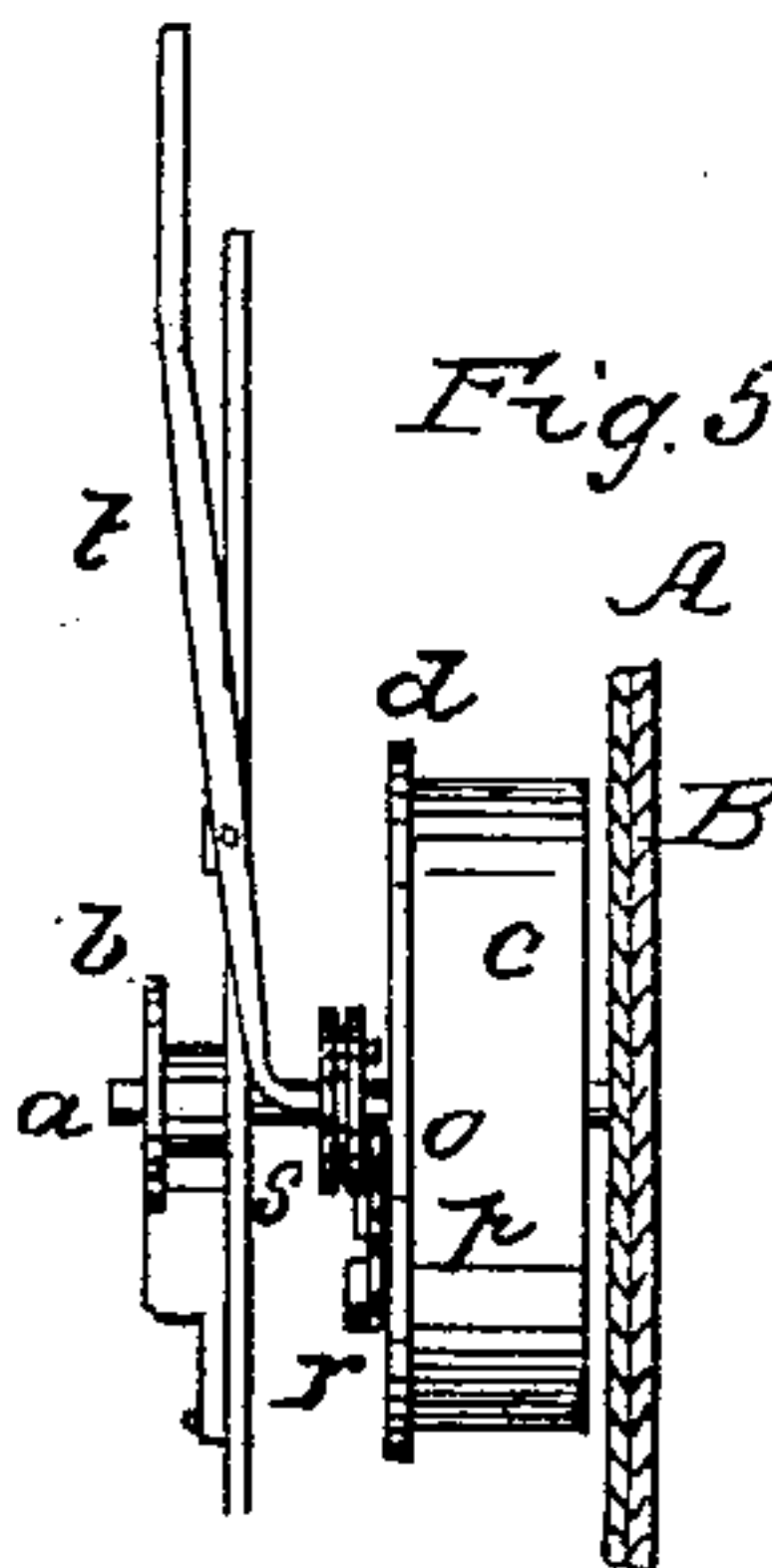


Fig. 5



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UNITED STATES PATENT OFFICE.

ROBERT HITCHCOCK, OF WATERTOWN, NEW YORK.

IMPROVEMENT IN WINDING CLOCKS BY CURRENTS OF AIR.

Specification forming part of Letters Patent No. 37,397, dated January 13, 1863.

To all whom it may concern:

Be it known that I, ROBERT HITCHCOCK, of Watertown, in the county of Jefferson and State of New York, have invented a certain new and useful Automatic Clock-Winding Attachment or Combined Clock and Ventilator Device; and I do hereby declare that the following, taken in connection with the accompanying drawings, is a full and clear description thereof.

In said drawings, Figure 2 represents a vertical transverse section of a clock in part, with my improvement applied to it; Fig. 1, a face view of a ventilator attachment to the clock, with its accompanying gearing; Fig. 3, a back view of the ventilator attachment, and Figs. 4, 5, and 6 views of certain details in illustration of their action.

My invention has for its object the automatic winding up of a clock by combining with the latter a ventilator or atmospheric current power, and whereby the clock may not only be kept constantly wound, but whereby also the room in which the clock is situated may be ventilated, the clock kept clean, and numerous other advantages obtained.

My invention is here shown applied to a clock designed to set against the wall of a room—as, for instance, over the fire-place and against or in connection with the fire-flue or chimney—and as operating in combination with a clock actuated by a mainspring and balance-wheel. Such disposition of parts, however, may be changed, and any hollow shaft or other atmospheric-current appliance be substituted for the chimney as a means for operating the clock attachment, and my invention is equally applicable to a pendulum-clock, or to one driven by a barrel and descending weight in the place of a mainspring, by combining with the barrel instead of with the mainspring the self-winding attachment. It will be sufficient, however, for the present purpose, and may avoid confusion, to describe and illustrate my invention in one of its applications only, and under a construction and arrangement of certain details suitable thereto, but which may be varied in point of devices and disposition of parts as circumstances or the will of the maker may direct.

Referring to the accompanying drawings and letters of reference marked thereon, A A represent the front and back plates of the frame which carries within it the clock-works,

and B the back of the clock-case. C is the mainspring of the clock, fast at its one end to an arbor, *a*, held from turning, except when the clock is being wound, by a ratchet-wheel, *b*, and pawl locking therein, and the other end of the spring made fast to a cylinder or box, *c*, that in being turned by the spring in unwinding actuates, by a toothed-gear, *d*, on its periphery, the clock-works in the usual way.

D is a tube which may be of somewhat less diameter than the clock-case, so as to be concealed or covered by the latter, attached to and arranged to project from the clock-case in the rear and to enter the chimney in the manner of a stove-pipe, and so that an atmospheric current may be induced therethrough by the draft of the chimney, for which purpose the clock-case may be set a little away from the wall to have an opening for the air inside the room to enter and pass off through said tube. In this way a draft is established through the tube D from the room into the chimney to actuate the self-winding attachment, as hereinafter described, and should any current blow down the chimney, the space left for the admission of air to the tube between it and the clock-case will serve to carry off dirt or dust produced by such a current and prevent it from entering the clock works through the openings in its case, while when the draft is a natural one—that is, from the room through the tube and up the chimney—the current thus induced will serve to keep the clock clean, which results the ventilator attachment, by a peculiar construction and action, as hereinafter explained, may be caused to aid. The tube D has any suitable braces or bearing plates *e* for the carriage of a freely-rotating shaft, *f*, of a flutter-wheel, E, or flutter-wheels E F, situated within the tube, and which may be of nearly the interior diameter of the tube. This flutter wheel or wheels have their vanes set at a suitable obliquity, or are made to assume such helical configurations, as that in the current of air passing from the room through the tube D, they will be acted upon by said current so as to cause said wheel or wheels to rotate in one and a given direction suitable, by the intervention of proper gearing connecting the flutter-wheel's shaft *f* with the mainspring arbor *a*, for winding up the clock. For this purpose a pinion, *g*, may be fitted on the front end of the flutter-wheel shaft *f*, and this pinion, to

diminish the velocity and increase the power derivable from the flutter-wheels, made to gear with a spur-wheel, *h*, the shaft of which carrying a pinion, *i*, operates another wheel, *k*, that has on its shaft a pinion, *l*, which may gear both with a wheel, *m*, fast on the mainspring-arbor *a*, and with a wheel, *n*, to serve the double purpose of winding up the mainspring of the clock and of winding up another spring with which the last-named wheel *n* is connected to operate or keep around the striking, musical, calendar, or planetarium attachment to the clock, when the clock is provided with such or other attachment or attachments. Such a contrivance as I have just described not only acts as an automatic winder to the clock, but it serves to give permanency to the mainspring by checking it from running down to an extent at which its force would be well spent, and does away with the necessity of its being wound fully up, for the flutter-wheel and draft operating it may be so pitched as not to be powerful enough to wind the mainspring fully up, but sufficiently strong on only a slight current passing through the thimble or tube *D* to wind easily and gently on the spring when the force of it on its arbor offers only a medium or moderate resistance, thus those alternate strong and weak actions of the spring, which are so detrimental to its permanency, and which, under the best arrangements of "pendulum" or "balance," affect the speed of the clock, are or may be avoided. The flutter-wheels *E F*, with their tube *D*, may also serve as a ventilator to the room, such parts being made large or small, or the ventilating area adjusted according to the capacity of the room, causing the foul air to pass off and fresh air to enter the room. The one of the flutter-wheels *F* is shown as made with immovable vanes, and it may either be used single or in concert with another flutter-wheel, *E*, so as to make the current passing from the first wheel impinge upon the rear one, and thus multiplying the effective area of the propeller, and the same principle may be further extended. Instead of immovable vanes, however, to the flutter wheel or wheels, they may be made movable, so as to open and close the exit through or past them, or one of the flutter-wheels, *E*, may be so constructed and the other one, *F*, made with immovable vanes, to insure a steadiness of action, and to catch any passing current while the movable vanes are on the swing in opening and closing. To give this opening and closing character to the flutter-wheel *E*, I prefer to so hinge the several vanes, the one to the other in succession, as illustrated in Figs. 1, 3, and 6 of the drawings, as that they will fall of their own gravity to assume their open position, as shown by black lines in Figs. 1 and 6, but will require only a slight force to make the vanes overlap each other and close, as represented by red lines in same figures. Thus hung these vanes will readily close on current blowing down the chimney and acting against them, and so ex-

clude the passage of soot or dirt into the room or clock works, and avoid back or unwinding action of the flutter-wheel on the mainspring. I cause the clock as it works to open and close, at certain or intermittent periods, these movable vanes, so as to insure them being kept in proper working action and free from sticking, and so as by alternately cutting off and opening egress past or through them to produce intermittent currents on the vanes, which, acting with more abruptness than constant currents, and aided by the varying angles of the vanes in opening and closing, will insure a start and run of the wheel when only a slight draft prevails. This may be done by means of a stud, *o*, on the mainspring-barrel *c*, acting each revolution of the latter to turn intermittently, one or more notches at a time, a notched wheel, *p*, which carries an incline, *r*, that, as the notched wheel completes a revolution, lifts on or forces out a loose sliding collar, *s*, which, operating a lever, *t*, presses on a rod, *u*, and this latter, by means of a hand, *v*, acting against a sliding collar, *w*, on the flutter-wheel shaft, causes said collar to shut the vanes. After the incline *r* has passed from under the sliding collar *s* on the mainspring-arbor, a spring, *x*, round the rod *v*, serves to throw said collar and the hand and its lever back to their normal position, and the vanes thus relieved open of their own weight. Thus the ventilator is made to wind or operate the clock and the clock to operate the ventilator.

I claim as my invention—

1. In combination with the shaft of a clock-operating spring, a flutter-wheel constructed as described, having its vanes so connected and hinged to radial spindles on said shaft as that the said vanes shall be allowed of being opened and closed, and be made self-opening by their weight, essentially as shown and described.

2. The combination for joint operation of fore-and-aft flutter-wheels, the one having movable or opening and closing vanes, and the other immovable ones, as described.

3. Controlling the opening and closing of the movable vanes of a flutter-wheel by the action of the mainspring of a clock, substantially as specified.

4. The combination of devices consisting of the stop or stud on the mainspring-barrel, the notched wheel gearing at intervals from the former and provided with an inclined plane, the sliding collar on the mainspring-arbor, a lever, hand, and sliding collar operated thereby, or the equivalents of these devices, for the purpose herein described.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

Washington, February 28, 1860.

ROBT. HITCHCOCK.

Witnesses:

A. POLLAK,

A. J. DE ZEYK.