

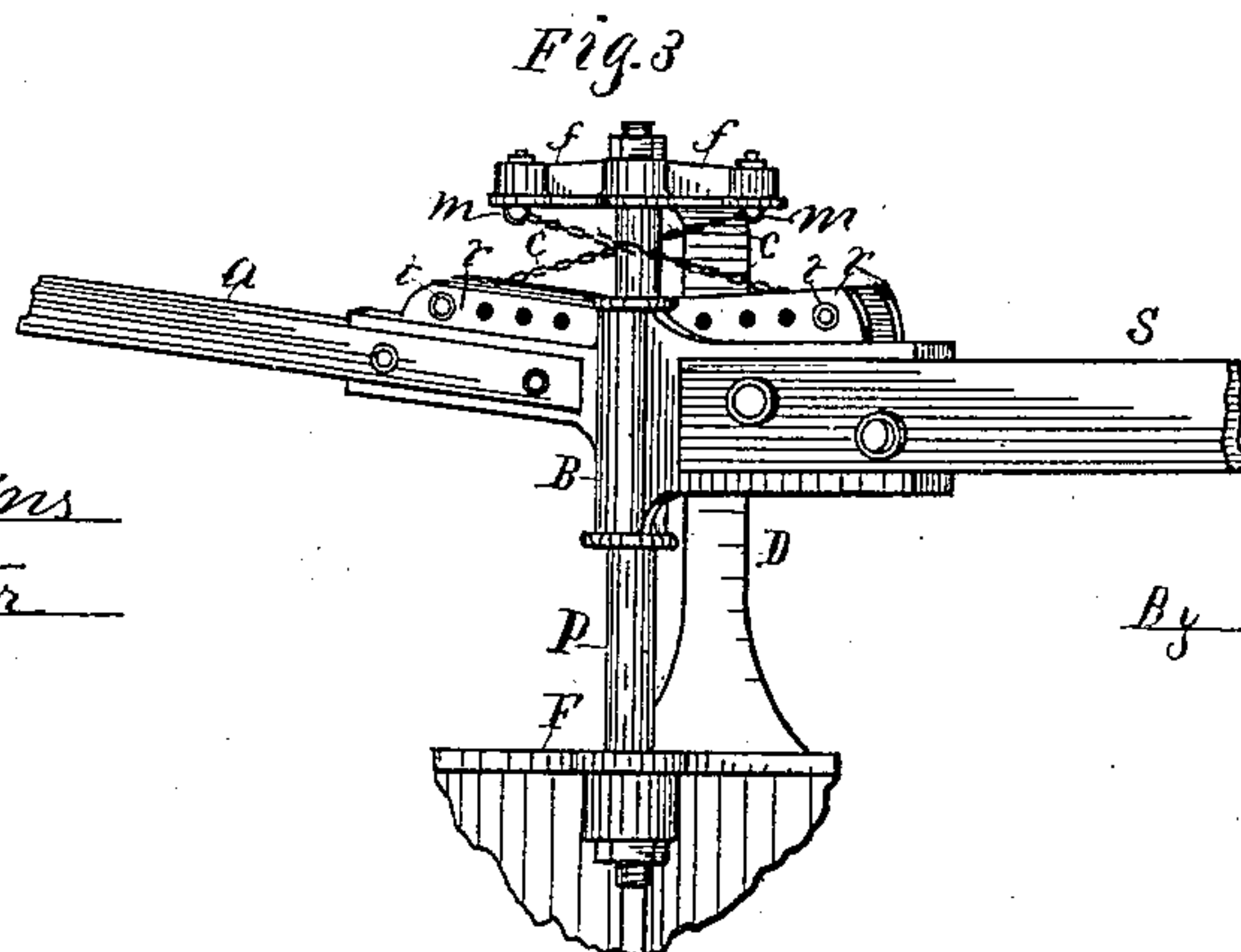
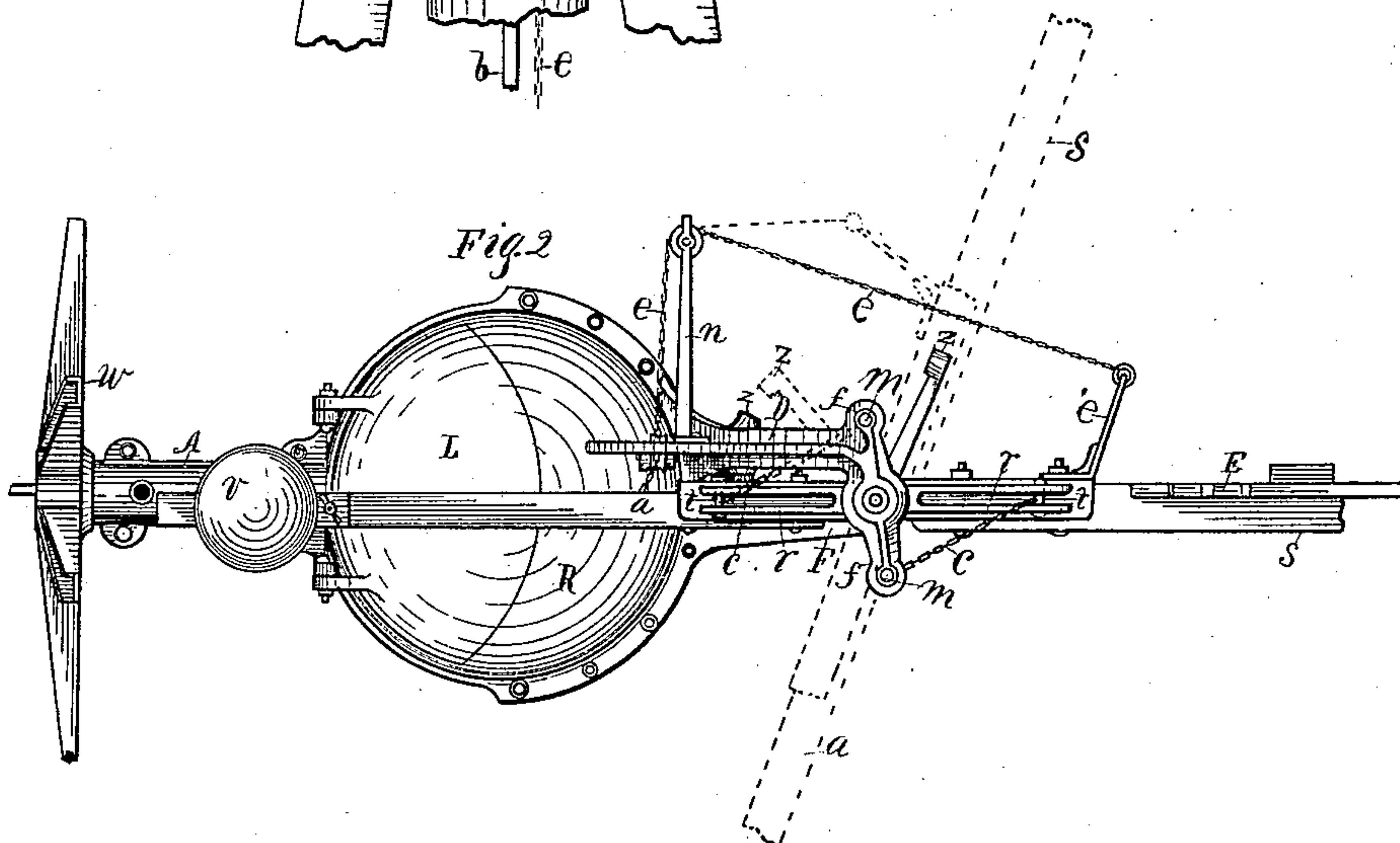
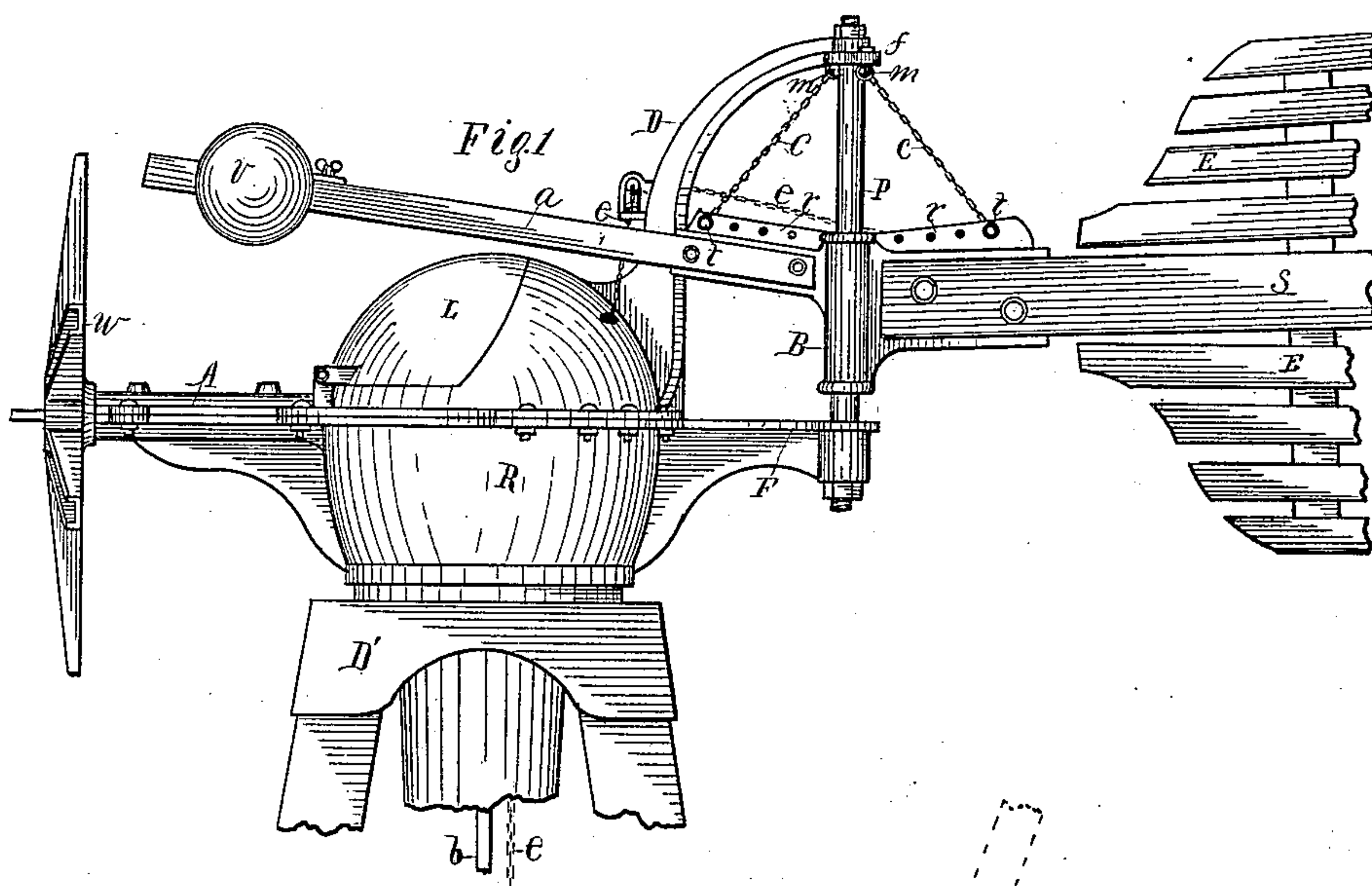
(No Model.)

G. GARSIDE.

WINDMILL.

No. 266,281.

Patented Oct. 24, 1882.



Attest.  
*John C Perkins*  
*L. W. Slaughter*

Inventor.  
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By \_\_\_\_\_  
*Atty-*



# UNITED STATES PATENT OFFICE.

GEORGE GARSIDE, OF KALAMAZOO, MICHIGAN.

## WINDMILL.

SPECIFICATION forming part of Letters Patent No. 266,281, dated October 24, 1882.  
Application filed August 19, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE GARSIDE, a subject of Canada, residing at Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented a new and useful Windmill, of which the following is a specification.

My invention relates to windmills having a hinged vane swinging radially and rising vertically on its hinging-pin.

The improvements simplifying the construction and operation of the vane I attain by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view of mill-head with hinge and portion of vane. Fig. 2 is a top view of same. Fig. 3 is a portion of rear view, with vane-hinge in position shown in dotted lines in Fig. 2.

Similar letters refer to similar parts throughout the several views.

The derrick-cap *D'* supports the mill head or body *R*, having an extended arm or bracket, *F*, cast integrally with said mill-head, upon which is secured by bolts an arm, *D*, rising and extending over bracket *F*, with a hinging-pin, *P*, passing through central eye in bracket *F* and arm *D*, securely bracing them together. Upon the hinging-pin *P* is a loose-fitting hinge, *B*, having recesses or pockets to receive vane-stem *S* and weight-arm *a*, upon which is secured a weight, *v*, said weight being of sufficient gravity to counterbalance the entire weight of vane *E* from the center of the hinge *B*. Upon the arm *D* are two projecting eyes, *ff*, through which pass two eyebolts, *mm*, to which are secured two chains, *cc*, which are also secured at the lower end to bolts *tt*, passing through holes in flanges *rr* on either side of hinge *B*, on upper side of pockets, in which are secured vane-stem *S* and weight-arm *a*.

*A* is the journal-box cap, covering and holding the crank-shaft in its bearings. Upon the shaft is fastened the wheel-hub or spider *u*. The arm *n*, Fig. 2, is provided with a sheave-wheel at its outer extremity, for the operating-chain *e* to pass over, then fastened to arm *e'* on vane-hinge casting *B*.

*z*, Fig. 2, is the bumper-arm, also secured to vane-hinge casting *B*. This arm *z* comes in contact with bumper *z'* when the mill is out

of gear, and forms stop for the vane and wheel when in that position.

The dotted lines in Fig. 2 give the position of the vane when partially pulled out of the action of the wind by the operating-chain *e*, passing down through mill-head *R* and reaching to the ground in the usual manner, as in other windmills; or the same position of the vane *E* in dotted lines, Fig. 2, will be shown when the action of the wind causes the mill-head *R* to turn on the derrick-cap *D'*.

Figs. 1 and 2 show the position of vane *E* when the windmill is in its normal position to receive the wind on the face of the wheel, as usual in windmills of this class.

The mechanism as employed for operating the vane *E* in this mill needs no covering, as there are no parts liable to become clogged with ice or snow. As will also be seen, there are few points producing friction, in consequence of the manner of hanging and balancing the vane, and fewer parts to wear, comparatively, as when friction-rollers and other devices are used to raise the vane. Supporting-rods may also be used instead of the chains *cc*.

To enable the mill to govern itself when the wind increases to such velocity as it may be desired that the mill shall turn out of the line of action, then the mill-head *R*, turning on the derrick-cap *D'*, brings the edge of the wheel to the wind, thereby producing a twisting action on the chains *cc*, and at the same time raising the combined weight of the vane *E* and weight *v*, as shown in Fig. 3. When the wind subsides again the weight of the balanced vane will cause the wind-wheel to face the wind in its normal position for working, as shown in Figs. 1 and 2.

To adjust the mill to turn out of the wind at a less wind-pressure, the chains *cc*, secured at the lower end to bolts *tt*, may be changed into holes in flanges *rr*, nearer to the center of the hinge *B*, thereby producing less resistance in the twisting action of the chains *cc*, or the opposite to produce a greater resistance, the several holes in flanges *rr* giving various points of adjustment. As the chains *cc* in their twisting action come nearer to a horizontal position, as shown in Fig. 3, the resistance be-

comes greater as the hinge rises, thereby producing the varying resistance so desirable and necessary in windmills.

Having thus described my invention, what I claim is—

1. A windmill having a hinged vane suspended and balanced with various points to adjust suspending device to increase or decrease the pressure at which the mill shall turn out of the wind, as specified and shown.
2. A windmill having a hinged vane pro-

ducing a twisting and increasing resistance on its suspending-chains, as described and set forth.

3. A windmill having a hinged balanced vane suspended by chains, for the purpose specified and set forth.

GEORGE GARSIDE.

Witnesses:

L. W. SLAUGHTER,  
JOHN C. PERKINS.