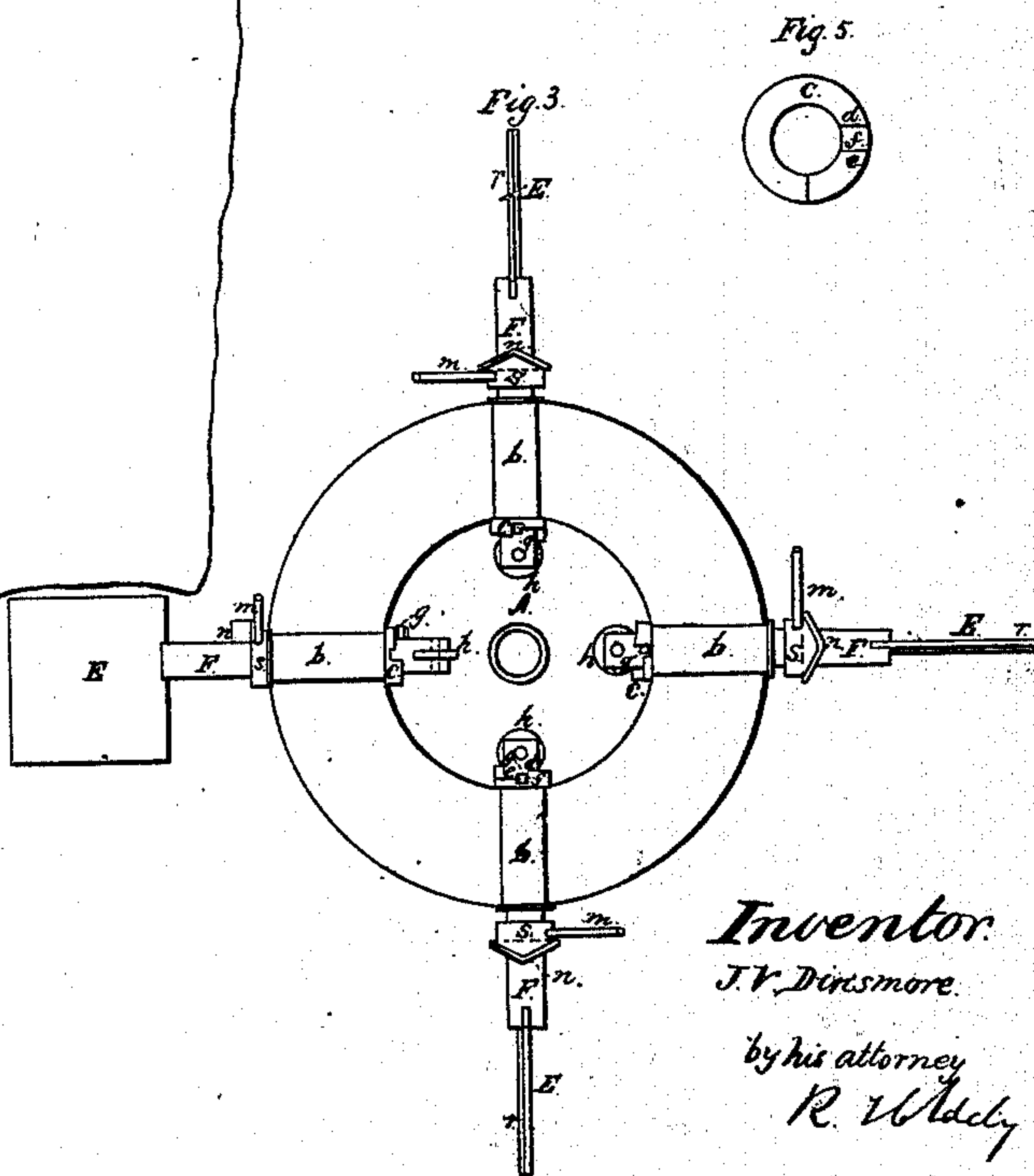
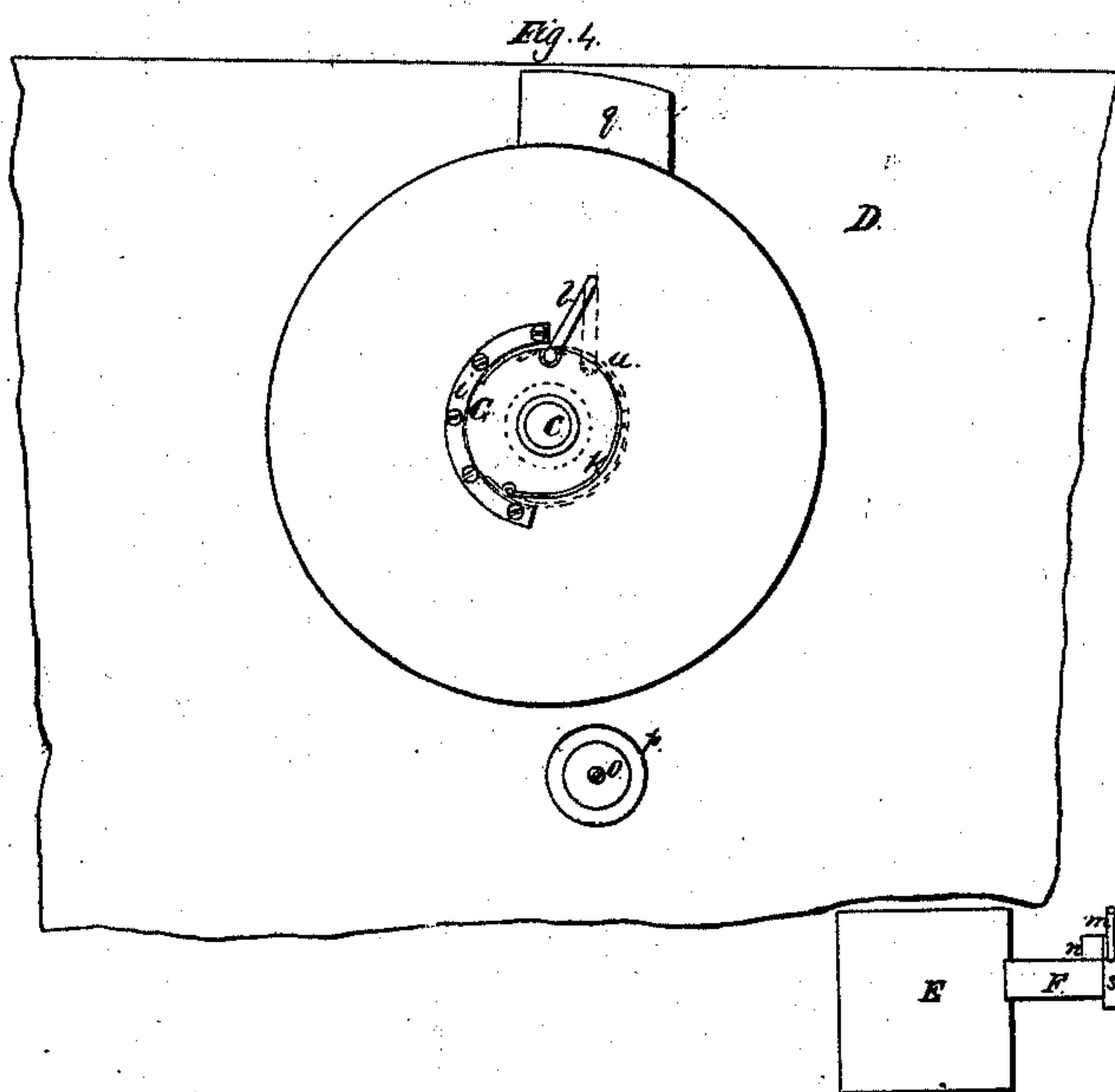
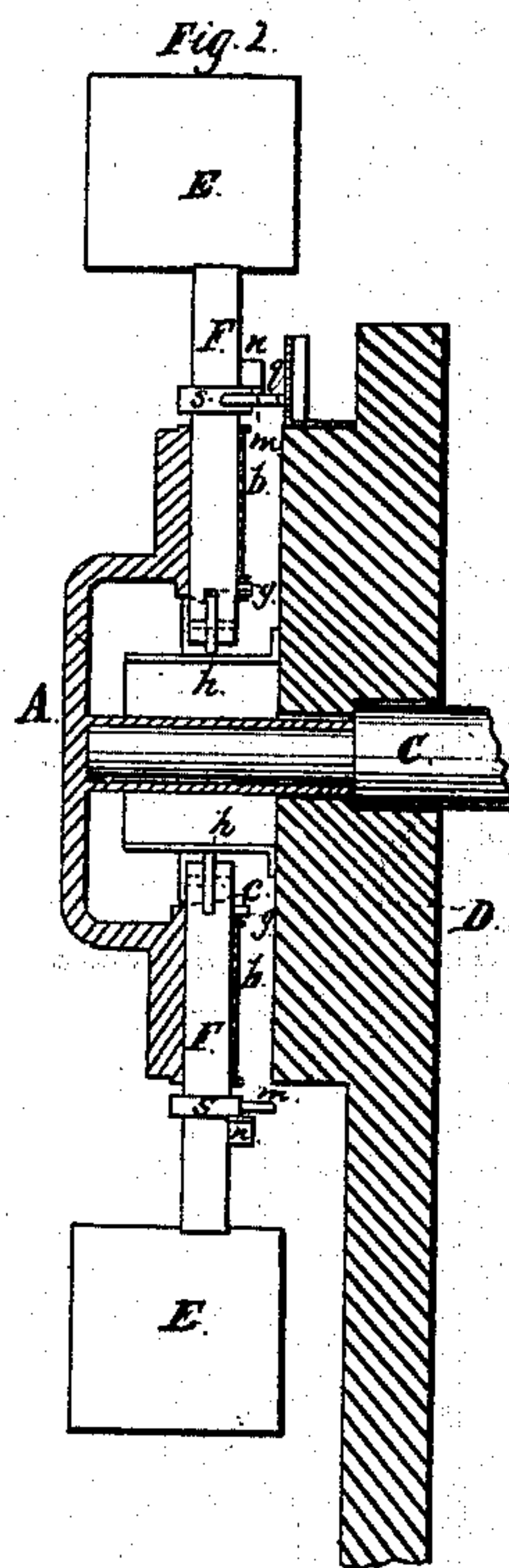
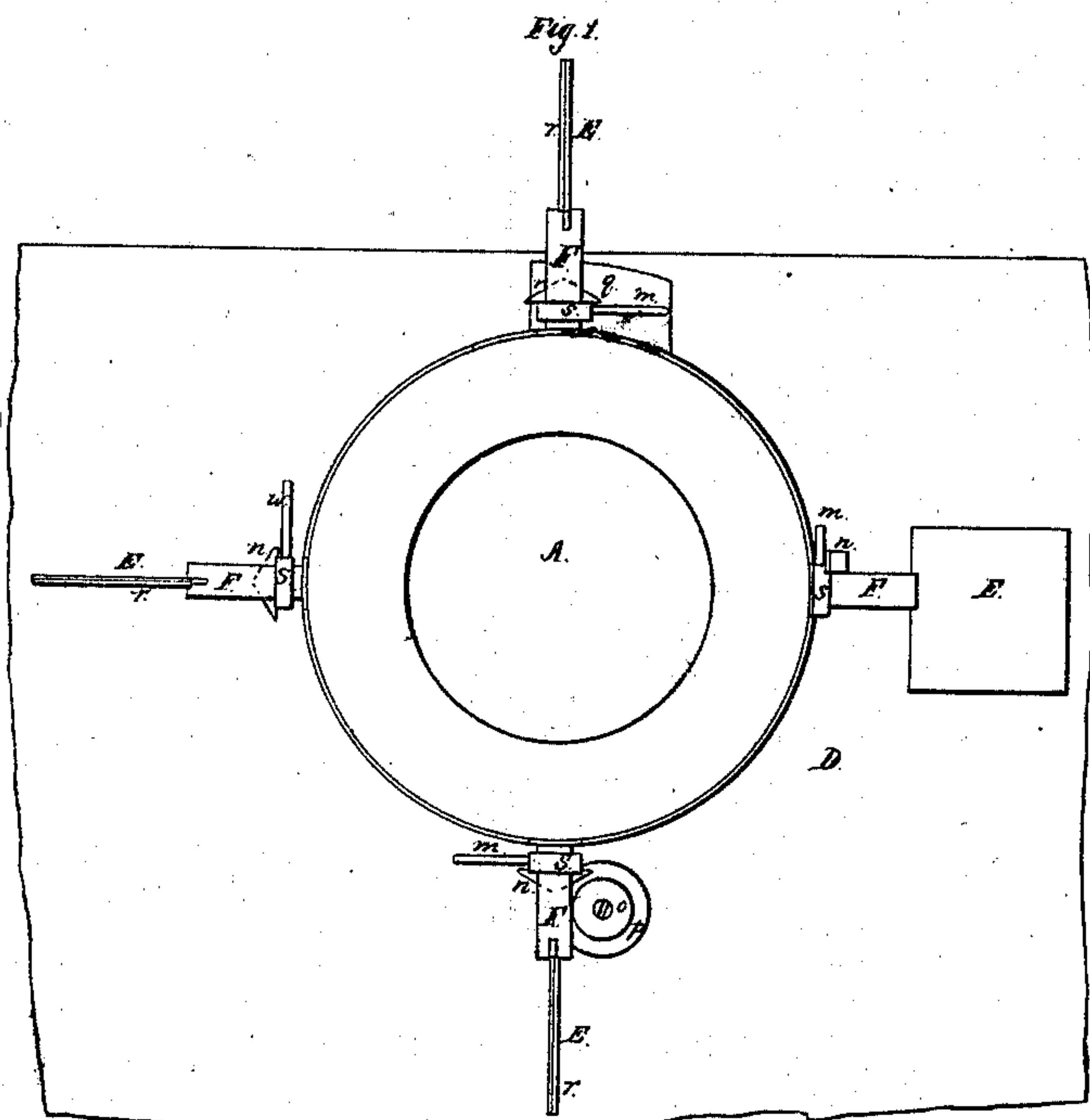


J. V. Dinsmore. Paddle Wheel.

N^o 60,345.

Patented Dec. 11, 1866.



Witnesses:
Daniel C. Piper
Geo. H. Andrews

Inventor:
J. V. Dinsmore.
by his attorney
R. W. Waddy

United States Patent Office.

IMPROVED FEATHERING PADDLE WHEEL.

JOHN V. DINSMORE, OF MILFORD, MASSACHUSETTS, ASSIGNOR TO HIMSELF
AND M. HARRIS. OF SAME PLACE,

Letters Patent No. 60,345, dated December 11, 1866.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL PERSONS TO WHOM THESE PRESENTS SHALL COME:

Be it known that I, JOHN V. DINSMORE, of Milford, in the county of Worcester, and State of Massachusetts, have invented an Improved Feathering Paddle Wheel; and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a side elevation, and

Figure 2 a transverse section of such wheel, as applied to the side of a steamship or vessel.

Figure 3 is an inner side view of the wheel, as separate from the vessel.

Figure 4 is a side view of the devices applied to the side of the vessel, and to aid in effecting the axial motions of each paddle of the wheel.

In the drawings, A denotes the hub of the wheel, provided with a tubular shaft to project from its center, and to encompass and be fixed to a driving shaft, C, projecting through the side D, of the vessel. E E E E are four paddles, each of which is fixed to one of four shafts, F F F F, that are arranged radially with respect to the hub, and are supported in tubular bearings b b b b, projecting from the inner face of the hub. Each shaft should be capable of sliding lengthwise as well as turning transversely within its bearing. Each of the bearings, at its inner end, is provided with an annular head, c, which is recessed, or formed with two shoulders, d e, and a notch f, close to one of the shoulders, the same being as shown in fig. 3, and also in fig. 5, which is an end view of the head c. A stud g, extends from each shaft, F, and between the shoulders d e, of its bearing head c, and serves with such shoulders to stop the axial movements of the paddle. When the stud is in the notch f, the paddle cannot be turned in either direction axially, and this is the position of it while it is in the act of propelling the vessel through the water. Each shaft, at its end, carries a small wheel, h, which is to run on the outer surface of a cam G, projecting from the side of the vessel. A portion i, of the said cam is stationary, the rest of it, or that part marked k, being hinged to the part i, and movable with respect to it; that is, from the position shown in full black lines in fig. 4 into that as represented in dotted lines in such figure—the movements of such part k, of such cam being effected by a bent lever l, suitably applied to the cam and the vessel. Each shaft F, also has an arm m, extending from it at right angles to it, and furthermore, such shaft has a horizontal projection or cam n, extending from it laterally. These cams, during each revolution of the paddle-wheel, are intended to be brought successively into contact with the periphery of the roller, o, carried by an arm, p, extended from the side of the vessel and below the cam G. Over the cam, G, and attached to the side of the vessel, is another cam, q, against which the arms m, are to be borne in succession while the paddle-wheel is in revolution. The axis of each paddle is somewhat eccentric with respect to that of its shaft, F, and furthermore, each paddle is curved a little near that side of it which is farthest from its shaft, the curve being as shown at r, and the arrangement of the paddle relatively to its shaft being as represented in the drawings. The movement of each paddle shaft E, inward toward the axis of the wheel is limited by a shoulder s, (formed on the shaft F,) being brought up against the outer end of the bearing b. While the wheel is in revolution, each paddle, in passing over and by the cam q, will have its shaft depressed in its bearing so as to enable the said shaft to be turned by the action of the cam q against the paddle arm m, while the latter is in the act of passing it. This action will cause the paddle to be turned ninety degrees, so as to bring its stud g, into a position to enter the notch f, into which the stud will be forced as the roller of the shaft F rises over the part u of the cam G. While the wheel is travelling on the stationary part of the cam, the paddle, by such part, will be held from revolving axially, and while in the act of propelling the vessel. On rising out of the water, the cam n of the paddle will be carried into contact with the roller o, which will raise the paddle so as to move its stud g out of its notch f, and enable the paddle to turn. The action of the paddle against the water while rising out of it will cause the paddle to feather, or turn, so as to pass edgewise out of the water. Thus each paddle, while passing into the water and propelling the vessel, will act flatwise against the water, but while rising out of the water, it will feather, or be caused to go edgewise out of it. In this way what is termed the effect of back water on the wheel will be overcome. By raising the part k of the cam q into the position as exhibited by dotted lines, the paddles will be prevented from feathering while the paddle wheel is being revolved so as to move the vessel backward. The pur-

pose of the curve *r* of the edge of each paddle is to insure the paddle being turned flatwise against the water while the wheel is in the act of backing.

I claim the combination for operating each of the paddles while the wheel is revolving, the same consisting of the cam *G*, the sliding and rotary shaft *F*, its bearing *b*, stud *g*, notch *f*, shoulders *d e*, arm *m*, cams *n* and *q*, and the arm *p*, and roller *o*, or the equivalent thereof, the paddle being applied eccentrically upon the shaft, and the whole being, in other respects, substantially as hereinbefore described.

I also claim the cam *G*, as made in two parts, hinged together, and applied to the side of the vessel, so that one of them may be stationary thereon, and the other movable, as and to produce with the wheel results as above set forth.

JOHN V. DINSMORE.

Witnesses:

R. H. EDDY,
F. P. HALE, JR.