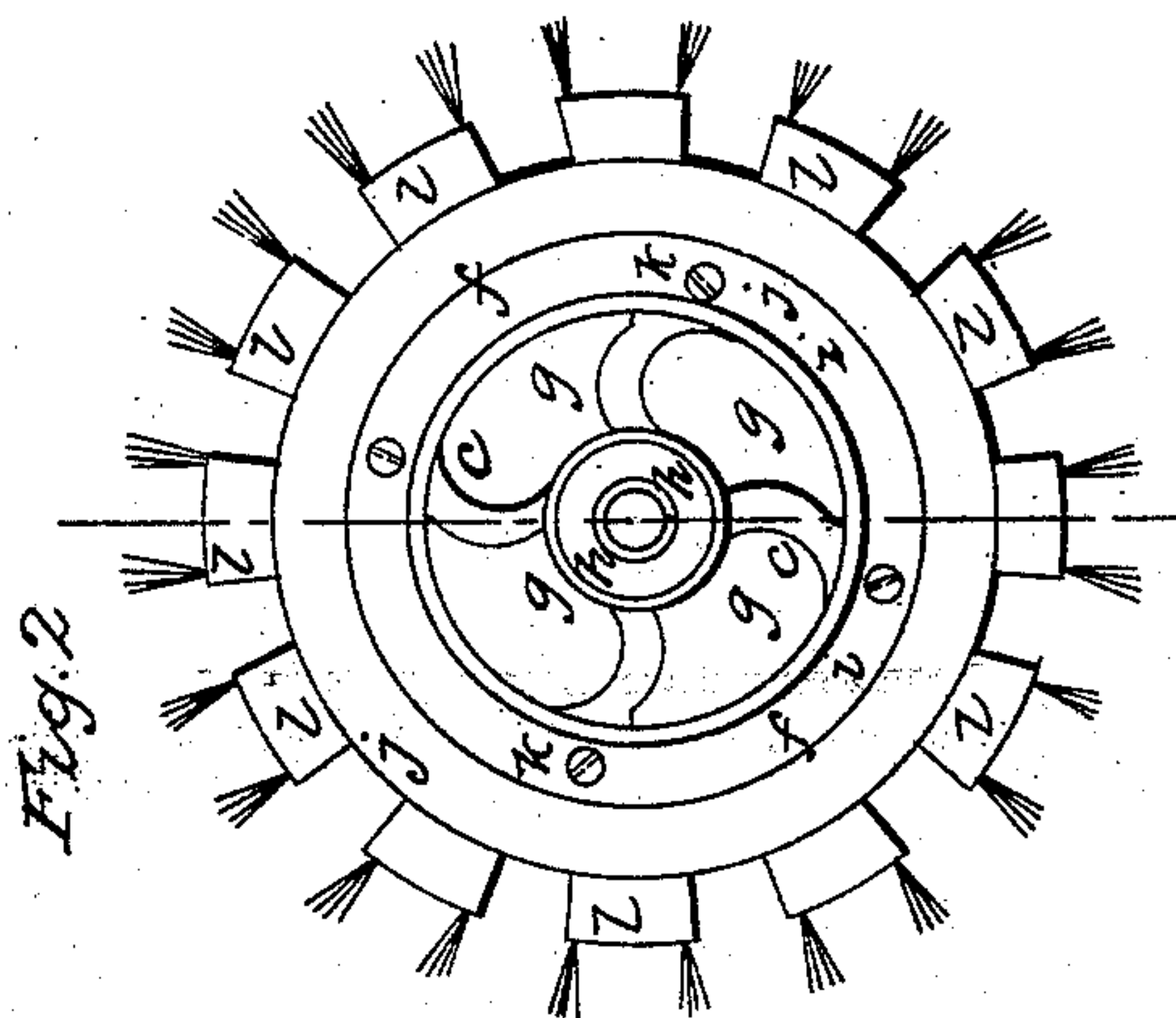
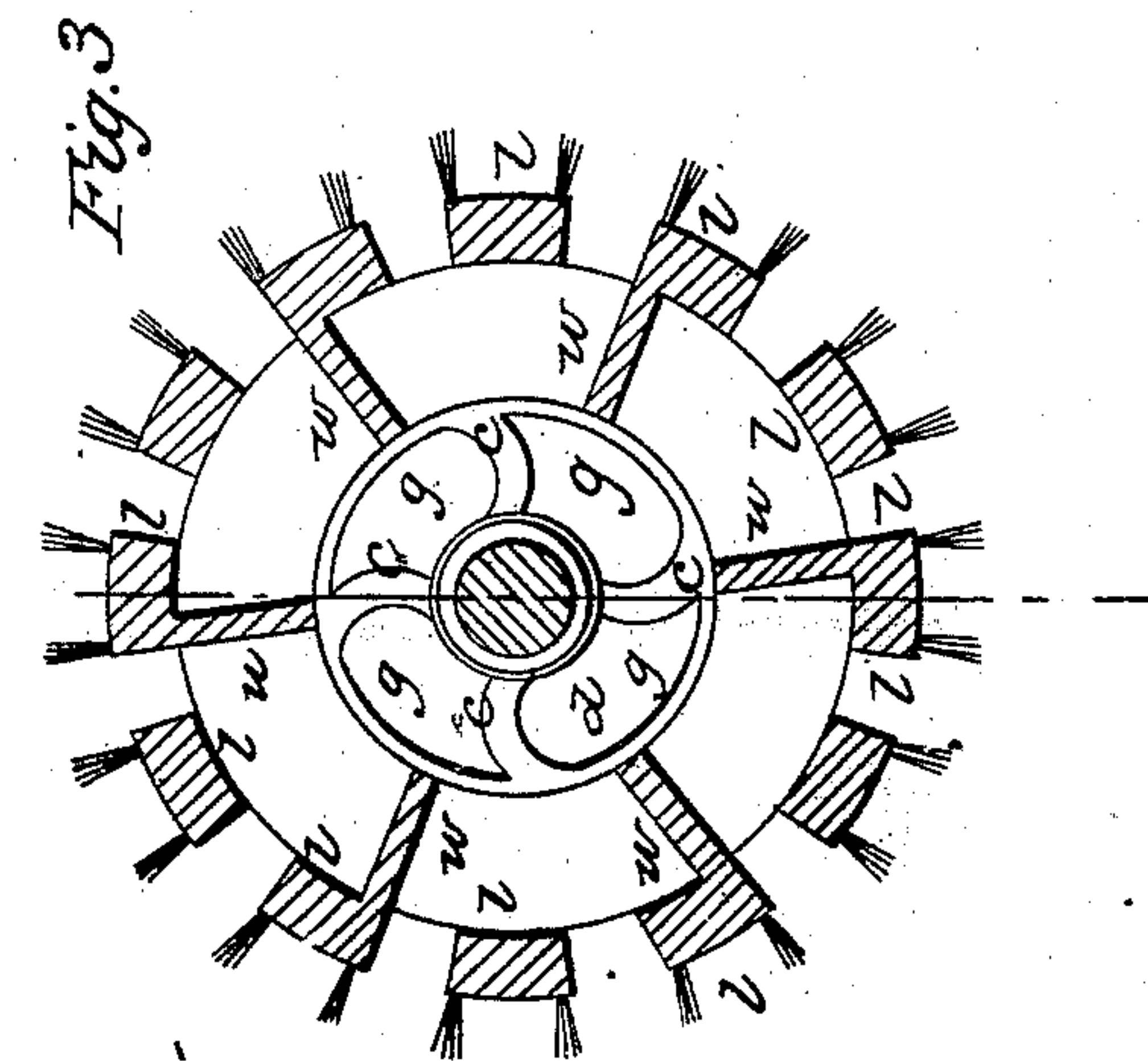
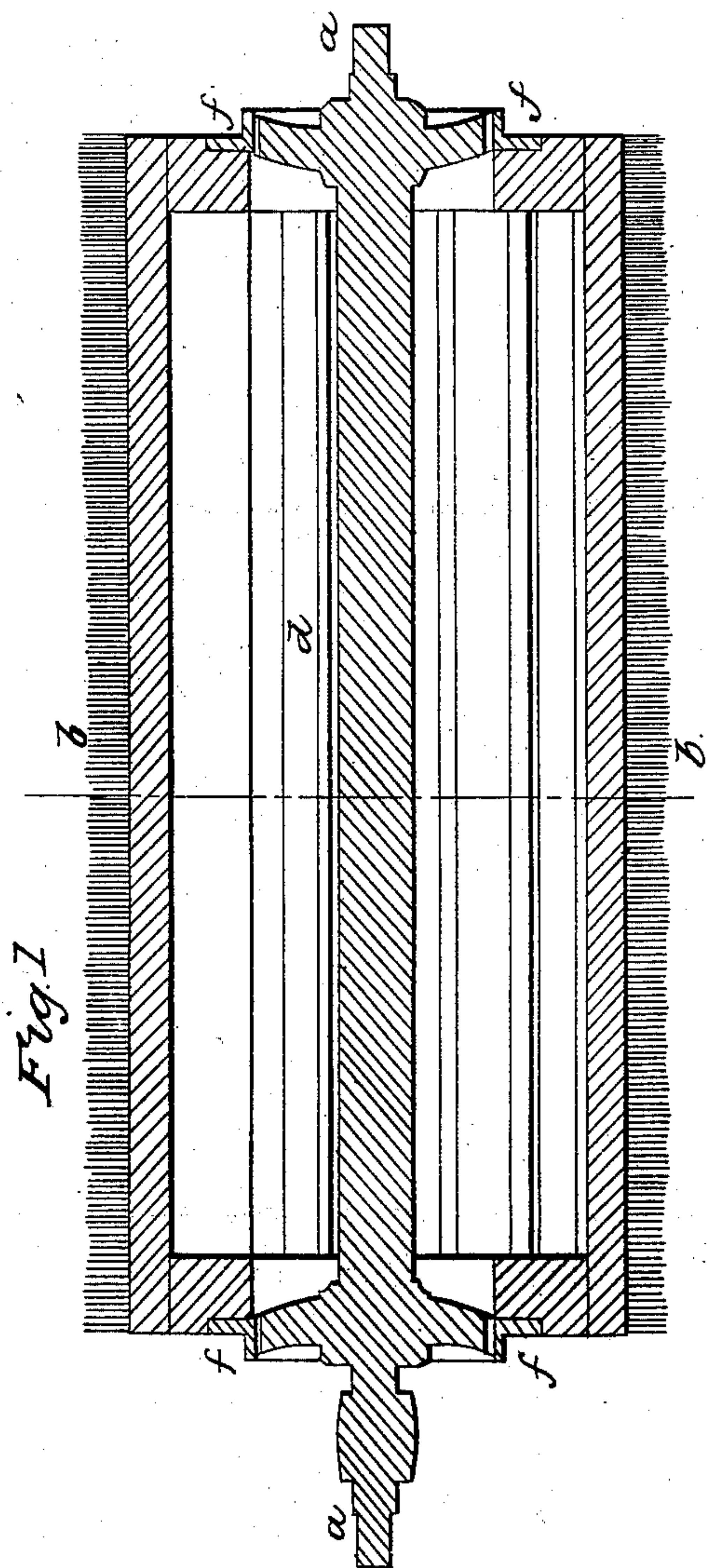


E. KEITH.
Cotton Gin Brush.

No. 4,196.

Patented Sept. 19, 1845.



Witnesses
Willard Phillips
Rich. Robins

Inventor
Edwin Keith

UNITED STATES PATENT OFFICE.

EDWIN KEITH, OF BRIDGEWATER, MASSACHUSETTS.

IMPROVEMENT IN BRUSHES FOR COTTON-GINS.

Specification forming part of Letters Patent No. 4,196, dated September 19, 1845.

To all whom it may concern:

Be it known that I, EDWIN KEITH, of Bridgewater, in the county of Plymouth and State of Massachusetts, have invented a new and useful Improvement in the Brushes of Saw-Gins for Ginning Cotton, of which the following is a full and exact description.

The brush to the saw-gin is fixed upon a shaft behind and parallel to the saw-cylinder, revolving, when the gin is in operation, in a direction opposite to that of the saw-cylinder, and at a much greater velocity. It is ordinarily of a greater diameter than the saws, and is inclosed within the frame of the gin-stand by the side ceiling and top. Below the brush and within a few inches of the hair or bristles is placed the mote-board, which extends from one end of the brush to the other, inclined upward toward the back part of the gin-stand. In the rear of the mote-board is placed the flue or conductor, through which the ginned cotton is driven into the cotton-room by the current of air created by the fans or wings of the revolving brush. To operate successfully, the brush should supply a regular current of air through the flue sufficient to keep it clear, and at the same time the hair or bristles should be so distributed over the outer surface of the brush-frame as to detach the fibers of cotton from the saw-teeth in minute portions, and separate the fibers so that the motes, dirt, and false seeds may be more readily disengaged from the cotton, and the cotton delivered into the cotton-room in a free and open state without having the fibers knapped or entangled together.

Brushes have heretofore been made in various ways. Some of those in use have four or more fans or wings fixed around the shaft, with hair or bristles attached to their outer edges. Others have the shaft inclosed in a cylindrical, octagonal, or hexagonal case, the hair or bristles being attached either directly to this case or to the edges of narrow fans fixed around it extending from end to end. In some cases cylindrical brushes have fans fixed upon their ends or heads next the side ceiling; and winged brushes are sometimes inclosed in a stationary cylindrical case, having a grating in front through which the saws project, and an opening into the flue in the rear. Two brushes are sometimes made use of in the same machine—one of them cylindrical without fans, to detach the cotton from the saw-teeth, and another behind it with fans or

wings, to receive the cotton from the first and drive it into the cotton-room. The air for the brush is sometimes supplied from the front part of the stand beneath the saw-cylinder, sometimes from an opening in the side ceiling around or near the shaft, and most frequently in both these ways.

The brushes heretofore in use, especially when ginning fast, in certain states of the atmosphere and courses of the wind, have dropped more or less of the cotton at the ends and in front of the mote-board, and much of it which has been delivered into the cotton-room has been found to be knapped or knotted and mixed with a good deal of dirt and motes.

The object of my improvement is to take the cotton from the saw-teeth in minute quantities, with the fibers free and separated, and in all states of the atmosphere to supply a constant and uniform current of air into the cotton-room, so that the cotton may be delivered into it in the same free and open state in which it is taken from the saws by the brush, and more free from motes and dirt than heretofore, and to prevent the cotton from dropping or lodging in front of the mote-board or in any part of the flue; and these objects my brush is found to effect successfully.

In the annexed drawings, Figure 1 represents a longitudinal section of my brush. *d* is the shaft. The journals are at *a a*. *b b* are two rows of bristles as intersected by this section.

In Fig. 2 an exterior view is presented of the end or head of the brush-frame and brush. *h h* is the center-piece of the head, whereby it is attached to the shaft, (or to the gudgeons if the frame rests on gudgeons, without having a shaft running through it.) *c c c c* are arms extending from this center-piece. *g g g g* are open spaces between the arms to admit the air from without the side ceiling to the central part of the brush. At *i i i i* is a circular hoop, cast in the same piece with the center-piece and arms, the whole piece being more conveniently made of cast-iron. This circle or hoop, thus inclosing or attached to or being of one piece with the arms, projects out an inch or two, more or less. The side ceiling at each end of the brush has a hole cut in it of a size corresponding to the circular hoop, that part of the side ceiling directly above this hoop being movable, so that the brush is put upon its bearings in the stand while this movable part of the side ceiling is removed out of its

place, and after the brush is placed in the stand it is slid down in its place, the semicircular space in its bottom fitting the upper semicircle of the hoop, and thus making the side ceiling complete. On this hoop is cast a flange, as shown by its section *f* in Fig. 1, which projects eccentrically on the hoop an inch or two, more or less, to which the wooden part of the head *j j j j* is attached by the screws *k k k k*, this flange being let into the wood. To this wooden part the pieces of lagging or covering *l l l l*, &c., and the wings *w w w w*, &c., are attached.

The hoop above described, or some substitute for it, is a material part of my improvement, its object being to intercept and prevent currents and eddies of air within the gin-stand between the heads of the brush and the side ceiling, and especially to prevent any current or eddy round on the outside of the brush-heads into the openings *g g g g*. It is immaterial at what part of the space *j j j j* such eddies and currents are cut off, for the effect will be the same if the hoop is put any where in the space *j j j j* between the central openings, *g g g g*, and the periphery of the brush-head, and the hoop might be made to run in a circular groove or channel cut for it in the side ceiling, or it might be attached to the side ceiling and project over or rather shut upon the head of the brush at its periphery, or project into a circular groove or channel made purposely for it in the head of the brush; or two hoops might be attached, one to the ceiling and one to the head of the brush, of different diameters, and one shut over the other as closely as it could be made to do without causing friction, or they might be at a distance from each other. A circular elevation on either the brush-head or the opposite ceiling will answer instead of the hoop, and the desired effect might no doubt be produced without the hoop projecting through the whole thickness of the ceiling or the brush-head, or into any groove, by adapting the edge of the hoop pretty exactly to the opposite surface, so that the brush might revolve without friction, and yet without leaving any considerable space to admit of the passage of any sensible current of air. But the hoop, as above described, is a perfectly effectual contrivance for the purpose, and is cheap of construction and convenient in operation.

The heads have grooves in them on the inside, into which the wings are fitted, so that they may slide into these grooves and be fixed by screws or otherwise in their position. A transverse section of the wings *w w w w* is shown in Fig. 3, being, in the brush from which these drawings are taken, six in number, one being attached to each alternate piece of lagging; but the number of wings may be varied. There may be a wing to each piece of lagging, or to every three, four, or other number. The number of wings and pieces of lagging represented in the drawings is found to answer perfectly well. The breadth of the wings may be, as represented in the drawings, about one-

third of the distance from the interior or central surface of the lagging to the axis of the brush, or a greater or less proportion. I have made the wings three and a half inches wide for a twelve-inch saw, and they have been found to work perfectly well. Narrow pieces of lagging in which the bristles are set, extending the whole length of the brush, are attached at each end to the heads, as shown in the drawings, and the rows of bristles set in each piece of lagging may be one, two, or more. Two rows, as represented in the drawings, answer perfectly well in operation.

Slits or openings are left between each two successive pieces of lagging in the annexed drawings for the passage of air from the central part of the brush into the current through the flue; but the pieces of lagging may be jointed together like barrel-staves, and so make the brush-frame a cylinder, and holes or openings of any form may be made for the passage of the air from the central part of the brush into the flue. Openings between the pieces of lagging from one end to the other of the brush, as they are represented in the annexed drawings, answer perfectly well in operation. The openings, as represented in the drawings, may be four-sevenths of the breadth of the pieces of lagging—that is, the area of the openings for the air may be to that of the covered part of the brush-frame in the proportion of four to seven, and the same proportion will answer in case of apertures of other forms being adopted. This proportion may be varied very much without materially affecting the operations of the brush.

In common-sized gin-stands, for the purpose of supporting and securing the pieces of lagging, I usually construct a divisional head at about the longitudinal center of the brush, to which the pieces of lagging are fastened. Instead of this divisional head, spokes or arms attached to the shaft may be constructed for the same purpose.

I claim as my invention and ask a patent for—

1. A cotton-gin brush made of a cylindrical form, with holes or openings, as above described, or made with pieces of lagging with open spaces between them, as above described, also with openings at the ends about the axis of the shaft, as above described, for the admission of air, and made with wings, as above described, and with heads, the outer ones having each a hoop, circular projection, or other equivalent contrivance for cutting off currents and eddies of air, as above described.

2. The hoop, circular projection, or other equivalent contrivance at the head of the brush for cutting off currents and eddies of air, as above described, with an opening within the hoop or circular projection for the admission of air, as above described.

June 12, 1845.

In presence of— EDWIN KEITH.
WILLARD PHILLIPS,
RICH'D. ROBINS.