

(No Model.)

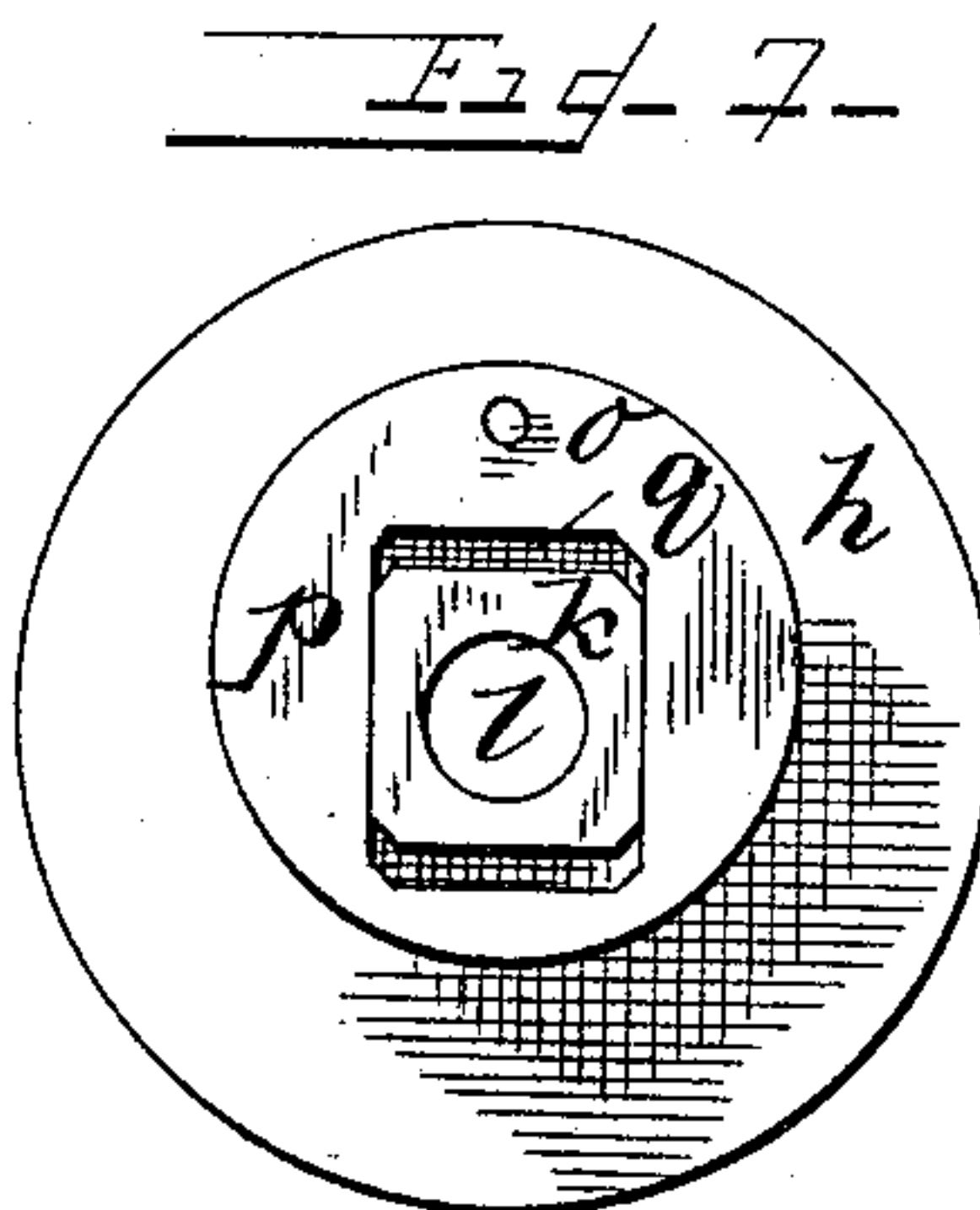
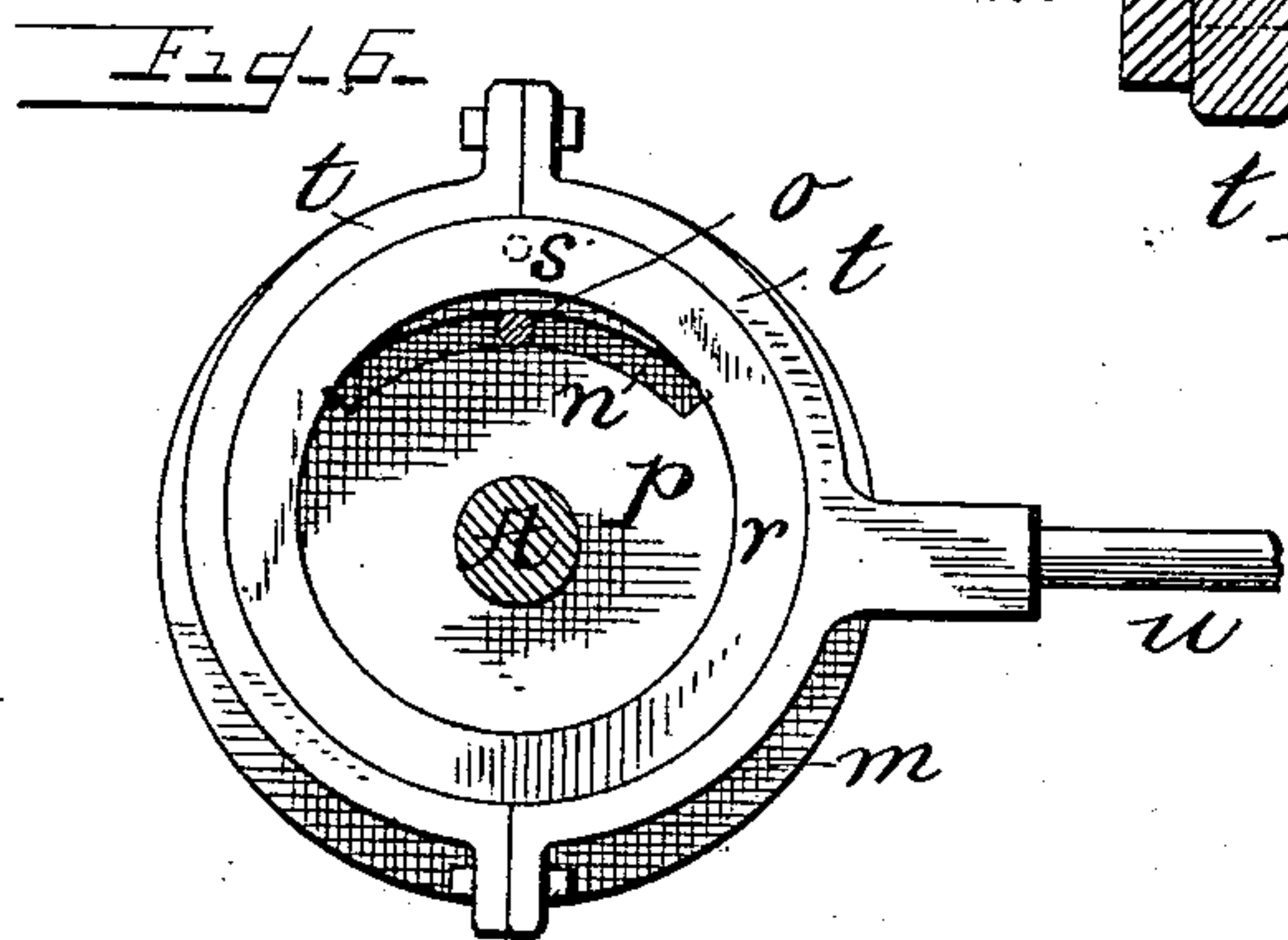
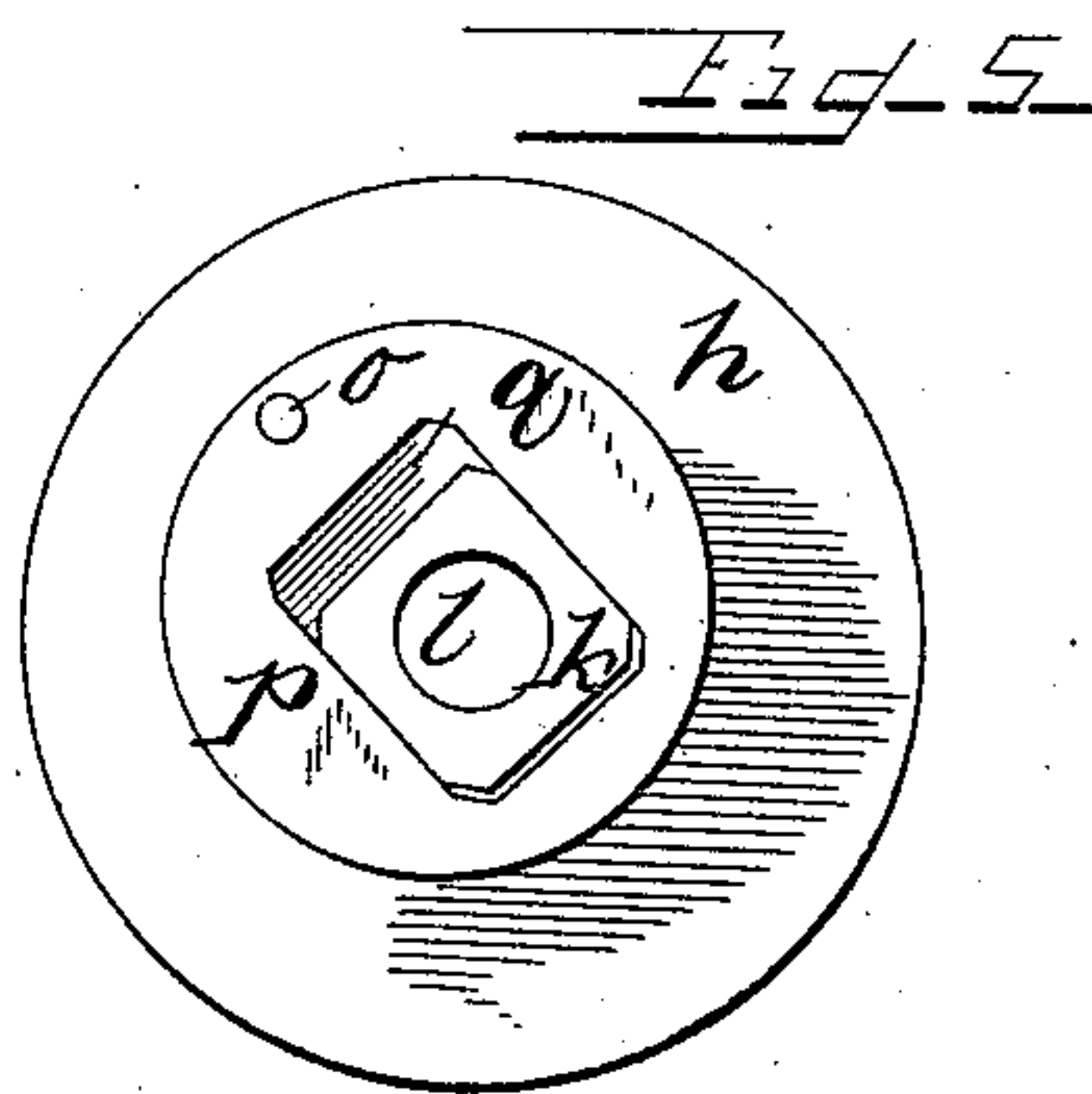
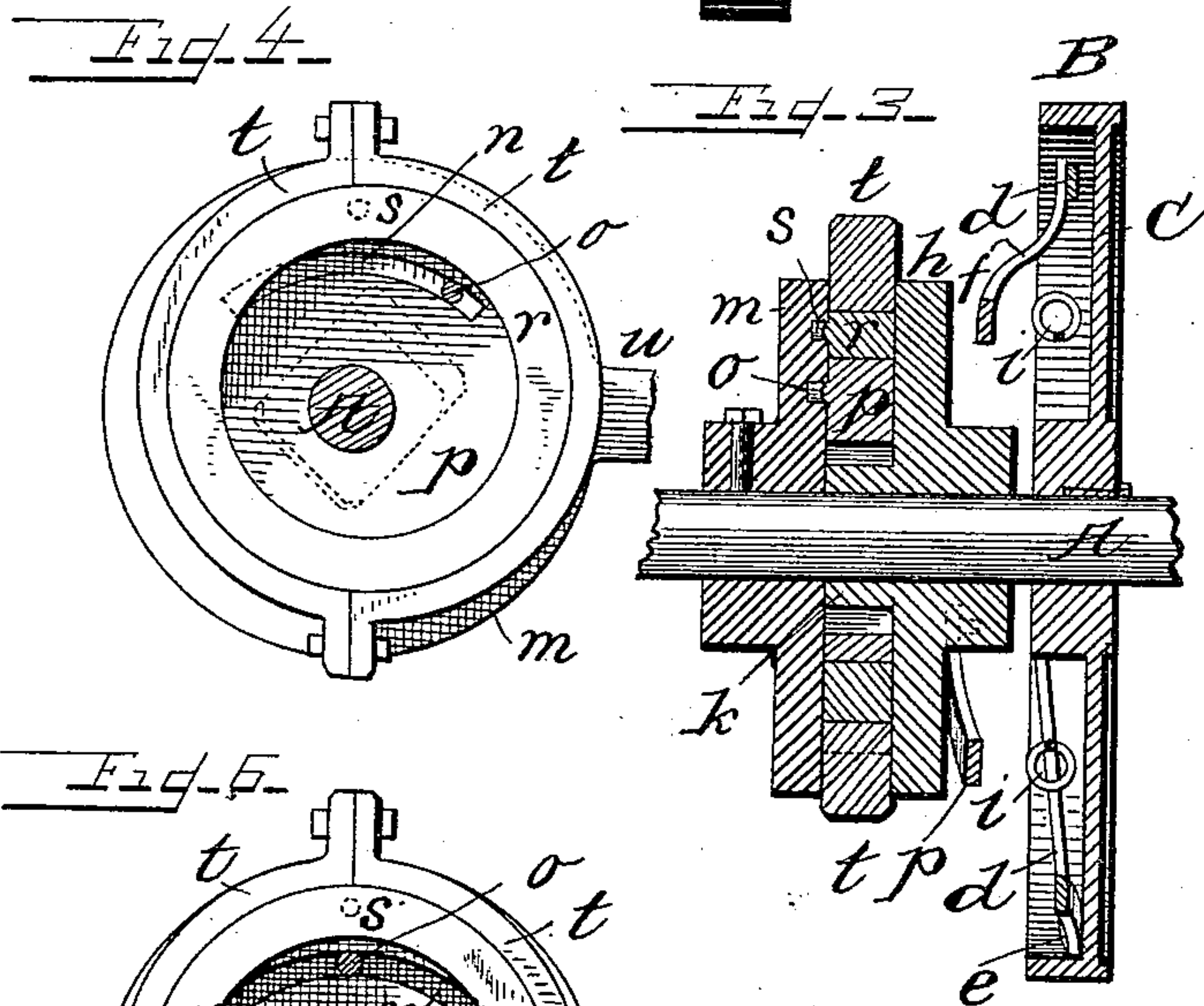
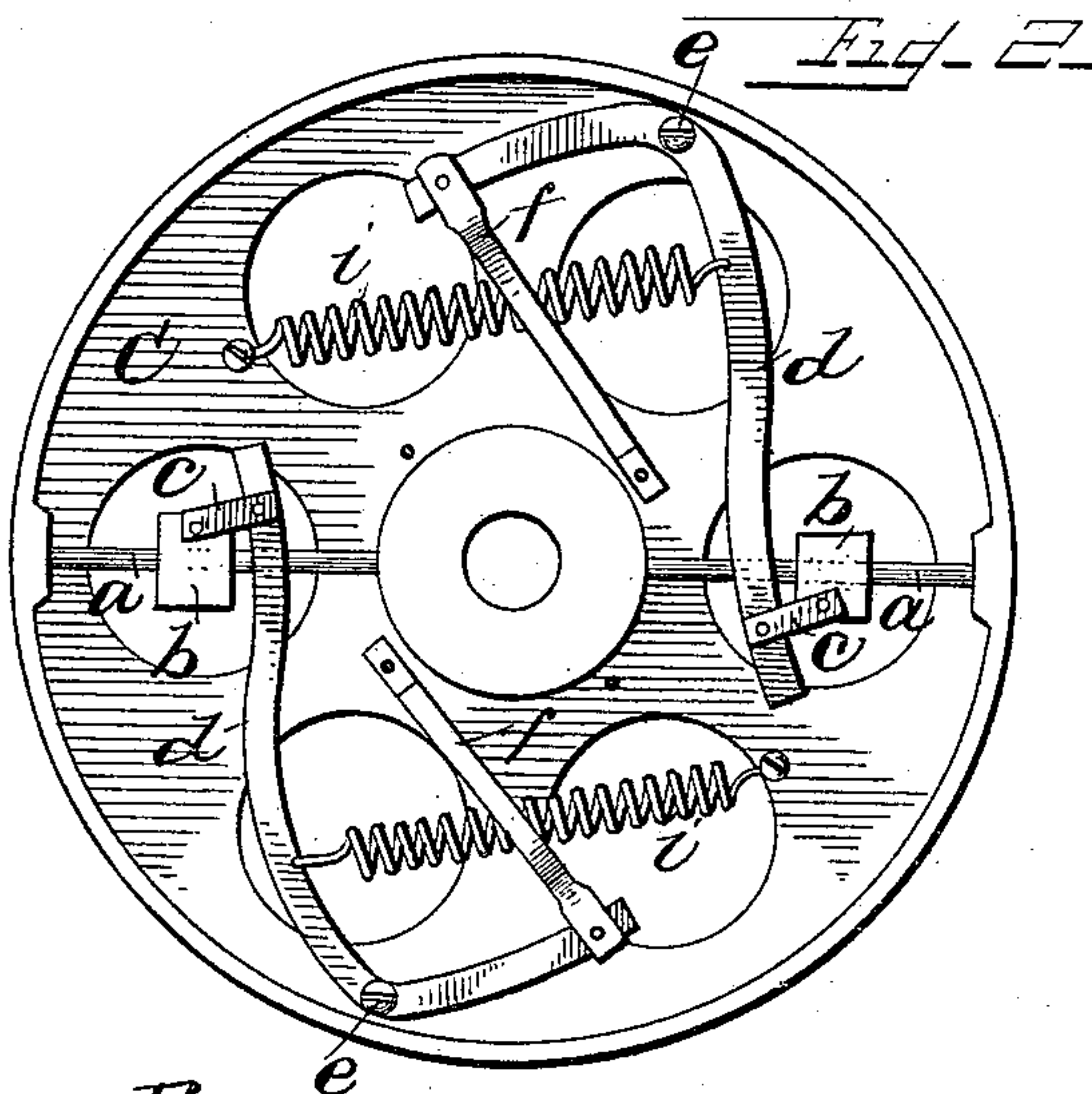
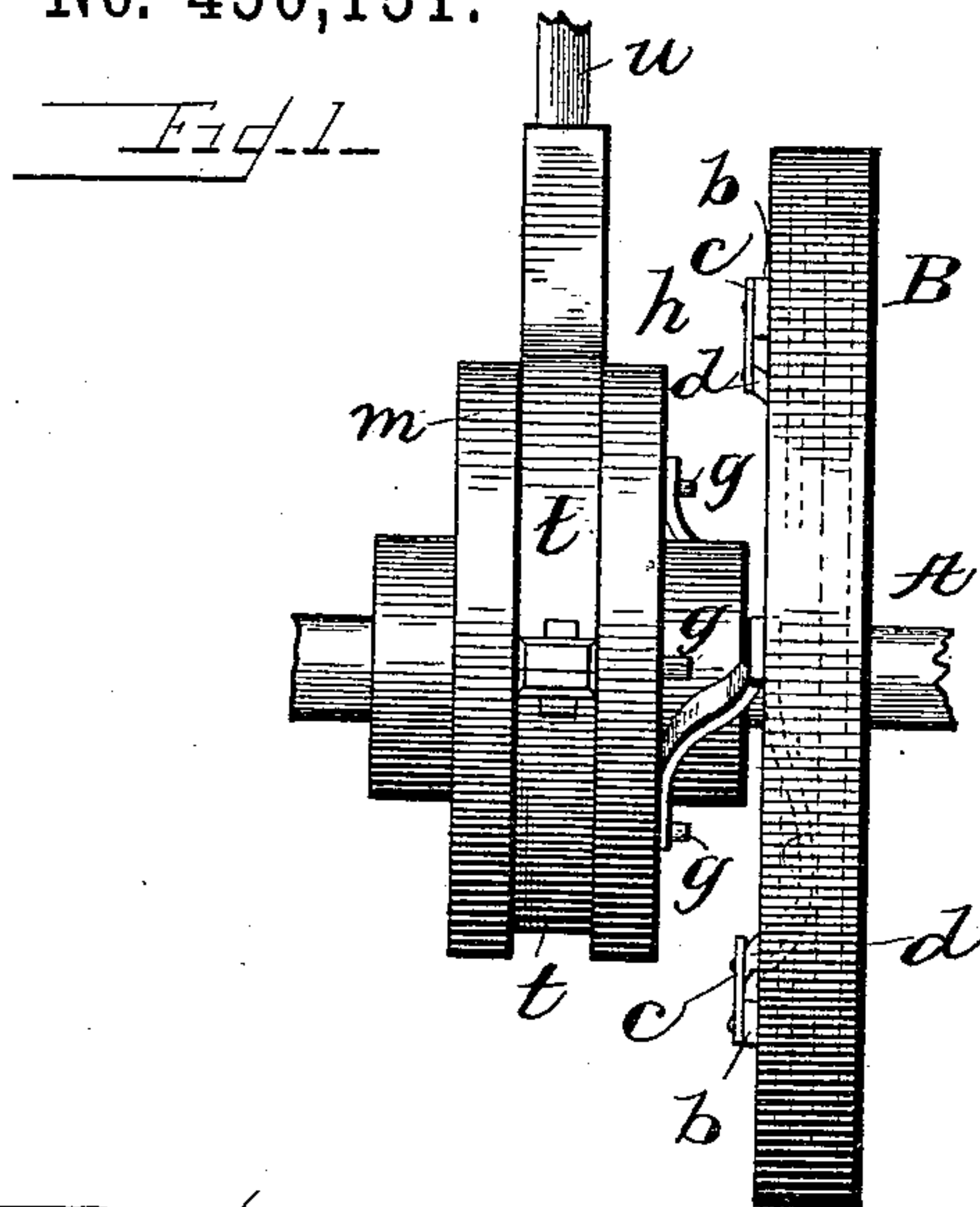
J. HARROLD, Dec'd.

L. A. HARROLD, Administratrix.

GOVERNOR FOR STEAM ENGINES.

No. 450,151.

Patented Apr. 14, 1891.



Witnesses

G. A. Taubenschmidt  
J. D. Kugachery

Inventor  
Lucy Ann Harrold  
Administratrix of the estate of Jonas Harrold  
By her Attorneys  
Johnston, Reinohl & Dyre



# UNITED STATES PATENT OFFICE.

LUCY ANN HARROLD, OF COLUMBIANA, OHIO, ADMINISTRATRIX OF JONAS HARROLD, DECEASED.

## GOVERNOR FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 450,151, dated April 14, 1891.

Application filed December 26, 1890. Serial No. 375,895. (No model.)

*To all whom it may concern:*

Be it known that I, LUCY ANN HARROLD, a citizen of the United States, residing at Columbiana, in the county of Columbiana and State of Ohio, administratrix of the estate of JONAS HARROLD, deceased, late of same place, who did in his lifetime invent certain Improvements in Governors for Steam and other Engines, do hereby declare the following to be a full, clear, and exact description of the invention of said JONAS HARROLD, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to steam and other engines, and has especial reference to mechanism for controlling the speed of an engine by automatically shifting the eccentric to which the valve-rod is connected.

The invention will be hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, which form part of this specification, Figure 1 represents a top plan view; Fig. 2, a side elevation of the band-wheel supporting the governor with the eccentric removed; Fig. 3, a vertical longitudinal section; Figs. 4, 5, 6, and 7, details showing the different positions of the eccentric.

Reference being had to the drawings and the letters thereon, A indicates the engine-shaft, upon which is secured the band pulley or wheel B. Within the circumferential flange of the wheel and on one side of the web C are secured two rods *a* between the hub and the rim of the wheel. Upon each rod is a movable weight *b*, attached by a link *c* to a lever *d*, which is fulcrumed on the web at *e*, and the opposite end of each lever is attached to a rod *f*, which at its opposite end engages with a stud or pin *g* on the disk *h*. The disk *h* is provided with four studs *g*, arranged in pairs diagonally opposite each other, and are engaged by the rods *f* in reverse position, according to the direction in which the engine is running, forward or backward.

To the levers *d* are attached coiled springs *i*, one end of each of which is secured to the web of the wheel, and serve to restore the weights and levers to their normal position after having been displaced by an increase

of speed of the engine produced by an increase of pressure of the motor-fluid, or by suddenly throwing off some of the machinery being driven by the engine, or by decreasing the speed by a diminished pressure of the motor-fluid, or putting more machinery in operation.

The centrifugal action of the weights is communicated or transmitted to the eccentric by the rods *f* moving the disk *h*, the wheel B being secured to the shaft and the disk *h* normally mounted thereon. The disk *h* is provided with a square projection *k*, through the center of which is an aperture *l* for the passage of the shaft A, and fixed to the shaft is another disk *m*, having a groove *n* in its inner surface with which a stud or pin *o* on the eccentric *p* engages. The eccentric *p* is provided with a rectangular slot or opening *q* of the width of the projection *k*, and encircling the eccentric *p* is an annulus or eccentric ring *r*, which is pivotally attached to the disk *h* by a pin, such as *s*, to enable said ring to swing freely back and forth as the position thereof is changed by the projection *k* and the eccentric *p* sliding thereon. Around the ring *r* and between the disks *h* and *m* is secured the eccentric-strap *t*, the rod *u* of which engages with a valve-rod (not shown) in the usual manner.

By interposing the ring *r* between the eccentric *p* and the eccentric-strap *t* the wear of the parts is taken up by said ring and is readily and easily renewable at a very small cost.

In Figs. 4 and 5 are shown the position of the parts of the eccentric when the eccentric is at its greatest throw, and in Figs. 6 and 7 are shown their position when the eccentric is at its lowest throw.

The operation is as follows: As the speed of the engine changes from any cause the disk *h* is moved upon the shaft as its axis, the projection *k* throws the eccentric *p* and moves the eccentric ring *r* upon the pin *s*, which connects it to the disk *m*, which has the effect of lengthening or shortening the throw of the valve, thereby letting on or cutting off steam to or from the engine, according to the direction in which the eccentric moves.

What is claimed is—

1. The combination, with a disk having a projection on its inner face, of an eccentric having an elongated slot, an eccentric ring, and  
5 an eccentric-strap, substantially as described.
2. The combination, with a disk having a projection on its inner face, of an eccentric provided with an elongated slot and a stud,  
10 said stud engages, and an eccentric ring pivotally secured to the latter disk.
3. The combination of a centrifugal governor, a revoluble disk to which the levers of the governor are connected, a projection on

the inner surface of said disk, an eccentric 15 provided with an elongated slot and a stud, a disk having a groove with which said stud engages, and an eccentric ring pivotally secured to the latter disk.

In testimony whereof I affix my signature in 20 presence of two witnesses.

LUCY ANN HARROLD,

*Administratrix of estate of Jonas Harrold, deceased.*

Witnesses:

JOHN D. WEAVER,  
G. S. SNYDER.