

(Model.)

G. WALE.

POWER INDICATOR AND RECORDER.

No. 255,220.

Patented Mar. 21, 1882.

Fig. 1.

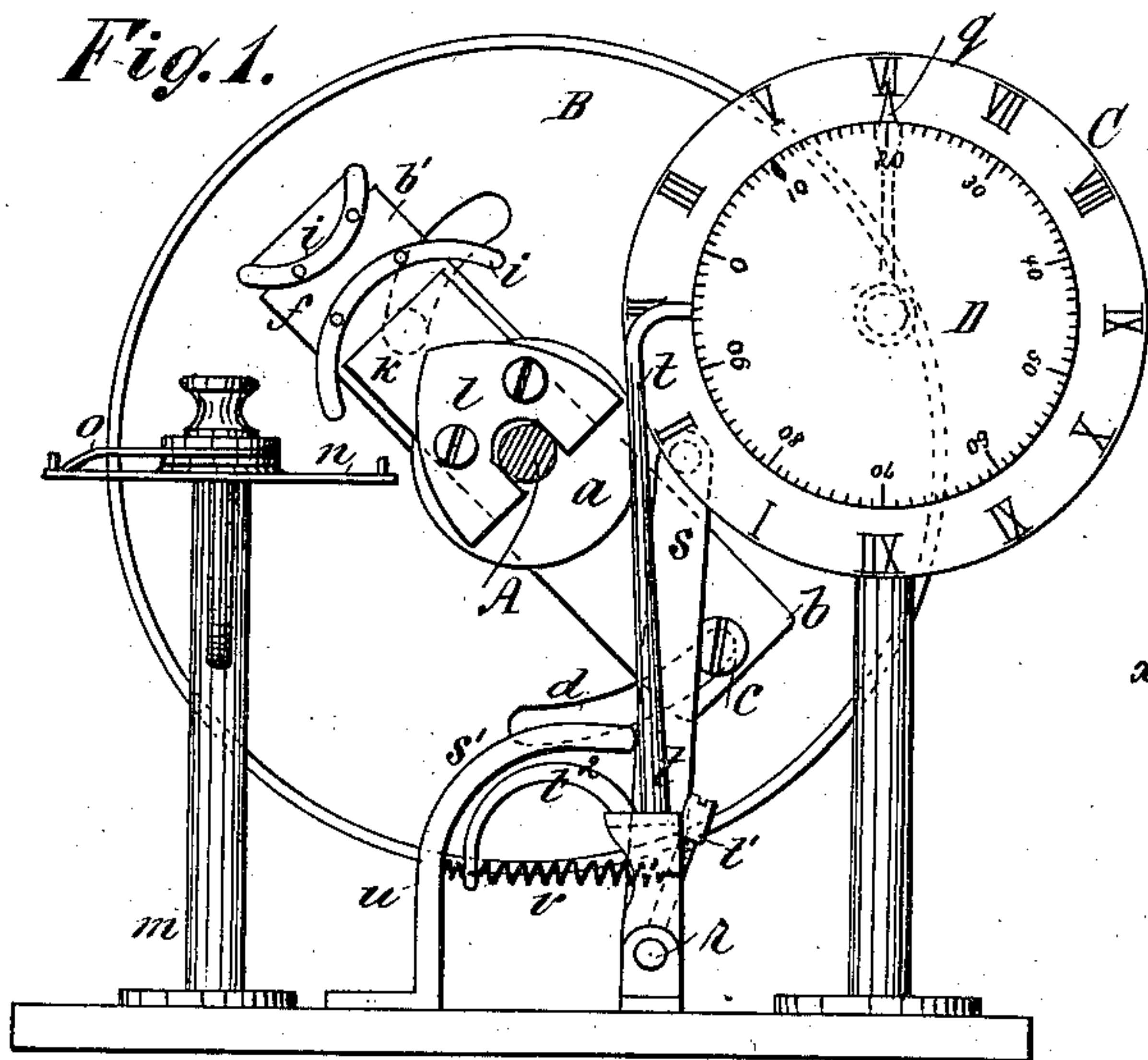


Fig. 3.

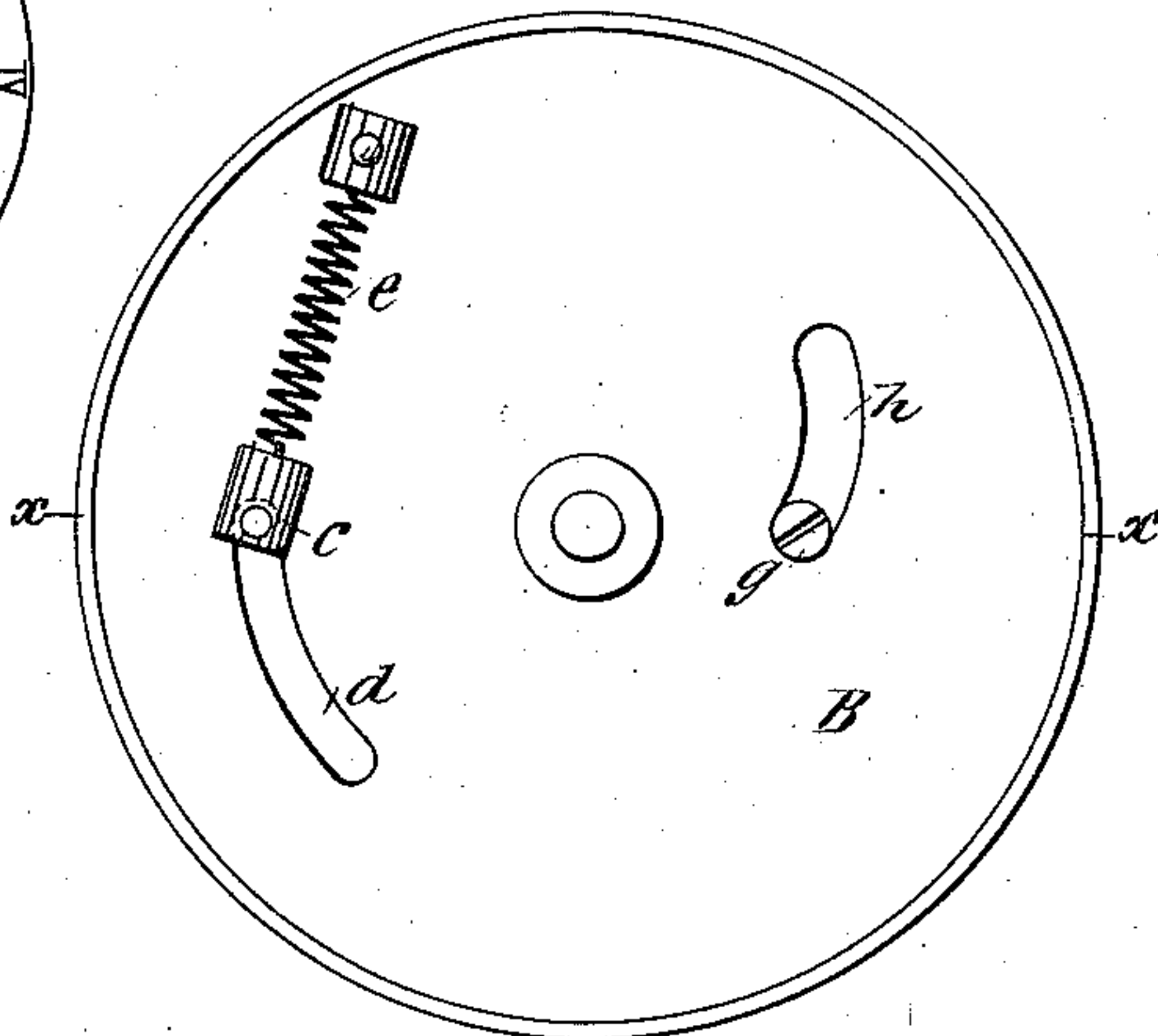


Fig. 2.

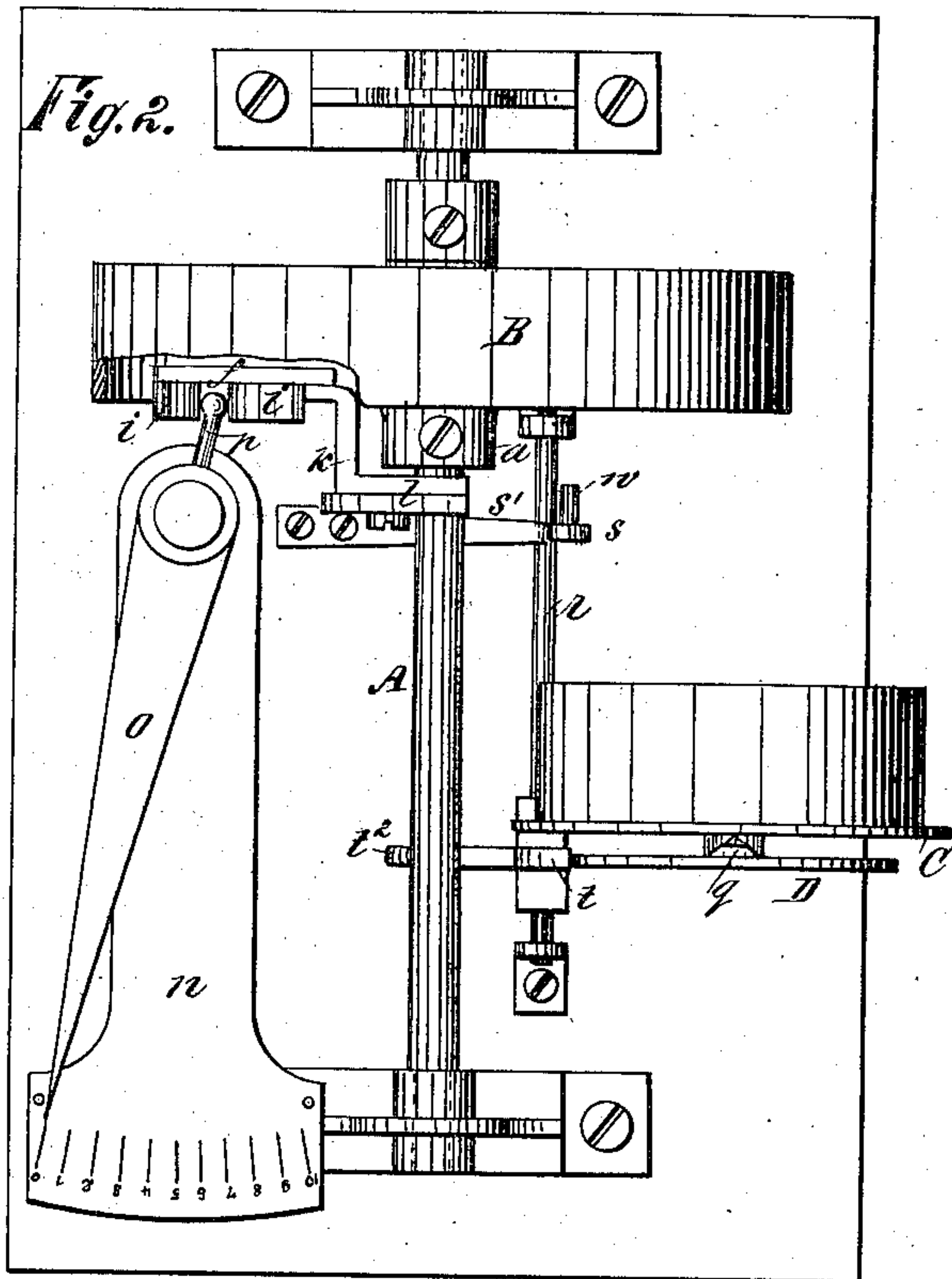


Fig. 4.

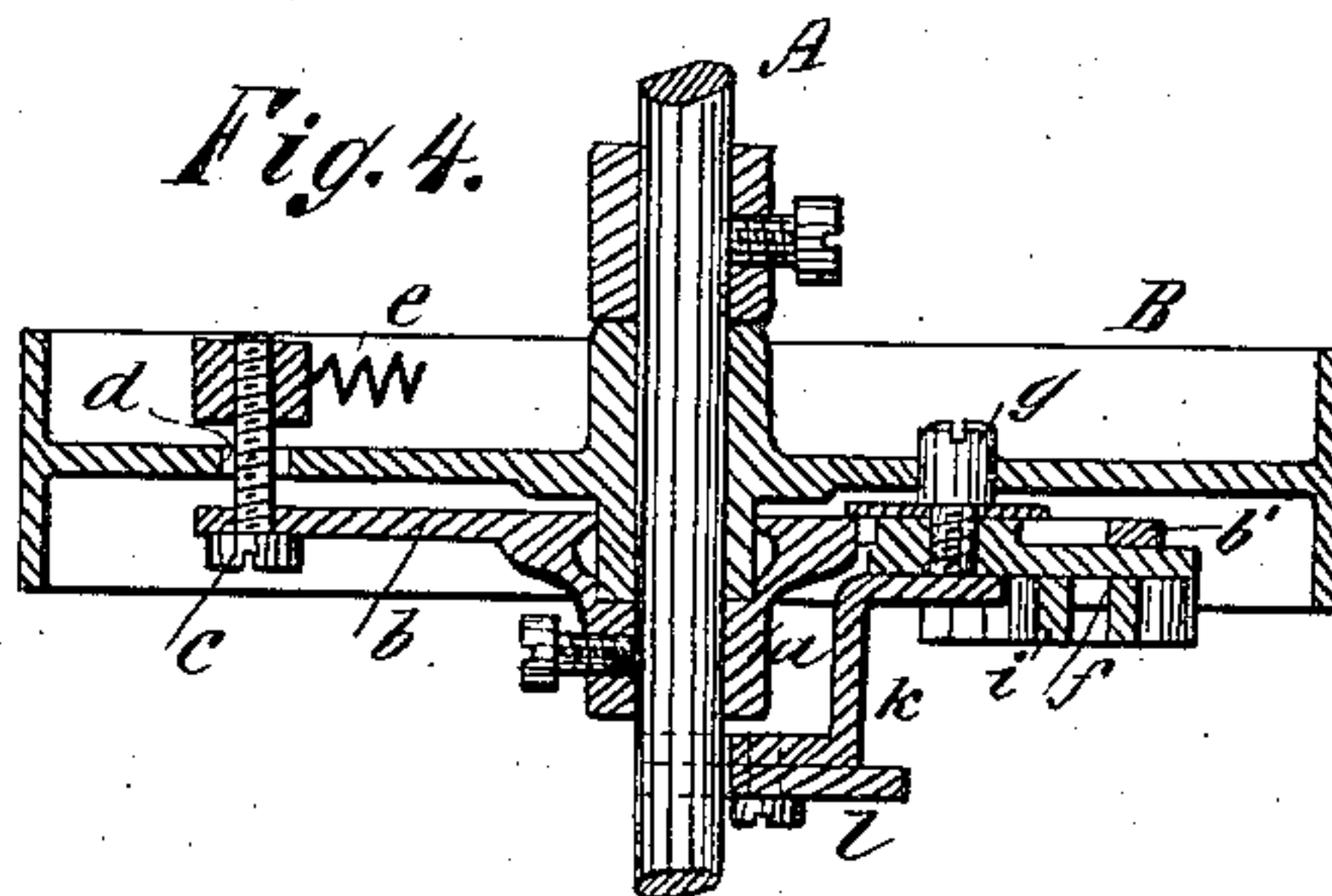
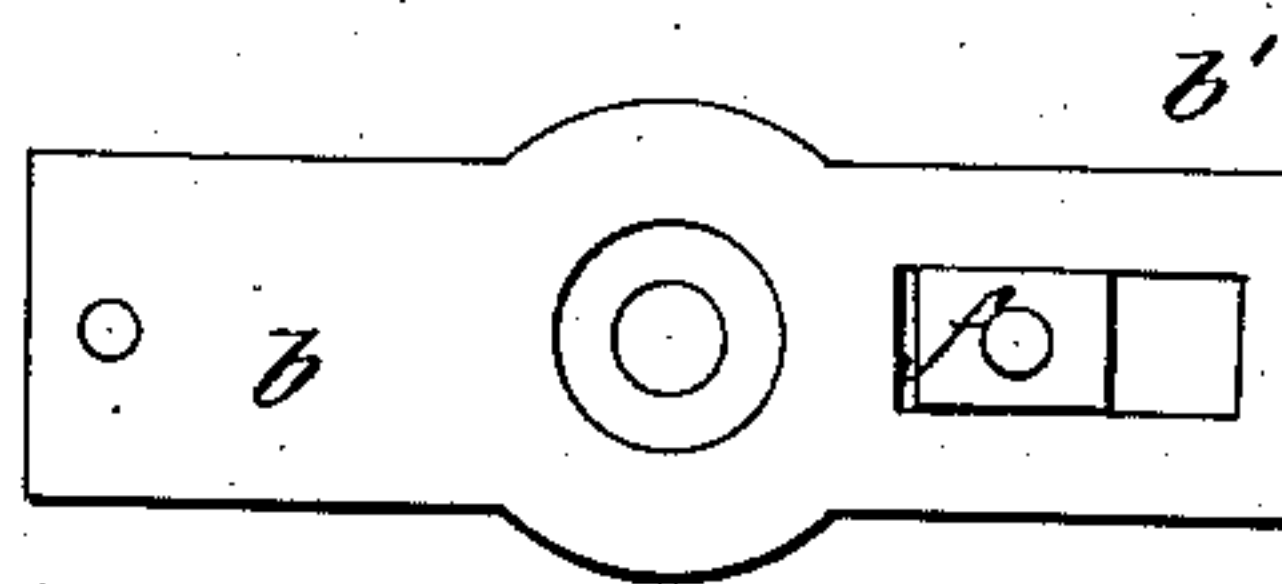


Fig. 5.



WITNESSES:

Theo. G. Hoster.  
B. J. Underwood.

INVENTOR:

G. Wale.  
BY *Mum Co*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

GEORGE WALE, OF PATERSON, NEW JERSEY.

## POWER INDICATOR AND RECORDER.

SPECIFICATION forming part of Letters Patent No. 255,220, dated March 21, 1882.

Application filed July 12, 1881. (Model.)

To all whom it may concern:

Be it known that I, GEORGE WALE, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and Improved Power Indicator and Recorder, of which the following is a specification.

The object of my invention is to obtain constant indication and permanent record of power taken from main driving-shafts.

To that end the invention consists in the combined mechanism hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of the indicating and recording mechanism cross-sectionally of the power-shaft. Fig. 2 is a plan view of the apparatus, partially sectional. Fig. 3 is an elevation of the driving-pulley, showing the reverse side. Fig. 4 is a transverse section of the pulley on line *xx* of Fig. 3, and Fig. 5 is a side elevation of the arm by which the shaft and pulley are connected.

Similar letters of reference indicate corresponding parts.

A is a shaft, on which is a pulley, B, connected with the shaft, as next described. On the shaft A, and secured thereto by a set screw, is a collar, *a*, provided with radial arms *b b'* at opposite sides. The outer end of arm *b* is fitted with a screw or pin, *c*, which extends through a slot, *d*, formed in the web of the pulley B.

To the end of the pin *c* one end of a spiral spring, *e*, is connected, the other end of the spring being attached to the pulley, so that the spring tends to draw the pin *c* to one end of the slot. The arm *b'* is slotted and the slot fitted with a slide-piece, *f*, from which a pin, *g*, projects through a slot, *h*, formed in the web of the pulley eccentric to the axis thereof.

To the slide *f* two curved strips, *i i*, are fixed, which form eccentric flanges on the side of the slide. The slide also carries a bent arm, *k*, to the outer end of which is fixed a cam-piece, *l*.

On the post *m*, that carries a graduated dial-plate, *n*, a pointer, *o*, is hung, and from the inner end of the pointer a pin or stud, *p*, projects between the eccentric flanges *i* of slide *f*. The pointer is for indicating on the dial-plate *n* the amount of power being used, as hereinafter set

forth. To obtain a permanent record the following devices are employed.

C represents the dial-plate of a time-piece, and *q* the hour-hand.

D is a dial on the arbor of the hand *q*, and held thereto by friction devices of suitable character, so that the dial shall turn with the arbor.

*r* is a rock-shaft, sustained in suitable bearings and carrying two arms, *s t*. The arm *s* is fixed on the shaft and is sustained in an upright position, or nearly so, by a stop-piece, *s'*, against which the arm is drawn by a spring, *u*. The arm *t* is loose on the shaft and is retained in an upright position, or nearly so, by a stop-pin, *t'*, which projects from the shaft *r*, against which the arm is drawn by a spring, *v*, that extends from pin *t'* to a hook, *t<sup>2</sup>*, projecting from the lower end of arm *t*. The arm *t* is curved at its upper end to bear on the edge of dial D, and in its normal position is nearly in contact with the dial. The arm *s* has a pin or lug, *w*, at its upper end projecting into the plane of the cam-piece *l*, before mentioned as being carried by the slide *f*.

The dial D is marked on its face to indicate units of power, and when set for operation the hand *q* of the time-movement will be at the zero-mark of the dial.

In operation the shaft is to be driven by power and pulley B used for connection of the machinery to be driven. The arm *b* on the shaft, acting through pin *c* and spring *e*, carries the pulley with the shaft, and the tension of the spring is sufficient to retain the pin at the end of the slot *d* so long as no power is being used. In that position of the arm *b* the slide *f* is at the inward end of the slot of arm *b'*, the cam-flanges *i* pass by the pin *p* of the pointer without contact therewith, and the cam *l* is in its inward position. If power be taken from the pulley, the resistance thereby offered will check the pulley and cause the pin *c* to move out in the slot *d* until the tension of the spring *e* is sufficient to overcome the resistance, when the pulley will revolve and the pin remain stationary in the slot. The arm *b'* at the same time carries the pin *g* of slide *f* forward in the slot *h*, and the slide is forced outward, carrying with it the cam-flanges *i* and cam *l*. The inner flange



*i*, as it passes the pin *p* of the pointer, will now move the same to a distance corresponding with the radial movement of the slide, and the pointer will indicate the movement on the dial-plate.

5 The cam *l* being by the movement of the slide thrown into position for striking the lug on arm *s*, the arm is thus moved outward, the pin *t'* is drawn away from arm *t*, and the spring *v* draws the arm *t* into contact with the dial *D*. This  
10 movement of arm *s* occurs at every revolution of the shaft, so that the arm *t* is pressed against the dial *D* in a series of pulsations with more or less pressure, according to the extent of radial movement of slide *f*. The effect is to retard the  
15 dial *D*, so that the hand gains on the dial a greater or less distance, according to the amount of power being used and the length of time during which the power is used. The dial, being properly marked to indicate its retardation,  
20 will make a record from day to day, and thus show the total number of units of power used. As soon as power is ceased to be taken from the pulley the spring *e* returns the parts to their normal position, and the outer cam-flange *i*  
25 will move the pointer *o* back to the zero-point. The dial *D* and hand *q* will then move together, as before, with the hand in the advanced position.

If desired, the dial *D* may be revolved by  
30 connections from the driving-shaft, instead of by the time-piece.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

35 1. In power indicating and recording mech-

anism, the combination of shaft *A*, carrying arms *b b'*, pulley *B*, provided with eccentric slot *h*, spring *e*, connecting the arm *b* and pulley, and the slide *f*, engaging slot *h* of the pulley, substantially as shown and described. 40

2. In power indicating and recording mechanism, the combination of radially-moving slide *f*, cam-flanges *i*, and pointer *o*, placed for engagement with the cam-flanges of the slide, substantially as shown and described. 45

3. In power indicating and recording mechanism, the combination of radially-moving slide *f*, cam *l*, rock-shaft *r*, and arm *t*, substantially as shown and described.

4. The combination, in power-recording mechanism, of revolving dial *D*, arm *t*, arm *s*, shaft *r*, provided with stop-pin *t'*, cam *l*, and slide *f*, carrying the cam, substantially as shown and described, for operation as set forth. 50

5. The combination, in power-recording mechanism, of a graduated dial, revolved by friction-connections, a retarding-arm hung adjacent to the dial, and a cam operated by the driving-shaft to press the retarding-arm in contact with the dial with a varying pressure, substantially as shown and described. 55 60

6. The combination, in power-recording mechanism, of a recording-dial, a time-piece moving in unison with the dial, and a dynamometer acting to retard the dial, substantially as shown and described. 65

GEORGE WALE.

Witnesses:

C. SEDGWICK,

J. H. SCARBOROUGH.