

(No Model.)

2 Sheets—Sheet 1.

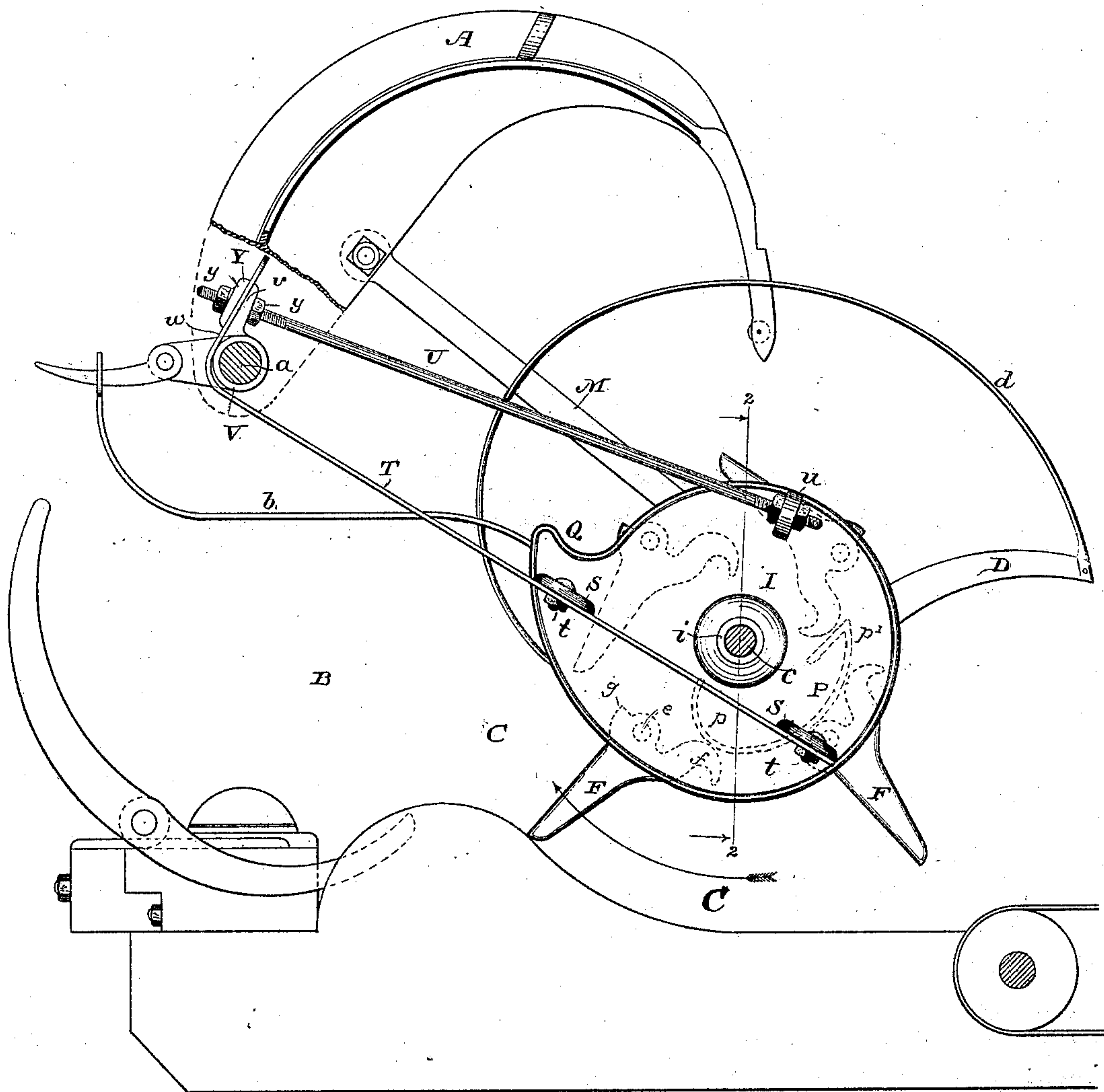
J. S. DAVIS.

GAVELING MECHANISM FOR GRAIN BINDERS.

No. 283,866.

Patented Aug. 28, 1883.

Fig. 1.



WITNESSES

Wm A. Skinkle.
Henry A. Lamb.

INVENTOR

John S. Davis

By his Attorneys

Maldwin, Hopkins & Hyton

J. S. DAVIS.

GAVELING MECHANISM FOR GRAIN BINDERS.

No. 283,866.

Patented Aug. 28, 1883.

Fig. 2.

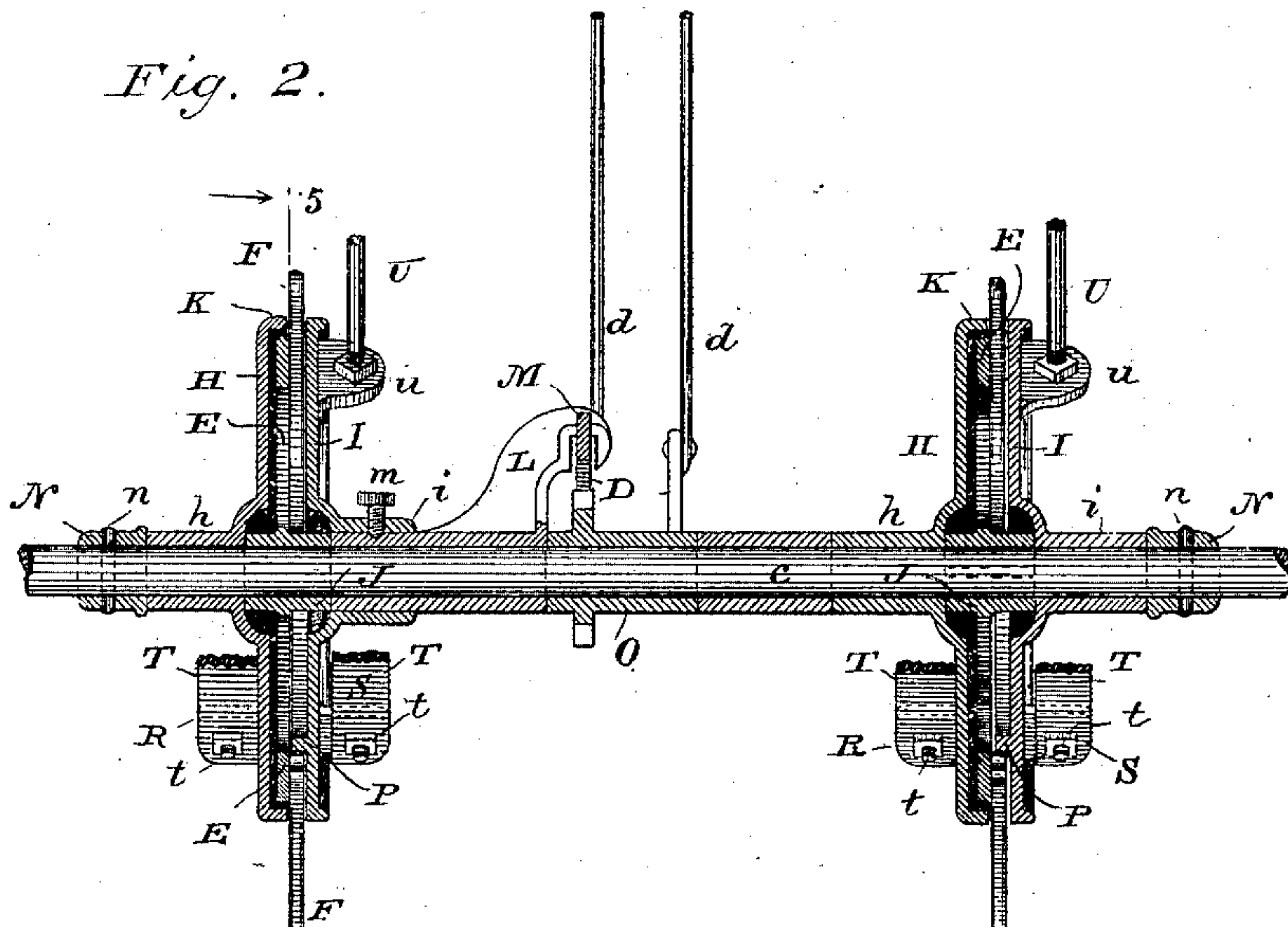


Fig. 4.

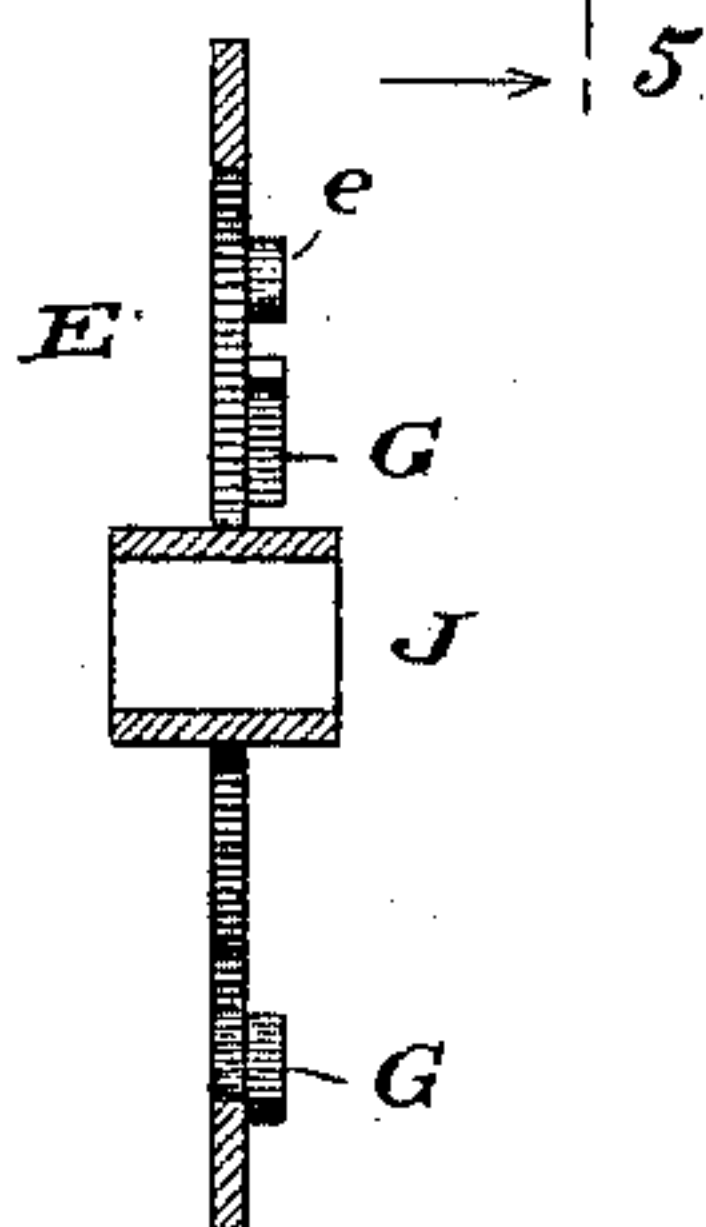


Fig. 3.

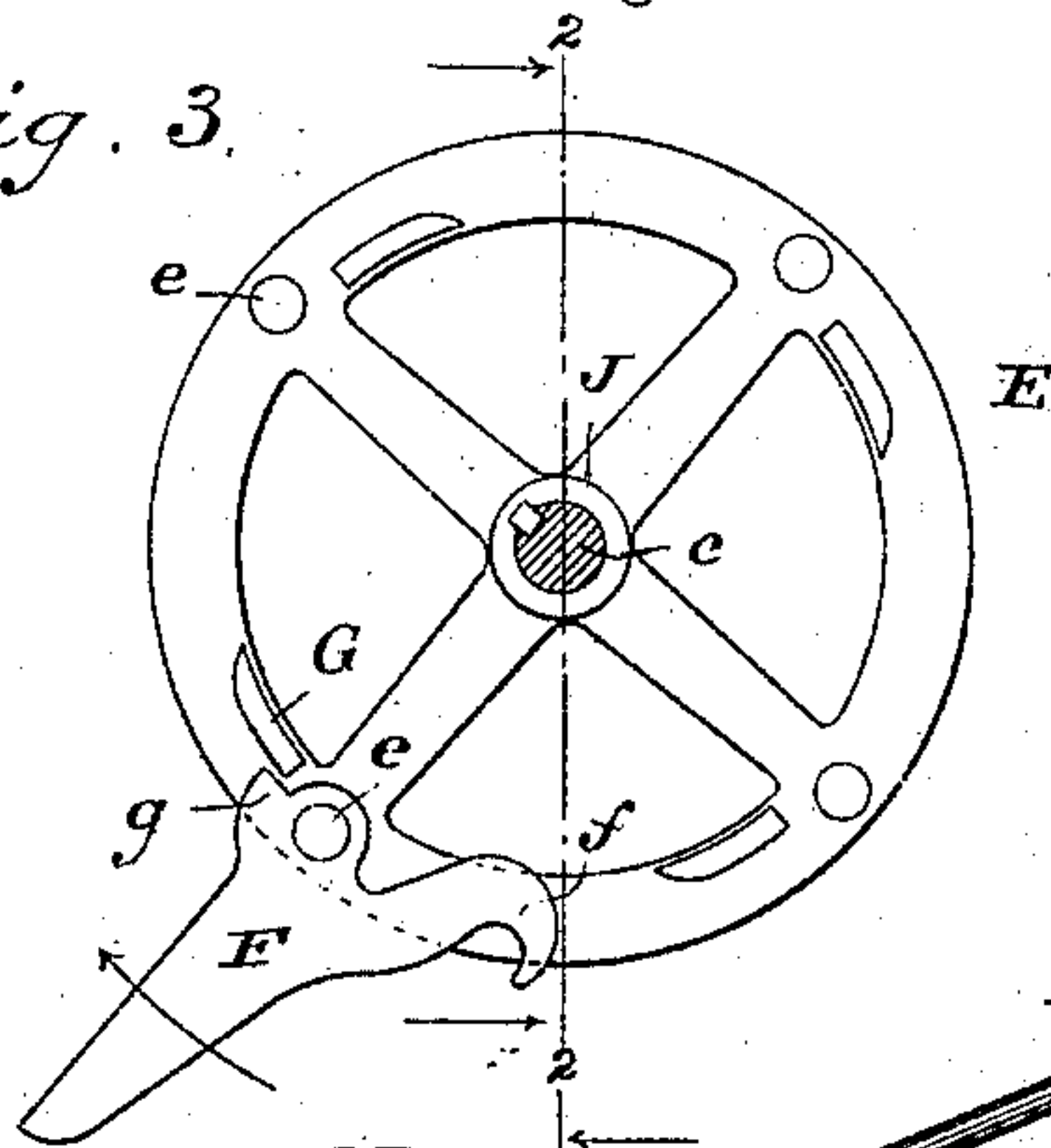


Fig. 6.

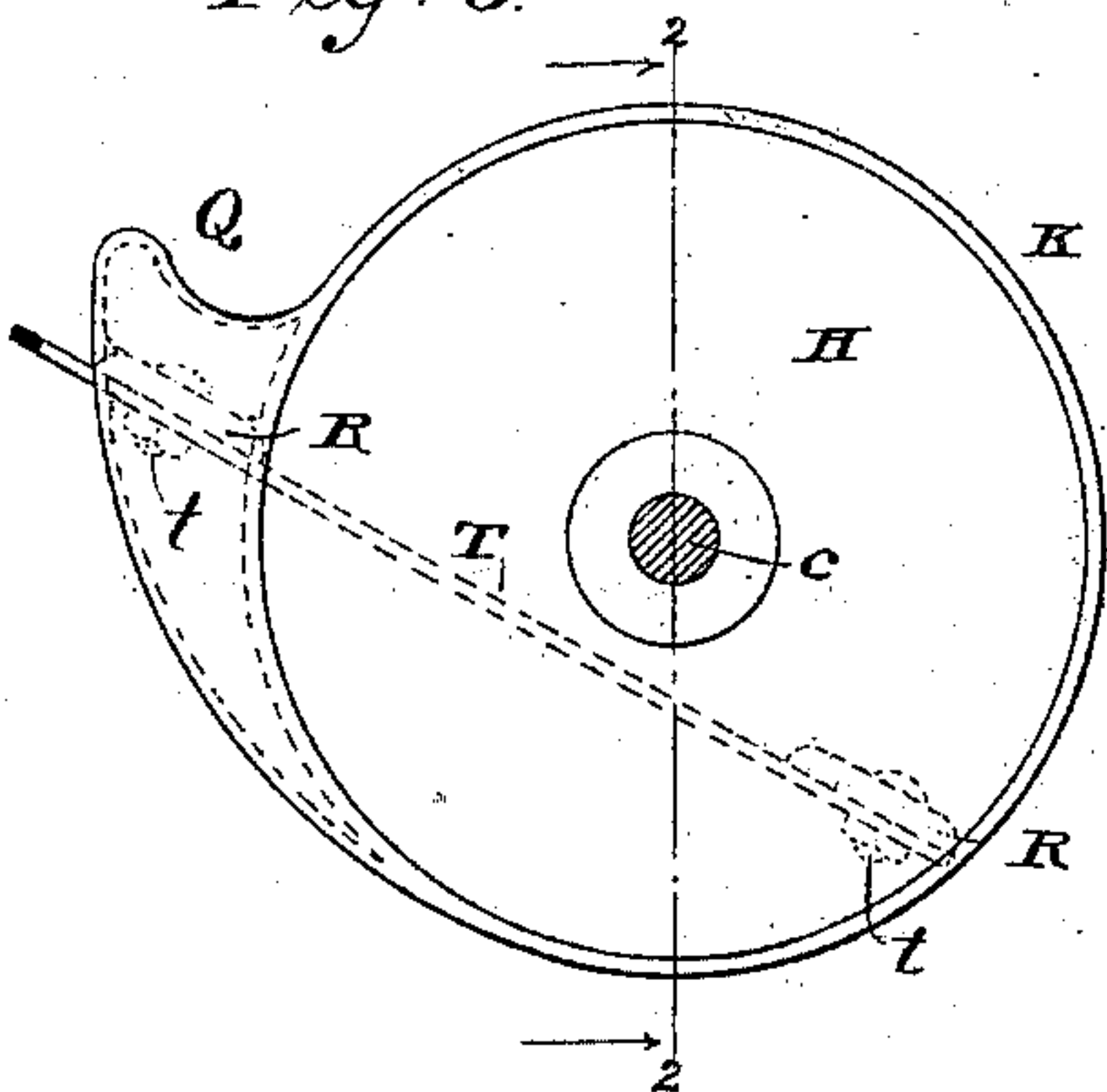
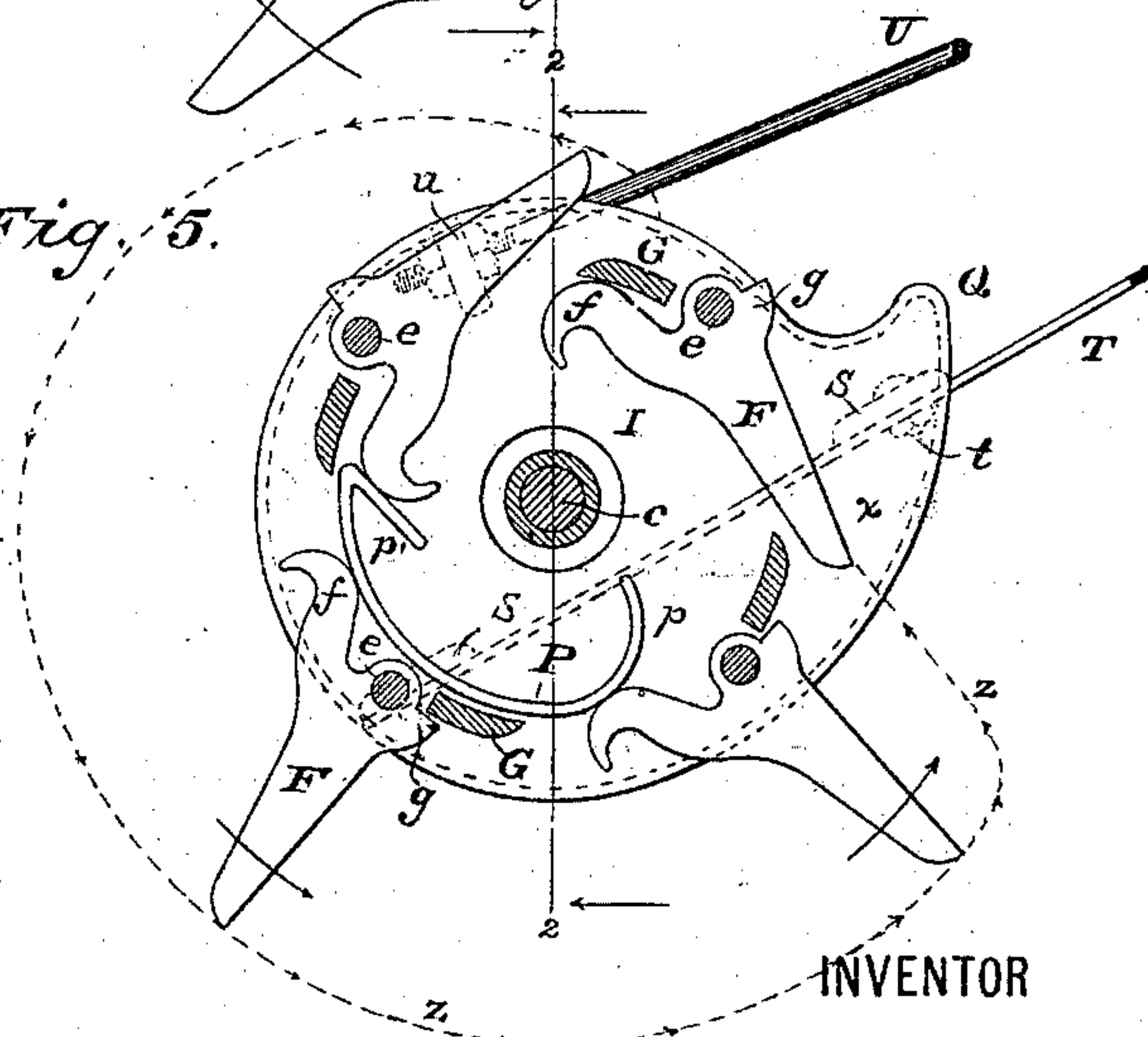


Fig. 5.



WITNESSES

Wm A. Sinkler
Henry A. Lamb

INVENTOR

By his Attorneys John S. Davis
Galdwin, Hopkins & Weston.

UNITED STATES PATENT OFFICE.

JOHN S. DAVIS, OF TOLEDO, OHIO, ASSIGNOR TO THE TOLEDO MOWER AND REAPER COMPANY, OF SAME PLACE.

GAVELING MECHANISM FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 283,866, dated August 28, 1883.

Application filed May 25, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. DAVIS, of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Gaveling Mechanism for Grain-Binders, of which the following is a specification.

My invention mainly relates to improvements applicable to platform-binders for packing the grain in gavels in binding-receptacles, and especially adapted for use in connection with binders, such as shown in sundry Letters Patent of the United States heretofore granted for my inventions. Particular reference is made to United States Letters Patent No. 274,441, dated March 20, 1883. Such features of a fully-organized binder as may be needed to convey a proper understanding of my present invention, as preferably embodied, are shown and described, or else referred to, in said Patent No. 274,441.

In the accompanying drawings, Figure 1 is a view partly in rear elevation and partly in vertical section, showing those features of a binder with which my improvements have connection. Fig. 2 is a view partly in side elevation and partly in section on the lines 2 2 of other figures. Fig. 3 shows the rotary packer carrier or wheel detached from its shaft with one of the freely-pivoted packer-arms in place. Fig. 4 shows the packer-wheel in section. Fig. 5 is a view partly in front elevation and partly in section on the line 5 5 of Fig. 2. Fig. 6 is a view as seen from the inner side of one of the casing-disks or cover-plates of the packer-wheel detached.

A binder-arm, A, its suitably-actuated rock-shaft *a*, a gavel-actuated trip-arm, *b*, and co-operating mechanism for starting the binding mechanism, a binding-receptacle, B, a grain passage-way, C, leading thereto from the endless carrier of the grain-platform, a suitably-operated rotary packer-shaft, *c*, grain-parting arms D D, loosely mounted on this shaft, and their attached curved rods *d d*, together constituting a passage-way cut-off and gavel-isolating mechanism, and a rack-bar for actuating said mechanism from the binder-arm, are all similar to or substantially the same as heretofore-employed devices. (See my prior patents.)

Instead of providing the rotating packer-

shaft *c* with rigidly-connected packer-arms, as in my formerly-patented improvements, I now provide packer-arms of the pivoted type, and so construct the packing mechanism as to guard against entanglement of stalks of grain therewith. Furthermore, the packer-shaft is maintained at a fixed distance from the binder-arm shaft by a bracing connection between these shafts, so as to prevent the springing of the packer-shaft by the expansive pressure on the packer-arms of the accumulated grain, which spring of the packer-shaft has heretofore occasionally interfered with the proper co-operation of the parting-arms of the gavel-isolating mechanism and the binder-arm. Any desired number of packer-arms are provided. In this instance there are eight arms in two sets or groups of four each. These sets are exactly alike, and in describing the packing mechanism detailed description of one set of arms only is needed.

Two rotary packer carriers or wheels, E E, are removably secured at a suitable distance apart, by keys or otherwise, upon the packer-shaft. Each wheel carries a set of packer-arms, F, which are loosely pivoted, at equal distances apart, close to the periphery of their wheel by pivot-studs *e*. Each arm F has a curved-ended heel-projection or controlling-lug, *f*, projecting from one side, near its pivot, and on the opposite side of its pivot has a shoulder or ear, *g*. Short ribs or stop-projections G are provided on the carrier-wheels. There is one such stop G for every packer-arm, arranged close to its pivot-stud *e*, so as to be borne against by the stop-shoulder *g* or the heel-lug *f*, as further on to be explained.

At the opposite sides of each packer-carrier E there are provided circular casing-plates or packer-protecting disks H and I. These plates are loosely mounted on the packer-shaft by sleeve-hubs *h* and *i*. Each carrier is provided with a hub, J, of a length sufficient to keep the centrally dished and hubbed disks at the proper distance apart to leave a space between them to accommodate the packer-arms. Each plate H is formed with a peripheral flange, K, inclosing and protecting the carrier-wheel, and between this flange and the opposite surface of the disk I a peripheral space is provided, by way of which the pack-

er-arms are projected beyond and withdrawn within their sectional casing, as further on to be explained.

In order that the guide-lug L for the rack-
5 bar M may be readily secured in place by the same fastening which secures one of the plates I in the desired position relatively to the adjacent packer-carrier, the sleeve of this guide-lug, fitting loosely about the packer-shaft, extends into the sleeve or hub of the plate, abuts
10 against the hub of the carrier, and is secured to the plate-hub by a set-screw, *m*. The packer-shaft between the guide-lug L and the rear-most one of the casing-plates H is protected
15 by loose sectional sleeving, and in front and rear of the packing-casings short sleeves N N, removably secured to the packer-shaft by cross-pins *n n*, abut against the hubs of the front plate, H, and rear plate, I, respectively,
20 of the two casings for the packer-arms. The sleeve-section O carries the parting-arms D D of the gavel-isolating and passage-way cut-off mechanism. The plates H and I are prevented from turning about the packer-shaft,
25 as further on will be explained, and each plate I is provided with a cam, P, shown as formed with it by a rib having the somewhat abrupt inward curve at its heel or lowermost end, *p*, beneath the packer-shaft, and with the downwardly-projecting angular termination *p'* at
30 its point or upper end.

To assist in the clearing of the packer-arms from the grain after it has been pushed along the passage-way and forced into the receptacle, the plates H I are formed with the cam-
35 shaped lugs or eccentric projections Q at their edges next the receptacle and above the level of the receptacle-bottom. The arms, after they are freed from the action of the cam P, drop and withdraw within the periphery of
40 the eccentric portions of their casings, as further on will more fully be explained.

The sectional casings for the packer-arms are held in place, and the packer-shaft is
45 braced by connection with the shaft *a* in the following way: Side lugs, R R, upon the outer faces of the plates H H, and similar lugs, S S, upon the plates I I, have braces or stay-straps T T, respectively, secured to them by bolts
50 and nuts *t t*. Additional brace-rods U, one for each plate I, are secured by their threaded ends, nuts, and perforated lugs *u* to the plates. The rock-shaft frame tube or sleeve V is provided with lugs *v*, for making connection between the rock-shaft and the outer ends of the
55 straps T and rods U. Only one of these lugs is shown, as the location of the other is obvious. The outer ends, *w*, of the brace-straps curve or bend upwardly after passing beneath the rock-shaft tube and rest against the lugs *v*. These bent ends of the brace-straps are slotted longitudinally. The outer ends of the
60 rods U are threaded, pass through perforations in the lugs *v*, and through the slots of the brace-straps, and the parts are adjustably and detachably secured by means of two nuts, *yy*, and a washer, Y, for each lug.

From the above description it will readily be understood that the various attachments of the packer-shaft may readily be secured in position and removed, and that yield of the packing mechanism in a direction away from the binder-arm shaft is impossible. 70

In operation the packer-arms (rotating in the direction indicated by arrows) are actuated in part by gravity, in part positively, and in part
75 by the pressure of the grain against which they work. Starting with a packer-arm in the position in which the retracted one (marked *x*) is shown in the drawings, it will be understood that its controlling-lug or heel-projection, when first presented to the cam P, is acted upon by the angular end *p'* thereof and the arm thus quickly projected from the casing. During the time the heel-lug bears against the cam
80 the arm is held in position to act on the grain. During the time the heel-lug is held by the pressure of the grain against the curved end *p* of the cam the arm is being gradually withdrawn from contact with the grain and into its casing, as will be understood by inspection of Fig. 5, in which the path of the points of the arms is indicated by the dotted line *z*. During the times the packer-arms are retracted, so as to be within their casings at their points, their
85 heel-arms bear against the stops G, and are thus held in position to be directed by the revolution of the carriers to the cam, as above explained. 90

I am well aware that it is not new to provide rotating pivoted packing arms or teeth, nor to combine with such arms controlling mechanism for retracting and projecting them, and therefore I do not broadly claim either the arms or their combination with controlling mechanism. Neither do I wish to be understood as confining my invention to precise details of construction and arrangement, as hereinbefore particularly described, nor to the employment of all features of my invention, as some of my improvements may be used without others, and essential and novel features thereof be employed in connection with machines differing from that herein described. 100 105 110

I claim as of my own invention— 115

1. The combination, substantially as hereinbefore set forth, of the packer-shaft, the packer-carrier, the packer-arms freely pivoted to the carrier, the open-peripheried sectional packer-casing, supported on the packer-shaft, and means for controlling the vibrations of the packer-arms, for the purpose described. 120

2. The combination, substantially as hereinbefore set forth, of the rotary packer-shaft, the packer-carrier, the stationary sectional packer-casing, open at its periphery, the freely-pivoted packer-arms, and means by which they are projected from their casing to act upon the grain and then allowed to gradually withdraw within the casing, for the purpose described. 125 130

3. The combination, substantially as hereinbefore set forth, of the packer-shaft, the packer-carrier having the stops, the stationary

open-peripheried sectional casing, the cam carried by one section of the casing, and the freely-pivoted packer-arms having controlling-lugs and stop-shoulders operating in connection with the casing-cam and the carrier-stops, for the purpose described.

4. The combination, substantially as hereinbefore set forth, of the packer-carrier, the packer-arms, the plates constituting the stationary sectional packer-casing supported on the packer-shaft and having the eccentric edge projections, and means for controlling the vibrations of the packer-arms, for the purpose hereinbefore set forth.

5. The combination, substantially as hereinbefore set forth, of the rotary packer-shaft, the shaft of the binder-arm, and the bracing connection between said shafts, for the purpose described.

6. The combination of the packer-shaft, the packer-casing, the frame tube or sleeve of the binder-arm shaft, and the braces connecting the packer-casing and frame-tube, substantially as and for the purpose hereinbefore set forth.

7. The combination of the packer-shaft, the packer-casing plates H I, the shaft of the

binder-arm, its frame-tube, the lug thereon, and the braces T T and rod U, connected to the casing-plates and secured to the lug, substantially as and for the purpose hereinbefore set forth.

8. The combination, substantially as hereinbefore set forth, of rotary packing mechanism, the parting-arms, the binder-arm, its shaft, and means by which the packing mechanism is braced from the binder-arm shaft, for the purpose described.

9. The combination, substantially as hereinbefore set forth, of rotary packing mechanism, its casing supported on the packer-shaft, the cut-off and gavel-isolating mechanism, also supported on the packer-shaft, the binder-arm and its shaft, with which the casing on the packer-shaft has bracing connection, for the purpose described.

In testimony whereof I have hereunto subscribed my name this 21st day of May, A. D. 1883.

JOHN S. DAVIS.

Witnesses:

J. H. SOUTHARD,
ELISHA B. SOUTHARD.