

(No Model.)

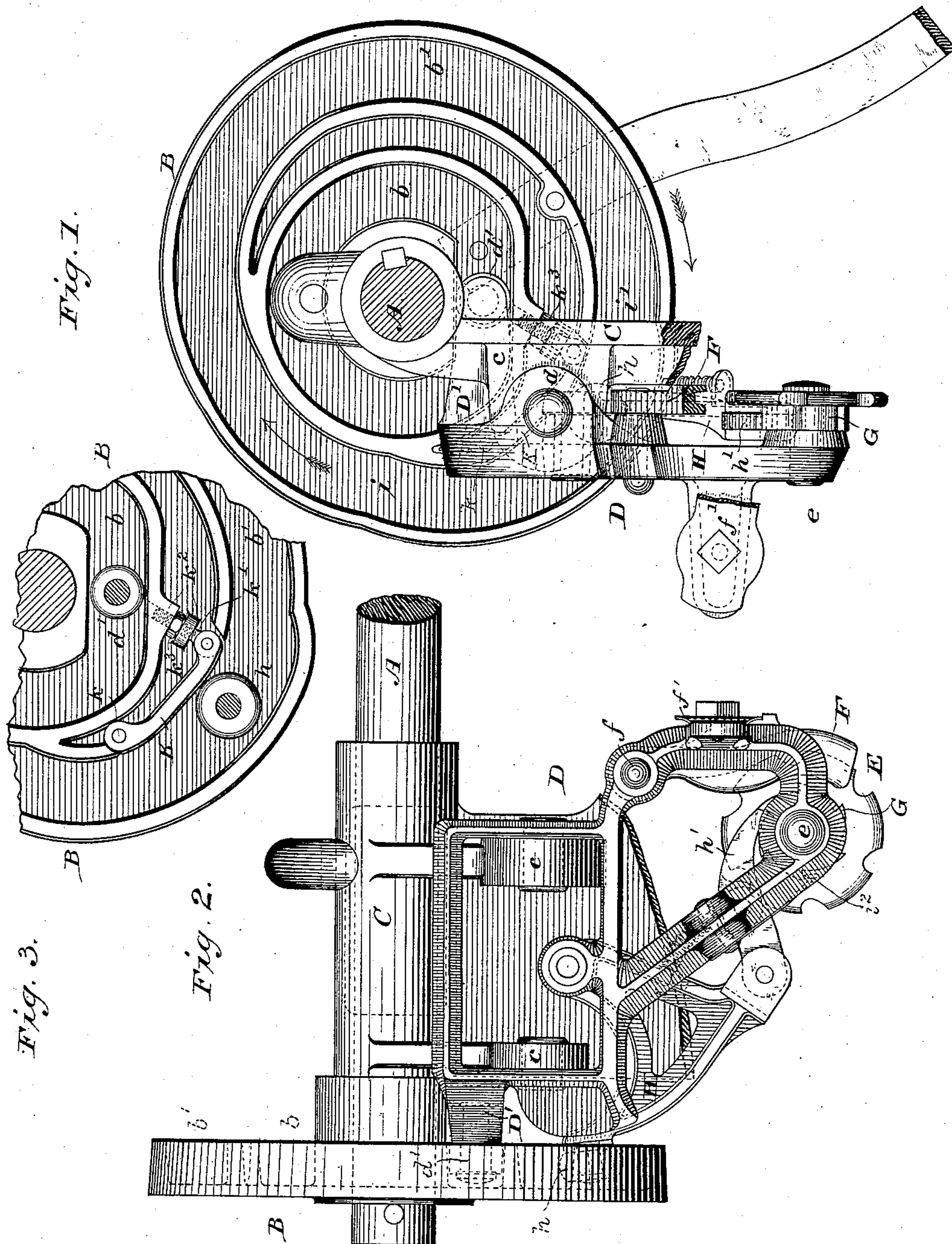
2 Sheets—Sheet 1.

W. R. BAKER.

CORD HOLDER FOR GRAIN BINDERS.

No. 324,353.

Patented Aug. 18, 1885.



WITNESSES

Wm A. Skinkley.  
Alfred C. Newman.

INVENTOR

William R. Baker  
By his Attorneys.

Parkinson & Parkinson

(No Model.)

2 Sheets—Sheet 2.

W. R. BAKER.

CORD HOLDER FOR GRAIN BINDERS.

No. 324,353.

Patented Aug. 18, 1885.

Fig. 4.

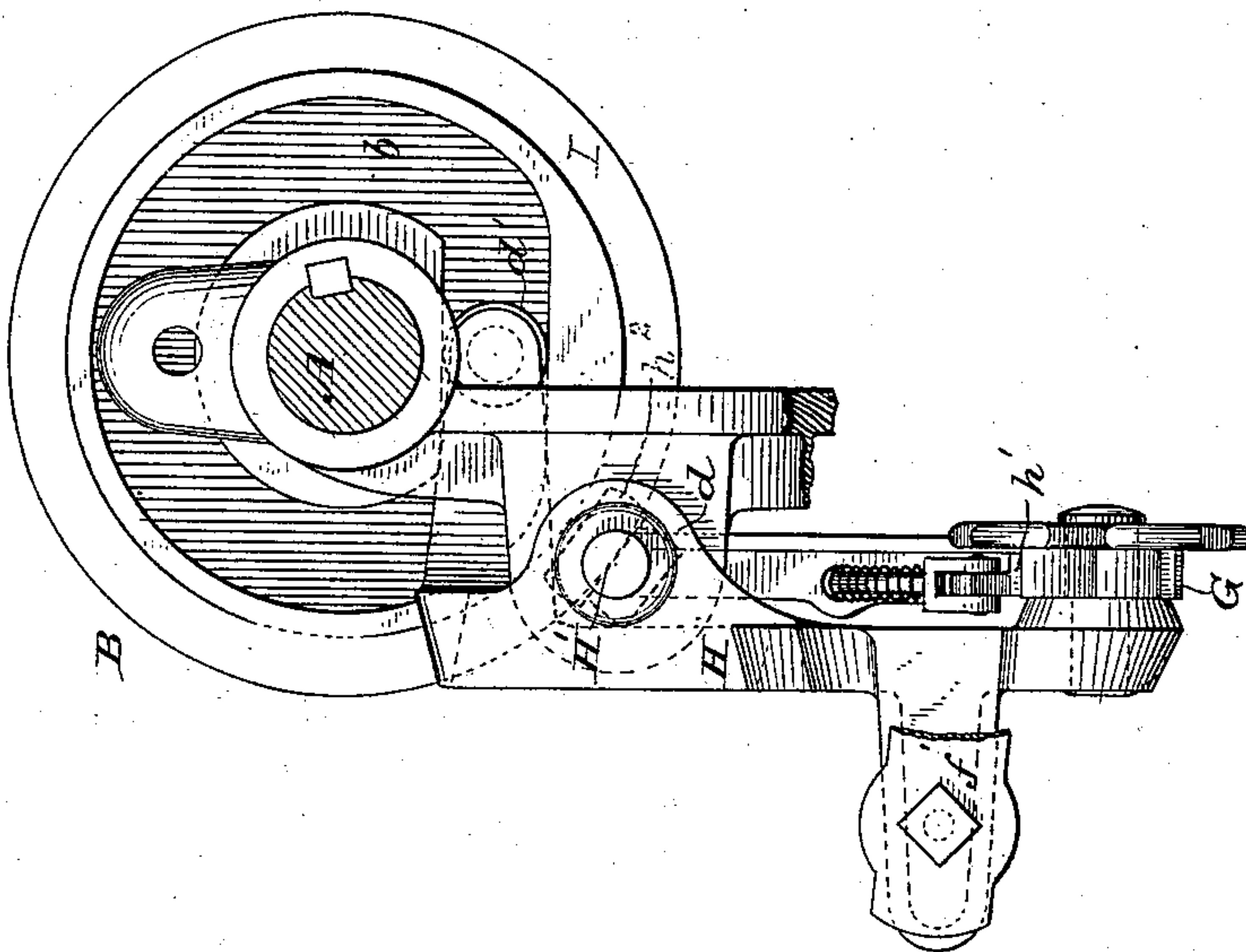
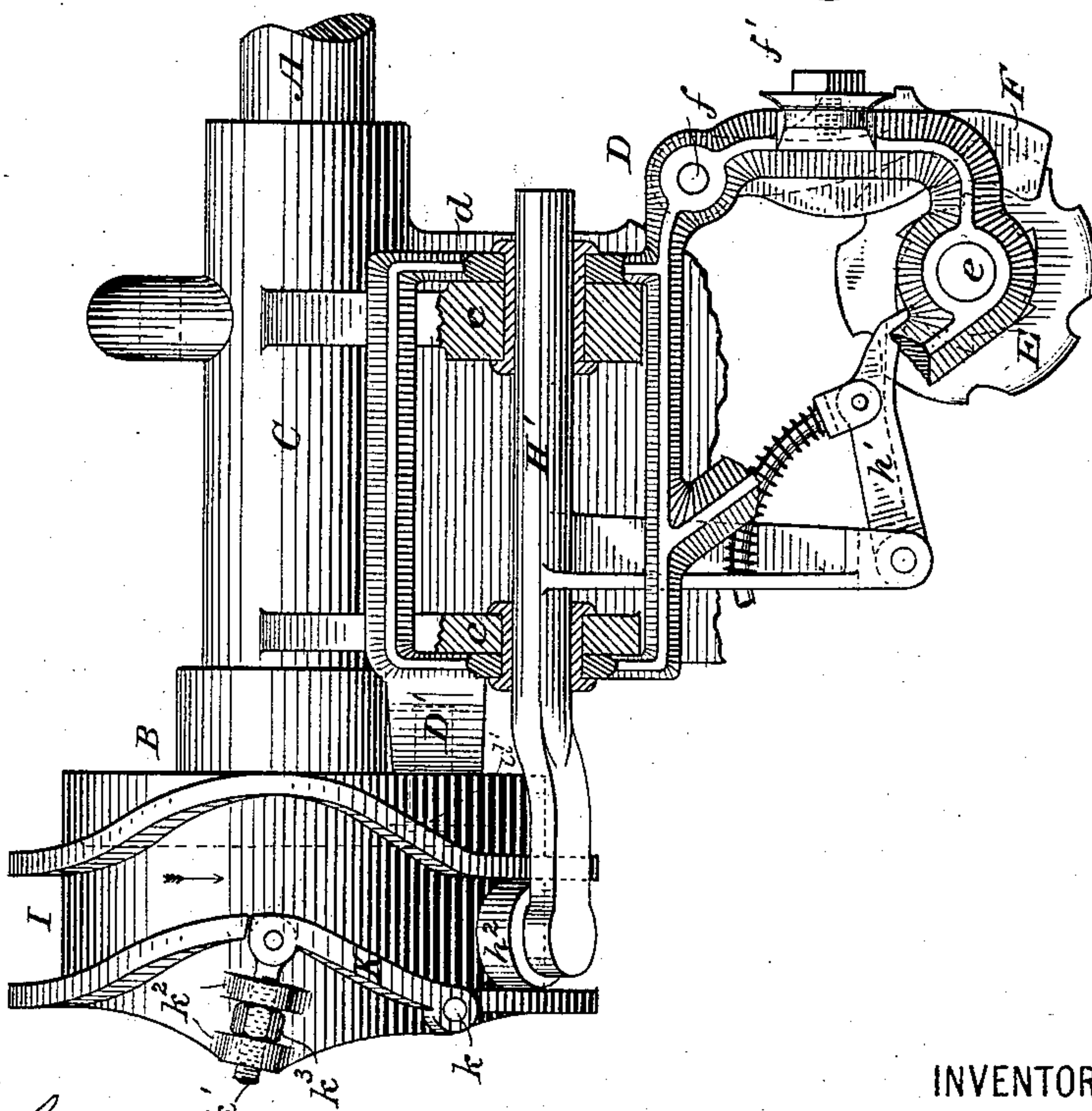


Fig. 5.



WITNESSES

Wm A. Skinkle  
Henry A. Lamb.

INVENTOR

William R. Baker.

By his Attorneys

Parkinson & Parkinson



# UNITED STATES PATENT OFFICE.

WILLIAM R. BAKER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE McCORMICK HARVESTING MACHINE COMPANY, OF SAME PLACE.

## CORD-HOLDER FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 324,353, dated August 18, 1885.

Application filed April 18, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM R. BAKER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful  
5 Improvements in Cord-Holders for Grain-Binders, of which the following is a specification.

Of late years a cord-holder has come into quite general use wherein one or more rotating  
10 disks work against or into a hinged and spring-pressed shoe, the periphery of the disk or disks being notched to receive the strands of the cord and to carry them against and jam or bend them upon or into the shoe. Upon  
15 the hub of the disks, which rotate concurrently and may be integral, is placed a ratchet-wheel, and a pawl is at the proper time operated by suitable mechanism—commonly a cam-track on the face or in the periphery of a revolving  
20 wheel—to carry the disks forward one step or stage sufficient to take a fresh grasp upon the cord. In the course of time the point of the pawl or dog has, according to experience, become worn, and there is other wearing in the  
25 various joints necessitated in the construction of the intermediate connecting mechanism, so that engagement does not certainly take place with the ratchet-teeth, and sometimes there is no operation of the holder to grasp the cord;  
30 but, so far as I am aware, no provision has heretofore been made for remedying this, except the renewal of the worn parts. In what is perhaps at the present day the most widely used form of this holder, its supporting-frame  
35 is pivoted to hangers from a rigid bracket, and a roller upon the heel-extension of the frame follows a cam-track in the face of a wheel, the outline of which track is such that the holder is held stationary during a certain  
40 interval corresponding with the accumulation and encircling of the grain, and is then lifted toward the knotter to yield up slack as this knotter revolves. A second track exterior to the first, and heretofore acting upon a sliding bolt perpendicular to the face of the wheel,  
45 has controlled the rotation of the holding-disks. The various castings and pivots have so far been adapted to this construction that it is undesirable to make any change necessitating alteration in them—at least in establish-  
50 ments of any magnitude and age. My pur-

pose is, so far as possible, while preserving the general outlines of the frame, castings, brackets, and supports of such a construction, to reduce the wear by a reduction in the num-  
55 ber of parts and pivotal points communicating motion from the cam to the holding-disks, and to provide for taking up whatever inevitable wear may be still incurred by so constructing the cam-track that that bearing por-  
60 tion of the track which corresponds with the actuation of the holding-disks may be adjusted to effect an intermediate coacting mechanism, whatever that may be, to a greater extent in proportion as this fails to do its work prop-  
65 erly from the original adjustment.

In the drawings, Figure 1 is a side elevation of a holder, holder-frame, and actuating cam wheel or disk with parts broken away to more  
70 fully expose the mechanism. Fig. 2 is a bottom plan view thereof; Fig. 3, a detail of the cam-disk apart from other mechanism; and Figs. 4 and 5 represent in sectional side elevation and top plan the application of my  
75 invention to a peripheral cam-track.

A is a shaft located above the grain-chute if the binder-arm is pivoted below, or below  
80 said chute if the binder-arm is above, and usually intermittently rotated, such rotation taking place only when a gavel has accumulated  
85 and the mechanism starts to encircle and bind it. A cam wheel or disk, B, is keyed upon this shaft so as to revolve with it, and in its face has cam-grooves  $b b'$ , the tracks in the present instance being in both grooves afford-  
90 ed by the sides or walls thereof.

Sleeved to the shaft on the grooved side of the cam-wheel, or else projecting from one of the bearings of said shaft, is a bracket, C, hav-  
95 ing pendent ears or hangers  $c$ , to which are pivoted upright ears  $d$  from the holder-frame D. The latter has at its inner end an arm,  $D'$ , carrying a pin or roller,  $d'$ , which follows the inner cam-track,  $b$ , and swings the holder-frame upon its pivots, as hereinbefore ex-  
100 plained.

At the outer end of the frame is a notched disk, E, turning upon a vertical pivot,  $e$ , and saddled by a shoe, F, pivoted at  $f$  to an arm or web of the frame, which is preferably and  
105 of necessity, at this point, of skeleton outline.

A spring,  $f'$ , clamped to a pendent lug from



the frame or to any suitable part of said frame, forces the shoe in toward the disk, and causes it to clamp or bend the cord thereover as the disk revolves.

5 Upon the hub of the disk, or upon its pivot-pin if the two turn together as an integral piece, is a ratchet-wheel, G, having in the most approved form—that is, where each notch in the disk serves in turn to receive both  
10 strands of the cord, and the disk is consequently moved one notch to each impulse—just as many ratchet-teeth as there are notches.

Now, in order to rotate the holder-disk, I pivot to the holder-frame, at a point for best  
15 effect as nearly as possible perpendicular to the outer cam-groove, an elbow or bell-crank lever, H, one arm of which is provided with a roller,  $h$ , which takes into and follows said groove, and the other arm has pivoted to it a  
20 pawl or dog,  $h'$ . A curved rod is pin-jointed to the back of this pawl and enters a recess or bore through the adjacent arm of the lever, and about this rod is coiled a spring, which tends constantly to force the pawl away from  
25 the arm and into engagement with the ratchet-wheel.

The cam groove  $b'$ , which the roller  $h$  follows, is of such shape and relation to the part it is to operate that when the roller is  
30 at the point  $i$  in the cam-groove the pawl has fallen behind one of the ratchet-teeth, and the disk has been for some time and is still at rest. From  $i$  to  $i'$  there is what may be termed a "rise" in the track, which  
35 throws the bell-crank lever forward on its pivot, pushing the pawl against the ratchet-tooth, and causing the holder-disk to revolve to bring the next notch in position for the reception of the subsequent strands of cord. At  
40 the point  $i'$  the movement of the disk ceases, and it is retained against retrograde motion by means of a spring-catch,  $i''$ , which drops behind one of the ratchet-teeth. From the point  $i'$  to the point  $i$  the track is upon an in-  
45 ward spiral, gradually withdrawing the bell-crank lever and pawl until the latter drops behind the next tooth and is again in position for action. The effective labor, it will be noticed, is between the point  $i$  and  $i'$ , and espe-  
50 cially in the last half of this portion; and if there is any shortcoming, due to wear or other defect, it will be felt while the roller is passing over this part of the track. Therefore, as suggested in the preamble, I propose to insert  
55 an adjustable section at this point, that can be moved out to insure a proper throw to the bell-crank lever to take up such deficiency. A simple way of doing this is as follows: A portion of the track is removed corresponding  
60 to this effective length, and in its place is inserted a section, K, pivoted at  $k$ , or at the end against which the roller will first come, so as to be flush as to its outer surface with the adjacent portion of the fixed track at that point  
65 and afford no obstacle to the roller as it reaches it. At the other end, also, it shuts in, so as to be flush with that portion of the fixed track

contiguous at said end. At a suitable point—say at this free end—it has pin-jointed to it a short screw-threaded rod,  $k'$ , which passes  
70 through lugs  $k^2$  on the face of the disk, and receives between such lugs a nut,  $k^3$ , whereby it can be adjusted in or out to close this hinged section entirely flush with the adjacent portions of the fixed track, or to raise it relatively  
75 thereto, between the hinge and its free end. As such outward displacement will throw the roller on the elbow-lever toward the opposite wall of the cam-groove, such wall is given an outward bulge along this portion sufficient to  
80 accommodate any anticipated range of adjustment.

I have described but a single form of cam-track. It will be understood, however, that the track, instead of being, as here, perpen-  
85 dicular to the plane of the disk, may be laid upon its periphery, that portion of the track which causes the effective action of the lever or other instrumentality moving the cord-  
90 holder being made adjustable according to the principle explained. One mode of such application is indicated in the last two figures of the drawings. The holder-frame is pivoted  
95 upon a plunger-bolt,  $H'$ , having a lateral arm, to which is pivoted the dog  $h'$ , pressed toward the ratchet on the holder-disk by a spring encircling a curved guide-rod playing through the arm and hinged to the dog, as before. A  
100 roller,  $h^2$ , from the end of the plunger-bolt enters the peripheral cam-track I upon the disk, and is acted upon by the hinged adjustable section K, to project the bolt and cause the dog  
105 to turn the holder-disk. From the end of this section the camway retreats until it has withdrawn the roller and bolt to their starting position, setting the dog for the next impulse, when it becomes straight, and so continues to the foot of the adjustable section.

I do not limit my invention to the particular form of the cam-track or to its location,  
110 nor do I limit said invention to use with a rising and falling cord-holder so far as the adjustable feature of the cam-track is concerned since it may be with equally relative benefit used where the nature of the machine de-  
115 mands a stationary holder.

I claim—

1. The combination, with a cord holder, of an actuating-lever and a cam-track controlling  
120 said lever having an adjustable section corresponding with the effective portion of its track in the impelling movement of the lever, whereby loss by wear may be compensated for.

2. The combination, substantially as here-  
125 inbefore set forth, of the holder-disk, a spring-pressed shoe therefor, a ratchet-wheel upon the hub or pivot of said disk, a driving-pawl, a cam-track upon a rotating wheel, mechanism intermediate between said pawl and track, and  
130 an adjustable section in said track, which causes the impelling movement of the pawl, and whereby wear may be compensated for and the point of the pawl always brought to the same position in its stroke.



3. The combination, substantially as herein-  
before set forth, of the holder-disk, its shoe  
and ratchet-wheel, the pawl engaging with  
said ratchet-wheel, the bell-crank lever to  
5 which said pawl is pivoted, the coiled spring  
between the pawl and bell-crank lever, the  
cam-track receiving a roller from the adjacent  
arm of the bell-crank lever, and the adjusta-  
ble section in said cam-track.

10 4. The combination, substantially as herein-  
before set forth, of the holder-disk, its shoe  
and ratchet-wheel, the pawl engaging with  
said ratchet-wheel and pivoted to one arm of  
a bell-crank lever, the pin-jointed rod and  
15 coiled spring between said pawl and arm, the  
cam-track on the face of the revolving disk,  
into which a roller from the adjacent arm of  
the lever takes, a hinged section in said cam-  
track, the screw-rod pin-jointed to said sec-  
20 tion and passing through lugs on the face of the  
wheel, and the nut on said rod.

5. The combination, substantially as here-  
inbefore set forth, with the cam-track control-  
ling the instrumentalities for revolving the

holder-disk, of the hinged section flush with 25  
the fixed portion of the track at its hinged  
end, and at the opposite end having a screw-  
rod pin-jointed thereto, which rod takes  
through stationary lugs on the face of the cam-  
wheel and receives between such lugs a nut 30  
for its adjustment.

6. The combination, substantially as herein-  
before set forth, of the pivoted holder-frame,  
its vertical arm, the cam-groove in the face of  
the revolving wheel, into which a roller from 35  
said arm takes, the holder-disk pivoted in said  
frame, the bell-crank lever and pawl for oper-  
ating said disk, and a second cam-groove in  
the face of the revolving wheel circumscrib-  
ing the first, into which a roller from the ad- 40  
jacent arm of the bell-crank lever takes, where-  
by the holder-frame is raised and lowered, and  
the cord-holder operated by the revolutions  
of the wheel.

WILLIAM R. BAKER.

Witnesses:

S. C. A. HOLTH,

JOHN V. A. HASBROOK.