

(No Model.)

3 Sheets—Sheet 1.

S. D. LOCKE.
Harvester.

No. 236,503.

Patented Jan. 11, 1881.

Fig. 1.

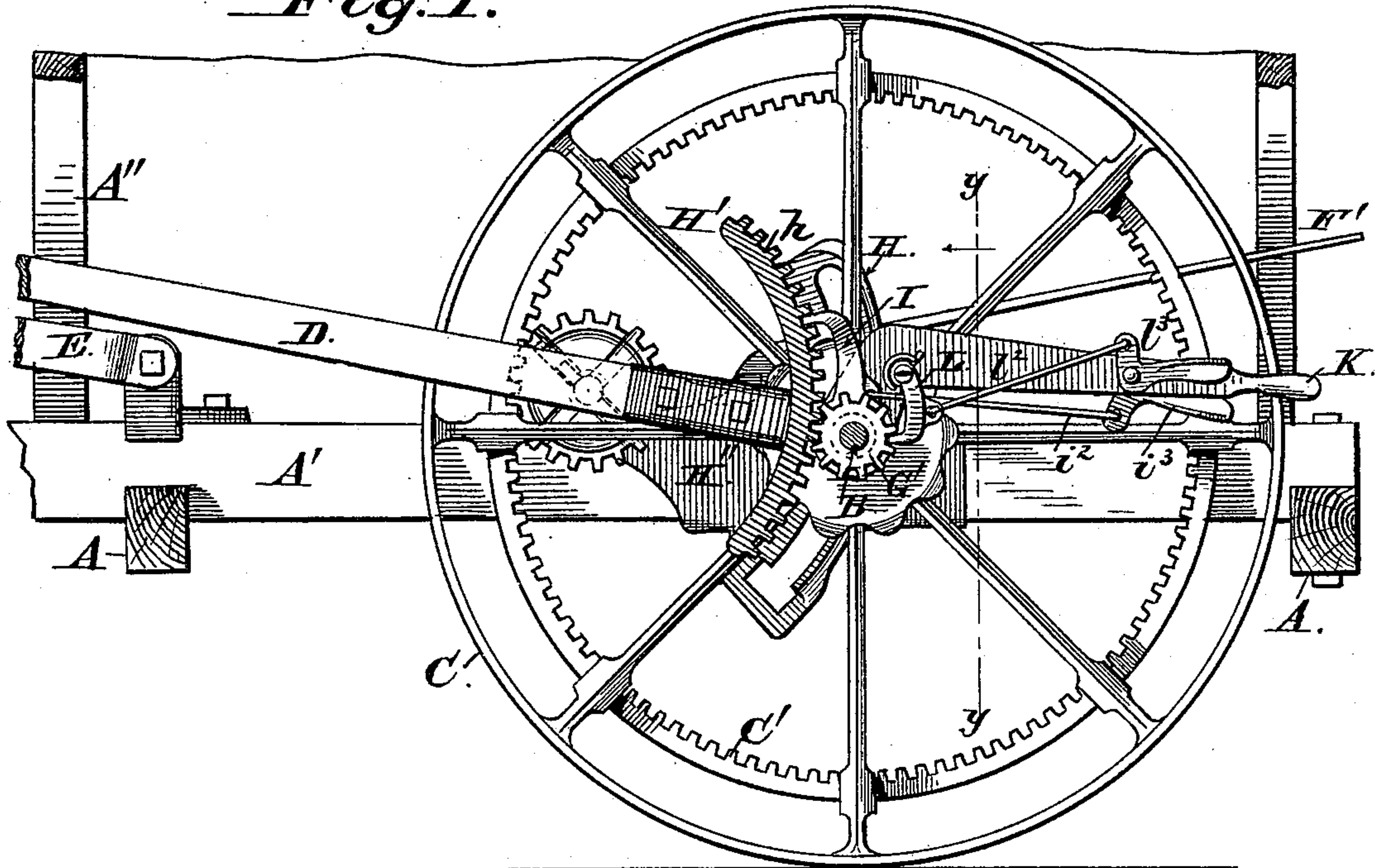
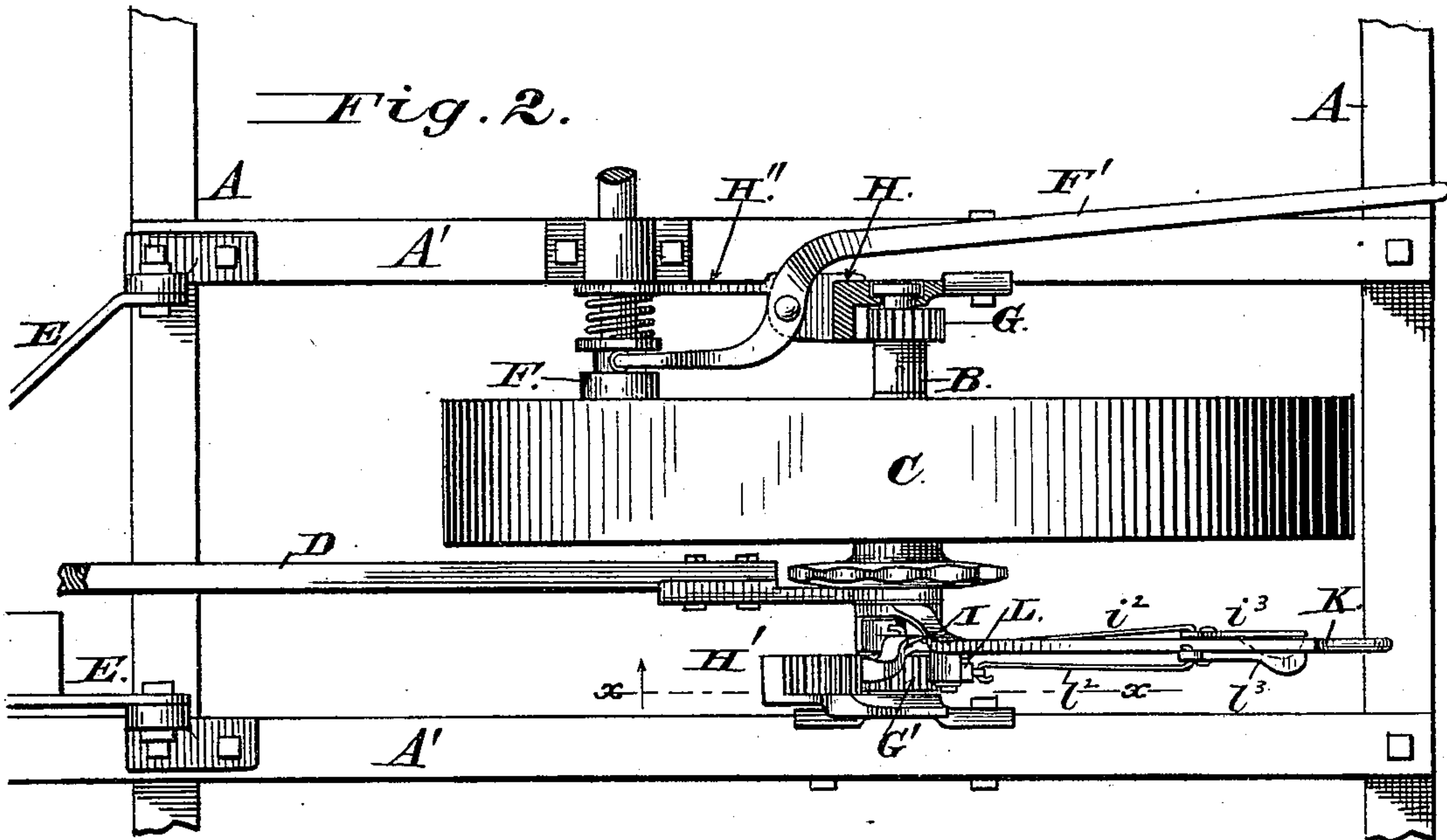


Fig. 2.



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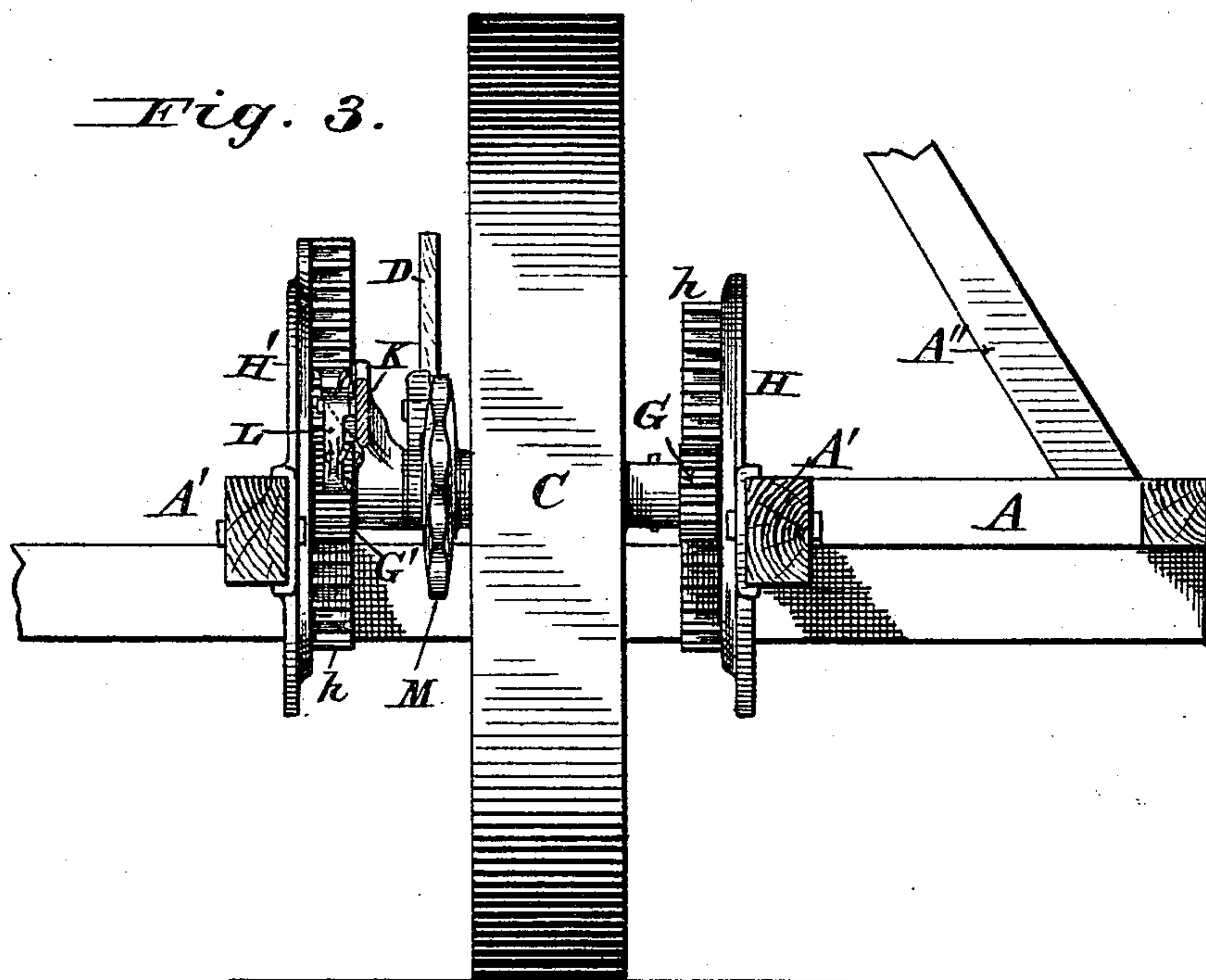


Fig. 5.

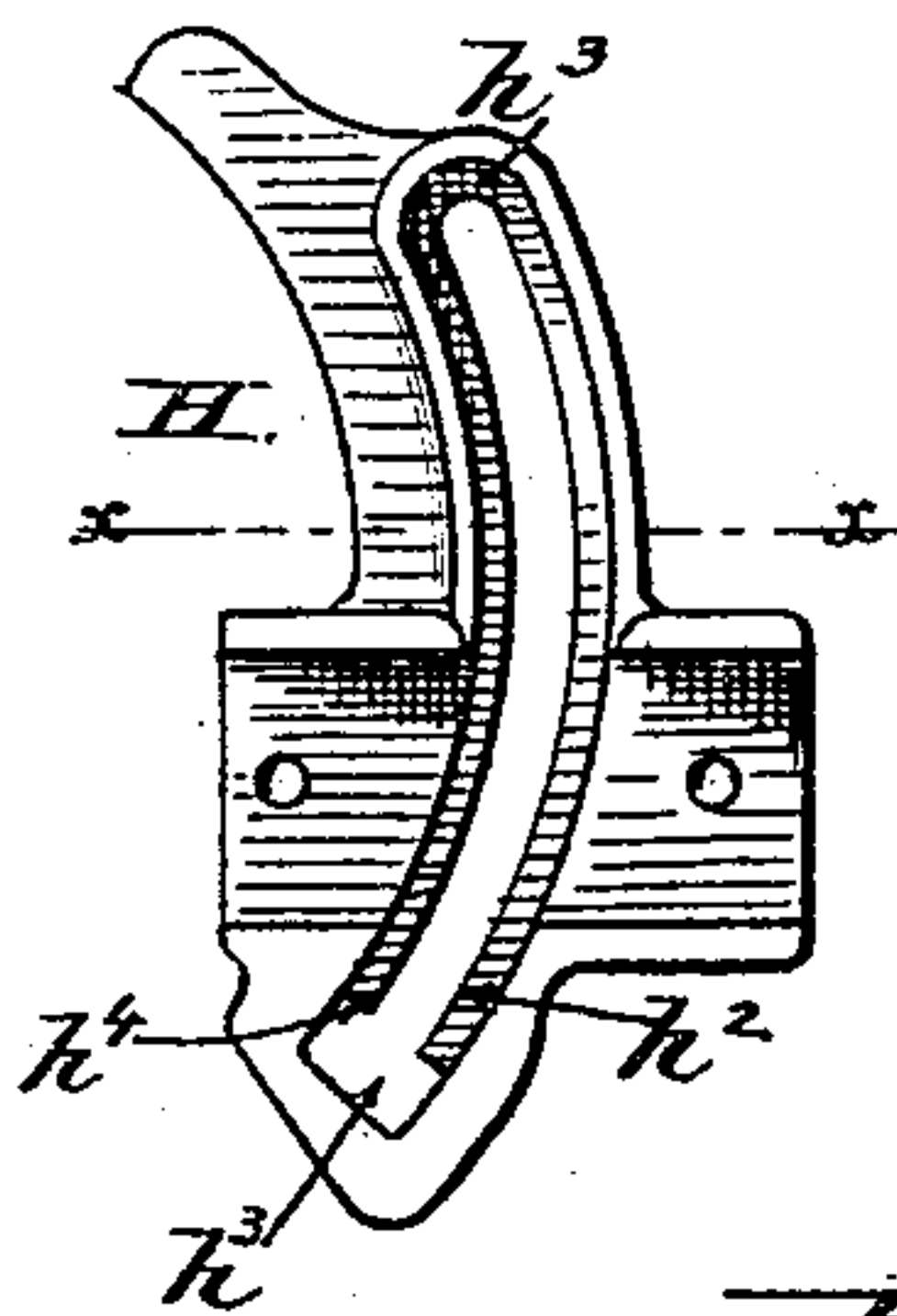


Fig. 6.

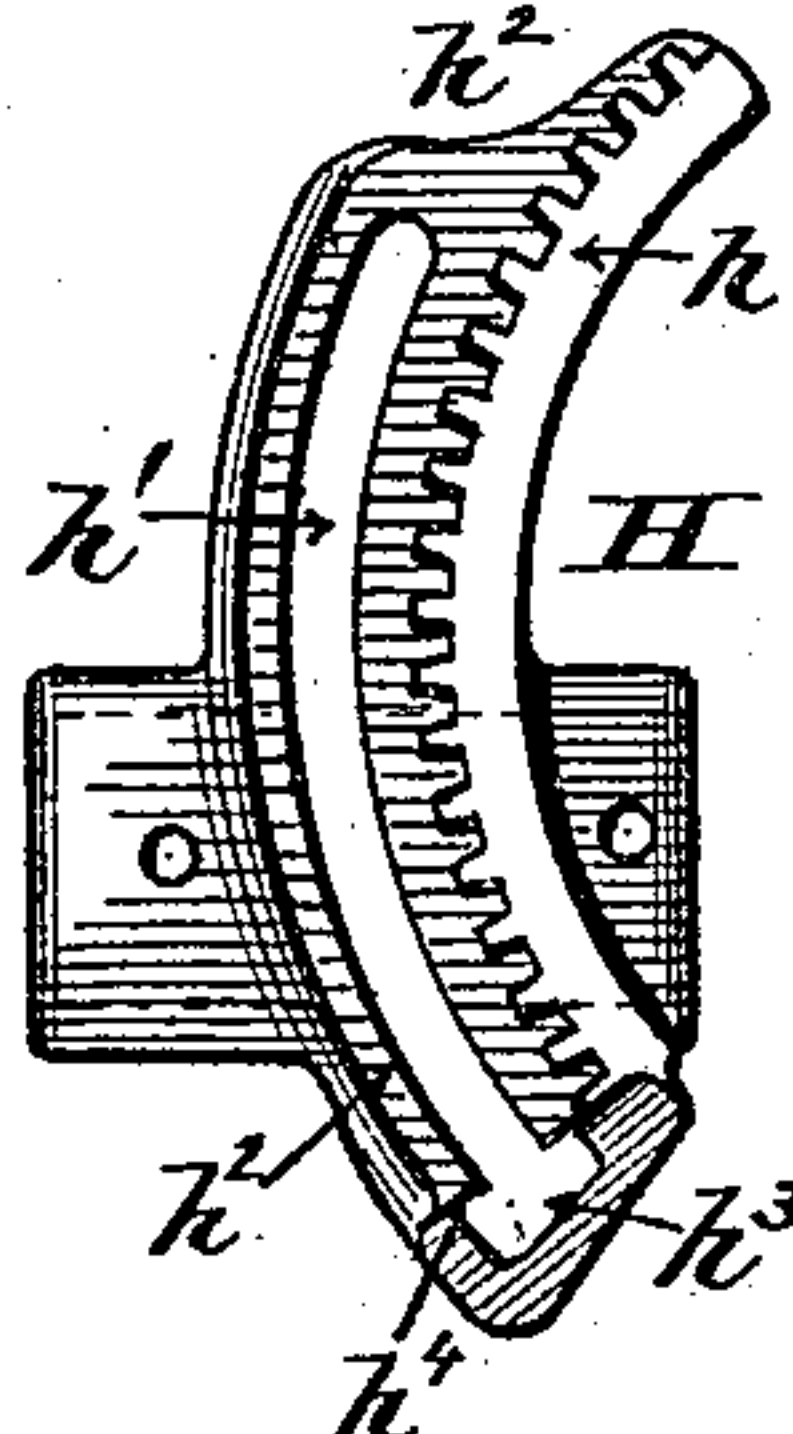
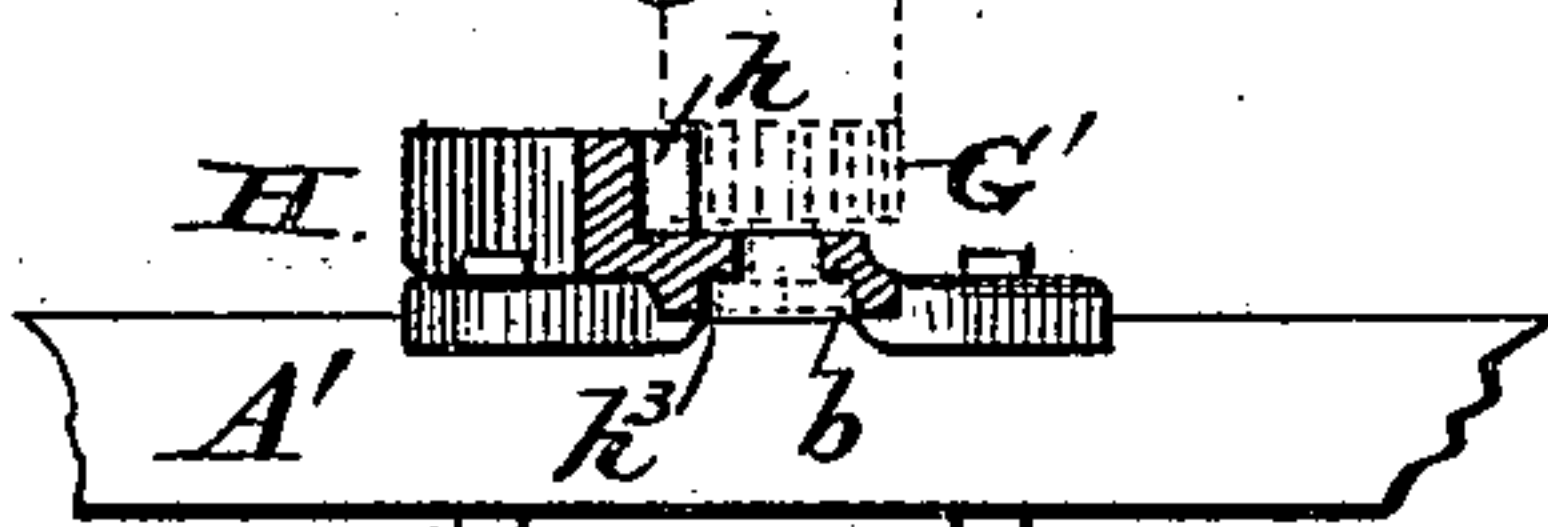


Fig. 7.



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Fig. 4.

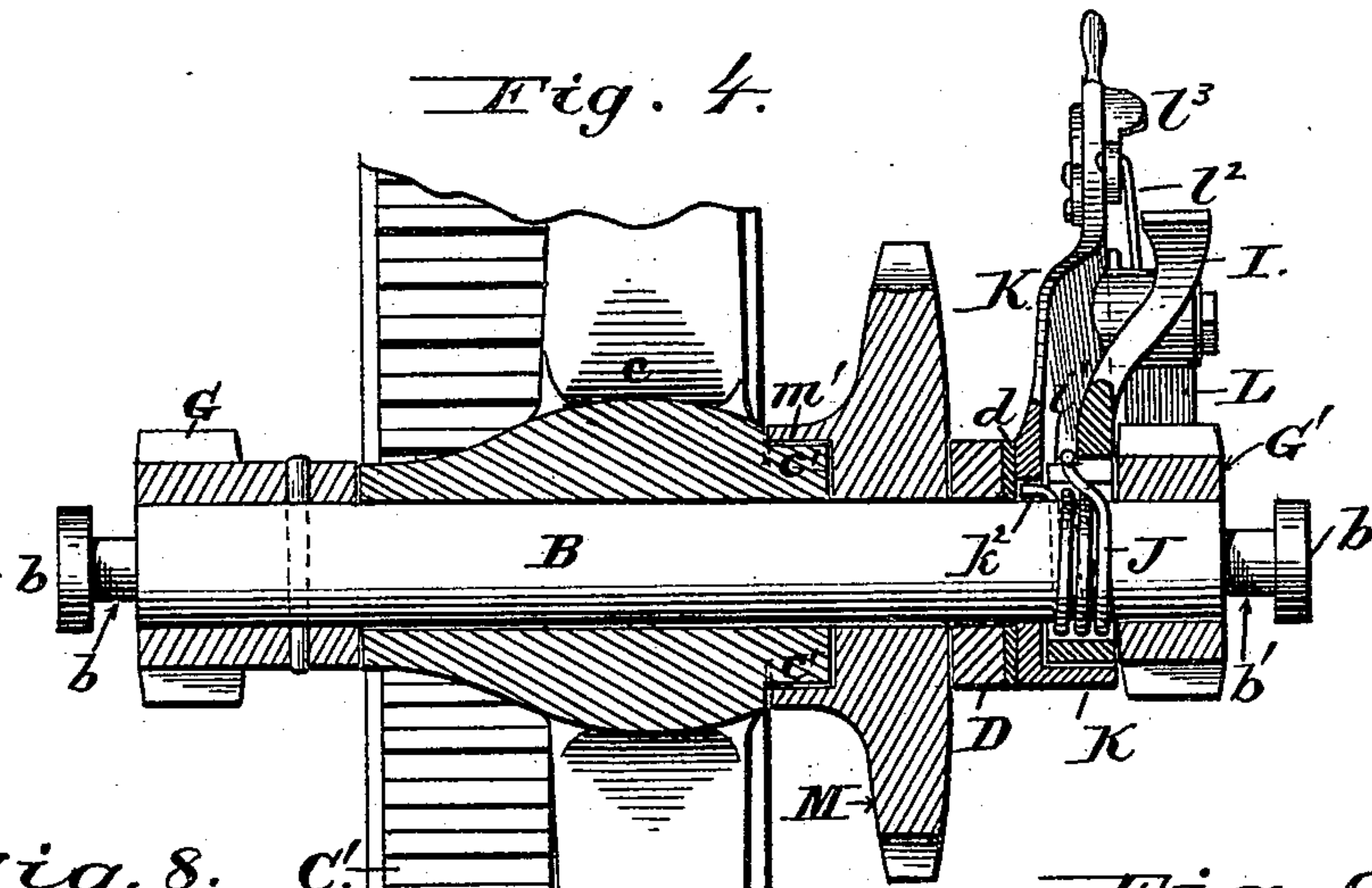


Fig. 8.

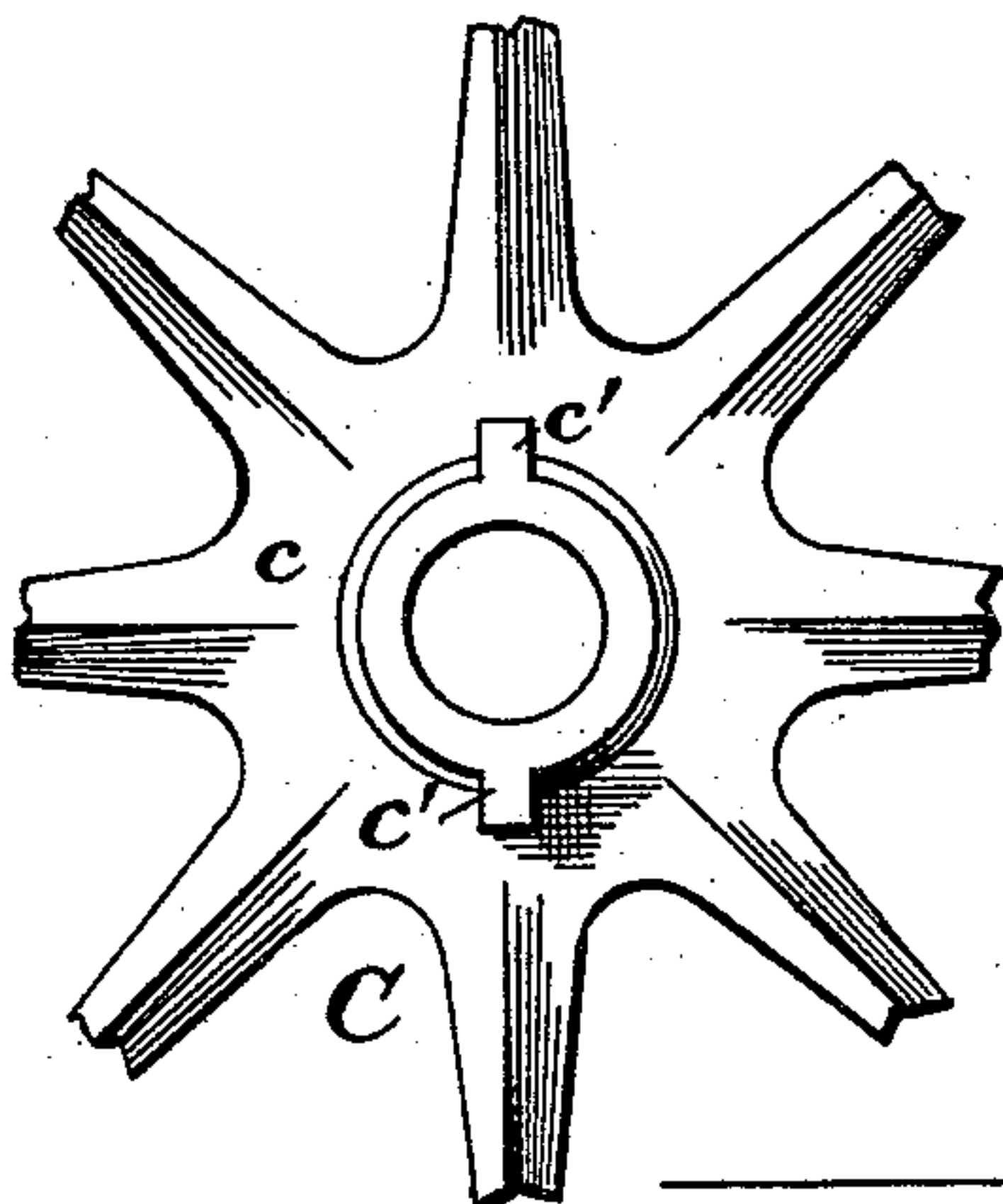


Fig. 9.

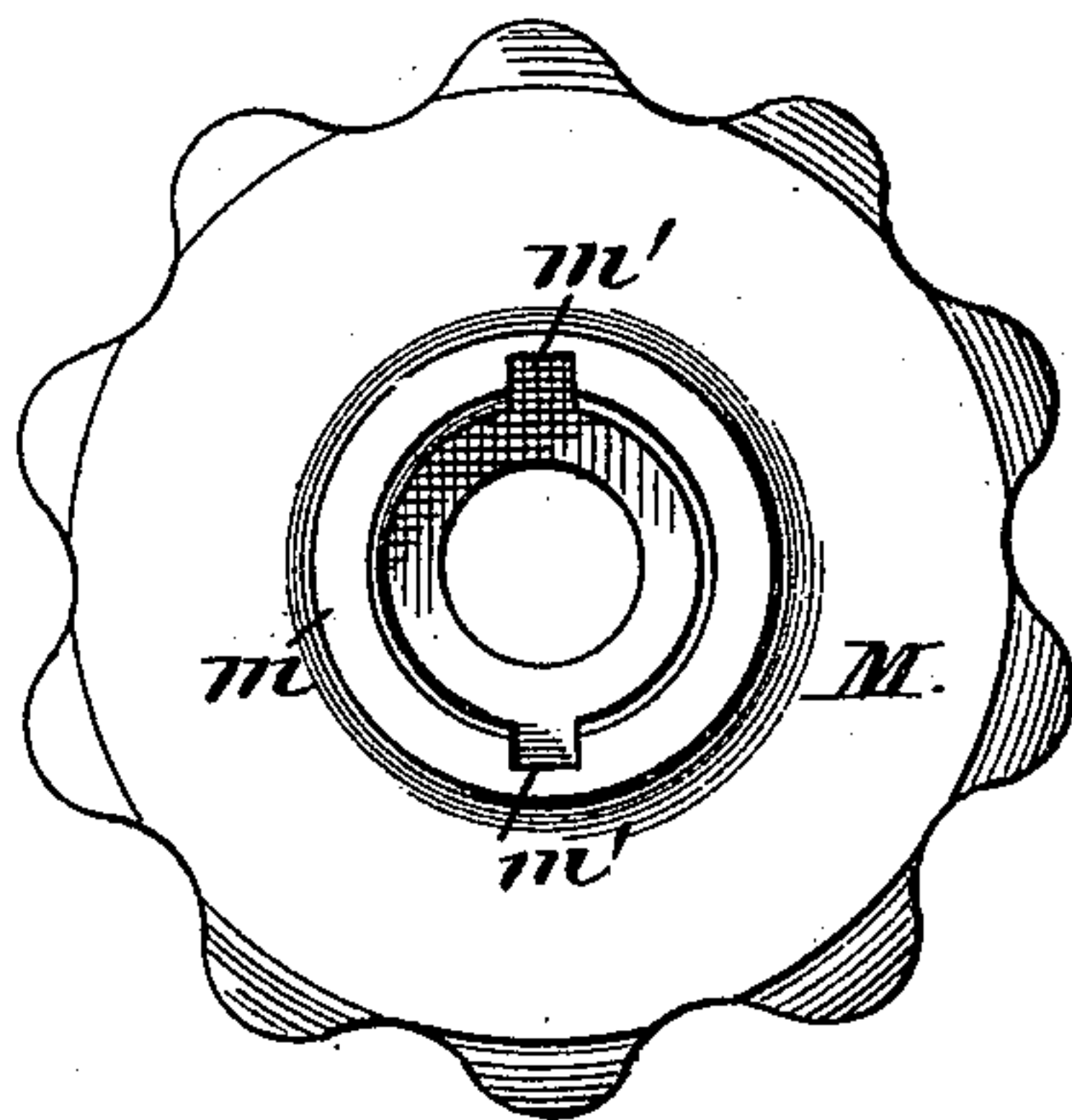


Fig. 10.

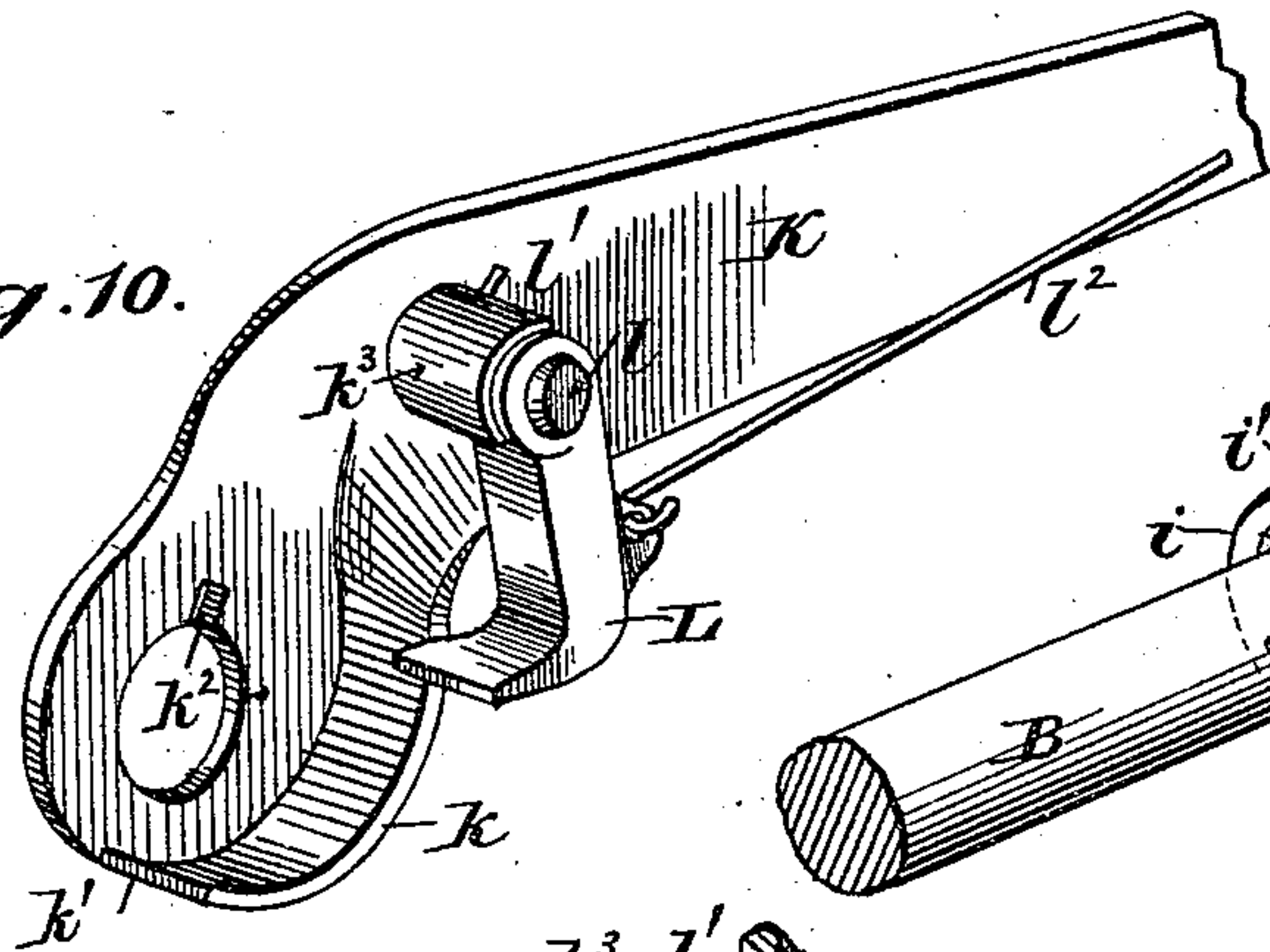


Fig. 11.

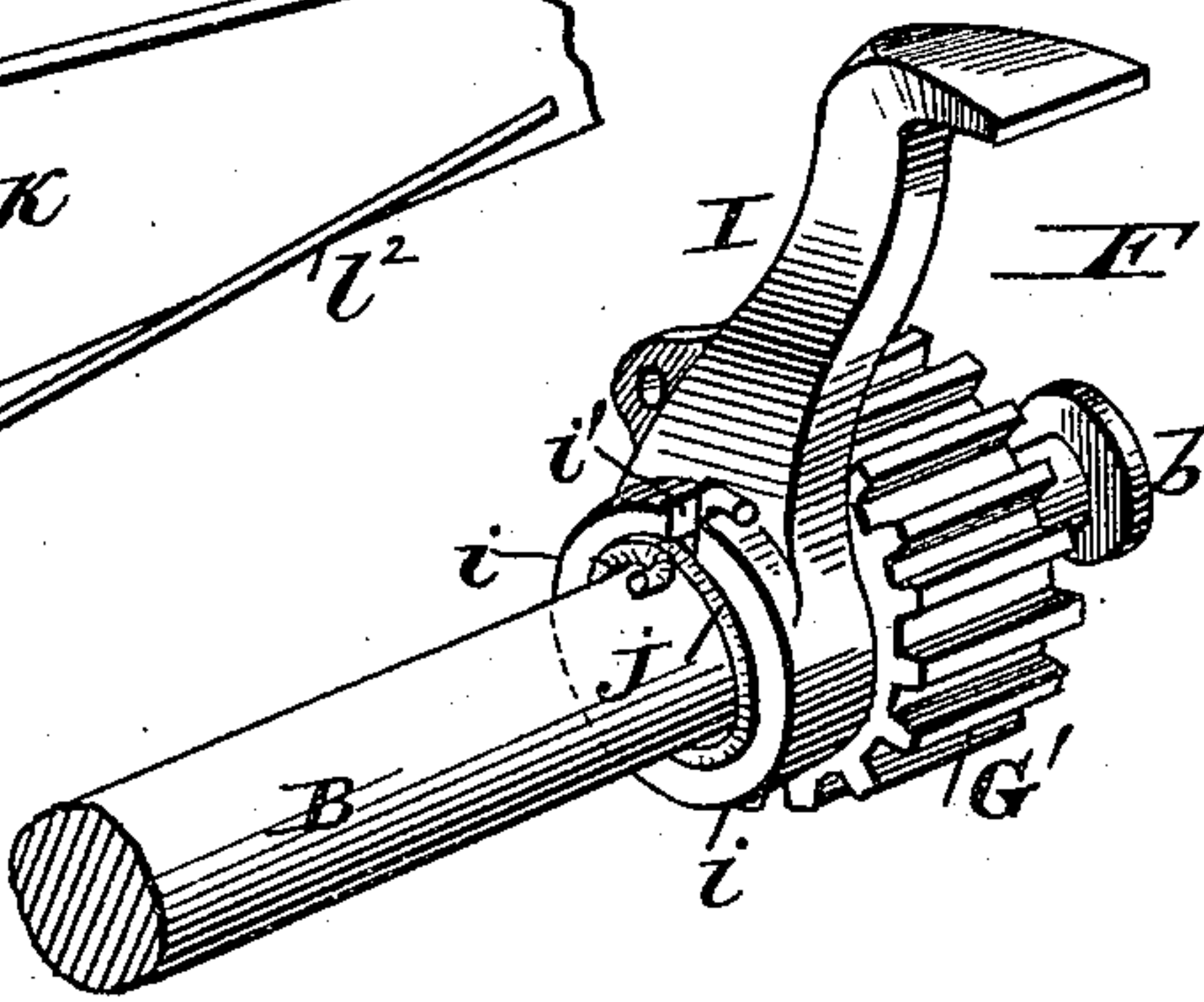
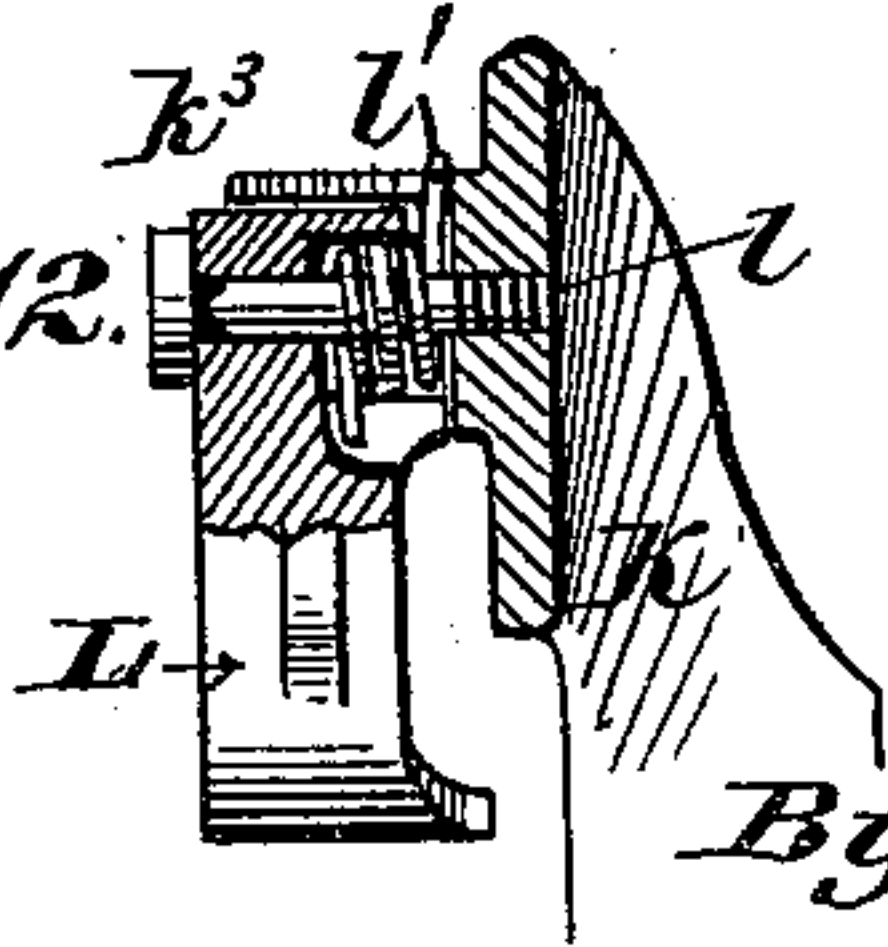


Fig. 12.



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UNITED STATES PATENT OFFICE.

SYLVANUS D. LOCKE, OF HOOSICK FALLS, NEW YORK.

HARVESTER.

SPECIFICATION forming part of Letters Patent No. 236,503, dated January 11, 1881.

Application filed July 27, 1880. (No model.)

To all whom it may concern:

Be it known that I, SYLVANUS D. LOCKE, of Hoosick Falls, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Harvesters, of which the following is a specification.

In order to raise and lower or adjust the height of the main frame of harvesters or mowers to vary the height of cut, the axle of the main or driving wheel is generally made movable up and down relatively to said frame upon an arc concentric with the pinion driven by the wheel, and so as to be firmly locked or held at any given point. One of the most convenient and reliable forms of securing this adjustment is exemplified in the patent granted Henry A. Adams, November 4, 1873, numbered 144,179, reissued June 29, 1880, No. 9,268, in which the axle is provided at each end with pinions keyed thereto and taking into segmental racks on the main frame, so as to move up or down co-ordinately, and is held in position by dogs mounted upon it, so as to take into the racks at any point and prevent the descent of the main frame. In Letters Patent No. 156,804, granted me November 10, 1874, a similar construction is shown, except that the locking is effected by pins passing through the rack-plate and axle instead of by dogs.

In practice any suitable means to prevent the rotation of the pinions and axle under the weight of the frame which they support has been found to serve efficiently as a locking device, whether applied at both ends of the axle or at one only, since one end of the axle cannot sag unless its pinion turns, and one pinion cannot turn without the other.

My invention relates particularly to adjusting devices of the above character; and it consists in the provision of mechanism readily controlled by the attendant and at all times in position for use, whereby the axle may be raised or lowered relatively to the main frame, or the frame which it supports, with ease and celerity, without regard to whether the machine is or is not in action; and in various combinations and details of construction hereinafter described and claimed. As these adjusting devices are more commonly used in connection with the main or driving wheel of a harvester of the Marsh type—that is, one hav-

ing an elevated side delivery for the grain—I have chosen to illustrate my improvements in connection with the main frame of a harvester of this class.

In the drawings, Figure 1 is a side elevation of a main or drive wheel and a portion of the main frame of a harvester, partly in section, on the line *xx* of Fig. 2, exhibiting the mode of applying my invention. Fig. 2 is a top-plan view of the same; Fig. 3, a rear elevation, partly in section, on the line *yy* of Fig. 1; Fig. 4, a vertical section taken lengthwise of the hub through the wheel and the devices mounted upon the axle. Figs. 5, 6, and 7 illustrate the construction of the rack-plates or supporting-standards for the axle; Figs. 8 and 9, the mode of mounting the sprocket-wheel for the reel-chain, and Figs. 10, 11, and 12, the lever and the dog and pawl operated thereby.

A is the harvester-frame, A A' being the cross beams or timbers, herein termed "side bars," between which the drive-wheel is mounted, and A'' a portion of the elevator-frame. B is the axle; C, the drive-wheel turning loosely upon the axle; D, a radius-bar for the reel-post, and E the hounds of the tongue or draft-pole.

The drive-wheel is provided with the usual annular gear C', meshing with and driving the main pinion F, which, by means of a lever, F', and a suitable clutching device, as shown, is caused to run fast or loose upon its shaft and transmit or not motion to other parts of the harvester, as may be desired.

Upon the axle, on each side of the drive-wheel, are keyed the equal pinions G, G', and firmly secured to the side bars, A', are the rack-plates or standards H H', having segmental racks *h*, in which the pinions mesh, and guideways *h'* for the projecting ends of the axle concentric with the axis of the main pinion-shaft. The standard H has also, preferably, an extension, H'', provided at its end with a collar for the main pinion-shaft, designed, as explained in Letters Patent No. 178,785, granted to me June 13, 1876, to prevent springing between the axle and said shaft under any stress. With this exception the two standards are alike. Their racks are of the same length and have the same number of teeth,

so that the pinions may roll up and down alike in each to co-ordinately adjust each end of the axle.

The axle and rack-plates or standards may
5 be constructed in manner similar to those heretofore in use, endwise movement of the former being guarded against by the closed sides of the latter. For the sake of lightness and ease and economy of manufacture, I have contrived, how-
10 ever, to form the standards as skeletons, and deem this preferable. Such a construction is shown in Figs. 10, 11, and 12 of my drawings. In this the segmental guideway h' passes entirely through the thickness of the plate H, di-
15 viding it into two main portions or sections, which are united at top and bottom only. One of these sections is thickened, so as to rise above the plane of the other, and upon this raised part is formed the rack h . The rack I have
20 shown as formed on the inner side of the segmental guideway, and with the controllable adjusting devices hereinafter described this is more convenient; but with slight and obvious modifications in the latter it may be reversed
25 in position. Below the rack, and in the same plane in each section, so as to have their surfaces flush, are shoulders or flanges h^2 , converging into the guideway h' . These are still raised somewhat above the general plane of
30 the plate H, to leave beneath them a channel, h^3 , of width corresponding to the diameter of the axle, and of suitable depth, generally about the thickness of the plate. The flanges h^2 meet each other at the top, and are there
35 united, but at the bottom are cut away, as at h^4 , a little short of the end of the channel, to permit the introduction of the axle. The latter is grooved circumferentially at its ends, immediately beyond each pinion, so as to leave
40 a head or button, b , united to the body by a neck, b' , corresponding in diameter with the guideway h' in the rack-plate, and of length equal to the thickness of the flanges h^2 , the head, when the parts are brought together,
45 passing into the channel h^3 at the cut-away ends h^4 of the flanges and abutting against the under surface of the latter, and the neck entering and fitting closely in the guideway h' , while the pinion comes snugly on the outer
50 surface of the flanges and engages with the teeth of the rack.

The standards having been attached to the side bars and the wheel and other parts being in proper position upon the axle, the latter
55 is introduced into the guideways from beneath, as above stated, care being taken that the pinions register properly with their racks when the weight of the harvester-frame carries it down upon the pinions, or, conversely, causes
60 the latter to roll up the racks until positively checked by a stop or locking device, or by the closed top of the flanged standards. Hence, the parts having once been brought into their proper relation, the constant pressure of the
65 harvester-frame will prevent their being separated otherwise than by design.

Upon the axle, inside of and next to the pinion G' , is loosely mounted a dog, I, turned outward and upward to stand over the pinion and take into any interdental space of the rack,
70 so as to stop at any desired point the further descent of the main or harvester frame and lock the axle in position. The dog is cast with a base, i , of sleeve shape, to embrace the axle, and a notch or recess, i' , to receive one bent
75 end of a coiled spring, J, inclosed within the base. Inside of and next to the dog, and likewise loose upon the axle, is mounted a lever, K, which extends rearwardly to a position near
80 the exterior of the frame, where it may be readily grasped and manipulated by the operator. This lever is cast or formed with a strengthening and steadying flange, k , which comes beneath and partially encircles the base or sleeve portion of the dog. The flange ter-
85 minates in a shoulder, k' , so as to leave a throat, in which the arm of the dog can play. A recess or seat, k^2 , is also formed in the lever in the process of casting, to receive and retain that bent end of the coiled spring J, opposed to
90 the end held by and pressing upon the dog. By this construction, when the lever is mounted in place against the dog the spring will be held permanently in position by the two parts themselves, and so as to force the dog toward the
95 rack.

Pivoted upon the outer or pinion side of the lever K, at such distance from the fulcrum as to permit it to take into the interdental spaces of the pinion on the periphery away from the
100 rack, is a pendent pawl, L. The hub of this pawl is partly inclosed and braced by a semi-cylindrical lug, k^3 , cast upon the lever concentric with the pawl-pivot l . A coiled spring, l' , sitting in a recess in the pawl-hub, bears at
105 one end against the lug k^3 and at the other against the pawl to force it into engagement with the pinion.

A link, i^2 , connects the dog I with a finger-piece, i^3 , pivoted to the main lever in juxtaposition to its hand-hold, so that while grasping
110 the lever the attendant may, by the pressure of the first finger of his hand, pull the dog back against the stress of its spring and withdraw it from the rack. The pawl L is, in like man-
115 ner, controlled by the thumb of the attendant through the instrumentality of a link, l^2 , and pivoted thumb-piece l^3 , so that it may be withdrawn from engagement with the pinion.

In harvesters having reels the radius-bar D
120 for the reel-post is mounted on the axle inside of the lever K, and separated therefrom by a washer, d , and next to the radius-bar, and between it and the drive-wheel, is placed the sprocket-wheel M, for the reel-chain. This
125 wheel is made with a recessed hub, m , having grooves m' , which sits over the end of the hub c of the drive-wheel, and is keyed thereto to turn therewith by the feathers or tenons c' , which enter its grooves. This construction
130 gives firmness of bearing while economizing space. When no reel is used, as in mowers,

the radius-bar and sprocket-wheel will be omitted, and the lever will or may come next to the drive-wheel.

In assembling the parts upon the axle one of the pinions is first keyed or pinned in place at the end, after which the other parts are laid or dropped on in their proper order, and then the other pinion is mounted and secured in place, binding the whole together, each part serving to hold the next in position for action.

When it is desired to raise the harvester-frame the main lever is depressed while the pawl L is still engaged with its pinion. This causes the pinion to revolve against the stress of the frame and lift the rack, and with it the frame, the dog I riding over the teeth of the rack as the latter ascends. The instant that the lever stops the dog falls into the rack in readiness to support it and the frame. The lever can then be raised, carrying with it the pawl to take a fresh hold upon the pinion, and by a second downward movement still further lift the harvester-frame. This operation can be repeated until the desired height is gained, when the lever will be left in a suitable position with the pawl dropped into the pinion, to support it out of the way of straw or stubble.

In lifting it is not, as a rule, necessary to manipulate the pivoted finger and thumb pieces, since the dog will ride over the teeth of the rack as the lever goes down and the pawl over the teeth of the pinion as the lever comes up, their pivot-springs causing their engagement at the end of the passage, and the lever being simply pumped down and up until the proper adjustment is reached. In lowering the machine, however, the lever is first slightly depressed until the dog is loosened from its hold. The latter is then withdrawn from the rack by pressing upon the finger-piece, and the lever, with the pawl still biting the pinion, gradually raised to let the frame down with ease. At the end of the upward movement the dog is dropped into the rack, the pawl withdrawn from the pinion by means of its thumb-piece, and the lever depressed into position to take a fresh hold upon the pinion, and, if needful, repeat the movement last described.

I do not intend to limit the application of these devices to harvesting-machines alone, or to machines having a single supporting-wheel, since they may be used wherever similar relative adjustments are required. Nor do I limit myself to the specific arrangement herein described and shown, since the mechanism is capable of various modifications without departing from the spirit of my invention—as, for instance, the dog which takes into the rack may be replaced by a pin or catch passing through the rack-plate into or through the axle, and likewise operated from the lever by a link and pivoted finger-piece. The pawl may engage with an independent ratchet

mounted upon the axle inside of the pinion. The pinions may, under some circumstances, be free on the axle. A lever permanently mounted upon the axle and carrying the pawl may be used in combination with independent means for locking the axle against the descent of the main frame. Two levers may be used at opposite ends of the axle, one carrying the dog and one the pawl, or both fully equipped; but the construction illustrated in the drawings I deem the preferable one.

I claim as my invention—

1. The combination of the axle and its pinions, racks upon the frame with which such pinions engage, a lever mounted upon the axle, a pawl upon such lever taking into one of the pinions to turn or control it against the downward stress of the frame, and means for holding the axle against the descent of the frame at any point along the racks.

2. The combination of the axle, pinions thereon, racks upon the frame with which such pinions engage, a lever mounted upon the axle, a pawl pivoted to the lever and taking into one of the pinions to turn or control it against the downward stress of the frame, and a link-connection between the pawl and a thumb or finger piece pivoted near the hand-hold of the lever.

3. The combination of the axle and its pinions, racks upon the frame with which such pinions engage, a lever mounted upon the axle, a pawl pivoted to the lever and taking into one of the pinions to turn or control it against the downward stress of the frame, and a dog upon the axle capable of being thrown into one of the racks at any point to lock the axle against the descent of the frame.

4. The combination of the axle and its pinions, racks upon the frame with which such pinions engage, a lever mounted upon the axle, a pawl pivoted to the lever and taking into one of the pinions to turn or control it against the downward stress of the frame, and a dog upon the axle capable of being thrown into one of the racks at any point and connected to the lever in such manner as to operate alternately with the pawl.

5. The combination, with the axle and its pinions and the racks with which such pinions engage, of a lever mounted upon the axle, a pawl pivoted to the lever and taking into one of said pinions in opposition to the downward stress of the frame, a locking device between the axle and one of the racks to stop the descent of the frame, and independent link and thumb or finger piece connections between said pawl and locking device and the hand-hold of the lever, whereby they may be thrown in or out of engagement at will.

6. The combination of the axle, pinions thereon, racks upon the frame with which such pinions engage, a dog mounted upon the axle and taking into one of the racks to stop the descent of the frame, a lever also mounted upon said axle, and a link-connection between

the dog and a thumb or finger piece near the hand-hold of the lever, whereby the dog may be withdrawn from the rack.

5 7. The combination of the axle, pinions thereon, racks upon the frame with which such pinions engage, a lever mounted upon the axle and provided with means for turning or controlling the pinions against the stress of the frame, a dog also mounted upon the axle and
10 taking into one of the racks to stop the descent of the frame, and a link-connection between the dog and a thumb or finger piece near the hand-hold of the lever, whereby the dog may be withdrawn from the rack.

15 8. The combination, with the axle and its pinions and the racks with which such pinions engage, of a lever mounted upon the axle, a pawl pivoted to the lever and taking into one of said pinions in opposition to the downward
20 stress of the frame, a dog upon the axle taking into one of the racks also against the descent of the frame, and link and thumb or finger piece connections between said pawl and dog and the hand-hold of the lever, whereby
25 the pawl and dog may be operated alternately while the lever itself is operated.

9. The skeleton-standard formed with a rack for the pinion and open guideway for the ends of the axle, substantially as described.

30 10. The skeleton-standard formed with the rack for the pinion, an open guideway, raised flanges at the sides of said guideway, meeting each other at the top and cut away at the bottom, and a channel beneath said flanges for the

reception of a head or button upon the end of 35 the axle.

11. The combination, with the skeleton-standards, formed, as described, with racks, open guideways, raised flanges, and underlying channels, of the axle and its pinions 40 and the heads or buttons upon the ends of said axle.

12. The dog cast with a space to receive the coiled spring and a recess for its bent end, substantially as described. 45

13. The lever cast with a flange which forms a seat for and partially incases the base of the dog, and a recess for one bent end of the coiled-spring connection between said dog and lever.

14. In combination with the lever and the 50 pawl pivoted thereto, the semi-cylindrical reinforcing lug cast upon the lever and partially embracing the hub of the pawl.

15. The combination, with the lever, the dog, and the interlying spring mounted loosely 55 upon the axle, of the pinions keyed to the ends of the axle and retaining said parts in position for co-operation.

16. The combination, with the drive-wheel, sprocket-wheel, radius-bar, lever, dog, and 60 spring, all mounted loosely upon the axle, of the pinions keyed to the ends of the axle and retaining said parts together for action.

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Witnesses:

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