

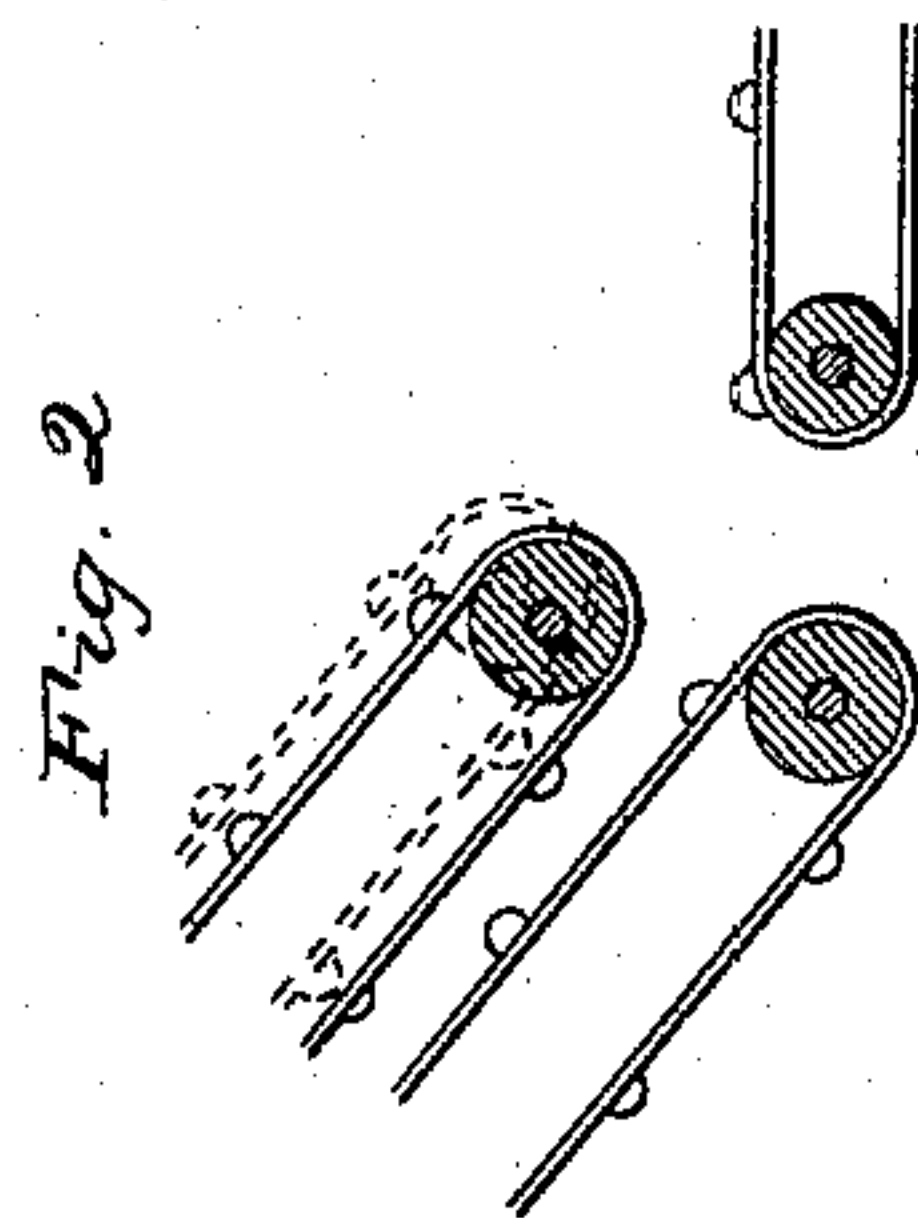
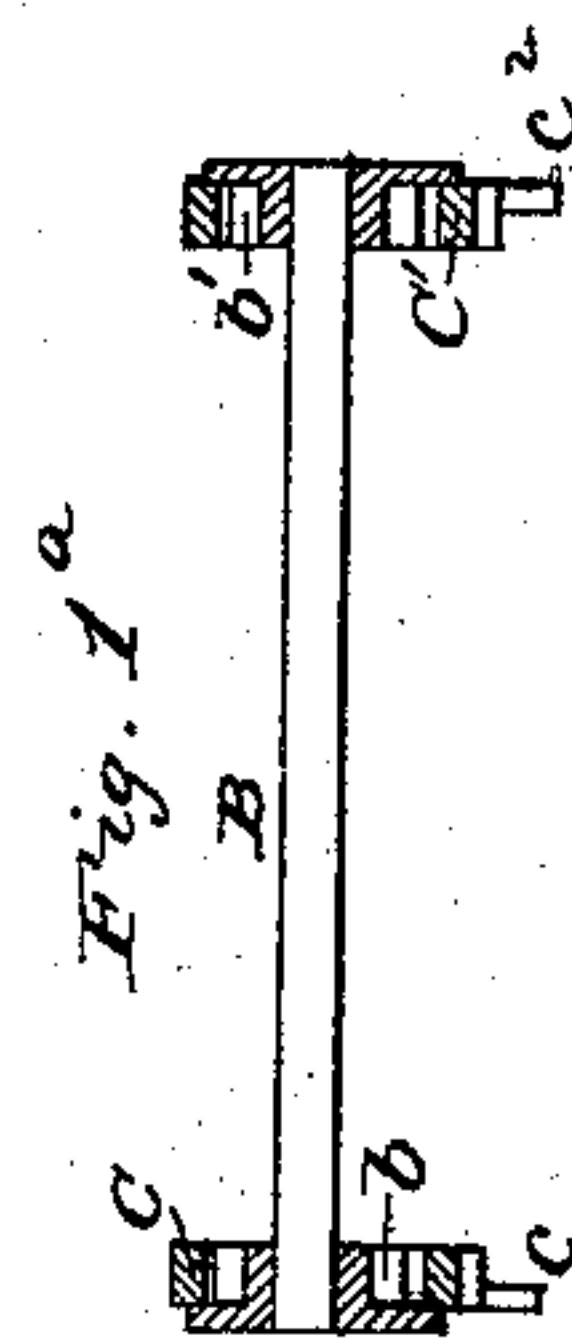
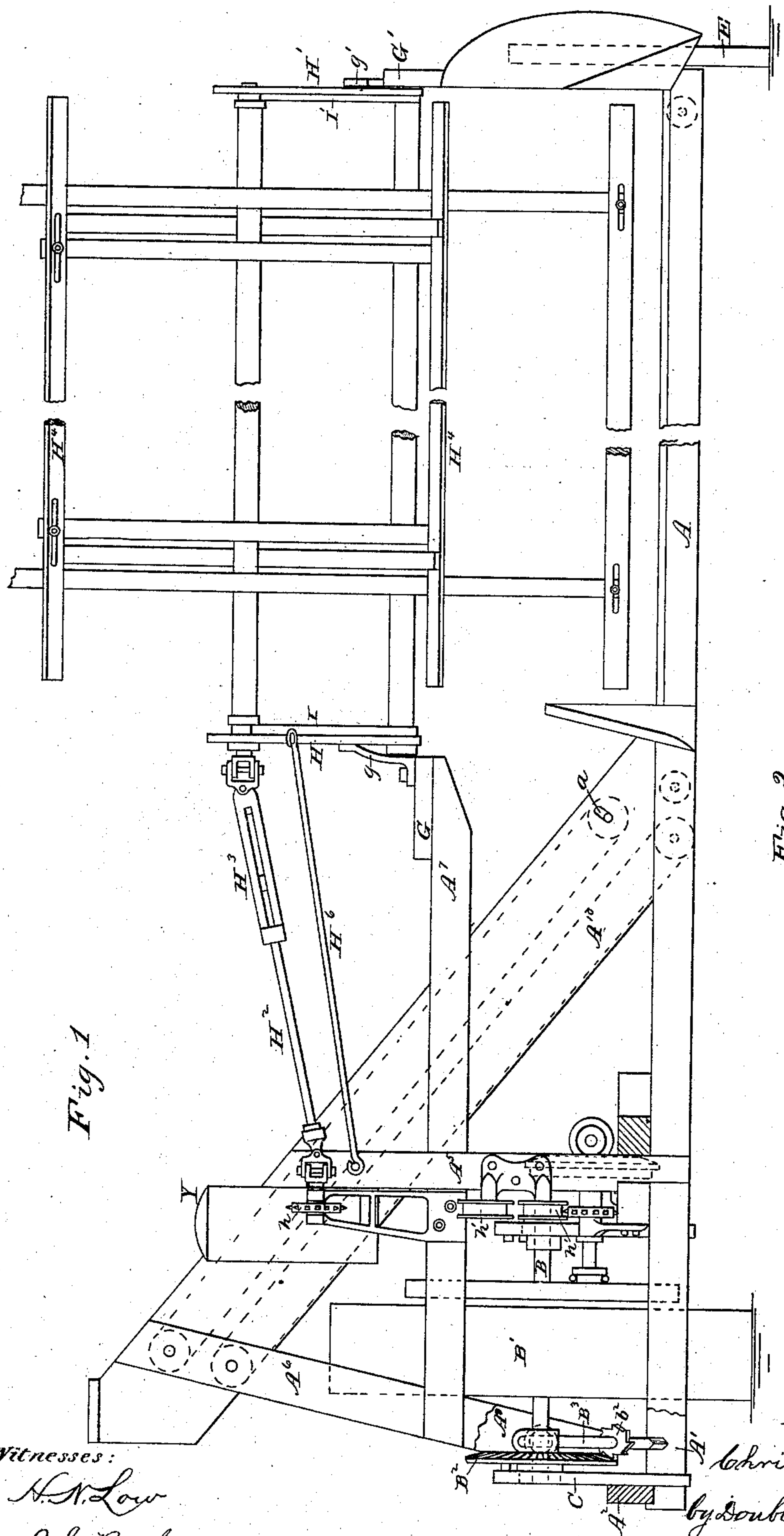
(No Model.)

4 Sheets—Sheet 1.

C. W. LEVALLEY.
Harvester.

No. 241,498.

Patented May 17, 1881.



Witnesses:

H. N. Low
J. S. Barker

Inventor:

Christopher W. Lavalley
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(No Model.)

4 Sheets—Sheet 2.

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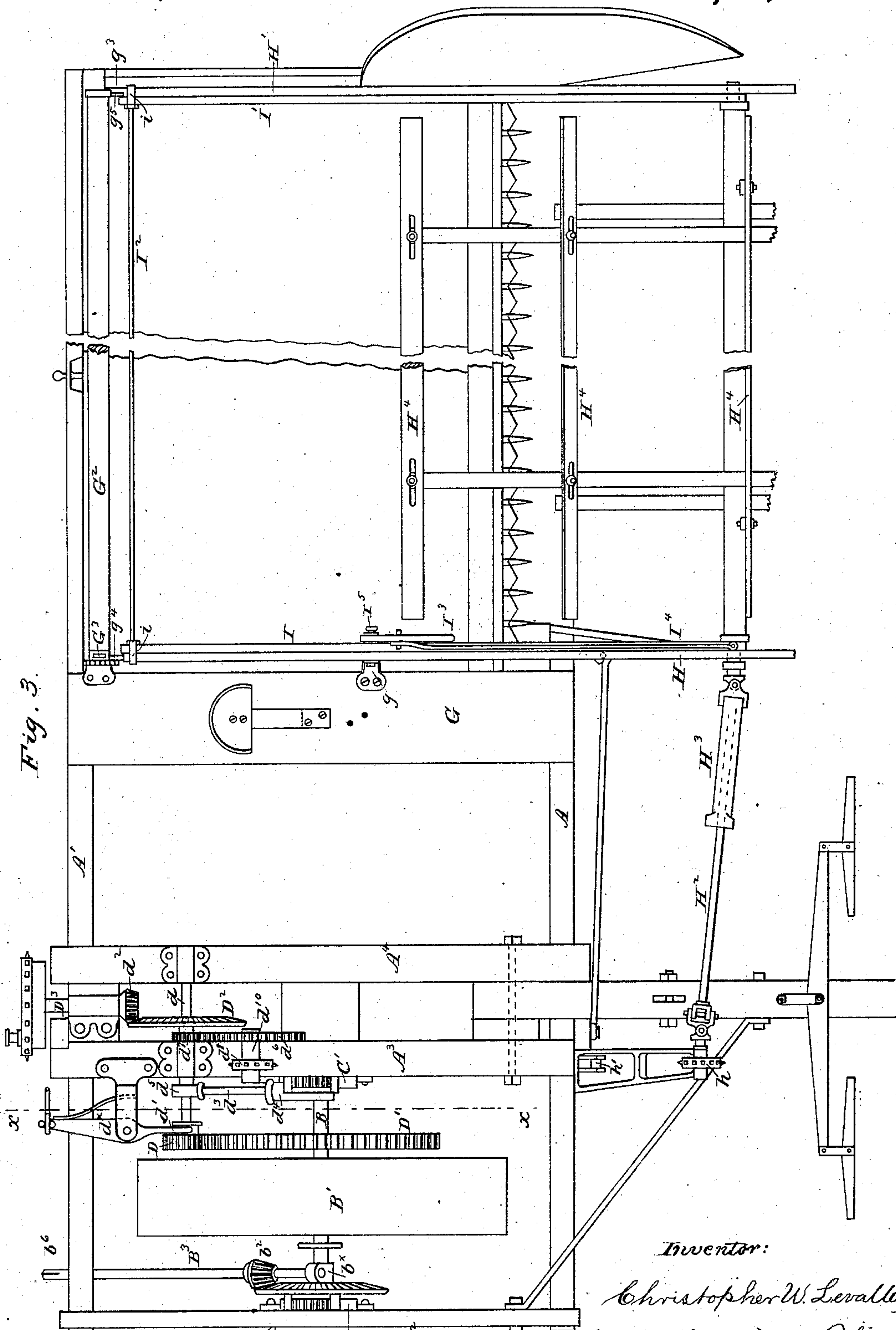


Fig. 3.

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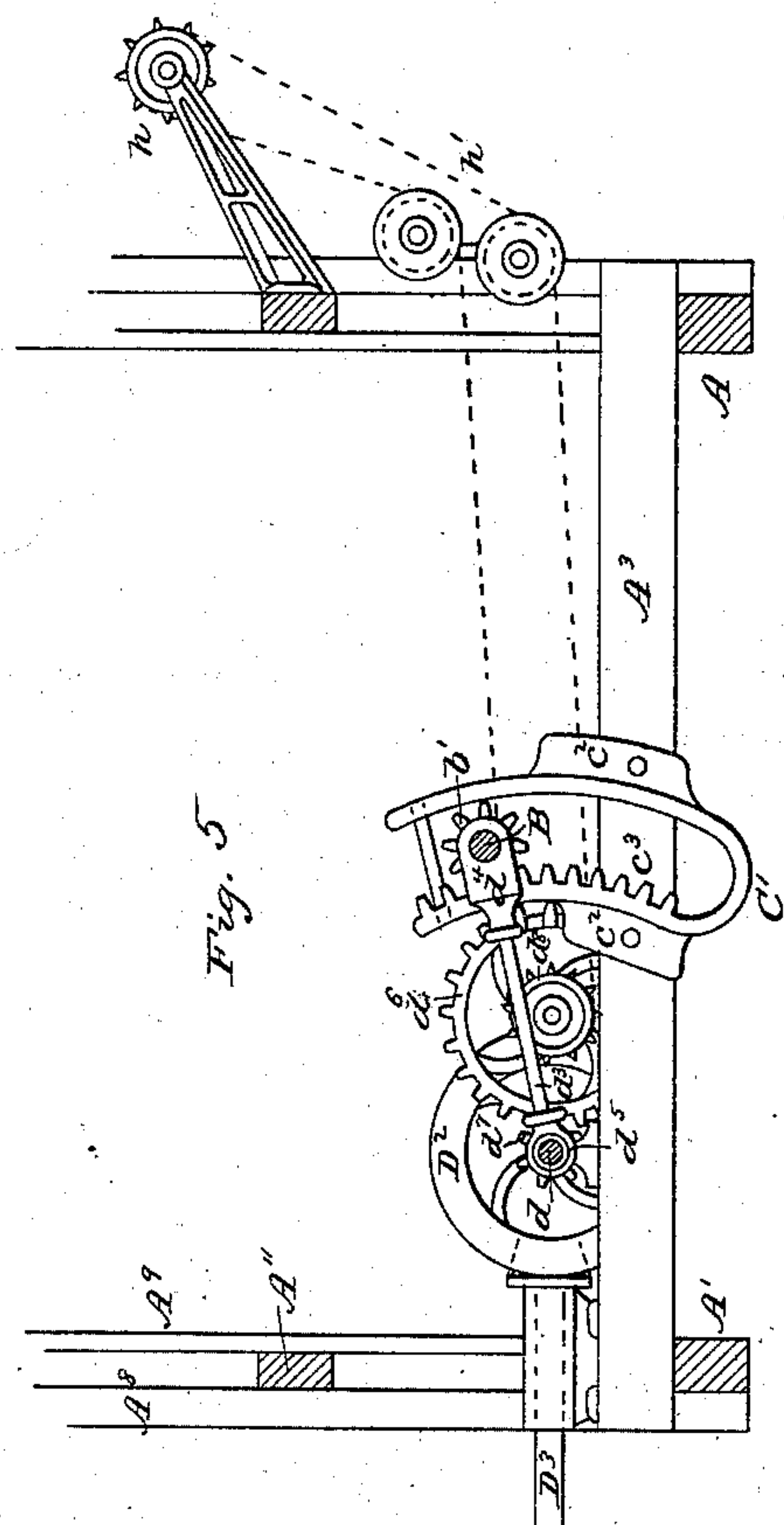


Fig. 5

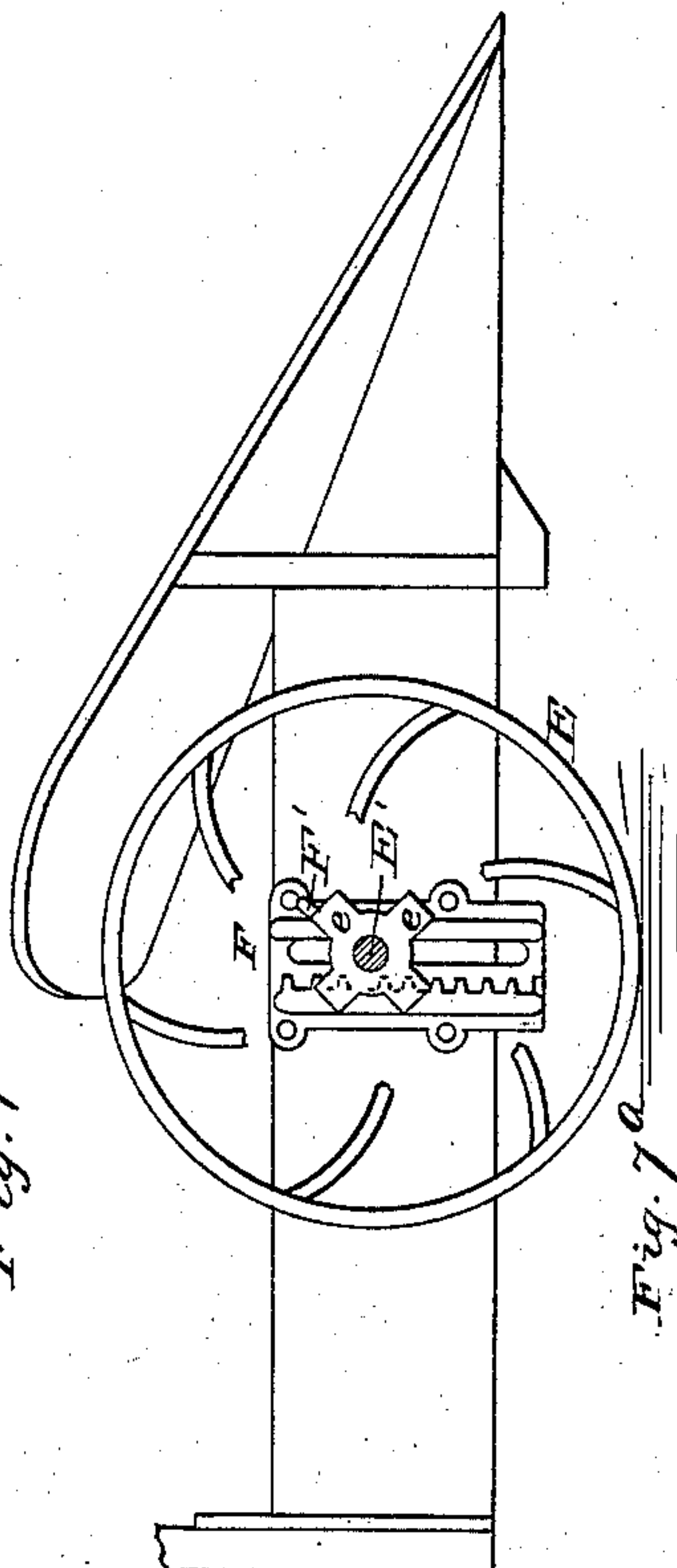


Fig. 7

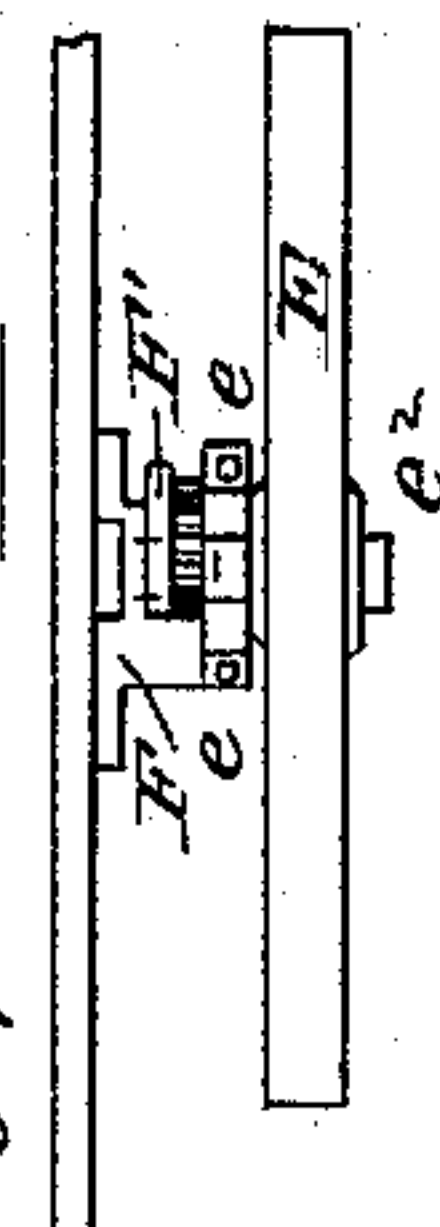


Fig. 7a

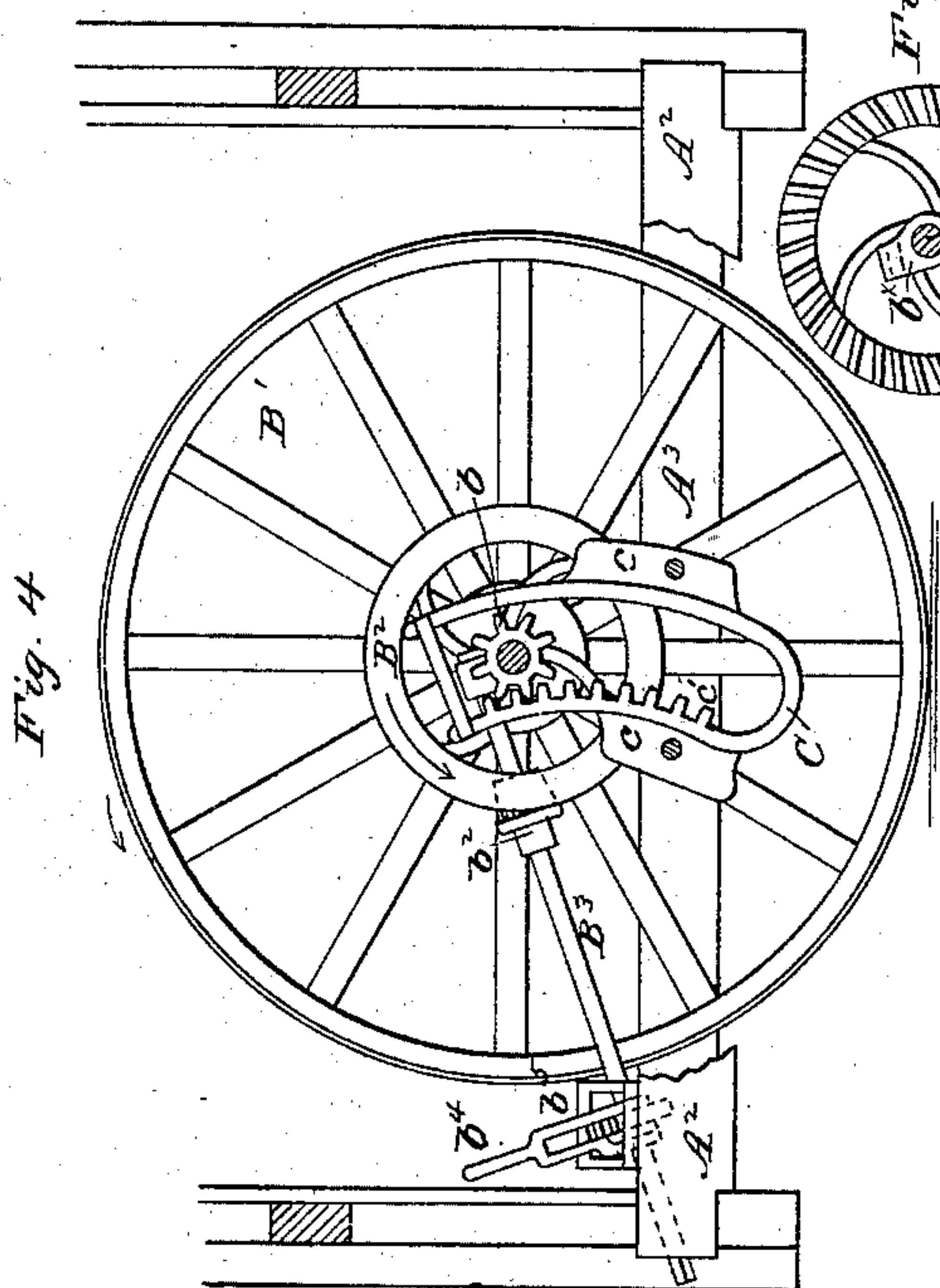


Fig. 4



Fig. 6a

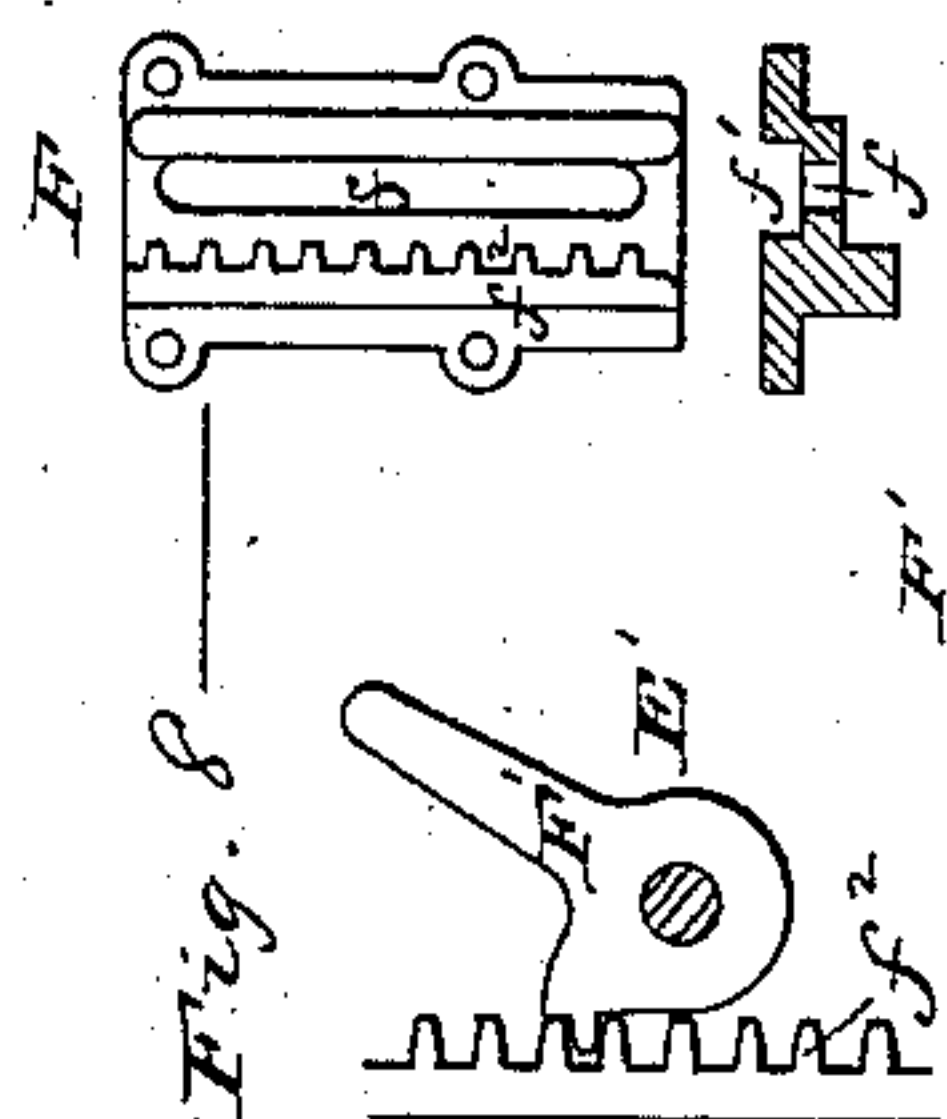


Fig. 8

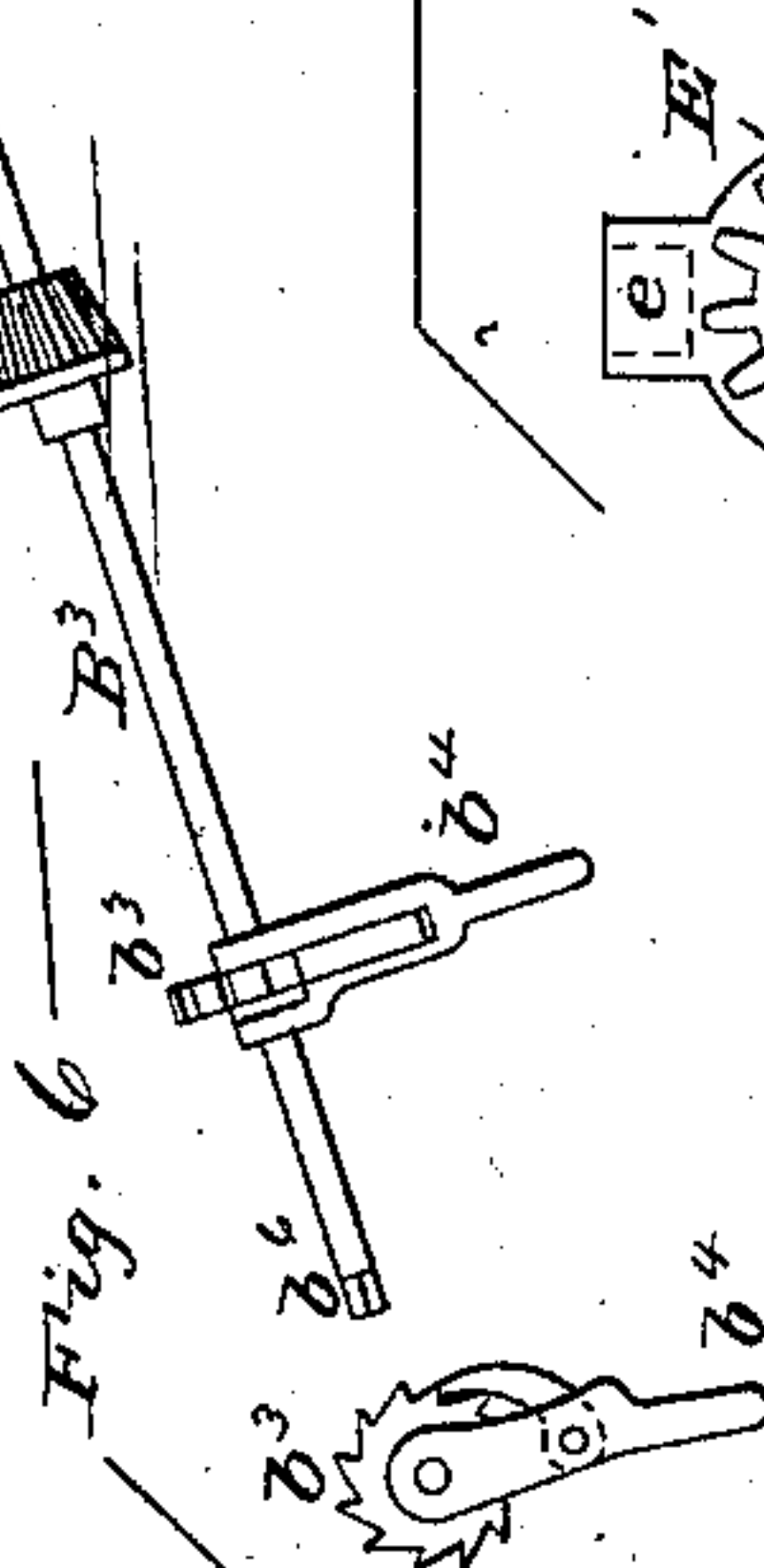
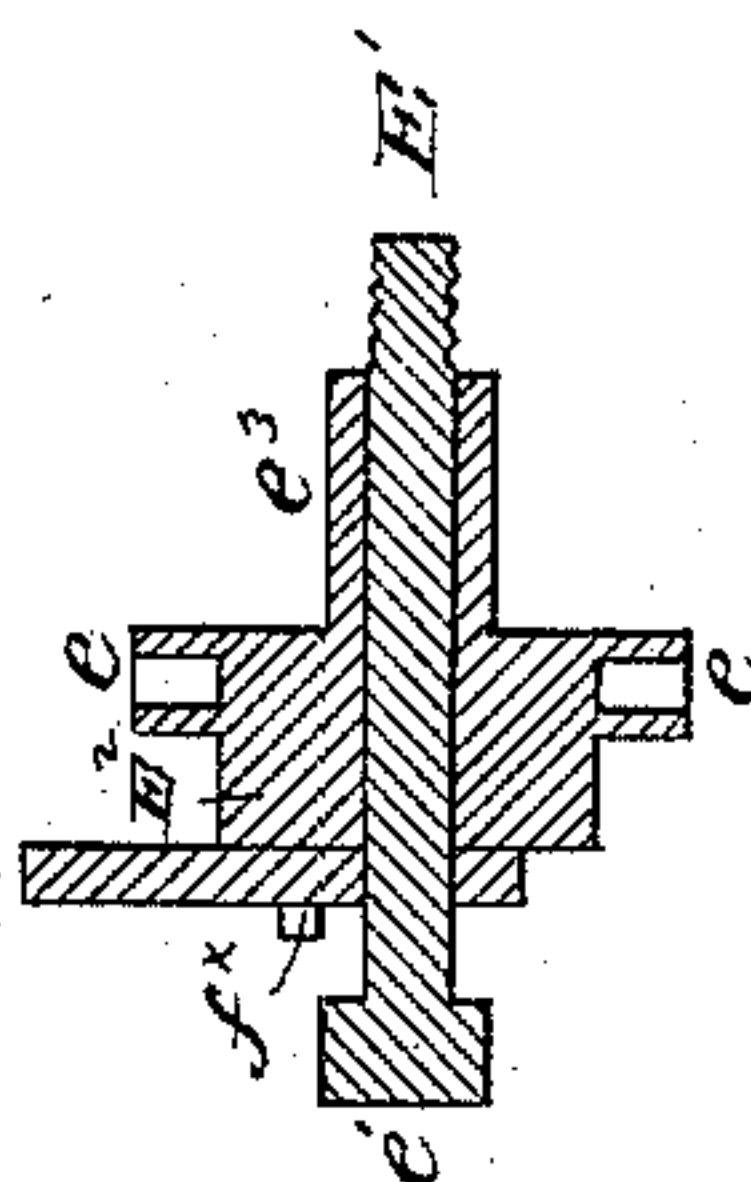


Fig. 6

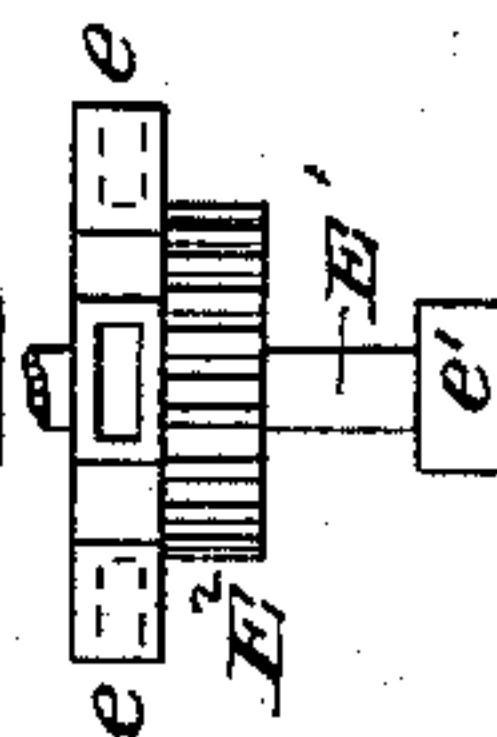


Fig. 6

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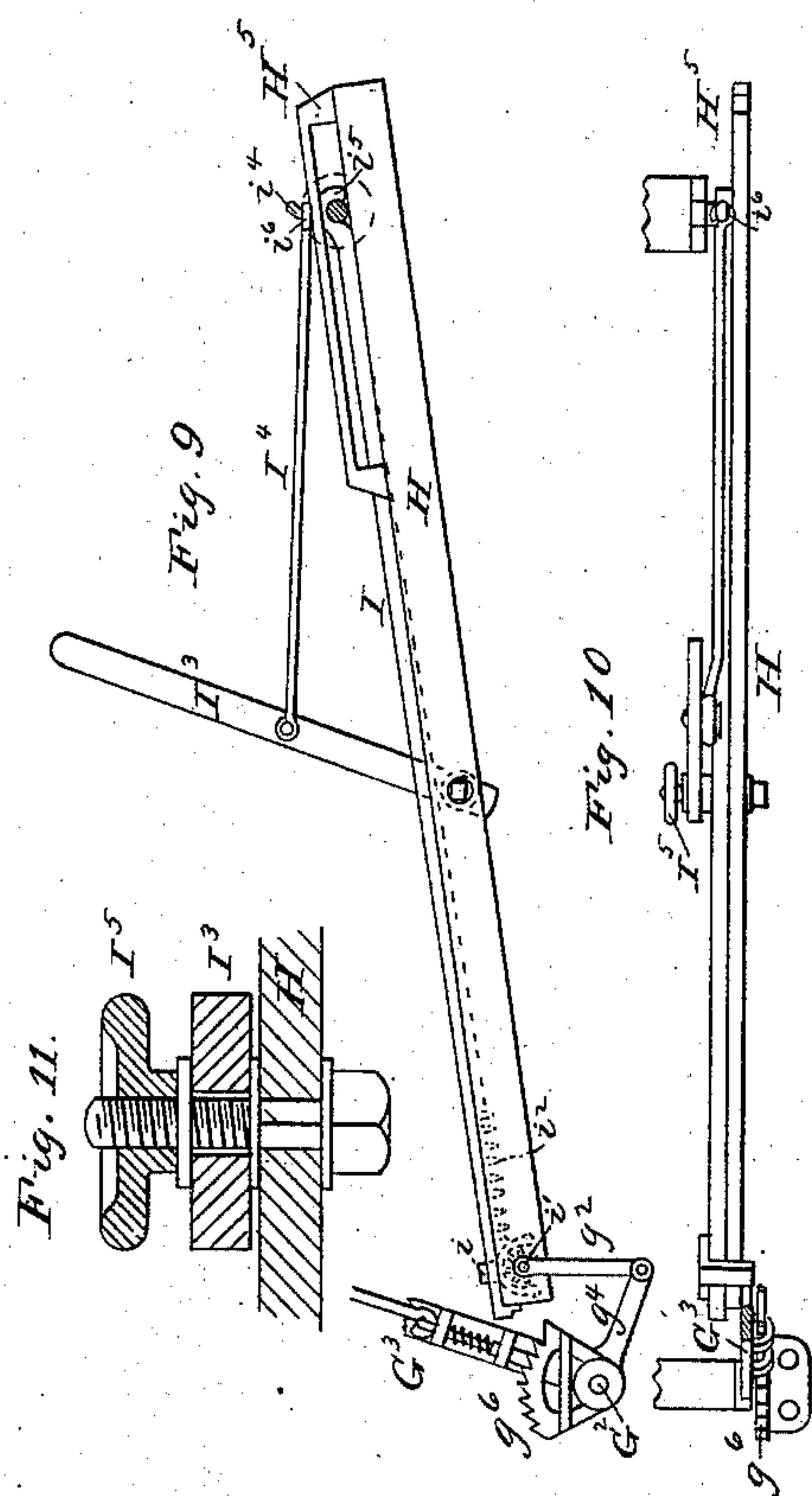
(No Model.)

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C. W. LEVALLEY.
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UNITED STATES PATENT OFFICE.

CHRISTOPHER W. LEVALLEY, OF ST. PAUL, MINNESOTA.

HARVESTER.

SPECIFICATION forming part of Letters Patent No. 241,498, dated May 17, 1881.

Application filed February 12, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHRISTOPHER W. LEVALLEY, a citizen of the United States of America, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Harvesters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a front elevation of a harvester to which my improvements are applied. Fig. 1^a is a detached view, partly in section, of the main axle and a portion of the devices connected therewith. Fig. 2 is a detached view, showing the adjacent ends of the elevator-belts, and the carrier-belt, which is arranged in rear of the cutting apparatus. Fig. 3 is a plan or top view of the harvester, the elevator having been removed therefrom in order to more clearly show the gearing. Fig. 4 is a view of the main supporting and driving wheel, taken from the stubble end of the machine, the other portions of the frame having been removed. Fig. 5 is a view of the driving-gear of the harvester, taken from the stubble side, on the dotted line *x x*, Fig. 3. Fig. 6 is a view of the shaft and its pinion, and a ratchet employed for raising the machine upon the driving-wheel. Fig. 6^a is a detached view of a wheel mounted on the main axle, taken from the grain side of the machine. Fig. 7 is a view of the grain-wheel and its supporting attachments, from the grain side of the machine, the hub and part of the spokes being removed. Fig. 7^a is a top or plan view of the same parts. Fig. 8 is a view detached of the devices employed for supporting the grain end of the machine upon the grain-wheel. Fig. 9 is a view of the reel-shifting devices. Fig. 10 is a top view of Fig. 9, and Fig. 11 is a section of the shifting-lever and clamp.

This invention relates to an improvement upon a machine organized substantially like that patented to me February 6, 1877, and having applied thereto the binder patented to me April 27, 1880.

In the drawings, A A' are the front and rear

longitudinal bed-pieces of the frame. A² A³ A⁴ are cross-girts. A⁵ and A⁶ are front supporting-posts, and A⁷ the horizontal longitudinal bar. B is the axle of the main drive-wheel B'.

I will now describe the mechanism for supporting one end of the machine upon the main drive-wheel B'.

Referring to Figs. 1, 3, 4, 5, and 6, C is a segmental yoke attached to the inner face of cross-girt A² by means of flanges *c*, and provided upon one of its inner faces with a segment of cogged gear, *c'*. C' is a similar yoke or frame attached to cross-girt A³ by means of flanges *c'*, and likewise provided with a segmental gear, *c'*. The main shaft B carries at its outer end a pinion, *b*, adapted to mesh with cogged gear *c'*, and at its opposite or inner end a similar pinion, *b'*, which meshes with cogged rack *c'*.

B² is a gear-wheel, the cogs of which are arranged tangential to a circle within, and concentric with the circumference, instead of radial to the center. (See Fig. 6^a.)

b^x is a bearing-block mounted loosely upon axle B, and fitted to receive the inner end of a shaft, B³, which carries a pinion, *b*², adapted to mesh with the cogs of wheel B². The outer or rear end of shaft B³ is mounted in a rear girt, A', or in a bearing at *b*⁵, Fig. 4, attached thereto, and carries a ratchet-wheel, *b*³, which is actuated by a vibrating pawl, *b*⁴. The bearing *b*⁵ has a loop or bracket rising therefrom, serving as a stop to limit the throw of the pawl *b*⁴. The extreme outer end or rear end of shaft B³ is squared, as at *b*⁶, so as to receive a wrench, and by examining Figs. 1, 3, 4, 5, and 6, it will be understood that by rotating shaft B³ the gear-wheel B² and pinions *b* and *b'* may be rotated in either direction, whereby the stubble end of the machine may be raised or lowered upon the main drive-wheel B', and locked at the desired height by means of the pawl *b*⁴. As shown in Fig. 1^a, the pinions *b* *b'* are each provided with flanges upon their outer faces, projecting as far as or a little beyond the outer ends of the cogs, the pinions being placed at such distance apart on the axle B that these flanges shall run in close contact with the outer faces of the yokes or frames C C', thereby supporting these yokes against spreading, this be-

ing especially desirable when the machine is running over rough ground and is lurched from side to side.

d is a secondary shaft carrying a pinion, D, which latter is rotated by a wheel, D', keyed to shaft B. A clutch at d' , of suitable character connects wheel D with shaft d . They may be disconnected by means of a lever, d^x .

D² is a bevel-wheel on shaft, d , meshing with pinion d^2 on the crank-shaft D³, from which devices motion is imparted to the various parts of the machine. d^3 is an adjusting-link engaging at one end with a head, d^4 , on shaft B, and at the other with a head, D⁵, which surrounds shaft d . By these parts the depth of mesh between wheels D and D' may be regulated, as required, when the frame is raised or lowered on wheel B'.

d^7 is a spur-pinion on shaft d rotating wheel d^6 , keyed to shaft d^{10} . This shaft d^{10} is mounted on girt A³ and carries a sprocket-wheel, d^8 , which drives the sprocket-wheel h . The latter wheel conveys power to the reel-shaft by a tumbling-rod, H² H³.

It will be seen that the chain connecting sprockets d^8 and h need not be varied in length to conform to different vertical positions of the machine.

H H' are reel-bearers pivoted to standards g g' , which rise respectively from the gear-plank G and post G'.

G² is a rock-shaft mounted on the frame of the machine and connected with the rear ends of the bars H H' by links g^2 g^3 . Said links are pivoted at the upper ends to the bars H H' and at the lower ends to crank-arms g^4 g^5 projecting from shaft G².

G³ is a lever which is connected with rock-shaft G². It carries a pawl which engages with a ratchet, g^6 , attached rigidly to the shaft-support. By means of lever G³, arms H H' can be vibrated on their pivots and the reel can be raised or lowered.

I I' are bars on the inner sides respectively of the bars H H'. They each carry a cogged rack, i^2 , which engages with a cogged pinion, i' .

I² is a shaft connecting and keyed to the pinions i' and mounted in the rear ends of the bars H H'.

i i are clasps or yokes which hold together the rear ends of bars I and H and I' and H' respectively.

I³ is a lever pivoted to the reel-bearer and connected with the end bar, I, by a link, I⁴, which engages with the bar I by means of an eye, i^6 , and pin i^4 , the latter projecting from bar I. The bars I and I' engage with the reel-shaft by hooks i^5 or eyes. Each reel-bearer has a loop or guide, H⁵, which permits the reel-shaft to be moved forward and back upon the bearers H H'. Both ends of the reel-shaft will move forward or back together as the bars I and I' are connected by the shaft I², the pinions i' , and the racks i^2 .

In my former patent, No. 202,036, I have

shown a construction of reel-bearers and sliding-bars closely resembling the corresponding parts in this case, except that in my earlier patent the bearers are each made in one piece and slotted at its front end, whereas in this latter construction the slot is formed by means of a metal strap, H⁵, which is not only a cheaper but more durable construction, and the device I i^4 i^5 is a much better contrivance for shifting the position of the bars I I' and the reel than is the device shown in my earlier patent.

I am aware, also, that the reel of a harvester has been heretofore revolved by means of a chain passing underneath idler-pulleys mounted near the front edge of the machine and running thence to a driving-sheave on the secondary shaft or counter-shaft; but I regard the construction and arrangement of parts which I have shown, including the mounting of the driving-sheave h on the stationary arm or bracket H⁶, and the connecting of said sprocket-wheel with the reel-shaft by means of the tumbling-rod, as being much better, because this construction not only permits the reel to be moved forward and backward, but also up and down, without increasing or diminishing the tension of the driving-chain.

I⁵ is a thumb-nut which clamps the lever I³ against the reel-bearer H, and by this nut the lever may be held in any desired position.

H⁶ is a stay-rod connecting the reel-bearer H with the stationary frame. It braces the reel and prevents endwise swaying thereof. It is loosely connected both to the reel and to the frame, so as not to cramp any of the parts in whatever position the reel may be.

E is the grain-wheel on shaft E'. E² is a spur-wheel mounted on shaft E' behind wheel E. $e e e e$ are socketed ears cast preferably in one piece with wheel E², and e^3 is a sleeve projecting outwardly from said wheel. The shaft E' passes loosely through slot f in plate F, which latter is secured to the machine. The plate F has a vertical way, f' , in which fits the head e' of shaft E'. Said plate has also a cogged rack, f^2 , cast therewith, which rack meshes with wheel E².

F' is a pawl pivoted on shaft E' behind wheel E². It engages with rack f^2 , and is prevented from swinging downward too far by means of a lug, f^x , projecting through slot f .

By means of a lever inserted in either of the sockets e the operator can rotate pinion E² and raise and lower the grain end of the machine and lock it in any desired position by the pawl F' and rack f^2 .

What I claim is—

1. The combination, with the grain-wheel and the slotted plate F, of the pinion E², socketed plate $e e e$, provided with sleeve e^3 , the pawl F', provided with lug f^x , and the shaft or stud-axle E', substantially as set forth.

2. The combination of the wheel B², having its cogs arranged not radially, the shaft B³, pin-

ion b^2 , ratcheted wheel b^3 , pawl b^4 , pinions $b b'$, axle B, and cogged yokes C C', substantially as set forth.

3. The combination, with the reel-bearer H, provided with loop H^5 , of the bar I, provided at its forward end with a hook, i^5 , adapted to surround the journal of the reel-shaft, and provided, also, with the upwardly-projecting pin i^4 , adapted to receive the link I^4 , substantially as set forth.

4. The combination, with the reel-shaft, of

the reel-bearers H H', loops H^5 , bars I I', lever I^3 , link I^4 , engaging with pin i^4 , shaft I^2 , pinions i , and racks on the bars I I', hooks i^5 , and pins i^4 , substantially as set forth.

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

CHRISTOPHER W. LEVALLEY.

Witnesses:

J. H. RANDALL,

P. HATCH.