

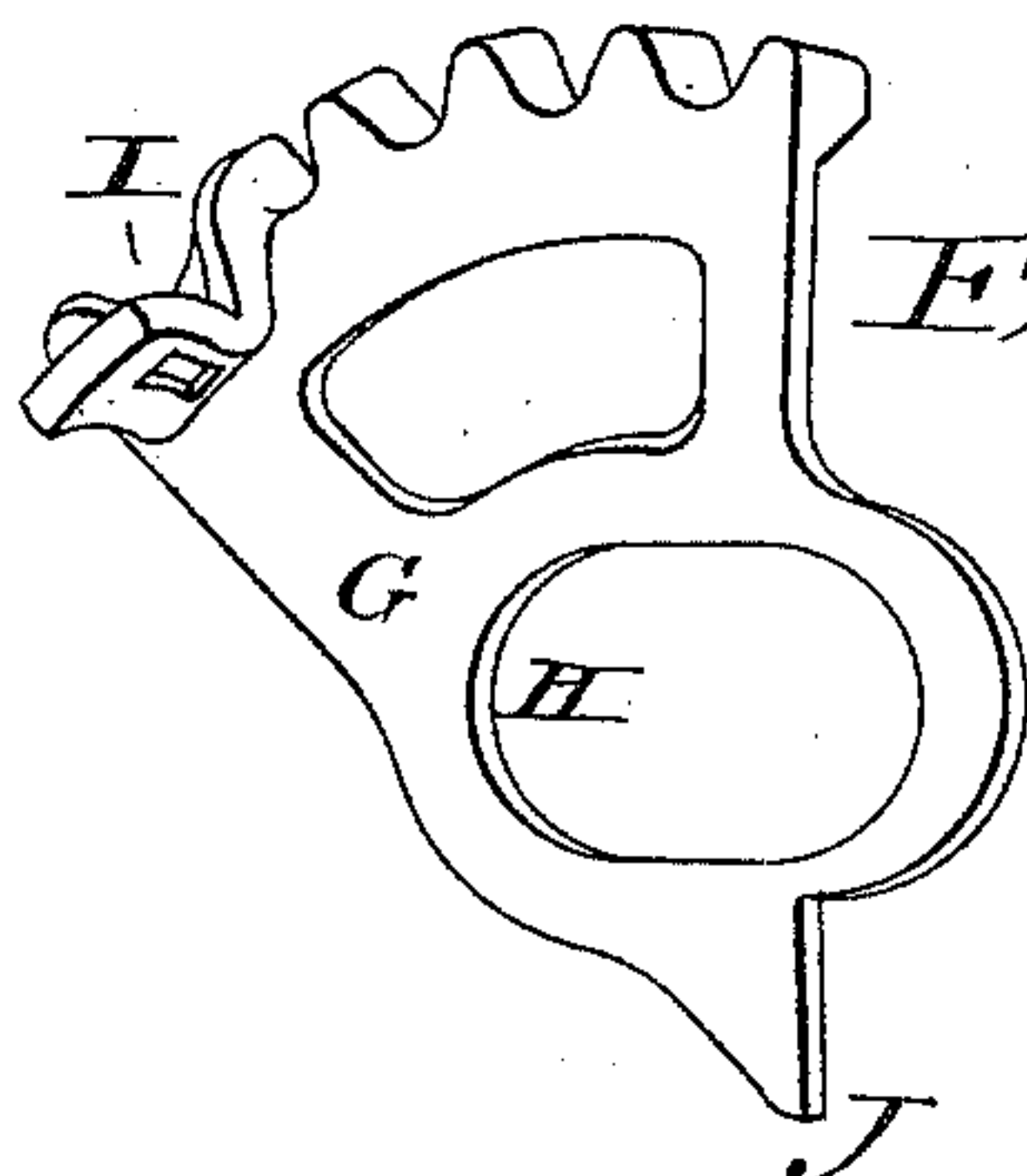
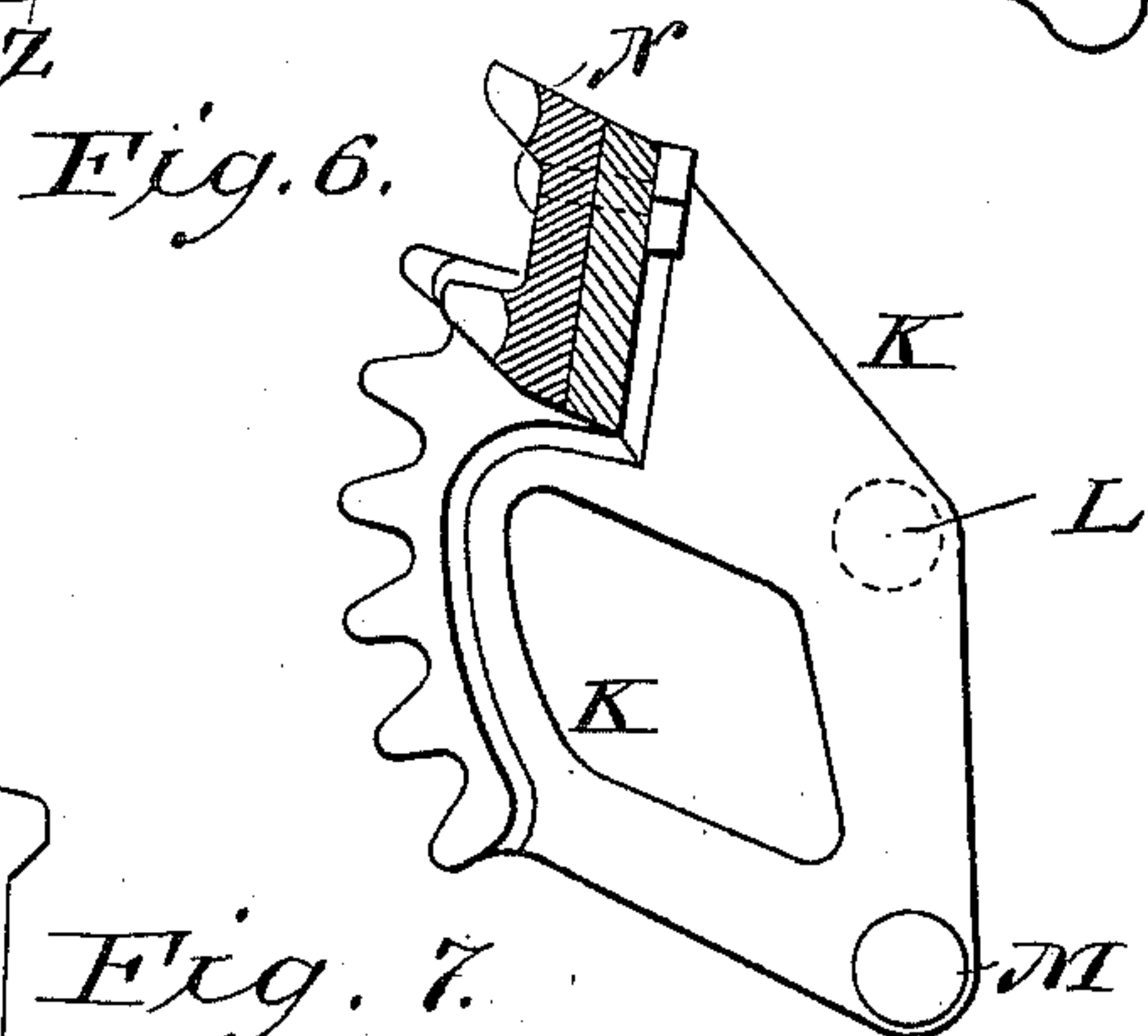
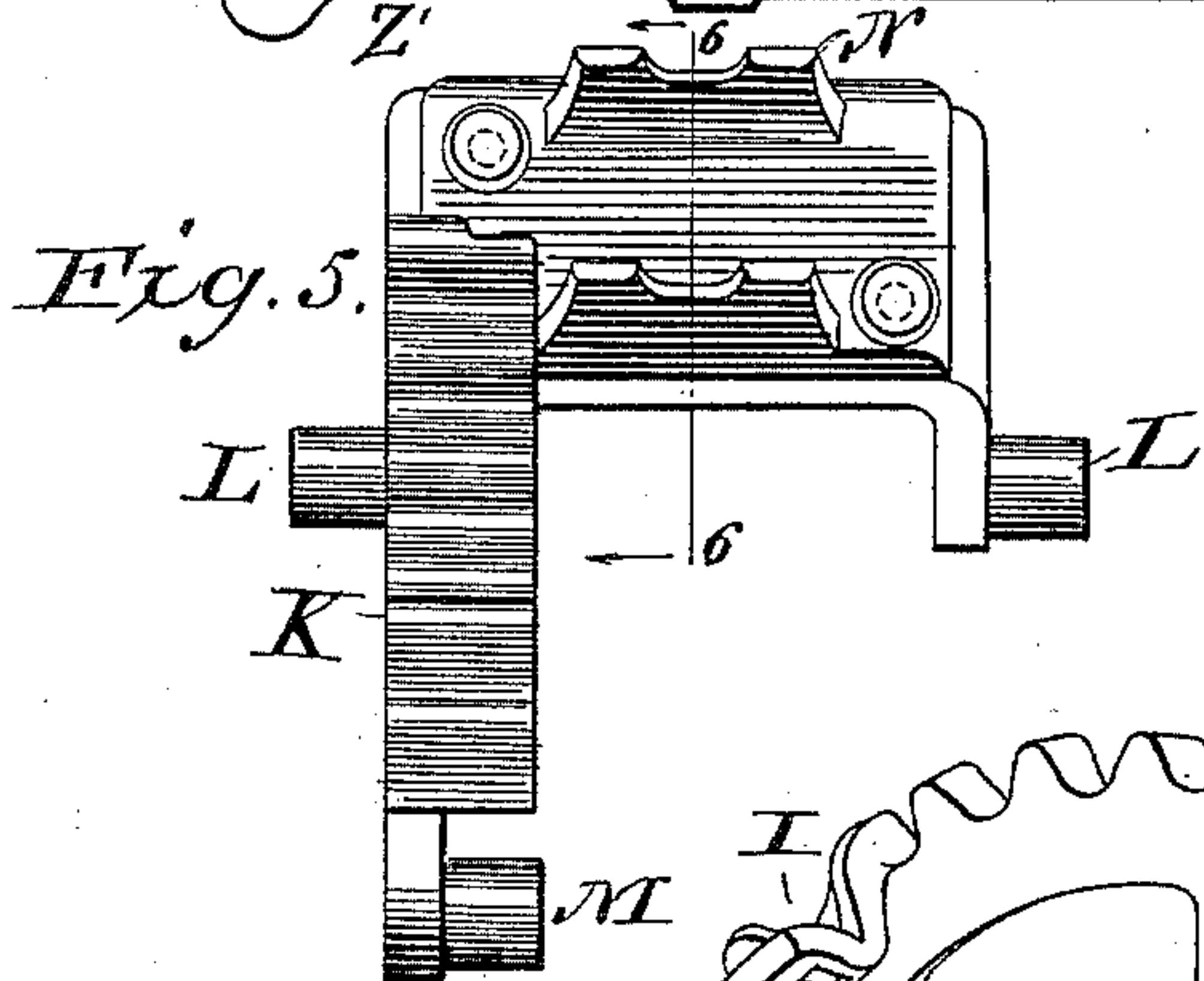
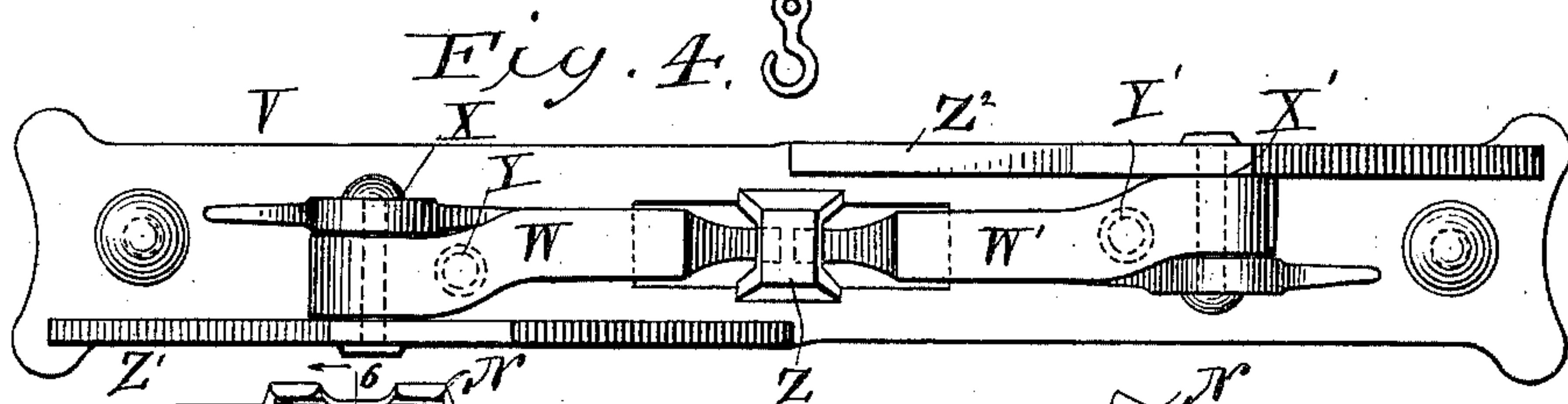
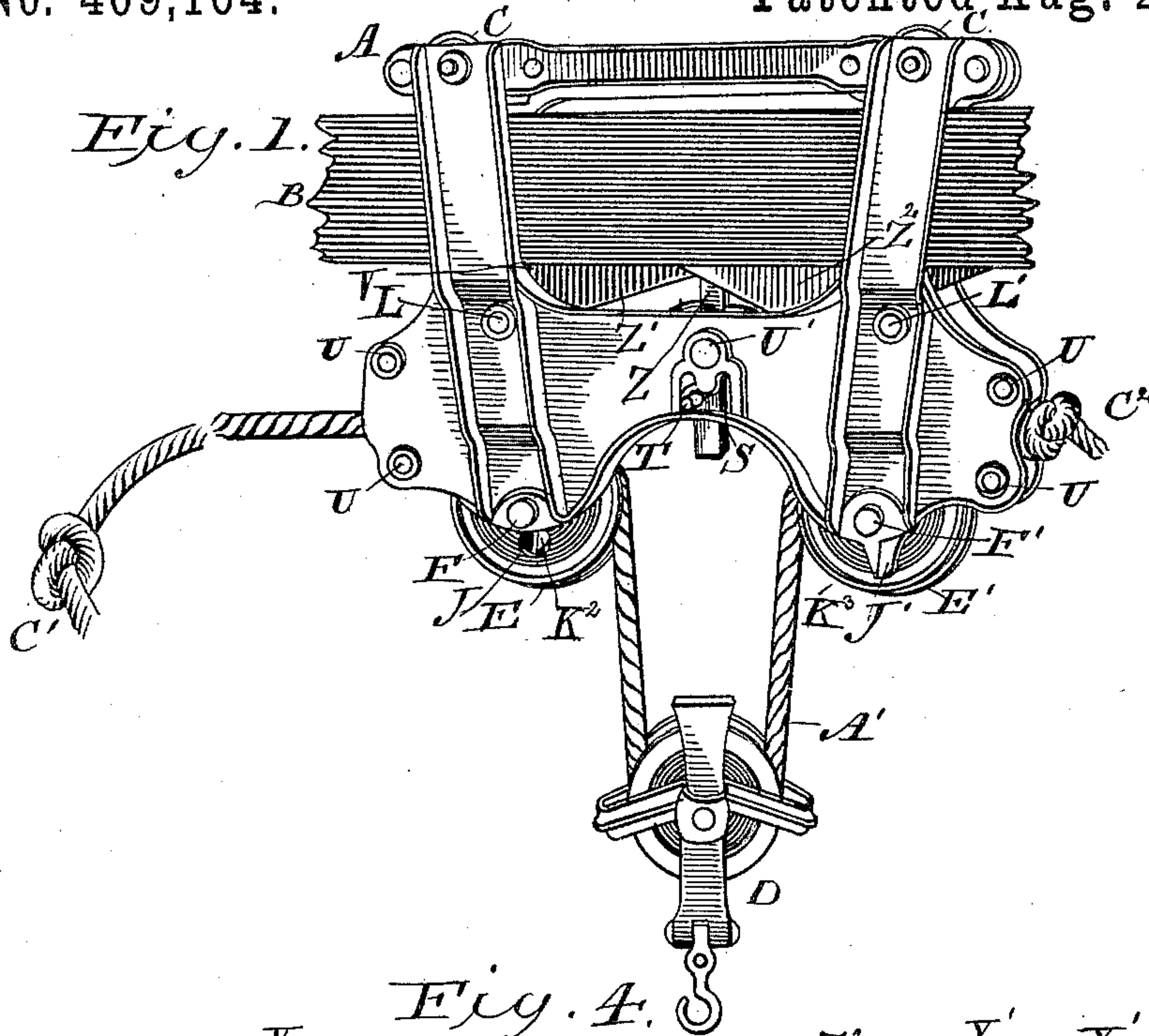
(No Model.)

2 Sheets—Sheet 1.

A. P. BOYER.
HAY CARRIER.

No. 409,164.

Patented Aug. 20, 1889.



Witnesses

H. C. Newman.
E. S. Newman

Inventor

Allen Philip Boyer,

By his Attorneys
Marcus S. Hopkins,
Joseph L. Atkins.

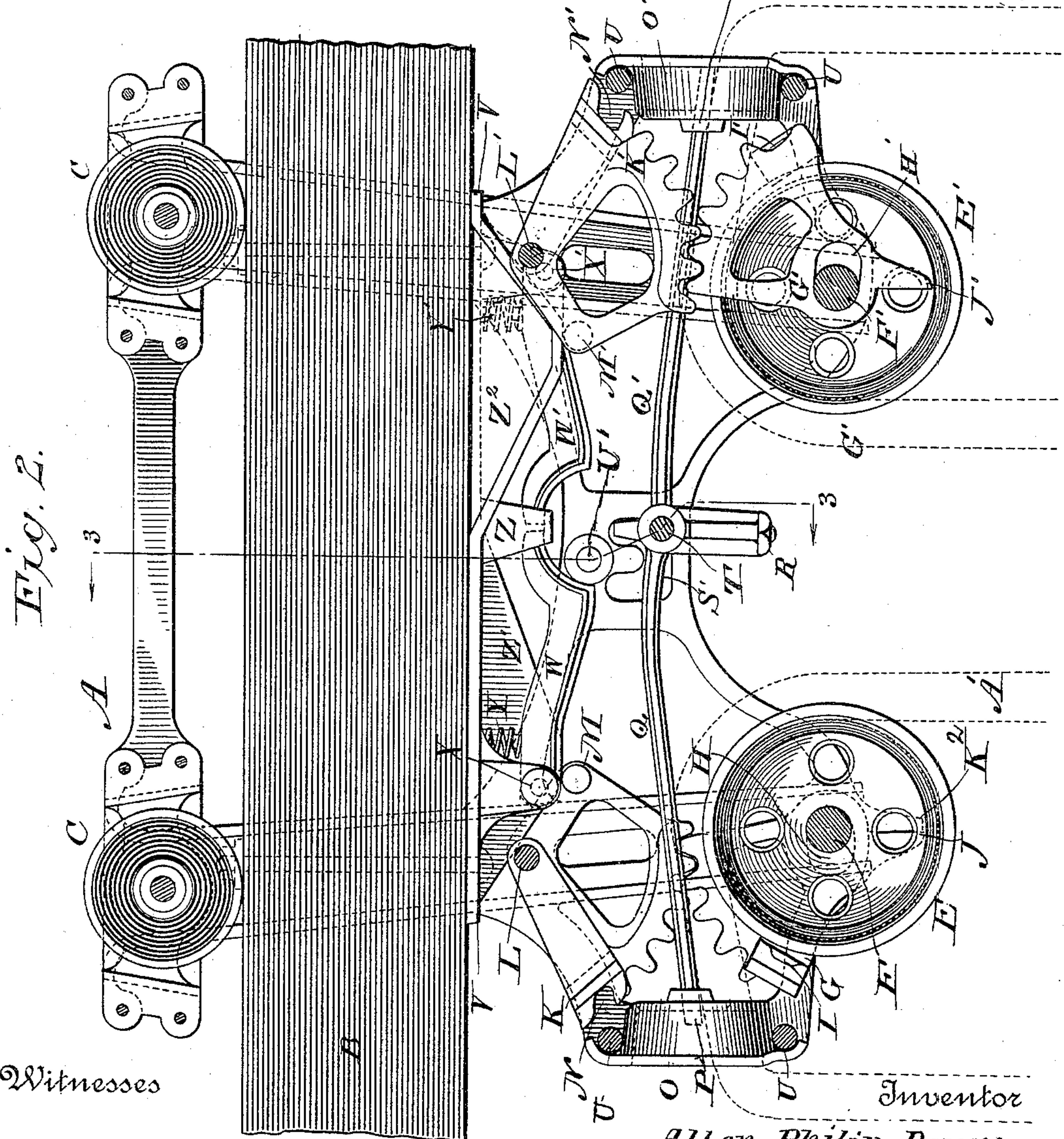
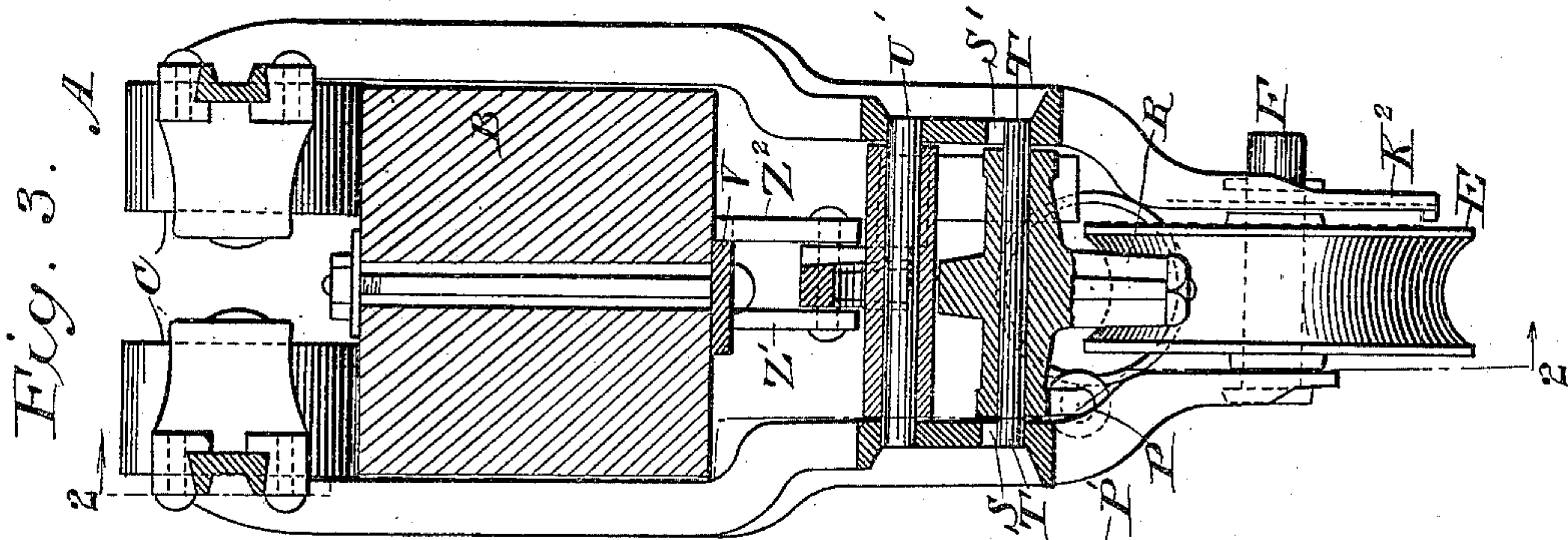
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UNITED STATES PATENT OFFICE.

ALLEN PHILIP BOYER, OF STURGIS, MICHIGAN.

HAY-CARRIER.

SPECIFICATION forming part of Letters Patent No. 409,164, dated August 20, 1889.

Application filed December 5, 1888. Serial No. 292,754. (No model.)

To all whom it may concern:

Be it known that I, ALLEN PHILIP BOYER, of Sturgis, county of St. Joseph, and State of Michigan, have invented certain new and useful Improvements in Hay-Carriers, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to provide a simple, strong, compact, and effective hay-carrier of the reversible type.

Another object is to provide a carrier which is secured by a latch while lifting a load, and when the load is completely raised is unlatched and set free to travel along a stationary track provided for it.

In the accompanying drawings, Figure 1 is a perspective view of my carrier in the locked position, showing a portion of the track upon which it is mounted and the free lifting-pulley pendent from it. Fig. 2 is an enlarged view of Fig. 1, with one side removed to show the interior arrangement and construction of the parts, the latch-key being in the opposite position from that shown in Fig. 1. Fig. 3 is a section on the line 3 3 of Fig. 2. Fig. 4 is a plan view of the latch-frame and latches detached. Fig. 5 is a view of one of the upper cog-gear cams detached. Fig. 6 is a section along the line 6 6 of Fig. 5. Fig. 7 is a view of one of the lower cog-gear cams detached.

Referring to the letters on the drawings, A indicates a carrier-frame, which consists of two parts identical in construction, and which in use depends from a suspended fixed track B, upon which it is, except when locked thereto, free to travel upon the trolleys C.

E E' indicate sheaves pivoted at F and F', respectively, in either end of the carrier-frame. Upon each of the axes of the sheaves, on opposite sides, are pivoted, through oblong slots H H', cog-gearred cams G G', each having jaws I I'. Each of said jaws in practice rides over the periphery of its respective sheave.

J J' indicate lugs upon the lower ends of the cams G G', respectively, which in use impinge against the projections K² K³ on opposite sides of the frame A and limit the radial movement away from the center of the carrier of the cams G G'.

K K' indicate cog-gearred cams pivoted at L L', respectively, and adapted to gear and co-operate with the cams G G' to produce a

clutch action between their respective jaws. The two sets of cams are thus in effect twinned, so that the motion of any single cam is dependent upon that of its twin. Each of the said cams K K' is provided with a lug M M' and a jaw N N', the latter being in use placed directly above the jaws I I', respectively. At each end of the carrier-frame are rope-guide pieces O O', pierced on opposite sides with latch-key guide-holes P P', which are adapted to receive the guide-rods Q Q' of the latch-key R.

S S' indicate U-shaped passages in each side of the frame to receive and guide the bearings T of the latch-key. The sides of the frame are firmly united by bolts U U'.

V indicates a latch-frame, which is bolted to the track B. At each end thereof is provided a latch W W', respectively, pivoted to the frame at X X'.

Y Y' indicate helical springs, which are seated upon the frame V and tend to assist gravity to press the latches downwardly; but they are not indispensable in practice.

Z indicates a slotted projection upon the frame V, which engages with each of the said latches and limits its downward movement.

Z' Z² indicate slanting projections on each side of the latch-frame V, which in use, when the carrier is in the locked position, engage with the lugs M M', respectively, and keep the jaws of the clutches separated.

A' indicates a rope which passes through the rope-guides O O' and around the sheaves E E', and between which it suspends a pulley D.

C' C² indicate knots; but any well-known similar obstruction will answer—for instance, a divided thimble bolted to the rope. These knots in practice are located on each of the free ends of the rope, and hold the carrier when it is hauled backward or forward on its track.

To illustrate the operation of my invention, let it be assumed that the carrier is in the locked position indicated in Fig. 1, the bolt U' being in engagement with the latch W. If now a load be attached in any well-known way—by a fork or sling, for instance—to the pendent pulley D, and a pull be made on the end of the rope next to knot C', the knot C² will enter the guide-piece O' and hold

the rope. As it enters the guide-piece, it strikes the guide-rod of the latch-key and shifts the latch-key to a position beneath the latch W. Continuing the pull upon the same end of the rope, the pulley D is lifted until it strikes and lifts the latch-key R, which in turn lifts the latch W, releases the carrier, and allows it to travel freely in the direction of the pull. As soon as the carrier leaves the latch-frame V, the jaws I I' and N N', which have hitherto been held apart by the contact of the lugs M M' with the projections Z' Z², are free to operate by any force exerted upon the rope in the direction of the pendent pulley. By this means an automatic clutch operation is exerted upon the rope, which relieves the strain upon the knot remote from the direction of pull while the carrier is being hauled along the track, and in case of any accident or slacking of the tension of the rope prevents the fall of the load. When the carrier reaches its destination, the load may be released, the carrier hauled back by the lazy end of the lifting-rope, and the operation of lifting and carrying repeated as before. If it be desired to carry in the opposite direction, all that is necessary is to haul on the end of the rope next to the knot C², and the operation is performed in the same manner as above described by the mechanism upon the side of the carrier next the knot C².

It will appear from the foregoing that when once placed in position my carrier can be with facility operated along the fixed track in either direction from the fixed latch-frame.

I am aware that a reversible carrier is not new, and that a carrier which is stationary while a load is being lifted, but which is set free to travel after it has been elevated, is old.

What I claim is—

1. In a hay-carrier, the combination, with a frame and lifting-sheaves carried thereon, of a set of clutch-gear for each sheave, and a lifting-rope passing over each sheave and through the clutch-gear, whereby the clutch is automatically operated to prevent the slipping of the rope, substantially as set forth.

2. In a reversible hay-carrier, the combina-

tion of a suspended track, a frame movable thereon, latches secured to the track, a bolt against which the latches impinge, and mechanism for automatically lifting the latch and releasing the carrier by the act of lifting a load, substantially as set forth.

3. In a reversible hay-carrier provided with a lifting-rope, sheaves, and pendent pulley, the combination of a suspended track, a frame movable thereon, latches secured to the track, a bolt against which the latches impinge, and a latch-key adapted to lift either of the latches and release the carrier when the load is raised, substantially as set forth.

4. In a reversible hay-carrier provided with sheaves and pendent pulley, the combination of a suspended track, a frame movable thereon, latches secured to the track, a bolt against which the latches impinge, and a latch-key provided with guide-rods, guide-pieces for supporting the guide-rods, and the lifting-rope having obstructions, whereby the position of the latch-key is automatically shifted by the act of lifting the load, substantially as set forth.

5. In a reversible hay-carrier, the combination, with a suspended track, of a frame, lifting-rope, pulley, sheaves, cams G G' K K', each being provided with jaws, lugs upon said cams K K', and projections Z' Z², secured to the track, whereby the jaws of the said cams are held separated while the carrier is being operated to lift a load, substantially as set forth.

6. In a reversible hay-carrier, the combination, with a suspended track, of a frame, pulley, sheaves, cams G G' K K', each being provided with jaws, lugs upon said cams K K', projections Z' Z², and latches W W', secured to the track, bolt U', the latch-key R, having its bearings in the said frame, latch-key guide-rods Q Q', guide-pieces O O', provided with guide-holes P P', and the lifting-rope having obstructions, as and for the purpose set forth.

ALLEN PHILIP BOYER.

Witnesses:

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