

No. 632,219.

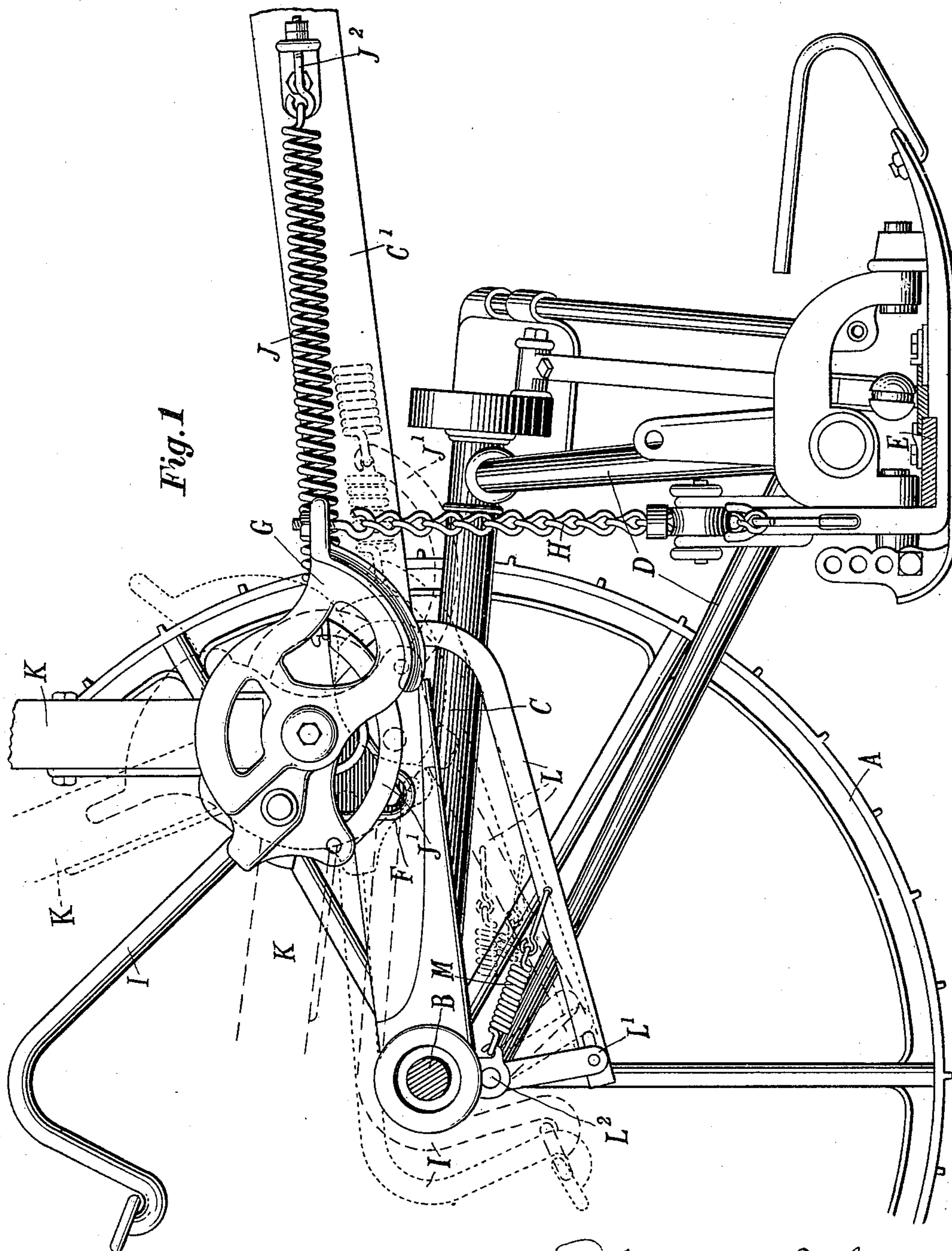
Patented Aug. 29, 1899.

**E. A. JOHNSTON.
MOWER.**

(Application filed May 9, 1898.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

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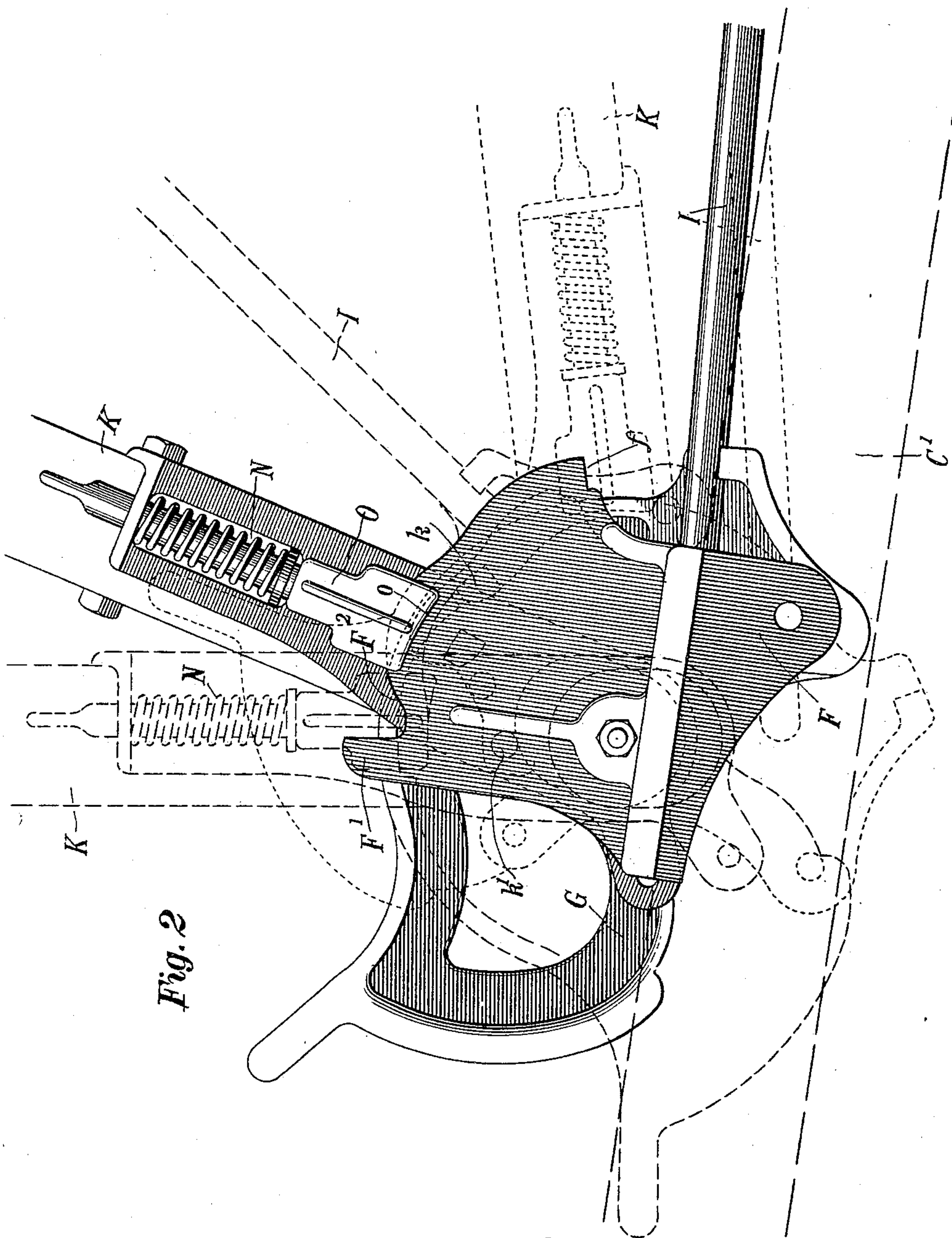
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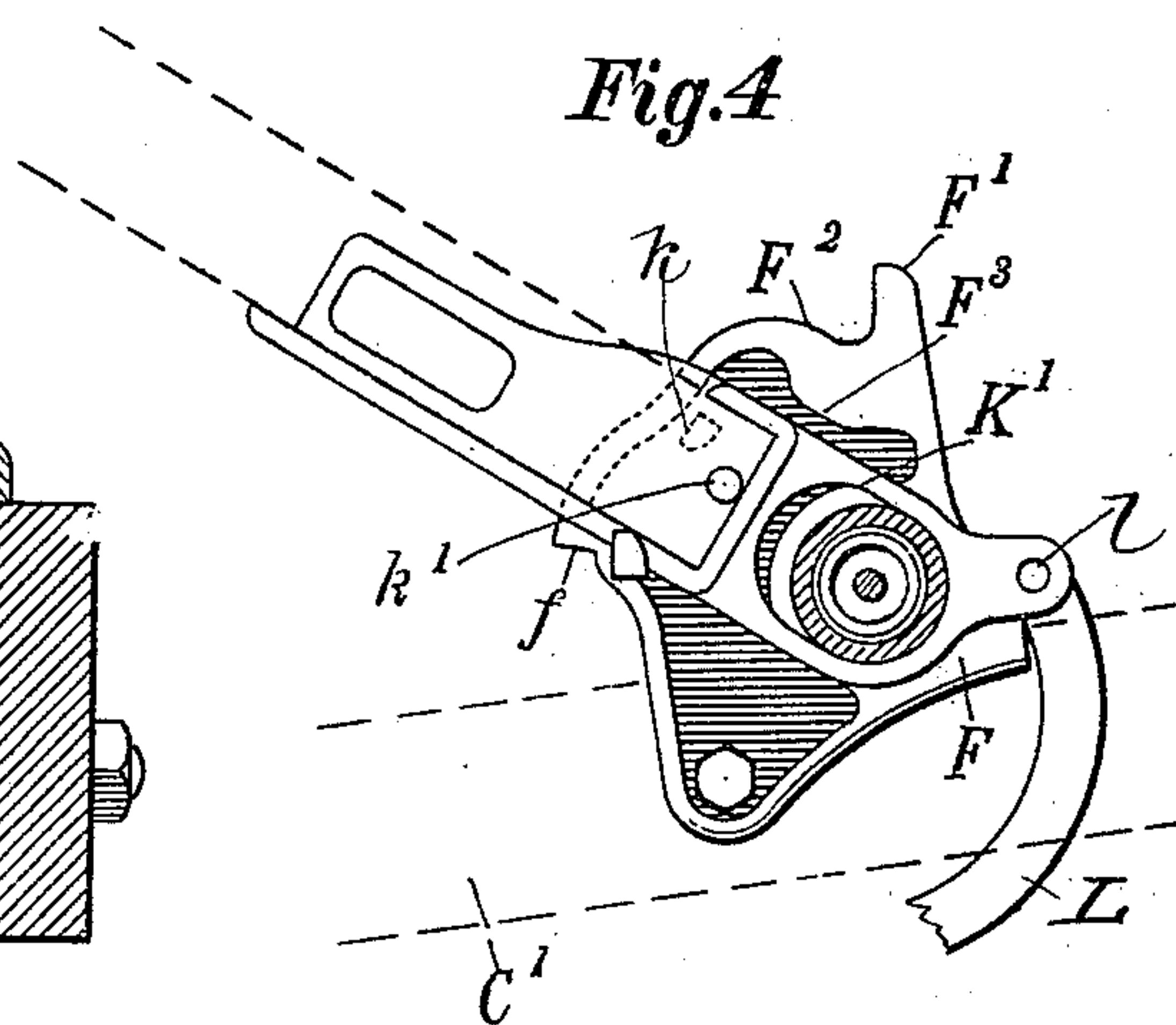
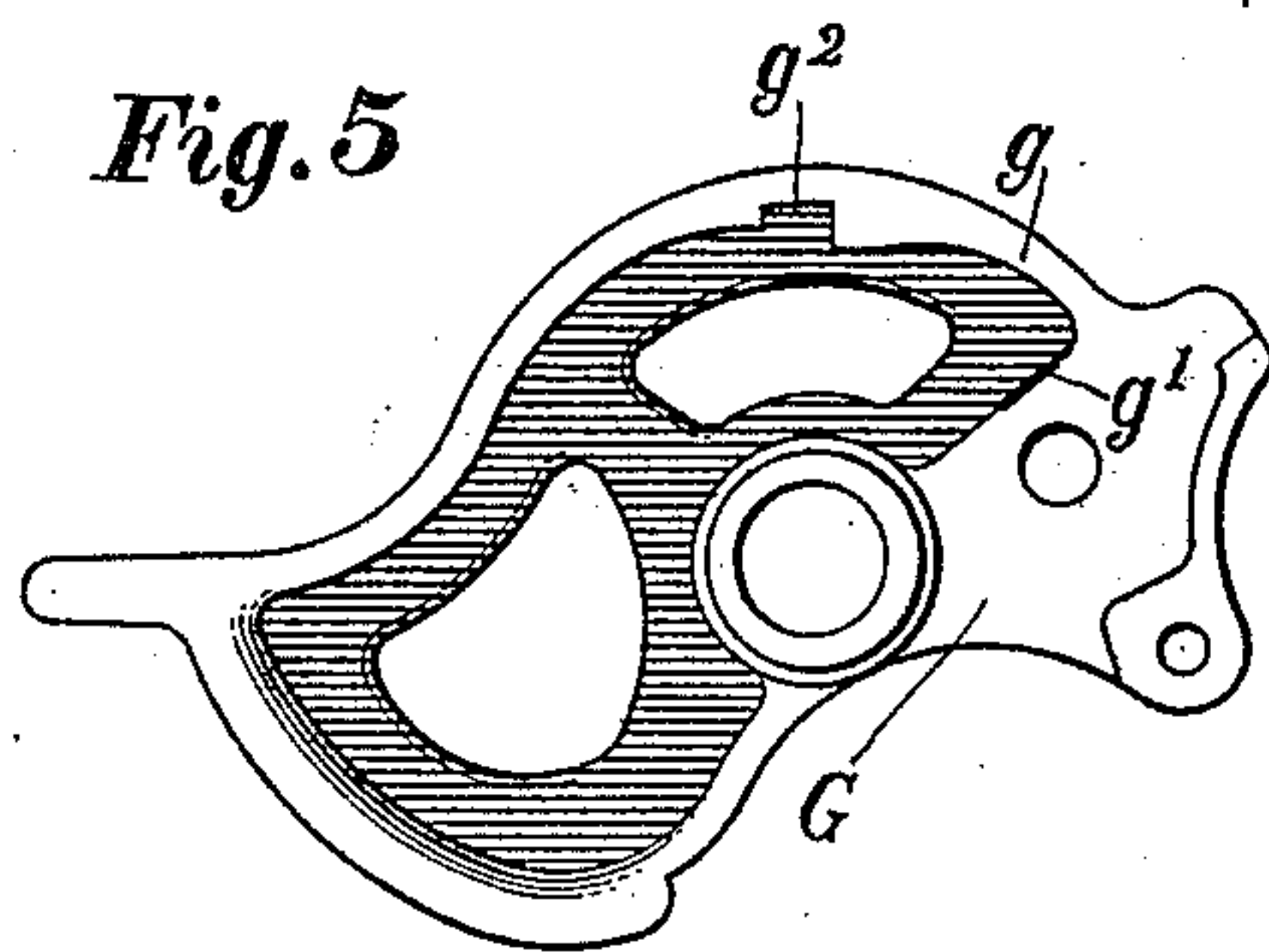
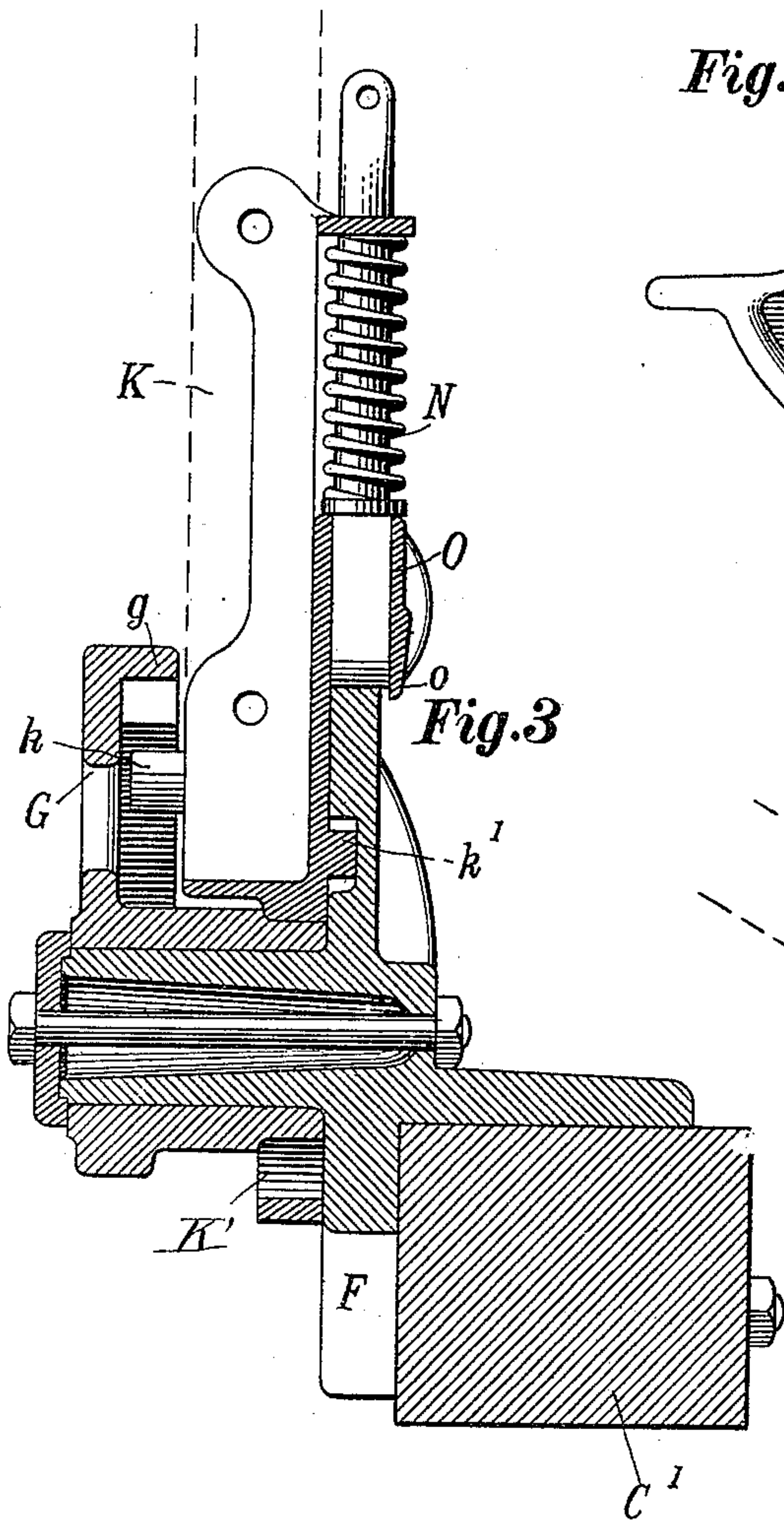
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UNITED STATES PATENT OFFICE.

EDWARD A. JOHNSTON, OF CHICAGO, ILLINOIS.

MOWER.

SPECIFICATION forming part of Letters Patent No. 632,219, dated August 29, 1899.

Application filed May 9, 1898. Serial No. 680,153. (No model.)

To all whom it may concern:

Be it known that I, EDWARD A. JOHNSTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Mowing-Machines, of which the following is a specification.

My invention relates to improvements in mowing-machines in which the finger-bar projects from the side of the machine and is controlled by a lifting device pivoted on the frame of the machine; and the object of my improvement is to provide a lifting device on the driver by which the cutting apparatus can be easily and quickly raised and lowered through a long range of movement by the operator. I obtain this object by mechanisms illustrated in the accompanying drawings, in which—

Figure 1 is an elevation from the finger-bar side of so much of a mowing-machine as is necessary to show my improvement. Two views of the position the parts occupy during the raising operation are shown in dotted lines. Fig. 2 is an enlarged detail view of the raising device from the opposite side of the view shown in Fig. 1. The full-line view shown in this figure is of the parts in the position they occupy when the foot-lever has raised the parts to the limit of its movement and the hand-lever has been started on its movement. The position of the parts when the machine is in operation is also shown in dotted lines, as is also the position of the parts when they have been given their extreme of movement. Fig. 3 is a vertical cross-sectional view through the pivot of the lifting device. Fig. 4 is a view, partly in section, of the pivot-casting of the lifting device, with the hand-lever partly thrown back. Fig. 5 is a detail view of the primary lever.

Similar letters refer to similar parts throughout the several views.

The mowing-machine to which I have attached my improvement is of the type shown in the patent granted to Bert R. Benjamin and myself March 9, 1897, No. 578,404.

The main wheel A is partly shown in Fig. 1. It supports the main axle B, which in turn carries the main frame C. Pivoted to this main frame in the usual manner is the coup-

ling-frame D, to which in turn is pivoted the finger-bar E.

Rigidly attached to the main frame C is the flanged casting F, which is provided with a stud, on which a primary lever G is pivoted, one arm of which is connected by the connection H to the cutting apparatus. To the other arm the foot-lever I is attached. When power is applied to this foot-lever, the primary lever will be rocked on its pivot and the cutting apparatus will be raised proportionately. A strong spring J reacts between the primary lever G and a fixed part of the frame of the machine in such a manner as to tend to rock the lever on its pivot and lessen the weight of the cutting apparatus on the ground. As shown in the drawings, a bent link J' extends from the end of the spring J, which is positioned nearly parallel with the tongue C' and is attached to a flange on the primary lever G. The other end of the spring is attached by an adjustable eyebolt J² to the tongue C', thus providing for the adjustment of the spring force applied to the primary lever. The link J' is used as an extension of the spring because there is not room for the spring to extend to the primary lever when the spring is applied, as shown in the drawings.

Pivoted on the stud of the flanged casting F is the hand-lever K. Its bearing on the pivot is elongated, as at K', so that it can move lengthwise somewhat. A link L connects with this lever at l and with the crank-arm L', that is rigidly fixed to the shaft L². This shaft is connected with the clutch mechanism of the machine, as is shown and described in Patent No. 578,404, of March 9, 1897. As thus far described when the hand-lever is moved on its pivot it will move the crank-arm L' back and forth. A spring M is attached to the link L and to the main frame of the machine and by its action tends to hold the hand-lever K in an upright forward position. The stop F' prevents the hand-lever from being thrown forward by this spring out of the reach of the driver. In order to make the hand-lever effective to rock the primary lever G on its pivot and thus lift the cutting apparatus, it has a pin k connected to it that extends into the path of a flange g

on the primary lever G. This pin k as the hand-lever is moved will come in contact with the end of the flange g' . This stop g' also prevents the cutting apparatus dropping too far into holes that are frequently found in rough meadows. The place where the pin and flange will strike can be seen by referring to Fig. 5. There is also a notch g^2 on the primary lever G, which when the lever is in its usual working position is out of the path of the pin k . When, however, the primary lever is partly raised, the notch g^2 will be caught by the pin k if the hand-lever K is pulled up on its elongated pivot-bearing. In order to keep the hand-lever from dropping down on its elongated bearing, a spring N is placed to react between it and the frame of the machine. In the drawings this spring N is shown as acting on a pawl O, which pawl is flanged, as at o , to overlap the edge of the flanged casting F and hold the lever closely against the side of the casting.

The casting F besides having the stop F' to limit the forward movement of the hand-lever has a notch F^2 in the flange just in rear of the stop, and then the radius of the flange is lengthened in rear of the notch, so that the action of the spring N upon the pawl tends to hold the lifting-lever up, and the pin k , being beneath the flange g of the primary lever, is thus brought within the path of the notch g^2 on that lever. The other extremity of the casting F is cut away to form a notch, behind which the spring N forces the pawl O and locks the hand-lever when it is thrown to this extreme of its movement. The spring N thus performs the double office of actuating the pawl and keeping the hand-lever raised on its elongated pivot-bearing. In order to disengage the pin k from the notch g^2 , a second pin k' is fastened to the hand-lever, and as the lever goes forward it comes against a flange F^3 on the casting F, which acts as a cam to force the hand-lever down against the action of the spring N and thus release the pin k from the notch g^2 . The flange F^3 is so positioned as to act on the hand-lever when it is over the notch F^2 .

Attention is called to the fact that any movement of the coupling-frame and finger-bar over uneven ground, which frequently raises the cutting apparatus to considerable heights, can have no effect upon the connection which operates the shaft that unclutches the mower because the hand-lever is out of engagement with the primary lever, the pin k being at this time held below the notch g^2 by the cam F^3 . Any extreme movement, therefore, of the cutting apparatus over rough ground will only rock the primary lever on its pivot. When, however, the operator is ready to raise the cutting apparatus, he can do so by the foot-lever, which will give a sufficient range of movement of the cutting apparatus to pass over ordinary obstructions. The hand-lever will remain in position and the machine will not be unclutched. When

an extreme position of the cutting apparatus is desired—such a position as would not allow the knife to be reciprocated by the connecting-rod—the hand-lever is worked and the pin k engages with the notch g^2 in the flange of the primary lever, which notch has been thrown into position to be engaged by the pin by the movement of the foot-lever, and the further movement of the hand-lever raises the cutting apparatus high enough to clear large obstructions and to pass by trees and stumps. This movement of the hand-lever unclutches the machine. If it is desired, however, the hand-lever can be used to give the first movement to the primary lever G, in which case the pin k will strike against the end g' of the flange. The parts can then be held in this position by the operator with his foot on the foot-lever. The hand-lever can then be thrown forward, (see position of the parts shown in full lines in Fig. 2,) when it will on its return movement bring the pin k into the notch g^2 , and then all the parts can be thrown into their extreme positions by the continued movement of the hand-lever. The object of this secondary movement of the hand-lever or of using the hand-lever to complete the extreme raising of the cutting apparatus is that when the cutting apparatus is given its full movement by one stroke of the lever its weight is so great as to make the operation a hard one for the driver. If the lifting-spring is increased in strength to make the handling easier, it will when the machine travels over rough ground raise the cutting apparatus from the ground and not allow it to return quickly enough to do a smooth job of mowing. The primary object, therefore, of my improvement is to make an operative device by which the driver can easily raise the cutting apparatus through a long range of movement.

The principle here employed of keeping the hand-lever out of the path of any stops on the primary lever until the hand-lever is actuated can be accomplished in various ways. It has been my purpose to merely show one way, which I now think to be the best way and from practical experience in the field I know to be a success.

Having now described my invention, what I desire to secure by Letters Patent is—

1. In a mower the combination with the main frame, a pivoted coupling-frame, a finger-bar pivoted to the coupling-frame, a primary lever pivoted on the main frame, a connection between one arm of the primary lever and the finger-bar, a spring reacting between the other end of the lever and the main frame, a hand-lever pivoted on the main frame, a spring acting on the hand-lever in a direction tending to bring it into engagement with the primary lever, and means to hold it out of engagement against the force of the spring when the hand-lever is in position for the machine to be at work.

2. In a mower, the combination with the main frame, of a pivoted coupling-frame, and a finger-bar pivoted to the coupling-frame, a primary lever pivoted on the main frame, a
 5 hand-lever pivoted with an elongated bearing on the same center as the primary lever, a spring reacting between the main frame and the hand-lever, a cam and pin to hold the hand-lever against the stress of the spring
 10 when the lever is in position for the machine to be at work, and means to hold the hand-lever in position for the cam and pin to act when the machine is at work.

3. In a mower, the combination with the
 15 main frame, the coupling-frame, and the finger-bar, of a primary lever pivoted on the main frame, one end of which is connected with the finger-bar and the other end with the main frame through a spring connection,
 20 a hand-lever pivoted on the same pivot as the primary lever, means for locking the hand and primary levers together, a stop on the main frame to limit the forward movement of the hand-lever, and a spring acting to hold
 25 the hand-lever against the stop.

4. In a mower, the combination of a primary lever pivoted on the frame, one arm of which is connected with the finger-bar, a spring reacting between the frame and the
 30 other end of the primary lever, a hand-lever pivoted on the frame with an elongated bearing, a spring tending to hold the hand-lever at one extremity of its pivot-bearing, means for holding the hand-lever in the other ex-
 35 tremity of its pivot-bearing when the hand-

lever is in position for the machine to be at work, a stop on the frame to limit the forward movement of the hand-lever, a second spring acting to pull the hand-lever against this stop, a segment-flange on the frame on
 40 which the first-mentioned spring on the hand-lever travels, and by which it tends to throw the hand-lever into the other extremity of its elongated bearing, and locking connections
 45 between the hand-lever and the primary lever.

5. In a mower, the combination of a primary lever pivoted on the frame, one arm of which is connected to the finger-bar, a spring reacting between the other end of the lever and the frame of the machine, a foot-lever
 50 pivoted on the end of the primary lever to which the spring is attached, a hand-lever pivoted, with an elongated bearing, on the same pivot as the primary lever, a flange on the frame having a stop to hold the hand-le-
 55 ver in an upright position, a depression in the flange, a spring on the hand-lever acting against a pawl mounted on the hand-lever, cams on the flange and hand-lever to hold the lever into one extremity of its elongated bear-
 60 ing, a notch at the other end of the flange to hold the coupling-frame and finger-bar elevated when the hand-lever is drawn back, and means for locking the hand-lever and primary lever on the movement of the hand-
 65 lever.

EDWARD A. JOHNSTON.

Witnesses:

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 WILLIAM S. BELL.