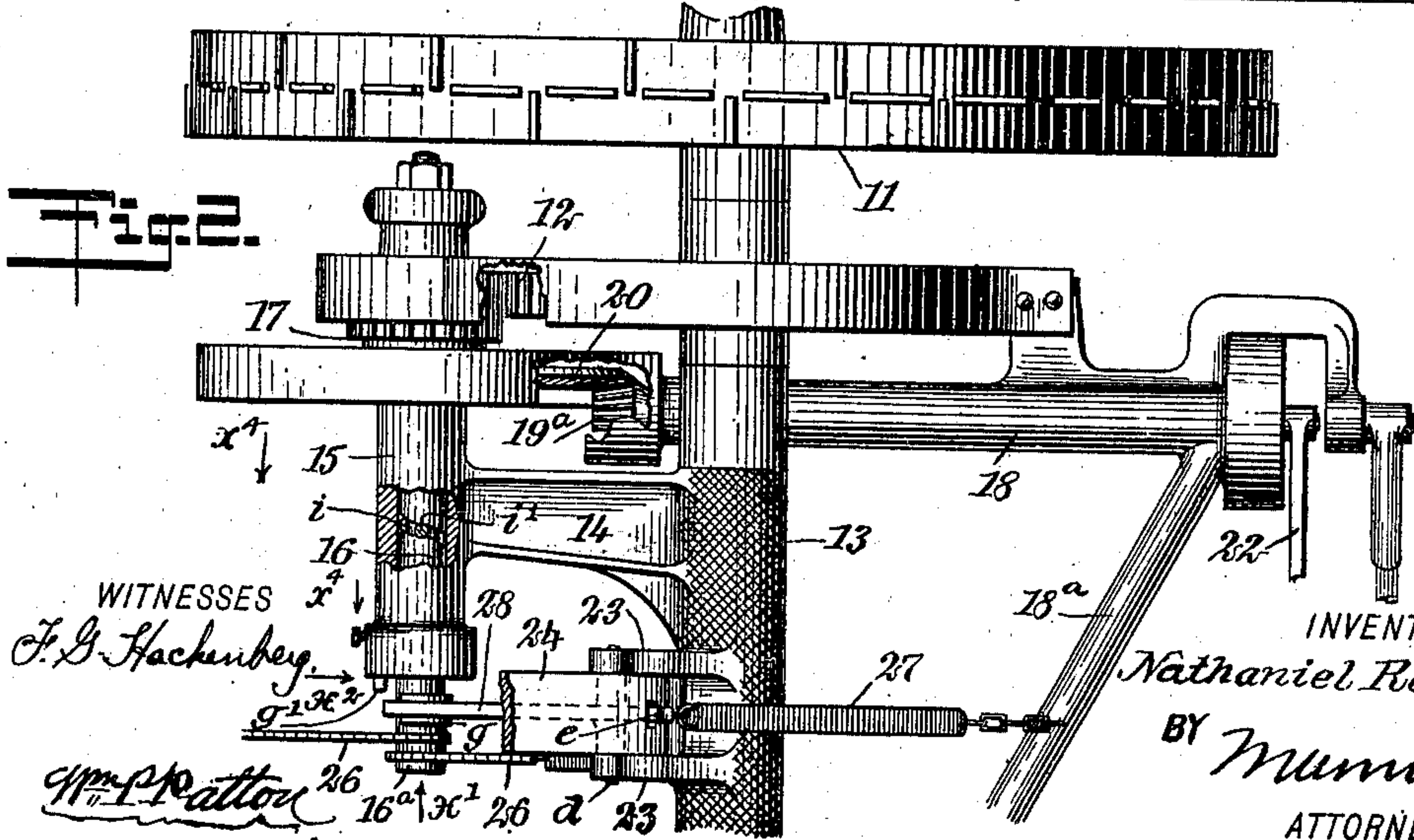
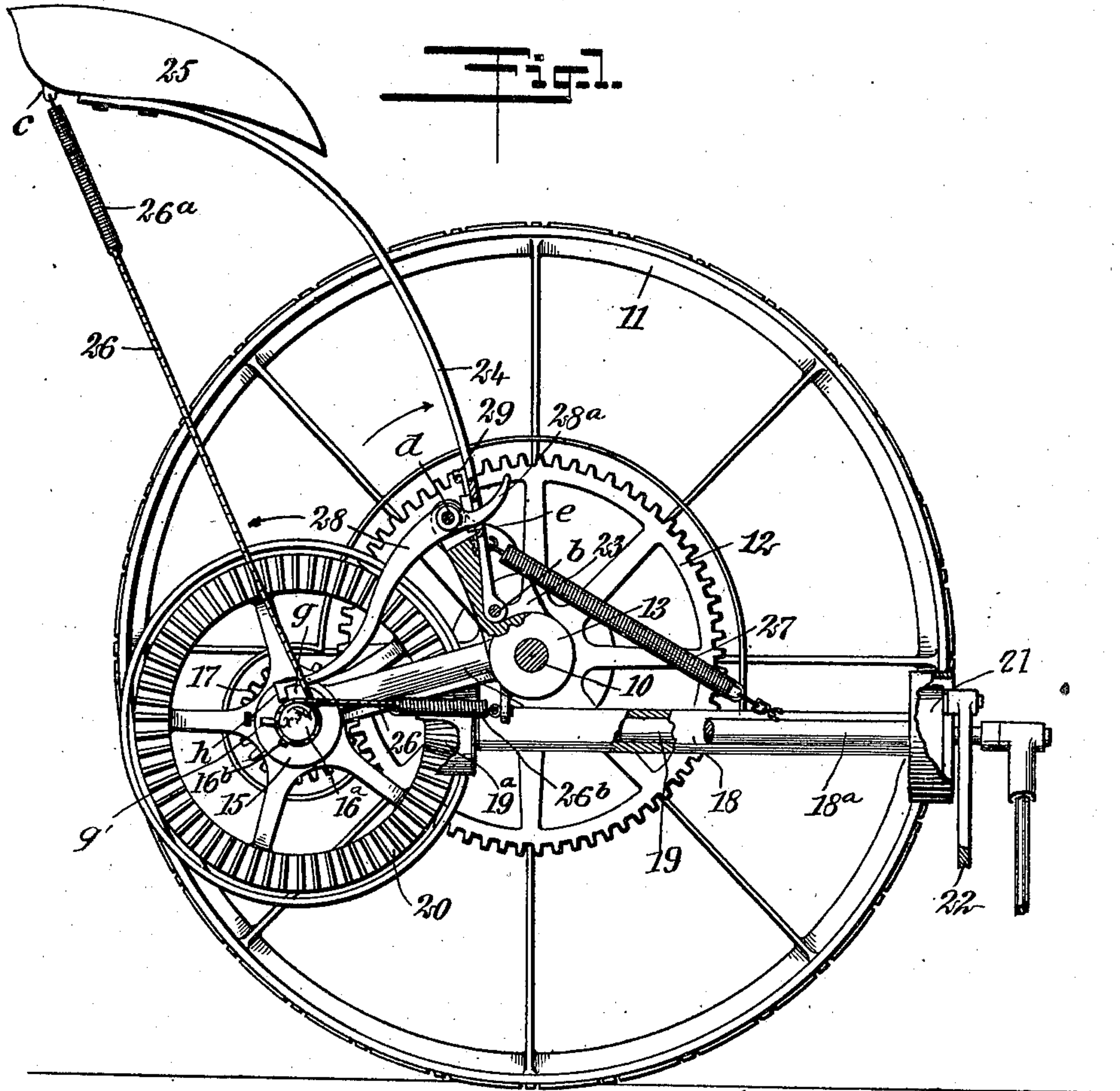


N. ROGERS.
SAFETY CHECK FOR CUTTER BARS OF MOWING MACHINES.
APPLICATION FILED OCT. 29, 1908.

995,907.

Patented June 20, 1911.

2 SHEETS—SHEET 1.



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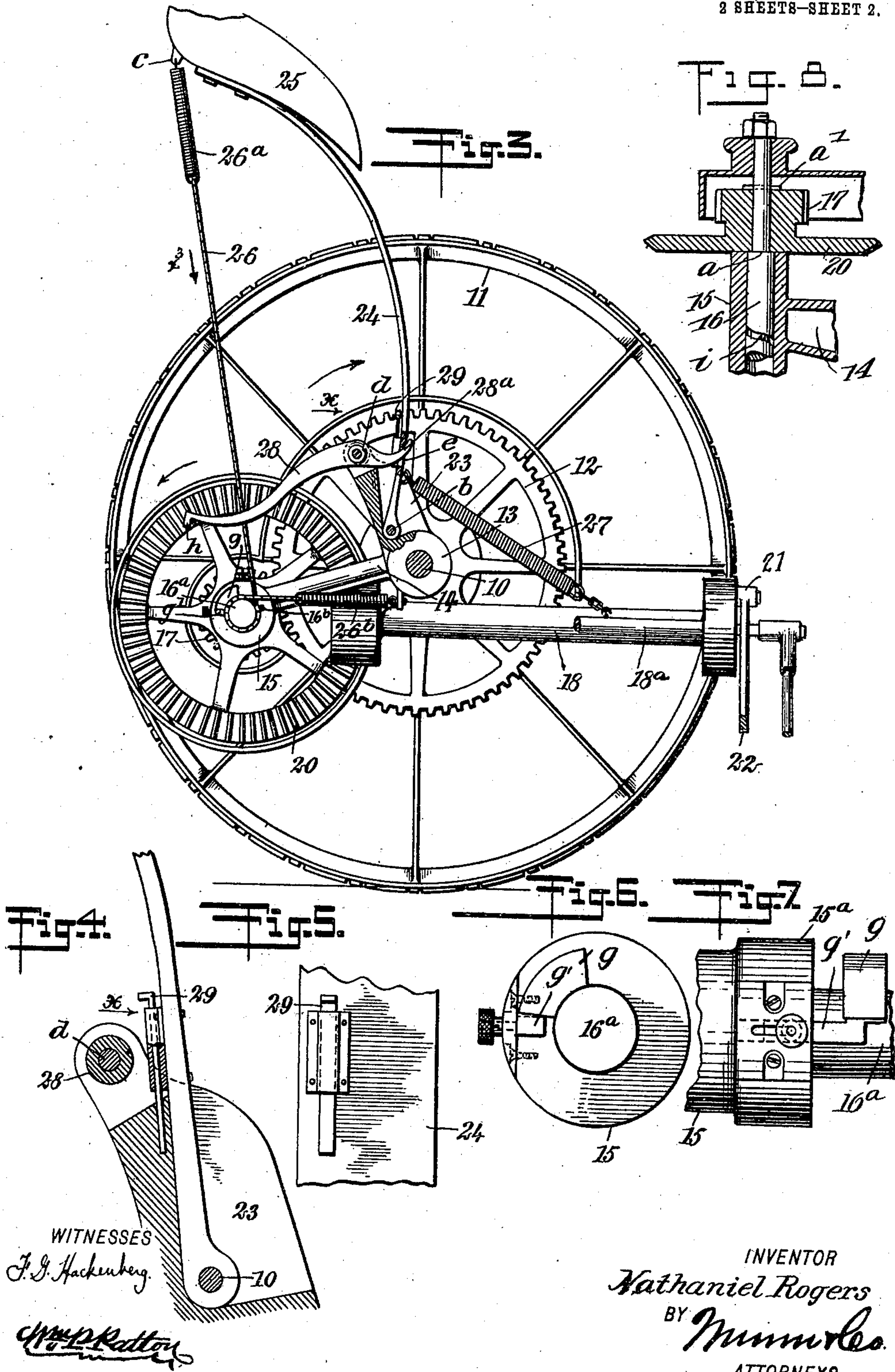
ATTORNEYS

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UNITED STATES PATENT OFFICE.

NATHANIEL ROGERS, OF WOLFBORO, NEW HAMPSHIRE.

SAFETY-CHECK FOR CUTTER-BARS OF MOWING-MACHINES.

995,907.

Specification of Letters Patent. Patented June 20, 1911.

Application filed October 29, 1908. Serial No. 460,018.

To all whom it may concern:

Be it known that I, NATHANIEL ROGERS, a citizen of the United States, and a resident of Wolfboro, in the county of Carroll and State of New Hampshire, have invented a new and Improved Safety-Check for Cutter-Bars of Mowing-Machines, of which the following is a full, clear, and exact description.

In the operation of mowing machines as usually constructed, danger of serious injury is incurred when the driver dismounts from his seat, or is accidentally thrown therefrom in the traverse of rough ground, due to the failure of the operator to stop the reciprocation of the cutter bar.

The object of this invention is to provide novel means for automatically and instantly stopping the action of the cutter bar while the mowing machine is progressively moved, at the time the driver vacates the seat on the machine when said vacation is effected purposely or accidentally.

The invention consists in the novel construction and combination of parts, as is hereinafter described and defined in the appended claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a partly sectional side view of a mowing machine gearing, embodying details of the invention, showing the adjustment of parts when the seat for the driver is occupied; and the cutter bar is adapted to receive reciprocation; Fig. 2 is a plan view of the mechanism shown in Fig. 1; Fig. 3 is a side view of the mechanism shown in Fig. 1, but changed in adjustment, showing parts in the relative positions assumed when the seat on the machine is vacant; and the cutter bar is rendered dormant. Fig. 4 is an enlarged partly sectional side view of one means for locking the seat supporting arm in a rearward position and the gearing in mesh for the reciprocation of the cutter bar; Fig. 5 is an enlarged side view of a portion of the seat supporting arm and a slidable bolt thereon, seen in the direction of the arrow X in Figs. 3 and 4; Fig. 6 is an enlarged end view of novel details seen in the direction of the arrow X' in Fig. 2; Fig. 7 is a side view in part, of novel details, seen in the direction of the arrow X² in Fig. 2; and

Fig. 8 is an enlarged sectional plan view of actuating mechanism for a cutter bar, not shown, this mechanism being positioned below the arrow X⁴ in Fig. 2.

In the drawings, 10 indicates an axle for a mowing machine and 11 a traction wheel thereon, a master spur gear 12 being mounted and secured on the axle near the traction wheel. On the axle 10, a sleeve 13 is loosely mounted, and from said sleeve an arm 14 is extended rearward at a right-angle thereto, carrying at its rear end a tubular box 15, that is parallel with the sleeve 13. In the box 15, a countershaft 16 is loosely fitted, and from the end of this box that is near the spur gear 12, the body of the countershaft 16 is reduced in diameter and is extended through a boss on a casing that covers the master spur gear 12, this end of the shaft 16 having a nut mounted on it.

A spur pinion 17 is loosely mounted upon the portion of the counter-shaft 16, that is of reduced diameter, and likewise a bevel gear 20, that is of considerable diameter, said gear that faces toward the arm 14 being formed or secured upon the spur pinion 17. The reduction in diameter of the countershaft 16 produces a shoulder *a* thereon, against which the bevel gear 20 has loose contact, and the bevel gear and spur pinion 17 are prevented from sliding away from the shoulder by a cross pin *a'*, that is inserted through a transverse perforation of the counter-shaft, and has a loose engagement with the end of the spur pinion, as is clearly shown in Fig. 8.

In an elongated box 18, that is supported from the main frame of the mowing machine, not shown, a shaft 19 is rotatably carried, and on the rear end of the shaft that is near the bevel gear 20, a bevel pinion 19^a is mounted and secured, said pinion being meshed with the gear 20 when the mowing machine is in operation, as will hereinafter appear. At the forward end of the shaft 19, a crank disk 21 is mounted and secured thereon, and upon said crank disk one end of a pitman rod 22 is pivoted, and thus adapted to receive reciprocal movement, said rod similarly actuating a cutter bar for the mowing machine, not shown.

The details of construction hereinbefore described are all well known parts of a modern mowing machine, the ordinary means for manually shifting the bevel gear 20 toward and from the bevel pinion 19^a

being supplanted by novel means, that are controlled by the rocking movement of a driver's seat, as will hereinafter be fully described.

Between the spaced arms 23, that are upwardly extended from the sleeve 13, the lower end of a seat-supporting arm 24 is pivoted, said arm from its pivot connection *b* being curved upward and rearward, and on the rear end thereof a seat 25 in plate form is mounted and secured. Near the forward end of the box 18 a brace bar 18^a is secured by one end thereof, and thence is extended rearward into an engagement with the sleeve 13.

As shown in Fig. 2, the seat-supporting arm 24 is disposed at its rear end directly over the remaining end of the counter-shaft 16, which projects from the right-hand end of the box 15, as shown at 16^a in Fig. 2. A short distance from the right-hand end of the box 15, an abutment block *g* is formed on the shaft end 16^a, which will be more fully described hereinafter, said block serving to define the slidable movement of the shaft 16 toward the left side of the machine.

A flexible connection 26 is wrapped around the end 16^a of the shaft 16, and held thereon by the pin 16^b and from said shaft is extended at its ends respectively toward the rear end of the arm 24 and the axle 10. The portion of the flexible connection 26 that is upwardly extended is attached to one end of a coiled spring 26^a, that is at its upper end received upon the seat plate 25, or it may be affixed upon the rear end of the arm 24. Upon the remaining end of the flexible connection 26, which is extended forwardly from the shaft end 16^a, one end of a coiled spring 26^b is secured, said spring in taut condition being extended forwardly into connection with a depending ear on the sleeve 13. It will be noted that the pull of the springs 26^a, 26^b tightens the wrapped portion of the flexible connection 26 upon the end portion 16^a of the counter-shaft 16. Upon the front side of the seat-carrying arm 24, one end of a contractible spring 27 is secured, said spring, that extends forwardly and downwardly, is attached at its forward end upon the brace 18^a.

The pull of the spring 27 on the arm 24 rocks said arm forwardly or into the position shown in Fig. 3, this occurring when the seat 25 is not occupied. Between the arms 23, above the pivot connection *b* of the arm 24, a detent arm 28 is pivoted, as shown at *d* in Figs. 1 and 3. The pivot *d* engages the detent arm 28 at a point a short distance from the forward end of said arm, and in the detent arm adjacent to and forward of the pivot *d* a slot opening *e* is formed, thus producing a short member 28^a that is curved upward and forward from the pivot *d*.

When in place, the short arm 28^a that has

been passed through the slot *e* and curves upward therefrom fits neatly in said slot, so that a rocking movement of the seat-supporting arm 24 will correspondingly rock the detent arm 28, and it will be seen that the rocked movement of the arm 24 forwardly, due to the pull of the spring 27, will depress the short arm 28^a and elevate the rear end of the detent arm 28.

The abutment block *g*, before mentioned, is formed or secured on the portion 16^a of the shaft 16, and as shown, the end walls thereof are defined by radial lines prolonged from the center of the shaft 16.

The portion of the detent arm 28 that is preferably curved as shown and extends rearward, terminates in the depending hook member *h*, before mentioned, said hook having engagement with the rear end wall of the abutment block *g* when the detent arm is rocked downward, as is represented in Fig. 1.

As shown in Figs. 2 and 8, a cam groove *i* is formed in the body of the counter shaft 16, near the longitudinal center thereof, having a quick pitch or spiral turn. From the inner surface of the box 15, in which the shaft 16 is rotatably mounted, a stud *i'* projects into the cam groove *i*, and serves to give an endwise movement to the shaft if it is turned in either direction. The trend of the diagonal groove *i* in the shaft 16 is such that upon turning said shaft in direction of the arrow α^3 , Fig. 1, it will be moved endwise in direction of the arrow α^4 , Fig. 2, and cause the bevel gear 20 to mesh with the bevel pinion 19^a, thus adapting the gearing that is driven by the traction wheel 11 to reciprocate the cutter bar of the mowing machine. The left hand end of the box 15, considered from the front of the machine, is enlarged in diameter, as shown in Fig. 2, and on said enlarged end a stop bar *g'* is slidably mounted, which may be longitudinally adjusted toward and from the abutment block *g*.

It will be seen that when the stop bar *g'* is adjusted endwise toward the abutment block *g*, it will cross the path of rotatable movement of said block and arrest it, said contact being indicated in Figs. 6 and 7. It should be further explained that the arm 24, carrying the seat 25, is somewhat resilient, so that when weight is placed upon the seat 25 the arm 24 is not only rocked rearwardly, but is also bent slightly, hence, when the seat is occupied the distance from the point *c* thereon to the center of the shaft 16 is less than it is when the seat is vacant. Furthermore, when the seat 25 is occupied, and assumes the rearwardly rocked position shown in Fig. 1, the spring 27 will be stretched, and the position of the flexible connection 26, that extends between the seat and the shaft 16, will be slackened. The

slackness of the flexible connection mentioned will permit the spring 26^b that is under tension, to pull upon the flexible connection 26 it is attached to, and owing to the wrapped engagement of said flexible connection with the portion 16^a of the counter shaft 16, said shaft will be partially rotated in the direction of the arrow α^3 , Fig. 1, which, as before explained, will move the shaft 16 in the direction of the arrow α^4 , Fig. 2, and effect a meshed engagement of the bevel gear 20 with the bevel pinion 19^a. It will also be noted that upon vacation of the seat 25, the spring 27, by its contraction, will pull the arm 24 into a nearly upright position, and as said arm will resume a normal form it will be lengthened, and the distance between the point *c* and the center of the shaft 16 be correspondingly increased. The portion of the flexible connection 26, between the seat and the shaft 16, will be drawn upward, which will turn the shaft 16 in the reverse direction of the arrow α^3 and cause said shaft to move endwise in the reverse direction of the arrow α^4 , thus detaching the bevel gear 20 from the pinion 19^a, and consequently instantly arresting the reciprocal movement of the cutter bar of the mowing machine. The rearward and downward rocking movement of the seat supporting arm 24, due to the occupation of the seat 25 by the driver of the mowing machine, rocks the detent arm 28 downward and engages the hook *h* thereof with an end wall of the abutment block *g*, which engagement serves to prevent a release of the counter shaft and a detachment of the teeth of the gear 20 from the pinion 19^a. It will be noted that the pull of the spring 27 on the seat carrying arm 24 when the seat is vacated, also causes the short forward member 28^a of the detent arm 28 to rock downwardly, and this will obviously rock the rear end of the detent arm upwardly.

Referring again to the abutment block *g*, it will be noted that the position given to said block with relation to the stop bar *g'*, is such that the abutment block will have contact therewith when the seat 25 is vacant, as appears in Fig. 1, thus adapting the taut flexible connection 26 to counteract against the pull of the spring 27, check the forward rocking movement of the arm 24, and define the degree of upward rocking movement had by the detent arm 28.

In some cases, when it is found necessary for the proper control of the draft animals or for other causes, the driver prefers to walk while the machine is in motion, and it is desired to detachably secure the gearing 19^a, 20, in meshed engagement for the assured reciprocation of the cutter bar of the machine, the following appliance may be utilized for such a purpose.

A key bolt 29 is slidably secured upon a

side of the seat supporting arm 24, and adapted for insertion into a socket in one of the upright arms 23, as is clearly shown in Fig. 4, and it will be evident that when the key bolt is thus inserted, the arm 24 will be held stationary and the gearing 19^a, 20 will be maintained in meshed engagement with each other until the key bolt is released from the arm 23.

The engagement of the stop bar *g'* with the abutment block *g*, is mainly useful to prevent any possible reciprocation of the cutter bar of the mowing machine while the latter is drawn over rough ground, to and from a field where the machine is to be or has been in use.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a mowing machine, the combination with a pitman rod, an axle, a spur gear thereon, a sliding and rocking counter shaft having a spiral trending cam groove therein, a supported box wherein the counter shaft is mounted, a stud extending from the box into the cam groove, and a pinion and bevel gear wheel on the counter shaft, of a driven shaft that is crank connected with the pitman rod, a bevel pinion on said driven shaft, and adapted to mesh with the gear wheel of the counter shaft, a rockable seat, and means for rocking the counter shaft from the seat, whereby the said shaft will be moved endwise and its bevel gear wheel moved into or out of mesh with the pinion of the driven shaft according to the position of the said seat.

2. In a mowing machine, the combination with an axle, a furcated arm thereon, a spring-drawn seat-supporting arm pivoted by one end on the furcated arm, and a seat on the other end of said arm, of a supported box, a counter shaft rockable and slidable in said box, said counter shaft having a cam groove therein, a stud extended from the box into the cam groove, a bevel gear on the counter shaft, a rotatable driven shaft, a pitman rod, a cranked connection between the pitman rod and the driven shaft, a bevel pinion on an end of the driven shaft opposed to the bevel gear, and a flexible connection wrapped around the counter shaft and at the respective ends connected with the seat and the furcated arm.

3. In a mowing machine of the character described, the combination with an axle, a furcated arm thereon, a seat-supporting arm pivoted on the furcated arm, and a seat thereon, said seat-supporting arm having an opening therein, of a detent arm pivoted on the furcated arm and passing through the opening, a counter shaft supported to rock and slide, said shaft having an abutment block thereon, a stop bar on the counter shaft support that may engage the abutment

block, a flexible connection wrapped on the counter shaft and furnished with a spring at each end respectively connected with the seat and the furcated arm, and means connected with the shaft that slides it endwise in accord with the rotation of said shaft produced by pull on the flexible connection when the seat is rocked.

4. In a mowing machine, the combination of a cutter bar operating shaft, gearing for operating the said shaft, a rotatable and endwise movable shaft upon which one of the gear wheels of the said gearing is mounted, a movable seat, and means controlled by the movement of the seat, whereby the shaft is rotated and moved endwise to throw the gearing in and out of mesh.

5. In a mowing machine, the combination of a cutter bar operating shaft, gearing for operating the said shaft, a rotatable and endwise movable shaft upon which one of the gear wheels of the said gearing is mounted, a pivoted and spring-pressed seat, means controlled by the seat, whereby the shaft is rotated and moved endwise to throw the gearing in and out of mesh and means for locking the gearing in mesh.

6. In a mowing machine, the combination of a cutter bar operating shaft having a pinion thereon, a counter shaft, a gear wheel loosely mounted on the counter shaft and adapted to mesh with the pinion of the cutter bar operating shaft, means for operating the said gear wheel, a movably mounted seat, means whereby the counter shaft will be rotated by the movement of the seat from one position to the other, and means for moving the counter shaft endwise when rotated, whereby the gear wheel thereon will be moved in and out of mesh with the pinion of the cutter bar operating shaft.

7. In a mowing machine, the combination of a cutter bar operating shaft having a pinion thereon, a counter shaft, a gear wheel loose thereon and adapted to mesh with the pinion of the cutter bar operating shaft, means for operating the said gear wheel, a movably mounted seat, means whereby the counter shaft will be rotated by the movement of the seat from one position to the other, means for moving the counter shaft endwise when rotated, whereby the gear wheel will be moved in and out of mesh with the pinion of the cutter bar operating shaft, and a locking device for the counter shaft controlled by the seat.

8. In a mowing machine, the combination of an axle, a cutter bar operating shaft hav-

ing a pinion thereon, a counter shaft, a gear wheel loosely mounted on the counter shaft and adapted to mesh with the pinion of the cutter bar operating shaft, means for operating the gear wheel from the axle, a pivoted seat, means whereby the counter shaft will be rotated by the swinging movement of the seat from one position to the other, and means for moving the counter shaft endwise when rotated, whereby the said gear wheel will be moved in and out of mesh with the pinion of the cutter bar operating shaft.

9. In a mowing machine, the combination of an axle, a cutter bar operating shaft having a pinion thereon, a counter shaft provided with a stop, a gear wheel loosely mounted on the counter shaft, means for operating the gear wheel from the axle, a pivoted seat carrying arm, means whereby the counter shaft will be rotated by the swinging movement of the seat from one position to the other, means for moving the counter shaft endwise when rotated whereby the gear wheel thereof will be moved in and out of mesh with the pinion of the cutter bar operating shaft, and a pivoted arm adapted to engage the stop of the counter shaft and operated by the seat carrying arm.

10. In a mowing machine, the combination of an axle, a cutter bar operating shaft having a pinion thereon, a counter shaft provided with a stop, a gear wheel loosely mounted on the counter shaft and adapted to mesh with the pinion of the cutter bar operating shaft, means for operating the gear wheel from the axle, a pivoted and spring actuated seat carrying arm provided with an opening therein, means whereby the counter shaft will be rotated by the swinging movement of the seat from one position to the other, means for moving the counter shaft endwise when rotated, whereby the gear wheel will be moved in and out of mesh with the pinion of the cutter operating shaft, and an arm pivoted intermediate of its ends and having one member thereof projecting through the opening of the seat carrying arm, said pivoted arm having a projection on its other member adapted to engage the stop of the counter shaft.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NATHANIEL ROGERS.

Witnesses:

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HUGH H. WALLACE.