

No. 678,838.

Patented July 16, 1901.

M. LAFEVER.

GOVERNOR FOR BAND CUTTERS AND FEEDERS.

(No Model.)

(Application filed July 17, 1900. Renewed June 12, 1901.)

3 Sheets—Sheet 1.

Fig. 3.

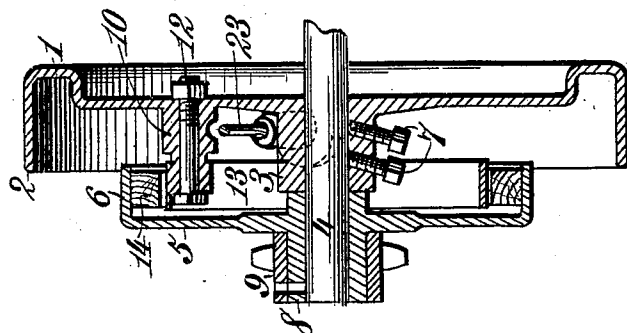


Fig. 2.

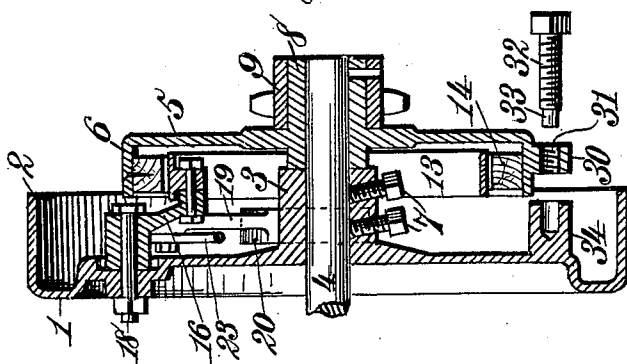
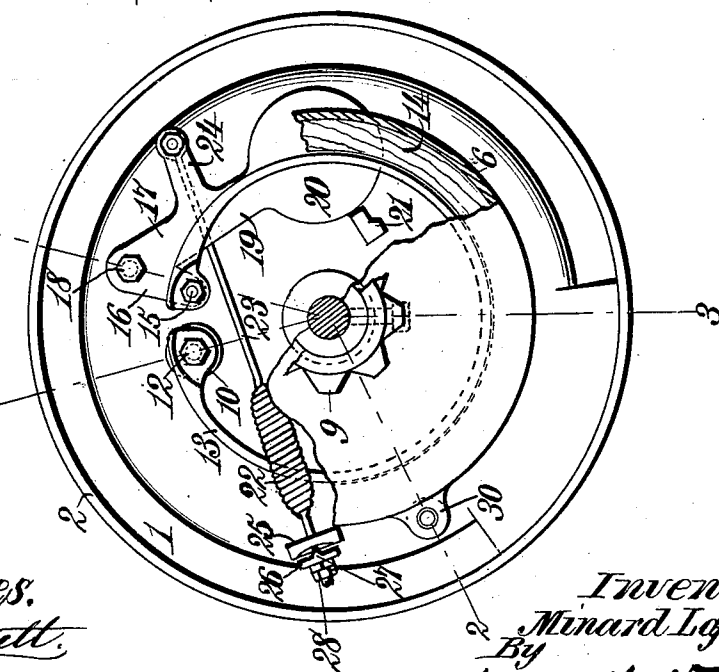


Fig. 1.



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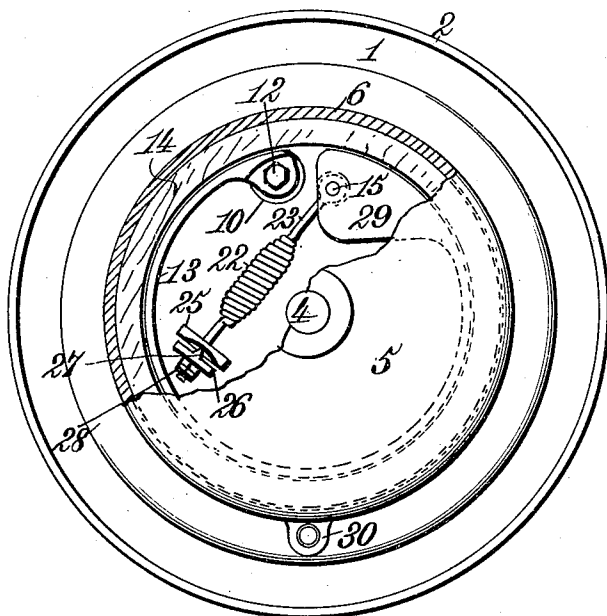
GOVERNOR FOR BAND CUTTERS AND FEEDERS.

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(No Model.)

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Fig. 4.



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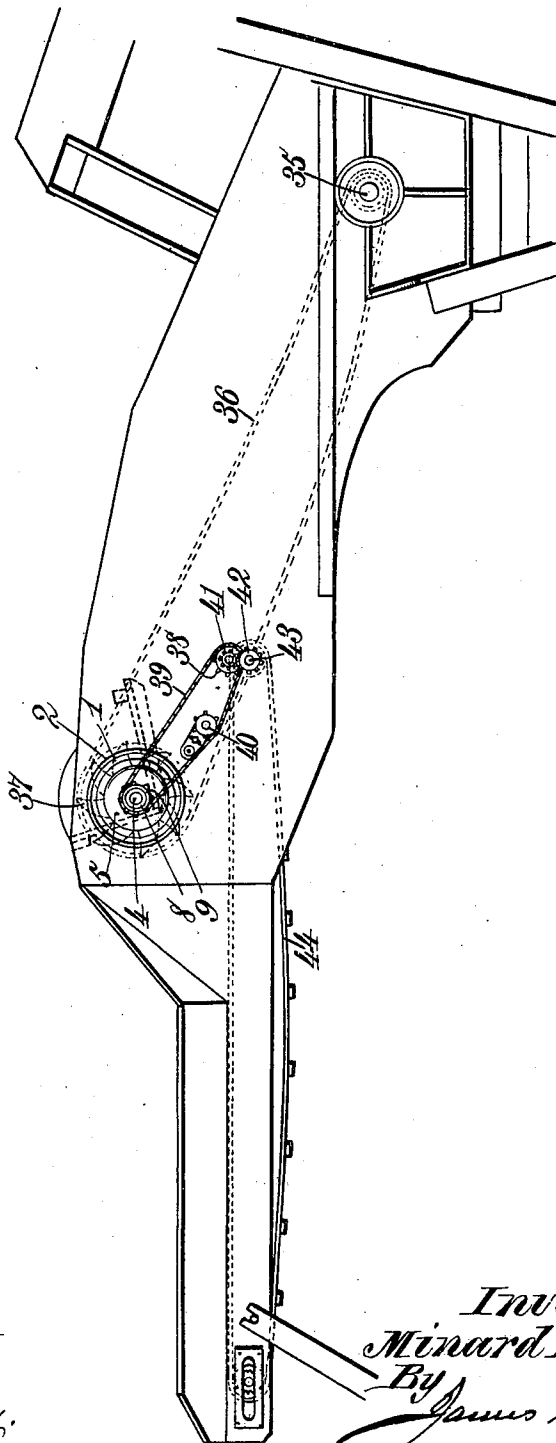
GOVERNOR FOR BAND CUTTERS AND FEEDERS.

(Application filed July 17, 1900. Renewed June 12, 1901.)

(No Model.)

3 Sheets—Sheet 3.

Fig. 5.



Witnesses.
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UNITED STATES PATENT OFFICE.

MINARD LAFEVER, OF BATTLECREEK, MICHIGAN.

GOVERNOR FOR BAND-CUTTERS AND FEEDERS.

SPECIFICATION forming part of Letters Patent No. 678,838, dated July 16, 1901.

Application filed July 17, 1900. Renewed June 12, 1901. Serial No. 64,341. (No model.)

To all whom it may concern:

Be it known that I, MINARD LAFEVER, a citizen of the United States, residing at Battlecreek, in the county of Calhoun and State of Michigan, have invented new and useful Improvements in Governors for Band-Cutters and Feeders, of which the following is a specification.

My invention relates to governors for band-cutters and feeders.

It is my purpose to provide simple means for automatically arresting the action of the raddle or carrier whenever the threshing-machine, either by reason of an overload or from any other cause, drops below its normal speed and for causing the raddle or carrier to again resume its operation as soon as the normal rate of speed of the threshing-machine is again attained.

It is my purpose also to materially simplify and improve the construction and operation of this class of mechanism; and my invention consists in the novel features of construction and new combinations of parts hereinafter fully explained and then particularly pointed out and defined in the claims at the end of this specification.

To enable others to fully understand and practice my said invention, I will proceed to describe the same in detail, reference being had for this purpose to the accompanying drawings, in which—

Figure 1 is a face view or front elevation showing the governor, part of the clutch-disk being broken away to show the interior parts. Fig. 2 is a section of the parts shown in Fig. 1 upon the line 2 2. Fig. 3 is a section through the line 3 3 3 in Fig. 1. Fig. 4 is an elevation showing a slight modification. Fig. 5 is a side elevation of the feed end of a threshing-machine, showing the band-cutter and feeder and the application of my invention thereto.

The reference-numeral 1 in said drawings indicates the web of a drive-pulley having the rim 2 and a central hub 3, by which it can be mounted upon a shaft 4. Upon the same shaft is arranged a clutch-disk 5, having a flange 6, which projects toward the web of the pulley 1. The disk 5 is loose upon the shaft 4, while the pulley is fixed to said shaft by set-screws 7. Upon the clutch-disk 5 is a

hub 8, upon which is a sprocket 9, which operates the raddle or feed-carrier by which the bundles of grain are carried to the threshing-machine. Projecting from the web 1 of the drive-pulley is a boss 10, which supports a pivot-bolt 12. Upon the end of this bolt, which lies within the flange 6, is pivotally mounted one end of an expansible split ring 13, which lies within and near a wooden annulus 14, forming a rigid part of the flange 6, to the inner face of which it is fastened. The other end of said ring is supported by a pivot-bolt 15, carried by the short arm 16 of an angular lever 17, which has its fulcrum upon a bolt 18, projecting from the web of the pulley almost directly in the radial line passing through the end of the ring. The other and longer arm 19 of said lever is provided with a weight 20, which rests upon a lug 21 on the web of the drive-pulley when the latter is not in operation. When said pulley is revolved, however, the weight 20 is swung away from the lug and outward toward the periphery of the casing, thereby expanding the split ring and causing it to engage the wood annulus 14, within which it lies. A moderate degree of centrifugal force acting upon the weight is sufficient to develop a friction between the split ring and the wooden annulus that will lock the two together and cause the drive-pulley and clutch-disk 5 to turn in unison. This centrifugal force is counteracted to a certain extent by the elasticity of the expansible ring and still more by a spring 22, coiled on a rod 23, one end of which is pivotally connected to an arm 24 on the angular lever, while its other end passes through a lug 25, projecting from the web 1, and is provided with a washer 26, having projections 27, which rock on the lug. Nuts 28, turned on the end of the rod behind the washer, serve to adjust the force with which the spring acts. Thus whenever the speed of revolution falls below a predetermined rate the centrifugal force acting upon the weight will be overcome and the ring will contract sufficiently to withdraw it from its operative clutch engagement with the wooden annulus. The clutch-disk 5 will thereupon come to a stop, as well as the sprocket on its hub by which the raddle is driven. When the speed of rotation reaches a normal rate, the centrifugal force acting

upon the weight 20 will overcome both the spring 22 and the elasticity of the ring 13 and the lever will expand the latter and again lock the drive-pulley to the clutch-disk 5.

5 I may in some instances dispense with the weighted angular lever and connect the end of the rod 23 directly to the free or unattached end of the expansible ring, which is provided with an enlargement 29, which constitutes a weight and is the equivalent of the weight 20 before referred to, as shown in Fig. 4. In other respects the construction and arrangement do not differ from what has already been described.

15 In Fig. 5 of the drawings I have shown my improved governor as applied to a band-cutter and feeder, the connections between the various parts being as follows: Around a pulley on the shaft 35 of the threshing-cylinder passes a belt 36, which also passes around a pulley on the shaft 4 and transmits the movement of the cylinder-shaft 35 to the shaft 4. On the latter shaft are mounted the cutters 37. Connecting the sprocket-wheel 9 on the clutch-disk 5 with a sprocket-wheel 38 is a sprocket-chain 39, having the usual slack take-up 40 acting thereon. Upon the same shaft as that to which the sprocket-wheel 38 is secured is a gear 41, which meshes with a corresponding gear 42 on a shaft 43, around which the carrier 44 passes. By this construction it will be observed that if the speed of rotation of the shaft 35 of the threshing-cylinder falls below a certain predetermined point the clutch-disk 5 will be disconnected from the shaft 4, which is driven from the shaft 35, and the feeding movement of the carrier 44 will be automatically stopped. Clogging of the machine is therefore effectually prevented.

To provide for an accident to the governor, by which it may be temporarily thrown out of action, I form on the exterior of the flange 6 a projection 30, having a threaded aperture 31 to receive a bolt 32, having a plain-faced point 33, which enters an opening in a boss 34 on the plate 1. By this means the two parts can be temporarily locked together. This is only intended for use in case of a mishap to the clutch, so that the machinery need not lie idle.

I have heretofore described the part 1 as being the web of a pulley secured to the shaft 4 and driven thereby. It is obvious, however, that this so-called "pulley" may be a plate, disk, or other part which is connected with the shaft 4. In the claims, therefore, where I have referred to this part as a "pulley" I intend it to be understood, of course, that it may be a plate, disk, or other rotary part connected with the shaft 4.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

65 1. An automatic governor for band-cutters and feeders, consisting of a rotary part and a clutch-disk, the latter having an annulus

thereon, a normally-contracted expansible split ring pivoted to said rotary part and lying within said annulus, a lever fulcrumed to said rotary part and connected with the free end of said ring, and a weight on said lever adapted to be thrown outwardly by centrifugal force to rock said lever and thereby expand said ring.

2. An automatic governor for band-cutters and feeders, consisting of a fixed driving-pulley and a loosely-mounted clutch-disk, both mounted upon a drive-shaft, an annulus secured to said clutch-disk, a normally expansible split ring lying within said annulus and having one end pivotally connected to said pulley, a lever connected to the opposite end of said ring and adapted to expand the same, a spring acting upon said lever to resist its outward movement and a weight carried by said lever, adapted to be thrown outwardly by centrifugal force to rock said lever and thereby expand said ring.

3. In a governor for band-cutters and feeders, the combination with a drive-pulley locked to a shaft of a clutch-disk having a fixed annulus, a normally-contracted expansible split ring lying within said annulus one end being pivotally connected to the drive-pulley, a lever having its fulcrum on said pulley and connected on one side of said fulcrum to the other end of said ring, and a weight on said lever on the other side of its fulcrum to operate said lever by centrifugal force and expand the split ring against said annulus, substantially as described.

4. In a governor for band-cutters and feeders the combination with a shaft of a drive-pulley locked thereon and a clutch-disk loose on the same, a normally-contracted expansible split ring having one end on a pivot-bolt carried by said pulley said ring lying in an annulus rigid on the clutch-disk, a lever fulcrumed to said pulley and having one end connected to the other end of the split ring, a weight on the other end of said lever, a spring connected to said lever and to a fixed lug on the pulley, and means for varying the tension of said spring, substantially as described.

5. In a governor for band-cutters and feeders, the combination with a drive-pulley and clutch-disk, one locked and the other loose on the same shaft, of a normally-contracted expansible split ring lying in an annulus on the clutch-disk and having one end connected to the said pulley, a spring connected to the other end of said ring, and means for varying the tension of said spring, substantially as described.

6. An automatic governor for band-cutters and feeders, comprising a drive-pulley and a clutch-disk, the former locked and the latter loose upon the same shaft, a normally-contracted expansible split ring lying within an annulus rigid on the clutch-disk, one end of said ring being fixed on the drive-pulley and the other end free to move, and a weight connected with the free end of said split ring

and operated by centrifugal force to expand the ring into contact with the annulus on the clutch-disk, substantially as described.

7. An automatic governor for band-cutters and feeders, comprising a drive-pulley and clutch-disk, the former locked and the latter loose upon the same shaft, a normally-contracted expansible split ring lying within an annulus rigid on the clutch-disk, one end of said ring being fixed on the drive-pulley and the other end free to move, a weight connected with the free end of said split ring and operated by centrifugal force to expand the ring into contact with the annulus on the clutch-disk, and a spring-actuated lever normally operating to contract said ring, substantially as described.

8. In an automatic governor for band-cutters and feeders, a fixed drive-pulley, a loose clutch-disk, an annulus fixed to said disk, a normally-contracted expansible split ring arranged within said annulus, means for pivotally connecting one end of said ring to said pulley, a weighted lever pivoted to said pulley and connected to the other end of said split ring, and an adjustable tension-spring suitably connected to said lever.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MINARD LAFEVER.

Witnesses:

JOHN J. LUMM,
H. H. BARTHOLOMEW.