(No Model.) 3 Sheets—Sheet 1.

G. W. NYE.

ALARM BELL FOR GRAIN ELEVATORS, &c.

No. 446,881. Patented Feb. 24, 1891.

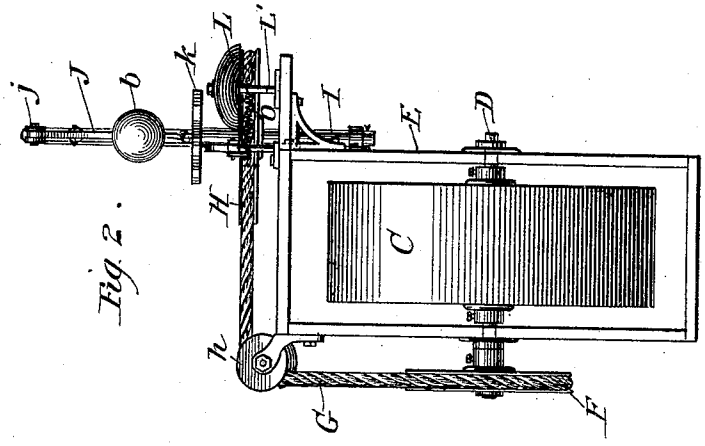


Fig. 2.

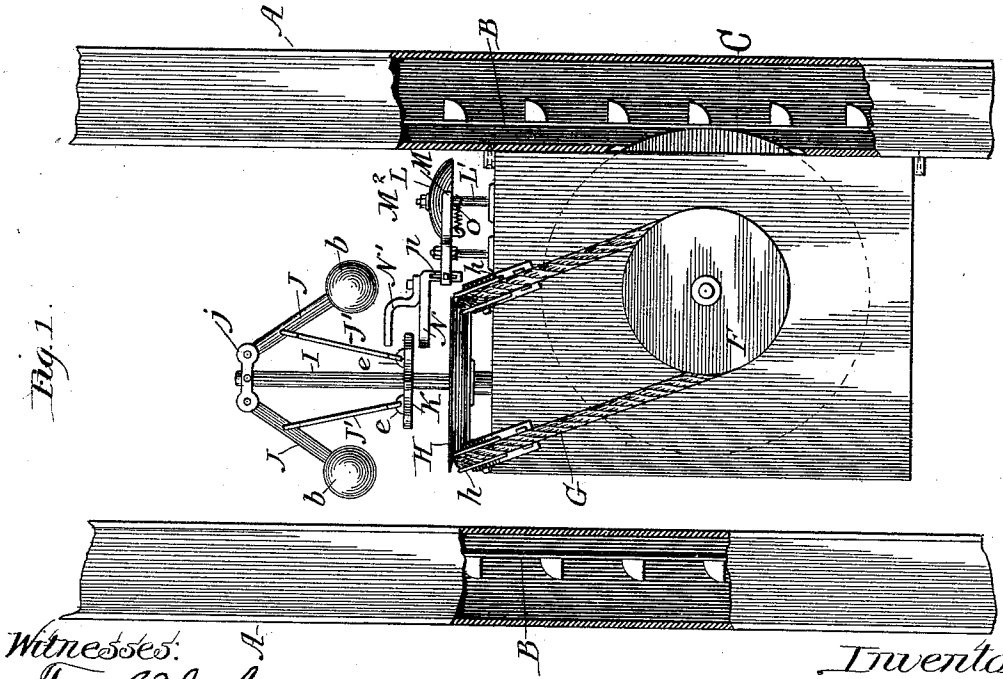


Fig. 1.

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Fig. 3.

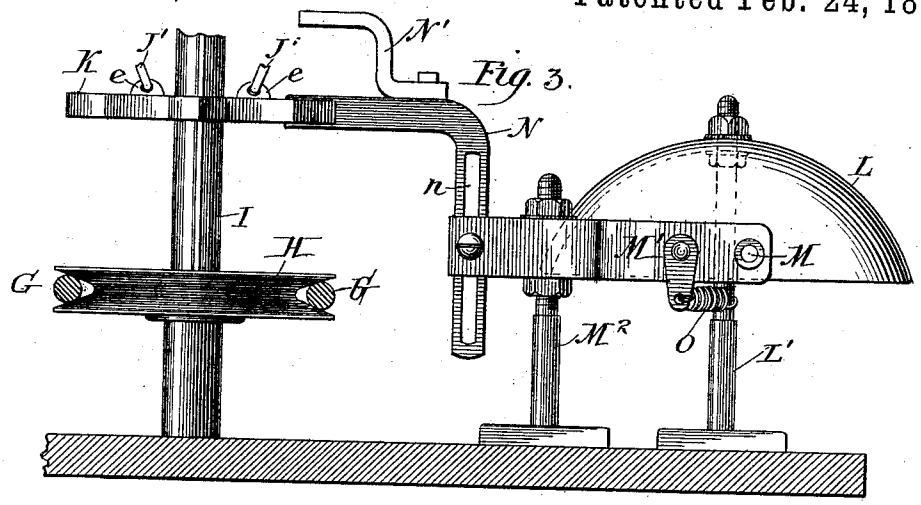


Fig. 4.

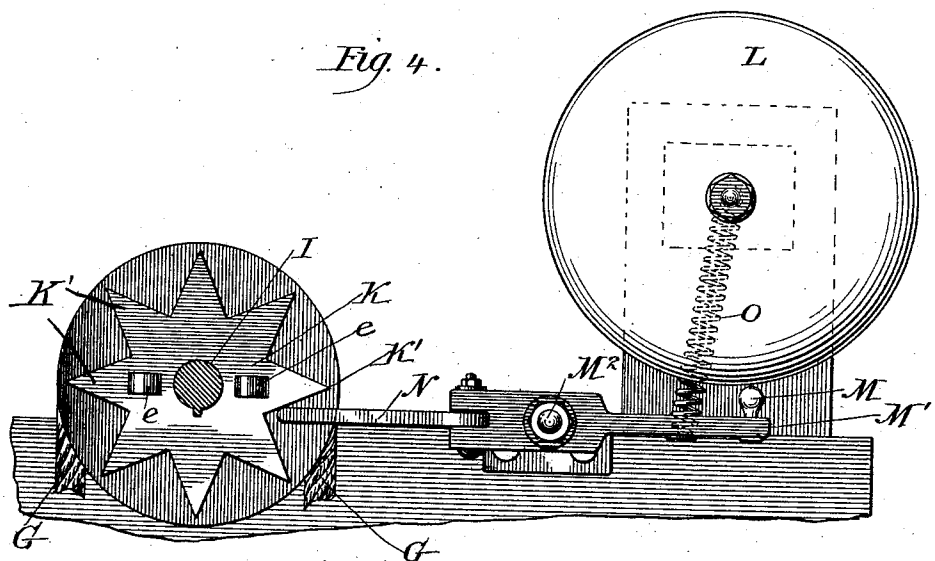


Fig. 5.

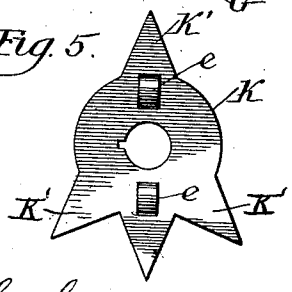
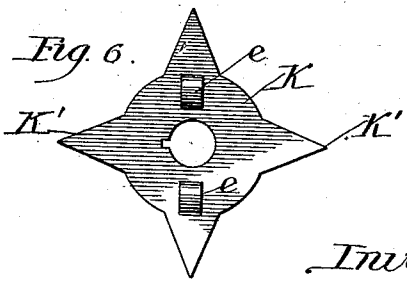


Fig. 6.



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Fig. 7.

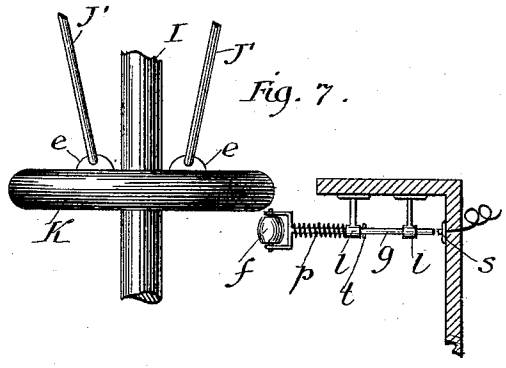
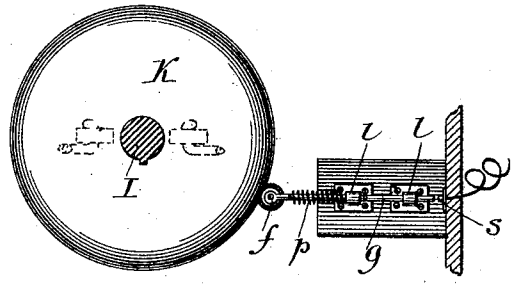


Fig. 8.



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UNITED STATES PATENT OFFICE.

GEORGE W. NYE, OF CHICAGO, ILLINOIS.

ALARM-BELL FOR GRAIN-ELEVATORS, &c.

SPECIFICATION forming part of Letters Patent No. 446,881, dated February 24, 1891.

Application filed December 13, 1889. Serial No. 333,594. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. NYE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Alarm-Bell for Grain-Elevators, of which the following is a specification.

My invention relates to improvements in alarm-bells for grain-elevators; and the object of my improvement is to provide a means for ascertaining the rate of speed of the endless cup-belt of an elevator-leg by mechanism operated by such endless belt.

In the operation of grain-elevators it frequently happens that the machine becomes clogged with the grain from various causes, and this fact is not immediately discoverable. This clogging causes the elevator-belt bearing the cups or buckets to run too slow and ultimately to stop entirely if the cause is not removed. The purpose of my improvement is to provide automatic means to give immediate notice of such clogging by the ringing of a bell, either by striking it with a hammer or by the pressure on a button to complete an electrical circuit and thus ring a bell.

I attain the objects of my invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my device; Fig. 2, a front elevation. Fig. 3 is a side elevation of part of my device. Fig. 4 is a top view of the bell, hammer, and rotary disk or collar. Figs. 5 and 6 are details of different-shaped disks or collars. Fig. 7 shows in elevation a rotary disk and device for ringing an electric bell. Fig. 8 is a view of the devices shown in Fig. 7, from the under side thereof.

Similar letters refer to similar parts throughout the several views.

A A are the two divisions of the leg of a grain-elevator having an endless belt with buckets attached thereto constructed and operating in the ordinary manner.

C is a flat-faced drive-wheel rotating upon a horizontal shaft D, journaled in a frame or box E, which is open at its side next to the elevator-leg to permit the drive-wheel C to bear at its periphery against the endless belt B through an aperture in the elevator-leg. The box E is held in position by cleats on the inside of the leg. The drive-wheel C bears against the endless belt B at the side opposite the buckets with such force that the endless belt when in motion will rotate the drive-wheel.

The shaft D of the drive-wheel C extends beyond the frame or box on one side and bears the sheave F, which actuates the endless cord G. This cord is deflected by the idlers *h h* and passes around the horizontal pulley H, which is rigidly attached at its center to the rotating vertical shaft I. The shaft I is supported in suitable bearings on the box E. Rigidly fastened to the top of the shaft I and rotating with it is the cross-piece *j*, to each end of which is hinged one of the two arms J J, each having at the end thereof a ball *b* of suitable weight. Between the bal's and the point of attachment of the arms J J to the cross-piece *j* two rods J′ J′ are hinged at one end each to one of the arms J J at a point distant from the cross-piece *j* about one-third the distance between the said cross-piece and the balls. At their other end the rods J′ J′ are hinged to the lugs *e e* on the disk or collar K. The disk or collar K is feathered upon the vertical shaft I and rotates with it, but is free to move vertically on said shaft. The disk or collar K is shaped so as to have projections K′ on its periphery, which projections may be varied in shape and arrangement, as shown in Figs. 4, 5, and 6.

L is a bell of suitable size, supported upon a standard L′.

M is a hammer upon the outer end of the lever M′. This lever M′ is pivotally supported upon the standard M^2. At the end of the lever M′ remote from the bell is rigidly attached the arm N, which extends far enough toward the disk or collar K to engage with the projections on the periphery of the said disk or collar as said disk or collar rotates with the shaft I.

O is a spiral spring extending from the standard L′ and fastened to the lever M′ by a lug or otherwise in such manner as to hold hammer M close to the bell L.

In operation the endless belt in the elevator-leg communicates motion to the drive-

wheel C, which actuates the rotating vertical shaft I through the sheave F, cord G, and horizontal pulley H.

The device is so adjusted that when the elevator is properly working the speed with which the shaft I is rotated causes the balls *b* by centrifugal force to spread the arms J J, and thus lift the rotating disk by the rods J′ J′, so that the projections on the disk or collar will not engage the arm N; but when the elevator-leg begins to be clogged the speed of the endless belt B is necessarily diminished, and with it also the speed of the rotating shaft I. This diminution of speed suffers the balls *b b* to drop somewhat, thus lowering the disk or collar K until one of the projections thereon engages the arm N. This will cause the hammer M to be thrown away from the bell L, and the further rotation of the disk K will cause the said projections thereon to pass the arm N and release it. The elasticity of the spiral spring O will then immediately cause the hammer to strike against the bell. The continued rotation of the disk will thus cause the blows of the hammer against the bell to be repeated in rapid succession, giving immediate notice that the elevator-leg is clogged. The arm N may be slotted at its point of juncture with the lever M′, as shown at *n*, so that the device may be adjusted to indicate different rates of speed. An additional arm N′ may be fastened to the top of the arm N, so as to enable the device to register two different rates of speed. The disks or collars also may be of various shapes at their periphery, so as to give different kinds of alarms, so that where two or more elevator-legs are operated in proximity to each other disks or collars having projections differently shaped or arranged on each disk or collar may be employed in the different legs, and the leg which is clogged may be readily discovered by the kind of alarm produced. My device may also be employed to give signals by operating an electric bell.

To operate an electric bell, the rotating disk K should have a substantially smooth periphery, as shown in Figs. 7 and 8. A rod *g* is suspended in suitable hangers *l l*, so that it will slide therein. Directly opposite one end of this rod is a button *s* for closing an electrical circuit, and thus sounding an electric bell. At the other end of the rod *g* toward the disk K is attached a yoke sustaining a pivoted roller *f*. A spiral spring *p* around the rod holds the outer end of the rod *g* away from the button *s*, and also holds the roller *f* a sufficient distance within the periphery of the disk K. A small transverse pin *t* prevents the rod *g* from being thrown too far away from the button *s*. When the rate of speed of the elevator-belt B desired to be registered is attained, the periphery of the disk K presses against the roller *f*, compressing the spiral spring *p* and pressing the sliding rod *g* against the button *s*, thus closing the electrical circuit and ringing an electric bell. (Not shown.) This latter method of using my device may often be the most convenient, as an electric bell may be located in any desired position, however remote from the disk K, while the bell L must necessarily be in the vicinity of the disk.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with an elevator-leg provided with an opening, of an elevator-belt running in said leg, a friction drive-wheel extending through said opening and bearing against said belt, a spindle operated from said drive-wheel, a ball-governor on said spindle, and an alarm-bell arranged to be sounded by a rising and falling collar or disk forming part of said governor, whereby the elevator-belt itself is utilized to sound an alarm when it is not properly working.

2. The combination, with an elevator-leg provided with an opening, of an elevator-belt running in said leg, a box or support E, attached to said leg, a drive-wheel C, suitably journaled in said box or support and arranged to project through said opening into contact with said belt, a spindle I, mounted on said box or support and operated from said drive-wheel, a ball-governor on said spindle, and an alarm-bell arranged to be sounded by a rising and falling collar or disk forming part of said governor, substantially as set forth.

3. An alarm attachment for indicating irregularity in the speed of the endless belt in an elevator-leg, said attachment consisting of a drive-wheel bearing against and operated by said endless belt and communicating motion through an endless cord and horizontal pulley to a spindle operating a ball-governor having a rising and falling rotary disk or collar with projections thereon, said projections being varied in shape or arrangement to engage with a bell-ringing lever, substantially as described.

GEORGE W. NYE.

Witnesses:
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JESSE COX.