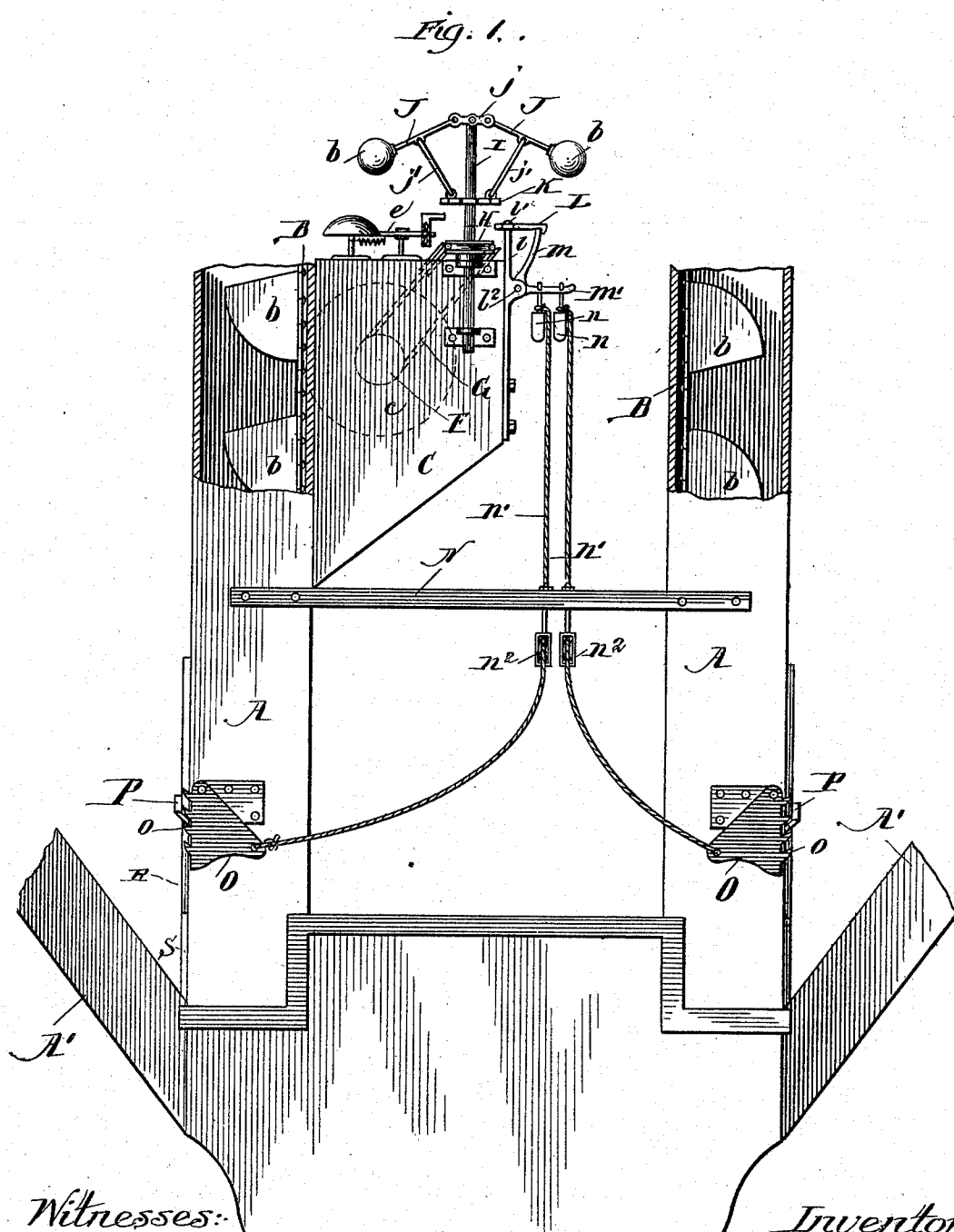


G. W. NYE.

AUTOMATIC SHUT-OFF FOR GRAIN ELEVATORS.

No. 518,622.

Patented Apr. 24, 1894.



Witnesses:
W. Rossiter
G. F. Lanaghan,

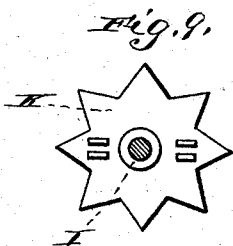
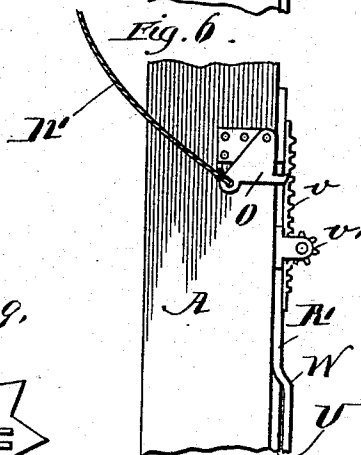
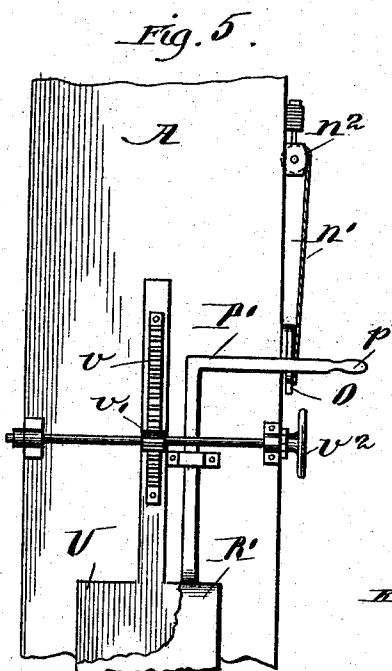
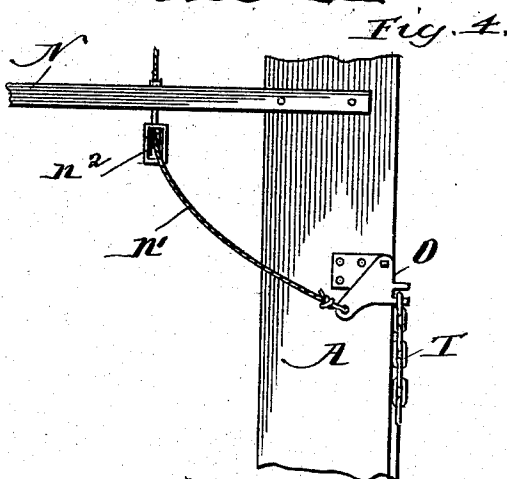
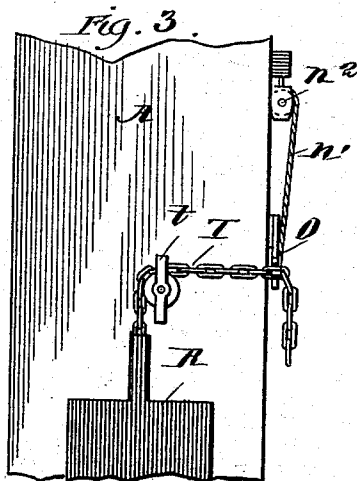
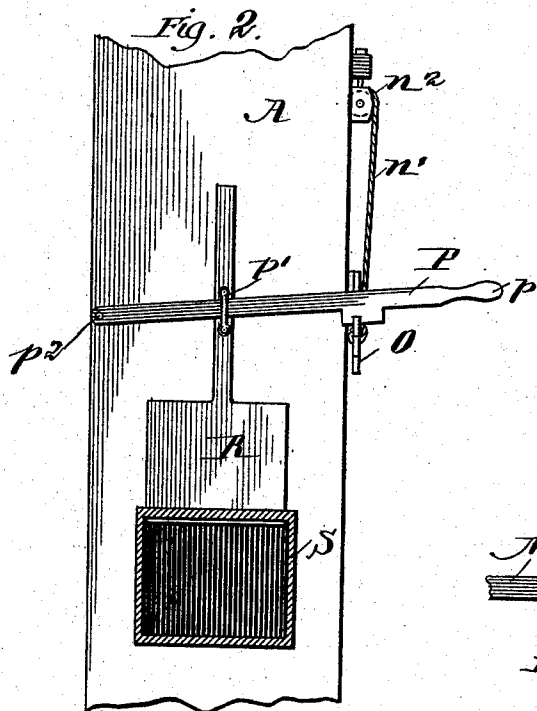
Inventor
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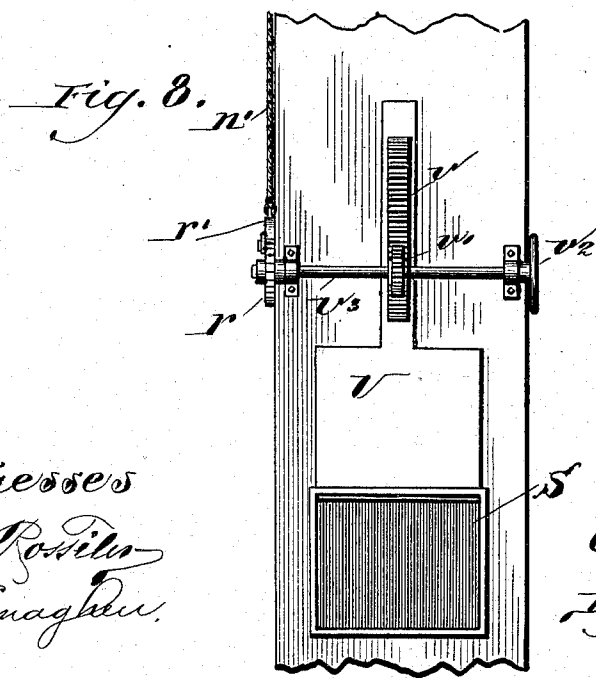
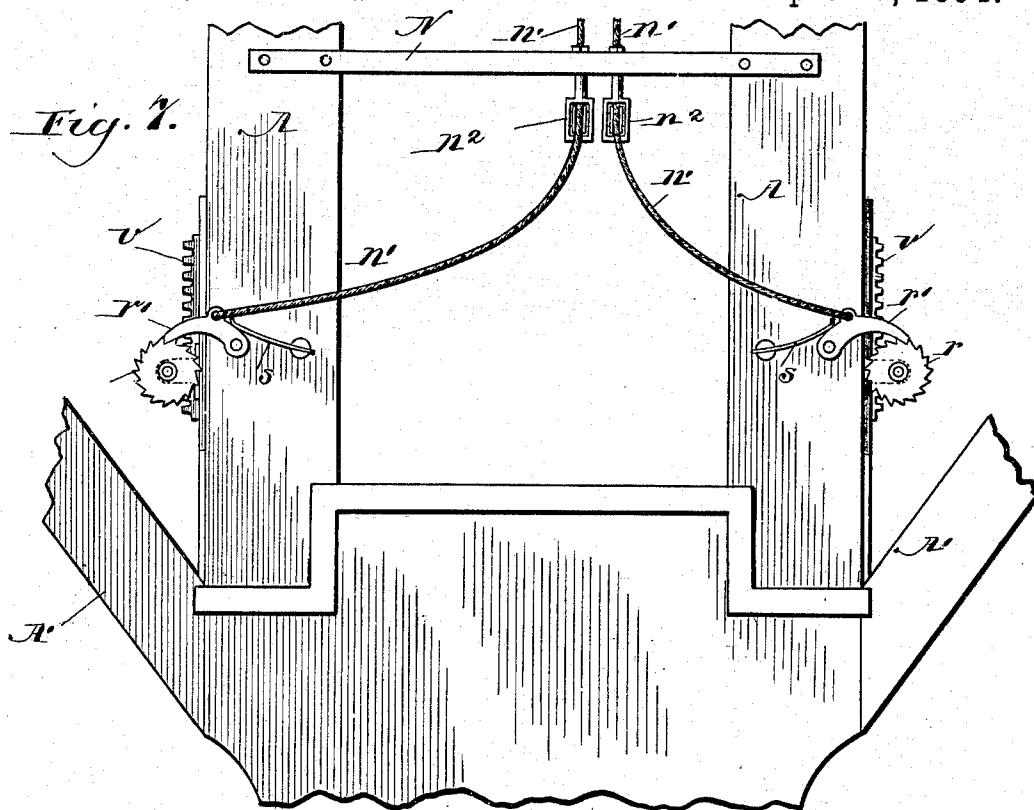
Inventor:
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Witnesses
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G. F. Lanaghan.

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UNITED STATES PATENT OFFICE.

GEORGE W. NYE, OF CHICAGO, ILLINOIS.

AUTOMATIC SHUT-OFF FOR GRAIN-ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 518,622, dated April 24, 1894.

Application filed April 27, 1891. Serial No. 390,586. (No model.)

To all whom it may concern:

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

My invention relates to improvements in automatic shut offs for grain elevators, and the object of my invention is to provide means whereby, when the leg of the elevator becomes clogged, communication between the boot and the supply of grain is cut off through the slackening of speed of the cup belt. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1, represents the two divisions of an elevator leg, showing the endless cup belt, friction wheel, ball governor, rotating disk, pivoted arms, weights, cords, sheaves, and catches, constituting the means for releasing the sliding gates whereby communication between the supply of grain and the cup belt is cut off. Fig. 2, represents the sliding gate near the lower extremity of the elevator leg, and the lever whereby said gate is lifted and released. Figs. 3 and 4, show an alternative method of holding and releasing the sliding gate; Fig. 3, being a front view thereof, and Fig. 4, a side view thereof. Figs. 5 and 6, show respectively a front and side view of the lower part of the elevator leg where two sliding gates are employed. Figs. 7 and 8, show another alternative method of holding and releasing the sliding gate. Fig. 9 is a detail view of a collar, having projections thereon for the vertical spindle of the ball governor.

Similar letters refer to similar parts throughout the several views.

A, A, are the two divisions of the elevator leg.

B is the endless cup belt, and *b, b, b, b*, are cups thereon, all constructed in the usual manner.

A', A', are hoppers for supplying grain to the leg.

C is a frame or box attached to the back of one of the divisions of the elevator leg nearest to the endless cup belt. This frame or box is open on the side at which it is attached to the leg. In this frame or box is journaled the flat faced friction drive wheel *c*, shown in

dotted lines in Fig. 1, which bears against the endless cup belt through a suitable aperture in the elevator leg, with such force that it will be driven by said cup belt when in motion. The shaft of this friction drive wheel *c* extends beyond the frame or box C at one side thereof, and bears the sheave F, (shown in dotted lines in Fig. 1,) which actuates the endless cord G, also shown in dotted lines in the same figure. This cord G is deflected by idlers, and passes around the horizontal pulley H, for the purpose of rotating the vertical spindle I to which it is rigidly attached, and which is supported in suitable boxes on the frame C, in such manner that it can be easily rotated.

Rigidly fastened to the top of the spindle I, and rotating with it, is a cross piece *j*, to each extremity of which is hinged one of the two arms J, J, each of which arms has attached to the end thereof, a ball *b* of suitable weight. The arms J, J, are connected at about their central portion to the disk or collar K, by links *j', j'*. This disk or collar rotates with the spindle I, but is free to rise and fall upon it as the ball governor thus formed is rotated rapidly or slowly. Said disk or collar has a projection or projections of any desired shape upon its periphery.

The construction above described is substantially the same as that shown and described in Letters Patent, granted to me for an improvement in alarm bells for grain elevators, &c., on the 24th day of February, A. D. 1891, No. 446,881, and may be used in connection with the bell ringing lever *e*, as fully described in my said Letters Patent. The vertical standard *l*, is slotted and attached to the box C by thumb screws, so as to be vertically adjustable on said box.

L is a hooked arm pivoted to the slotted vertical standard *l* at *l'*, and extending beyond said vertical standard *l*, on both sides thereof. To a lug *l''* on this vertical standard are pivoted two arms *m* and *m'*, connected together at their pivot and standing nearly at right angles to each other. When the arm *m* is in a substantially upright position, its upper extremity may engage with the hook on the arm L. When the upper extremity of the upper arm *m* is engaged with the hook on the arm L, the lower arm *m'* will occupy

a substantially horizontal position, so that the two weights n, n , may be hooked upon said arm m' and thereby supported in position. To these weights n, n , are attached
 5 cords n', n' , which pass over sheaves n^2, n^2 , in blocks secured to the bar N, which bar extends across from one division of the elevator leg to the other. The opposite ends of the
 10 cords n', n' , are attached to the triangular pieces of metal or catches O, O, at the inner extremities of said catches. Said catches O, O, are suitably pivoted at their upper extremities to the elevator leg, and bear projections or teeth, which engage with a suitable
 15 projection on the levers, P, P. Each of the levers P, P, has a handle at one end, and at the other is pivoted to the elevator leg at p^2 . Each lever P passes loosely through a strap p' , on an extension of the sliding gate R,
 20 which opens and closes the aperture S, in the lower part of the elevator leg, through which the grain is admitted to the leg.

In operation, the arm m is held in an upright position by the hooked arm, L; the
 25 weights n, n , are hooked upon the arm m' , which then stands in a horizontal position. The gate R, is lifted, and the lever P held up by one of the teeth on the catch O. The speed of the cup belt being normal, the arms
 30 J, J, will spread, and the collar or disk K will be lifted out of the way of the hook L. When the elevator leg becomes clogged, the consequent slackening of the speed of the cup belt will cause the rotation of the spindle I, to be
 35 less rapid than when the cup belt is working properly; this lessening of speed permits the balls b, b , to approach each other, and force down the disk or collar K. If the leg is seriously clogged, the speed of the cup belt will
 40 be so slow that the disk or collar K will fall low enough for a projection thereon to engage with the inner end of the hooked piece L. This action will push aside the hooked
 45 arm L, and cause it to let go the arm m , and the consequent fall of the arm m' on its pivot l^2 will cause the weights to slip off from said arm m' . The weights will then fall with such
 50 force that the cords n', n' , will draw over the sheaves n^2, n^2 , and jerk the lower and inner ends of the catches O, O, upward, thus disengaging the teeth o, o , on said catches from the lever P. This action will permit the levers P, and with them the sliding gates R, to
 55 fall, thus closing the apertures S in the lower end of the leg, and preventing any more grain from entering the leg. This shutting off of the grain will frequently permit the cup belt to overcome the difficulty without stopping the belt; and in any event enables the operator to remove the obstruction easily.

The standard l is slotted, so that it can be adjusted vertically, and held in position by set screws upon the box C. This construction enables the operator to set the hooked
 65 arm L, at different altitudes, so that its inner end will engage with the projections on the

collar K, as the cup belt has different rates of speed as desired; it being obvious that the higher the arm L is set, the greater the speed of the cup belt when the weights will be released by the engagement of the arm L, with the projections in the collar K. 70

Instead of the lever P, a chain T, may be fastened to the sliding gate R, and passing over a guarded sheave t , have one of its links
 75 hooked into a tooth on the catch O. The falling of the weight n , will draw the tooth on the catch from the link of the chain T, into which it is hooked, and permit the gate R to fall and close the aperture S. 80

If desired, the usual sliding gate U, actuated by the rack v and pinion v' , and hand wheel v^2 may be retained, and an additional sliding door R' of sheet iron or other suitable material, with lever P', used, as shown in
 85 Figs. 5 and 6. This outer door is automatically closed in the same manner as is the door, R. When such additional door is used it should be bent as shown at w Fig. 6, so as to work outside the door U. The closing of
 90 this door will not shut off entirely the supply of grain from the elevator leg, but will only lessen the same, so that if the leg is not seriously clogged, it will clear itself without closing the inner door, U, and thus entirely shutting off the supply of grain from the leg. 95

In Figs. 7 and 8, the ordinary sliding gate U, is lifted and lowered by means of a rack v , on the extension of the gate, and a pinion v' meshing with said rack; the said pinion being set upon a spindle v^3 , having at one end
 100 a hand wheel v^2 , and on the other a ratchet wheel r . The gate U being lifted, the pawl r' , prevents the spindle from rotating, and thus holds the gate uplifted. The spring s bearing on the pawl r' insures the engagement of the pawl with the teeth in the ratchet wheel r . To the pawl r' is attached the cord
 105 n' , so that when the weights n, n , are released and fall, the cord n' will lift the pawl r' , and leave the spindle v^3 free to rotate. The gate U, will then fall of its own weight, and close the aperture S, through which the grain is admitted to the elevator leg. 110

What I claim as new, and desire to secure by Letters Patent, is— 115

1. In an automatic device for shutting off the supply of grain from a grain elevator, a friction wheel operated by the elevator belt, a ball-governor driven thereby, and having a
 120 disk or collar adapted to rise and fall, and having a suitable projection thereon, a pivoted hook L adapted to be engaged by said projection, a pivoted lever, having the arms m, m' , a weight n , adapted to be supported by the arm m' , a cord n' attached to said weight
 125 and passing over a suitable guiding sheave, a catch secured to the end of said cord, a sliding door, and means adapted to be engaged by said catch whereby when the speed of the belt slackens, the hook L will release the arm
 130 m , causing the weight n to fall and release

the sliding gate, so as to shut off the supply of grain from said elevator, substantially as described.

2. In a grain elevator having a sliding gate
5 for shutting off the supply of grain from the elevator leg, an additional sliding gate outside the said inner gate, said additional outer gate being so arranged as to partially shut off the supply of grain from the leg when such
10 outer gate is closed, the cup-belt, and means

connected with the outside gate and adapted to be automatically actuated by the cup-belt of said elevator in such manner that said outer gate will fall when the speed of the cup-belt slackens.

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Witnesses:

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GIDEON F. LANAGHEN.