

(No Model.)

2 Sheets—Sheet 2.

W. G. COGSWELL.

MEANS FOR OPERATING SAFETY CUT-OFFS FOR GRAIN ELEVATORS.

No. 482,468.

Patented Sept. 13, 1892.

Fig. 4.

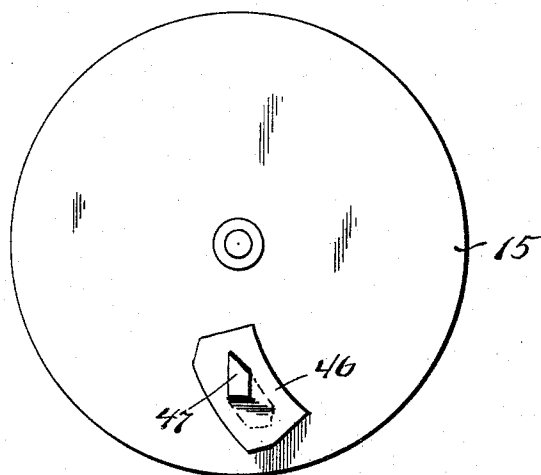


Fig. 5.

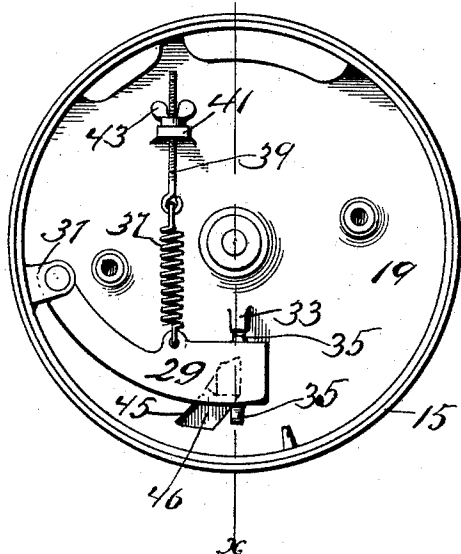
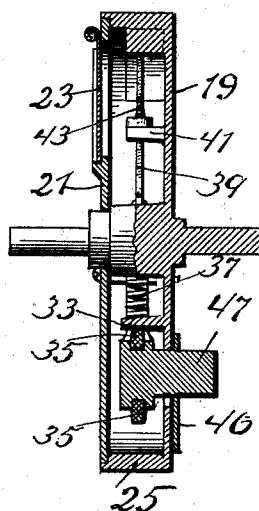


Fig. 3.



Witnesses
J. Jensen.
Fred Lyon

Inventor.
Wilfred G. Cogswell.

By Paul & Merwin Attys

UNITED STATES PATENT OFFICE.

WILFRED G. COGSWELL, OF DULUTH, MINNESOTA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO HERMAN E. LONG, OF SAME PLACE, AND CHARLES E. SOULE, OF GRAND HAVEN, MICHIGAN.

MEANS FOR OPERATING SAFETY CUT-OFFS FOR GRAIN-ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 482,468, dated September 13, 1892.

Application filed August 31, 1891. Serial No. 404,188. (No model.)

To all whom it may concern:

Be it known that I, WILFRED G. COGSWELL, of Duluth, in the county of St. Louis and State of Minnesota, have invented certain Improvements in Means for Operating Safety Cut-Offs for Grain-Elevators, of which the following is a specification.

This invention relates to a novel means for operating automatic cut-offs for grain-elevators for the purpose of cutting off the supply of grain to the traveling elevator-buckets and for sounding an alarm when from any cause the movement of the belt carrying the buckets is retarded; and its object is to provide a device of this kind that will not become clogged up and rendered inoperative by the dust, of which there is always a large quantity present in the place where a device of this kind must be used.

My invention consists generally in providing an inclosed wheel, which operates in connection with the traveling belt and is provided with a centrifugal device that is arranged within and inclosed and protected by said wheel and which upon the stoppage or retarding of the belt is caused to operate a tripping device that is connected with and controls the gate which supplies the grain to the elevator-belt, and this tripping device may also control a suitable alarm, so that the same will be set in operation whenever the device is tripped, thus notifying the attendant when the belt has been retarded and the feed-gate has been shut.

The invention consists, further, in the construction and combination hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of a portion of an elevator-leg showing my device applied thereto. Fig. 2 is a side elevation showing a portion of the elevator-leg and a portion of the timbers that support the boot-screws and showing my device as I prefer to arrange it upon the elevator-leg. Figs. 3, 4, and 5 are details of the governing-wheel.

In the drawings, 2 represents a portion of an ordinary elevator-leg, and 3 the belt that is

arranged therein and provided with buckets 5 of any ordinary or preferred construction.

7 represents one of the boot-screws, and 9 the timbers by which said screws are supported.

Secured upon the side of the elevator-leg is a suitable plate 11, preferably of wood, to which is hinged a plate 13, also preferably of wood. A wheel 15 is journaled in suitable bearings 17 upon the plate 13, and this wheel projects into the elevator-leg, so that it rests upon the surface of the belt 3, and as the belt is moved said wheel is rotated by the frictional contact with said belt. The construction of the wheel 15 is shown in Figs. 3, 4, and 5.

The wheel, as here shown, is made in the form of a closed cylindrical case, one side being formed by the disk 19, formed, preferably, in one piece with the rim, and the other side by the disk 21. The disk 21 is provided with an opening and with a slide 23, that covers said opening. Through this opening access may be had to the interior of the wheel. The disk 21 is placed within the rim 25 and it is secured to the wheel by suitable screws. Arranged within said wheel is a weight-arm 29, that is pivotally supported upon a lug 31, preferably formed upon or secured to the inner surface of the rim of the wheel. The opposite end of this arm, which is the heavy or weighted end, is arranged to swing freely between the lug or stop 33 and the rim of the wheel and is provided with the rubber buffers 35. When the wheel is rotating at its normal speed, the arm will be held by centrifugal force against the rim of the wheel. A spring 37 is connected at one end to the arm 29, and its opposite end is connected to a threaded rod 39, that passes through a lug 41, and is provided with an adjusting-nut 43. The disk 19 and the rim 25 of the wheel are preferably cast in one piece and are provided with the lugs 31, 33, and 41, hereinbefore mentioned. By means of the spring 37 and its adjusting means the weighted arm 29 may be set for any desired speed of the wheel. The disk 19 of the wheel is provided with a slot 45, and the arm 29 is provided with a lug 47, that projects through said slot. A plate 46 is secured to the lug 47 and covers the slot 45.

When the wheel 15 is being rotated at its normal speed, the arm 29 is thrown out, so as to carry the lug 47 to the outer end of the slot 45, and when it is in this position this lug does not encounter any obstacle to its movement. I provide, however, a tripping device that is connected to the elevator-gate and also to a suitable alarm, preferably, and this tripping device is so arranged that when the lug 47 is in the outer end of the slot 45 it is not engaged by said lug; but when the speed of the belt slackens to permit the spring 37 to draw the weight-arm 29 inward the lug 47 on said arm will engage the tripping device and operate the same. The tripping device that I prefer to use consists of a shaft 51, that is mounted in brackets or bearings 53, that are secured upon the plate 13. This shaft is provided with an arm 55; having an inturned end 57 and projects alongside of the wheel 15. A staple 59 preferably passes over the arm 55 and is secured to the plate 13, and thus forms a guide for the arm. The end 57 of the arm 55 is within the radius of the lug 47, so that when said wheel is moving at its normal speed said arm is not encountered by said lug. Should, however, the lug be moved inward toward the inner end of the slot 45 it will in its rotation strike against the inturned end of the arm 55 and rotate the shaft 51. The shaft is connected by a rod 56, lever 58, and chain 59 to a latch 61, held in normal position by a spring 63.

65 represents one of the gate-racks, which is preferably pivoted on the elevator-leg and is adapted to be engaged by a suitable handle or lever 67 on the feed-gate or cut-off, and thus hold the gate in any desired position. A rod 69 is connected to the rack 65, and it may be by the lever 71 and rod 73 connected with one or more racks. A trip-lever 75 is connected with the rod 69 and it is adapted to engage the latch 61. A spring 77 is connected to this lever and it is arranged so that when said lever is released from the latch 61 the spring will throw the lever, move the rod 69, release the gates, and permit them to close by their own gravity.

The gate-racks are preferably provided with a guard 79, and the trip-lever is preferably provided with a circular guard 81 and with a handle 83, by means of which it may be conveniently returned to position after each operation.

I may provide the plate 13 with an eye 14 and tie the lower end of the plate to the side of the elevator-leg by a belt-lacing 16. This holds the wheel 15 against the belt; but the lace will break and permit the wheel to move away from the belt in case broken cups or other obstacles obstruct the belt-passage.

Any suitable alarm may be connected to the latch 61 or to the trip-shaft 51, so as to be agitated during the time the machinery is moving slowly or the elevator-leg is being choked.

I claim as my invention—

1. Means for operating cut-offs, comprising, in combination with a suitable belt, a wheel bearing upon said belt, a weight-arm pivotally supported within said wheel and provided with a lug projecting through the wall of said wheel, a spring connected with said arm, and a tripping device arranged to be operated by the lug on said arm, substantially as described.

2. The herein-described wheel for operating cut-offs, consisting of the disk 19 and rim 25, said disk being provided with a slot 45, a disk closing the other side of the wheel, the weight-arm pivoted within said disk and provided with a lug 47, projecting through said slot 45, the spring 37, connected with said arm, and means for adjusting said spring, as described.

3. The combination, with the elevator-belt, of the wheel arranged in engagement with said belt, an arm arranged within said wheel, a tripping device, and a lug upon said arm adapted to engage said tripping device without engaging it when the wheel is running at its normal speed.

4. The combination, with the elevator leg and belt, of the plate pivotally supported upon said leg, the wheel mounted upon said plate and arranged to engage said belt, a movable arm inclosed within said wheel, a tripping device, and a lug upon said arm projecting through a slot in said wheel and adapted to engage said tripping device when the wheel is running slowly and to pass the same without engagement when the wheel is running at its normal speed.

5. In combination with the elevator-belt, a wheel arranged to be held against the same by gravity, a yieldingly-held weighted arm pivoted within said wheel, a lug upon said arm projecting through the side of the wheel, a pivoted tripping-arm arranged in position to be engaged by the lug on said weighted arm when the wheel is running at a low rate of speed, and a cut-off gate actuated by the tripping of said arm, substantially as described.

6. The combination, with the elevator belt and leg, of a hinged frame on said leg, a wheel journaled in said frame and adapted to engage said belt to be rotated thereby, a weighted arm yieldingly held in said wheel, a pivoted trip-lever to engage said arm, as described, a gate, a rack pivoted on the leg and by means of which the gate is normally supported, a draw-rod 69 in connection with said rack, a spring in connection with said draw-rod, and a latch normally holding the same under tension and adapted to be tripped by said trip-lever, substantially as described.

7. The combination, with the elevator belt and the leg wherein the same is adapted to run, of a frame hinged thereon from its upper edge, a wheel or pulley carried in said frame and held by gravity against said belt, a weighted arm yieldingly held in connection with said wheel, a trip-shaft 51, having a trip-

lever 55 to engage said weighted arm, as described, a lever 58, linked to an end 56 of the shaft 51, a latch 61, pivoted on the leg, a spring 63 in connection therewith, a connection between said latch and the lever 58, a lever 75 to be engaged by said latch and pivoted on the leg, the bar 69 in connection therewith, a spring 77, connected with the lever 75, and a rack-bar 65, pivoted on the leg, and a feed-gate having a lug to engage said rack-

bar, whereby on the slowing down of said belt said rack 65 is withdrawn and said gate permitted to fall, substantially as described.

In testimony whereof I have hereunto set my hand this 22d day of August, A. D. 1891. 15

WILFRED G. COGSWELL.

In presence of—

G. J. MALLONY,

ERNEST WEBBER.