F. R. McQUEEN.

BACK STOP FOR ELEVATOR HEADS.

APPLICATION FILED JUNE 1, 1917.

1,283,539.

Patented Nov. 5, 1918.

2 SHEETS—SHEET 1.

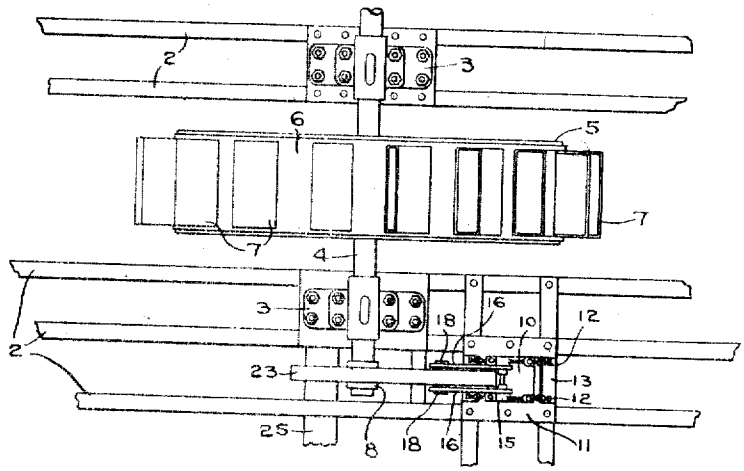


FIG.-1

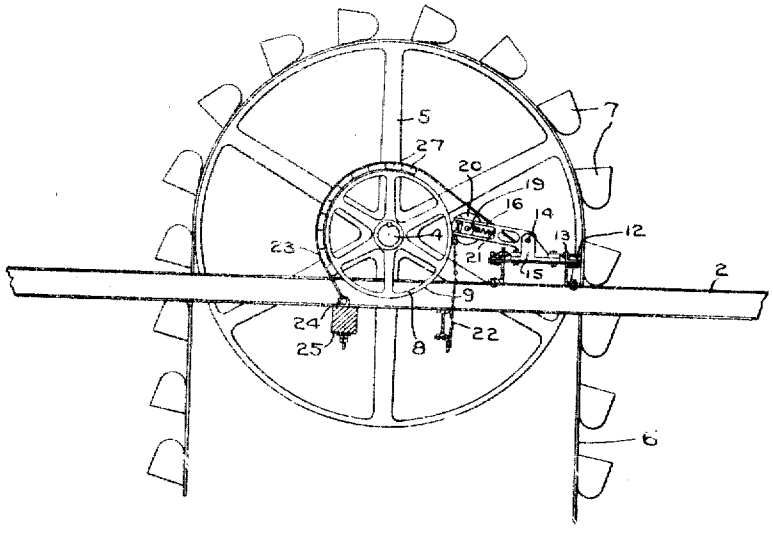


FIG.-2

WITNESSES:
B. H. all
Q. E. Sorensen

INVENTOR:
FINLAY R. McQUEEN
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F. R. McQUEEN.

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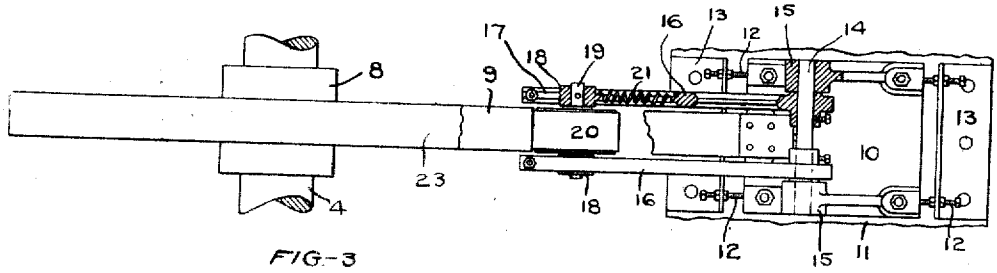


FIG-3

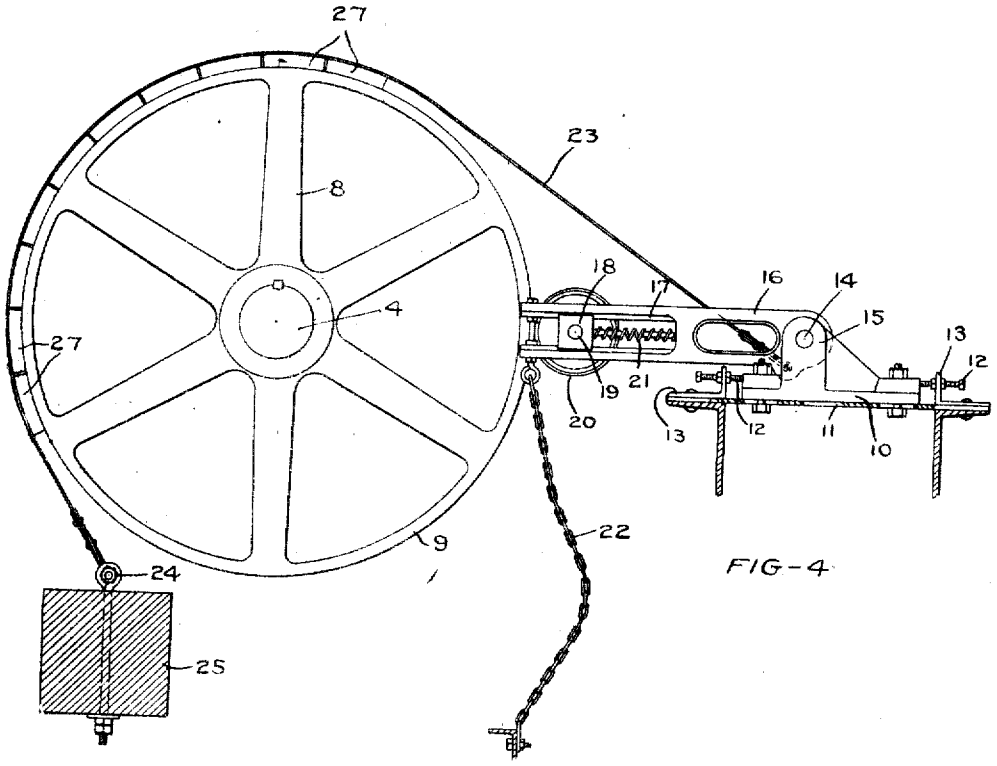
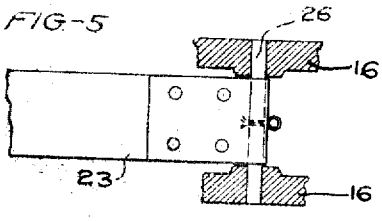


FIG-4

FIG-5



WITNESSES:
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FINLAY R. McQUEEN
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UNITED STATES PATENT OFFICE.

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BACK-STOP FOR ELEVATOR-HEADS.

1,283,539. Specification of Letters Patent. Patented Nov. 5, 1918.

Application filed June 1, 1917. Serial No. 172,234.

To all whom it may concern:

Be it known that I, FINLAY R. McQUEEN, a citizen of the United States, resident of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Back-Stops for Elevator-Heads, of which the following is a specification.

The object of my invention is to improve the back-stop shown and described in Letters Patent of the United States, No. 984,586, issued to me on the 21st day of February, 1911, by providing means for gradually arresting backward movement of the pulley and shaft instead of bringing them to an abrupt stop, as provided for in the mechanism of my former patent.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification,

Figure 1 is a plan view of an elevator head having my improved back stop applied thereto,

Fig. 2 is a side elevation of the same,

Fig. 3 is a plan view, partially in section, showing in detail the application of the invention to the pulley,

Fig. 4 is a side elevation of the same,

Fig. 5 is a detail view, showing the manner of connecting or anchoring one end of the brake strap.

In the drawing, 2 represents the supporting bars or timbers of a grain elevator, having mounted thereon in suitable boxes 3 a head shaft 4 carrying a head pulley 5. The elevator belt 6 equipped with a series of buckets 7 passes over this head pulley in the usual way and all these parts may be of any ordinary or preferred construction. The shaft 4 is driven by any suitable means, preferably an electric motor, (not shown). It will be understood that when the device is in operation the buckets on the up-side of the belt are loaded with grain and as these buckets pass over the top of the head pulley, they empty their load into a spout hopper or receptacle suitably placed to receive it. The buckets on the upside of the belt are therefore weighted with grain, while those on the down side thereof are empty, and if for any reason the elevator is stopped when the buckets on the upside are loaded, the weight of the grain in these buckets tends to cause a reverse movement of the belt and head pulley and will often seriously damage the operating mechanism.

To obviate this objection, I provide upon the shaft 4 a suitable brake wheel 8 having a peripheral friction surface 9. A plate 10 is slidably mounted on a support 11 and adjustable thereon by means of adjusting screws 12 mounted in angle bars 13 on said support and engaging the side plate. A shaft 14 is mounted in bearings 15 on said plate and carries bars 16 having guides 17 therein for bearing blocks 18 in which the shaft 19 of a friction wheel 20 is mounted and normally held toward the wheel 9 by compression springs 21. The pressure of this wheel on the wheel 9 may be increased or decreased by the adjustment of the plate 10. These bars are arranged to tilt to the position shown in Fig. 2, or swing downwardly to the position shown in Fig. 4. The frame is in the normal position when the elevator is at work, but in case of a breakage, or stopping of the elevator occurs for any reason, so that backward movement of the buckets takes place, then the frictional engagement of the wheel 9 with the wheel 20 will cause them to assume the position shown in Fig. 4 and the chains 22, which normally have the function of limiting the upward movement of the bars 16, will become slack, as shown in Fig. 4.

For the purpose of gradually checking backward movement of the elevator and the wheel 9, I provide a brake band 23 attached at 24 to a beam 25 and mounted on a rod 26 at its other end in bars 16 below the shaft 14, so that when the bars 16 are swung on said shaft as a center, the brake band will be either loosened or tightened, depending upon the direction of movement of the bars. If they are raised to the position shown in Fig. 2, then the band will be loosened and the wheel 9 will turn freely, but when the bars are drawn down by the frictional engagement of the wheels 9 and 20 with each other, then the brake band will be put under tension as its pivotal connection with the bars swings down under the pivot 14 and the fiber shoes 27 mounted on the brake band will grip the surface of the wheel with sufficient pressure to gradually check its backward movement without shock or jar to the other mechanism of the apparatus. I am able, therefore, to gradually check backward movement of the back stop in case

breakage occurs or in case the elevator is stopped and the loaded buckets begin to revolve the wheel backwardly or in the opposite direction to that in which it normally moves when the buckets are elevating the grain.

In various ways the details of construction herein shown and described may be modified and still be within the scope of my invention.

I claim as my invention:

1. A back stop for elevator heads comprising a shaft, a brake wheel mounted thereon, a frame pivoted for oscillation in the plane of said wheel, a spring-actuated friction wheel carried by said frame to engage the periphery of said brake wheel, a brake band pivotally supported at one end adjacent said brake wheel and partially encircling the same and having brake shoes for engagement with said wheel, the other end of said brake band having an eccentric pivotal connection with said frame, oscillation of said frame operating to loosen or tighten said band on said brake wheel.

2. A back stop for elevator heads comprising a shaft, a brake wheel mounted thereon and having a peripheral friction surface, a frame pivoted at one end to swing toward and from the periphery of said wheel, a friction wheel slidably mounted in said frame for engagement with the peripheral surface of said brake wheel, a brake strap partially encircling said brake wheel and connected to said frame eccentrically with respect to the pivot thereof, backward movement of said brake wheel engaging it with said friction wheel and swinging said frame downwardly to tighten said brake strap.

3. A back stop for elevator heads comprising a shaft, a brake wheel secured thereon having a peripheral friction surface, a frame composed of side bars pivoted at one end for movement in a vertical plane parallel with the plane of said wheel, boxes slidably mounted in said bars, springs for normally holding said boxes toward said brake wheel with a yielding pressure, a friction wheel journaled in said boxes and having a yielding contact with said brake wheel, a brake band secured at one end and partially encircling said brake wheel and connected with said bars below and adjacent the pivots thereof, backward movement of said brake wheel tilting said bars downwardly and tightening said brake band on said brake wheel.

4. A back stop for elevator heads comprising a shaft, a brake wheel mounted thereon and having a peripheral friction surface, a spring-actuated friction wheel arranged to contact with said surface, a pivoted frame wherein said wheel is mounted and yieldingly held toward said brake wheel, a brake band mounted to contact with the periphery of said brake wheel and attached to said frame eccentrically with respect to the pivot thereof, backward movement of said brake wheel engaging said friction wheel to tilt said frame downwardly and set said brake band, and forward movement of said brake wheel lifting said frame and friction wheel to release said band.

5. A back stop for elevator heads comprising a shaft, a brake wheel mounted thereon, a tilting frame, a friction wheel carried thereby and yieldingly held toward the periphery of said brake wheel, forward movement of said brake wheel lifting said friction wheel and frame and backward movement of said brake wheel engaging said friction wheel to move it past the center of the pivots of said brake wheel and said frame, and a brake strap engaging said friction wheel and connected with said frame to be loosened or tightened by the movement thereof.

In witness whereof, I have hereunto set my hand this 26th day of May, 1917.

FINLAY R. McQUEEN.