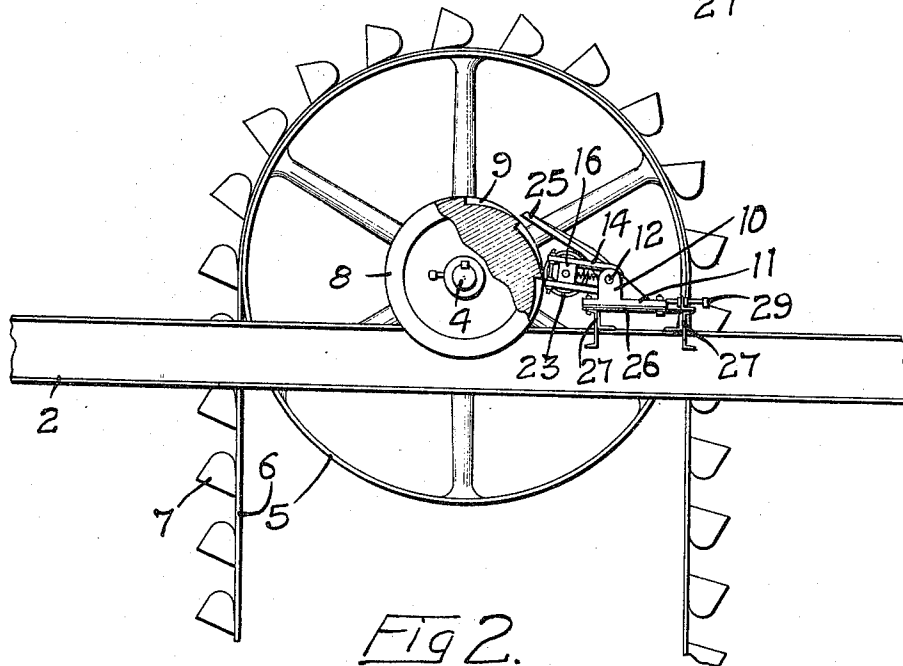
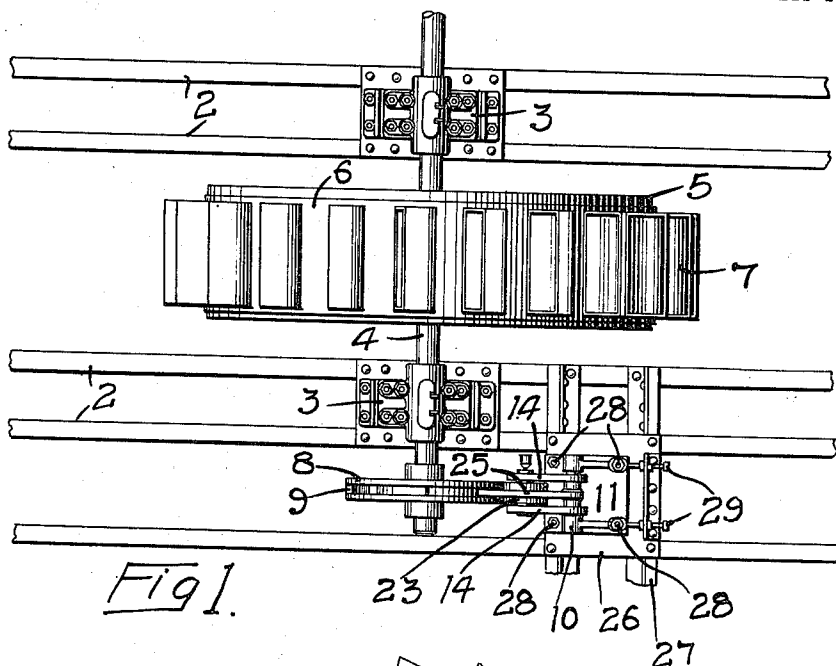


984,586.

F. R. McQUEEN.
BACK STOP FOR ELEVATOR HEADS.
APPLICATION FILED JAN. 11, 1909.

Patented Feb. 21, 1911.

2 SHEETS—SHEET 1.

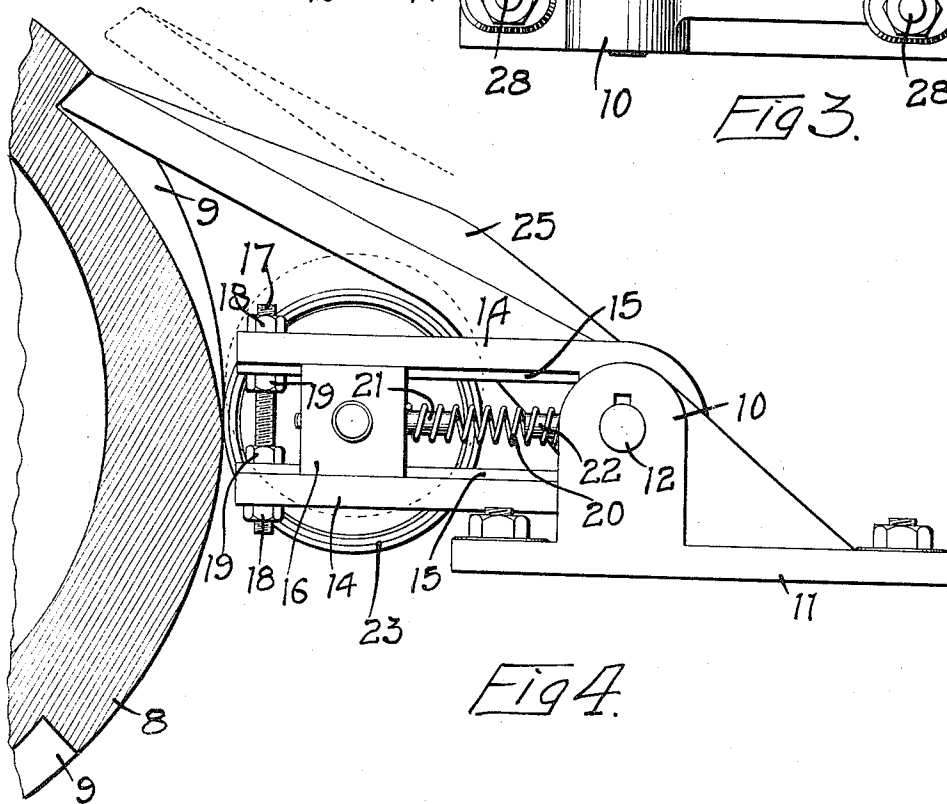
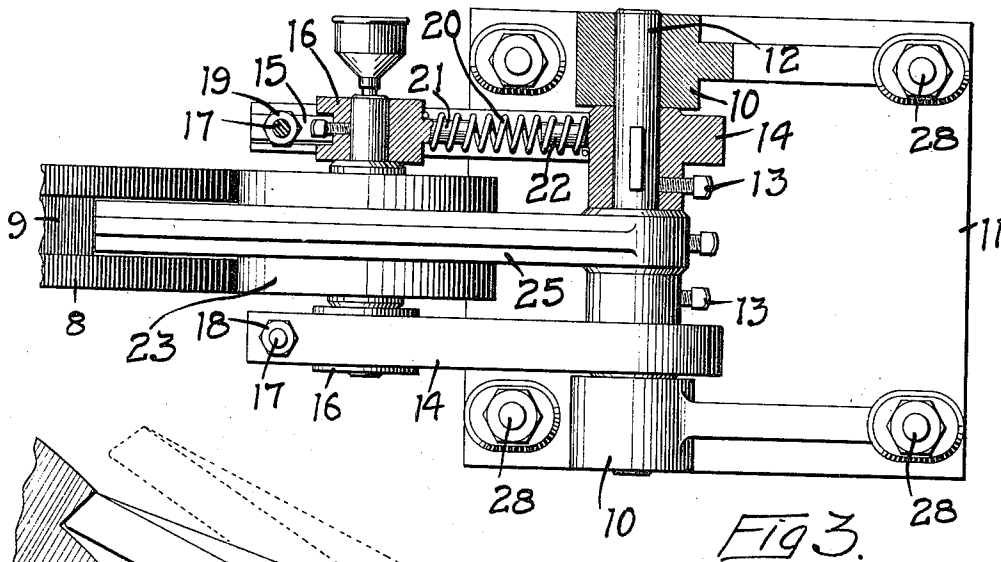


WITNESSES
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R. G. Hanson

INVENTOR
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2 SHEETS—SHEET 2.



WITNESSES
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UNITED STATES PATENT OFFICE.

FINLAY R. McQUEEN, OF MINNEAPOLIS, MINNESOTA.

BACK-STOP FOR ELEVATOR-HEADS.

984,586.

Specification of Letters Patent.

Patented Feb. 21, 1911.

Application filed January 11, 1909. Serial No. 471,613.

To all whom it may concern:

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

This invention relates to improvements in devices designed to prevent a backward
10 movement of the head pulley of a grain elevator, and the objects I have in view are to provide a simple device of this character that can be readily applied to any elevator head-shaft and which will effectually pre-
15 vent any backward movement of the pulley and shaft, which is liable to occur when the elevator is stopped by reason of the downward pull of the loaded side of the elevator belt.

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

In the accompanying drawings, forming
25 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, partly broken away. Fig. 3 is a detail plan of the mechanism constituting the elevator-stop. Fig. 4
30 is a side elevation of the same.

In the drawings, 2 represents the supporting bars or timbers of a grain elevator having mounted thereon, in suitable boxes 3, a
35 head-shaft 4, carrying a head-pulley 5. The elevator-belt 6, provided 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
40 shaft 4 is driven by any suitable means, preferably by a suitable 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
45 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 up-side of the belt are, therefore, weighted with grain,
50 while those on the down-side are empty. If, for any reason, the elevator is stopped when the buckets on the up-side are loaded, the weight of the grain in these buckets tends to cause a reverse motion of the belt
55 and head-pulley and this will often create serious damage in the mechanism. To ob-

viate this objection, I provide upon the shaft 4, a suitable disk 8 having, preferably, a series of centrally disposed ratchet notches 9 and I mount in uprights 10, on a suitable
60 supporting frame 11, a short shaft 12. This shaft is capable of rocking in its bearings and it has secured to it, in any suitable manner, preferably by suitable set-screws 13, the two projecting frames 14. Each of these
65 frames is provided with suitable ways 15 on which are arranged the bearing blocks 16 capable of sliding freely upon said ways. The outer ends of each frame are connected
70 by a suitable bolt 17 having adjusting nuts 18 and 19. By means of these bolts, the proper alinement of the parts of each frame may be secured so as to insure the free movement of each block 16 upon the ways 15.

The ratchet notches form in effect a
75 shrouded gear in the center of the periphery of the disk. That is, the teeth or shoulders of the ratchet are supported, not only at the base, but on each side, and the outer
80 faces of the shoulders are flush substantially with the friction surfaces on each side of the notches. This construction adapts the device as a back stop for an elevator head where an ordinary ratchet gear with
85 the teeth supported only at the base would be stripped off by the dog, owing to the excessive strain to which the back stop is subjected when it is called into operation by
90 the backward movement of the elevator. For ordinary purposes, the well known ratchet mechanism would suffice, but as a back stop for an elevator head where the mechanism may be suddenly subjected to
95 a load in tons, it is evident that something more than an ordinary ratchet must be employed. Furthermore, by providing the ratchet notches in the center of the disk
100 and the friction surfaces on each side, I am able to equalize the strain, distributing it uniformly through the disk and shaft and the other back stop mechanism.

A suitable spring 20 is provided for each block 16. These springs are held in position
105 by the lugs 21 on the blocks 16 and 22 on the inner part of the frame 14, and these springs tend to move the blocks 16 toward the outer end of said frame 14. Mounted in the blocks 16 is a friction wheel 23. The surface of this wheel is held in contact with
110 the disk 8 by the springs 20. Secured upon the shaft 12, just above the friction wheel 23, is a dog or pawl 25, the free end of which

stands directly over the ratchet notches in the disk 8.

When the elevator is running, the friction wheel 23 is moved upward by the contact therewith of the surface of the disk 8 so that said wheel and the dog 25 stand in the position shown by full lines in Fig. 2 and by dotted lines in Fig. 4. Should, however, the head pulley start in a reverse direction, the frictional contact of the disk 8 with the surface of the friction wheel 23 will cause said wheels, and the parts controlled thereby, to move downward into the position shown by full lines in Fig. 4 and the end of the dog or pawl 25 will engage one of the ratchet notches in the disk 8, thereby stopping said head-pulley and preventing reverse movement of said pulley and belt.

20 The frame 11 may be mounted in any suitable manner. I have here shown this frame mounted upon a plate 26 and this plate is secured upon suitable cross-bars 27. The frame 11 is secured upon the plate 26 by bolts 28 and is capable of adjustment thereon, said adjustment being secured by means of suitable adjusting screws 29. I do not, however, limit myself to the details of the construction herein shown and described, or to the details of the means for supporting and adjusting the friction pulley, and parts controlled thereby.

I claim as my invention:

1. The combination, with a shaft and a disk having peripheral notches mounted thereon, of a pivoted frame, blocks slidable therein, means for alining the parts of said frame and permitting the free movement of said blocks, a friction wheel journaled in said blocks, means for yieldingly holding said wheel and blocks toward said disk, a pivoted dog controlled by said wheel, said dog engaging said ratchet teeth when said disk is revolved in one direction and being forced out of the path of said teeth when said disk is revolved in the opposite direction.

2. A back stop for elevator heads comprising a shaft, a disk mounted thereon having centrally arranged ratchet notches in its periphery, and peripheral friction surfaces on each side of said notches, a spring actuated friction wheel arranged to contact with both of said friction surfaces and a dog or pawl controlled by said wheel and adapted to engage said notches between said fric-

tion surfaces as said disk rotates in one direction and be held out of engagement with said notches as said disk rotates in the other direction, the arrangement of said friction surfaces and said notches causing the strain to be equally distributed on said disk and shaft, for the purpose specified.

3. A back stop for elevator heads comprising a shaft, a disk thereon, said disk having shrouded ratchet notches in its periphery and friction surfaces on each side thereof, a spring actuated friction wheel arranged to contact with said friction surfaces and a dog or pawl controlled by said wheel and adapted to be held by said wheel out of contact with said notches as said disk rotates in one direction and be brought into contact therewith as said disk rotates in the other direction.

4. A back stop for elevator heads comprising a shaft, a disk mounted thereon having shrouded ratchet notches in its periphery, said disk having friction surfaces on each side of said notches, the faces of said surfaces being flush substantially with the outer faces of the shoulders formed by said notches, a spring actuated friction wheel arranged to contact with both of said friction surfaces and a dog controlled by said wheel and adapted to be held thereby out of contact with said notches as said disk rotates in one direction and be brought into contact therewith as said disk rotates in the other direction, the pressure of said dog and friction wheel being equally distributed on said disk and shaft.

5. A back stop for elevator heads comprising a shaft, a disk having a shrouded ratchet in its periphery and a spring actuated friction wheel arranged to contact with said periphery, a dog or pawl controlled by said wheel and adapted to be held thereby out of contact with said ratchet as said disk rotates in one direction and be brought into contact therewith as said disk rotates in the other direction, the pressure of said wheel and dog being equally distributed on the periphery of said disk, for the purpose specified.

In witness whereof, I have hereunto set my hand this 28th day of December 1908.

FINLAY R. McQUEEN.

Witnesses:

J. A. BYINGTON,
C. G. HANSON.