No. 708,386. Patented Sept. 2, 1902.

W. L. McLAUGHLIN & J. E. SWENSON.

AUTOMATIC CAR AND ELEVATING TRACK.

(Application filed Mar. 25, 1902.)

(No Model.) 2 Sheets—Sheet 1.

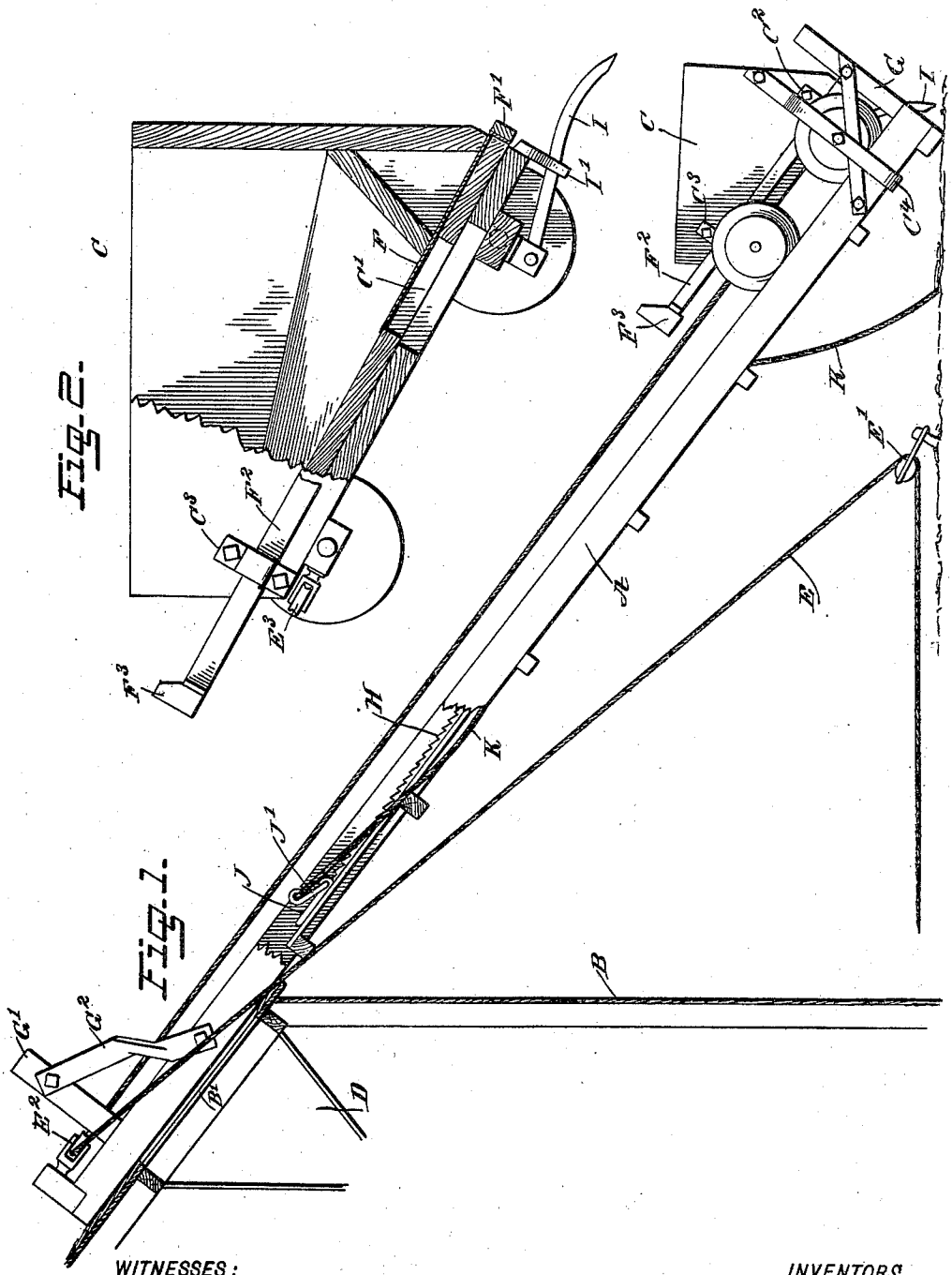


Fig. 2.

Fig. 1.

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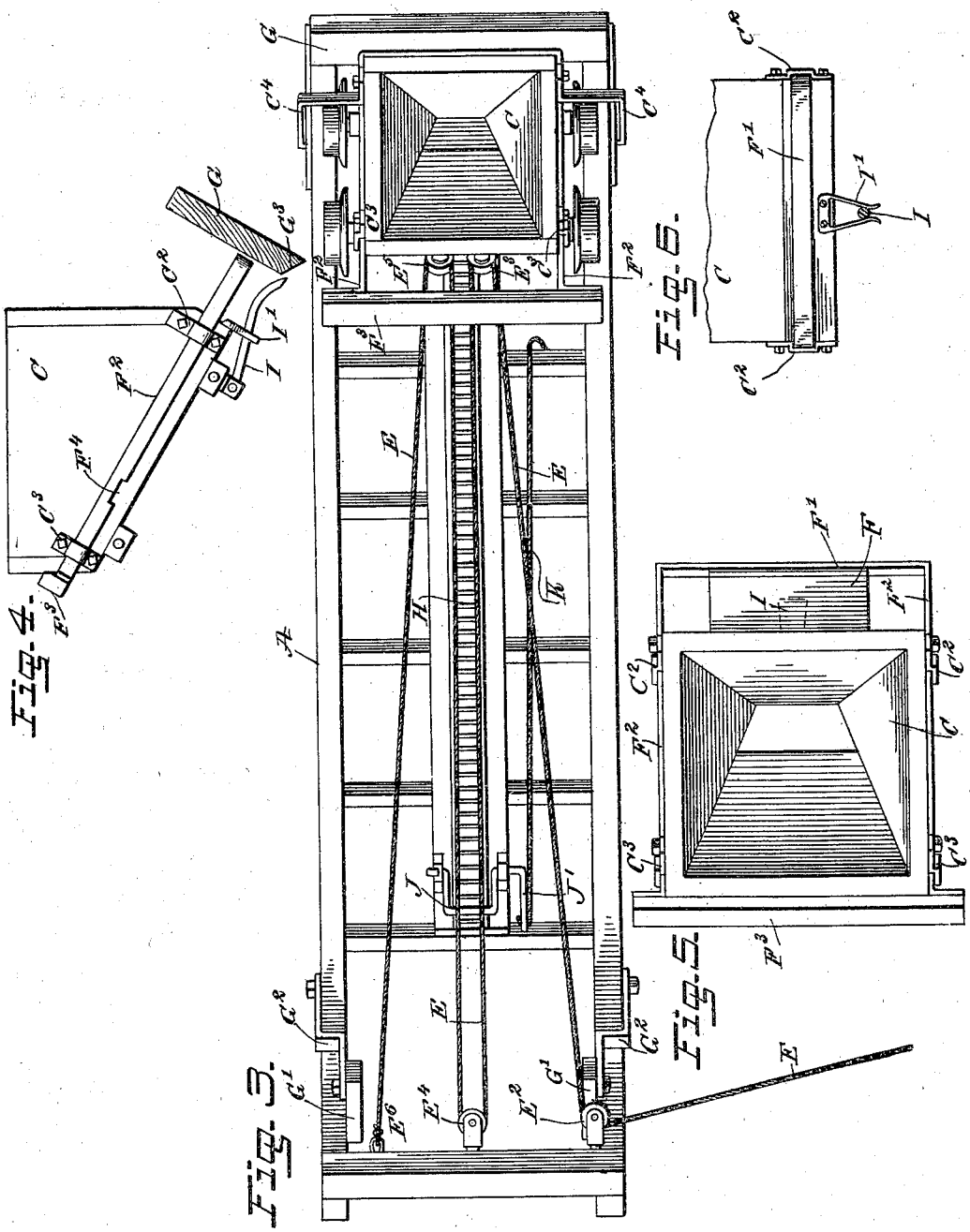


Fig. 3.

Fig. 4.

Fig. 6.

Fig. 5.

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AUTOMATIC CAR AND ELEVATING-TRACK.

SPECIFICATION forming part of Letters Patent No. 708,386, dated September 2, 1902.

Application filed March 25, 1902. Serial No. 99,893. (No model.)

To all whom it may concern:

Be it known that we, WILLSON LOWMAN McLAUGHLIN, a citizen of the United States, and a resident of Clearlake, in the county of Cerro Gordo and State of Iowa, and JAMES EDWARD SWENSON, a citizen of the United States, and a resident of Lake Crystal, in the county of Blue Earth and State of Minnesota, have invented a new and Improved Automatic Car and Elevating-Track, of which the following is a full, clear, and exact description.

The invention relates to apparatus for elevating and dumping grain, corn in ear, coal, sand, gravel, earth, ores, sawdust, beets, and other products and materials; and the object of the invention is to provide a new and improved automatic car and elevating-track, which is simple and durable in construction, not liable to easily get out of order, and arranged to automatically open the locked car-gate for discharging the material into the chute leading to a bin or other place of discharge at the time the car reaches an uppermost position, to automatically close and lock the gate when the car reaches a lowermost or receiving position, and to allow the operator to swing the safety-dog for the car out of a locking position whenever it is desired to cause the car to descend after the material is discharged.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement, parts being broken out. Fig. 2 is an enlarged sectional side elevation of the car. Fig. 3 is a plan view of the improvement. Fig. 4 is a side elevation of the car when nearing a lowermost position, the car-wheels being removed. Fig. 5 is a plan view of the car, showing the car-gate in an open position; and Fig. 6 is an end view of part of the car, showing the safety-dog in engagement with the spring-catch.

The track A extends in an inclined direction from the ground to the roof of the barn or other building B containing the bin into which the grain or other material is to be discharged from a car C, mounted to travel up and down on the track A, the roof of the said building B being provided for the purpose with an opening B′, leading to the mouth of a chute D for directing the material to the bin.

The car C is pulled up the track A by a rope E, connected at one end with a team or a motor, the said rope extending over a pulley E′, held near the ground, as plainly indicated in Figs. 1 and 3, the rope then extending upward and over a pulley E^2, held on the head of the track A, the rope then passing downward on top of the track and around a pulley E^3, journaled on the front of the car C, then passing upward over another pulley E^4, held on the head of the track, and then passing downward around a pulley E^5, held on the front end of the car, the rope finally extending upward to connect with the head of the track at a staple or other device E^6, as shown in Fig. 3. Now when a pull is exerted on the rope E the latter causes the car C to travel up the track A, and when the car is unlocked and the rope E is slackened then the car travels down the track by its own gravity.

In the hopper-shaped bottom of the car C is arranged a discharge-opening C′, normally closed by a gate F, mounted to slide in suitable bearings on the bottom of the car C, as plainly indicated in Fig. 2, the lower outer end of the said gate being attached to the cross-bar F′ of a rectangular frame having its side bars F^2 mounted to slide in bearings C^2 and C^3, secured to the sides of the car C. The forward ends of the side bars F^2 are connected with each other by a cross-bar F^3. Now in order to impart a sliding motion to the gate F, so as to close or open the same when the car moves into a lowermost position or into an uppermost position, the lower end of the track A is provided with an abutment G for the cross-bar F′ to abut against, and the upper end of the said track is provided with abutments G′ for the cross-bar F^3 to abut against. Thus when the car moves into a lowermost position and the gate F is open, as shown in Figs. 4

and 5, then the cross-bar F′ finally comes in contact with the abutment G to hold the frame stationary while the car C still descends, so that the gate F is pushed into a closed position. When the car C moves up the track and reaches an uppermost position, then the cross-bar F^3 abuts against the abutments G′ and is thus held against movement, and as the car moves into a final uppermost position the frame is shifted to move the gate F into an open position, so that the grain or other material runs out of the car C through the openings C′ B′ into the mouth of the chute D.

In order to hold the gate F in a locked position when closed, we provide the side bars F^2 of the gate-frame with notches F^4, engaging the bottoms of the bearings C^3, so as to hold the gate-frame and the gate against movement, the gate then standing in a closed position. Now when the car C moves into an uppermost position the cross-bar F^3 engages and slides up cams G^2, attached to the track A and to the abutments G′ in front of the latter, so that the gate-frame is swung upward sufficiently to disengage the notches F^4 from the bottoms of the bearings C^3 to allow a rearward or downward sliding movement of the gate F on the cross-bar F^3, engaging the abutment G′ at the time the car moves into a final uppermost position, as above described.

The gate-frame stands approximately parallel to the track A and the bottom of the car, and when the latter moves into a lowermost position and the cross-bar F′ engages the abutment G and causes the gate F to close then the notches F^4 can drop into engagement with the bottoms of the bearings C^3 to hold the gate in a locked position for receiving the grain or other material and for carrying the same upward to the place of discharge, as previously explained. The car C is provided with guide-irons C^4, engaging the side beams of the track A to prevent the car from accidentally leaving the track sidewise.

In the track A is arranged a longitudinally-extending toothed rack H, adapted to be engaged by a safety-dog I, fulcrumed on the bottom of the car C, preferably at the rear end thereof, so that during the upward travel of the car the free end of the dog slides up the teeth of the rack H, and in case the rope E should break the car is held against return movement by the dog I in mesh with the toothed rack H. When the car C reaches an uppermost discharging position, then the car is held against return movement by the dog I engaging the rack H even if the rope E is slackened, and after the grain or other material has been discharged and it is desired to run the car C down the track A it is necessary to disengage the safety-dog I from the rack H to allow the car to run down the track. For this purpose we provide the track A near its upper end with a crank-shaft J, journaled in suitable bearings and having its crank adapted to engage the dog I so as to swing the same upward when imparting a turning motion to the crank-shaft. For this latter purpose the crank-shaft J is provided with an angular arm J′, connected with one end of a rope K, extending down the track A to the ground, so as to be within reach of the operator. Now when the operator pulls the rope K the crank-shaft is turned and its crank-arm swings the dog I upward out of engagement with the rack H and in engagement with a spring-catch I′, secured on the car, to hold the dog in an inactive position. (See Fig. 2.) When the car moves into a lowermost position, then the free end of this dog I moves in engagement with the beveled bottom edge G^3 of the abutment G (see Fig. 4) to swing the dog I downward out of engagement with the spring-catch I′. The dog is now again in position to engage the rack H as soon as the car C moves on its upward journey on the track A.

The manually-controlled device for throwing the dog I out of engagement with the rack H at the time the car reaches an uppermost position may be rendered automatic by swinging the crank-arm of the crank-shaft J into an uppermost position and tying the lower end of the taut-drawn rope K to the track or other fixed support to cause the dog I to move into engagement with the crank-arm of the shaft J on the car reaching an uppermost position. When this takes place, the dog is caused to swing upward into engagement with the spring-catch I′.

From the foregoing it will be seen that the locked car-gate is unlocked and opened automatically at the time the car reaches an uppermost position, so that the grain or other material runs out of the car by its own gravity into the mouth of the chute connected with the bin, and during the time the car is in this discharging position it is held against accidental return movement by the dog I even should the rope E be slackened.

When the car C moves downward on the track A, the gate F is automatically closed, as previously described, and the safety-dog is automatically swung back into an active position.

The device is very simple and durable in construction, is not liable to easily get out of order, and is arranged to prevent spilling of the grain or other material by accidental opening of the gate or by the car descending the track previous to the contents of the car being completely discharged into the chute D.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. An apparatus of the class described, comprising a track, a car mounted to travel thereon and having a sliding gate at its bottom, and abutments at the ends of the said track for alternately engaging the gate, to slide the same alternately into an open and closed position, as set forth.

2. An apparatus of the class described, comprising a track, a car mounted to travel there-

on and having a sliding gate at its bottom, abutments at the ends of the said track for alternately engaging the gate, to slide the same alternately into an open and closed position, and a locking device for the said gate, to hold the same locked when the gate is in a closed position, the said locking device being controlled and unlocked by the abutment at the discharge end of the track, immediately previous to the abutment opening the gate for dumping the contents of the car, as set forth.

3. An apparatus of the class described, comprising an inclined track, a car mounted to travel thereon, a sliding gate at the bottom of the car, having a frame external of the car, and abutments at the end of the track, adapted to be engaged by the said frame, to open and close the gate, as set forth.

4. An apparatus of the class described, comprising an inclined track, a car mounted to travel thereon, a sliding gate at the bottom of the car, having a frame external of the car, and abutments at the ends of the track adapted to be engaged by the said frame, to open and close the gate, the side arms of the gate-frame having notches for engaging a fixed part on the car, to lock the gate in a closed position and one of the abutments having a cam device for moving the notched side arms out of engagement with the fixed part, to unlock the gate immediately previous to opening the same, as set forth.

5. An apparatus of the class described, having an inclined track provided with a toothed rack, a car mounted to travel on the said track, a safety-dog hung on the car and adapted to engage the said rack, and a crank-shaft on the track having its crank-arm adapted to engage the safety-dog, to swing the same out of engagement with the rack whenever it is desired to return the car, as set forth.

6. An apparatus of the class described, having an inclined track provided with a toothed rack, a car mounted to travel on the said track, a safety-dog hung on the car and adapted to engage the said rack, means on the track for engaging the safety-dog, to swing the same out of engagement with the rack whenever it is desired to return the car, and a retaining device on the car adapted to be engaged by the said dog when swung out of engagement with the rack, as set forth.

7. An apparatus of the class described, having a car, a safety-dog fulcrumed on the car, a spring-catch on the said car, and a manually-controlled device in the path of the dog to throw the latter into engagement with the spring-catch, as set forth.

8. An apparatus of the class described, having a track, a car traveling thereon, a safety-dog on the car, a spring-catch for holding the said safety-dog in an inactive position, and an abutment on the track for engaging the dog, to swing the latter out of engagement with the spring-catch, as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLSON LOWMAN McLAUGHLIN.
JAMES EDWARD SWENSON.

Witnesses:
J. N. NILES,
F. E. CHURCH.