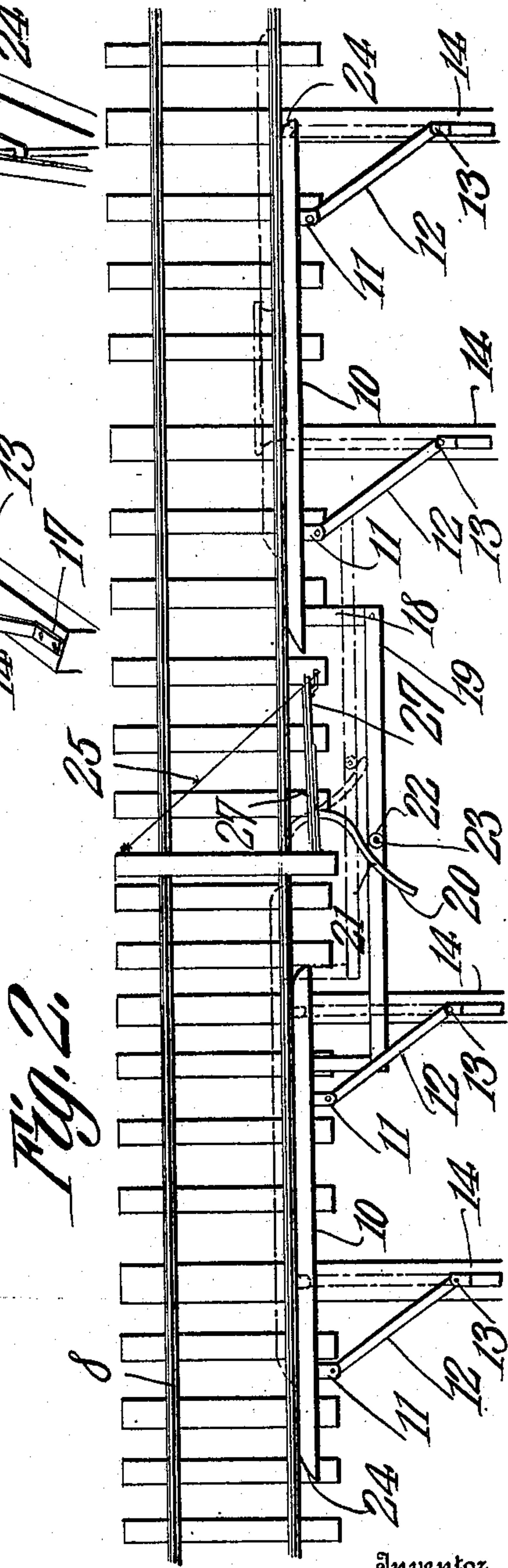
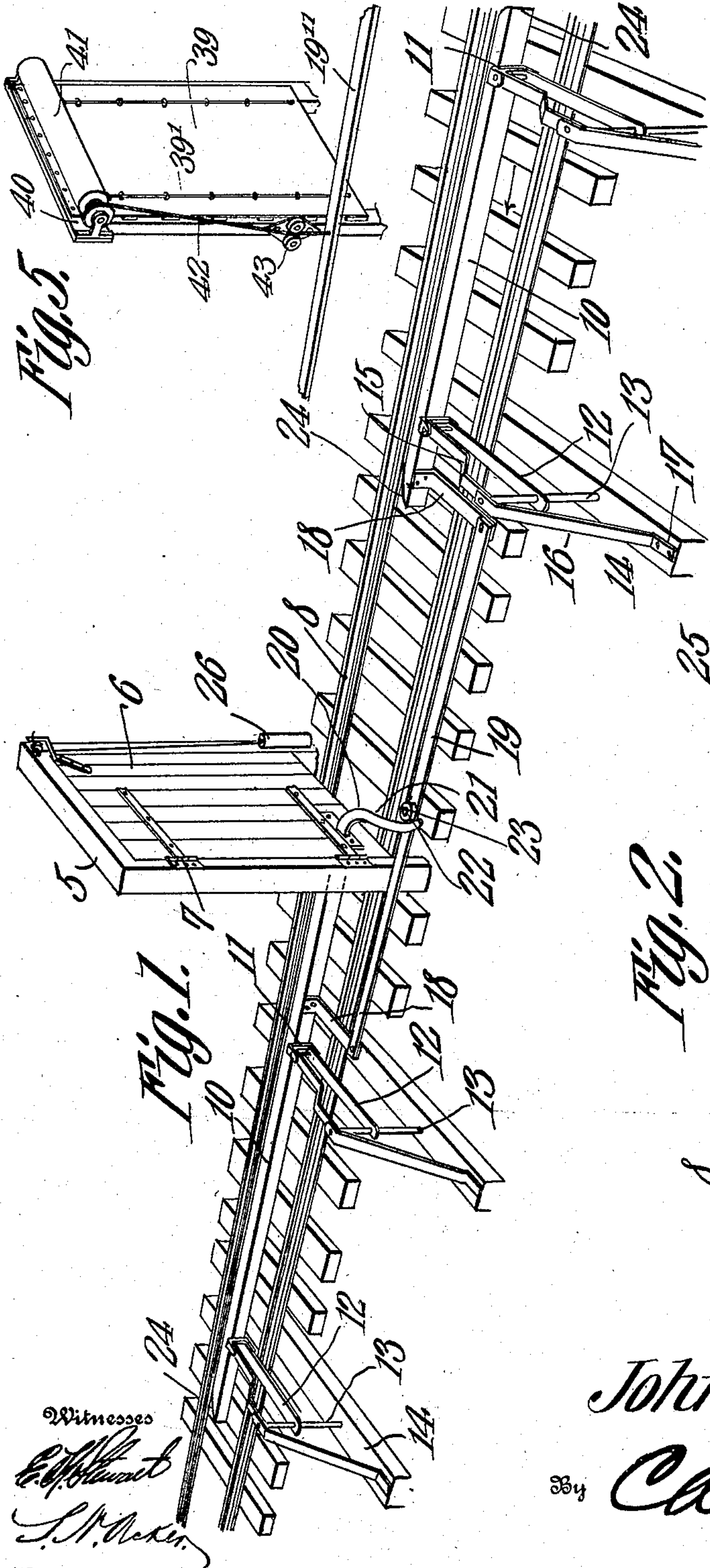


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916,027.

Patented Mar. 23, 1909.

3 SHEETS—SHEET 1.

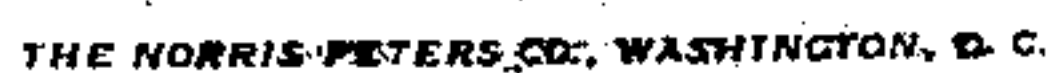


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3 SHEETS—SHEET 2.

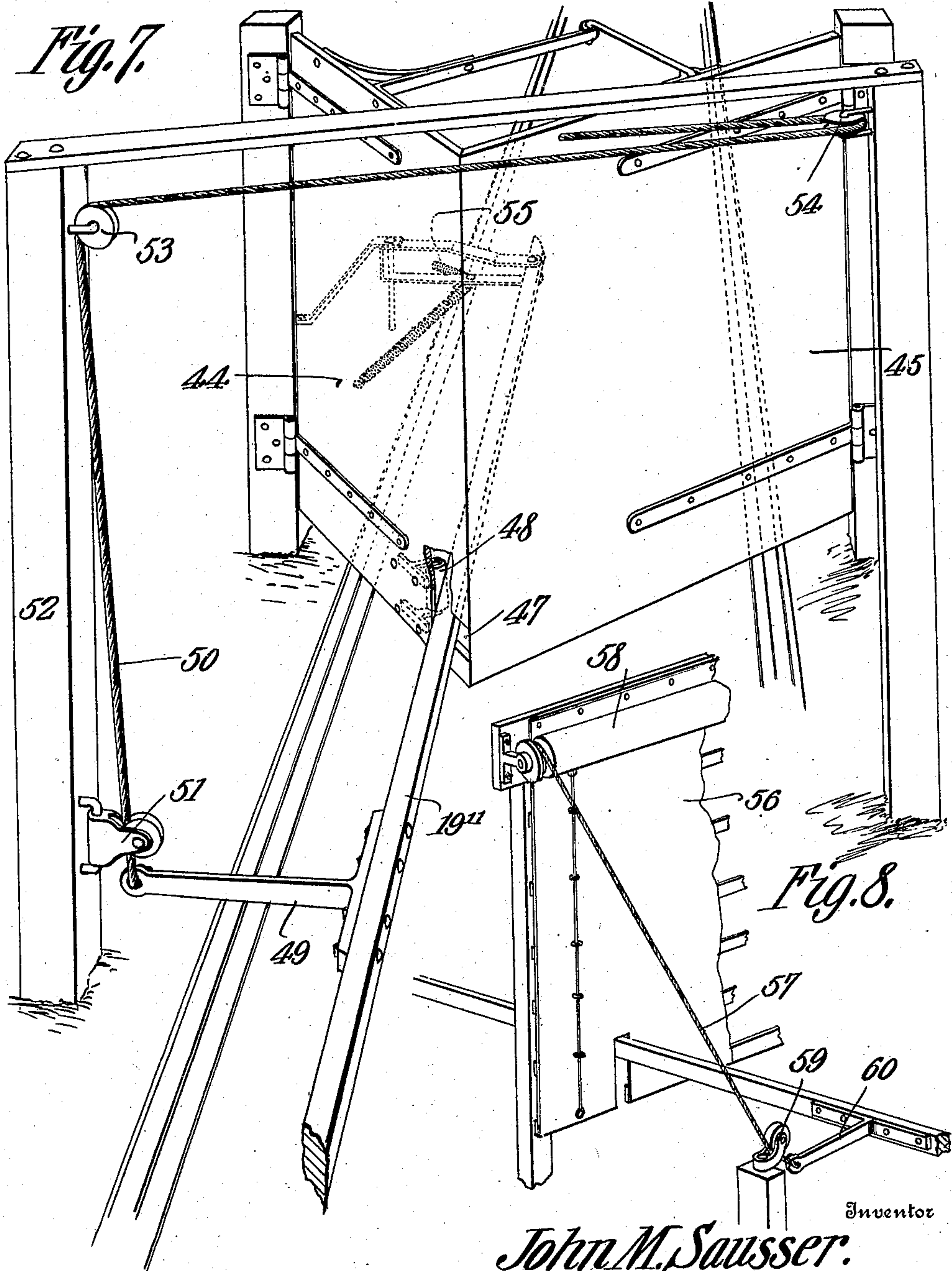




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# UNITED STATES PATENT OFFICE

JOHN M. SAUSSER, OF OSNABURG, OHIO.

## MINE-DOOR-OPERATING DEVICE.

No. 916,027.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed May 6, 1908. Serial No. 431,191.

*To all whom it may concern:*

Be it known that I, JOHN M. SAUSSER, a citizen of the United States, residing at Osnaburg, in the county of Stark and State of Ohio, have invented a new and useful Mine-Door-Operating Device, of which the following is a specification.

This invention relates to mine door operating devices of that general class shown and described in my former application for United States patent filed on the 21st day of December, 1907, under Serial No. 407,595.

The object of the invention is generally to improve and simplify the construction of the operating mechanism and to render the same more positive and efficient in operation by the employment of laterally swinging track devices which are actuated by contact with the outer faces of the car wheels to effect the opening of the mine door.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

In the accompanying drawings forming a part of this specification: Figure 1 is a perspective view of a mine door operating device constructed in accordance with my invention. Fig. 2 is a top plan view of the same showing in full lines the door in open position and in dotted lines said door in closed position. Figs. 3, 4 and 5 are perspective views illustrating modified forms of the invention. Fig. 6 is a side elevation illustrating a further modification. Fig. 7 is a perspective view showing another modification. Fig. 8 is a detail perspective view illustrating a further modification.

Similar numerals of reference indicate corresponding parts in all of the figures of the drawings.

The improved mechanism forming the subject matter of the present invention is principally designed for use in connection with mine doors and similar closures and by way of illustration is shown applied to a mine door of the ordinary construction in which 5 designates the door frame, 6 the swinging door or closure pivotally connected with the frame at 7 and adapted to normally extend transversely across the track 8.

Arranged on opposite sides of the door 6 are track devices each preferably in the form of a longitudinal bar 10 spaced inwardly

from and disposed parallel with the adjacent rail and provided with laterally extended brackets 11. Pivotally mounted between the spaced ears of the brackets 11 are laterally swinging yokes the arms 12 of which are pivotally mounted on suitable posts or standards 13 secured to adjacent cross ties 14, the cross ties 14 being extended beyond the ends of the adjacent cross ties for this purpose, as shown.

The upper arm of each yoke is preferably off set at 15 and extending from the pivoted end of the off set arm is a diagonal brace 16 having its lower end provided with a laterally extending finger 17 adapted to be secured to the adjacent cross tie 14.

Fastened to the inner end of each actuating bar 10 is a relatively short arm or bracket 18, which latter is secured to the arm or bracket of the mating bar 10 by a connecting bar 19 so that any movement imparted to one of the actuating bars 10 will cause a corresponding movement of the mating actuating bar.

Extending laterally from one side of the door 6 is a curved arm 20 having a cam face 21 for engagement with a roller 22 mounted for rotation on a suitable pin or stud 23 secured to the upper face of the connecting bar 19.

The opposite ends of the actuating bars 10 are preferably inclined or beveled at 24 for engagement with the wheels of a passing car, said bars being so disposed with relation to the track that the inner faces of the bars will bear against the outer faces of the car wheels as the car travels through the door way.

A cord, chain or other flexible medium 25 is secured to the free end of the door with its opposite end passing over a suitable pulley on the door frame 5 and provided with a weight 26 for automatically returning the door to closed position after the passage of the train through the door-way. If desired, however, suitable springs may be employed for automatically closing the door in place of the weights here shown and described.

It will thus be seen that the wheels of a car traveling in the direction of the arrow indicated in Fig. 1 of the drawings will engage the adjacent inclined terminal 24 of the bar 10 and force the latter together with the yokes 12 laterally to the full line position shown in Fig. 2 of the drawings so as to permit the wheels to travel on the rails with



their outer faces bearing against the inner faces of the actuating bars thereby to hold the bars against inward movement during the passage of the train through the door way.

As the actuating bars 10 are moved from the dotted line position to the full line position shown in Fig. 2 of the drawing the wheel or roller 23 will engage the cam face of the arm 20 and move the door to open position, the weight 26 serving to automatically close the door and return the actuating bars to the position shown in Fig. 1 of the drawings after the passage of the car through the door way.

Should the car approach the door from the opposite direction the car wheel will force the adjacent actuating bar against the door and thus move the latter to open position, the weight 26 serving to automatically close the door and re-set the track devices after the passage of the car, in the manner before described.

If desired, suitable flat plates or guards 27 may be secured to the inner face of the door so as to prevent the car wheels from coming in contact therewith and breaking or otherwise injuring the door during its passage through said door way.

In Fig. 3 of the drawings there is illustrated a modified form of the invention in which a post or standard 29 is mounted adjacent the track 8 to form a support for a pair of sheaves or rollers 30 and 30', the latter being mounted for rotation in a yoke or keeper 31 secured to the top of the standard 29, as shown. Secured to the outer face of the car door are two ropes or cables 32 and 33 one of which passes over the roller 30' and is extended between the arms 12 of the yoke and thence around a pulley 34 for attachment to a lug or bracket 35 secured to the outer face of the adjacent actuating bar 10, the cable 33 being extended around the other pulley 30 and thence around a pulley similar in construction to the pulley 34 for attachment to a bracket on the actuating bar on the opposite side of the door way. In this form of the device the wheels of a car approaching the door from either direction will engage the adjacent actuating bar 10 and swing the same laterally in the manner before described. As the actuating bar is swung laterally a longitudinal pull will be exerted on the adjacent cord or cable thereby to move the door to open position, the weight serving to automatically return the door to closed position and the bars 10 to the full line position shown in Fig. 3 after the car has passed through the door way. One or more springs 13' are preferably connected with the arms 12 and the adjacent cross ties, respectively, to assist in returning the bars 10 to normal position.

A further modification is illustrated in Fig.

4 of the drawings in which a single swinging yoke or bracket 12' is employed for supporting each actuating bar. In this form of the device a pair of sheaves or pulleys 36 is mounted on a standard 14', there being a cord or cable 38 secured to the intermediate portion of the connecting bar 19' with its opposite end passing between the pulleys 36 for attachment to the adjacent face of a mine door, as shown, so that when the actuating bar on either side of the door frame is pressed laterally by contact with the car wheels the door will be moved to open position. The intermediate portion of the bar 19' is preferably offset or curved laterally to strengthen the same, there being a roller 20' journaled in a suitable support beneath the bar to assist in sustaining the weight of said bar, as well as to reduce friction between the parts. In Fig. 5 of the drawings the door is in the form of a flexible curtain 39, the lower end of which is preferably weighted while the opposite end thereof is secured to the top of a supporting frame 40 in which is mounted for rotation a drum or roller 41. Secured to the drum 41 is one end of a cord or cable 42 the opposite end of which passes between a pair of sheaves or pulleys 43 secured to the door frame for attachment to the connecting bar 19''. Suitable cords 39' extend through eyes attached to the transverse slots of the curtain with their upper ends attached to the roller 41 for lifting the curtain when the roller 41 is rotated. It will thus be seen that when the connecting bar 19'' is moved in either direction the cord or cable 42 will be unwound from the drum 41 thereby elevating the curtain, the weight of the curtain 39 causing the latter to drop and re-wind the cord 42 on the drum 41 after the outer faces of the car wheels are released from engagement with the actuating bars.

A still further modification is illustrated in Fig. 6 of the drawings in which a pair of sheaves or pulleys 44 are mounted on the connecting bar and adapted to receive between them the cord or cable 45. In this form of the device one end of the cord or cable 45 is secured to a drum 46 extending laterally from the curtain rollers 47, while the opposite end thereof passes between the rollers 44 and is rigidly secured to the adjacent door frame beneath the bar, as indicated at 48. The operation of this form of the device is similar to that shown in Fig. 5 of the drawings the only difference being a quicker action of the roller 47 in effecting the raising of the curtain.

A further modification is illustrated in Fig. 7 in which a pair of swinging doors 44 and 45 constitute the transverse barrier for the track, said doors being connected by levers 46, so that the opening movement of one door will move the other to open position. In this form of the invention the track device or bar



19" extends through an opening 47 in the adjacent door 44 for engagement with a roller 48 mounted for rotation on the inner face of the door, as shown. An arm 49 extends laterally over the track from the intermediate portion of the bar 19" for connection with the adjacent end of a cord or cable 50. One end of the cord or cable 50 passes over a sheave or pulley 51 pivotally mounted on a supporting frame 52 while the opposite end of the cable passes over relatively stationary pulleys 53 and 54, on the upper portion of the frame for attachment to the door 45. It will thus be seen that a lateral pressure exerted on the bar 19" by the wheel of a passing car will cause the arm 49 to exert a longitudinal pull on the cord or cable 50 and at the same time cause the bar 19" to press laterally against the roller 48 thereby moving both doors to open position. A suitable spring or weight may be connected with the door to assist in returning the same to closed position after the passage of a car, and a similar spring 55 may be secured to one of the pivoted arms or yokes of the bar 19" for automatically returning the latter to normal position.

A still further modification is illustrated in Fig. 8 of the drawings in which a flexible curtain 56 is provided, the latter being similar in construction to the curtain 39 shown in Fig. 5 and operated by means of a cord or cable 57 one end of which is secured to the walls 58 of the curtain while the opposite end thereof extends over a swivel pulley or roller 59 for attachment to the lateral arm 60 of the track device or bar, as shown.

While I have shown and described in Figs. 1 to 4 inclusive a single car door extending transversely across the track to form a barrier therefor it is obvious that two or more doors may be employed instead, and when so used, may be disposed at an angle to each other and pivotally connected in any suitable manner so that the opening movement of one of the doors will effect a corresponding opening movement of the other door.

From the foregoing description it is thought that the construction and operation of the device will be readily understood by those skilled in the art and further description thereof is deemed unnecessary.

Having thus described the invention what is claimed is:

1. The combination with a track, of a door forming a barrier for the track, and track devices movable laterally and longitudinally in a horizontal plane and actuated by a passing car to effect the opening of the door.

2. The combination with a track, of a door forming a barrier for the track, a cam carried by the door, and laterally depressible track devices actuated by a passing car and movable longitudinally in a horizontal plane in engagement with the cam for effecting the opening of the door.

3. The combination with a track, of a door forming a barrier for the track, laterally swinging track devices movable longitudinally in a horizontal plane and actuated by a passing car to effect the opening of the door, and means for automatically closing the door after the passage of the car through the doorway, said door closing means also serving to return the track devices to operative position.

4. The combination with a track, of a door forming a barrier for the track, track devices disposed on opposite sides of the door, a bar forming a rigid connection between the track devices, a cam carried by the door, and means mounted on the connecting bar and adapted to engage the cam for moving the door to open position when the track devices are swung laterally by contact with a passing car.

5. The combination with a track, of a door forming a barrier for the track, longitudinal actuating bars disposed on opposite sides of the door and movable laterally in a horizontal plane, a bar forming a rigid connection between both actuating bars, a cam extending laterally from the door, and a roller mounted on the connecting bar and adapted to engage the cam for effecting the opening of the door when the actuating bars are swung laterally.

6. The combination with a track, of a door forming a barrier for the track, supports disposed adjacent the track, yokes pivotally mounted on the supports, actuating bars disposed on opposite sides of the door and pivotally connected with the yokes, said actuating bars being movable laterally and longitudinally in a horizontal plane by contact with the wheels of the car, a connecting bar forming a rigid connection between the actuating bars, and means carried by the connecting bar for moving the door to open position when the actuating bars are swung laterally.

7. The combination with a track, of a door forming a barrier for the track, supports disposed adjacent the track, longitudinal bars arranged on opposite sides of the door and provided with laterally extending brackets, yokes pivotally mounted in the brackets and pivotally connected with the adjacent supports, said actuating bars being movable laterally and longitudinally in a horizontal plane by contact with the wheels of a car, arms extending laterally from the actuating bars, a connecting bar forming a rigid connection between the laterally extending arms, and means carried by the connecting bar and cooperating with the door for moving the latter to open position when the actuating bars are swung laterally.

8. The combination with a track, of a door forming a barrier for the track, a laterally swinging track device operatively connected with the door and movable longitudinally in



a horizontal plane to effect the opening of the door, said track devices being actuated by contact with the outer face of a car wheel.

9. The combination with a track, of a door 5 forming a barrier for the track, a laterally swinging actuating bar disposed on one side of the track and having its opposite ends inclined or beveled, said actuating bar being disposed in the path of travel of a car wheel 10 and movable longitudinally in a horizontal plane to effect the opening movement of a door.

10. The combination with a track, of a door forming a barrier for the track, longitudinal actuating bars disposed on opposite 15 sides of the door and provided with brackets having laterally extending ears, yokes pivotally mounted between the ears of the brackets and each including spaced arms one of which 20 is off set, posts mounted adjacent the track and forming supports for the arms of the

yokes, a brace connecting the supper arm of each yoke with the adjacent cross tie of the track, arms extending laterally from the inner faces of the actuating bars, a longitudinal 25 bar connecting the arms, a cam extending laterally from one face of the door, a roller mounted on the upper surface of the connecting bar, said actuating bars being movable laterally in a horizontal plane by contact with 30 the outer faces of a car wheel to effect the opening movement of the car door, and means for automatically closing the door and simultaneously moving the actuating bars to operative position. 35

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN M. SAUSSER.

Witnesses:

W. O. WERNZ,

ANNA A. SEYMOUR.