No. 608,436. Patented Aug. 2, 1898.

N. K. BOWMAN.

MINE GATE.

(Application filed Aug. 30, 1897.)

(No Model.) 3 Sheets—Sheet 1.

FIG. 1.

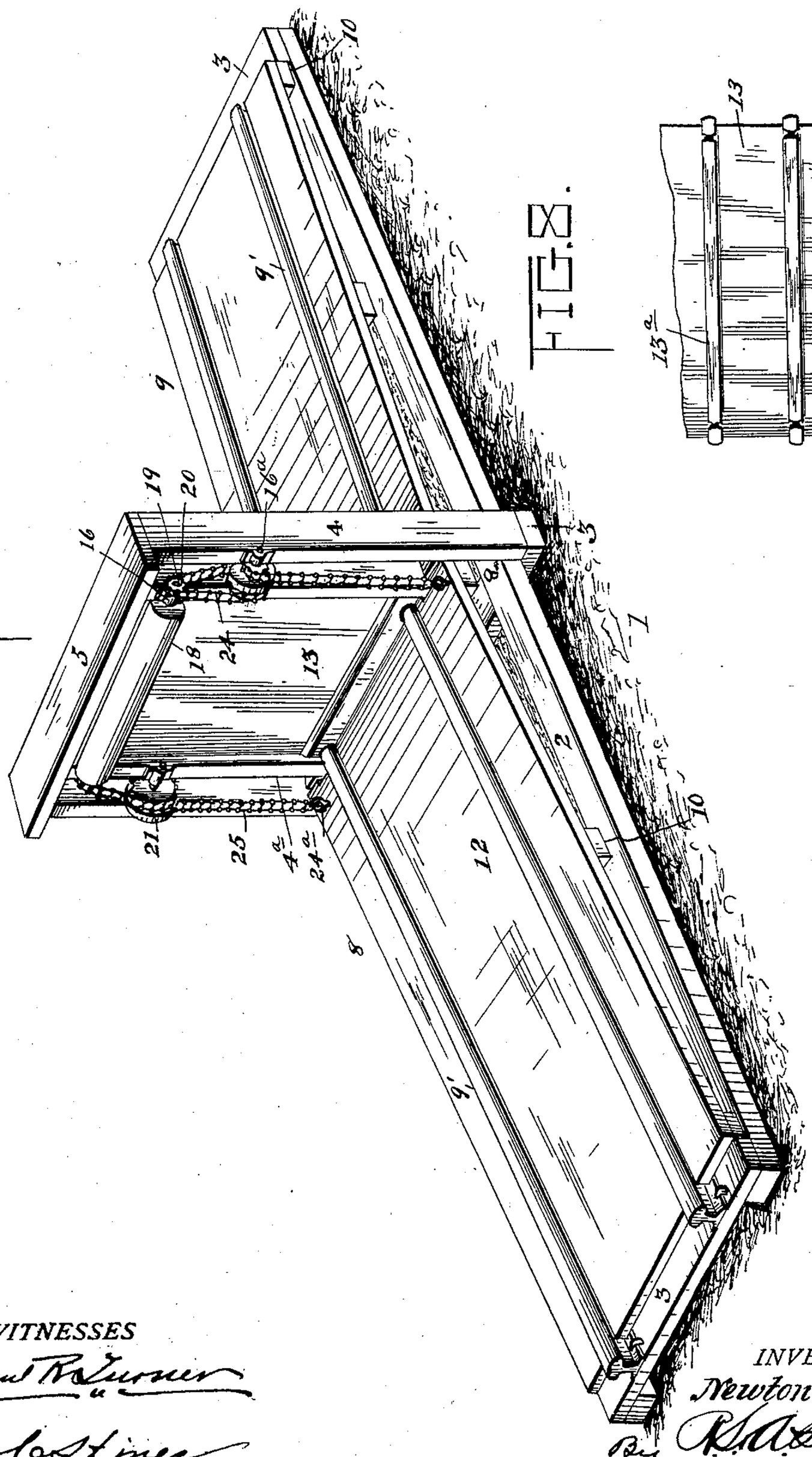

FIG. X.

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FIG. 2.

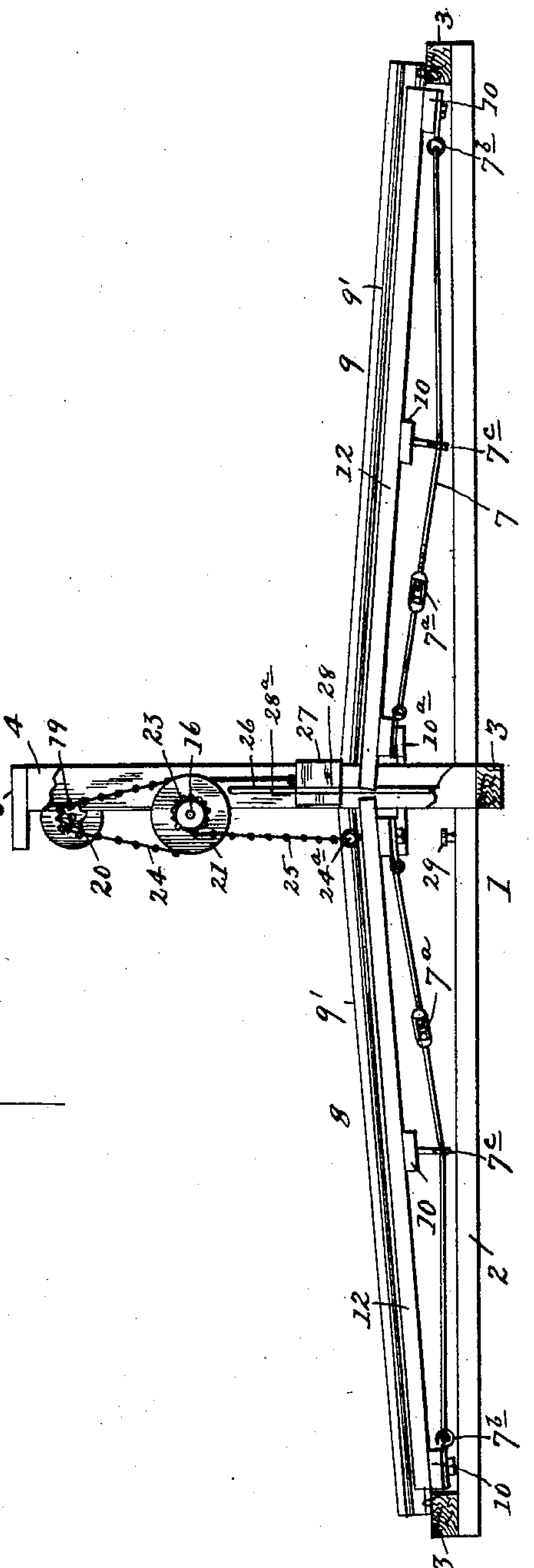
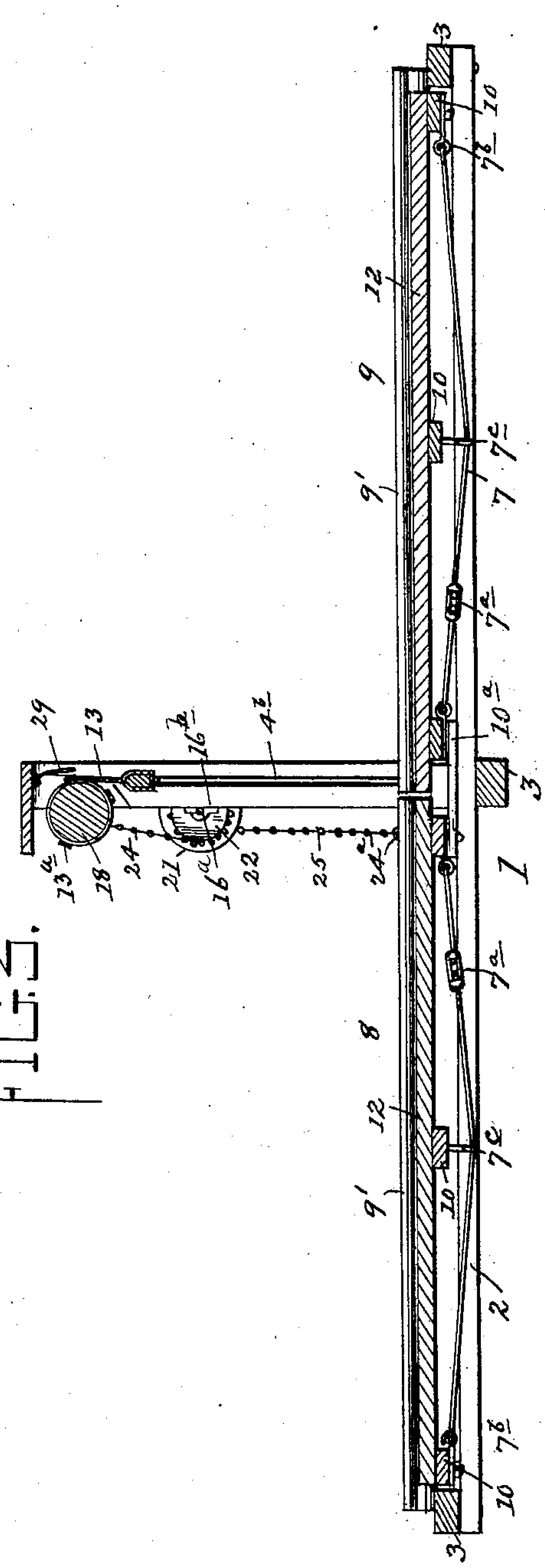


FIG. 3.



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(No Model.) 3 Sheets—Sheet 3.

FIG. 4.

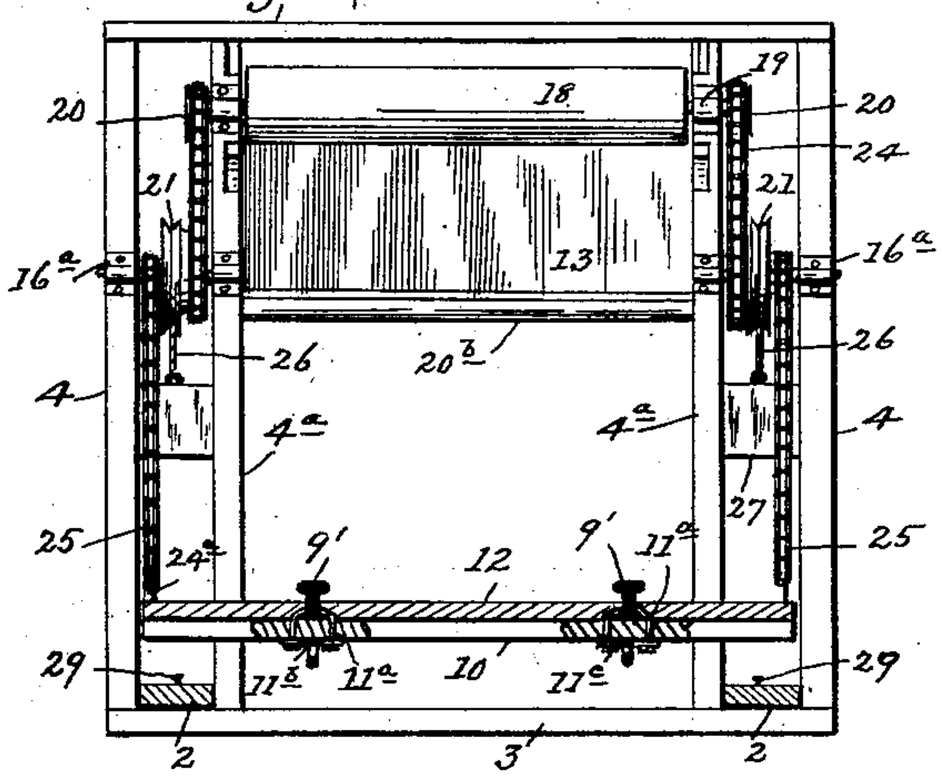


FIG. 5.

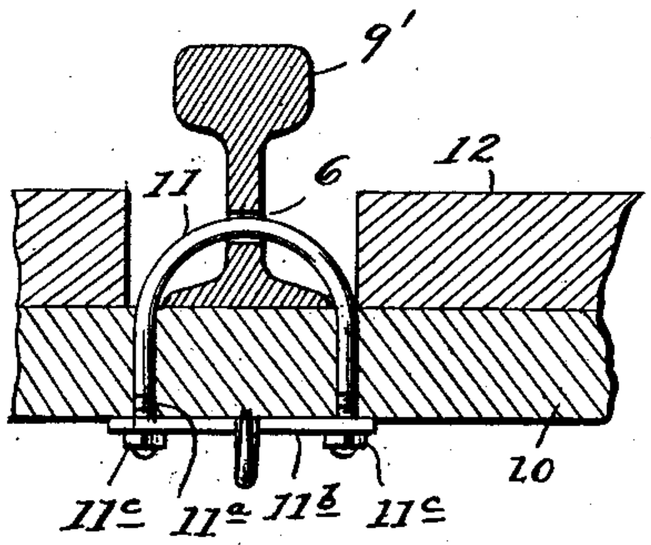


FIG. 6.

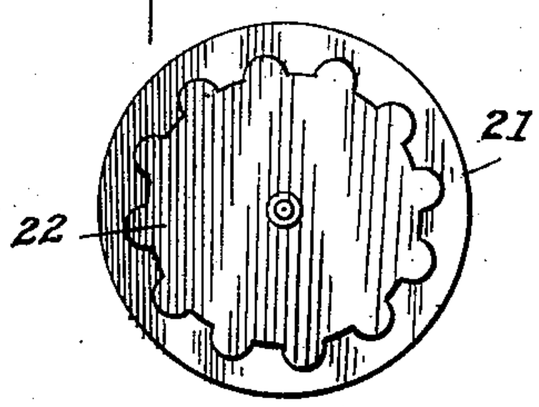
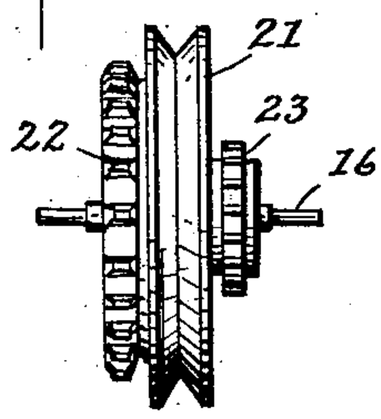


FIG 7.



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UNITED STATES PATENT OFFICE.

NEWTON K. BOWMAN, OF LAWRENCE, OHIO, ASSIGNOR TO ALVIN HURFORD, OF CANTON, OHIO.

MINE-GATE.

SPECIFICATION forming part of Letters Patent No. 608,436, dated August 2, 1898.

Application filed August 30, 1897. Serial No. 650,014. (No model.)

To all whom it may concern:

Be it known that I, NEWTON K. BOWMAN, a citizen of the United States, residing at North Lawrence, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Mine-Gates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to mine-gates; and its object is to provide an improved automatic gate of this character; and to this end the invention consists in the novel constructions, combinations, and arrangements of parts hereinafter more fully described, and particularly set forth in the appended claims.

In the drawings hereto annexed and forming part of this specification, Figure 1 is a perspective view of a track, platform, and gate embodying my invention. Fig. 2 is an end view with post 4 broken away; Fig. 3, a vertical longitudinal section showing the gate in open position. Fig. 4 is a transverse section through the gate-platform; Fig. 5, a detail sectional view illustrating the rail-tie connections; Fig. 6, a side view, and Fig. 7 an edge view, of one of the sprocket-pulleys; Fig. 8, a detail view of the gate-curtain.

Referring to the drawings, 1 represents the gate-platform frame, which is set into the track-bed and interposed in the line of the rails and which comprises two parallel longitudinal side sills 2, connected at their ends and center by cross-braces 3.

4 represents posts or standards rising from the sills or center cross-brace and connected at their upper ends by a transverse rail or bar 5. Mounted on said base-frame are two inclined tilting platforms 8 9, forming two inclined planes, having their highest portion at the center in line with said posts or standards 4, as shown. These platforms carry track-rails 9′, which are supported by cross-ties 10, to which said rails are secured by U-bolts 11. These bolts have their return-bend portions passed through orifices 6 in the body of the rail and their threaded shanks 11^a projecting through the tie and connected by a clamping-plate 11^b, retained in position thereon by nuts 11^c, as clearly illustrated in Fig. 5. The ends of the ties extend beyond the rails, and on these projecting ends of the ties and between the rails the deck-flooring 12 of the platform is laid.

The tilting platforms 8 9 are supported at their outer ends by the ends of the rails 9′, resting on the cross-braces 3, and are connected at their inner ends, so as to sag or tilt at the center in unison by supporting plates or blocks 10^a, each having one end secured to the inner cross-tie of the platform 8 and the other end thereof projecting under the inner cross-tie of the platform 9.

The construction and arrangement of parts above described is substantially the same as that shown and described in my application for Letters Patent of the United States, filed July 26, 1897, Serial No. 646,015, except in the manner of supporting the platforms and securing the rails. The improvements to which the present application relates will now be described.

7 represents trusses, two of which are provided on each platform, one arranged at each side and extending longitudinally thereof. Each truss consists of two sections having their inner contiguous ends connected by a swivel or turnbuckle 7^a and their outer ends connected to eyebolts 7^b on the end cross-ties 10, and the center portion of each truss is supported by a truss brace or guide 7^c on the center cross-tie, as shown. These trusses are adapted to prevent the rails and the platform-deck from bending or sagging under the weight of heavily-loaded cars passing thereover.

4^a represents the gate-posts, which are arranged parallel with the posts 4 and connected with the center cross-brace 3 and transverse rail 5, the deck-platforms being slotted at their inner ends for passage of the same. These posts are formed with vertical guide-grooves 4^b on their inner sides.

The gate 13 is in the form of a curtain, preferably made of heavy ducking, canvas, or some other suitable waterproof material. This curtain is connected with and adapted to roll up on a roller 18, having stub-shafts 19 journaled in bearings 16 on the posts 4^a and carrying sprocket-pinions 20. The gate-curtain is stiffened by transverse cleats or

strips 13ª to resist air-pressure and is provided at the lower end thereof with a sleeve or pocket 20ᵇ for the reception of a comparatively heavy transverse bar 14, the ends of which are fitted to slide in the guide-grooves 4ᵇ. The lower edge of said bar is recessed at 15, and the sleeve is made to conform thereto, so that the lower end of the curtain may fit over the rails and rest upon the platforms. The strips 13ª stiffen the curtain sufficiently to prevent it from bulging at the center, while permitting it to roll readily on the roller 18, while the transverse bar 14 holds the lower end of the curtain firmly and maintains it in close contact with the platforms.

16ª represents winding-shafts located between the posts or standards 4 4ª at each side of the gateway and mounted in bearings 16ᵇ thereon. Each of said shafts carries a grooved pulley 21 and two sprocket-wheels 22 23 of different sizes, one on each side of said pulley, and chains 24 connect the sprocket-wheels 22 with the sprocket-pinions 20 on the roller-shaft 19.

25 represents lifting-chains having one end connected with eyebolts 24ª on the platform 8 and the other end made fast to the sprocket-wheels 23, and 26 represents cords, ropes, or cables made fast to the pulleys 21 and carrying counterbalancing-weights 27, formed at opposite sides with flanges 28, traversing guide-grooves 28ª in the posts 4 4ª.

29 represents a flap to cover the aperture at the top of the gate-curtain.

The operation of the gate thus constructed is as follows: When a person walks upon one of the platforms—the platform 9, for instance—or a car rolls upon the rails thereon, the weight of said person or car will depress and cause both platforms to tilt or sag down at the center to a horizontal position until the crossties rest upon the stops 29. This will draw on the chains 25, which will operate the shafts 16, which in turn will revolve the roller 18 through the medium of the sprockets 20 22 and chains 24 and draw up the counterbalancing-weights 27. The gate-curtain 13 will thus be caused to roll up on the roller 18 and open the gateway and will remain in this position until said person or car has passed over the platform 8, when the gate will be unwound and closed and the platforms restored to their normal position by the combined weight of the platforms themselves, the transverse bar 14, and counterbalancing-weights 27.

Having thus fully described my invention, what I claim as new and useful, and desire to secure by Letters Patent of the United States, is—

1. In a mine-gate, the combination with a base support or frame, of the spaced, parallel posts 4 4ª rising therefrom, two inclined depressible platforms, a roller 18 mounted in bearings on said posts 4ª and carrying sprocket-pinions 20, winding-shafts 16 mounted in bearings on the posts 4 4ª and each carrying two sprockets 22 23, chains 24 connecting the sprockets 22 20, chains 25 connecting the sprockets 23 and one of said platforms, a gravity-closing gate-curtain connected with said roller, and means auxiliary to the gate, for restoring the platforms to their normal position and assisting in effecting the closing of the gate, substantially as described.

2. In gates, the combination of a base-frame carrying the posts 4 4ª, two inclined depressible platforms 8 9, a roller 18 mounted in bearings on said posts 4ª and carrying sprocket-pinions 20, winding-shafts 16 mounted in bearings on the posts 4 4ª and each carrying a grooved pulley 21 and two sprockets 22 23, chains 24 connecting the sprockets 22 20, chains 25 connecting the sprockets 23 and one of said platforms, counterbalancing-weights suspended from the pulleys 21 and provided with flanges traversing guide-grooves in said posts, and a gate-curtain connected with said roller, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

NEWTON K. BOWMAN.

Witnesses:
WILLIAM J. GREEN,
JAMES SCOTT.