

No. 820,090.

PATENTED MAY 8, 1906.

N. K. BOWMAN.

MINE GATE.

APPLICATION FILED MAR. 10, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

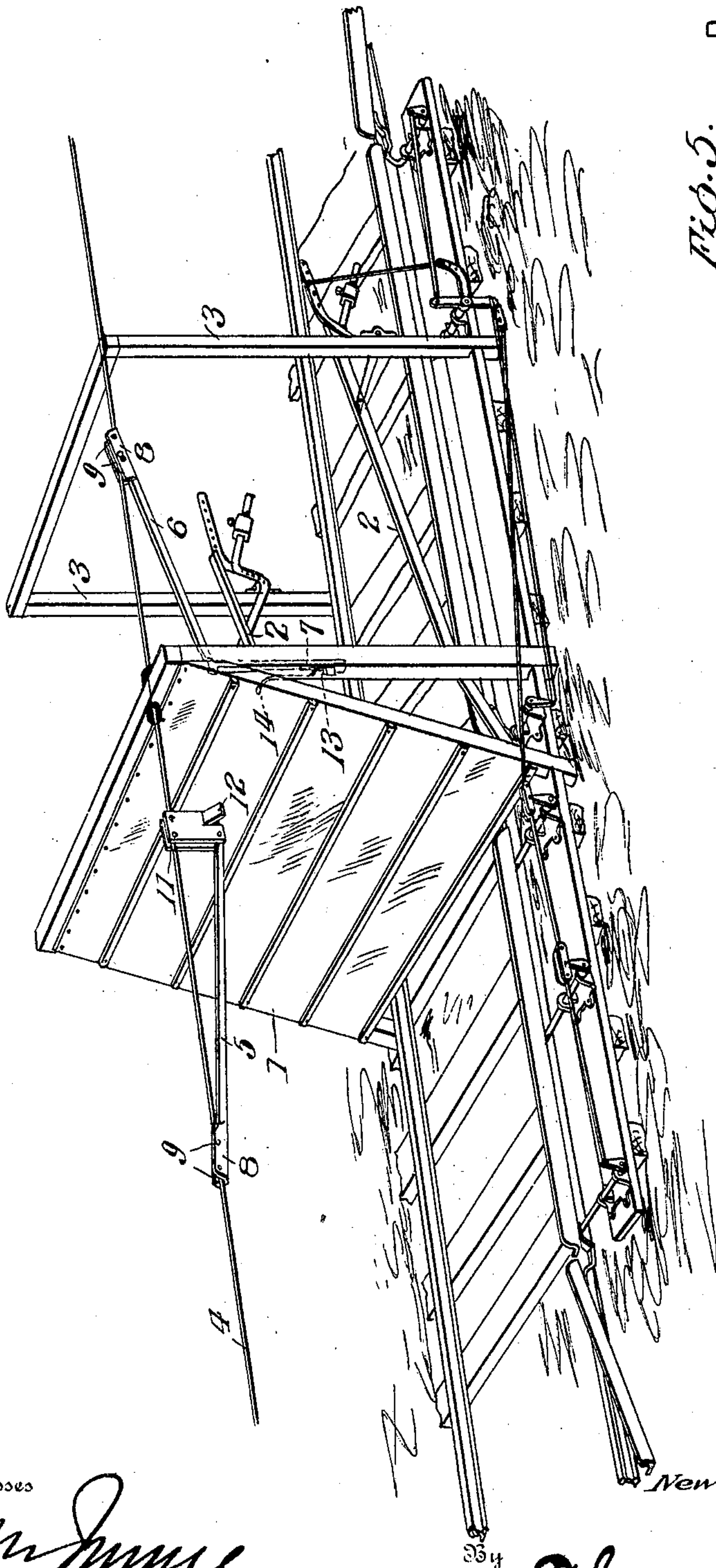


Fig. 5.

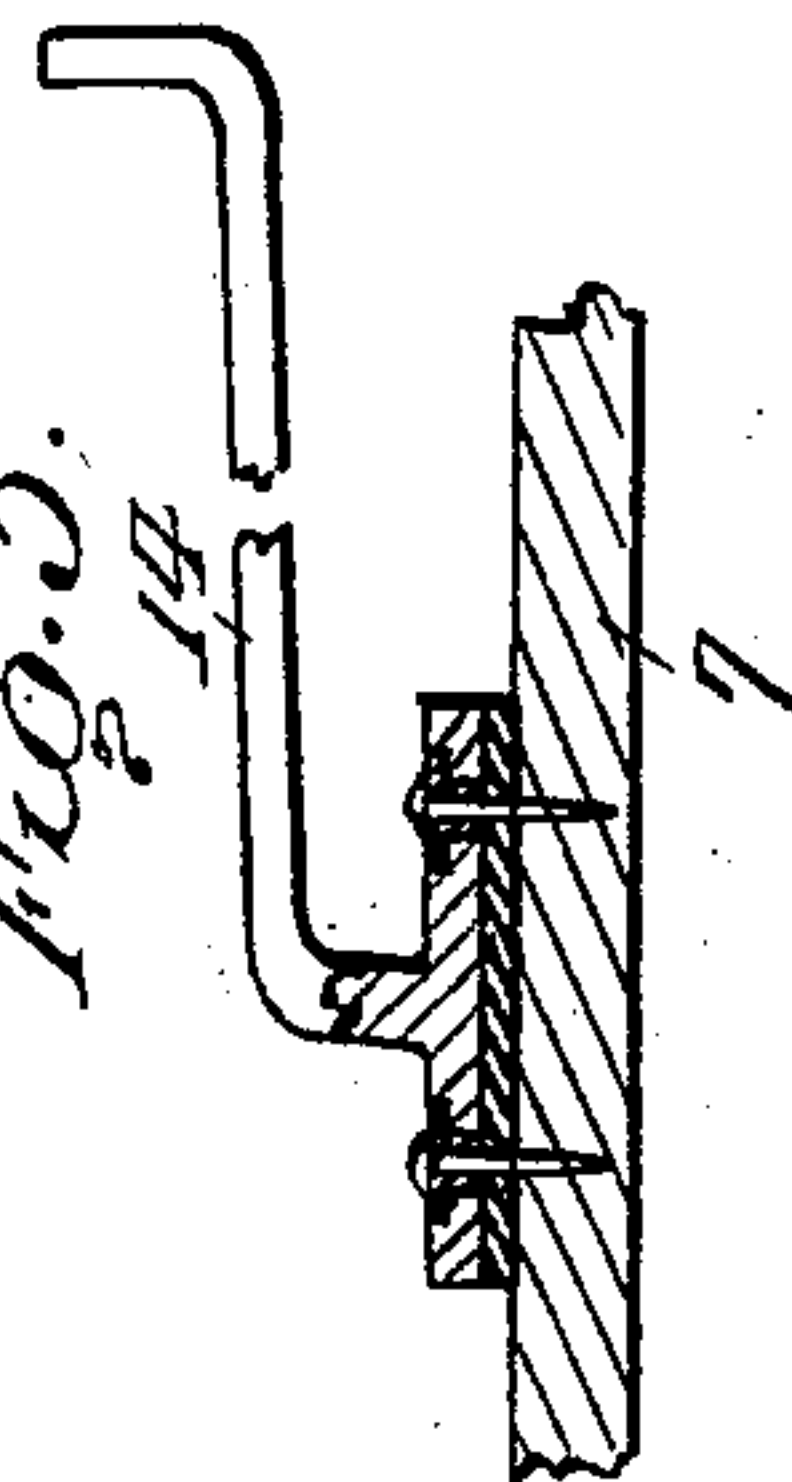
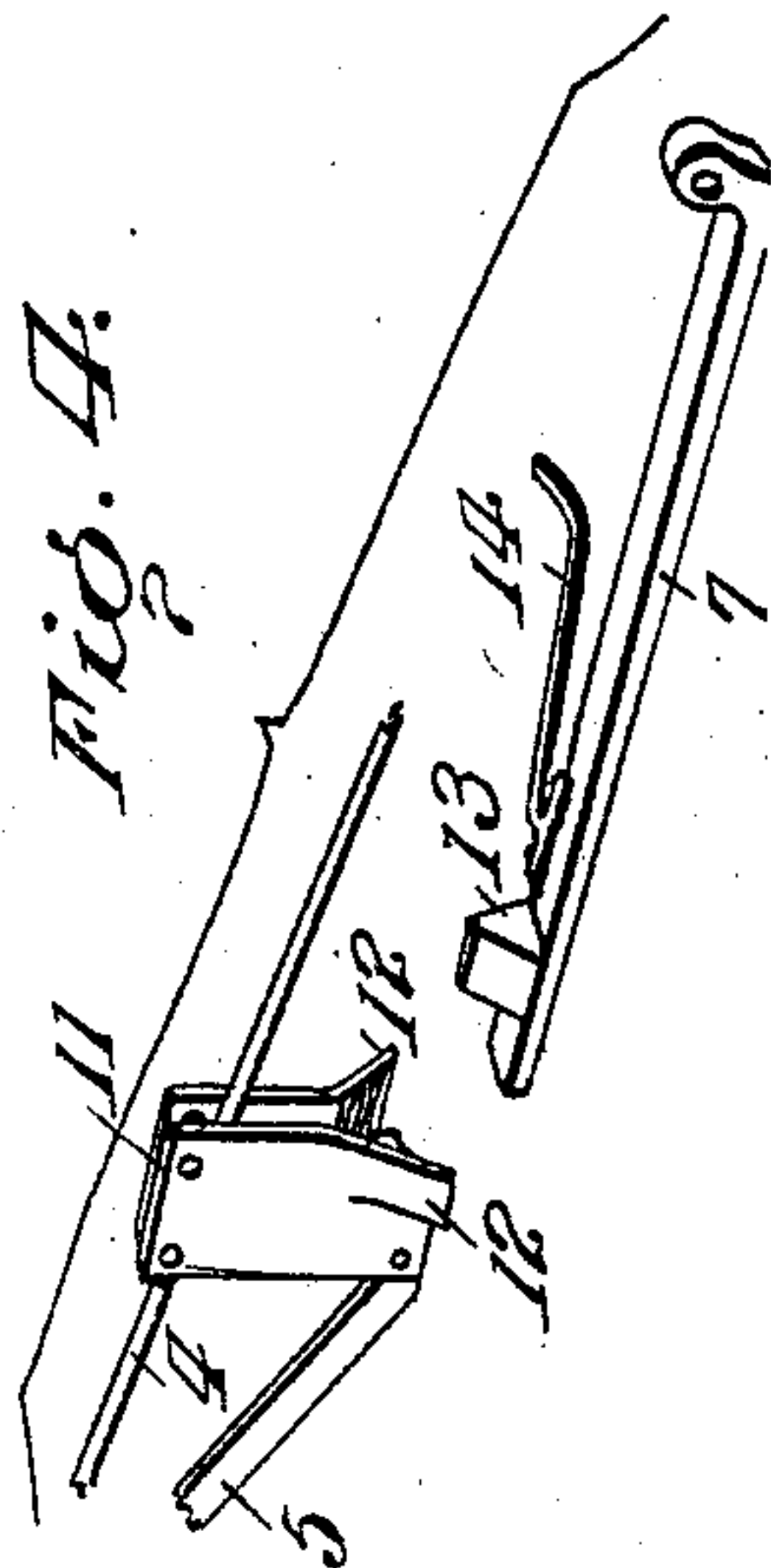


Fig. 4.



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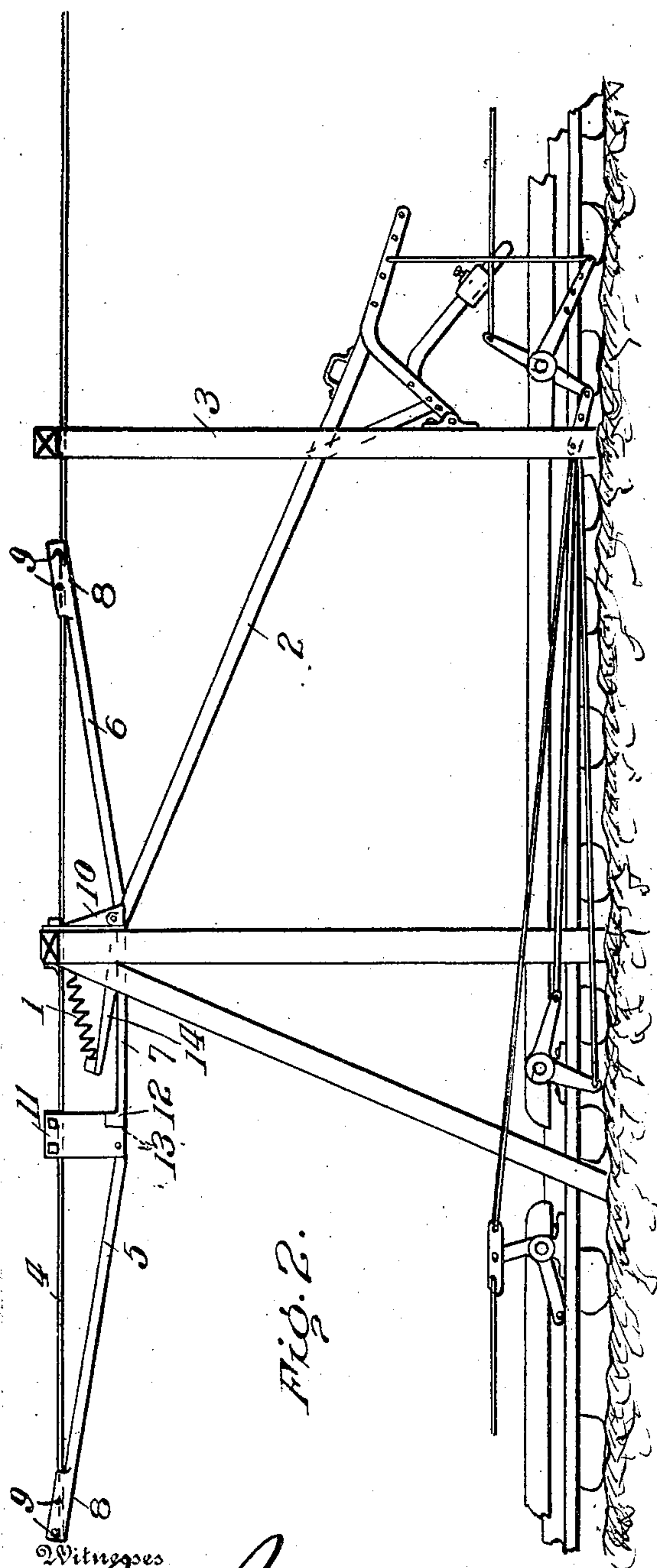
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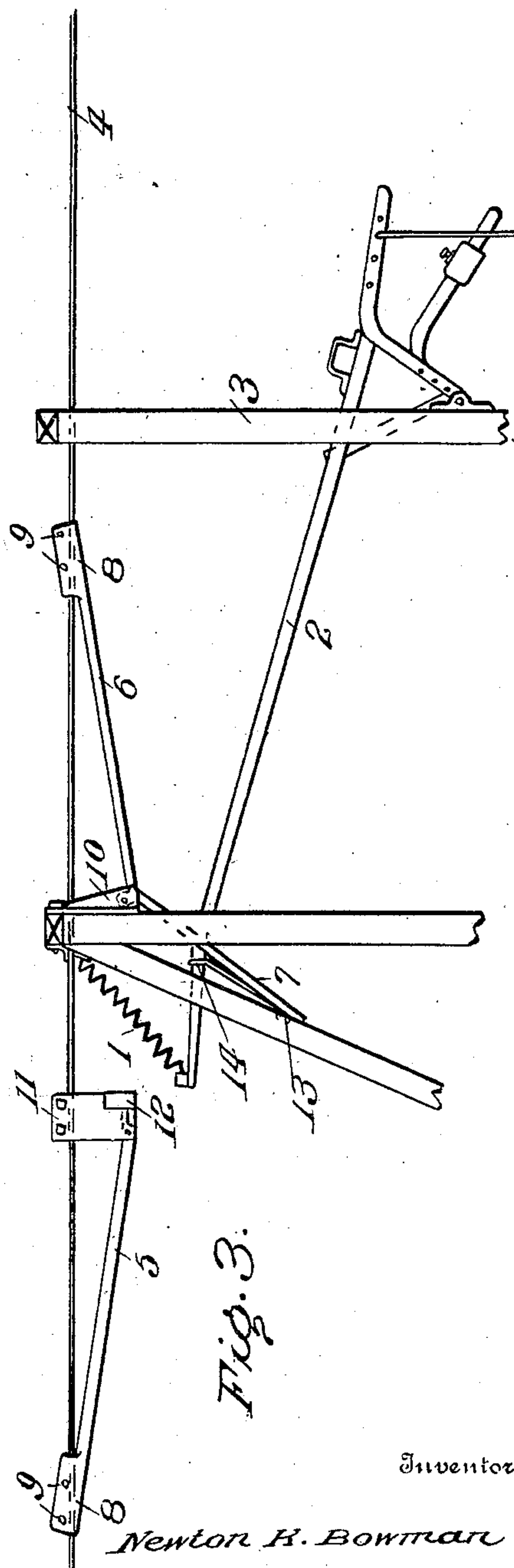
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

NEWTON K. BOWMAN, OF NORTH LAWRENCE, OHIO.

MINE-GATE.

No. 820,090.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed March 10, 1905. Serial No. 249,428.

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, of which the following is a specification.

This invention relates to electric haulage-lines having gates or guards projected across them in such a manner as to obstruct the passage of the trolley and necessitate jumping or spanning of the obstruction, and aims to provide a novel means actuated by the gate, its support, or adjunctive part to safely carry the trolley by the obstruction without interrupting the continuity of the current to the electric motor of the car or carrier.

The invention is particularly designed for mine-gates, and is shown in this adaptation in the accompanying drawings, in which—

Figure 1 is a perspective view of a mine-gate of the type substantially as shown in Patent No. 676,835, granted to me June 18, 1901, equipped with spanning means for the trolley constructed in accordance with and embodying the invention. Fig. 2 is a side view of the parts shown in Fig. 1, illustrating the relation of the elements when the gate is open. Fig. 3 is a view of the parts shown in Fig. 2 with the trolley bridge or spanner about in normal position and the gate nearly or quite open. Fig. 4 is a detail perspective view of the trolley bridge or spanner and the end portion of the approach coöperating therewith. Fig. 5 is a top plan view of the trolley bridge or spanner.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The gate 1 illustrated is of the type adapted to open upward in a series of folds and attached at its lower end to corresponding operating-arms 2, pivotally supported to posts or uprights 3 of a frame arranged a short distance from the gate. The gate, its mountings, and actuating means are substantially the same as set forth in my patent herein referred to, the gate being typical of the type of guard for which the invention is designed.

The trolley-line 4 is arranged overhead, and approaches 5 and 6 are arranged for coöperation therewith, being disposed upon opposite sides of the gate 1 and oppositely inclined. The space or gap formed between the proximal ends of the approaches admits of the gate

folding upward and is closed by means of a spanner or bridge 7, which is pivoted at one end to one of the approaches and is adapted to make connection at its opposite end with the other approach. The approaches are of similar construction, and each is provided at one end with a U-shaped clip 8, which embraces opposite sides of the trolley-line 4 and receives bolts or fastenings 9 for clamping the line-wire between side members of the clip and holding the latter in place, the fastenings 9 extending over the line-wire and serving to close the open side of the clip. The clip may form an integral part of the approach or be fitted thereto in any manner. A hanger 10 supports the end of the approach 6 bordering upon the gap or space and may be secured to the gate-supporting structure or to the trolley-line 4, as may be found most convenient. The spanner or bridge 7 is pivoted either to the hanger 10 or the approach 6. A hanger 11 supports the end of the approach 5 bordering upon the space or gap and is provided at its lower end with oppositely-inclined portions 12 to direct the swinging end of the spanner or bridge 7 to its seat when closing. The hanger 11 is secured to the trolley-line 4.

The spanner or bridge 7 consists of a bar similar in structure to the approaches, and is pivoted at one end to the approach upon the same side of the gate as the arms 2, and is adapted to open downward and to close by an upward pivotal movement. A wedge-shaped projection 13 is provided upon the upper side of the bridge 7 near its free end and is adapted to fit the angular space formed between the downwardly-flared guides 12. The bridge 7 normally occupies a position so as to clear the gate 1, as indicated in Fig. 3, whereby provision is had for a minimum amount of movement. The bridge 7 being positively connected to one of the approaches is adapted to move in a predetermined plane, so as to make connection with the opposite approach when closed, thereby insuring the safe carrying of the trolley-wheel past the gap or space through which the gate moves in opening and closing. As shown, one of the arms 2 is utilized as means for tripping the bridge to effect closing thereof, said bridge opening automatically by gravitative action. When the gate opens, the bridge 7 is caused to swing upward into the position about as shown in Fig. 2, thereby presenting a continuous track for the trolley-wheel to

travel upon and at the same time preserving a continuity of the current, whereby the electric fluid is continually supplied to the motor employed for propelling the car or like vehicle. A trip 14 is attached to the bridge 7 and is electrically insulated therefrom, so as to prevent charging the arm 2 and connecting parts. The trip 14 consists of an arm preferably possessing a degree of resiliency, so as to yield, whereby the inertia of the bridge may be gradually overcome when the trip strikes the same in the quick movement of the arm incident to the sudden action of the gate-operating means.

Fig. 1 represents the gate closed and the spanner or bridge out of the path thereof. In the event of a mine-car or like carrier approaching the gate in either direction the gate-operating means is set in motion and the arms 2 are moved so as to throw the gate upward, as indicated in Figs. 2 and 3. As the gate nearly reaches the limit of its upward movement the arm 2 upon the same side as the trolley-line and trolley-bridge comes in contact with said bridge or the extension 14 thereof, as indicated in Fig. 3, and a continued upward movement of the gate moves said bridge upward at its swinging end and closes the gap or space between the approaches 5 and 6, thereby providing for a safe and continuous support for the trolley, while at the same time preserving the continuity of the electric current, whereby the motive fluid may be continuously supplied to the motor. After the car passes the gate and the latter closes, the bridge or spanner automatically assumes a normal position.

Having thus described the invention, what is claimed as new is—

1. In electric haulage lines or systems and in combination with the trolley-line gate and gate-actuating mechanism operated by means of the approaching car, a spanner or bridge located upon one side of the gate and

in electrical connection with the trolley-line and adapted to be tripped and swung across the path of the gate and make electrical connection with the trolley-line upon the opposite side of said gate to safely carry the trolley-wheel thereby without necessitating interruption of the electrical current.

2. In electric haulage lines or systems and in combination with the trolley-line and gate, oppositely-inclined approaches located upon opposite sides of the gate, clips at the outer ends of the approaches embracing opposite sides of the trolley-line, fastenings connecting opposite side members of the clips and confining the trolley-line therein, hangers at the inner ends of the approaches, and a bridge pivoted to one of the approaches and adapted to be tripped upon opening of the gate to close the gap or space between the approaches for carrying the trolley-wheel thereby and maintaining continuity of the electric current.

3. In electric haulage means or systems, and in combination with the trolley-line and gate, oppositely-inclined approaches spaced apart at their inner ends and secured at their outer ends to the trolley-line, hangers connecting the inner ends of the approaches with the trolley-line, one of said hangers having oppositely-inclined guides at its lower end, a bridge pivoted to the other hanger and adapted to be tripped upon the approach of a car to safely carry the trolley by the space formed between the inner ends of said approaches, and a wedge-shaped piece attached to the free end of the approaches for coöperation with the oppositely-inclined guides of the first-mentioned hanger, substantially as set forth.

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

NEWTON K. BOWMAN. [L. s.]

Witnesses

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