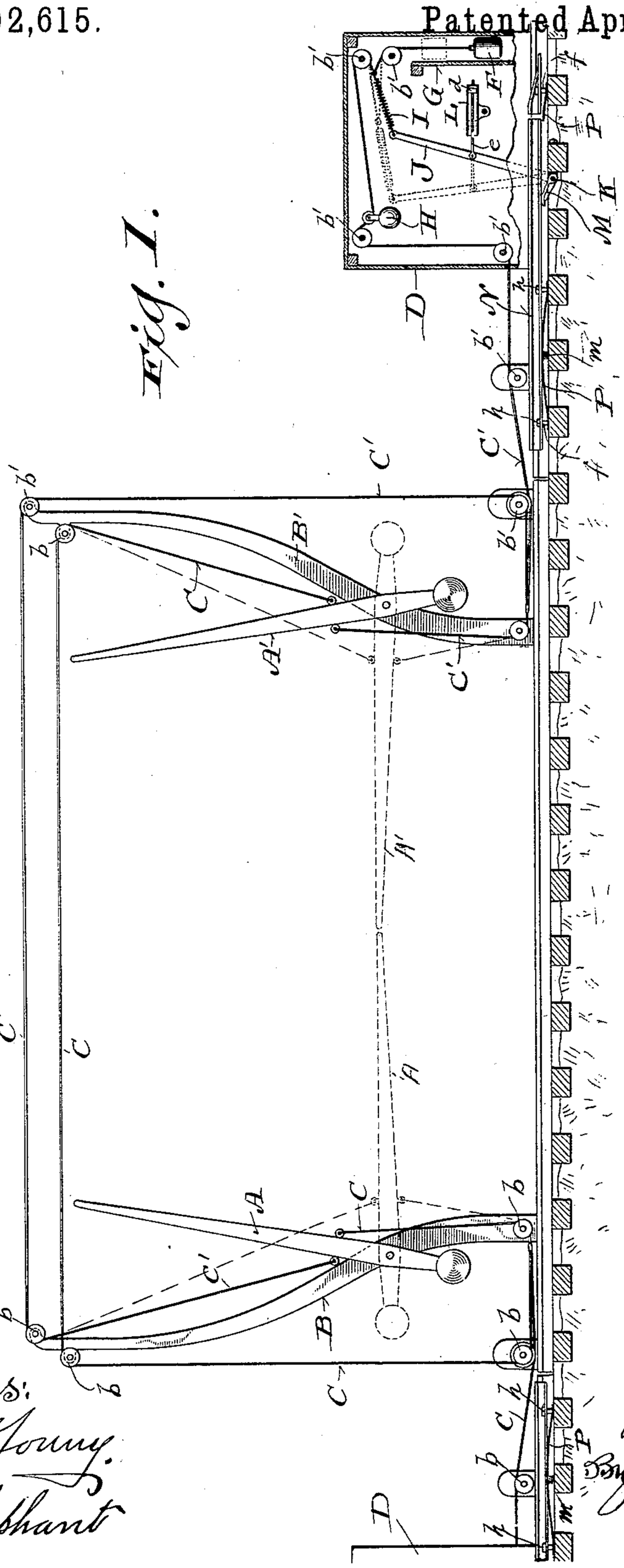
(No Model.) 3 Sheets—Sheet 1.

F. A. CRAMER & J. A. GARMAN.

RAILWAY GATE MECHANISM.

No. 602,615. Patented Apr. 19, 1898.

Fig. 1.



Witnesses:
Geo. W. Young.
N. E. Oliphant

Inventors:
F. A. Cramer
J. A. Garman.
By H. G. Underwood
Attorneys

(No Model.)

3 Sheets—Sheet 2.

F. A. CRAMER & J. A. GARMAN.

RAILWAY GATE MECHANISM.

No. 602,615. Patented Apr. 19, 1898.

Fig. 2.

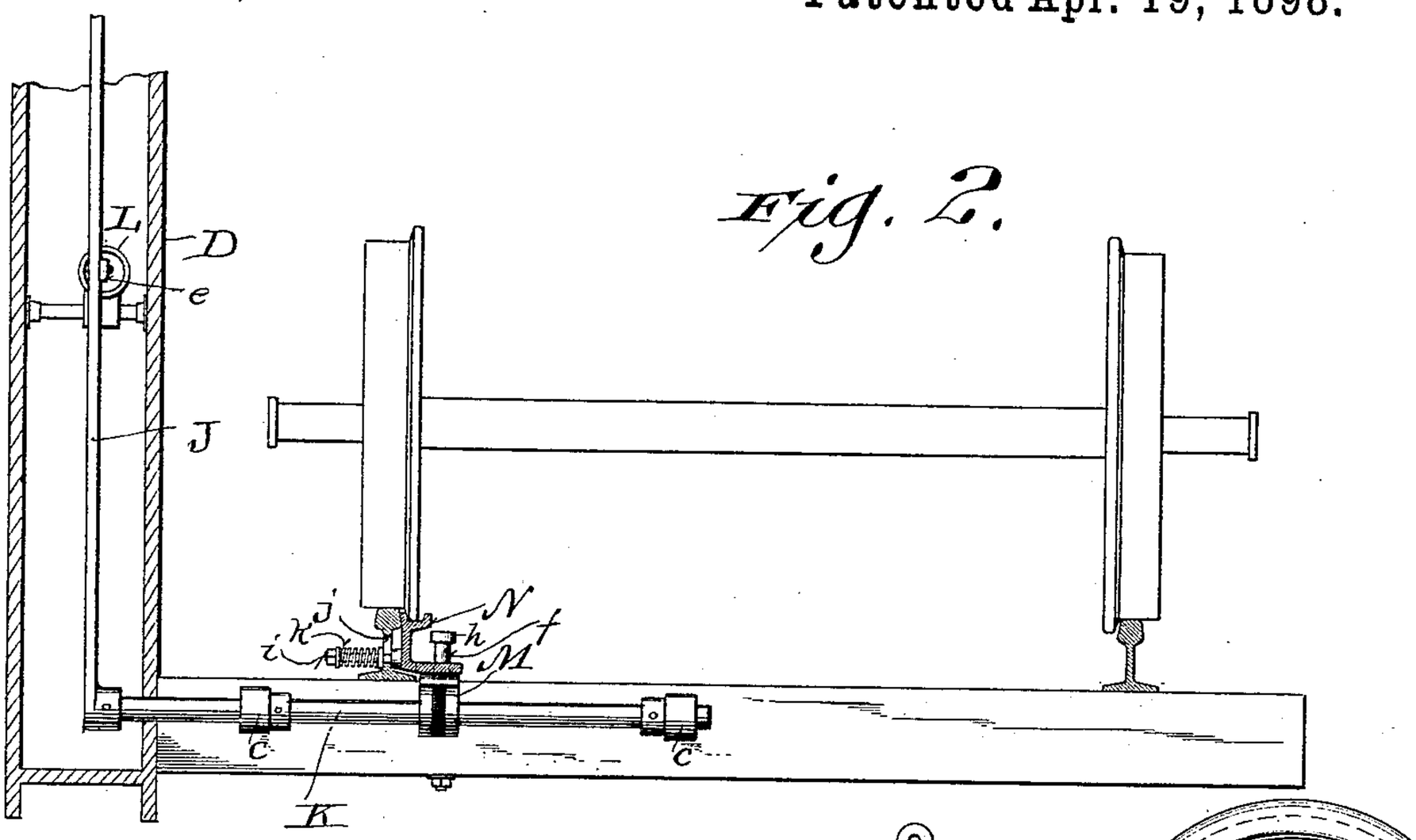


Fig. 3.

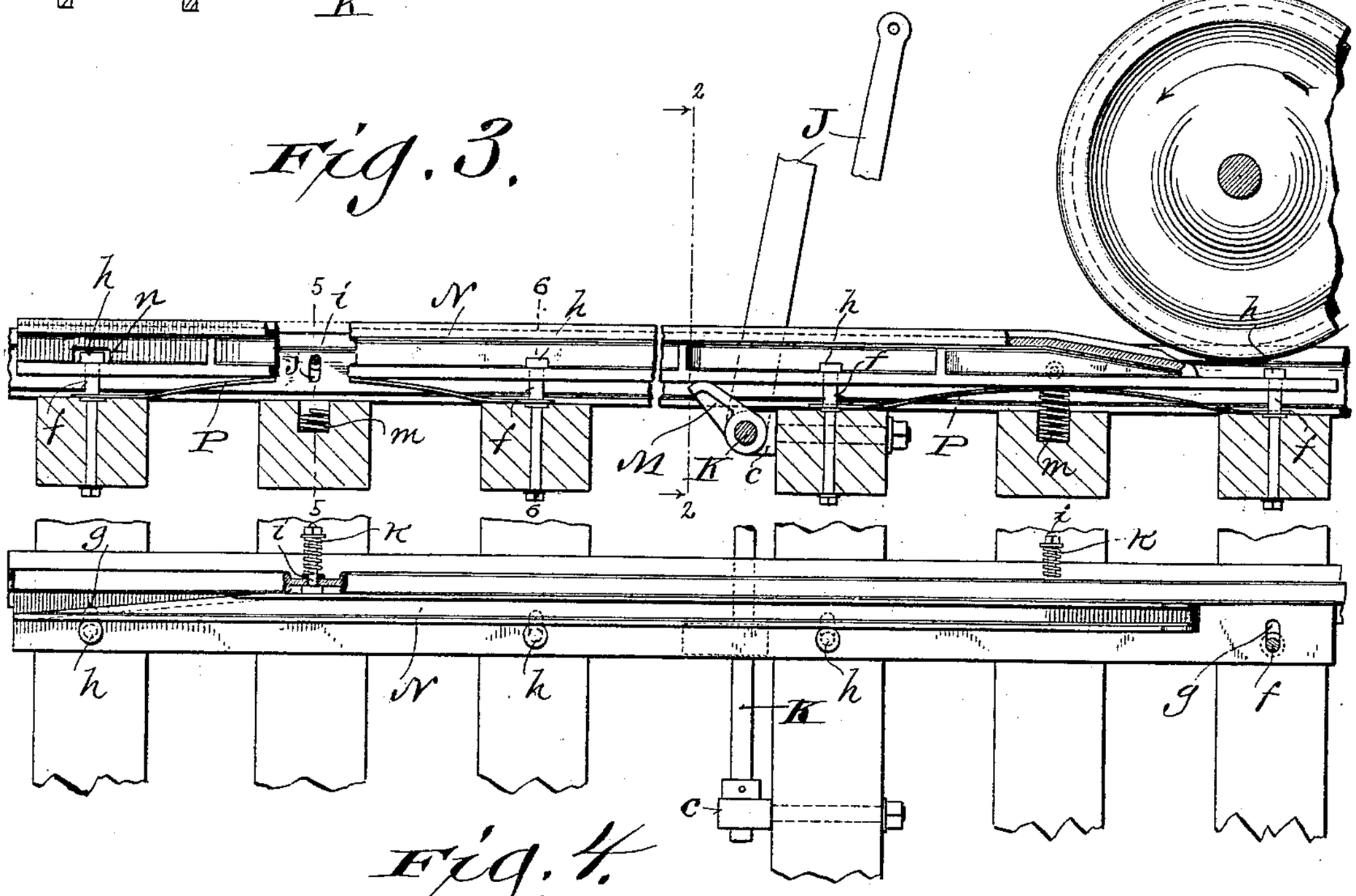


Fig. 4.

Witnesses:

Geo. N. Young.

N. C. Oliphant

Inventors:

F. A. Cramer

J. A. Garman

By H. G. Underwood

Attorneys.

(No Model.) 3 Sheets—Sheet 3.

F. A. CRAMER & J. A. GARMAN.

RAILWAY GATE MECHANISM.

No. 602,615. Patented Apr. 19, 1898.

Fig. 1.

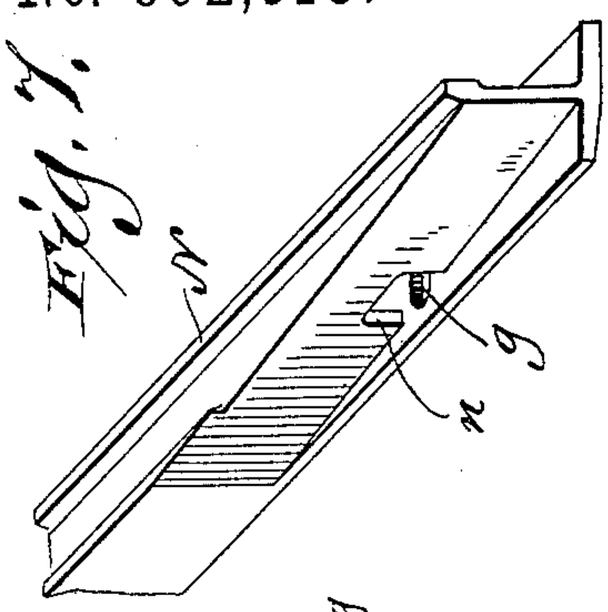


Fig. 6.

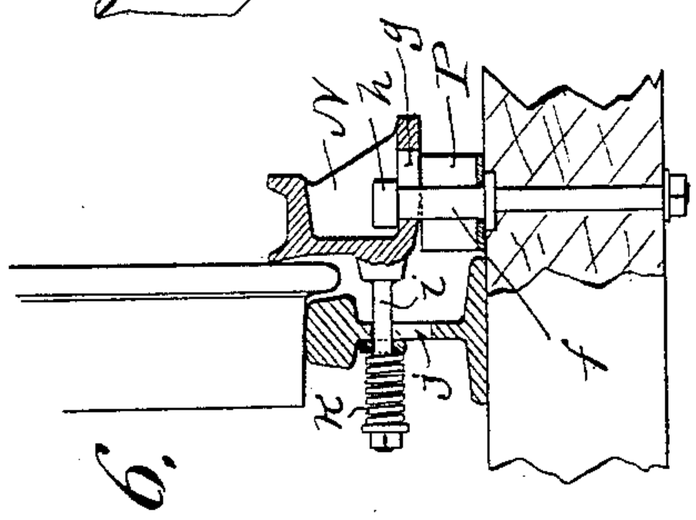


Fig. 5.

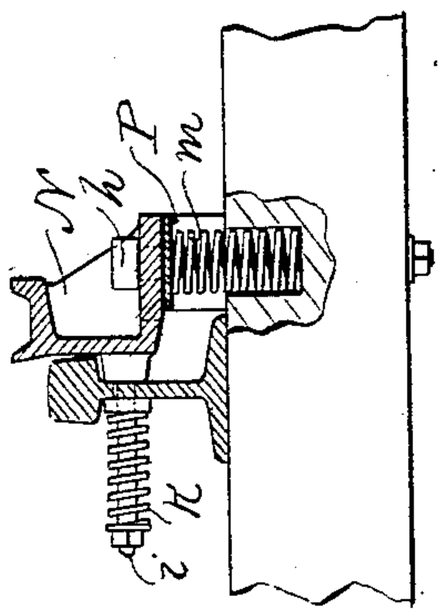
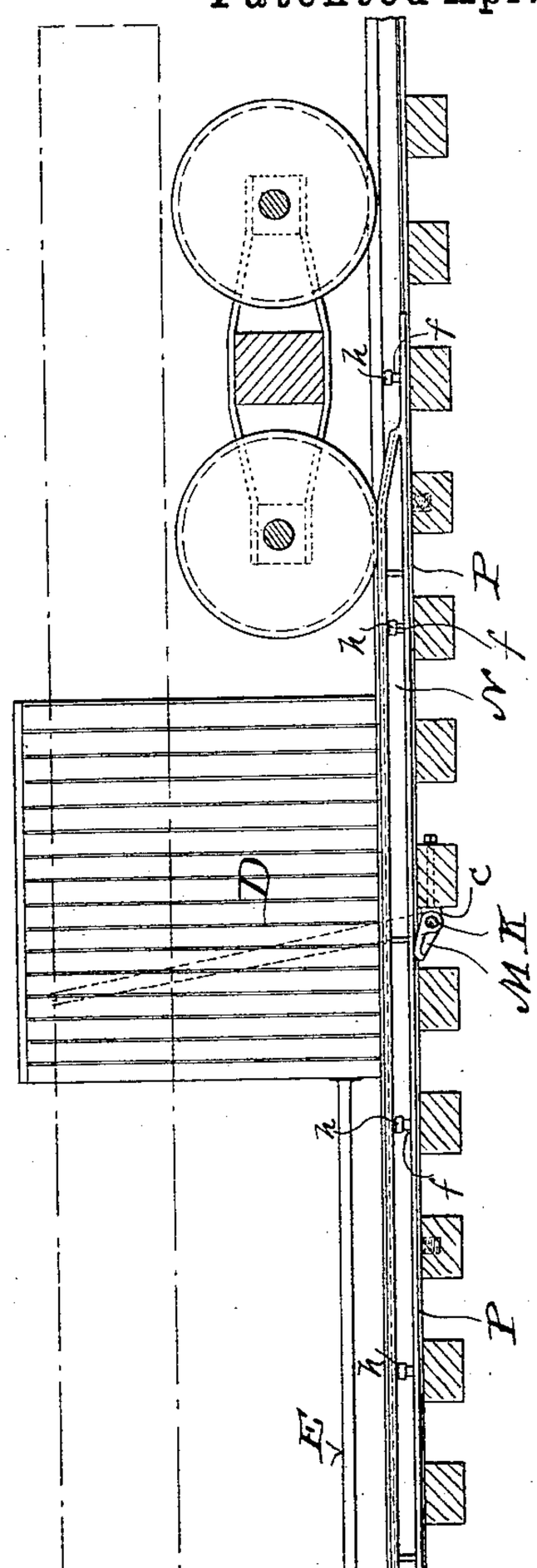


Fig. 8.



Witnesses:
Geo. W. Imny.
N. E. Oliphant

Inventors:
F. A. Cramer
J. A. Garman
By H. G. Underwood
Attorneys

UNITED STATES PATENT OFFICE.

FREDERICK A. CRAMER AND JAMES A. GARMAN, OF NEENAH, WISCONSIN.

RAILWAY-GATE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 602,615, dated April 19, 1898.

Application filed June 10, 1897. Serial No. 640,127. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK A. CRAMER and JAMES A. GARMAN, citizens of the United States, and residents of Neenah, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Railway-Gate Mechanism; and we do hereby declare that the following is a full, clear, and exact description thereof.

Our invention has for its object to provide for the automatic operation of railway-crossing gates; and it consists in certain peculiarities of construction and combination of parts hereinafter set forth with reference to the accompanying drawings and subsequently claimed.

Figure 1 of the drawings is a diagram illustrating the general construction and arrangement of parts comprehended by our invention. Fig. 2 represents a partly-sectional transverse view on the plane indicated by line 2 2 in the succeeding figure and illustrates a car-wheel operating in conjunction with a portion of our gate-operating mechanism; Fig. 3, a side elevation with parts broken away and in section to illustrate certain features of the gate mechanism and the action of a car-wheel thereon; Fig. 4, a plan view of certain of the parts shown in the preceding figure; Figs. 5 and 6, detail transverse sections respectively indicated by lines 5 5 and 6 6 in the third figure; Fig. 7, a detail perspective view of one end of a rail embodied in said gate mechanism; and Fig. 8, a diagram illustrating the passage of railway rolling-stock along the aforesaid rail, the latter being auxiliary to the track-rails.

Referring by letter to the drawings, A A′ represent a pair of counterweighted gate-bars in pivotal connection with posts B B′ at a railway-crossing, these gate-bars and posts being common in the art to which our invention relates. Connected to the gate-bar posts and other suitable supports along the railway-track in opposite directions from the crossing are sheaves *b b′* for flexible runners C C′, each of the runners being branched, as shown in Fig. 1, and directly connected to opposite gate-bars, whereby the latter may operate in unison incidental to draft exerted on either of said runners.

Some of the sheaves for each flexible runner are shown contained in a housing D, arranged a convenient distance from the crossing, and, as shown in Fig. 8, runner-incasing pipes E may be utilized as weather-guards, the housing also serving the purpose of a weather-guard for inclosed mechanism. That portion of each flexible runner trained on sheaves within a housing D connects with a weight F, and a box G may be employed to incase the weight. A horizontal stretch of the housing-inclosed portion of each flexible runner supports a weighted traveler H, that automatically takes up slack, and between sheaves above the weight F a vertical stretch of the runner is connected by a spring I with a lever J, that extends into the housing from a rock-shaft K, having its bearings *c* made fast to a cross-tie under track-rails. Arranged in each housing is a horizontal cylinder L, having an air-vent, and operative in the cylinder is a piston *d*, having a rod *e* in pivotal connection with the aforesaid lever.

A crank M, fast on rock-shaft K, is opposed to an auxiliary rail N, laid close to one of the track-rails inside the latter on bow-springs P, the ends of these springs being forked and having their yield along vertical guide-sleeves *f*, bolted to cross-ties, on which said bow-springs are supported. The rail N is preferably grooved upon its top, and each of the guide-sleeves for the bow-springs extends up through a transverse slot *g* in a flange of said rail. The flange is upon the inner side of rail N and the heads *h* of the bolts run down through the guide-sleeves opposite the upper surface of said flange, as best shown in Fig. 6.

Pins *i*, extending from that side of rail N opposite the flange of the latter, engage vertical slots *j* in the adjacent track-rail, and arranged on each pin outside said track-rail, between a washer and nut, is a spiral spring *k* under tension, whereby the auxiliary rail is normally drawn snug against said track-rail.

From the foregoing it will be understood that each auxiliary rail N may have vertical and horizontal play, the normal elevation of said rail being greater than that of the adjacent track-rail. That end of each auxiliary rail farthest from the crossing is inclined, so

that car-wheel flanges may come thereon without shock, these flanges causing a depression of said rail against resistance of the bow-springs upon which it rests, and spiral springs *m*, seated in cross-ties under the centers of said bow-springs, cushion the latter and lessen their liability to fracture incidental to sudden contraction. The other end of the auxiliary rail N is beveled on its inner side, so as to provide for entrance of car-wheel flanges between it and the adjacent track-rail, whereby the former rail may be moved horizontally against resistance of the spiral springs *k*, under tension on the pins *i*, that engage vertical slots in said track-rail. As shown in Fig. 7, the beveled end of rail N has its web provided with an aperture *n* in order to obtain clearance for one of the bolt-heads *h* above specified.

The length of each auxiliary rail is such that when railway rolling-stock is passing along the same in either direction a front wheel of one truck will operate in conjunction with said rail before the rear wheel of the preceding truck has ceased to act, and thus the aforesaid rail will remain in its depressed or laterally-moved position from the time it is first struck by the first car-wheel until an entire train has passed. It is also to be understood that the direction of travel on the part of the train governs the adjustment of each auxiliary rail along which it may move.

When a rail N is automttically depressed, its pressure on the crank M of a rock-shaft K causes movement of the corresponding lever J, thereby drawing upon the flexible runner connected by a spring I with said lever, and thus the gate-bars are swung down to horizontal position, said spring operating to prevent a too sudden movement of the part of said gate-bars. At the same time the piston *d*, in rod connection with lever J, is moved in the cylinder L in a direction away from the air-vent, and the weight F, in connection with the flexible runner, is elevated. Pressure being removed from an auxiliary rail N the latter is returned to normal position by expansion of its supporting-springs. Simultaneous with this action descent of the previously-elevated weight F, attached to the flexible runner upon which draft was exerted, effects a return of the corresponding lever J and rock-shaft crank M to normal position, and said flexible runner yields to the force exerted by the counterweights of the gate-bars to swing the latter upward on their pivots. The return of lever J and the gate-bars to normal position is retarded and cushioned by compression of air in cylinder L incidental to the movement of the piston *d* therein having rod connection with said lever. A train of cars having exerted pressure on one of the auxiliary rails N and cleared the same said train may be backed beyond this rail to stand head on toward the crossing, this movement having no effect on the then automatically-elevated gate-bars, for the reason that the car-wheel flanges will pass between said rail and adjacent track-rail; but when the train is again moved forward said gate-bars will be automatically lowered, as above described. In practice a crossing will be blocked by a moving locomotive or railway-train before the gate-bars have automatic return to normal position and for a time thereafter. It also follows that when our auxiliary rail is depressed by a moving train the next succeeding auxiliary rail is moved horizontally, and therefore no effect is had upon the gate-bar-actuating mechanism on the far side of a crossing.

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

1. The combination of counterweighted gate-bars in pivotal connection with posts at opposite sides of a railway-crossing, sheave-supported weight-controlled flexible runners that extend along the railway-track in opposite directions from the crossing and have branches connecting opposite gate-bars, a slack-take-up operative in conjunction with each runner, a cranked rock-shaft arranged under the track-rails, a crank-shaft lever having spring connection with said runner, an air-cushion mechanism coöperative with the lever, and a spring-supported auxiliary rail of suitable length in spring-controlled laterally-adjustable connection with a track-rail over the rock-shaft crank, one end of the auxiliary rail being in the path of car-wheel flanges and the other end beveled upon its inner side to obtain clearance for said flanges.

2. The combination of counterweighted gate-bars in pivotal connection with posts at opposite sides of a railway-crossing, sheave-supported weight-controlled flexible runners that extend along the railway-track in opposite directions from the crossing and have branches connecting opposite gate-bars, a slack-take-up operative in conjunction with each runner, a cranked rock-shaft arranged under the track-rails, a crank-shaft lever having spring connection with said runner, and a spring-supported auxiliary rail of suitable length in spring-controlled laterally-adjustable connection with a track-rail over the rock-shaft crank, one end of the auxiliary rail being in the path of car-wheel flanges and the other end beveled upon its inner side to obtain clearance for said flanges.

3. The combination of counterweighted gate-bars in pivotal connection with posts at opposite sides of a railway-crossing, sheave-supported weight-controlled flexible runners that extend along the railway-track in opposite directions from the crossing and have branches in direct connection with opposite gate-bars, a lever mechanism and slack-take-up in connection with each flexible runner, and a spring-supported auxiliary rail of suitable length in spring-controlled laterally-adjust-

able connection with a track-rail and coöperative with the lever mechanism, one end of the auxiliary rail being in the path of car-wheel flanges and the other end beveled upon its inner side to obtain clearance for said flanges.

In testimony that we claim the foregoing we have hereunto set our hands, at Neenah, in the county of Winnebago and State of Wisconsin, in the presence of two witnesses.

FREDERICK A. CRAMER.
JAMES A. GARMAN.

Witnesses:
GEORGE MERRY,
J. W. MERRY.