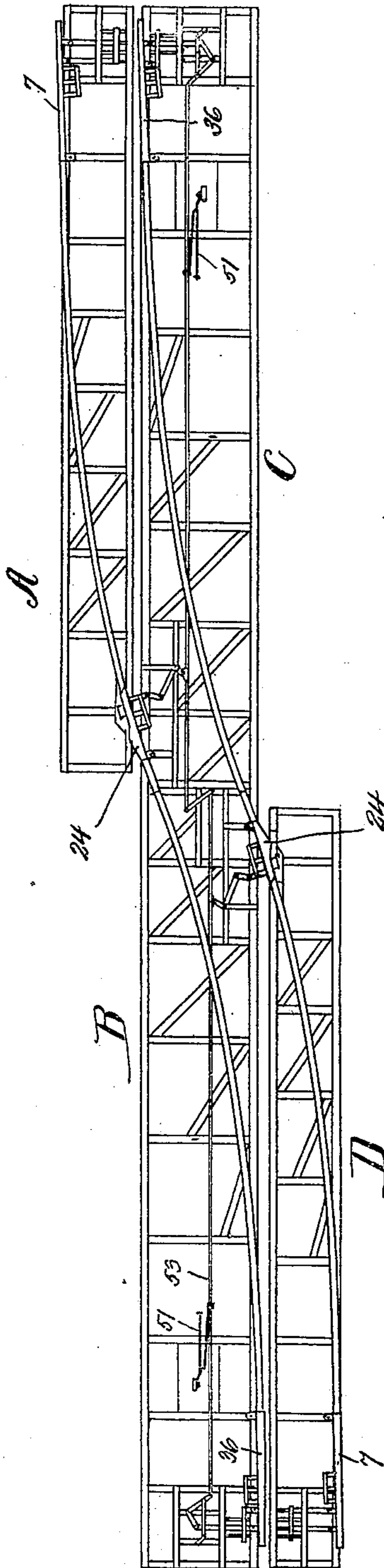


C. B. RYAN.  
REMOVABLE CROSSOVER.  
APPLICATION FILED MAR. 16, 1909.

931,493.

Patented Aug. 17, 1909.  
4 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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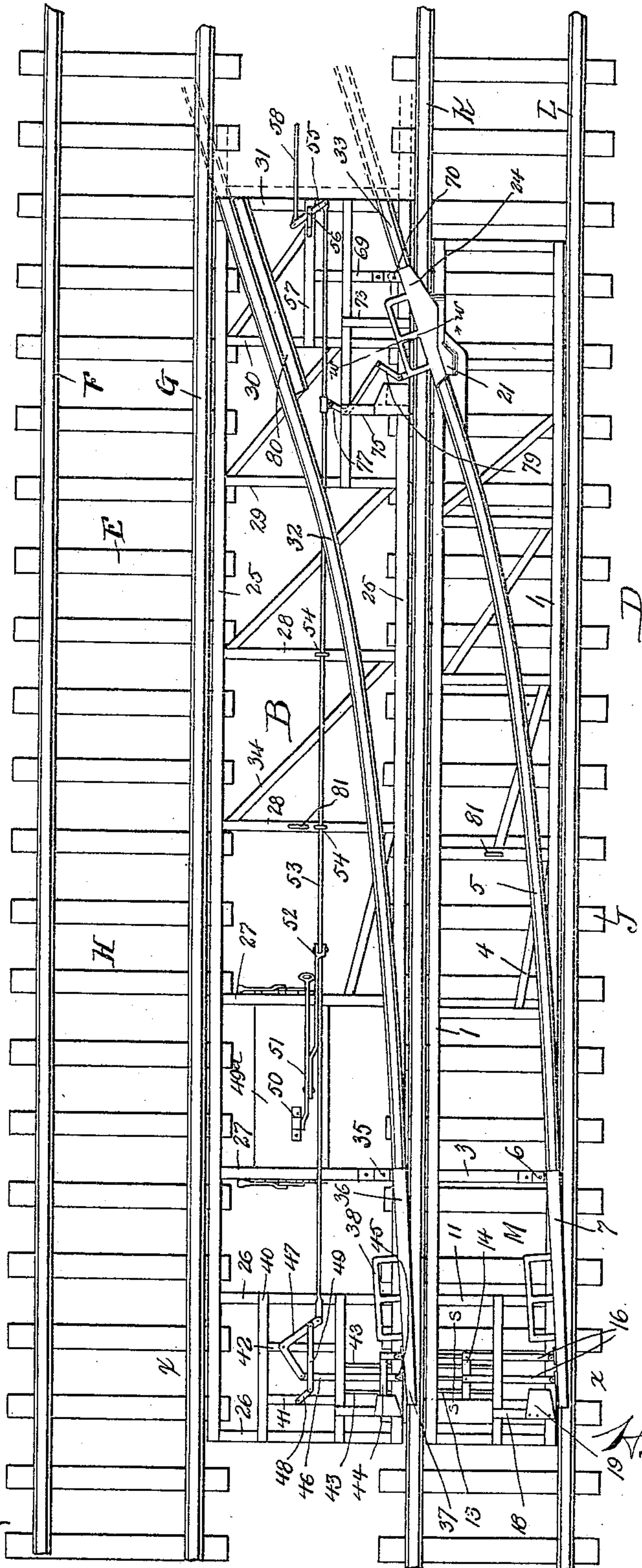
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Fig. 2.



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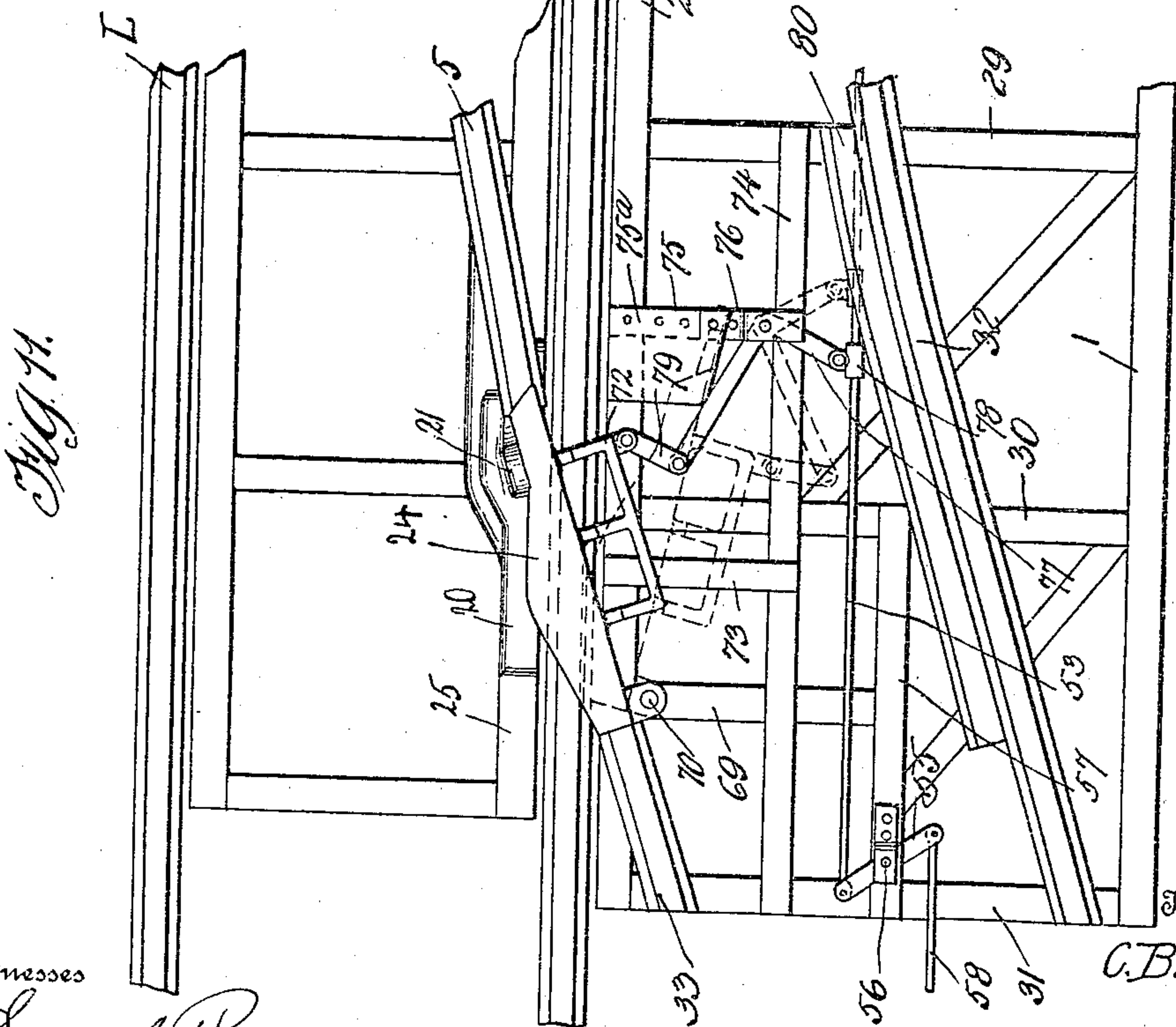
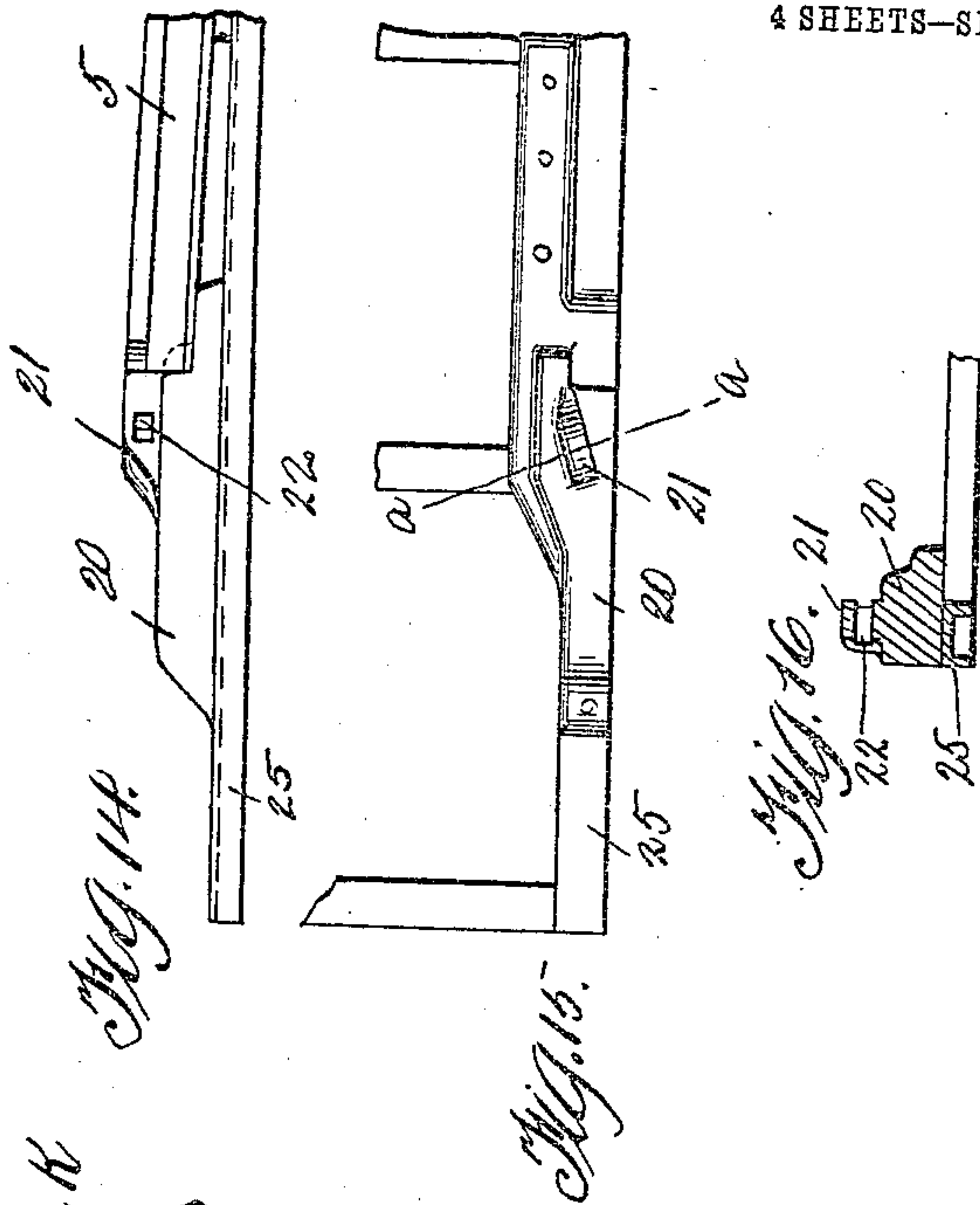
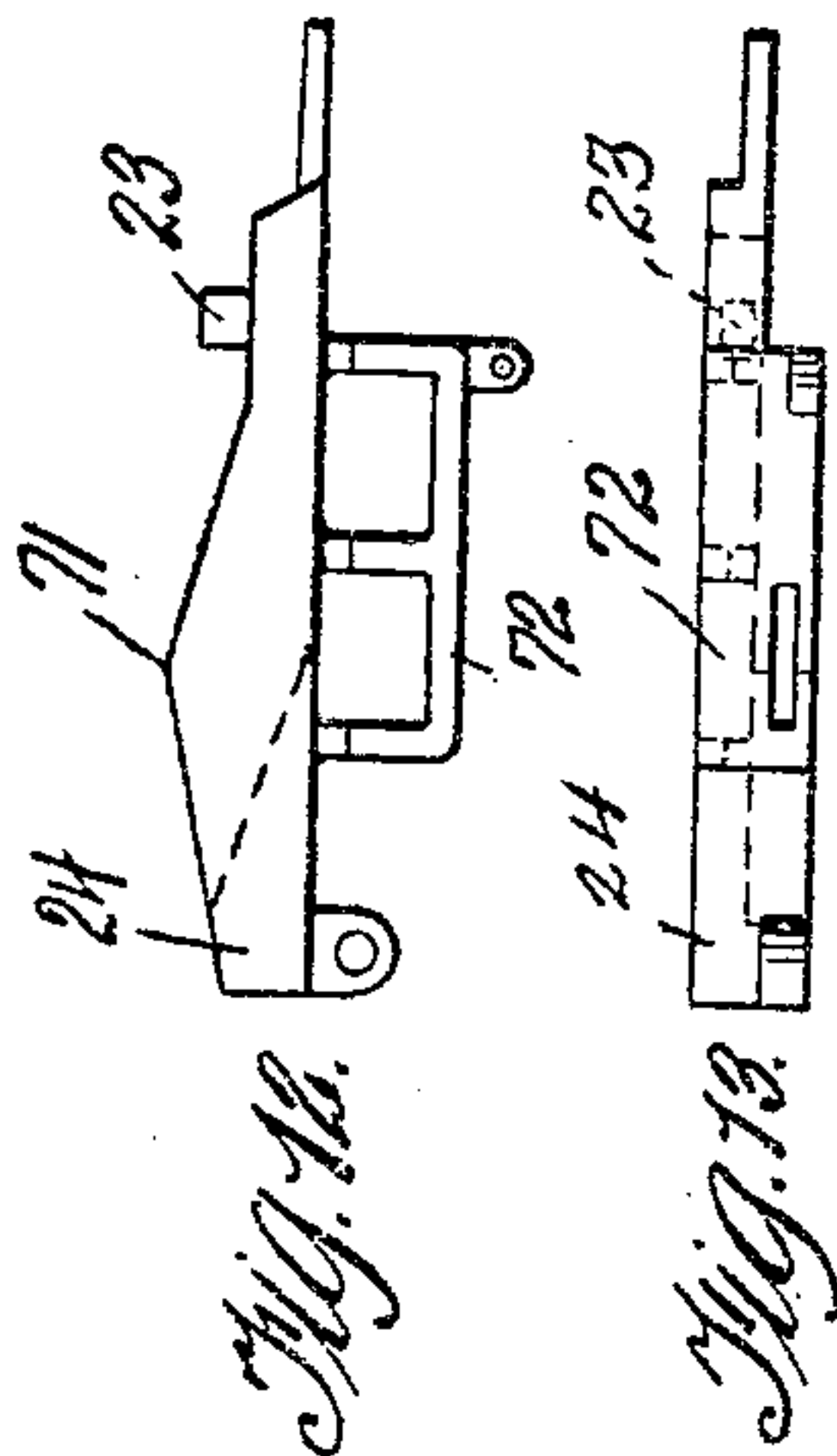


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# UNITED STATES PATENT OFFICE.

CLARENCE B. RYAN, OF PITTSBURG, PENNSYLVANIA.

## REMOVABLE CROSSOVER.

No. 931,493.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed March 16, 1909. Serial No. 483,837.

*To all whom it may concern:*

Be it known that I, CLARENCE B. RYAN, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Removable Crossovers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to removable crossovers; and more particularly to certain improvements in the removable crossover disclosed by my Patent No. 825,682, granted July 10th, 1906.

The present invention aims to provide a portable sectional crossover for railroads, made in its entirety of structural steel and castings assembled to provide a durable and safe structure for the passage of a train from one track to another, the construction of the crossover permitting of the same being easily and quickly handled and installed for immediate use.

Another improvement over my prior patent resides in the novel construction of the switch tongues, switch mechanism, and the switch locks, all of which are safety factors in the transferring of trains by the crossover.

In order that the present invention can be fully understood without reference to the above mentioned patent, I quote as follows:

"The invention aims to provide a portable sectional crossover for railroads adapted to be used in case of a wreck, land-slide, or any interruption that might occur upon a railroad-track, the crossover being used in connection with another track for transferring cars around the point of obstruction.

To this end, I have devised a sectional crossover adapted to be carried by wrecking trains and laid to provide a temporary track over which cars may pass from one track to another. The crossover is so constructed as to adapt it to be easily and quickly clamped into engagement with the permanent tracks, thereby insuring a safe passage of cars from one track to another. The crossover is constructed to be used in connection with a two or more track system, and in order that the crossover may be used, it is necessary that the track adjacent to the interrupted track be clear, and by installing my improved crossover upon the obstructed track at each side of the obstruction I am enabled to move cars around the obstructed point."

It will be observed from the above quotation that my invention aims to facilitate the despatch of the trains of a railroad system; and the present invention aims to provide certain improvements, some of which are cited above, while others will more readily appear as the nature of the present invention is better understood.

Referring now to the drawings forming part of this application, there is illustrated the preferred embodiments of the invention, but I would have it understood that the structural elements thereof can be varied or changed, as to the exact manner of assembly, shape, proportion, and size, without departing from the spirit or scope of the invention.

In the drawings, Figure 1 is a diagrammatic plan of a crossover constructed in accordance with my invention, Fig. 2 is a plan of a portion of the crossover, constituting practically one-half of the crossover located at one end of a wreck, Fig. 3 is an enlarged cross sectional view, Fig. 4 is a plan of a main switch tongue, Fig. 5 is side elevation of the same, Fig. 6 is an enlarged cross sectional view taken on the line W—W of Fig. 2, Fig. 7 is an enlarged cross sectional view taken on the line S—S of Fig. 2, illustrating a coupling bar, Fig. 8 is an enlarged plan of the coupling bar, Fig. 9 is a perspective view of the switch plate and the switch mechanism carried thereby, Fig. 10 is an elevation of the switch lock, Fig. 11 is an enlarged plan of the crossover switch tongue and the actuating mechanism thereof, Fig. 12 is a plan of the crossover switch tongue, Fig. 13 is a side elevation of said tongue, Fig. 14 is an enlarged side elevation of the crossover tongue support and socket, Fig. 15 is a plan of the same, and Fig. 16 is a cross sectional view taken on the line a—a of Fig. 15.

In Fig. 1 of the drawings, I have only illustrated one of the crossovers used for transferring a train around a wreck, for instance, from an "east bound" track to a "west bound" track, and it is to be understood that a similar crossover, reversely arranged is used at the other side of a wreck for transferring trains from a "west bound" track to the "east bound" track.

Considering now the detail construction entering into my invention, the reference characters A, B, C, and D designate four frames, the frame A being adapted to rest upon the ties E and fit between the rails F



and G of a "west bound" track H; the frame D to rest upon the ties J and fit between the rails K and L of an "east bound" track M; and the frames B and C to rest upon the ends of the ties E and J between the rails G and K of the "west bound" and "east bound" tracks H and M.

The frames A and D designated are identical in construction, and the frames B and C are identical in construction, and for the sake of clearance in describing this invention, reference will only be had to the detail construction of the frames B and D shown in Fig. 2, and hereinafter the other frames briefly referred to.

Reference numerals will now be used to designate the structural elements of the frames B and D, and referring first to the frame D, this frame comprises longitudinal channel bars 1 and 2 connected by transverse braces 3, said braces intermediate the ends of the frame being connected by diagonally disposed braces 4, which together with the braces 3 constitute supports for a switch rail 5. The switch rail 5 terminates in proximity to the rails K and L, and the brace 3 adjacent to the end of a switch rail 5 and the rail L, is provided with a bearing 6 for a main switch tongue 7. This main switch tongue as shown in detail in Figs. 4 and 5, is provided with an overhanging ledge 8 adapted to extend over the rail L and cause a wheel to rotate from said rail onto the switch rail 5. The inner side of the main switch tongue 7 is provided with a guide frame 9 having a longitudinal slot 10 formed therein, through which extends a guide 11, similar to one of the braces 3. The guide 11 is connected by a longitudinal frame 12 to the end braces of the frame D, and the frame 12 intermediate the ends thereof is provided with a plurality of guides 13, connecting with the longitudinal bar 1. Slidably mounted upon the guides 13 is a coupling bar 14 provided with a plurality of apertures 15. The coupling bar 14 is pivotally connected to the main switch tongue 7 by links 16, and is provided with two connecting rods 17, adapted to extend under the frame D, rail K and under the frame B to a switching mechanism carried by said frame, as will hereinafter appear.

The frame 12 is connected by a bar 18 to the outer bar 1 of the frame D, and the bar 18 supports a guard 19 for the shiftable end of the main switch tongue 7, said guard preventing the wheel flanges of rolling stock from striking the main switch tongue, when traveling upon the rails L and K.

Reference will now be had to the opposite end of the switch rail 5 adjacent to the rail K, the reference numeral 20 designates a casing secured to the inner channel bar 1 of the frame D, said casing providing a support for the end of the switch rail 5. The casing 20 is formed with an enlargement 21 having a

socket 22 formed therein for the auxiliary tongue 23 of a crossover switch tongue 24, to be hereinafter more fully considered in connection with the frame B.

The frame B comprises longitudinal channel bars 25, connected by transverse braces 26, 27, 28, 29, 30 and 31, the transverse braces 27, 28, 29, 30 and 31 supporting a switch rail 32 parallel with the switch rail 5, while the brace 31 and the bar 25 adjacent to the rail K, supports a switch rail 33, representing a continuation of the switch rail 5 and the crossover switch tongue 24. The braces 28, 29, 30 and 31 are connected by diagonally disposed braces 34 assisting the braces 28 to 31 inclusive in supporting the switch rail 32.

The brace 27 adjacent to the end of the switch rail 32 and the rail K is provided with a bearing 35 for another main switch tongue 36. This tongue is constructed similarly to the switch tongue 7, by having an overhanging ledge 37 and a guide frame 38, said frame being guided by one of the braces 26. The braces 26 are connected by longitudinal frames 40, and said frames are connected by transverse bars 41 and 42.

The frame 39 is connected to the bar 25 adjacent to the rail K by guides 43 and slidably mounted upon these guides is a coupling bar 44 similar to the coupling bar 14, said coupling bar 44 being pivotally connected to the switch tongue 36, as at 45. The connecting rods 17 which extend under the frame B are connected, to the coupling bar 44, and said coupling bar 44 is connected by a link 46 to a bell crank lever 47 pivotally mounted upon the bar 42. The long arm of the bell-crank lever 47 is pivotally connected to a crank 48 by a link 49, and crank 48 is pivotally mounted upon the bar 41 for rotating a signal or semaphore standard (not shown).

The braces 27 support a switch plate 49<sup>a</sup> and upon this plate is a bearing 50 for a switch lever 51. Pivotally connected to the switch lever 51 is a link 52 which connects with a longitudinal rod 53 arranged in bearings 54, carried by the braces 27 and 28. One end of the rod is connected to the bell crank lever 47, while the opposite end thereof extends under switch rail 32 and connects with a lever 55 pivotally mounted in a bearing 56, carried by a frame 57 connecting the braces 30 and 31.

Another rod 58 connects with the pivoted lever 55, and this rod is employed in connection with the switch mechanism of the frames A and C; a switch throwing lever similar to the lever 51 being used in connection with the frame C, whereby the tongues of the entire crossover can be thrown from either end thereof.

In connection with the switch lever 51, I have devised a novel lock for securing said



lever in either position. The outer sides of the braces 27 adjacent to the plate 49<sup>a</sup> are provided with plates 59 having upwardly extending lugs 60, 61, 62 and 63. Pivotally  
5 connected to the lugs 61 is a toothed lever 64 for engaging the switch lever 51 and retaining the same between the lugs 60 and 61. The lever 64 is pivotally connected, as at 65, to a lever 66, loosely connected to the lug 63,  
10 said lever having a tread plate 67. The lug 62 and the lever 64 are apertured, as at 68, whereby said lever can be locked in engagement with the lug 62 to prevent unauthorized persons from tampering with the switch.  
15 The ordinary and well known type of padlock can be used for this purpose.

The frame 57 of the braces 30 and 31 is connected to the channel bar 25 by a bar 69, which adjacent to the rail K is provided with a  
20 bearing 70 for the crossover switch tongue 24. This tongue is provided with an over-hanging ledge 71 adapted to extend over the rail K, when said tongue is closed. The tongue is also provided with a guide frame 72 through  
25 which extends a guide 73 connecting the channel bar 25 with a longitudinal frame 74 mounted upon the braces, 29, 30 and 31. The frame 74 is connected to the bar 25 by a bar 75, which is provided with a bearing 76  
30 for a bell-crank lever 77. This lever is pivotally connected to the rod 53 by a sleeve 78 and to the guide frame 72 by a link 79. The bar 75 supports a guard 75<sup>a</sup> for the end of the crossover switch tongue 24. As a  
35 safety factor in connection with the crossover switch tongue 24, the frame B is provided with a guard rail 80 secured to the braces 29 and 30.

The crossover switch tongue illustrated in  
40 Fig. 11 is identified with frames A and C and the parts of this crossover switch tongue are simply reversed compared to the same elements of frames B and D. By reference to Fig. 1, it is evident that when the switch  
45 levers 51 are unlocked, that either lever can be swung to shift the six movable tongues of the crossover, whereby a train can pass from the "east bound" track to the "west bound" track or vice versa, or pass straight ahead on  
50 "east bound" or "west bound" tracks M and H. The latter instance is essential in order that a wrecking crew and train can be placed on a siding near the wreck and that the wrecked portion of the track be thoroughly  
55 tested before the crossover is removed at either end of the wreck.

Throughout the entire construction of the crossover, I use durable elements, and by using longitudinal channel bars, the lower  
60 flanges of said bars can be easily spiked to the ties or sleepers E and J.

The frames A to C inclusive are provided at suitable places with eyebolts 81 whereby a  
65 derrick can be easily connected to said frames to swing the same off and on flat cars.

Having now described my invention, what I claim as new, is:—

1. In a crossover, the combination with two parallel tracks, of a frame arranged between the rails of each track, frames arranged  
70 between said tracks, rails carried by said frames for extending over the innermost rails of said tracks, main switch tongues, crossover switch tongues, and a switching mechanism carried by the frames between  
75 said tracks for simultaneously throwing said tongues.

2. In a crossover, the combination with two parallel tracks, of a frame arranged between the rails of each track, frames arranged  
80 between said tracks, rails carried by said frames for extending over the innermost rails of said tracks, main switch tongues, crossover switch tongues, and means arranged longitudinally of the frames between said  
85 tracks for controlling the operation of said tongues.

3. A crossover embodying a plurality of frames adapted to rest upon the ties of a railway-track, said frames being made of  
90 channel bars adapted to have the lower edges thereof secured to the ties of a railroad-track, rails carried by said frames for transferring rolling stock from one track to another, switch tongues supported by said frames for  
95 controlling the passage of rolling stock over said rails, a switching mechanism supported by said frames for moving said tongues, and means in connection with said switching mechanism for locking said mechanism.  
100

4. A crossover embodying a plurality of frames adapted to rest upon the ties of a railway-track, said frames being made of channel bars adapted to have the lower edges  
105 thereof secured to the ties of a railroad-track, rails carried by said frames for transferring rolling stock from one track to another, switch tongues supported by said frames for controlling the passage of rolling stock over  
110 said rails, and a switching mechanism supported by said frames for moving said tongues.

5. A crossover for transferring from one railway-track to another, comprising frames adapted to rest upon the cross ties, rails supported by said frames, switch tongues for  
115 controlling the passage of rolling stock over said rails, and means operable from the outer ends of said frames for simultaneously moving said tongues.  
120

6. A crossover embodying a plurality of frames, rails carried by said frames, switch tongues in connection with said rails, and means supported by said frames for simultaneously moving said switch tongues.  
125

7. In a crossover, the combination with tracks, of frames arranged between said tracks, a frame arranged between the rails of each track, rails carried by said frames for transferring from one track to the other, and  
130



a switching mechanism controlling the movement over said rails and said tracks.

8. In a crossover, the combination with tracks, of portable rails adapted to extend from one track to the other, switch tongues in connection with said rails for controlling the passage of rolling stock upon said rails and said tracks, and portable means for supporting said rails in operable relation to said tracks.

9. In a crossover, the combination of portable switch rails, main switch tongues at the ends of said rails, crossover switch tongues intermediate the ends of said rails, and a switching mechanism for simultaneously moving said tongues.

10. In a crossover, the combination of portable switch rails, main switch tongues at the ends of said rails, and crossover switch tongues intermediate the ends of said rails.

11. The combination of tracks, switching rails extending over the innermost rails of said tracks, main switch tongues associating with said rails, crossover tongues, intermediate the ends of said switching rails for controlling the passage of rolling stock upon said tracks and said switching rails, and means for simultaneously moving said tongues, said

means being located between said tracks and contiguous to the ends of said switch rails.

12. The combination of tracks, switching rails extending over the innermost rails of said tracks, crossover tongues pivotally mounted intermediate the ends of said switching rails, auxiliary tongues carried by said crossover tongues, sockets arranged adjacent to said crossover tongues to receive the auxiliary tongues, and means for simultaneously moving said crossover tongues.

13. The combination of tracks, switching rails extending over the innermost rails of said tracks, switching tongues at the ends of said switching rails, cross-over tongues at the intersection of said switch rails and the innermost rails of said tracks for controlling the passage of rolling stock upon said switching rails and said innermost rails, and means in conjunction with the first mentioned means for moving said switch tongues.

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

CLARENCE B. RYAN.

Witnesses:

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MAX H. SROLOVITZ.