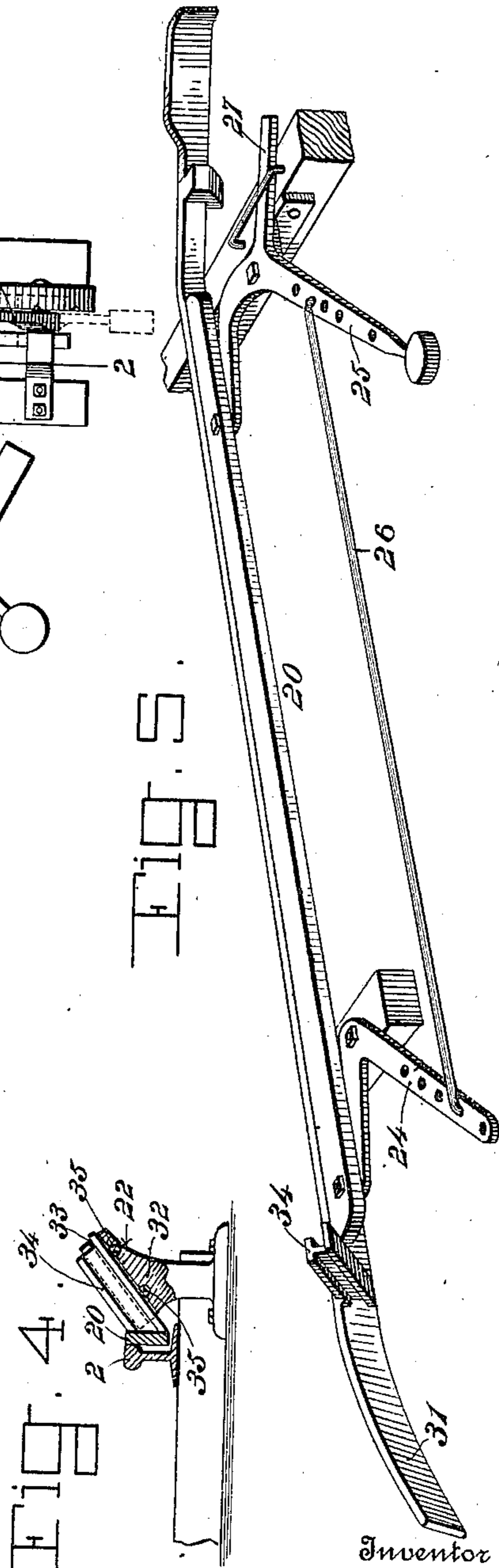
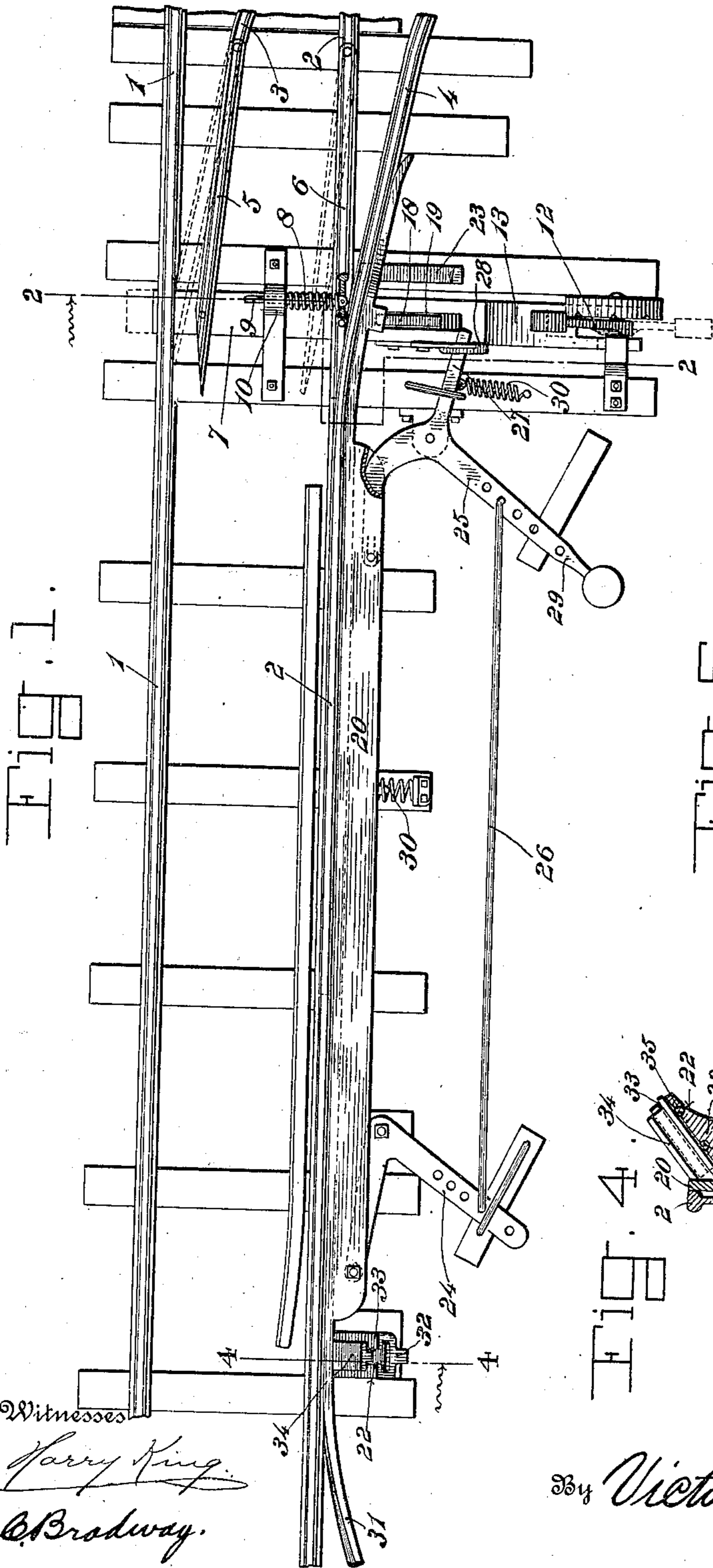


J. C. WARREN.
 AUTOMATIC SWITCH OPERATING MECHANISM.
 APPLICATION FILED MAR. 11, 1910.

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Patented June 20, 1911.
 2 SHEETS—SHEET 1.



Witnesses

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Fig. 2.

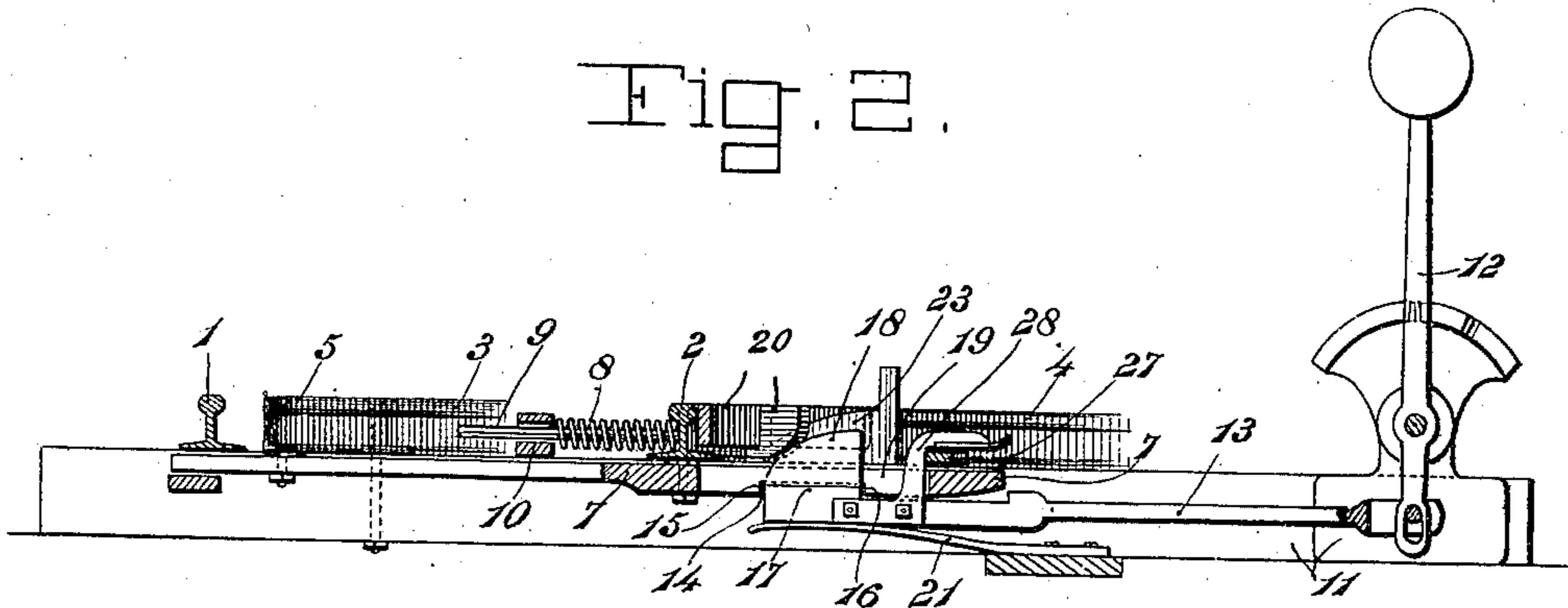


Fig. 3.

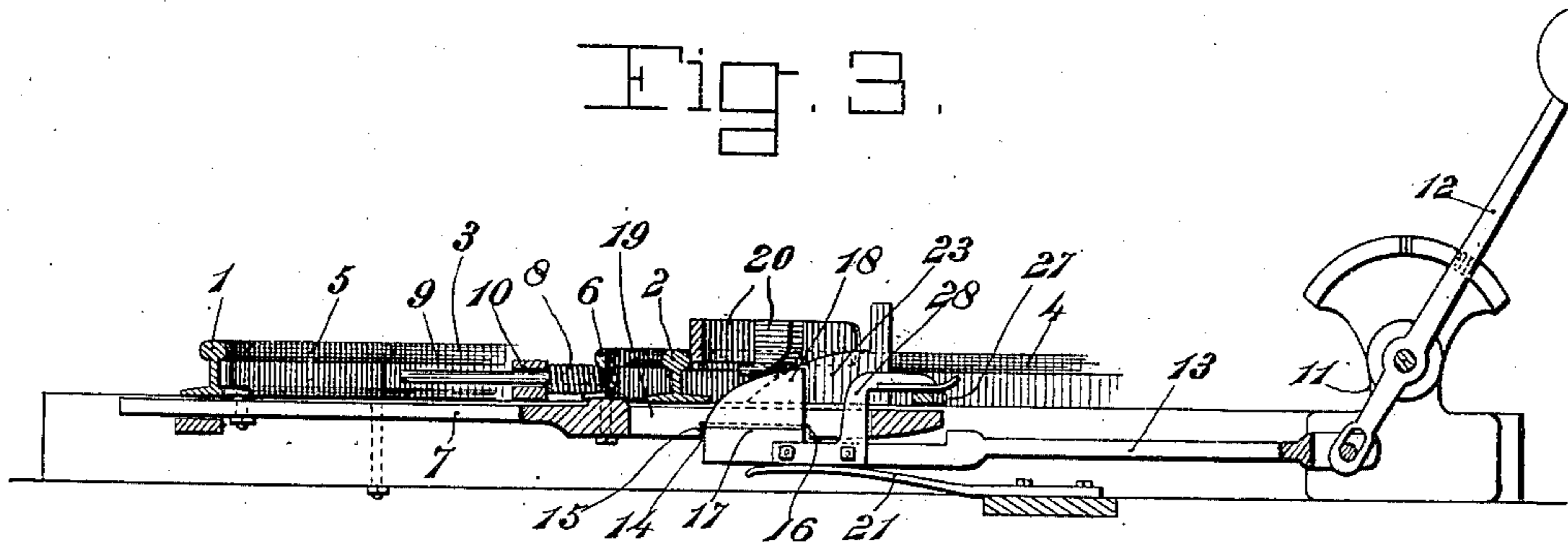
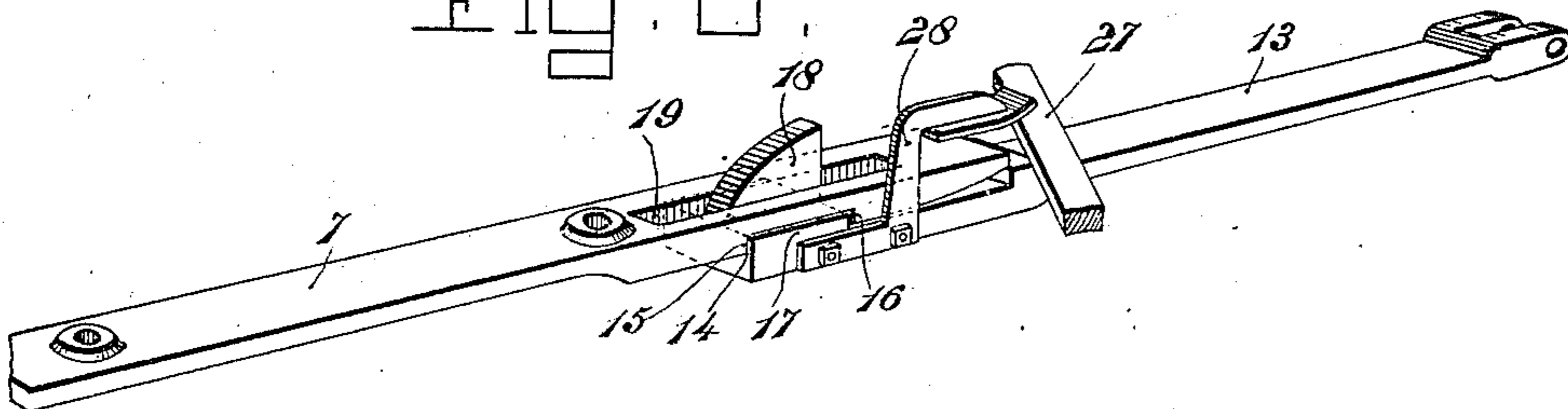


Fig. 6.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC SWITCH-OPERATING MECHANISM.

995,827.

Specification of Letters Patent. Patented June 20, 1911.

Application filed March 11, 1910. Serial No. 548,559.

To all whom it may concern:

Be it known that I, JOHN C. WARREN, a citizen of the United States, residing at Mooresville, in the county of Iredell and State of North Carolina, have invented new and useful Improvements in Automatic Switch-Operating Mechanisms, of which the following is a specification.

This invention relates to a switch operating mechanism adapted more especially for railroad tracks whereby the switch can be automatically closed by an approaching train should the switch be inadvertently left open.

The invention has for its objects to improve and simplify the construction and operation of apparatus of this character so as to be comparatively simple and inexpensive to manufacture and install, reliable and efficient in use, and composed of comparatively few operating parts.

With these objects in view, and others as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate one embodiment of the invention; Figure 1 is a plan view of a portion of a track showing a siding switch with the switch operating mechanism applied thereto. Fig. 2 is a transverse section on line 2—2 of Fig. 1. Fig. 3 is a similar section showing the switch open. Fig. 4 is a detail sectional view on line 4—4 of Fig. 1, showing the trip rail supporting means at one end. Fig. 5 is a perspective view of the trip rail and operating lever. Fig. 6 is a perspective view of the releasably connected elements or bars through which the switch is opened and releasably held in open position.

Similar reference characters are employed to designate corresponding parts throughout the several views.

Referring to the drawings, 1 and 2 designate the main track rails and 3 and 4 the siding rails; 5 and 6 the switch points of usual construction that are connected together by a bar or element 7 so that the movable members 5 and 6 of the switch can operate in unison, the switch being held normally closed with the switch point 6 engaging the track rail 2 by means of a spring 8 disposed on a rod 9, attached to the switch

point 6 and slidable in a support 10 secured to the cross ties of the track the spring having its ends bearing on the switch point 6 and support 10.

At one side of the switch is a switch stand 11 of any approved construction which is provided with a lever 12 that is operatively connected by a rod or bar 13 with the rod or bar 7, so that by moving the lever back and forth, the switch can be opened or closed. The bars 7 and 13 overlap each other and the bottom face of the bar 7 has a recess 14 which forms spaced shoulders 15 and 16 between which engages an upwardly extending projection 17 on the bar 13 and as long as the projection engages in the recess 14, the switch shifting elements 7 and 13 are positively connected and moved together either by the lever 12 or by mechanism extending along the track to a switch tower. The element 13 has an upwardly projecting tongue 18 extending through a slot 19 in the member 7 at a point outwardly from the track rail 2 and disposed over this tongue and arranged to engage the same is a depressible device 20 which will be depressed by the wheels of an approaching train for releasing the member 13 from the member 7 when the switch is open so that the member 7 can cause the switch to close by the spring 8 expanding. Normally, the members 7 and 13 are held in engagement by an upwardly pressing spring 21 disposed under the member 13, the spring being fixed so that the member 13 can slide back and forth during the opening and closing of the switch by the lever 12.

The device 20 for automatically releasing the switch shifting elements 7 and 13 from each other is preferably in the form of a trip rail extending along the outside of the main rail 2 from a point considerably in advance of the switch to a point rearwardly beyond the latter where the trip is curved to extend along the siding rail 4. This trip rail is supported on inclined ways 22 and 23 located at opposite ends of the rail and rigidly supported in any suitable manner on the road bed. Connected with the trip rail are bell-crank levers 24 and 25 fulcrumed at the side of the track and connected together by a rod 26 so that the levers will operate in unison. The lever 25 has an arm 27 which is adapted to engage under the upstanding angle arm 28 on the switch shifting element 13 so that when the lever

25 is tilted, the arm 27 will engage the arm 28 and move the switch shifting elements 7 and 13, the lever 25 being provided with a handle 29. The trip rail is urged inwardly toward the main rail 2 by a spring 30 and as it moves outwardly from the rail, it will be raised by resting on the inclined ways 22 and 23 and this outward and upward movement will be caused by the switchman moving the lever 25 to the right, Fig. 1. To permit the sides of the wheels of a train engaging the inner face of the trip rail, while the same is held raised and laterally of its normal position by the switchman, the forward extremity of the rail is curved outwardly at 31 so that the first wheels of a car or locomotive will readily engage the inner surface of the trip rail and hold the same laterally and upwardly when the switchman releases the lever 25. Since the trip rail is connected with levers, it will operate through the latter to hold the switch open as long as the trip rail is urged laterally against the tension of its spring by being engaged with the wheels of a train passing along the main track and until the train has entered the siding and the wheels have left the tail end of the trip rail.

The inclined way 22 comprises a support 32 which is provided with guide passages 33, in which moves a shoe 34 secured to the trip rail at the end thereof farthest from the switch, the shoe being inclined upwardly so that a lateral movement of the rail will cause a simultaneously upward movement, and to reduce the friction, the shoe rides on rollers 35 secured in the support 32. The other inclined way 23 is merely a bearing block having an inclined upward face and the trip rail merely rests thereon. When the switch is open, the trip rail will be raised off the inclined way 23 and will rest on the projection or tongue 18 of the switch shifting element 13 so that as the train approaches the switch when the same is open, the trip rail will be depressed by the wheels of the train so as to cause the elements 7 and 13 to be disconnected for permitting the switch to automatically close.

When the switch is closed and it is desired to run a train into the siding, the switchman will run forwardly in advance of the train and throw the lever 25 toward the switch stand for the double purpose of moving the switch open and moving the trip rail outwardly from the rail 2. As soon as the advancing train reaches the trip rail, the wheels of the train will hold the trip rail outwardly and maintain the switch open so that the switchman will not have to hold the lever and can board the train. As soon as the train passes into the siding, the trip rail will be free to return to its normal position and allow the switch to automatically close by its spring. In running out of the

siding, the switch can be opened manually by the lever of the switch stand, or the wheels of the first car or locomotive of the train will strike the tail end of the trip rail, which end is normally disposed above the level of the siding rail 4 and consequently the trip rail will be moved outwardly and operate through the lever 25 to open the switch and the switch will be held open until the train passes beyond the trip rail. Should the switch be open for any reason, an on-coming train can automatically release the switch by the wheels riding on the trip rail, which normally has its rear end or that nearest the switch points slightly raised above the level of the adjacent main rail by being supported on the projection or tongue 18 of the member 13, and since only the spring 21 holds the member 13 raised, it is obvious that the trip will be depressed by the train wheels riding on the main rail 2 and as a result, the members 7 and 13 will be disengaged and the switch will be automatically closed.

What I claim as new and desire to secure by Letters Patent is:—

1. The combination of a switch, shifting elements for moving the same open, said elements being normally interlocked, means for yieldingly holding the elements interlocked, a device adapted to be supported in raised position when the switch is open and in the path of the first wheel of a train to release the elements when depressed by such wheel, and means for closing the switch when the elements are released.

2. The combination of a track switch including switch points, a bar connecting the points to move together, means for holding the switch points in closed position, a bar normally interlocked with the first mentioned bar and having an upwardly projecting member, a spring for holding the members interlocked and the said member raised, and a device normally bearing on the said member when the switch is open and adapted to be depressed by the first wheel of a train for disconnecting the members and permitting the switch to close.

3. The combination of main rails, siding rails, a switch between the main and siding rails, a trip rail extending along one of the main rails and the adjacent siding rail, means for supporting the trip rail to move outwardly and upwardly and to be maintained in such position by wheels of a train in passing into or out of the siding, means for normally holding the trip rail against the adjacent main rail, a switch throwing mechanism, and means for operatively connecting the trip rail with the said mechanism.

4. The combination of main rails, siding rails, a switch between the main and siding rails, a trip rail extending along one of the

main rails and the adjacent siding rail, means for supporting the trip rail to move outwardly and upwardly and to be maintained in such position by wheels of a train in passing into or out of the siding, means for normally holding the trip rail against the adjacent main rail, a switch throwing mechanism, means for operatively connecting the trip rail with the said mechanism, and means for disconnecting the mechanism from the switch when the latter is open, by the depression of the trip rail.

5. The combination of main rails, siding rails, a switch between the main and siding rails, a trip rail extending along one of the main rails and the adjacent siding rail, means for supporting the trip rail to move outwardly and upwardly and to be maintained in such position by wheels of a train in passing into or out of the siding, means for normally holding the trip rail against the adjacent main rail, bell crank levers separately connected with the trip rail, and means for connecting one of the bell crank levers with the switch for holding the latter open by the trip rail.

6. The combination of main rails, siding rails, a switch between the main and siding rails, a trip rail extending along one of the main rails and the adjacent siding rail, means for supporting the trip rail to move outwardly and upwardly and to be maintained in such position by wheels of a train in passing into or out of the siding, means for normally holding the trip rail against the adjacent main rail, bell crank levers separately connected with the trip rail, releasably connected devices for actuating the switch and through which the levers operate to hold the switch open by the trip rail, and means for disconnecting the devices upon the depression of the trip rail by an approaching train for permitting the switch to close automatically.

7. The combination of main rails, siding rails, a switch between the siding and main rails, a shifting device connected with the switch, means for yieldingly holding the switch closed, a second device normally in-

terlocked with the first mentioned device, a spring for holding the devices interlocked, a member on the second device, a trip rail adapted to rest on the member when the switch is open and to be depressed by the wheels of a train for releasing the devices to permit the switch to close, inclined ways on which the trip rail rests in position alongside of one of the main rails and corresponding siding rail, and a mechanism connected with the trip rail for moving the same to position where it will be held raised on its inclined ways by the wheels of a train, said mechanism being connected with the said devices to hold the switch open by the trip rail being raised on its inclined ways.

* 8. The combination of main rails, siding rails, a switch between the siding and main rails, a shifting device connected with the switch, means for yieldingly holding the switch closed, a second device normally interlocked with the first mentioned device, a spring for holding the devices interlocked, a member on the second device, a trip rail adapted to rest on the member when the switch is open and to be depressed by the wheels of a train for releasing the devices to permit the switch to close, inclined ways on which the trip rail rests in position alongside of one of the main rails and corresponding siding rail, levers mounted along the track and spaced apart and connected with the trip rail, means for connecting the levers to move together, and a connection between one of the levers and said devices whereby the trip rail can be moved laterally and upwardly as the switch is thrown open for adapting the trip rail to be held in such position by the wheels of a train passing into or out of the siding and thereby hold the switch open until the train passes beyond the switch in moving in either direction.

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

JOHN C. WARREN.

Witnesses:

A. E. BROWN,
R. B. NEILL.