

No. 657,066.

Patented Aug. 28, 1900.

W. F. HORN.
PNEUMATIC SAFETY GATE.

(Application filed Nov. 11, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

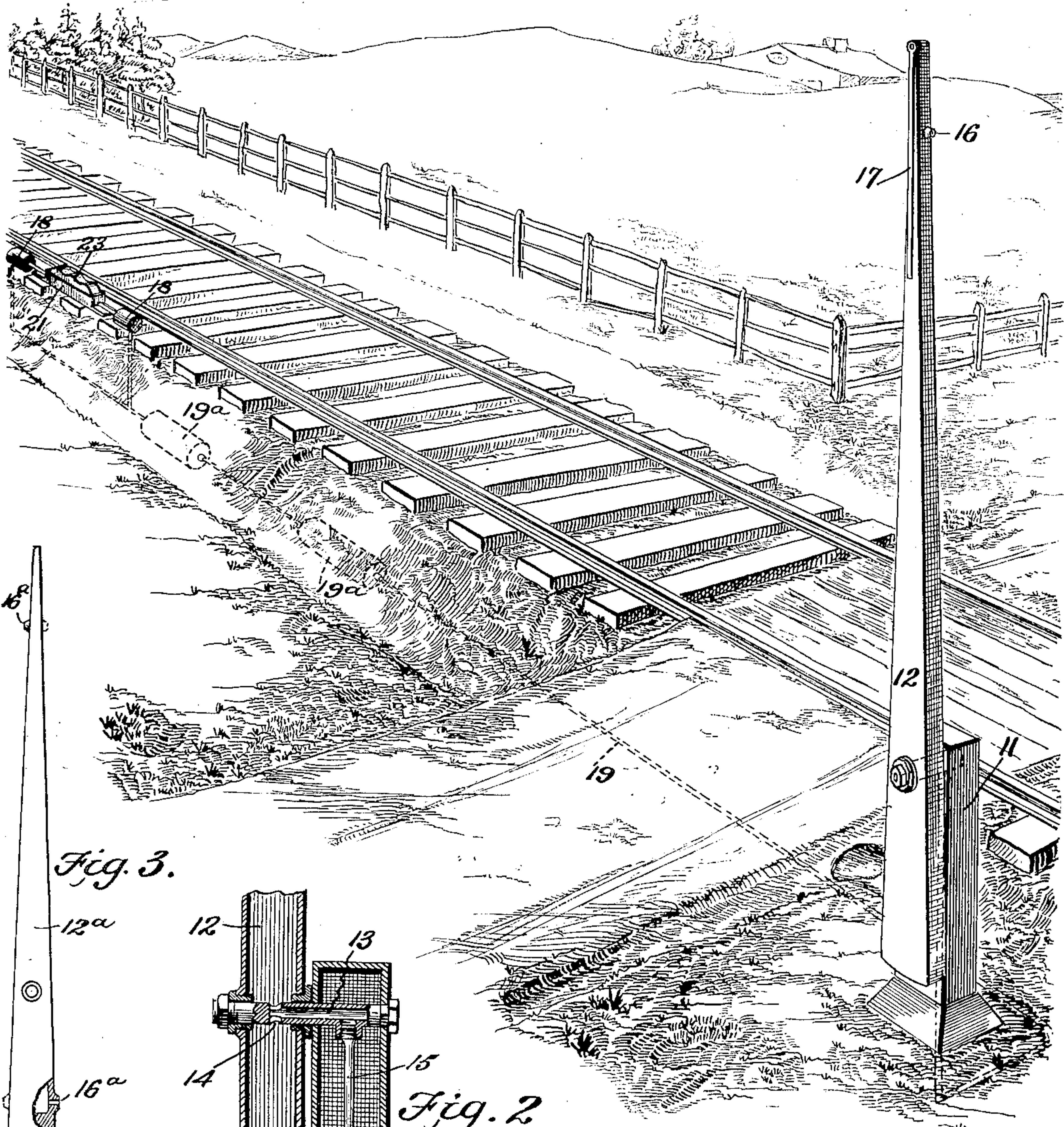
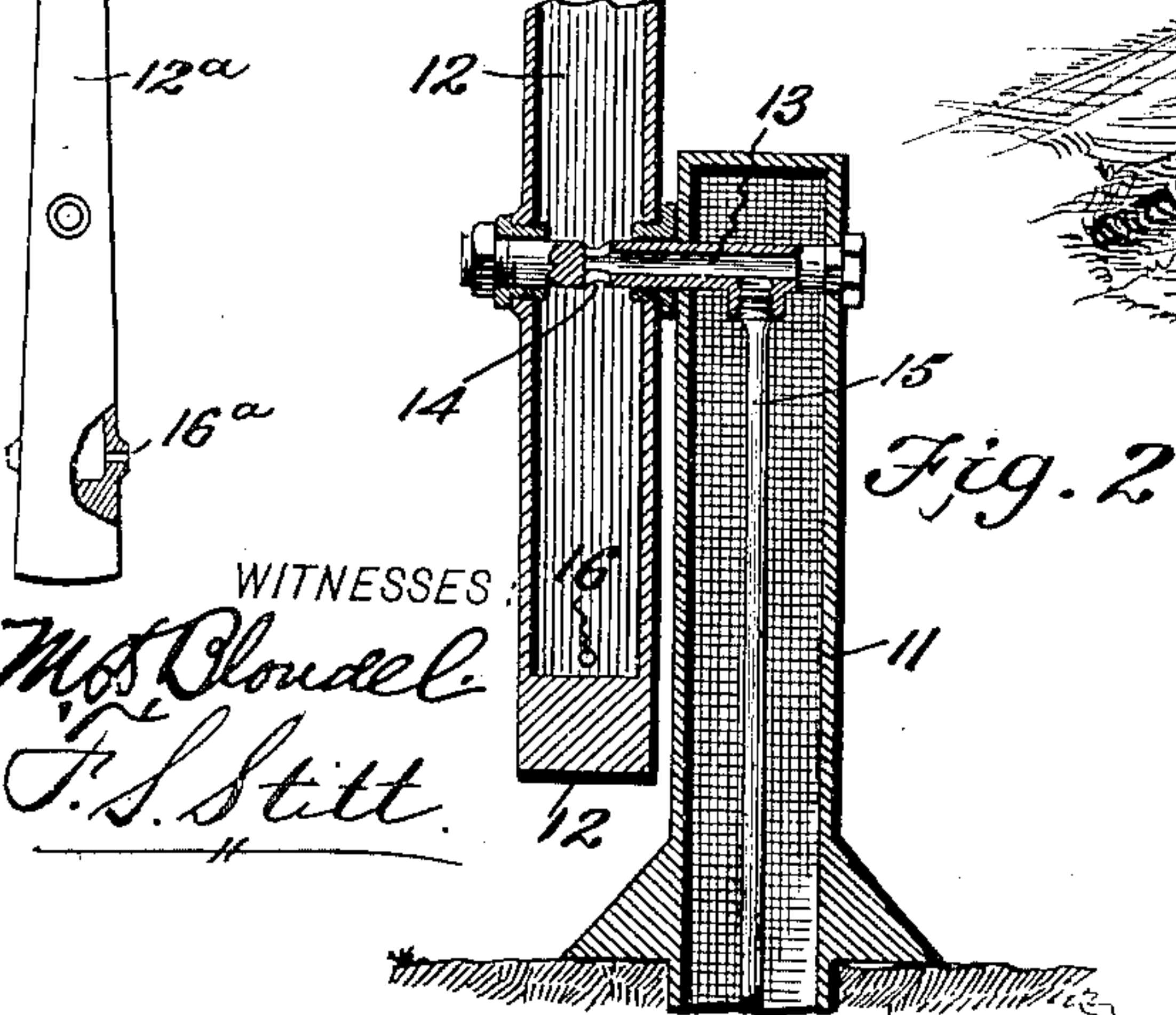


Fig. 3.



WITNESSES
Wm. Cloudell
J. S. Stitt

INVENTOR
Wilbur F. Horn.

BY *Munn & Co.*

ATTORNEYS

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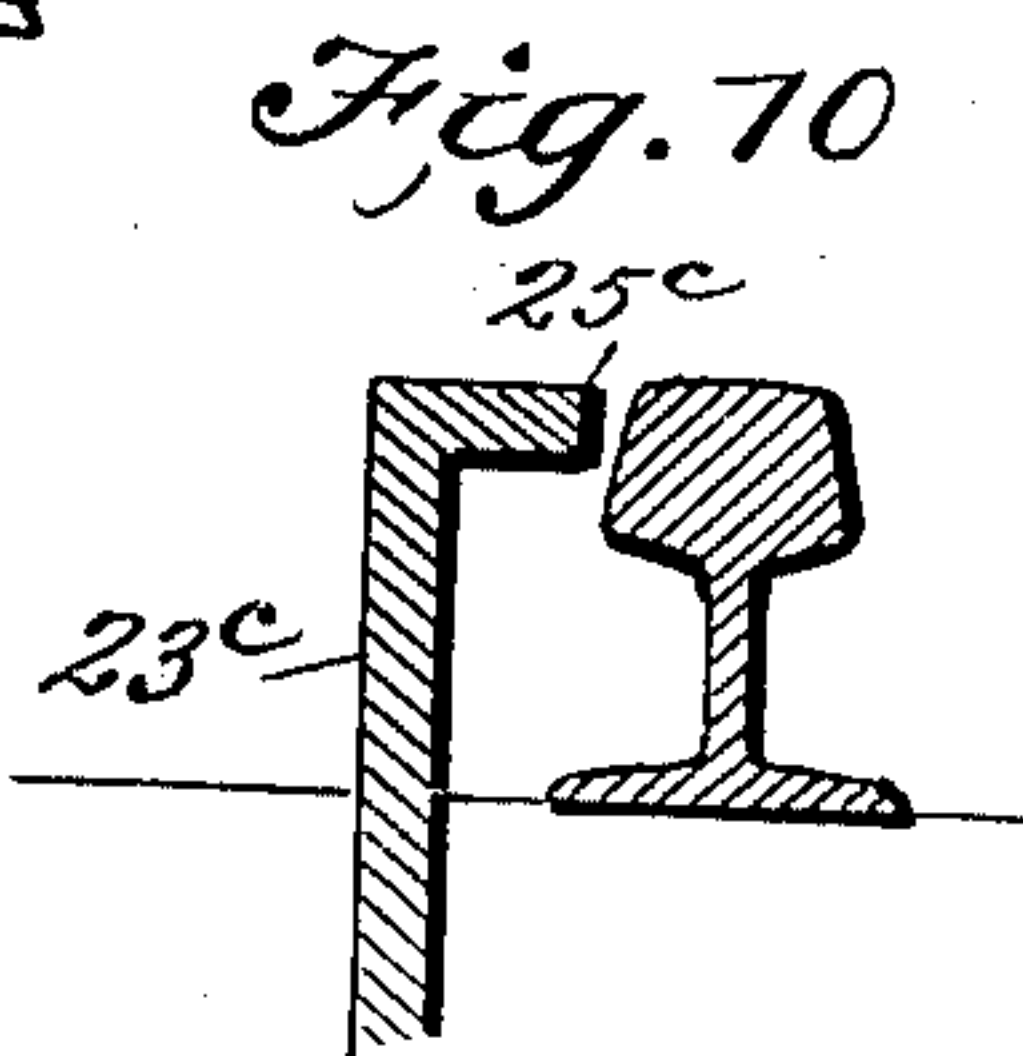
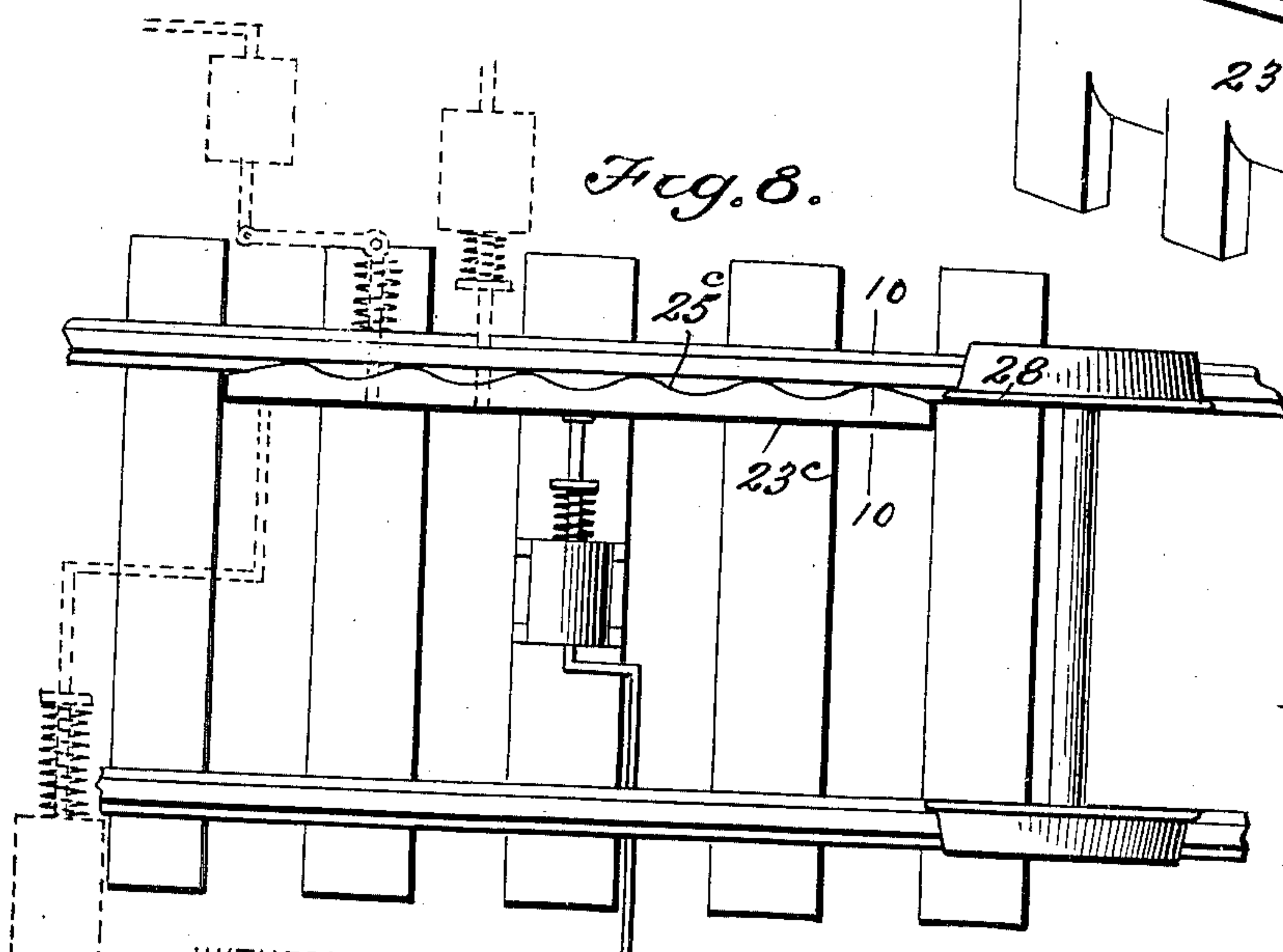
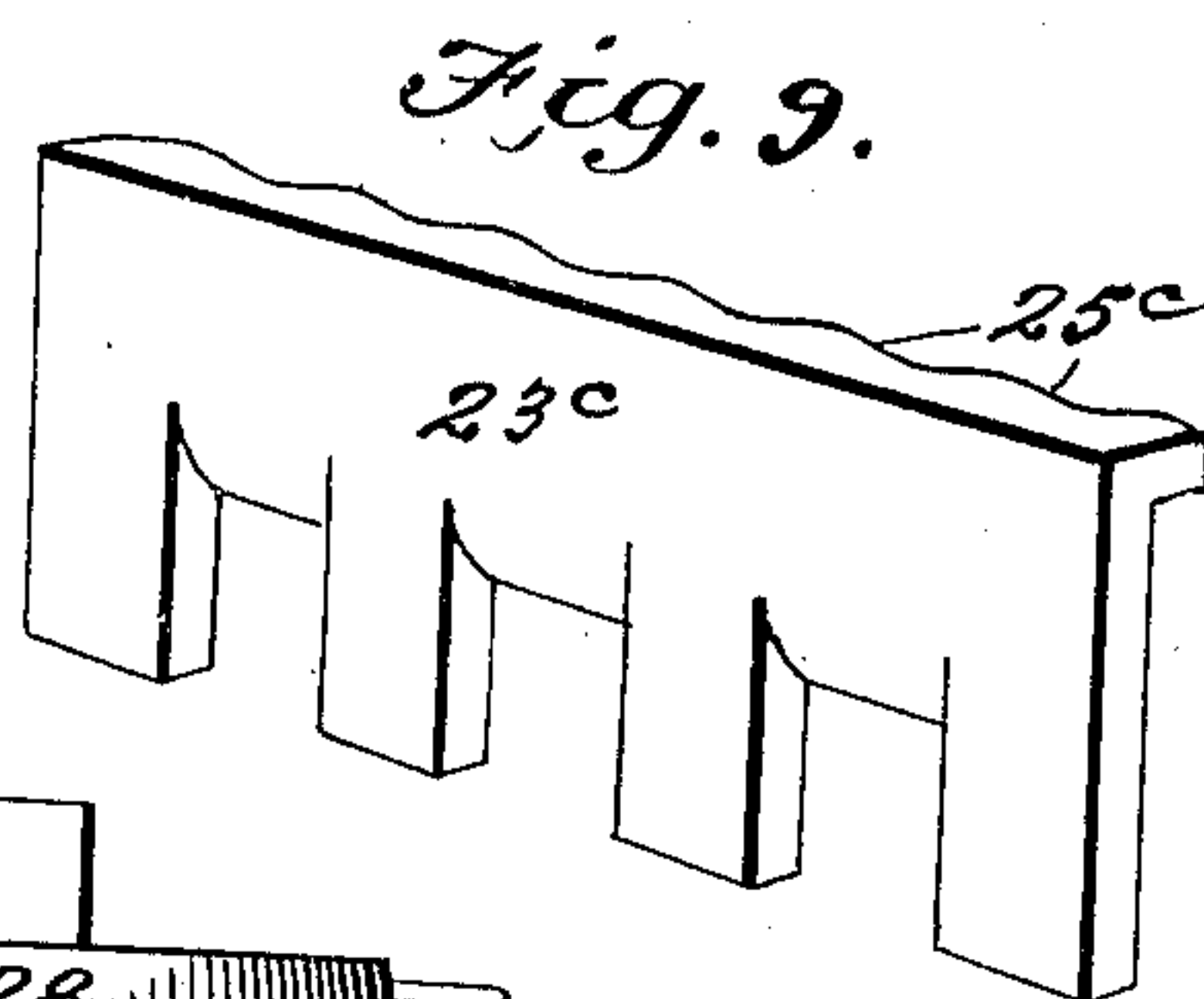
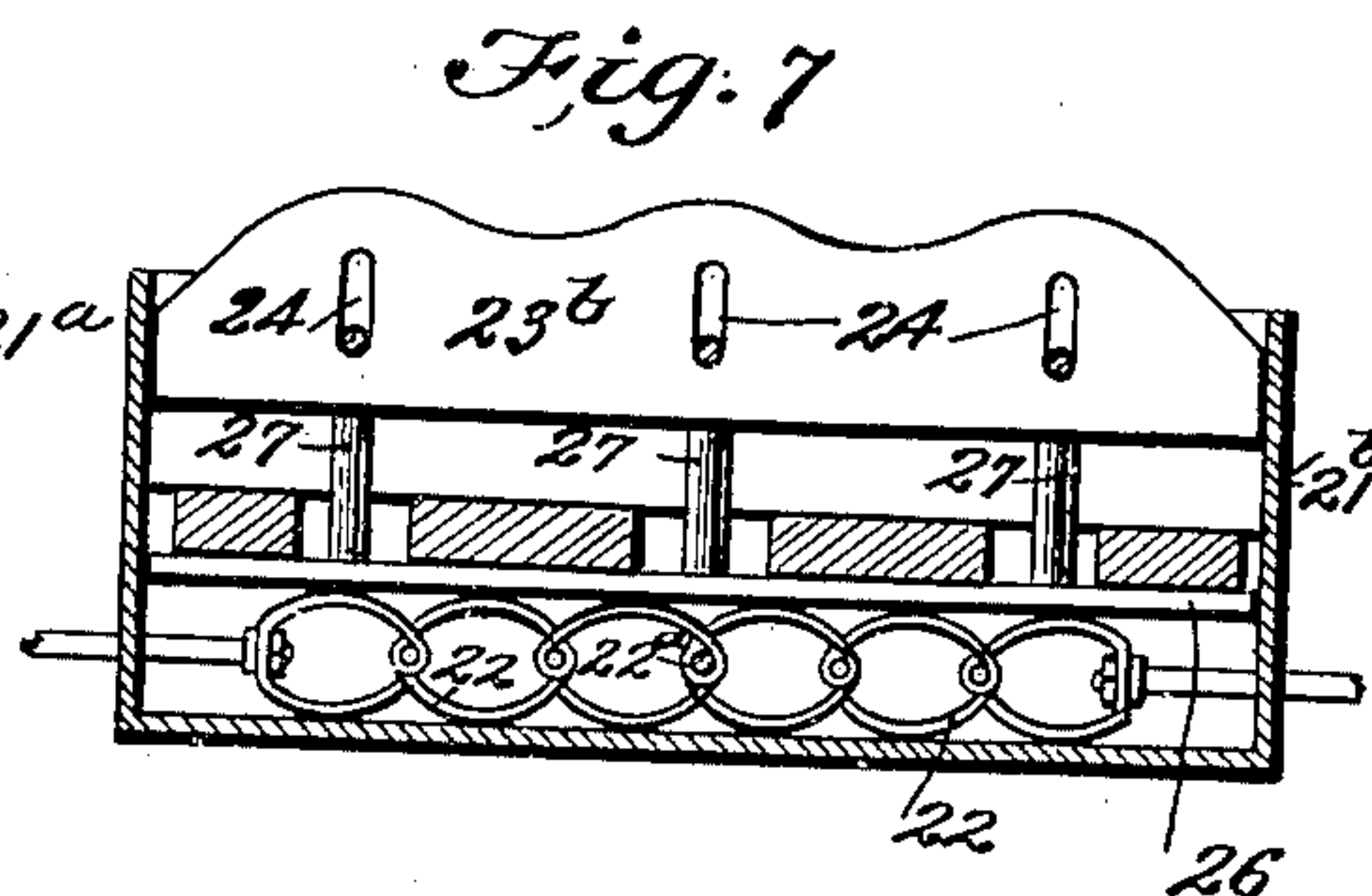
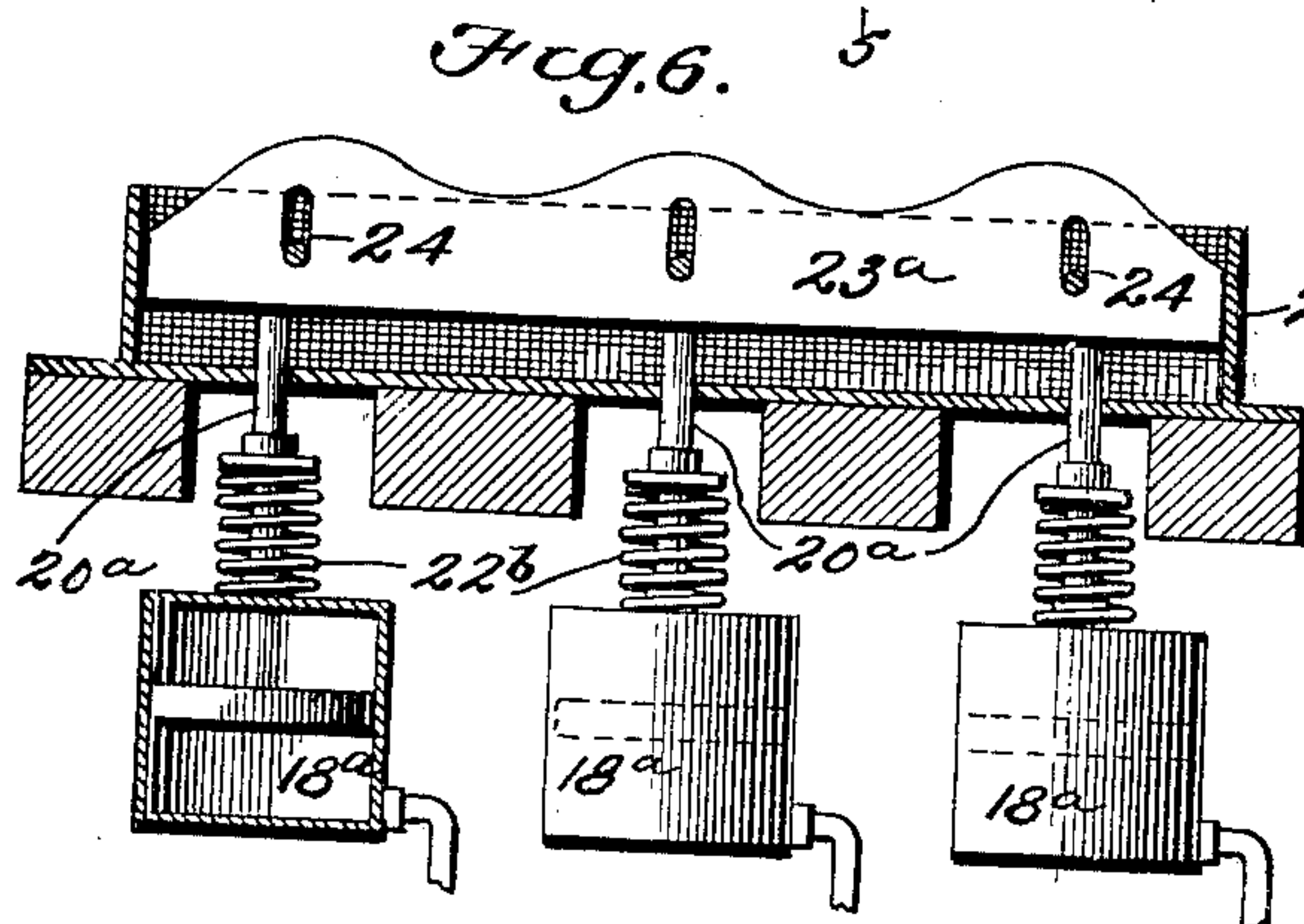
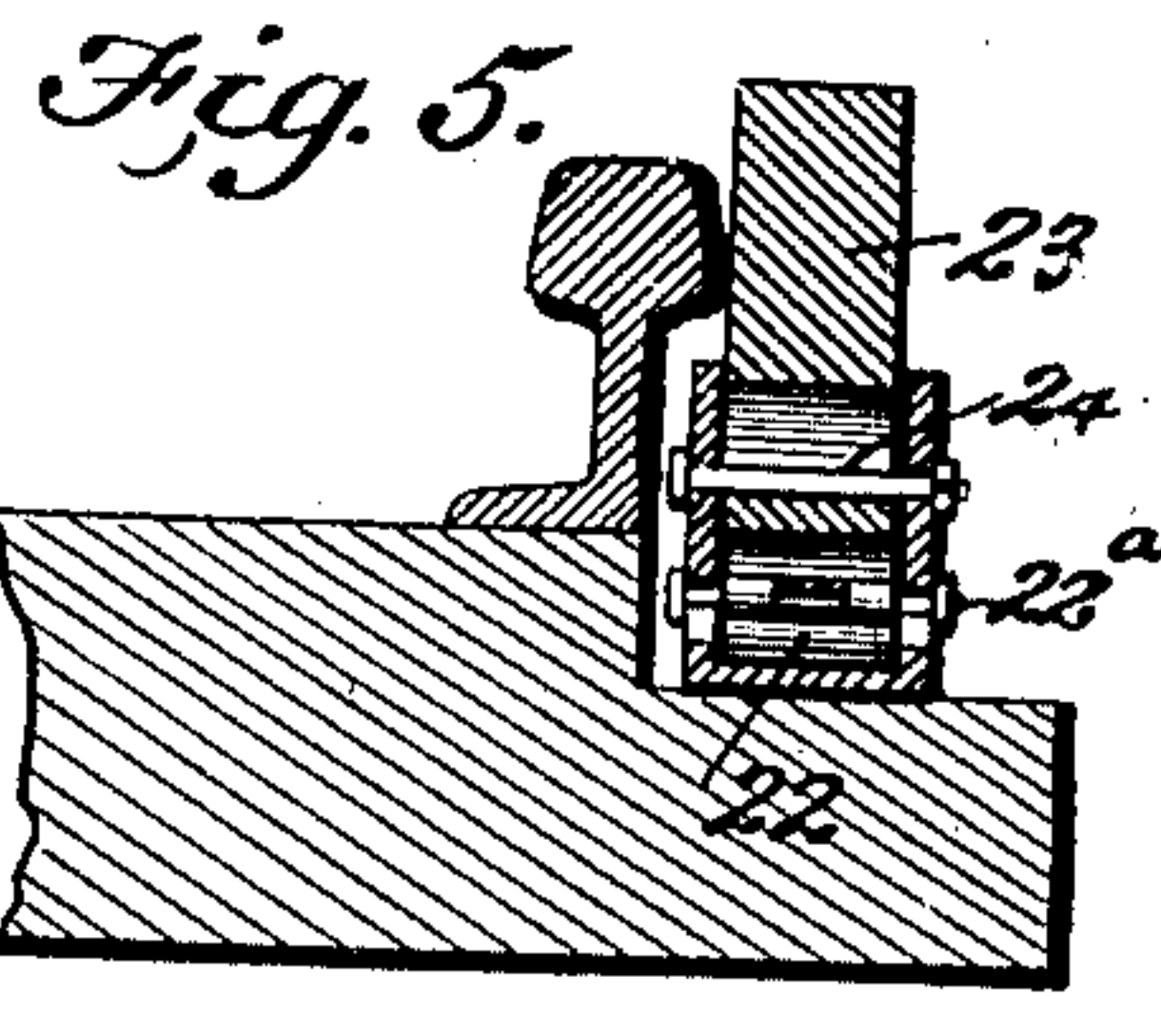
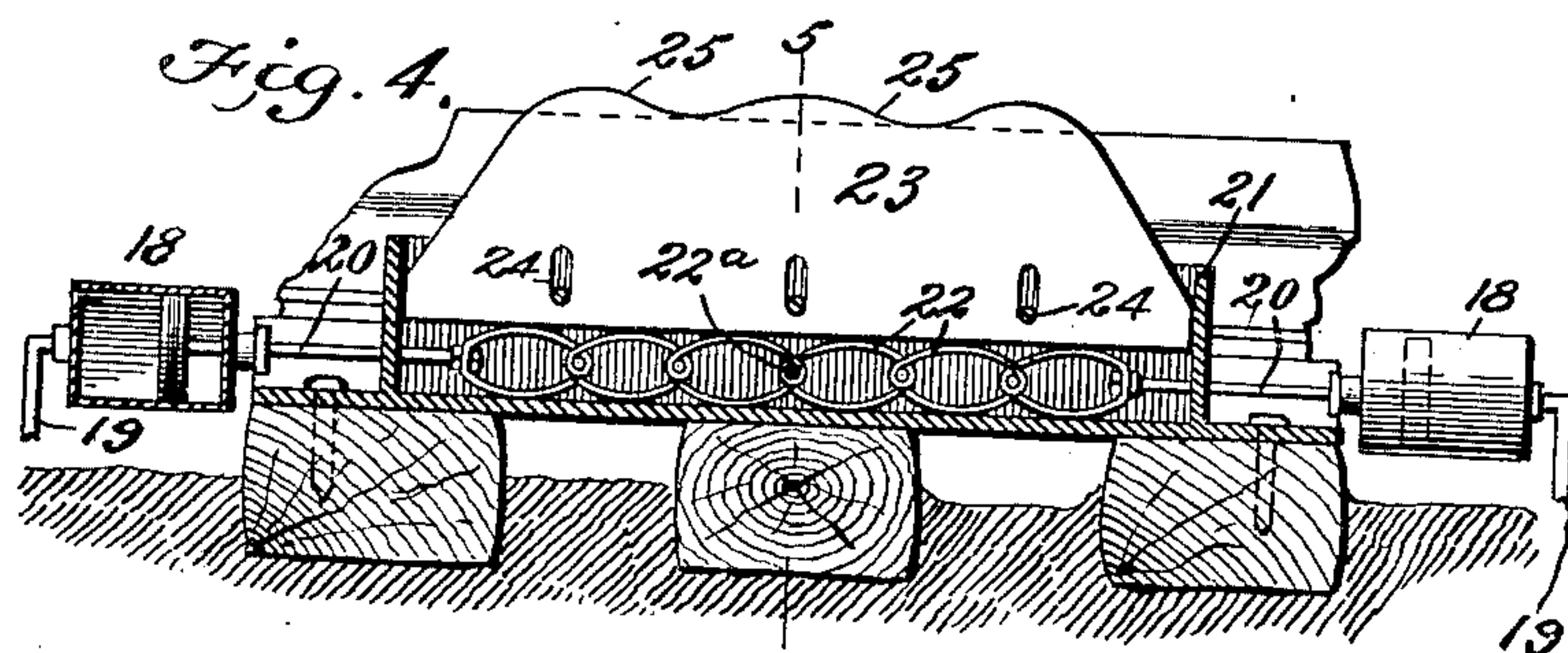
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(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

M. D. Blondel
J. S. Stitt

INVENTOR

Wilbur F. Horn

BY

Munn & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

WILBUR F. HORN, OF CARLISLE, PENNSYLVANIA.

PNEUMATIC SAFETY-GATE.

SPECIFICATION forming part of Letters Patent No. 657,066, dated August 28, 1900.

Application filed November 11, 1899. Serial No. 736,682. (No model.)

To all whom it may concern:

Be it known that I, WILBUR F. HORN, of Carlisle, in the county of Cumberland and State of Pennsylvania, have invented a new and useful Improvement in Pneumatic Safety-Gates, of which the following is a specification.

My invention relates to safety-gates for railroad-crossings, and has for its object certain improvements in this class of railroad safety appliances whereby the gate or gates may be operated by the direct power of currents of air, gases, or vapors issuing from or entering the gates on opposite sides of their axes, such currents being produced by pressure appliances automatically actuated at a distance by the railway rolling-stock.

With this end in view my invention consists in certain details of construction and combination and arrangement of the parts, which I shall hereinafter describe and then particularly point out in the appended claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which like characters of reference indicate corresponding parts in all the views in which they occur.

Figure 1 is a perspective view of my improved automatic pneumatic safety-gate in practical application. Fig. 2 is a vertical transverse section of the lower portion of the gate and its supporting-standard. Fig. 3 is a detail side elevation, partly broken away, of a gate, illustrating slight modifications. Fig. 4 is a vertical longitudinal section of one form of automatic pneumatic pressure appliances. Fig. 5 is a transverse section thereof on the line 5-5 of Fig. 4. Fig. 6 is a longitudinal section, with parts in elevation, of a modified form of pressure appliance. Fig. 7 is a longitudinal section of a further-modified form. Fig. 8 is a plan view of a railway road-bed, to which is applied pressure appliances which are actuated in a different manner from those forms above mentioned. Fig. 9 is a detail perspective view of the pressure-bar employed in the construction illustrated in Fig. 8, and Fig. 10 is a detail cross-section on the line 10-10 of Fig. 8.

On the standard 11, which is located in suitable proximity to a railroad-crossing, as seen

in Fig. 1, is pivotally mounted my improved gate 12, which is in the form of a beam made hollow in any preferred manner. The trunnion 13, on which said beam is mounted, is also hollow, as shown in Fig. 2, and is formed with ports 14, located within the beam, and is connected with an air-pipe 15 in the standard 11, as shown. Each arm of the beam is provided with air-discharge orifices 16 on opposite sides, and it is therefore evident that when currents of air are impelled through the pipe 15, the hollow trunnion 13, and discharged through the orifices 16 the beam will be swung in its vertical plane into closed or downward position, coming to rest when the pivoted arm 17 comes in contact with the ground, and the beam is so counterpoised that it will remain in such position so long as air is being discharged through the orifices, but will revert to its normal vertical position when currents of air cease. As shown in Fig. 3, the beam 12^a may be closed by the suction or ingress of air when the orifices 16^a are arranged in reverse order on the opposite sides of the beam.

In order to automatically produce the currents necessary to the operation of the gate-beam, I employ, as illustrated in Figs. 1, 4, and 5, at a predetermined distance from the crossing a pneumatic pressure appliance consisting of air-pumps 18, of any preferred construction, connected by pipes 19 and storage-chambers 19^a to the pipe 15 in the standard 11 and having their piston-rods at their outer ends working through the ends of a casing or box 21 and attached to springs 22, located in said casing. These springs may include any suitable number and, as shown, are of elliptical form and connected together at the ends of their longer axes. To cause the springs to yield equally in opposite directions, the middle springs are fixedly held in the casing by a bolt 22^a, moving in a vertical slot. Working vertically in the casing 21, with its lower flat edge resting on the springs 22, is a pressure-bar 23, guided by vertical slots and inserted pins, as shown at 24, Fig. 5, and formed with a scalloped or corrugated upper edge 25, which lies close to the outside of the adjacent rail. Each corrugation, as shown in Fig. 4, normally pro-

jects above the surface of the rail, so that the tread of a locomotive or car wheel passing over the pressure-bar will alternately press down and release the bar several times in its passage over the same, thereby alternately compressing and releasing the springs and causing several successive currents of air to be created and the gate-beam to be depressed. It should be especially noted that the length of the pressure-bar may be greatly increased according to my construction and the number of corrugations proportionately increased, causing a great number of successive air-currents, and thus insuring the prompt and effective action of the gate. While I have described the air-currents as successive for the purpose of bringing out clearly the advantage of my pressure-rod, they are practically merged into one continuous current, on account of the probable speed of the train.

As illustrated in Fig. 6, the piston-rods 20^a are inserted through the bottom of the casing 21^a and are directly attached to the lower face of the corrugated pressure-bar 23^a. In this instance the pumps 18 are located below the ties, and springs 22^b, coiled around the piston-rods, effect the rise of the pressure-bar.

Another slightly-modified form is shown in Fig. 7, in which the casing 21^b is fitted over the ends of the cross-ties, and the pressure-bar 23^b is provided with plate 26, bearing upon the springs and secured to the bar by rods 27.

A further modification is illustrated in Figs. 8, 9, and 10, in which the pressure-bar 23^c is of inverted-L shape in cross-section and is provided on its horizontal member with a corrugated surface, which is in a plane parallel with the diameter of a car-wheel, and is engaged and alternately forced away from the side of the rail and released by the flange 28 of the wheel, as is plainly indicated in the drawings. In dotted lines in Fig. 8 are shown possible positions of the air-pumps when a pressure-bar of this form is used.

I do not wish to confine myself to the exact location or number of the air-orifices in the gate-beam herein described and shown, for in this and other respects the details of the invention may be changed within the scope of the appended claims.

It is evident that the air passing through the openings 16 or 16^a will produce a whistling sound, thereby giving alarm of the approach of a train and, if desired, whistles of

any construction may be inserted in the said openings for this purpose.

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

1. In a pneumatic safety-gate, a hollow swinging beam formed with a lateral opening communicating with the atmosphere and adapted to permit of the passage of currents of air, and a pneumatic appliance arranged to force air through said opening, as set forth.

2. In a pneumatic safety-gate substantially as described, a hollow gate-beam formed with a lateral opening in each side on opposite sides of its axis, and a pneumatic appliance having a continuous and uninterrupted connection with the beam, whereby it is adapted to force air through said openings, as set forth.

3. In a pneumatic safety-gate, a standard, a hollow trunnion in said standard arranged for connection with a pneumatic pressure appliance and formed with ports, and a hollow beam mounted on said trunnion and formed with openings in its sides to permit the passage of currents of air as set forth.

4. In a pneumatic railway-gate, a gate-beam, air-pumps operatively connected with said gate-beam, springs tending to move the pump-pistons in one direction, and a pressure-bar connected with said pistons to move them in the opposite direction, said pressure-bar being arranged alongside the railroad-rail and formed with a plurality of corrugations adapted for engagement by a car-wheel, as and for the purpose set forth.

5. In a railway safety-gate, the combination with the gate-beam, of a pneumatic pressure appliance consisting of an air-pump, a casing located alongside the railroad-rail, springs in said casing connected with the piston of said pump, and a pressure-bar fitted to move vertically in said casing and arranged to compress said springs, said bar being formed on its upper surface with a plurality of corrugations each of which normally projects above the rail and which are adapted to be engaged in succession by a car-wheel, as set forth.

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

WILBUR F. HORN.

Witnesses:

W. H. CRIDER,
JNO. B. LANDIS.