

No. 621,520.

Patented Mar. 21, 1899.

F. E. CANDA.

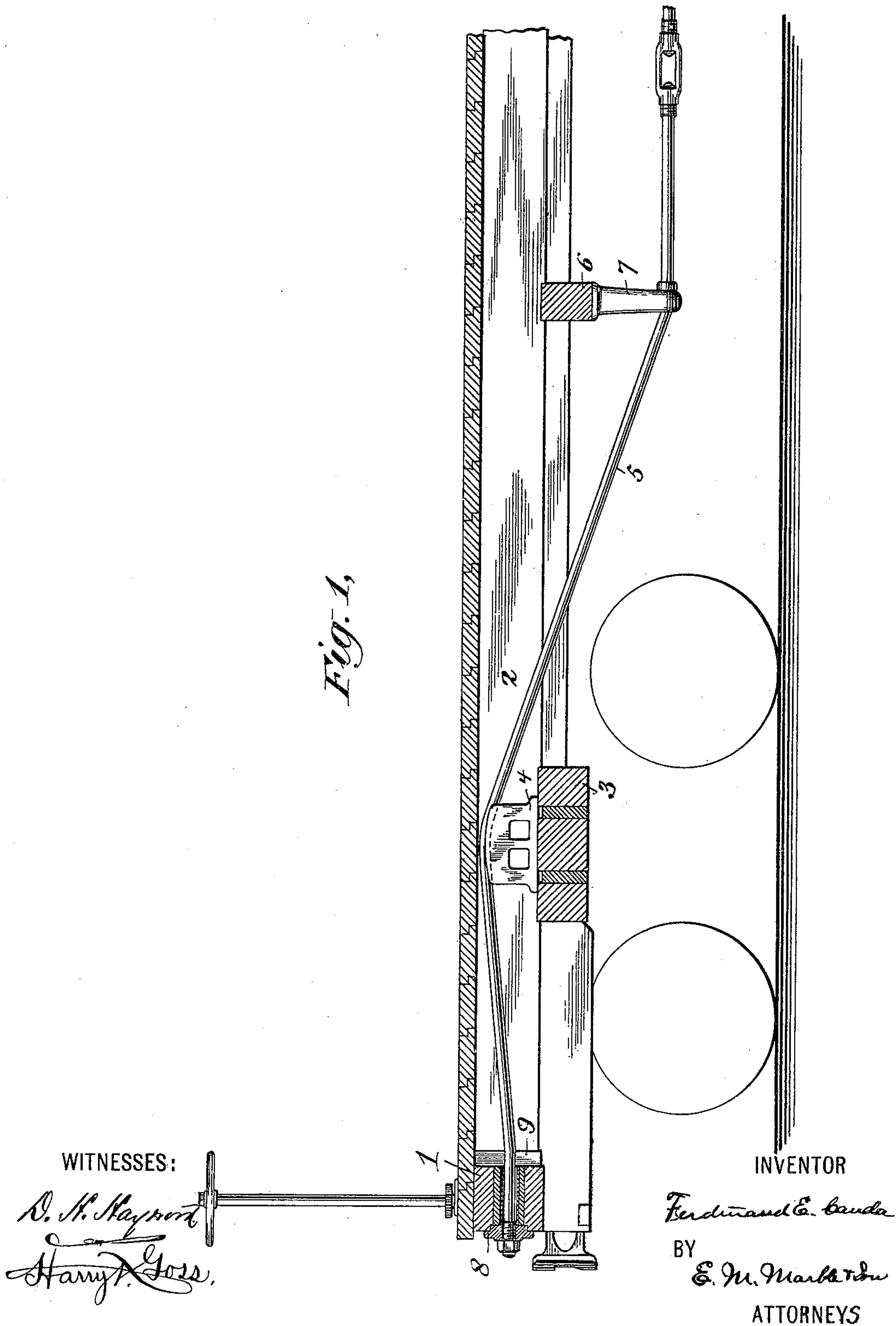
FLOOR FRAME.

(Application filed Nov. 22, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1,



No. 621,520.

Patented Mar. 21, 1899.

F. E. CANDA.

FLOOR FRAME.

(Application filed Nov. 22, 1898.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.

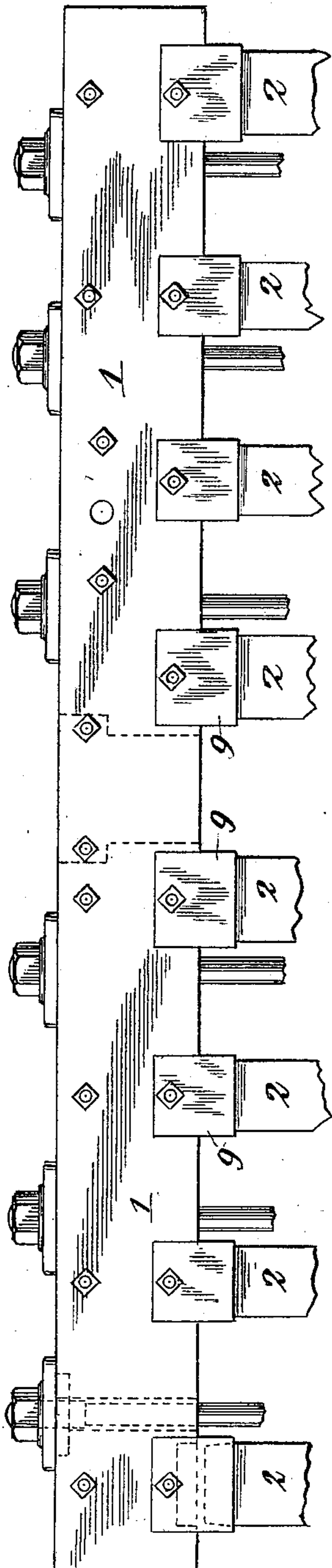


Fig. 3.

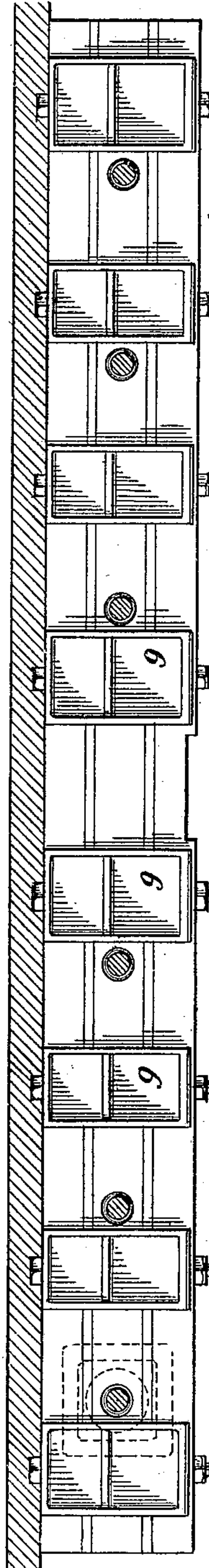


Fig. 6.

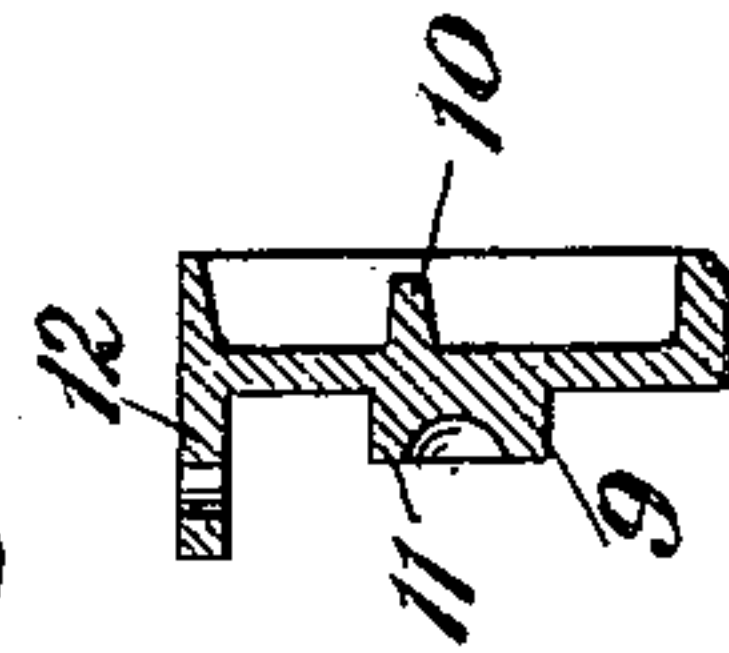


Fig. 4.

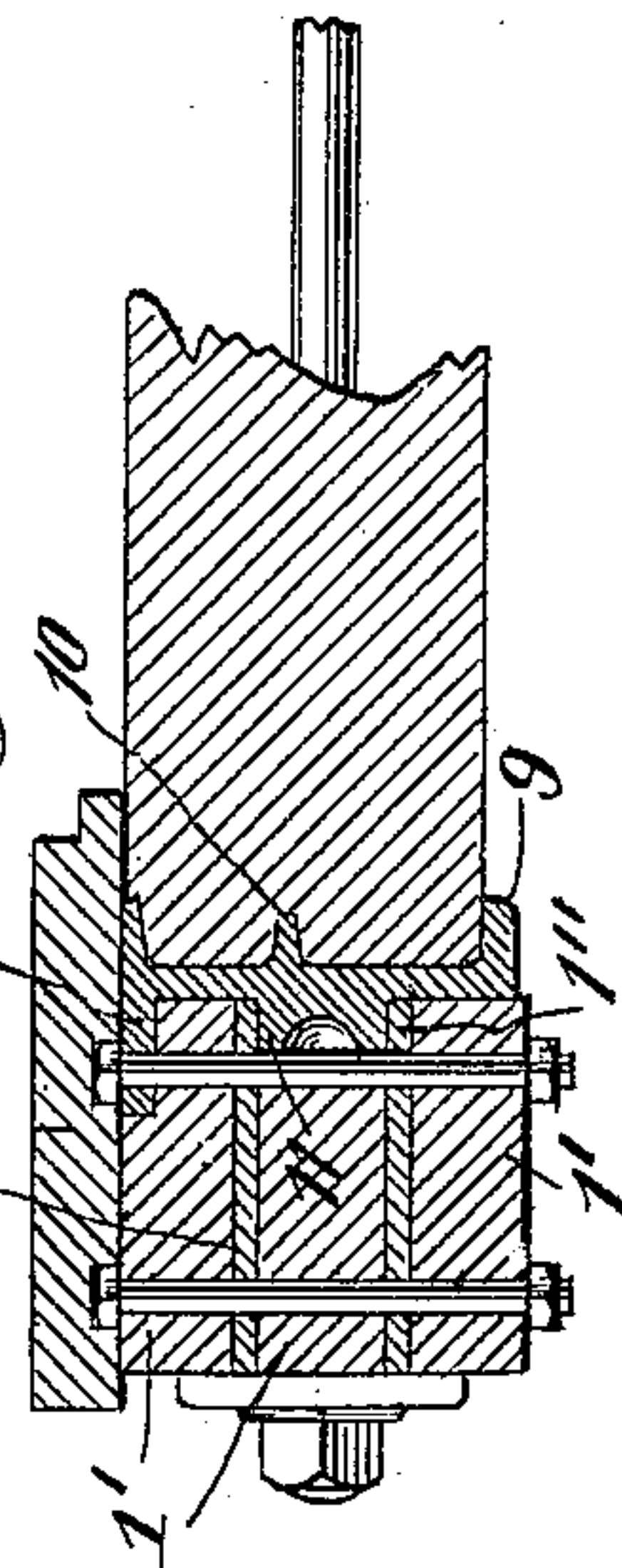
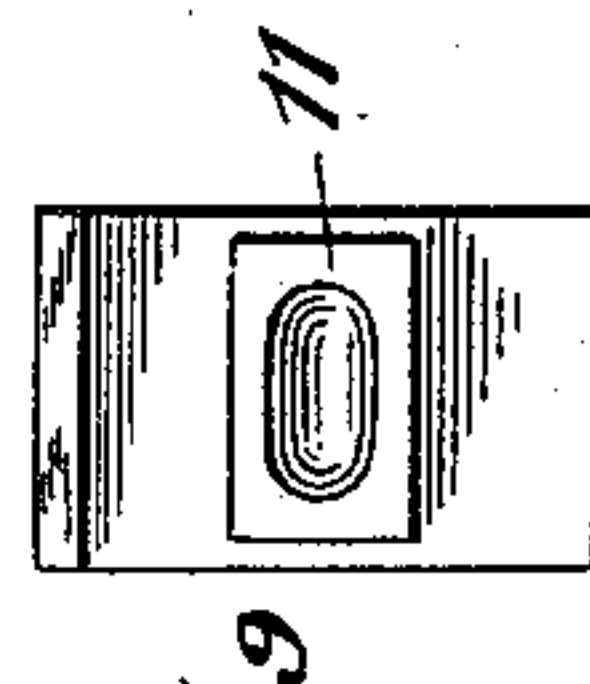


Fig. 5.



WITNESSES:

O. H. Hayward.
Harry Goss.

INVENTOR

Fredrick E. Canda

BY

E. M. Maitland

ATTORNEYS

UNITED STATES PATENT OFFICE.

FERDINAND E. CANDA, OF NEW YORK, N. Y.

FLOOR-FRAME.

SPECIFICATION forming part of Letters Patent No. 621,520, dated March 21, 1899.

Application filed November 22, 1898. Serial No. 697,140. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND E. CANDA, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Car-Frames; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates generally to improvements in railway-cars, and particularly to improvements in the construction of the end sills of railway freight-cars and in the method of connecting the same to the longitudinal sills; and my invention consists in the novel construction of the end sills and in the novel timber-pockets employed for connecting the end sills and longitudinal sills.

As car-frames are ordinarily constructed the end sills are formed entirely of wood and are connected to the longitudinal sills by mortise-and-tenon joints. When such sills are used, it is impossible to construct extremely light cars of great carrying capacity which shall retain their shape in use. In such cars the stress upon the longitudinal truss-rods is very great, and it is found that when the car is heavily loaded the end washers on the truss-rods sink into the wood of the end sills, thus permitting the frame of the car to sag and throwing a greater stress upon other members of the car-frame than such parts are intended to carry. To avoid the sinking of the end washers of the truss-rods into the end sills, these sills have been made of metal; but it is impracticable to make a metal end sill which shall be sufficiently stiff and yet shall have as little weight as is desirable for light cars. The mortises in the end sills which receive the tenons of the longitudinal sills weaken the end sills considerably and make it necessary to construct them of heavier timbers than would otherwise be required, thus adding dead-weight to the car-frame, and in order that light cars may be produced it is necessary to save weight wherever possible.

The objects of my invention are, first, to improve the construction of the end sills of railway-cars, so as to enable them to resist

the pressure of the end washers of the truss-rods, and, second, to connect the end sills and longitudinal sills in an improved manner. These objects are attained in the invention herein described, and illustrated in the drawings which accompany and form a part of this specification, in which the same reference-numerals indicate the same or corresponding parts, and in which—

Figure 1 is a longitudinal section of a portion of a platform-car, showing my improved end sill. Fig. 2 is a detail plan view of an end sill and the end portions of the longitudinal sills connected therewith. Fig. 3 is a detail elevation of the end sill with the timber-pockets which receive the ends of the longitudinal sills in place thereon. Fig. 4 is a detail section of an end sill, timber-pocket, and longitudinal sill. Fig. 5 is an end view of one of the timber-pockets, and Fig. 6 is a central sectional elevation of the timber-pocket.

In the drawings, 1 is an end sill; 2 2, longitudinal sills; 3, a body-bolster; 4, a truss-rod bearing thereon; 5, a longitudinal truss-rod; 6, a cross-sill, and 7 a truss-rod strut. These parts are all arranged in the customary manner.

The end sill 1, which embodies one feature of my invention, differs from former end sills in that it is of composite construction, being composed of alternate layers 1' of wood and 1'' of steel, bolted together. The steel plates 1'' are horizontal and are placed at such distance apart that the longitudinal truss-rods 2 may pass between them, and the end washers 8 upon these truss-rods may bear directly against them. The pressure produced by the stress upon the longitudinal truss-rods is therefore transferred directly to these plates 1'', which, being horizontal and therefore substantially parallel with the direction in which the stress is applied, are in the best possible position for resisting such stress. The layers of wood 1' surrounding these plates 1'' provide the stiffness necessary to enable the sill to resist flexure and other stresses and prevent buckling of the plates 1''. An end sill so constructed contains practically no dead-weight, is extremely light and stiff, and, because of the power of the plates

1" to resist crushing, is absolutely proof against the sinking of the end washers of the truss-rods into it. At the same time it may be made very cheaply.

- 5 The end sill is provided with timber-pockets 9, corresponding in number and position to the longitudinal sills, into which the ends of said sills fit. This method of securing the end sills and longitudinal sills together is superior to the ordinary mortise-and-tenon construction, since it avoids weakening of the end sill by the mortises, and the pockets transmit pressure from the end sill uniformly over the entire ends of the longitudinal sills.
- 15 The metal plates 1" of the end sill bear directly against these pockets 9, and thus the strain upon the longitudinal truss-rods is transmitted to the longitudinal sills through metal parts only and without the interposition of wood or any other similar substance which is likely to be crushed. Since wood does not shrink in the direction of its length, the length of the longitudinal sills does not vary, and therefore when the longitudinal truss-rods are once drawn tight they must carry their due proportion of the load and perform their intended function of keeping the frame of the car from sagging and cannot become loose.
- 30 The construction of the timber-pockets is shown particularly in the detail views Figs. 4, 5, and 6. Each pocket is provided with a recess, into which the end of a longitudinal sill may fit, and in this recess is a tenon 10, adapted to enter a groove in the end of the longitudinal sill, so as to hold said sill firmly in place, even should it shrink away from the sides of the recess in the timber-pocket. The timber-pocket is also provided on its opposite face with a tenon 11, adapted to enter a shallow mortise in the end sill and occupying the entire space between the steel plates 1". The timber-pocket is also provided with a top flange 12, extending over the top of the end sill and between said sill and the frame of the car. Suitable bolts passing through this top flange and the sill secure the flange to said sill.

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

1. A composite end sill formed of layers of wood separated by horizontal metal plates, extending inward from the positions occupied by the heads of the truss-rods passing transversely through said sill, when it is in use, substantially as described.

2. In a car-frame, the combination, with a tie-rod, of a timber, arranged transversely thereto, against which the head of said rod bears, and provided with metal plates, for receiving the pressure of said head, arranged substantially parallel to the direction of strain

upon the rod, and extending from the head of the rod inward, substantially as described. 65

3. In a car-frame, the combination, with longitudinal sills and truss-rods, of an end sill, and means for transmitting pressure, interposed between the end sill and the longitudinal sills, said end sill having openings for the passage of the truss-rods, and having also metal plates for receiving the pressure of the heads of the truss-rods, arranged substantially parallel to the direction of strain upon the truss-rods, and extending from the heads of said rods to the means employed for transmitting pressure to the longitudinal sills, substantially as described. 70 75

4. In a car-frame, the combination, with longitudinal sills, and truss-rods, of an end sill secured to said longitudinal sills, arranged transversely thereto and to the truss-rods, provided with openings through which the truss-rods may pass, and also provided with metal plates for receiving the pressure of the heads of the truss-rods, arranged substantially parallel to the direction of strain upon the truss-rods, and extending from the heads of the truss-rods inward, substantially as described. 80 85

5. In a car-frame, the combination, with longitudinal sills and truss-rods, of an end sill, and timber-pockets connecting said end sill and longitudinal sills, said end sill having openings for the passage of the truss-rods, and having also metal plates for receiving the pressure of the heads of the truss-rods, arranged substantially parallel to the direction of strain upon the truss-rods, and extending from the timber-pockets to the heads on the truss-rods, substantially as described. 90 95 100

6. A timber-pocket consisting of a metal piece having on one side a recess adapted to receive the end of a timber, and a tenon in said recess adapted to enter a recess in the end of a timber inserted into said recess, and provided with means for attaching said pocket to another timber, substantially as described. 105

7. In a car-frame, the combination, with longitudinal sills, and a composite end sill consisting of layers of timber having horizontal metal plates interposed between them, of timber-pockets connecting said end sill and longitudinal sills, having on one side recesses adapted to receive the ends of the longitudinal sills, and having on the opposite side tenons adapted to enter recesses in the end sill between the horizontal metal plates thereof and occupying the entire width of the space between said plates, substantially as described. 110 115 120

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

FERDINAND E. CANDA.

Witnesses:

J. C. SPRINGSTEEN,
H. M. MARBLE.