No. 677,456. Patented July 2, 1901.

G. LARSON.

RAILWAY.

(Application filed Jan. 5, 1901.)

(No Model.)

Fig. 1.

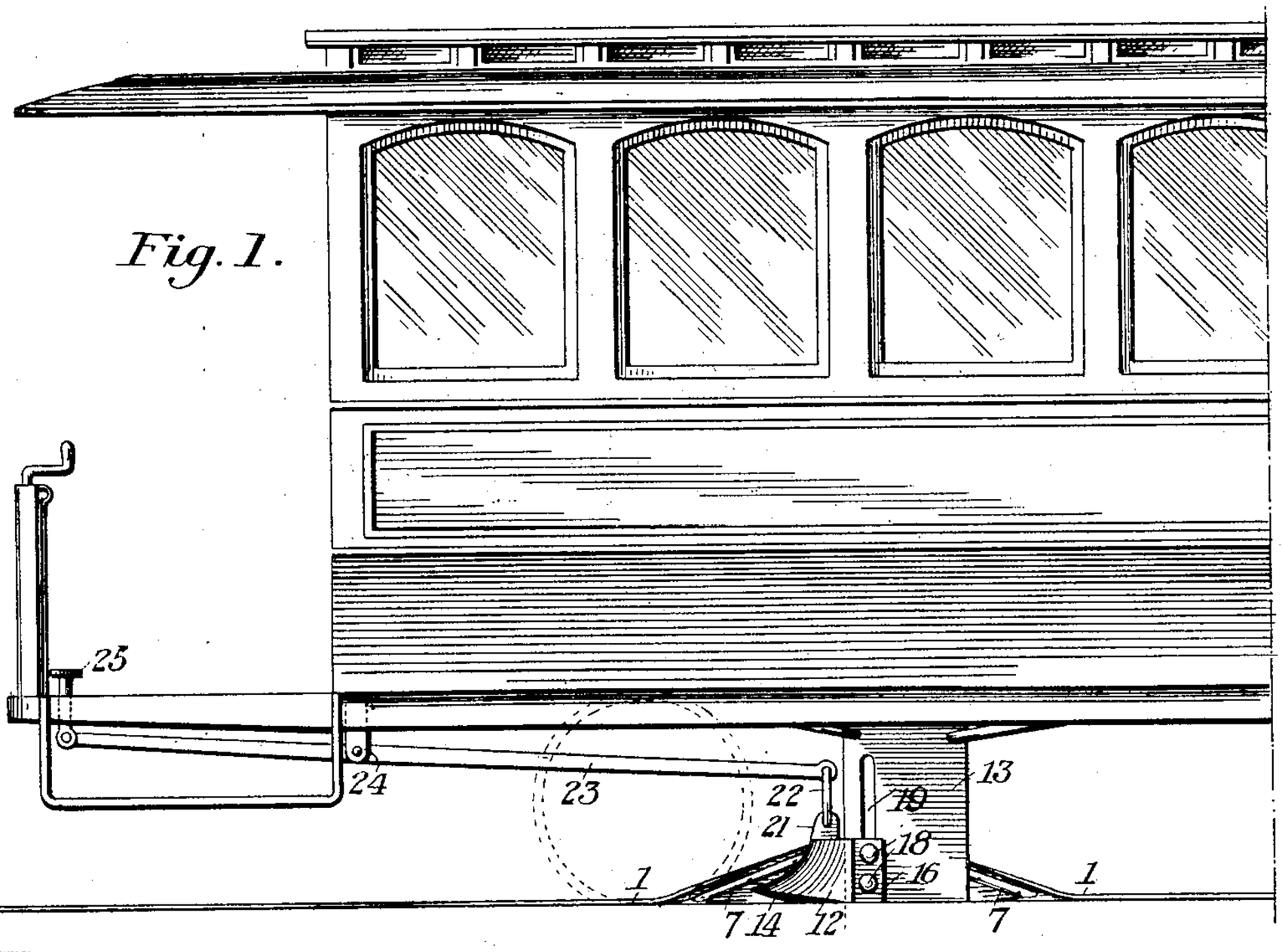

Fig. 2.

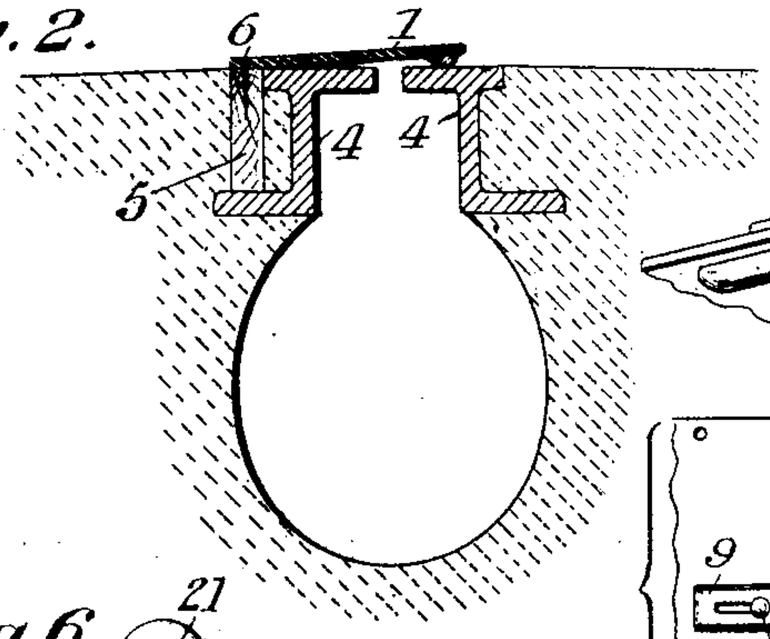

Fig. 3.

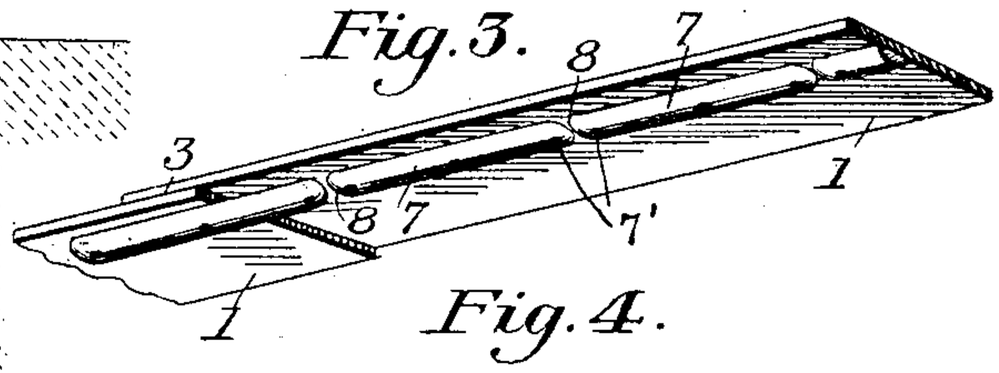

Fig. 4.

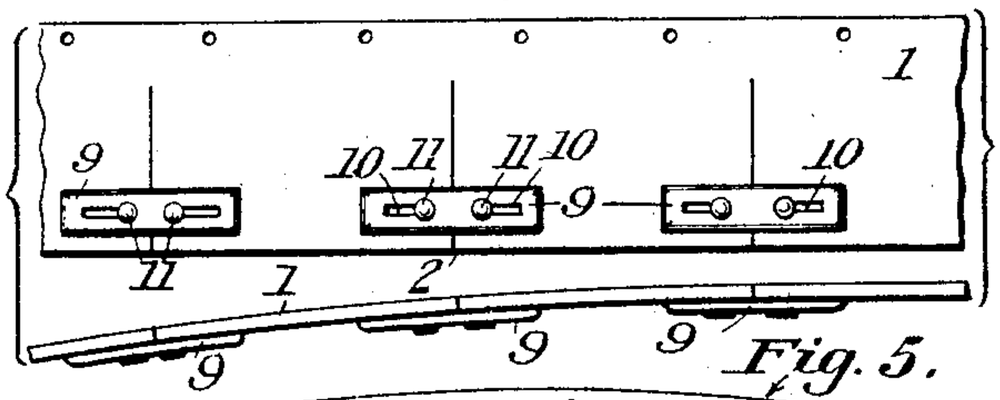

Fig. 5.

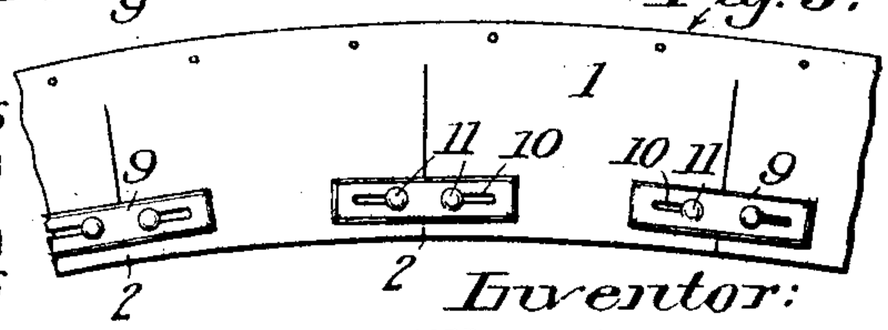

Fig. 6.

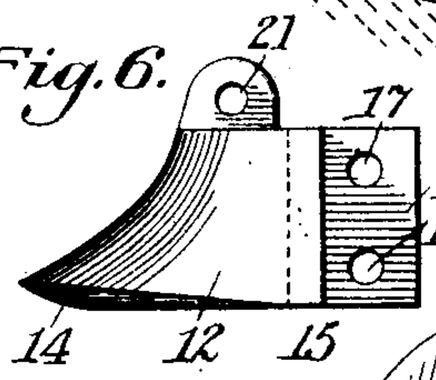

Fig. 7.

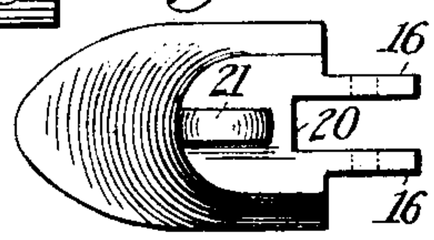

Fig. 8.

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UNITED STATES PATENT OFFICE.

GILBERT LARSON, OF BOTHELL, WASHINGTON.

RAILWAY.

SPECIFICATION forming part of Letters Patent No. 677,456, dated July 2, 1901.

Application filed January 5, 1901. Serial No. 42,257. (No model.)

To all whom it may concern:

Be it known that I, GILBERT LARSON, a citizen of the United States of America, residing near Bothell, in the county of King and State of Washington, have invented a certain new and useful Railway, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to railways; and the improvements hereinafter described are especially designed for use in connection with cable or electric railways embodying a slot in which the shank of the grip or plow travels.

The primary object of the invention is to provide a slot-cover adapted to seal or close the slot in the road-bed, the said cover being so constructed that it may readily be lifted by a suitable device on the car, after which it will return to its seat upon the slot-rails, the construction also rendering the slot-cover durable and capable of a considerable amount of wear without rendering the same useless or inoperative.

Another object of the invention is to so construct the cover that it is capable of longitudinal expansion and contraction, thus providing for the proper lifting or stretching of the cover at the tops of crests or ridges in the road-bed.

The detailed objects and advantages of the invention will appear more fully in the course of the ensuing description.

The invention consists in certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and incorporated in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a sufficient portion of a car and road-bed to illustrate the application and use of the present improvements. Fig. 2 is a transverse vertical section through the road-bed, showing the form of the cover and its relation to the slot-rails. Fig. 3 is an enlarged detail perspective view of a portion of the slot-cover looking toward the under side thereof. Fig. 4 illustrates the slot-cover in bottom plan and edge views. Fig. 5 is a bottom plan view of the slot-cover at a point where a bend or curve occurs in the roadway. Fig. 6 is a detail side elevation of the shoe which operates to lift the slot-cover. Fig. 7 is a plan view of the same. Fig. 8 is an enlarged detail longitudinal section showing the manner of connecting the adjacent ends of the sections of the slot-cover.

Similar numerals of reference designate corresponding parts in all the figures of the drawings.

The slot-cover contemplated in this invention consists, preferably, of a strip 1, of rubber or analogous material, which may be made up of any desired number of sections arranged with their adjacent extremities abutting or in close proximity to each other, as shown in Fig. 8, or overlapping, as shown in Fig. 3. The cover or strip 1 extends the entire length of the road-bed, and its width is approximately equal to or slightly less than the combined width of the slot-rails 4, as shown in Fig. 2.

In order to secure the slot-cover 1 in place, I employ an anchoring-strip 5, consisting, preferably, of wood and let into the road-bed, so as to be flush with the surface thereof, as shown in Fig. 2. This anchoring-strip 5 is set edgewise vertically, and one of the longitudinal edges of the strip 1 is secured to the upper edge of the anchoring-strip by means of suitable fastenings 6. The opposite or free edge of the cover 1 has secured to its under side a series of metal strips 7 sufficiently short to admit of the necessary flexibility of the cover 1. These strips 7 are half round in cross-section, as shown in Fig. 2, and are disposed with the rounded side downward, so as to lie in contact with the slot-rails. The strips also have their adjacent ends rounded, as shown at 8, so as not to interfere with each other when the cover is lifted by the means hereinafter described. The securing bolts or rivets 7′ have their heads countersunk into the strips 7, so as to lie flush with the bottom surface thereof. These strips serve to reinforce and strengthen the cover, to prevent undue stretching of the same, to weight the free edge of the strip and hold it against the slot-rails, and to prevent water, &c., from gaining access to the slot, and thereby filling the subway and rusting the cable.

In order to admit of the necessary expansion of the cover 1, the adjacent ends thereof are connected by means of splice-plates 9, which extend across the ends of the sections

of the cover and have their ends longitudinally slotted, as shown at 10, to receive and admit of the play of pins, bolts, or rivets 11, attached fixedly to the ends of the belt or cover, said construction being clearly illustrated in Figs. 4, 5, and 8. This construction just hereinabove described is particularly valuable on curves and at the crests of steep grades, where the cover is subjected to the greatest stretching in order to admit of the travel of the lifting-shoe beneath the same. At crests or ridges the belt or cover 1 is preferably cut in two transversely, and two or more sets of splice-plates may be used for each joint, and any number of joints may be employed at each crest, the number of joints depending upon the pitch or grade of the road-bed adjacent to such ridge or crest. Where the sections of the cover are overlapped on an inclined grade, the upper section laps over the adjoining extremity of the next lower section, as shown in Fig. 3, so as to prevent water and refuse from being carried through the joint into the slot of the road-bed in a manner that will be readily understood. On curves the cover is provided with slits extending only partially across the same, and these slits or cuts are crossed by means of the splice-plates 9, hereinabove described. If the cover is fastened on the outside of the curve, the inside edge of the cover will be cut in the manner just described. When the inner edge of the cover is fastened, it is slit or cut in the manner described and fastened, thus leaving the free edge uncut.

In order to lift the slot-cover 1, the lifting-shoe 12 is slidingly mounted upon the shank 13 of the cable-grip or electric shoe, as the case may be. The shoe 12 is constructed in a manner similar to a plow-point and is further rounded on its under side, as shown at 14, so as to prevent it from catching against small projections in the road-bed. The shoe 12 is further provided with a shank 15, comprising vertically-extending parallel flanges 16, adapted to embrace the shank 13 and having two sets of openings 17 for the reception of a pair of bolts 18, adapted to move up and down in the vertical slot 19, formed in the shank 13 of the grip or plow. The bolts 18 are slightly smaller than the slot 19, so as to allow a small amount of play and so that the shoulder 20, formed by the back of the shoe 12, may ride against the front edge of the shank 13. The space between the flanges 16 is also slightly greater than the thickness of the shank 13. By this construction the shoe 12 may ride easily and freely up and down on the shank 13 and compensate for the oscillation of the car-body. The shoe 12 is further provided on its upper side with an eye 21, to which is connected a rod or link 22, which connects with the long arm of a lever 23, fulcrumed on a pendent bracket 24 on the car-body and extending under the car-platform, where it is connected at its outer end to a treadle or post 25, upon which the motorman may place his foot for lifting the shoe in passing over a cross-road.

From the foregoing description it will be seen that I have provided a slot-cover which is capable of longitudinal expansion for the purpose set forth, which will adhere closely to the road-bed and effectually exclude water, dirt, and other foreign material from the subway. The metallic strips at the free edge of the cover not only serve to reinforce and strengthen the cover, but serve as weights for depressing the cover after it has been lifted by the shoe. Said strips also prevent wear upon the body of the cover, and thereby greatly increase the durability of the same. The splice-plates may be galvanized as well as the other metal parts, so as to guard against rust. At the initial end of the railway the cover will be turned upward and outward to one side and fastened in that position, so as to enable the shoe to pass beneath the cover as the car starts on its trip. Wherever the loose end of the belt lies in opposition to the direction in which the car is moving it is turned partly over and fastened the same as at the starting-point. This may be done a number of times on long hills, as the turning over of the end of the belt deflects or leads to one side any water which may be running on the belt, thus preventing it from entering the slot. This feature of construction is advantageous both when the cars are running and when the road is not in operation. The cars when in operation serve to partially lift and tilt the turned-over ends of the belt, thus spilling the water therefrom. At crossings the cover may be omitted for a suitable distance. It will also be seen that the shoe is capable of playing up and down freely, and thereby enabled to ride in close contact with the slot-rails. The cover by keeping out water, melting snow, ice, dirt, &c., adds materially to the life of the cable. When the cover is worn out, it may be replaced by a new cover, the cost of which is trifling as compared with the cost of a new cable.

I do not desire to be limited to the exact details of construction hereinabove set forth, but reserve the right to change, modify, or vary the construction within the scope of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. A slot-cover for the purpose specified, consisting of a flexible strip adapted to be attached to the road-bed and to overlie the slot therein, and a series of metallic strips attached to and extending longitudinally beneath the free edge of the cover, substantially as and for the purpose described.

2. A slot-cover for the purpose specified, consisting of a flexible strip composed of sections, and splice-plates connecting the adjacent ends of the sections and extending longitudinally thereof, substantially as described.

3. A slot-cover for the purpose specified, consisting of a flexible strip made in sections, and slotted splice-plates connecting the adjacent ends of the sections, substantially as described.

4. A slot-cover for the purpose specified, consisting of a sectional flexible strip, pins or studs on the adjacent ends of the sections, and slotted splice-plates associated therewith, substantially as described.

5. A slot-cover for the purpose specified, consisting of a flexible strip provided with transverse slits, and splice-plates connecting the slitted portions of the strip, substantially as described.

6. The combination with the slot-rails of a road-bed, of an anchoring-strip embedded in the road-bed extending along one side thereof, and a slot-cover having one edge secured to said anchoring-strip, substantially as described.

7. The combination with the slot-rails of a road-bed, of an anchoring-strip embedded in the road-bed and extending along the outside of one of the slot-rails, and a flexible slot-covering strip attached along one edge to the anchoring-strip and projecting across the slot, substantially as described.

8. The combination with the shank of a grip or plow, of a shoe mounted to slide up and down on said shank, and an operating-lever for lifting said shoe out of contact with the road-bed, substantially as described.

9. The combination with the shank of a grip or plow having a vertical slot therein, of a shoe having flanges embracing said shank, and one or more bolts passing through said flanges and playing up and down in the slot in the shank, substantially as described.

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

GILBERT LARSON.

Witnesses:
C. E. REMSBERG,
J. L. ANDERSON,
GEORGE SIMMONDS,
GEO. L. PECK.