(No Model.)

C. F. FINDLAY.

TRACTION ROPE RAILWAY.

No. 294,213. Patented Feb. 26, 1884.

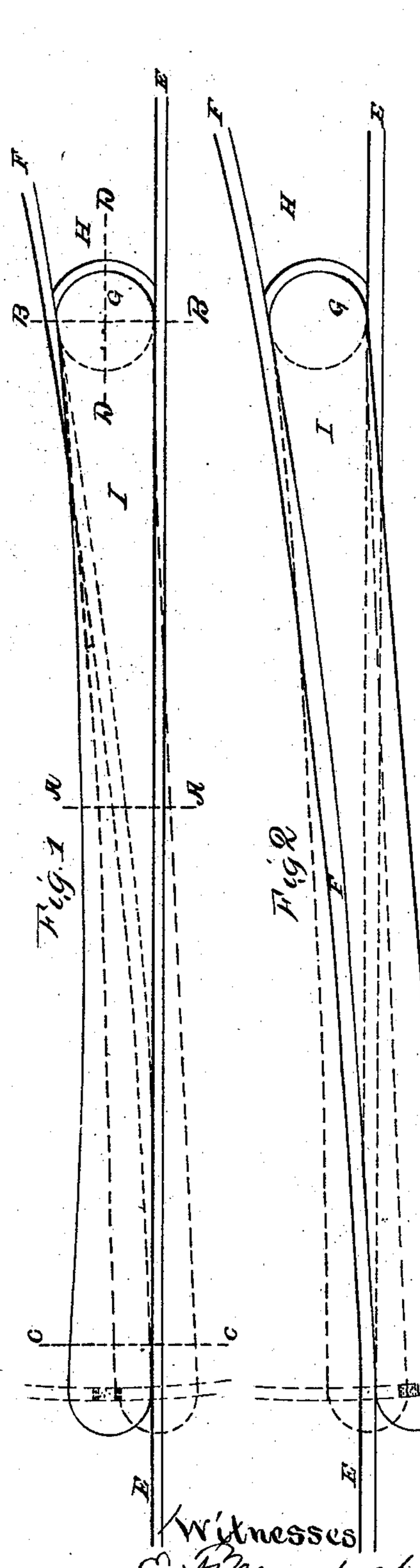

Fig. 1.

Fig. 2.

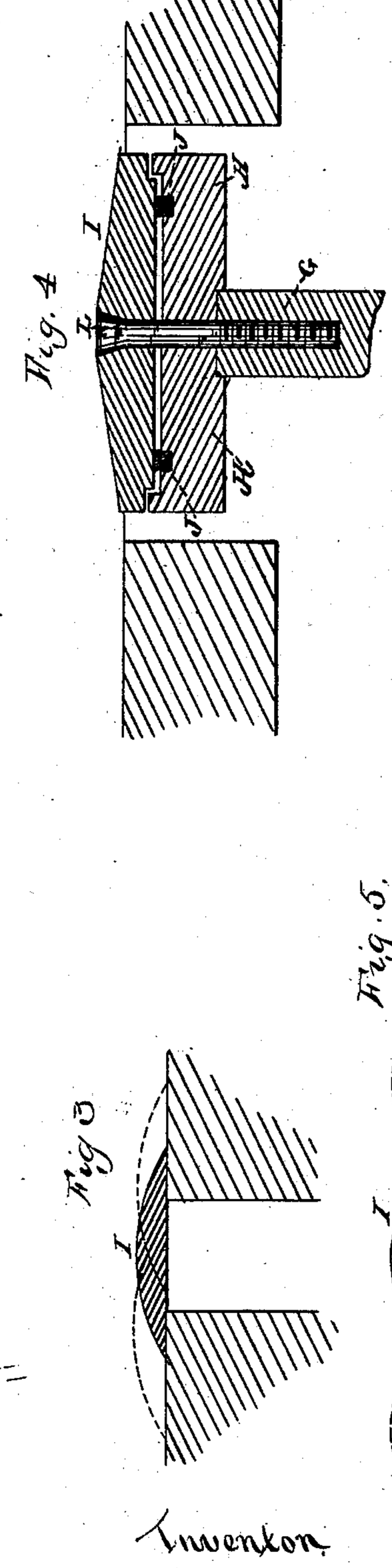

Fig. 4.

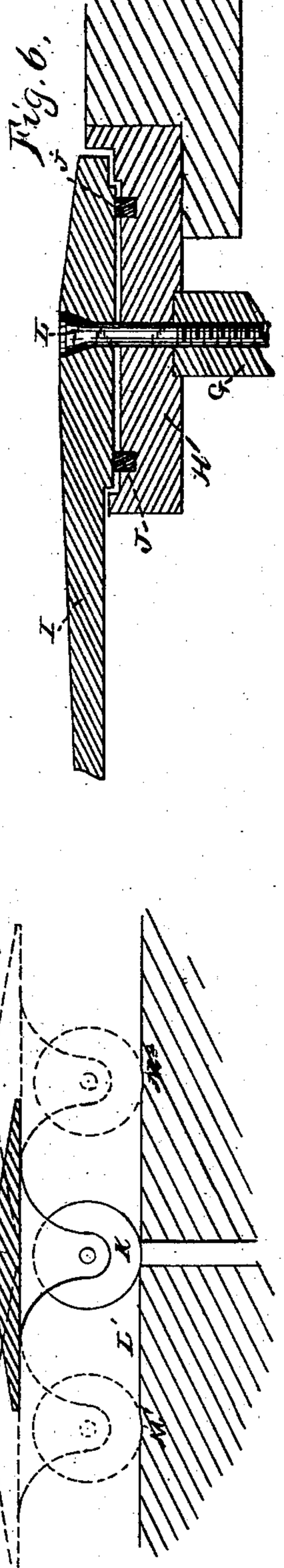

Fig. 6.

Fig. 3.

Fig. 5.

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UNITED STATES PATENT OFFICE.

CHARLES F. FINDLAY, OF LIVERPOOL, ENGLAND.

TRACTION-ROPE RAILWAY.

SPECIFICATION forming part of Letters Patent No. 294,213, dated February 26, 1884.

Application filed November 18, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. FINDLAY, a subject of the Queen of Great Britain, a resident of the city of Liverpool, England, and temporarily residing in New York city, New York, U. S. A., have invented a new and useful Improvement in the Construction of Traction-Rope Railways, of which the following is a specification.

When, for the purpose of propelling street or surface railway-cars, a traction-rope is used in a tube or tunnel, which tube or tunnel is beneath the surface-level of the street, and generally situated between the tracks of the railway, it becomes necessary to employ special means for supporting the covering which is placed over the tube or tunnel. This is especially true of that portion of such railways where there is a branch line or a switch leading away from the main tracks, for in this portion of such a railway there is a V-shaped space between the two tubes or tunnels in which the traction-rope is placed, one tube or tunnel for the main tracks and the other for the branch line or switch.

My invention relates to a simpler and more convenient construction of the road at such points than has hitherto been in use.

Figure 1 is a horizontal longitudinal plan of the apparatus, in which E represents the opening of the tube or tunnel for the traction-rope between the main tracks, at the surface-level of the street. I term the opening a "slot," as it is usually quite small or narrow. Fig. 2 is a horizontal longitudinal plan, in which F represents the slot for the branch tracks. Fig. 3 is a vertical cross-section of Fig. 1, taken at A A. Fig. 4 is a vertical cross-section of Fig. 1, taken at B B. Fig. 5 is a vertical cross-section of Fig. 1, taken at C C. Fig. 6 is a vertical longitudinal section of Fig. 1, taken at D D.

Similar letters in all the figures represent the same parts.

E is the slot for the main tracks. F is the slot for the branch tracks. G is a pillar between the slots E and F. By tracing these two slots it will be seen that at H they are some distance apart, and continue to diverge in the directions E and F and approach each other in the opposite direction, toward C C, until they become one large slot. This causes, usually, the entire removal of the ground beyond and from the pillar G up to the point C C, leaving a V-shaped space or large tunnel, dangerous to vehicles and the use of the street. I provide a cover for this V-shaped space, with a convenient method of operating it and securing the free use at all times of the slots for the main and branch tracks. I establish the pillar G at the nearest point to the junction of the two slots where it can be safely placed. This pillar is of metal, wood, stone, or bricks, and supports one end of the piece marked H, which is a cover to the space between the slots E and F. This piece H continues as a cover as far as the V-shaped excavation extends in the direction of the divergence of the two slots, and this excavation extends until the slots are far enough apart for the ordinary construction of the tube or tunnel to be adopted, and the ground filled in solid between them. Upon this piece H rests an iron cover, (marked I,) and which extends from the pillar G, in the direction of C C, up to the junction of the two slots E and F. This cover I is capable of turning, so as to leave open for use either the slot E or the slot F, as is desired. A grip extends down from the car, the shank passing down through the slot, and catches onto the traction-rope within the tube; hence the slot must be opened for the passage of the shank of this grip. The cover I is held in place by the screw L, with countersunk slotted head, which screw passes through the piece H and is secured into the top of the pillar G, and allows the cover I to be moved to the right or left to open either slot, as desired. Between the pieces H and I is inserted a ring, J, of brass or other material, to reduce the friction in turning.

The cover I is made, preferably, of the form shown in Figs. 3, 4, 5, and 6, so as to be strong enough to bridge the space between E and F, and yet offer no appreciable obstruction to vehicles crossing it. The cover I at the end, at C C, is supported by the roller K, which runs on a track placed beneath the surface of the street and at right angles to the slot. Slight depressions are formed in this track at M' and

M², so as to insure the cover remaining in its proper position to leave the slot E or F open, as the case may be, while the grip passes through. The roller K is made of such diameter that when it rests in the central position across the slot, as shown in Fig. 5, the cover I will be in contact with the solid ground-surface on both sides of the slot; but when the cover is drawn to one side the slight rise of the roller onto the track will lift the weight almost or entirely off the ground, so that it will be carried by the roller K and the ring J in turning.

By withdrawing the screw L the cover I can be removed, and all the apparatus is then accessible for cleaning or repair.

When both the main and branch tracks are used frequently, the normal position of the cover I should be the one shown by the dotted lines in Figs. 1 and 2. This is the central of the three positions in which this cover can be placed. Fig. 1 shows the tube for the main track as open, and the cover is moved so as to close the switch or branch tube. In this position the cover needs no attention, except when the switch or branch is to be used. Fig. 2 shows the tube for the main track as closed and the tube for the branch track or switch as open.

It may be preferable in come cases to dispense with the roller K to make the cover shorter than here shown, and when either track is to be open to turn the cover through a semicircle, so that it rests on the piece H. The advantage of this would be that both tracks would be open at once to the grip, and no accident could arise from the wrong slot having been opened by accident. The disadvantage would be the additional trouble in moving the cover I, and in this case it would be well to connect it by a sleeve on the pillar G to a connecting-rod passing below the travel of the grip to a station outside the track, where it could be operated by a switch-lever in the same way as the signals and switches of railroads are now operated.

In order that the cover I may be plainly visible to the driver of an approaching car, that he may see whether the tube for his track is clear, the cover should be painted of a color easily distinguishable from the rest of the road, and at night a lamp should be so placed as to cast a bright light on that part of the track. The cover standing somewhat above the rest of the road, such color will not be obliterated by dirt as soon at it otherwise would, and can be easily renewed. A cover of the section shown in Fig. 3 may also be used at any other point on the road where it may be desired to cover up the slot for any reason without raising an obstruction to the passage of vehicles along or across it.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a traction-rope railway with an underground tube, the combination of the piece H, the pillar G, and the cover I, substantially as set forth.

2. In a traction-rope railway with an underground tube, the combination, with the piece H and the pillar G, of the slotted screw L and a cover for the aperture between E and F, substantially as set forth.

3. The combination, for use in a traction-rope railway, of an underground tube or tunnel for the traction-rope, the cover I, and piece H, secured to a pillar, G, and upheld at the other end by a roller, K, which runs on a track, L′, as set forth.

4. For use in connection with a traction-rope railway, the track L′, having depressions M′ and M², in combination with roller K and cover I, held in place by screw L, as set forth.

5. The combination, with a tube for a traction-rope railway, of the piece H and pillar G, ring J, cover I, screw L, roller K, and track L′, provided with depressions M′ and M², substantially as and for the purposes set forth.

6. In combination with the cover I, turning on a pivot, the roller K, and track L′, substantially as and for the purposes set forth.

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