(No Model.) 2 Sheets—Sheet 1.

W. S. HERRINGTON.

RAILWAY.

No. 456,818. Patented July 28, 1891.

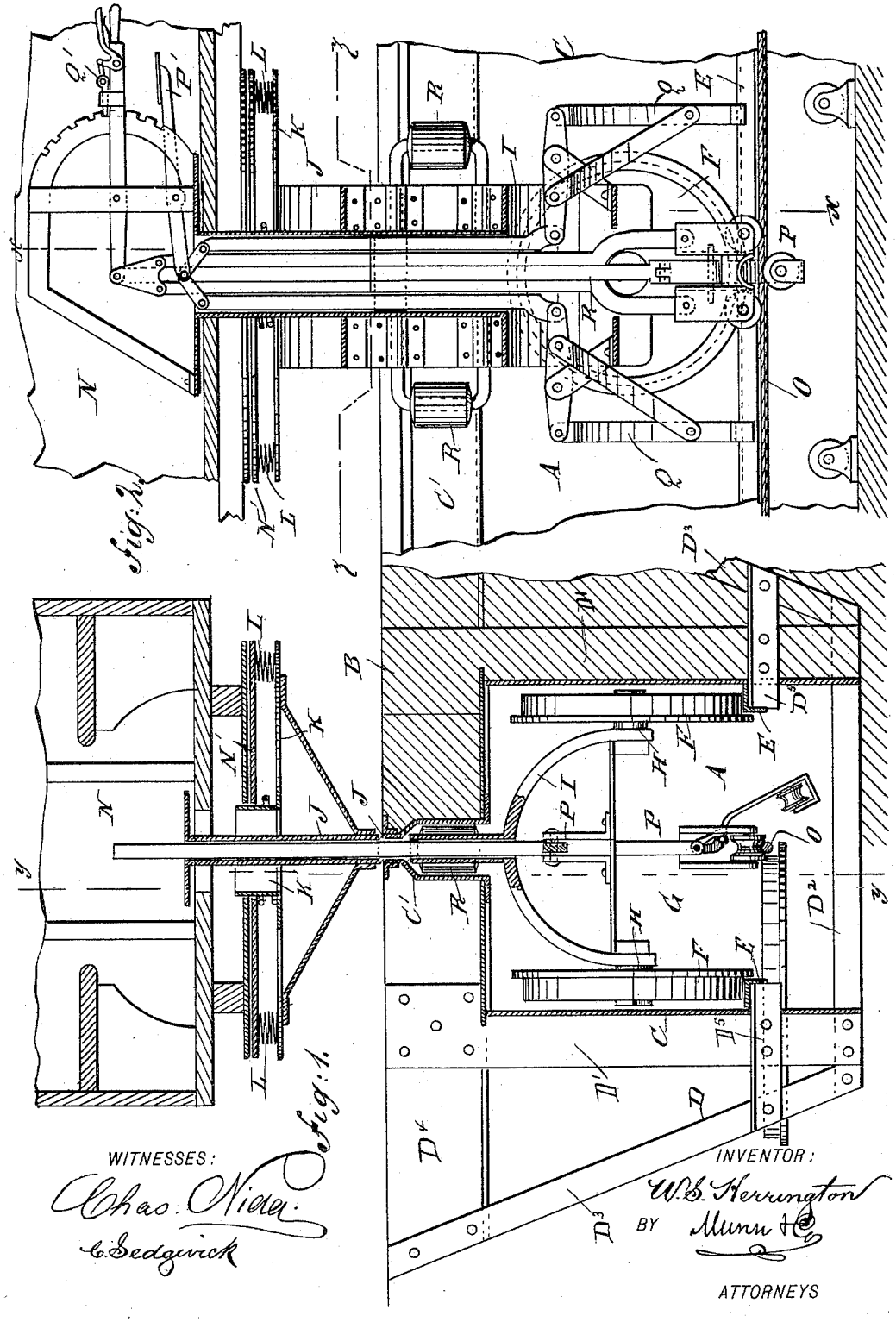


Fig. 2.

Fig. 1.

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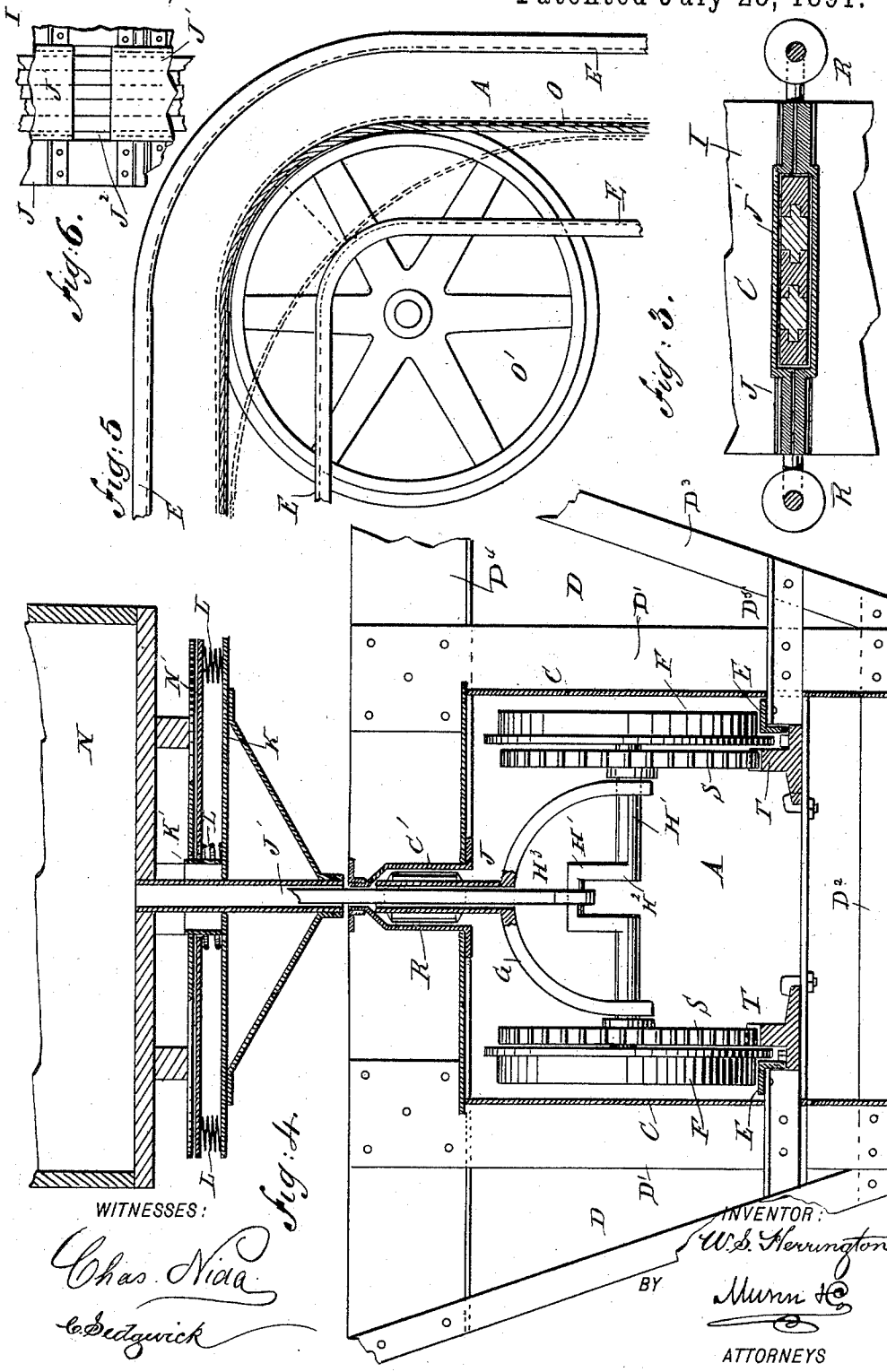


Fig. 6.

Fig. 5

Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM S. HERRINGTON, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO HIMSELF AND FRANK E. JONES AND JOHN D. DE FRIES, OF SAME PLACE.

RAILWAY.

SPECIFICATION forming part of Letters Patent No. 456,818, dated July 28, 1891.

Application filed April 4, 1890. Serial No. 346,568. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. HERRINGTON, of San Francisco, in the county of San Francisco and State of California, have invented a new and Improved Railway, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved railway which is simple and durable in construction, especially designed for use in cities, and arranged in such a manner that the track of the vehicle is under ground while the body of the vehicle is above ground.

The invention consists in certain parts and details and combinations of the same, as will be described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a transverse section of the improvement on the line $x\ x$ of Fig. 2 and as applied to a cable railway. Fig. 2 is a sectional side elevation of the same on the line $y\ y$ of Fig. 1. Fig. 3 is a sectional plan view of the frame on the line $z\ z$ of Fig. 2. Fig. 4 is a transverse section of the improvement as applied to a direct propelling system. Fig. 5 is a plan view of a curved track, and Fig. 6 is a side elevation of part of the truck-frame.

The improved railway is provided with a tunnel A, formed a suitable distance below the surface of the ground B and lined with a suitable casing C, supported on a frame D of any approved construction and held in the ground. The frame D is preferably formed by sets of oppositely-arranged uprights D′, connected with each other by bottom plates or bases D^2, from which extend upward and sidewise the braces D^3, connected with the ties D^4, also secured to the upper ends of the uprights D′ and carrying the top of the casing C. On the uprights and braces are also secured the short ties D^5, supporting on their inner projecting ends the track-rails E, on which are mounted to travel the car-wheels F of the truck G, which when propelled by a cable, as shown in Figs. 1, 2, and 5, has its axles H for the said wheels F stationary, the wheels revolving loosely on the axles. The axles H support a frame I, from which extends a narrow upwardly-projecting extension J, which passes through the slot C′, formed in the top of the casing C and leading to the surface of the ground B. On the upper outer end of the extension J is rigidly supported by suitable braces a disk K, provided with a hub K′, through which passes the extension J, and which forms the pivot or king-bolt on which the car-body is swiveled. The car-body is provided on its under side with a fixed disk N^2, mounted to turn on the hub K′ and resting on top of a disk N′, supported on series of springs L, held on top of the extension-disk K. By this arrangement the car-body is free to turn on the hub K′ and at the same time rides easily on the springs L.

The car-body N is usually supported on two or more wheeled trucks G, so that the car can turn around a very short curve, as shown in Fig. 5, on account of the car-body N turning on the central projection or king-bolt K, forming part of the extension J of the truck G. The slot C′ is naturally widened at curves, as indicated in dotted lines in Fig. 5, to permit the extension J to pass through the curved slot without binding. In order to prevent accidents to persons, animals, vehicles, &c., crossing the widened slot at curves, the said slot may be covered by suitable means, such as self opening and closing lids.

When the car is to be propelled by a cable O, the latter is mounted in the channel A in the usual manner, and is adapted to be engaged by a grip P of any approved construction operated from within the car-body N by the usual lever P′. A brake mechanism Q of any approved construction is also arranged on the truck G and is actuated from the lever Q′, arranged within the car-body N, and similar to and in the neighborhood of the lever P′. The brake mechanism Q, as shown in Fig. 2, is preferably provided with brake-shoes hung on arms actuated from the lever Q′. The brake-shoes are adapted to engage one or both of the track-rails E, as illustrated in said figure, so as to brake the car. The said levers P′ and Q′ have the usual connections, which extend through the hollow part J′ of the extension J of the truck G, in order

to connect the levers with the respective braking and gripping mechanisms. The hollow part J′ of the extension J is cut away at the sides at J^2 in the slot C′, as plainly shown in Figs. 4 and 6, so that the slot need not be wider than the thickness of connecting-levers of the grip and brake.

When the car is to be propelled by a power located within the car-body N, such as an engine, for instance, then the truck-wheels F are held loosely on an axle H′, mounted to revolve in suitable bearings in the truck-frame G, the said axle H′ being provided in its middle with a crank-arm H^2, connected with a pitman H^3, extending upward through the hollow extension J′, and connected at its upper end with the usual mechanism of the motor of the car. On the axle H′ are also secured, next to the car-wheels F, gear-wheels S, which mesh into racks T, arranged within the tunnel A alongside the rails E and supported, like the latter, from the frame-work D. Other suitable means may be employed to propel the car, the main object of the device being to locate the car-wheels under the ground.

In order to prevent any rubbing of the extension J on the sides of the slot C′, the said extension is provided at its front and rear edges with friction-rollers R, mounted to turn in suitable brackets projecting from the said extension J, said friction-rollers traveling on the sides of the slot C′.

It will be seen that by this railway system the wheels are located under ground, so that the street through which the railway passes has its surface preserved in an unbroken condition, not being obstructed by the dangerous and unsightly rails now used. It will further be seen that as the wheels of the trucks are located under ground the danger to human life is greatly reduced, and a party falling under a car is not liable to be hurt, as no wheels are above ground. It will further be understood that the track is never obstructed by snow, ice, &c., thus causing an interruption of travel. As the car-bodies can swing on the trucks that support them and as the cars can travel over very sharp turn-outs, switches, curves, &c., can be made in a short space.

I am aware that underground tracks with trucks traveling on the same and supporting a car above ground is not broadly new, and I do not broadly claim the same; but

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

1. In a railway, a tunnel comprising a frame located below the surface of the ground and constructed by uprights, bases, ties, and braces in the manner specified, a casing forming a lining for the said frame and provided at its top with a continuous slot widened at curves, and two parallel rails secured to short ties on the said frame and within the said casing, substantially as shown and described.

2. In a railway, an underground tunnel comprising a frame located below the surface of the ground and constructed by uprights, bases, ties, and braces in the manner specified, a casing forming a lining for the said frame and provided at its top with a continuous slot widened at curves, and two parallel rails secured to short ties on the said frame and within the said casing, in combination with two wheeled trucks adapted to travel on the said tracks and each provided with a hollow extension passing upward through the slot in the said casing, a disk supported on the said extension and formed with hub, and a car-body supported on the said disk and swiveled on the said hub, which forms its king-bolt, substantially as described.

3. In a railway, an underground tunnel comprising a frame located below the surface of the ground and constructed by uprights, bases, ties, and braces in the manner specified, a casing forming a lining for the said frame and provided at its top with a continuous slot widened at curves, and two parallel rails secured to short toes on the said frame and within the said casing, in combination with two wheeled trucks adapted to travel on the said tracks and each provided with a hollow extension passing upward through the slot in the said casing, a disk supported on the said extension and formed with hub, and a car-body supported on the said disk and swiveled on the said hub, which forms its king-bolt, and springs interposed between the said disk and the said car-body, substantially as shown and described.

4. In a railway, the combination, with an underground tunnel, as described, and being formed with a continuous slot in its top, of two parallel rails forming a track in the said tunnel, two wheeled trucks adapted to travel on the said track and provided with an upward hollow extension passing through the slot in the said tunnel, a disk supported on the outer end of the said extension and provided with a hub forming the king-bolt, and a car supported on the disk of the said wheeled trucks and swiveled on the said hubs, substantially as shown and described.

5. In a railway, the combination, with an underground tunnel, as described, and being formed with a continuous slot in its top, of two parallel rails forming a track in the said tunnel, two wheeled trucks adapted to travel on the said track and provided with an upward hollow extension passing through the slot in the said tunnel, a disk supported on the outer end of the said extension and provided with a hub forming the king-bolt, a car supported on the disk of the said wheeled trucks and swiveled on the said hubs, and springs interposed between the said disks and car-body, substantially as described.

6. In a railway, the combination, with a tunnel formed with a slot on top, of two parallel rails laid in the said tunnel and forming the track, wheels mounted to travel on the said track, a crank-shaft carrying the said wheels, a frame supported from the said axle, and a

hollow extension formed on the said frame extending through the slot in the said tunnel to support at its outer end the car-body containing driving mechanism adapted to connect with the crank of the said axle, substantially as shown and described.

7. In a railway, the combination, with a tunnel formed with a slot on top, of two parallel rails laid in the said tunnel and forming the track, wheels mounted to travel on the said track, a crank-shaft carrying the said wheels, a frame supported from the said axle, a hollow extension formed on the said frame and extending through the slot in the said tunnel, a car-body supported and swiveled on the upper end of the said extension, and a pitman connected with the car-motor and passing through the said hollow extension to connect with the crank of the said axle, substantially as shown and described.

8. In a railway, the combination, with a tunnel formed with a slot on top, of two parallel rails laid in the said tunnel and forming the track, wheels mounted to travel on the said track, a crank-shaft carrying the said wheels, a frame supported from the said axle, a hollow extension formed on the said frame and extending through the slot in the said tunnel, a car-body supported and swiveled on the upper end of the said extension, and a pitman connected with the car-motor and passing through the said hollow extension to connect with the crank of the said axle, gear-wheels secured on the said axle, and racks laid in the said tunnel parallel to the said rails and in which mesh the said gear-wheels, substantially as shown and described.

9. In a railway, the combination, with an underground tunnel, as described, and formed with a continuous slot in its top, of two parallel rails forming a track in the said tunnel, a wheeled truck adapted to travel on the said track and provided with a hollow extension passing upward through the slot in the said tunnel, a disk supported on the outer end of the said extension and provided with a hub, a car-body supported on the said extension and swiveled on the said hub, and a brake mechanism supported on the said truck and passing through the said hollow extension to the car, substantially as shown and described.

10. In a railway, the combination, with an underground tunnel, as described, and formed with a continuous slot in its top, of two parallel rails forming a track in the said tunnel, a wheeled truck adapted to travel on the said track and provided with a hollow extension passing upward through the slot in the said tunnel, a disk supported on the outer end of the said extension and provided with a hub, and two guide-wheels journaled at front and rear of the said upward extension and adapted to travel at both sides of the slot, substantially as shown and described.

WM. S. HERRINGTON.

Witnesses:
WILLIAM T. THOMSON,
FRANK. E. JONES.