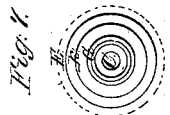
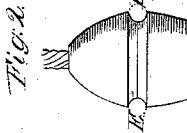
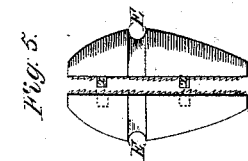
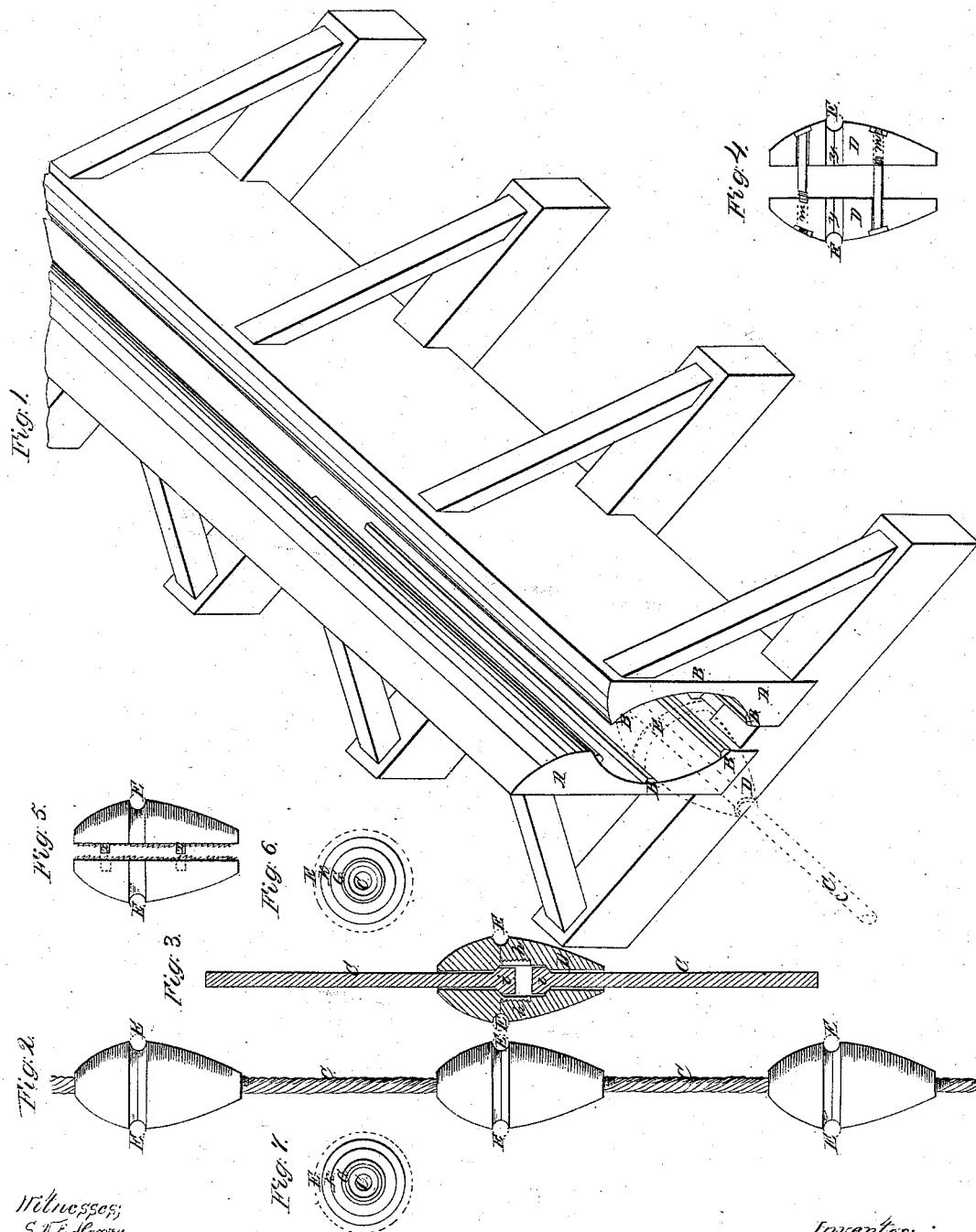


C. T. Harvey

Railroad

N^o 54,537.

Patented May 8, 1866.



Witnesses;
S & E Harvey
A D Parker

Inventor;
Charles Hancey

UNITED STATES PATENT OFFICE.

CHARLES T. HARVEY, OF TARRYTOWN, NEW YORK.

IMPROVED MODE OF PROPELLING CARS ON RAILWAYS.

Specification forming part of Letters Patent No. **54,537**, dated May 8, 1866; antedated April 6, 1866.

To all whom it may concern:

Be it known that I, CHARLES T. HARVEY, of the village of Tarrytown, county of Westchester, and State of New York, have invented a new and improved method of using chain or rope for propelling cars or other bodies upon railways, or their equivalent, when combined with stationary steam or other power.

The nature of my invention consists in using wire or other rope or chain inside of a series of concave guiding-plates, which may have also, on their interior surface, projections or "friction-slides," so called, for the purpose of reducing the surface exposed to the friction of the passing chain or rope and attachments thereto.

Also, in the peculiar construction of the chain or rope in having as attachments a series of bulbs or rounded projections made in or connected with the same at regular intervals. These bulbs, &c., are intended to receive the friction or wear from the motion communicated to the chain or rope and protect it therefrom, and they will be designated herein as "ferrules," and those which connect portions of the chain together, as hereinafter described, as "jointed ferrules."

Also, in the surrounding of these ferrules by an outer adjustable ring to receive friction on hardened surfaces, and to be designated herein as "friction-rings."

And I do hereby declare that the following is a description of the construction and operation of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a perspective view of the guide-plates and friction-slides in position and inclosing the propelling-ropes with ferrules and adjustable friction-rings attached. Fig. 2 is a perspective view of the chain or rope with several ferrules upon it in position. Fig. 3 is a transverse section of the chain or rope, exhibiting a jointed ferrule, exposing its interior construction in one convenient form. Fig. 4 is a perspective view of a ferrule, showing one mode of affixing them tightly to the chain or rope by means of screws or rivets. Fig. 5 is another or transverse view of a ferrule, showing how it can more firmly be held in place by means of spurs and an uneven interior surface, in connection with the friction-ring encircling

it. Figs. 6 and 7 are vertical sections of the ferrules, showing the circumference of the chain or rope of the ferrules, and also of the friction-rings.

In the practical application of my invention I first construct the longitudinal guide-plates A A, Fig. 1, supporting them with such framework or device as will hold them firmly in position and continuity. One side (usually the upper side) is left open for the purpose of attaching the chain or rope within to the car or moving body without by means of a clutch, grapple, or chain, or other equivalent device for purpose of connection. The reverse side will also be left open more or less to permit of the easy removal of deleterious accumulations within the guide-plates referred to.

On the interior surface of the guide-plates the projections termed "friction-slides," indicated by the letters B B B B B B in Fig. 1, whether more or less in number, may be placed either as a part of or an attachment to the guide-plates aforesaid, their use being to receive the thrust and friction of the ferrules during the passage of the chain on their rounded edges, and thus reduce the surface of the interior of the guide-plates liable to friction to the smallest practicable extent. These friction-slides may be of wood or iron or other metal.

In the chamber or concave space between the guide-plates, constructed as above, the endless or continuous chain or rope C C, in Figs. 1, 2, 3, 4, and 5 is to pass, driven by wheels attached to steam or other power. As the friction and wear of ordinary chain or rope would prevent its permanent use, especially at a high rate of speed, the bulbs or ferrules D, as shown in Figs. 1 and 2, are introduced to obviate this difficulty. They are placed at regular intervals to hold up the rope, &c., from touching the guide-plates when the rope or chain is in motion, as well as to prevent them—i. e., the rope or chain—from being thrown out from between the guide-plates, and also to enable a clutch to grasp entirely around the rope, and, by resting against the ferrule, maintain a firm hold.

The space between the guides B B, &c., and guide-plates A A, when combined on the two sides, may be more or less, so long as the openings between them are not sufficient to permit the passage of the ferrules D D from the in-

terior to the exterior of the guide-plates, but at the same time leaving them considerable freedom of space in the interior passage, enough at all times to permit of the introduction of a clutch or equivalent between the ferrules and the interior surface of the guide-plates, permitting the chain and ferrules to pass through the clutch or equivalent without disturbing or moving it while inside the guide-plates aforesaid.

In constructing the wire or other rope or chain provision is made for breakage in the rope, &c., by having a portion of the ferrules D D constructed with a screw or otherwise contrived joint near the center, as shown at letters *h h* in Fig. 3. The orifice being enlarged near the center, the ends of the rope or chain are introduced and enlarged, so as to fill the orifice, and thus become permanently secured to the two ends of the ferrule. The two ends of the ferrules being screwed or otherwise fastened together, the rope or chain is thereby connected without detriment to its intended purpose, and permits the division of the rope or chain into convenient sections when in use.

Having thus described the jointed ferrule, the peculiar features of the ordinary ferrule are to be noticed. These are intended to be adjustable in ordinary cases by being made in longitudinal equal sections, having their interior surface made rough to cling firmly to the rope, &c., and to be held in place and together by means of rivets or screws, as at M M in Fig. 4; or the ferrules may be made as a part of the chain itself.

To prevent the rapid wear of the ferrules from friction against their largest circumference, I introduce an outer shield intended to be

of hardened metal, called "friction-rings," as shown by the letter F in Fig. 1. A groove is intended to be made for them, as shown by letter E in Figs. 2, 3, 4, 5, which will hold them firmly in place when sprung into the groove on the ferrules, and by leaving about one-half of their thickness exposed beyond the outer circumference of the ferrule one or more of the friction-rings may be attached to each ferrule in the manner described, or otherwise.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The use, in connection with a railway, of one or more series of continuous guide-plates independent of but parallel to the rails, for containing and guiding a propelling rope or chain, said plates having one or more openings between or in them, permitting car connections, and also egress of injurious accumulations, substantially as and for purposes described.

2. The combination and use of interior friction slides or projections with the aforementioned guide-plates, substantially as and for purposes described.

3. The combination and use of the "ferrules," so called, whether jointed or adjustable or permanently attached to or with the wire or other rope or chain, substantially as described.

4. The combination and use of the adjustable "friction-rings," so called, with the ferrules and rope or chain aforementioned, substantially as described.

CHARLES T. HARVEY.

Witnesses:

SETH M. DUNNING,
S. V. E. HARVEY.