(No Model.)

J. B. KELLY.

PNEUMATIC RAILWAY.

No. 436,946. Patented Sept. 23, 1890.

Fig. 1,

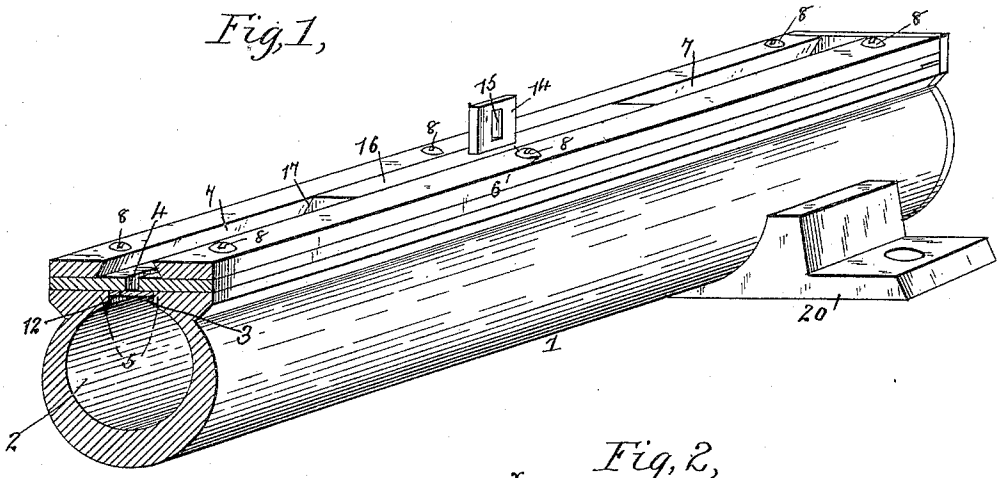


Fig. 2,

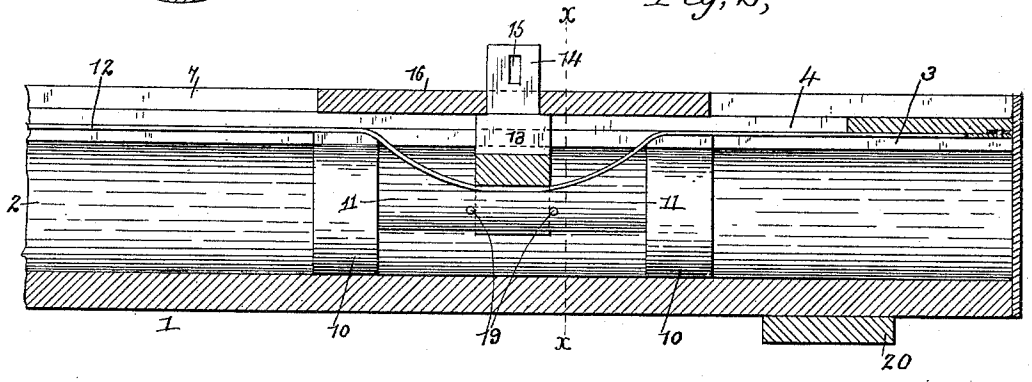


Fig. 3,

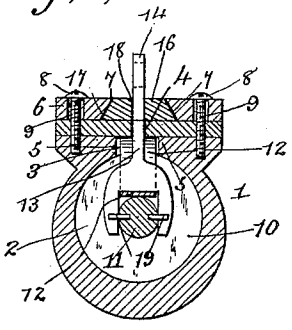
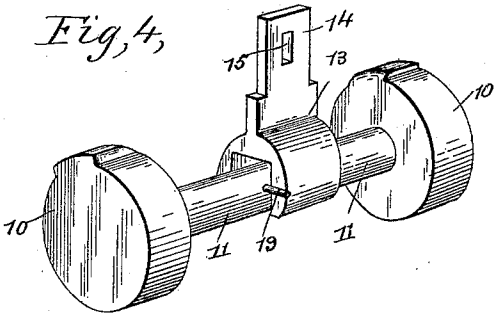


Fig. 4,



Witnesses

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PNEUMATIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 436,946, dated September 23, 1890.

Application filed May 31, 1890. Serial No. 353,741. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. KELLY, a citizen of the United States, residing at Pleasant Home, in the county of Multnomah and State of Oregon, have invented a new and useful Pneumatic Railway, of which the following is a specification.

This invention relates to pneumatic railroads; and it consists in the improved construction and arrangement of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a perspective view of a portion of the pneumatic tube, showing also the carrier. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a transverse sectional view taken on the line *x x* in Fig. 2. Fig. 4 is a perspective detail view of the piston and the carrier.

Like numerals of reference indicate like parts in all the figures.

1 designates the pneumatic tube, which has a cylindrical bore 2, at the upper edge of which is formed a recess 3, centrally in which is formed the longitudinal slot or opening 4, which extends throughout the entire length of the tube. While it is preferred that the latter should be as nearly straight as possible, it may be curved when necessity demands.

The upper side of the tube is provided on each side of the central longitudinal slot with shoulders or flanges 5 5, forming seats for a pair of cleats or guide-strips 6 6, having beveled or dovetailed inner edges 7 7. The cleats or guide-strips 6 are secured by means of screws or bolts 8, passing through transverse slots 9 in the said cleats, which latter are thereby rendered capable of being adjusted at a greater or less distance from the central slot or opening 4 in the pneumatic tube.

In the bore 2 of the tube 1 is mounted a piston, which consists of two separate heads 10 10, connected by a longitudinal rod 11 of suitable length. The piston-heads 10 are made of a size to fit closely in the bore of the tube 1, and are to be provided with suitable packing to prevent leakage of air.

The longitudinal slot 4 in the pneumatic tube is closed by means of the flexible valve-strip 12, which may be constructed of steel or other suitable material, and which is seated in the groove or recess 3 in the upper side of the bore of the tube. This longitudinal valve-strip may be suitably supported at the ends of the tube, which latter of course may be of indefinite length. At intermediate points of the tube the valve-strip does not require to be supported; nor is this indeed necessary or practical, said valve-strip being in operation forced outwardly, so as to effect an air-tight joint with the longitudinal slot 4 by the interior pressure of the air in the tube 1, which is supplied and sustained by means of a suitable forcing apparatus at one end of the line.

In order to connect the piston with the carrier traveling outside the tube, it becomes necessary to deflect the valve-strip 12 at the point where the piston is located. This I accomplish by mounting astride the piston-rod 11 a saddle 13, underneath which the valve-strip 12 is carried—that is to say, the said valve-strip passes between the saddle 13 and the piston-rod 11. The saddle 13 is provided with an arm 14, extending upwardly through the slot 4, and adapted by means of a vertical slot 15 formed in said arm for connection with the railroad-car or other apparatus which is to be moved by means of my improved pneumatic motor.

16 designates a carrier consisting of a strip having inclined sides 17 fitting between the dovetailed guide-cleats 6, which latter as wear takes place may be moved up closely against said carrier to insure a close and accurate fit. The said carrier is provided with a slot 18, whereby it is adjusted over the upwardly-extending arm 14 of the saddle of the piston-rod. This carrier is provided with bolts or suitable means for connecting the same with the railroad-car or other apparatus to be moved.

The saddle 13 is mounted astride the piston-rod 11, as already described, and it is prevented from being laterally displaced by means of transverse pins 19 or in any other suitable and convenient manner that may suggest itself.

In practice the pneumatic tube of my invention may be supported in suitable chairs, one of which is shown at 20. These chairs may be secured in any suitable manner and in any desired position, or they may be dispensed

with entirely and other means adopted for the purpose of securing or mounting the pneumatic tube in its desired position.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of my invenvention will be readily understood. Air or other fluid is forced into the tube behind the piston, which is thus forced through the said tube, carrying with it the exteriorly-arranged carrier and such car or other contrivance as may have been attached thereto.

When my improved pneumatic tube is employed as a railroad-motor, it is obvious that rails are to be arranged in the usual manner to support the rolling-stock. It will, however, be understood that my invention will be found useful for a variety of other purposes in addition to that of propelling cars. Thus, for instance, it might be used for the purpose of operating elevators and many different kinds of machinery, and I reserve the right to use my said invention to any purpose to which it may be applied without departing from the spirit of my invention.

Having thus described my invention, I claim—

1. The combination of the longitudinally-slotted pneumatic tube, the flexible interiorly-arranged valve-strip, the piston consisting of two heads connected by a longitudinal rod, the saddle arranged astride the piston-rod and having an arm extending outwardly through the slot in the tube, and the transverse pins to prevent longitudinal displacement of said saddle, the longitudinal flexible valve-strip being deflected between the saddle and the piston-rod, substantially as set forth.

2. The combination of the longitudinally-slotted pneumatic tube having flanges or shoulders formed on the opposite sides of the longitudinal slot therein, the guide-cleats mounted adjustably upon said shoulders or flanges, the longitudinal flexible valve-strip, the piston consisting of two heads connected by the longitudinal rod, the saddle mounted astride the said rod and having the outwardly-extending arm, and the carrier mounted on said arm between the guide-strips, substantially as set forth.

3. The combination of the pneumatic tube having a longitudinal slot and provided with the longitudinal groove or recess in its upper part, the flexible valve-strip seated in said groove or recess and adapted to cover the said slot, the piston composed of two heads connected by a longitudinal rod, the saddle mounted astride the piston-rod and having an arm extending outwardly through the slot in the tube, the guide-cleats, and the carrier, all arranged and operating substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JOHN B. KELLY.

Witnesses:
WILLIAM J. HUMMEL,
SAMUEL BULLOCK.