

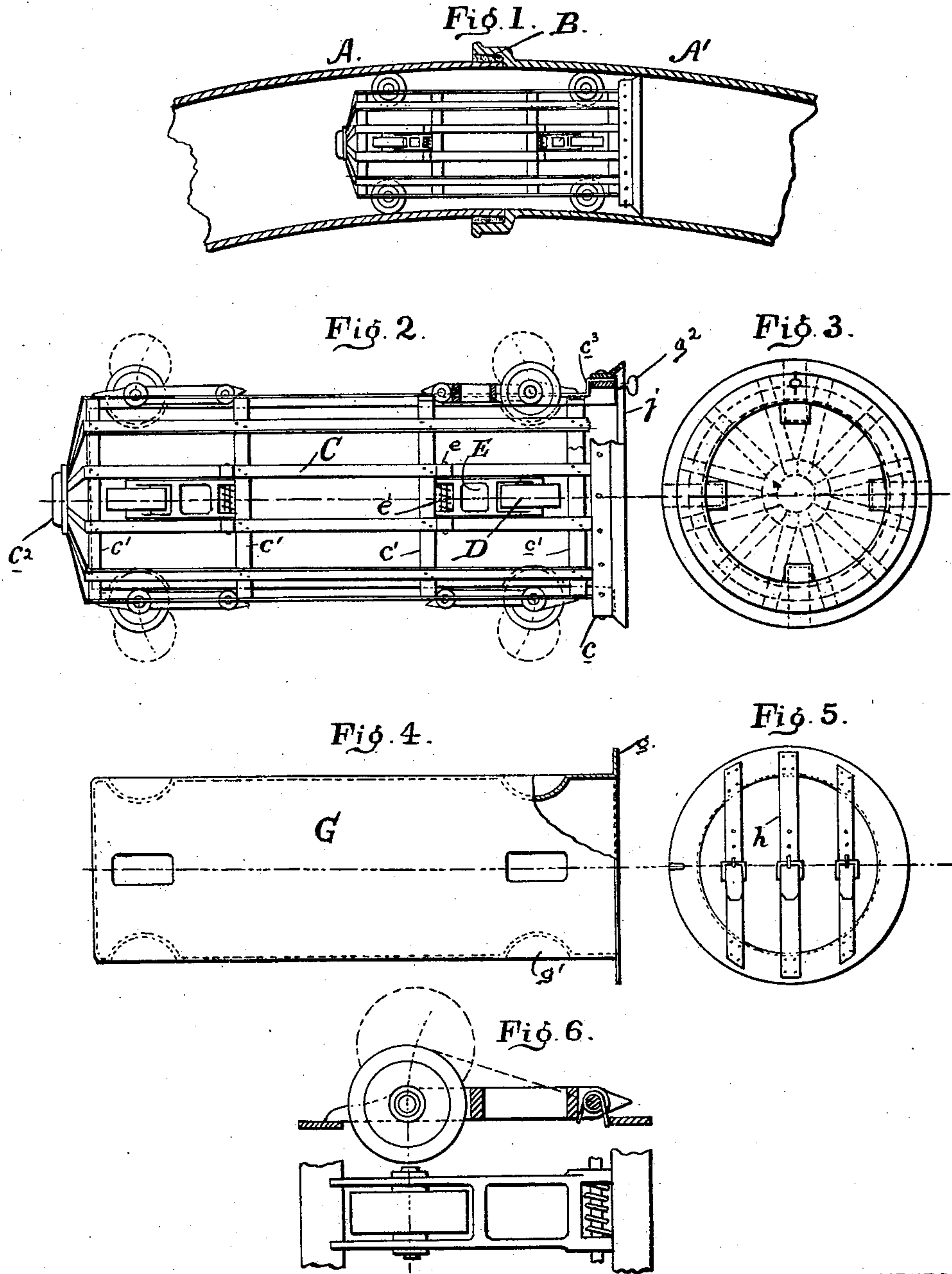
No. 685,202.

Patented Oct. 22, 1901.

J. H. DALE.
PNEUMATIC TUBE SYSTEM.

(Application filed Dec. 27, 1900.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN H. DALE, OF NEWARK, NEW JERSEY.

PNEUMATIC-TUBE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 685,202, dated October 22, 1901.

Application filed December 27, 1900. Serial No. 41,278. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. DALE, a citizen of the United States, residing at Newark, county of Hudson, State of New Jersey, have
5 invented certain new and useful Improvements in Pneumatic-Tube Systems, of which the following is a specification.

The primary object of my invention is to make ordinary cast or wrought metal pipes
10 without boring or other treatment available in the construction of pneumatic ducts.

To this end the invention comprises certain improvements in the pneumatically-driven carriers adapted to traverse such ducts.

15 In the accompanying drawings, Figure 1 is a longitudinal section through the curved part of a duct at the point where a joint occurs therein, showing also a carrier within the duct; Fig. 2, a side elevation, partly in
20 section, on an enlarged scale, of the carrier; Fig. 3, an end view thereof; Fig. 4, a view of the casing that fits within the carrier-frame; Fig. 5, an end view thereof. Fig. 6 shows on still larger scale a plan or section illus-
25 trating the mounting upon the carrier-frame of rollers upon which it runs.

A A' are sections of common cast or wrought metal tubing, and B the ordinary packed bell-mouthed joint between the two sections. The
30 carrier-frame is composed of a ring *c* at its rear or open end, several other similar rings *c'*, separated by suitable intervals and of somewhat less diameter than the ring *c*, a center plate *c²* at the front or leading end of the carrier of considerably less diameter than the
35 rings *c'*, and metal straps C, which radiate from said plate then embrace the outer faces of the ring *c'*, to which they are riveted and which at their ends are bent, as shown at *c³*,
40 to embrace the larger ring *c*, to which they are riveted. This structure forms a light but strong cage or frame. At four points equidistant on the circumference of the cage are mounted spring-supported carrying wheels
45 or rollers D. Each such roller is mounted in bearings in the end of a frame E, occupying the space between adjacent straps C and having a pivot-shaft *e* turning in bearings on the straps. A coiled spring *e'* is applied around
50 this pivot-shaft with one end bearing against a ring *c'* and the other against the roller-frame, the reaction of the spring being in such direc-

tion as to tend to throw the roller up and away from the cage. Four such rollers, mounted as described or in any equivalent way, are
55 arranged adjacent to each end of the frame. Around the ring *c* is applied a flaring piston-ring F, substantially fitting the bore of the tube or duct. The casing or receptacle to be placed within the carrier is shown in Fig. 4. 60
It is a hollow body G, except that at its rear or open end it has a flange *g*, and at four equidistant points adjacent to each end it has depressions *g'* in its circumference to receive the rolls D. The casing is pushed into the
65 frame with the depressions *g'* in line with the respective rollers. The flange *g* of the casing is then secured to the ring *c* by a thumb-screw *g²*, passing through the flange and entering a tapped aperture in the edge of the ring. The
70 casing prior to its introduction into the cage may have been filled with packages to be transported and which may be held in place therein by the straps *h*, extending across the open mouth of the casing, or the casing may
75 be packed while in position within the frame. The springs applied to the roller-frames tend normally to throw the rollers outwardly into the positions indicated by the dotted lines in
80 Figs. 2 and 6. When the frame is pushed into the pneumatic duct, the rollers are forced inwardly to the positions approximately shown by the full lines in Figs. 1 and 2. The rollers
85 being spring-supported accommodate themselves to the interior of the duct and conform to any roughness or unevenness therein, while they are at all times urged outwardly against the interior of the ducts by their springs.
Furthermore, since the rollers are arranged upon the circumference of the frame adjacent
90 to its ends, but projecting beyond the periphery of the casing, the frame or carrier is capable of traversing around a relatively sharp curve, the radial distance between the periphery of the carrier and a line connecting
95 the outer edges of parallel rollers being such as to permit the passage of the carrier around the curve. This is a distinguishing feature of my invention.

It is obvious that the carrier-frame might
100 be differently constructed and that it might be packed with merchandise or packages, the casing shown as removable contained within it being dispensed with. I prefer, however,

to use such casings, as they may be packed at any desired points and delivered to any station in the system. I also prefer a skeleton construction of frame, because sufficient strength and great lightness may be obtained thereby. It is also obvious that the projecting yielding carrying-rollers might be mounted in different ways without departing from the spirit of the invention.

I employ at each end of the carrier multiple rollers—*i. e.*, three or more, and preferably at least four—and each roller is spring-supported and projects a substantial distance from the periphery of the carrier. These rollers are capable of running upon any part of the interior walls of a duct, and therefore the carrier may be entered into the duct in any circumferential relation thereto. In this respect the apparatus is materially distinguished from carriers having rolls or wheels that run on tracks or in grooves specially disposed or formed within the duct. By placing the rollers inside the planes of the heads or ends of the carrier ready access to the interior is obtained and the length of the carrier as a whole is reduced to a minimum and it is capable of passing around shorter curves than can a carrier having wheels or rolls mounted in supports projecting longitudinally from its ends.

I claim as my invention—

1. A carrier for a pneumatic system provided adjacent its ends with yielding rollers located inside the planes of the front and rear heads or ends of the carrier and projecting a substantial distance from the periphery of the carrier for the purpose set forth.

2. A carrier for a pneumatic system provided adjacent each end with multiple rollers, located inside the planes of the front and rear heads or ends of the carrier and each of which is spring-supported and yielding and adapted to run on any part of the interior walls of the duct, the rollers at each end projecting a substantial distance from the periphery of the carrier for the purpose set forth.

3. A carrier for a pneumatic system having adjacent its ends rollers mounted in frames pivoted on the carrier and provided with springs for normally urging the rollers outwardly, the rollers projecting a substantial distance from the periphery of the carrier for the purpose set forth.

4. A carrier for a pneumatic system comprising a frame, spring-supported rollers mounted thereon adjacent its ends and projecting a substantial distance beyond its periphery, and a casing or package-holder frame adapted to fit within the carrier-frame.

5. A carrier for a pneumatic system comprising a skeleton casing, yielding rollers mounted adjacent its end and projecting a substantial distance beyond its periphery for the purpose set forth, a casing or package-holder adapted to fit within the carrier-frame and having at its outer face depressions for the accommodation of the rollers.

In testimony whereof I have hereunto subscribed my name.

JOHN H. DALE.

Witnesses:

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