R. G. COLLINS, JR.

PNEUMATIC DESPATCH TUBE AND CARRIER.

APPLICATION FILED APR. 15, 1914.

1,148,956.

Patented Aug. 3, 1915.

3 SHEETS—SHEET 1.

Fig 1

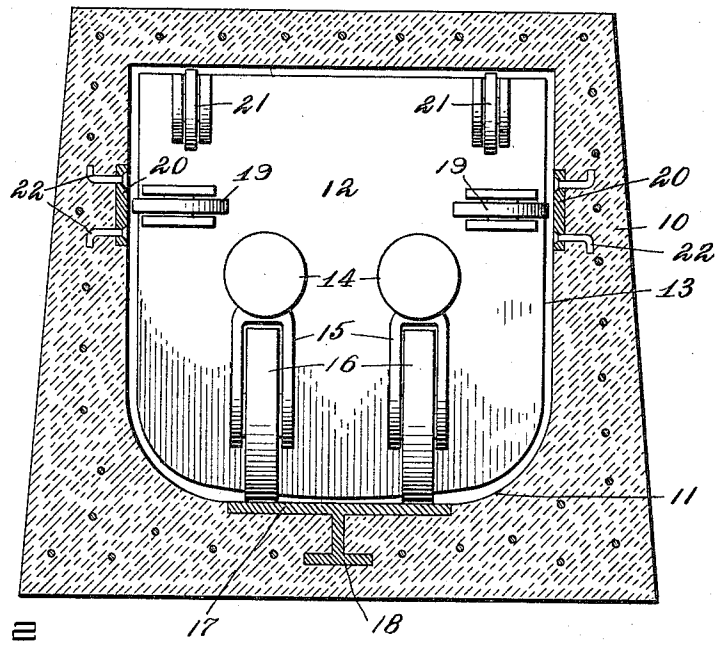
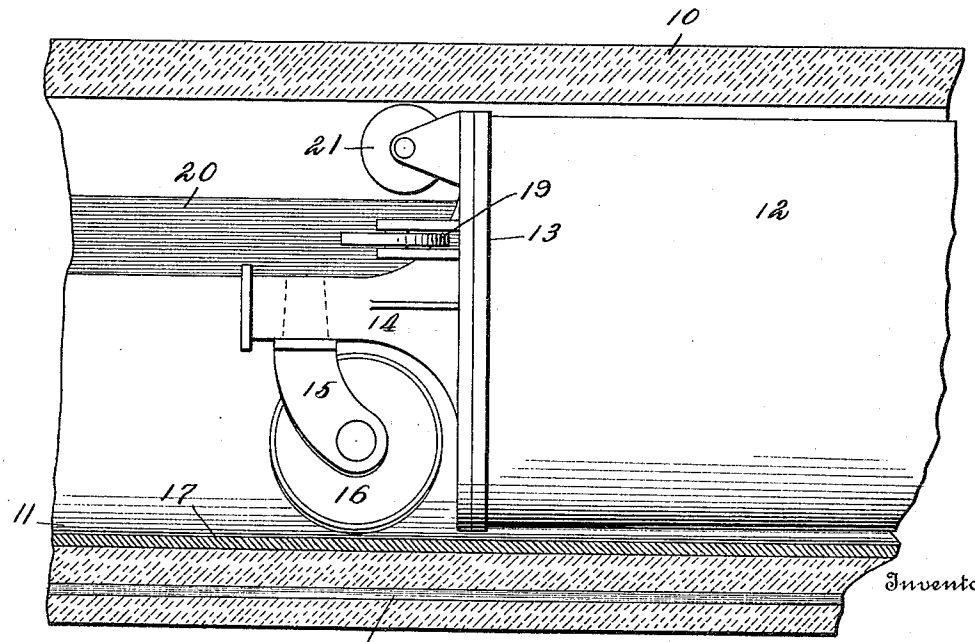


Fig 2



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3 SHEETS—SHEET 2.

Fig 3

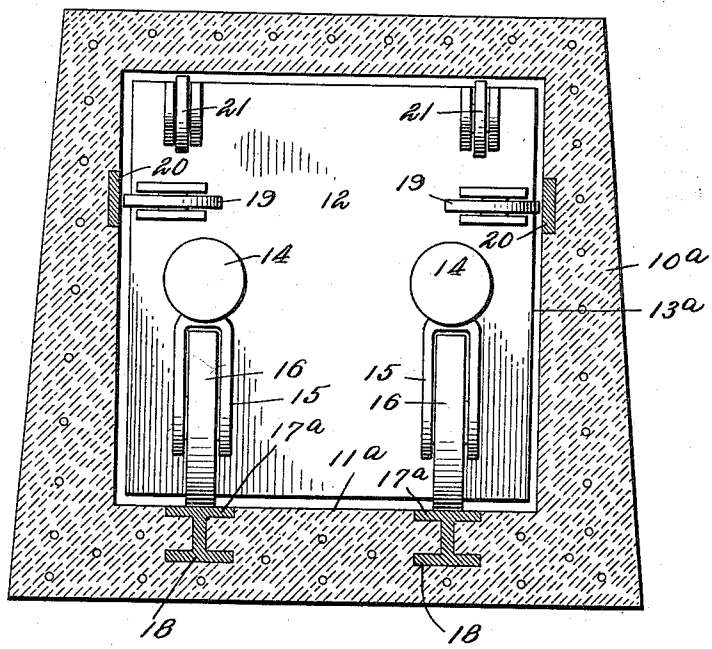
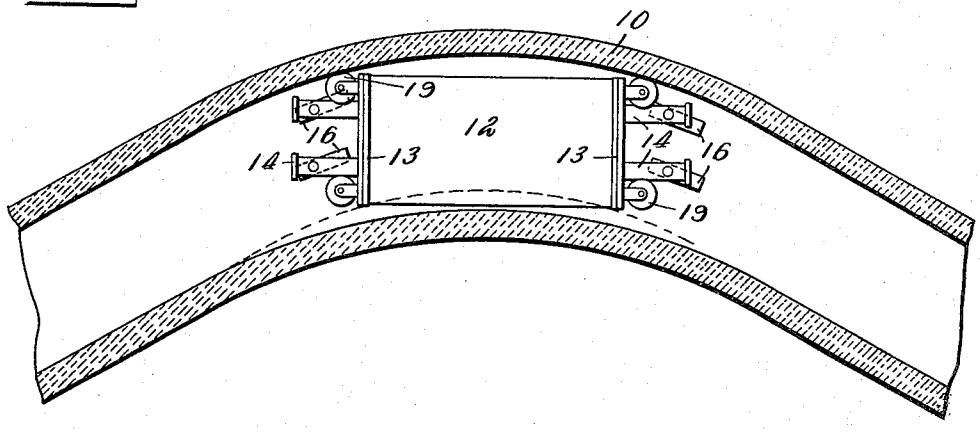


Fig 7



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3 SHEETS—SHEET 3.

Fig 4

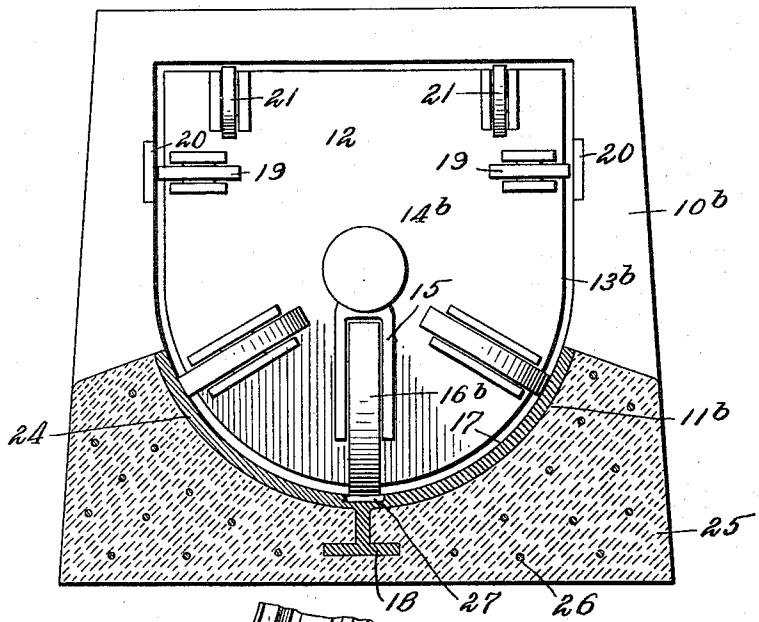


Fig 6

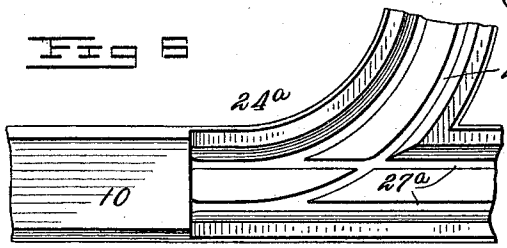


Fig 5

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UNITED STATES PATENT OFFICE.

RODERICK G. COLLINS, JR., OF NEW YORK, N. Y.

PNEUMATIC-DESPATCH TUBE AND CARRIER.

1,148,956. Specification of Letters Patent. Patented Aug. 3, 1915.

Application filed April 15, 1914. Serial No. 831,962.

To all whom it may concern:

Be it known that I, RODERICK G. COLLINS, Jr., a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Pneumatic-Despatch Tubes and Carriers, of which the following is a specification.

The present invention relates to pneumatic despatch apparatus, more particularly to an improved pneumatic tube and carrier therefor, and has for its object to provide a tube which may be made of cementitious material, which may be cheaply laid, which may be provided with wear plates to take up the wear and protect the tube at points where the carrier engages the tube, wherein the use of rails and their accompanying disadvantages are entirely done away with, which maintains the carrier in upright position at all times, and wherein the carrier is permitted a free lateral movement in the tube to prevent the binding of the carrier therein and to prevent undue friction between the carrier and the tube; to provide a carrier having at its opposite ends one or more supporting wheels mounted in the manner of caster wheels whereby a relatively heavy carrier may travel freely through curves in the tube, and whereby to admit the conveying of the carrier from the tube on to and about a flat platform, or the like, to any desired point for the purpose of storing, filling or emptying the carrier; to provide a carrier and tube of such shape in cross-section as to economize in space and admit of the utilization of practically the entire cross-sectional area of the tube for carrying the load; and to provide the tube at terminal stations with a guide or trough having side branches particularly for use with rounded bottom carriers, the guide or trough having one or more grooves in the tread portion thereof to receive the supporting caster wheels of the carrier and guide the carrier into any desired one of the various branches, and further to provide certain improvements in the prior art, relating particularly to the form of apparatus shown in my co-pending application, Serial No. 822,507 filed March 4, 1914.

The above mentioned and other objects and advantages of this invention will be more clearly brought out in the following detail description of the present embodiment of the invention, the same being shown in the accompanying drawings in which,—

Figure 1 is a transverse section through a despatch tube embodying the features of this invention, and showing in end elevation the improved carrier in the tube. Fig. 2 is a longitudinal central section taken vertically through the tube of Fig. 1 showing in side elevation one end of the carrier. Fig. 3 is a view similar to Fig. 1 showing a slightly modified construction. Fig. 4 is a like view showing a further modified construction of the tube and carrier. Fig. 5 is a top plan view of a terminal leading from the end of the despatch tube for use particularly with the carrier shown in Fig. 4. Fig. 6 is a similar view of the terminal adapted for use with the carriers shown in Figs. 1 and 3. Fig. 7 is a horizontal sectional view through a curve of the tube, showing the position of the supporting caster wheels and the carrier.

Referring to these drawings wherein like parts are designated by similar characters of reference throughout the several views, and particularly to Figs. 1 and 2, 10 designates the pneumatic despatch tube shown in the present instance as being of substantially rectangular cross-section and having a slightly rounded bottom 11, the middle or tread portion of which is substantially flat. A carrier 12 is fitted in the tube 10 conforming substantially in cross-section to the shape of the tube, and is provided at its opposite ends with heads 13.

Projecting outwardly from each head 13 are arms 14, preferably two in number. Each arm 14 has swiveled in its outer end and depending therefrom, a caster frame 15 in which is mounted a carrier supporting wheel 16, the rim of which projects slightly below the peripheral edge of the head 13 for contact with the tread portion of the bottom 11 of the tube. As shown in Figs. 1 and 2 of the drawings, a pair of caster wheels 16 is provided upon the head 13 of the carrier, the wheels being spaced apart upon the head sufficiently to maintain the carrier in upright position and engaging the bottom 11 at transversely spaced apart points. For the purpose of preventing undue wear of the wheels 16 upon the bottom 11, and of preventing the formation of grooves in the bottom which would act as tracks and confine the wheels from free lateral play, the tread

portion of the bottom 11 is provided with one or more wear plates 17 which lie substantially flush with the surface of the bottom 11 and are suitably secured in place by anchoring elements 18. The wear or tread plates 17 may be made integral as one relatively broad tread plate, shown in Figs. 1 and 2, may be made in separate strips or parts as shown in Fig. 3, or may be given any other adaptable shape provided that they do not act as rails to confine the supporting wheels 16 from free lateral movement.

It is readily seen that with a pneumatic despatch tube of this general construction a carrier as herein described may be used, possessing the advantages above enumerated, and moreover, the carrier having spaced apart supporting caster wheels at its opposite ends may be delivered from the tube and on to a flat terminal platform, and may then be rolled about to any desired position for loading and discharging the carrier. As the caster wheels 16 are swivelly mounted upon the ends of the carrier, the carrier may be guided about upon the floor, a flat surface, or a platform at the terminal station, to any desired place out of the way, thus overcoming the disadvantage heretofore had in devices of this nature wherein it has been found necessary to quickly unload and load the carrier to prevent congestion in the tube and at the terminal station, and also overcome the necessity of providing terminal stations with complicated arrangements of side tracks.

As the carrier is permitted a free lateral movement upon the bottom 11, the heads 13 thereof are provided with a suitable number of buffer wheels 19 arranged preferably as shown in Figs. 1 and 2, at the opposite sides of the head 13, and projecting slightly beyond the peripheral edge of the head for contact with the walls of the tube 10 to reduce the frictional contact between the carrier and the tube, and also for the purpose of guiding the carrier in the tube. The tube 10 may be provided with wear plates 20 in the opposite sides thereof directly opposite the buffer wheels 19 to protect the tube 10 and prevent undue wear upon the sides thereof. Each head 13 is further provided with a pair of vertically disposed buffer wheels 21 mounted at the top of the head and projecting slightly above the peripheral edge of the head for contact with the top of the tube to reduce frictional contact between the tube and the carrier, particularly where the carrier tends to engage the top of the tube as when passing through vertical curves. The wear plates 20 are anchored in the walls of the tube 10 in any suitable manner, as by L-shape bolts 22.

In Fig. 3 of the drawings the tube 10^a is shown as having a flat bottom 11^a, the head 13^a of the carrier conforming in shape to the shape of the tube 10^a. With the flat bottom as shown in Fig. 3, the supporting caster wheels 16 may be spaced a greater distance apart than in the structure shown in Figs. 1 and 2, and the bottom 11^a is provided with separate tread plates 17^a, one for each supporting wheel 16. It is of course understood that the one-piece tread plate 17 shown in Fig. 1 may be advantageously used in the structure shown in Fig. 3. In other respects the structure of Fig. 3 is similar to that shown in Figs. 1 and 2.

In Fig. 4 of the drawing the tube 10^b is disclosed as having a rounded bottom 11^b and having in its tread portion a wear or tread plate conforming to the shape of the rounded bottom and supporting a single caster wheel 16^b located centrally upon the head 13^b of the carrier. In this structure the head 13^b is provided with but one arm 14^b, the same being located centrally of the head for supporting the single caster wheel. Lower buffer wheels 23 are mounted on the head 13^b radially to the arm 14^b and at the opposite sides of the caster wheels 16^b for engagement with the rounded bottom to steady the carrier in its passage through the tube. The tube may be provided at its terminal stations with terminals in the form of concave tracks or troughs which, as shown in Fig. 4, may comprise a continuation of the curved wear plate, as indicated at 24. The terminal 24 is supported in any suitable manner, as by a cementitious base 25, the terminal 24 having suitable anchoring elements 26 embedded in the base portion to securely hold the terminals in place. The bottom of the terminal 24 is provided with a longitudinal groove 27 constituting a trackway adapted to receive the rim of the caster wheel 16^b to maintain the carrier in upright position after leaving the tube 10^b, and also for the purpose of guiding the carrier into various branches or side tracks 28, as shown in Fig. 5. When the carrier leaves the tube it may be propelled in any suitable manner to the desired branch 28, when the operator may turn the caster wheel 26 toward the branch or may swing the forward end of the carrier toward the branch so as to direct the forward caster wheel into the groove 27 leading to the branch. In this manner it is only necessary to start the carrier in the direction of the branch when the caster wheel, moving in the groove 27, guides the carrier into the branch. This construction of terminal may also be employed in connection with the carriers shown in Figs. 1 and 3 by simply conforming the terminal 24^a as shown in Fig. 6 to the configuration of the bottom of the carrier, and providing in the bottom of the terminal two grooves 27^a, one for each of the carrier wheels 16. It is of course understood that

where the carrier wheels 16 are disposed in pairs, and their rims project below the extreme bottom of the carrier, the carrier may be withdrawn from the tube on to a flat surface of any kind and be then propelled about to the desired place for loading, unloading, or for storing the carrier out of the way.

A very important feature of providing the carriers with caster wheels at their opposite ends is to admit the carrier passing through curves in the tube without undue frictional contact and the dragging of the carrier wheels.

As shown in Fig. 7 of the drawings, wherein the curve in the tube is widened gradually from one end to the apex of the tube, and is then gradually decreased in width to the opposite end of the curve to prevent jamming of the relatively long carrier in the tube, the caster wheels which support the carrier, and which are mounted upon the opposite ends of the carrier, are permitted to travel in the true path of the curve while the carrier travels in the direction of the chord or diagonally through the curve. It is thus seen that a relatively long carrier may be employed, and also a carrier carrying considerable weight, as the carrier wheels do not tend to bind the carrier in the curve but admit of the free passage of the carrier therethrough.

What is claimed is—

1. In pneumatic despatch apparatus, a tube having a relatively flat and smooth bottom, a carrier fitting closely in the tube, and caster wheels mounted on the opposite heads of the carrier beyond the ends thereof for contact with said bottom to support the carrier.

2. In pneumatic despatch apparatus, a carrier having a head at its end adapted to fit closely in a pneumatic tube, and a caster wheel vertically swiveled on the outer side of the head in spaced relation thereto and at a point above and out of vertical alinement with the axis of the wheel.

3. In pneumatic despatch apparatus, a tube having a substantially flat and smooth bottom, a carrier fitting in the tube throughout the entire length of the carrier, and caster wheels vertically swiveled upon the outer ends of the carrier and extending downwardly to the bottom of the carrier for supporting the same.

4. In a pneumatic despatch apparatus, a tube having a relatively flat and smooth bottom, a carrier fitting closely in said tube and conforming to the inner contour thereof, and wheels mounted on each end of said carrier beyond the body thereof for sustaining the carrier in upright position, said wheels being mounted to swing around vertical axes and trail in the line of movement of the carrier.

5. In a pneumatic despatch apparatus, a tube having a relatively flat bottom, a carrier fitting closely in said tube, and supporting wheels for the carrier mounted in bearings swiveled on vertical pivots at each end of said carrier beyond the body thereof to permit said wheels always to trail in the direction of the carrier.

6. In pneumatic despatch apparatus, a tube having a bore non-circular in cross-section and having a substantially flat bottom, a carrier closely fitting in said tube and conforming substantially to the shape of said bore and a pair of swiveling carrier wheels mounted on the opposite heads of said carrier beyond the ends of the same and having their rims projecting slightly below the bottom of the carrier for contact with the bottom of said tube to support the carrier and whereby said swiveling carrier wheels are adapted to trail caster-like in the line of the path of the carrier.

7. In pneumatic despatch apparatus, a tube having a substantially flat and smooth bottom, a carrier in said tube having a like cross-sectional shape and closely fitting in the tube, and caster wheels mounted upon the opposite heads of said carrier beyond the ends of the same and bearing upon the bottom of the tube to support the carrier, said caster wheels revolving in bearings swiveled on the vertical axes and adapted at curves to follow the true line of the curve whereby to prevent lateral dragging of the wheels and to admit of the free passage of the carrier through a curve in the tube.

8. In pneumatic despatch apparatus, a tube having a substantially flat and smooth bottom, a carrier closely fitting in the tube and having a bottom of like form, a pair of caster wheels mounted upon the ends of the carrier beyond the extremities of the same and running upon the bottom of the tube to support the carrier, and buffer wheels upon said ends of the carrier for engagement with the lateral walls of the tube to reduce the frictional contact between the carrier and the tube.

9. In pneumatic despatch apparatus, a tube having a bore non-circular in cross section and having a substantially flat bottom, a carrier closely fitting in said tube and conforming substantially to the shape of the bore thereof, and a pair of swiveled carrier wheels mounted on the opposite heads of said carrier beyond the ends thereof, the wheels being vertically swiveled at a point above and out of vertical alinement with the axis of the wheels and having their rims projecting slightly below the bottom of the carrier for contact with the bottom of the tube to support the carrier and adapted to trail caster-like in the line of the path of the carrier.

10. A pneumatic despatch apparatus, a

carrier having a head at its end adapted to fit closely in a pneumatic tube, a projection extending outwardly from the head, a depending frame swiveled vertically on the projection and adapted to swing caster like outwardly and free of the head, and a supporting wheel mounted for rotation in the lower end of the frame.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

RODERICK G. COLLINS, JR.

Witnesses:
GERTRUDE M. STUCKER,
JOS. J. MAWHINNEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."