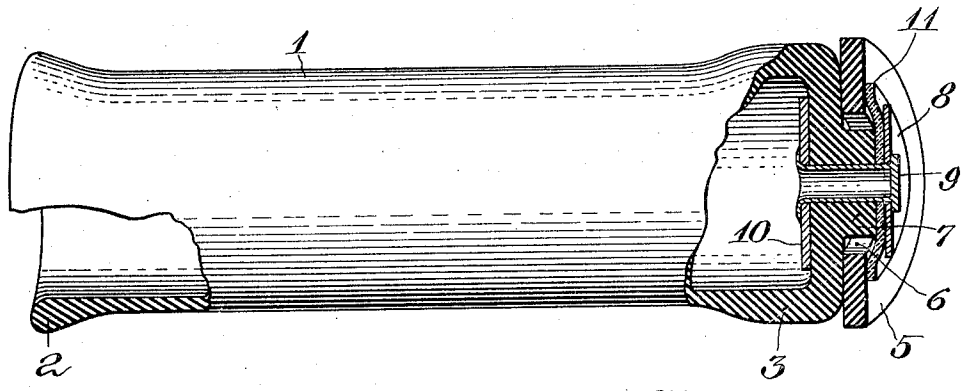
C. S. JENNINGS.

CARRIER.

APPLICATION FILED DEC. 30, 1916.

1,332,901. Patented Mar. 9, 1920.

Fig. 1.



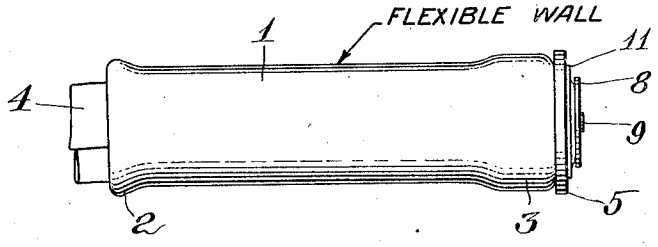


Fig. 2.

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CARRIER.

1,332,901. Specification of Letters Patent. Patented Mar. 9, 1920.

Application filed December 30, 1916. Serial No. 139,747.

To all whom it may concern:

Be it known that I, CHESTER S. JENNINGS, a citizen of the United States, residing at Wellesley Farms, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Carriers, of which the following is a specification.

This invention relates to carriers for pneumatic despatch tube systems and more especially to devices of this character so constructed as to possess certain desirable characteristics hereinafter referred to, and particularly adapted for the transmission of order or sales slips, telegrams and similar articles of very light weight.

The invention aims among its various objects at the provision of a carrier which shall be peculiarly sensitive to control, economical of manufacture, economical of air in transmission, and which shall possess an inherent flexibility which adapts it to traverse relatively abrupt bends or curves in the transmission line with great facility; the danger of its becoming stuck in the line at such a bend being reduced substantially to a minimum.

These and other objects will be hereinafter more fully discussed and the elements of the novel construction employed to the attainment of such objects will be particularly pointed out in the appended claims.

In the accompanying drawing which forms a part hereof and in which like reference characters designate like parts in the respective views, I have exemplified a preferred embodiment of my invention; but as I am aware of many and various changes and modifications which may be made herein without departing from the spirit of the invention, I desire to be limited only by the scope of the claims.

In the drawing:

Figure 1 is a considerably enlarged, perspective view of my novel pneumatic despatch tube carrier; and

Fig. 2 is a side view of said carrier, drawn approximately full size.

The carrier in question is primarily intended for use in pressure systems, or in other words those in which carriers are propelled by compressed air; although I do not desire to be limited to such systems, since the carriers may be used in what are generally termed "vacuum" systems.

Said carrier preferably comprises a receptacle 1 of molded rubber or the like; the first consideration, aside from durability, being lightness in weight. In furtherance of my aim to maintain the weight of the carrier at substantially a minimum, I prefer to make the carrier about the size of that shown in Fig. 2.

The wall of the receptacle is quite thin and preferably also very flexible; and soft rubber, molded into the desired form, particularly adapts itself to this requirement.

At the extremities of the preferably cylindrical receptacle, the walls are thickened, as at 2 and 3, to aid in the maintenance of the carrier in proper shape, especially during transit; and further on account of wear.

If the carrier be made of rubber, then a roll of paper 4, such as is shown in position in the carrier in Fig. 2, will frictionally engage the interior wall of the carrier,—by reason of the tendency of the paper to unroll and expand when confined in such a small diametered receptacle,—with sufficient force to substantially preclude any likelihood of said paper being inadvertently dislodged from the carrier when the latter is in transit.

Obviously, of course, if the wall of the receptacle were of metal, with a smooth surface, there would not be this pronounced resistance of the article against dislodgment; and hence for this reason in addition to that aforesaid; I greatly prefer rubber as the material out of which to form the body of the carrier. Such a plastic substance as rubber also adapts itself to economies in manufacture; but little work being necessary upon the body of the carrier in forming the same, other than to pour the plastic into the molds and thereafter remove the latter in a known manner.

In place of using a fixed felt head, such as is customarily provided upon carriers, I have devised a type of head 5, relied upon substantially to fill the opening in the transmission tube, whatever the position of the carrier laterally of the tube, and so constituting a floating head or packing. This head, rather than the body of the carrier, obstructs the flow of air past the carrier, the head thus constituting a packing between the carrier body and the wall of the transmission tube, adapted to fill the aperture between the carrier and tube whatever

the relative position of the carrier and the inner surface of the tube may be.

It will be observed that this hub is somewhat longer than the thickness of the floating head, to permit of a slight movement of the latter longitudinally of the carrier.

The floating head 5 receives the propulsive force of the air-current to drive the carrier, and may be retained in position by a disk or plate 8 of aluminum, brass, or other suitable material; this plate being firmly fastened to the bottom of the carrier by, for example, a rivet 9, the inner edge of which is peened over upon a washer or plate 10, which, in effect, forms the bottom of the interior of the carrier.

Since the retaining plate 8 is somewhat larger in diameter than the aperture 6, the floating head can never normally be separated from the receptacle 1; but, where maximum economy of operation of the system is desired, I prefer to provide a soft, resilient cup 11, constituting a substantially air-tight resilient packing between the body 1, 7, and the packing head 5. The cup 11 is preferably made of rubber and being positioned between the floating head 5 and the retaining plate 8, and being moreover somewhat dished or cupped, it normally tends to hold the head lightly against the base of the receptacle 1. By reason of the freedom of movement of said head upon the hub 7, the head can be canted or inclined with respect to the axis of the carrier to better enable the latter to traverse relatively sharp bends or curves in the line.

In fact, not only can the head thus cant with respect to the longitudinal axis of the carrier, but, further, it may shift its position laterally to a limited extent in different directions, with respect to said carrier axis, which still further tends to aid the carrier in safely traversing such sharp curves, and substantially obviates any tendency for the carrier to stick in the line.

In this connection also, it may be pointed out that the flexibility of the carrier as a whole enables the carrier in an emergency to deform slightly just as if it were a section of tube.

The carrier may be sent through the line with either end foremost; and especially where such a packing cup as that designated 11 is provided, leakage of air through the aperture 6 is practically entirely obviated; since if the carrier be traveling with its open end foremost, the pressure of air tends to hold the floating head 5 against the closed end of the carrier, and the flexible resilient cup 11 maintains its lip against the rear side of said head, and, in effect, covers said aperture.

Similarly, if the carrier be traveling with its floating head foremost, which in practice is best, the pressure of the air will tend to force said head away from the bottom of the carrier; but this merely drives the head more firmly against the cup 11, and the latter in turn is backed by the retaining plate 8.

If the carrier is traversing a bend, the cup 11 will of course tend to be correspondingly deformed while yet maintaining its seal.

I have found as a result of experimentation that a floating head thus constructed of layers of canvas combined with rubber is exceedingly durable; in fact, more so than the felt heads commonly in use; and owing to the flexible mounting of said head upon the carrier, its outer diameter may reasonably closely approximate the inner diameter of the tube through which it is to travel.

In conclusion, I desire to lay stress upon the importance of thus making a carrier of preferably plastic material, which can be readily molded into shape, and further of such material as is of relatively low specific gravity.

Such material advantageously permits of the formation of the carrier, especially when the latter is of such small size as that shown, of what may be termed "feather weight"; this term being used in the sense that it defines the extraordinarily light weight of my novel carrier which in practice weighs but about one ounce, instead of from half a pound up, as has been customary heretofore.

Some of the advantages residing in the provision of such an extremely light weight and small size carrier have been pointed out in the application of Walter Bixby, Serial No. 135,971; and to the best of my knowledge I am the first to combine in a pneumatic despatch tube carrier, the properties of extreme lightness and flexibility.

I may also add that as a result of the notably small weight of my carrier, it is possible to propel the latter through lines formed of, for example, 1¼" tubes, at high velocity and with an expenditure of very little power indeed, owing to the fact that the air current which furnishes the propulsive force, may be at a pressure but slightly above that of the atmosphere, or if the system in which the carrier is used be a vacuum one, then in such case but slightly below atmospheric pressure, at the exhaust end of the line. In fact, the carrier will be supported in a vertically disposed tube by an air current of but about one ounce pressure. An air current therefore which exerts a propulsive effort of less than two ounces may be relied upon to effectively drive the carrier.

By reason also of this extreme lightness of the carrier, practically all noise and rattling, commonly in evidence when carriers of the ordinary description are in course of transit through a line, and especially when such carriers are passing around a bend,—is eliminated. This feature, in itself, particularly adapts my improved carrier for

use in offices and like places where quietness is a desideratum; and when this quietness in transit is coupled with the fact that the carrier, by reason of its low specific gravity and weight, may be most readily deprived of its momentum; there may be effected a consequent quietness of delivery thereof, which, so far as I am aware is not possible with carriers of other descriptions, save where particular and more or less costly delivery apparatus is provided.

Having thus described my invention, what I claim is:

1. A carrier adapted for pneumatic propulsion in a despatch tube comprising a body of less width than the despatch tube having a closed head, a packing head wider than the body adapted substantially to fit in the despatch tube, and means connecting together packing head and body adapted to permit free relative sliding movement of said parts one on the other in the direction of the width of the carrier, whereby the body of the carrier is permitted to assume different lateral positions in the tube without opening a passage past the carrier for an air-current.

2. A carrier adapted for pneumatic propulsion in a desptach tube comprising a body of less width than the tube, an annular packing head exteriorly wider than said body adapted substantially to fit in the despatch-tube and close the aperture between said body and said tube, and means connecting together said packing head and said body adapted to permit lateral sliding movement in every direction of such head in respect of said body.

3. A carrier adapted for pneumatic propulsion in a despatch tube comprising a body of less width than the tube, an annular packing head exteriorly wider than said body adapted substantially to fit in the despatch-tube and close the aperture between said body and said tube, and means connecting together said packing head and said body adapted to permit both lateral sliding and canting movement of said head in respect of said body.

4. A carrier adapted for pneumatic propulsion in a despatch tube comprising a body of less width than the tube, an annular packing head exteriorly wider than said body adapted substantially to fit in the despatch-tube and close the aperture between said body and said tube, and means connecting together said packing head and said body adapted to permit lateral sliding movement of said head in respect of said body, said connecting means comprising a substantially air-tight resilient packing between said body and said head.

5. An elongated carrier for pneumatic despatch tube apparatus comprising a molded receptacle of plastic material, having an end thereof peripherally thickened and provided with a molded extension, said carrier having a floating head at said end, directly upon said extension, and adapted to be canted at an acute angle to the axis of said carrier.

6. A carrier for pneumatic despatch tube apparatus comprising a receptacle of molded plastic material constituting the body of said carrier, an extension centrally located upon one end of said body and integral therewith, a centrally apertured washer-like floating head for said carrier, and means for holding said head in place directly upon said extension while permitting of lateral rocking play between said head and extension, the central aperture in said head being of greater diameter than said extension.

7. An elongated pneumatic despatch tube carrier having a head movable with respect to the body of said carrier in substantially all directions in a plane perpendicular to the axis of said carrier, connections between said body and head, said connections to the head being made thereto within the confines of the perimeter of said head, and having an opening therearound and means for sealing said opening around said connections.

8. A pneumatic despatch tube carrier comprising a body, and a head for fitting engagement with the despatch tube wider than the body, said parts being jointed together by a headed projection on one of them taking loosely through a hole in the other, whereby to permit lateral and angular movement of the head in respect to the body.

In testimony whereof I have affixed my signature, in the presence of two witnesses.

CHESTER S. JENNINGS.

Witnesses:
A. G. Conway,
R. E. Fiske.