C. W. Wailey,

Paper Air Tank.

No. 81,713. Patented Sept. 1. 1868.

Fig. 1.

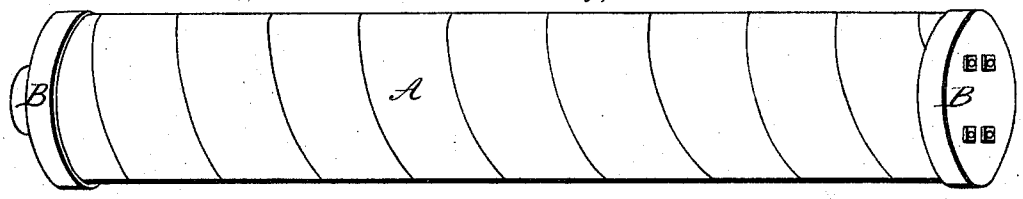


Fig. 2.

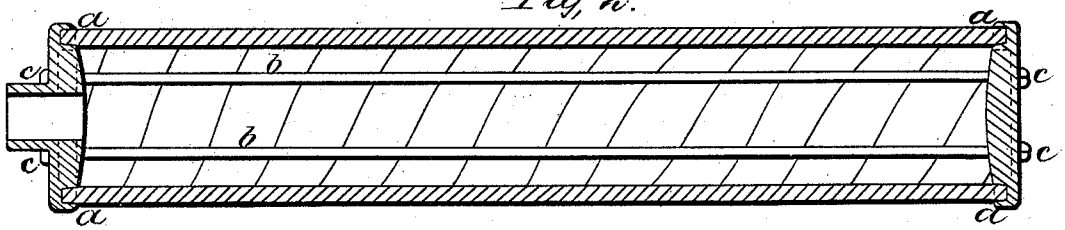


Fig. 3.

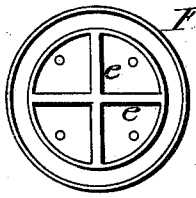
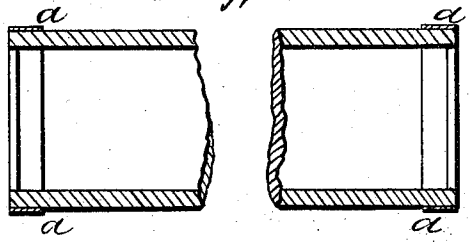


Fig. 4.



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C. W. WAILEY, OF NEW ORLEANS, LOUISIANA, ASSIGNOR TO NEW ORLEANS PNEUMATIC PROPELLING COMPANY.

Letters Patent No. 81,713, *dated September* 1, 1868.

IMPROVEMENT IN PAPER RESERVOIRS FOR COMPRESSED AIR.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, C. W. WAILEY, of the city of New Orleans, parish of Orleans, and State of Louisiana, have invented a certain new, useful, and improved Paper Air-Tank for Holding Compressed Atmospheric Air; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawing, in which—

Figure 1 is a perspective view of my said paper tank, as it appears in a completed or finished state.

Figure 2 a longitudinal sectional view of the same.

Figure 3 an inside view of one kind of metallic head that is used by me; and

Figure 4, sectional views that show another or alternate form of head for closing the ends of my tanks.

The object of my invention is to provide a cheap and easily-manufactured tank, that shall be at the same time very light and portable, and sufficiently strong to withstand a pressure of at least three hundred pounds to the square inch, my design being to carry in them, on street-railroad cars, a sufficient quantity of compressed atmospheric air to work a pneumatic engine, of which also I am the inventor, on the car, for the propulsion of the same from one terminus of a city-railroad to the other, or, if necessary, from one terminus to the other, and then back again to the starting-point, without renewing the supply, so that only one, or, at most, two stationary steam-engines, need to be provided for filling them, by means of suitable air-pumps, either in a direct manner, or through the agency of stationary reservoirs, which the said engines shall keep always filled, at or a little above the pressure required in the tanks on the car, at the starting of the latter, to propel the same the prescribed distance, whether that be to the end of the road, or to the end and back again.

But my invention will be more quickly and clearly understood by reference to the annexed drawing.

A, fig. 1, is my tank as it appears when completed and ready to be put on a car. The most convenient place on a car to put the tank is on the top or cover of the same, and in order to provide for an abundant supply of compressed air, without having too large a tank, I use two, one on each side of the top of the car, and placed longitudinally thereupon. Apertures through the heads of the tanks afford a means of establishing a connection with the stationary steam-engines, or the reservoirs connected therewith, as the case may be, in order to fill the tanks with compressed air, and also for the eduction of the said air from the tanks into the cylinder of the pneumatic engine, through proper pipes that enter the said apertures. The drawings show but one of these openings, but any mechanic of ordinary skill will know where to make them

In constructing my tanks, I use a cylindrical "former" of suitable diameter, around which I wrap any description of strong paper that possesses uniformity and closeness of texture, until the desired thickness of the shell of the same has been attained by a multiplication of folds or wrappings. In order to prevent wrinkling as the successive wrappings are put around the "former," and to secure an equal thickness everywhere in the shell of the tank, and, by the close cohesion of each of these successive wrappings, the one to another, a uniformity of resisting power or strength throughout all portions of the said shell, the paper must be wetted before it is used, and great care taken, as each new or additional thickness or sheet is put on, that every joint is broken or overlapped, whilst, at the same time, a thin coating of glue or varnish, or other equivalent substance, is spread upon or applied to the same. This coating may be applied by means of a soft parallel roller that impinges against the "former," and operates after the manner of an inking-roller in a printing-press. This roller subserves the additional function of pressing down the paper closely, and in an equal manner, at all points upon the surface of the circumference of the "former," and thus aids in establishing uniformity throughout all parts of the shell, in the particulars of thickness and composition or structure.

The required thickness of shell being attained, the tank is withdrawn from the "former" as soon as the paper is dry enough to allow it to be done with safety. Being withdrawn, the tank represents a hollow paper cylinder, with open ends, which I close with metallic heads, B, either as formed at figs. 1, 2, and 3, or as at fig. 4. The heads B, when constructed as shown at figs. 1, 2, and 3, are provided with an annular groove near

their perimeters, in which the ends of the paper shell enter, as shown at *a*, fig. 2, the said ends having been first cut off smoothly, and then sloped or chamfered, in order to secure a tight joint. This form of head is held in place by means of longitudinal rods, *b*, on which the nuts *c* are fitted by proper screw-threads. The alternate form of head that is delineated at fig. 4 is provided with a screw-thread around its perimeter, and thus is screwed directly into the ends of the shell or cylinder, and is then secured in place by external bands, *d*, as shown. To strengthen the heads B, ribs, *e*, may be cast upon them, either on their inner or outer faces, as may be deemed most advisable.

When constructed as above described, I have found that a tank eighteen inches in diameter, and having a shell-thickness of only half an inch, will safely bear a pressure of from twenty to twenty-five atmospheres from within the same; and I have thus demonstrated that all the conditions I have aimed to accomplish in its creation are completely fulfilled.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The paper air-tank A, when closed at its extremities with metallic heads, B, and otherwise constructed in the manner and by the use of the means herein described for the purpose set forth.

C. W. WAILEY.

Witnesses:

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