(No Model.)

E. D. LEAYCRAFT.

PNEUMATIC DISPATCH TUBE.

No. 411,864. Patented Oct. 1, 1889.

Fig: 1.

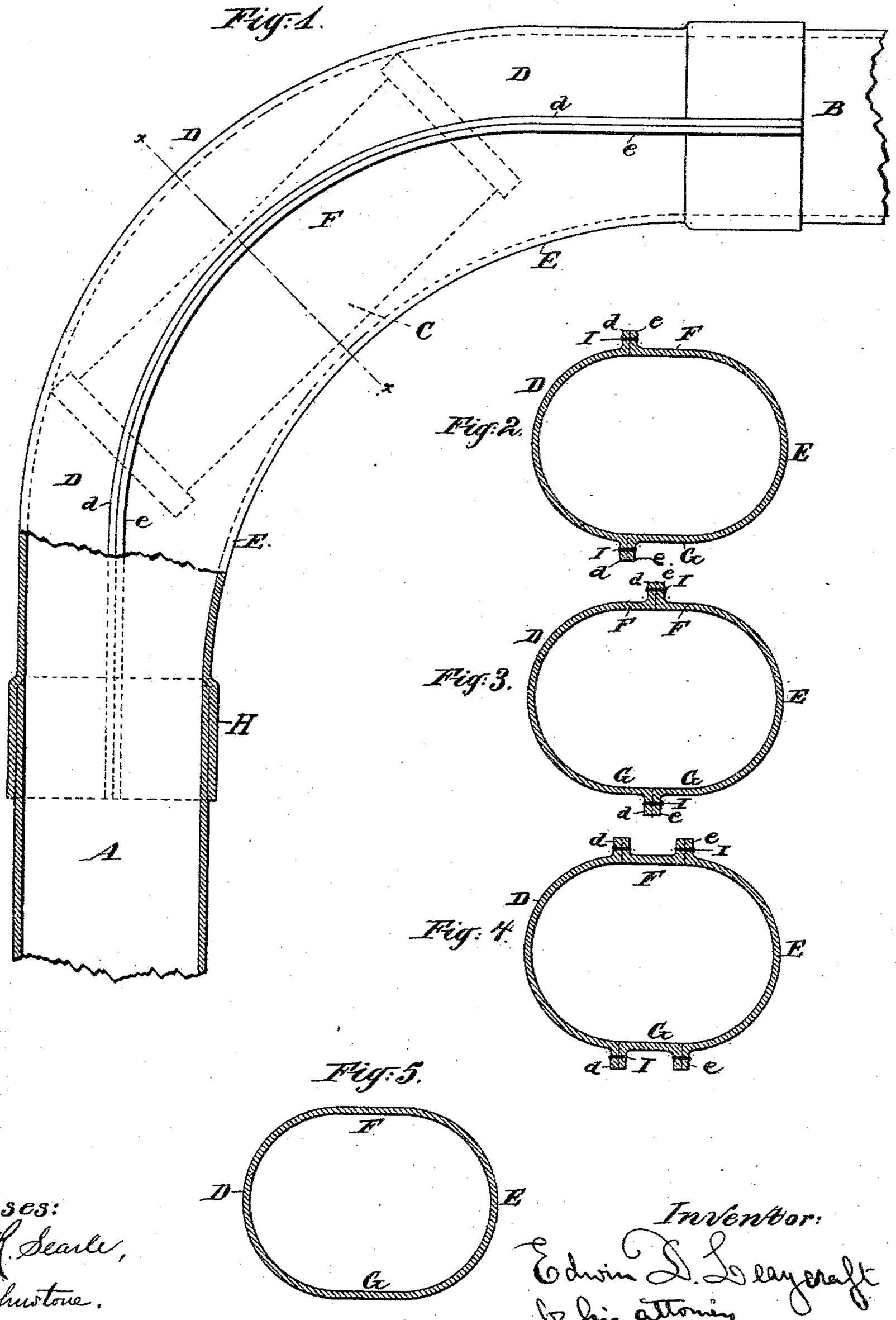

Fig: 2.

Fig: 3.

Fig: 4.

Fig: 5.

Witnesses:
Charles K. Searle,
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Inventor:
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by his attorney
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UNITED STATES PATENT OFFICE.

EDWIN D. LEAYCRAFT, OF JERSEY CITY, NEW JERSEY.

PNEUMATIC DISPATCH-TUBE.

SPECIFICATION forming part of Letters Patent No. 411,864, dated October 1, 1889.

Application filed January 18, 1889. Serial No. 296,748. (No model.)

To all whom it may concern:

Be it known that I, EDWIN D. LEAYCRAFT, of Jersey City, in the county of Hudson and State of New Jersey, have invented a certain new and useful Improvement in Pneumatic Dispatch-Tubes, of which the following is a specification.

The improvement relates to the construction of the curved portions. The straight portions may, as heretofore, be tubes having smooth interiors perfectly cylindrical. It has been considered necessary in changing the direction of such tubes to employ curves of so large radius as to frequently seriously weaken the timbers of floors and other parts by cutting into them to accommodate such curves. I have discovered that it is practicable to make curves of small radius by giving a proper form to the cross-section of that portion of the tube. I produce by stamping or other suitable means lengths of sheet metal curved to the proper radius to extend longitudinally along the exterior and interior of the curved portion, the cross-section of the outermost being simply a semicircle, and that of the innermost being a semicircle with a straight portion added on each edge. Each edge of each is flanged. When the flanges of the two parts are applied together and properly secured, the structure presents the conditions required, the interior of the tube having a breadth one way only a little in excess of the diameter of the carrier, and having a breadth the other way sufficiently greater to allow the straight carrier to traverse smoothly around the curve. It will be understood that there are on the inside portion of the curve two extended portions which are plane. The breadth of the plane metal is proportioned to the curvature of the bend, except that each end of each is narrowed to a point where the curve is joined to the straight portion. The breadth of the plane portions should be varied according to the quickness of the curve and the length of the carrier which is to traverse through the tube when in use.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a side view of a vertical curve made according to my invention, with a portion of each of the straight tubes which it connects. One of the junctions is shown in section. Fig. 2 is a cross-section on the line *x x* in Fig. 1. The remaining figures are cross-sections showing modifications.

Similar letters of reference indicate corresponding parts in all the figures where they occur.

A and B are straight portions of the tube extending in different directions.

C is the carrier, which is to traverse through the tube. The carrier and the straight portions of the tube may be of any ordinary or suitable construction. The curved portions of the tube are cylindrical on their outer and inner sides, but flat on the other two sides. Assuming the curve to be in a vertical plane from a horizontal path downward through a floor, or from a vertical path being deflected into a horizontal, the flat portions will be on the right and left sides. The dies in which the parts are manufactured are so formed and the pieces which are to be stamped up are so cut by dies or otherwise that the outermost is in cross-section a semicircle with a flange at each edge, and the innermost is a semicircle with an addition of a flat part at each edge, and the flange on the edge of that additional flat part. The piece D, with its flange *d*, applies on the outer side of the curve. The oppositely-conditioned piece E, with its flat portions F G and its flanges *e*, applies on the inside of the curve. The ends of these curved portions are circular, and are expanded into sockets H to receive the corresponding ends of the tubes A and B, secured by soldering or otherwise. The flanges *d* and *e* are joined by rivets I.

In traversing the straight portions A and B the carrier C moves in the ordinary manner, with its axis coinciding with the center line of the tube. In traversing the curve the carrier, being straight and rigid, lies always partially transverse to the curved center line of the tube. The form of the cross-section of the curved portion accommodates this position and makes an easy fit in traversing the entire curve. The centrifugal force induces an excess of pressure against the interior of the outer piece D, which varies with the ve-

locity, but is always sufficiently great to keep the carrier from pressing with any considerable force against the inner piece E.

Care should be taken in manufacturing and applying together the parts that the interior of the part D be accurately shaped and smoothly finished.

The several parts may be shaped by cutting and stamping in dies. I propose to use soft brass. The shaping may be effected either at a single blow or by a succession of treatments.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. I can join the flanges by other means, as by bolts and nuts, double-seaming, soldering, brazing, &c. It is important that the interior be true and smooth, and that the parts forming the curve be so connected as to brace and stiffen each other. I propose in manufacturing in the large way, where expense is no objection, to widen the parts D and E, so that each shall carry a portion of the flat metal F G. Fig. 3 shows such a modification.

It is practicable to employ interposed flat portions made separately and joined by flanges. Fig. 4 shows such a modification. It will be understood that in this modification I interpose between the flanges of the two parts longitudinal plane pieces of sheet metal properly curved edgewise, and each flanged at each edge, and secure the flanges firmly together.

Still another mode of constructing this part would be to make the whole D E F G in a single piece, being a flattened tube having the same cross-section as above described. In such case the flanges will not be required. Fig. 5 shows such modification.

I claim as my invention—

1. In a pneumatic dispatch-tube, the combination, with cylindrical straight portions, of a curved portion widened in one direction so as to match to the carrier in traversing it, as herein specified.

2. In a pneumatic dispatch-tube, the flattened portion D E F G, in combination with the straight portions A B, and with the joining means H, adapted to serve as herein specified.

3. The pieces D and E, with their flanges *d* and *e* and the portions F and G, with their flanges *f* and *g*, and joining means H, arranged as shown, in combination with each other and with the straight lengths of cylindrical pipe A and B, as herein specified.

In testimony whereof I have hereunto set my hand, at New York city, this 16th day of January, 1889, in the presence of two subscribing witnesses.

EDWIN D. LEAYCRAFT.

Witnesses:
CHARLES R. SEARLE,
H. A. JOHNSTONE.