

(No. Model)

W. R. BILLINGS & E. C. COLLINS.
EXPANSION JOINT FOR STEAM OR OTHER PIPES.

No. 582,804.

Patented May 18, 1897.

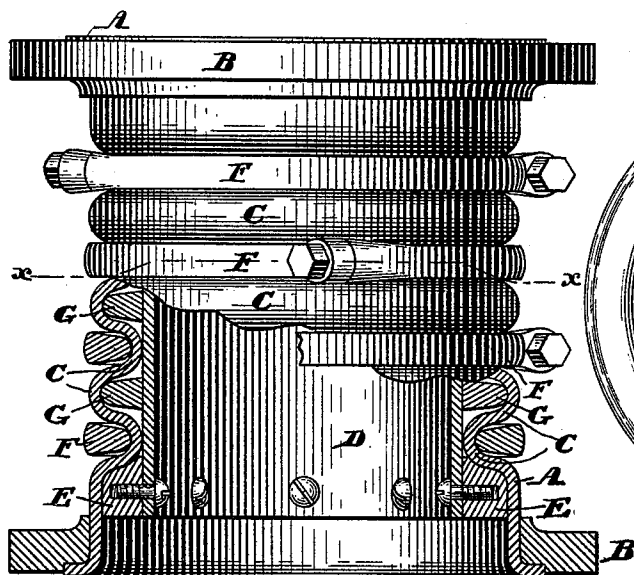


Fig. 1.

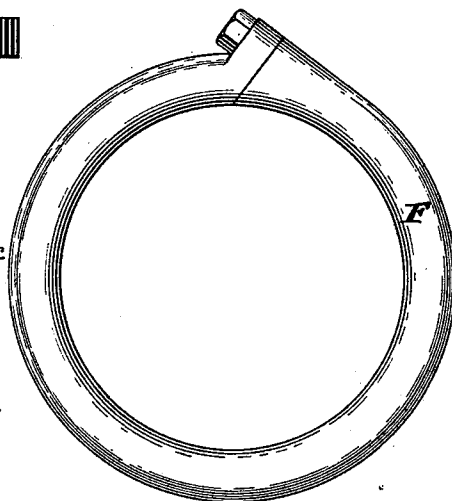


Fig. 3.

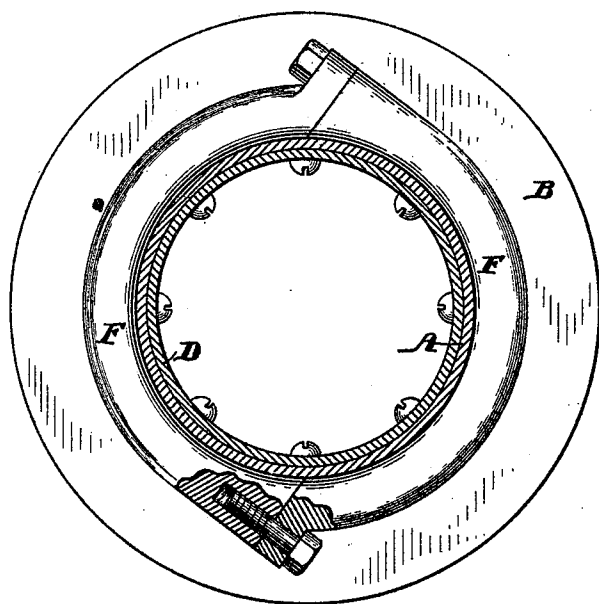


Fig. 2.

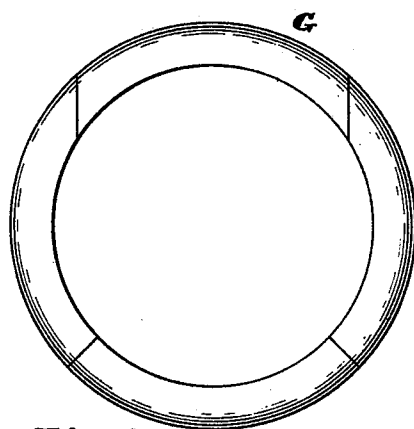


Fig. 4.

Witnesses:

William E. Shaw
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Inventors:

William R. Billings
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UNITED STATES PATENT OFFICE.

WILLIAM R. BILLINGS AND EDWARD C. COLLINS, OF TAUNTON, MASSACHUSETTS, ASSIGNORS TO THE TAUNTON LOCOMOTIVE MANUFACTURING COMPANY, OF SAME PLACE.

EXPANSION-JOINT FOR STEAM OR OTHER PIPES.

SPECIFICATION forming part of Letters Patent No. 582,804, dated May 18, 1897.

Application filed March 15, 1897. Serial No. 627,512. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM R. BILLINGS and EDWARD C. COLLINS, of Taunton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Expansion-Joints for Steam or other Pipes, of which the following, taken in connection with the accompanying drawings, is a specification.

Our invention relates to expansion-joints for steam and other pipes; and it consists in certain novel features of construction, arrangement, and combination of parts, which will be readily understood by reference to the description of the accompanying drawings, forming a part of this application, and to the claims hereto appended and in which our invention is clearly pointed out.

Figure 1 of the drawings is a sectional elevation of an expansion-joint, illustrating our invention. Fig. 2 is a transverse section on line *x x* on Fig. 1. Fig. 3 is an elevation of one of the outside reinforcing-hoops having only a single joint, and Fig. 4 is an elevation of one of the inner reinforcing or corrugation supporting-rings.

In the drawings, A is a soft copper pipe having secured to each end thereof a heavy metal flange B and having a series of parallel corrugations C C, extending circumferentially around the same between said flanges, and D is a slip-tube fitted within said corrugated pipe, extending at each end beyond said corrugations, and having secured to the exterior thereof at each end the metal ring E, one only of which is shown in Fig. 1.

So far the expansion-joint is old and not of our invention.

In the practical operation of expansion-joints of the kind above described it has been found that if for any reason there is a thin or weak place in one or more of the corrugations the expansion and contraction will be greater at the weak points than in the other corrugations, the result of which is that owing to the greater movements at said weak points the weakness is increased, and ultimately a break occurs. To obviate this objection is the object of our invention, and to this end we apply to each exterior groove of

the corrugation a reinforcing-hoop F, which may be made in two pieces bolted together, as shown in Fig. 2, or it may be made in one piece cut open at one side and bolted together, as shown in Fig. 3.

The inner edge of the hoop F is curved transversely to a somewhat smaller radius than the curve of the bottom of the corrugation, so as to permit a certain amount of contraction of said corrugation, beyond which it cannot be contracted, thereby compelling the expansion and contraction of the corrugated pipe to be evenly distributed through all of the corrugations.

When the hoop F is made in one piece, as shown in Fig. 3, it is made of soft brass and is expanded sufficiently to pass over the end of the pipe A before the end of said pipe is expanded at its end to fit into the annular rabbet in the outer face of the flange B. We also insert in each of the inner grooves of the corrugated pipe A a ring G, made up of a plurality of pieces or segments of such a length that they can be easily placed in position in said grooves, in which positions they are maintained by the slip-tube D, to the outer periphery of which they are fitted, as shown in Fig. 1. The outer edges of the supporting-rings G are curved transversely to a radius substantially the same as the inner edges of the hoops F and act in connection with the inner corrugations to limit the amount of compression thereof, substantially like the hoops F.

By the use of the hoops F and rings G any considerable excess of compression in any one corrugation because of a thin or weak place in the pipe A is effectually prevented and the durability of the expansion-joint is greatly increased.

The operation of our invention will be readily understood from the foregoing without further explanation here.

What we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In an expansion-joint the combination of a soft-metal pipe having a plurality of parallel corrugations extending circumferentially around the same; and a reinforcing-hoop fitted to each exterior groove of said corrugations and having its inner edge curved trans-

versely to a radius somewhat less than the radius of the transverse curve of the bottom of the groove in which it is secured.

2. In an expansion-joint the combination
5 with a soft-metal pipe provided with suitable flanges and having a plurality of parallel corrugations extending circumferentially around the same between said flanges, and a slip-tube fitted within said corrugated pipe
10 and having an exterior ring or flange secured to each end thereof, of a reinforcing-ring composed of a plurality of segments fitted in each interior groove of said corrugations between its bottom and said slip-tube, and hav-
15 ing its outer edge curved transversely to a radius less than the radius of the transverse curve of the bottom of the groove in which it is fitted.

3. In an expansion-joint the combination
20 of the corrugated pipe A provided with the flanges B, B; the slip-tube D; the rings E secured to the ends of said slip-tube; the hoops

F fitted to the exterior grooves of the corrugated pipe; and the rings G surrounding said slip-tube and entering the interior grooves of said corrugated pipe substantially as described.

4. In an expansion-joint the combination with the corrugated pipe A provided with suitable flanges, of a reinforcing-hoop fitted to each of the exterior grooves of said pipe made in one piece and having its inner edge curved transversely to a radius less than the radius of the transverse curve of the bottom of said groove.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, on this 12th day of March, A. D. 1897.

WILLIAM R. BILLINGS.
EDWARD C. COLLINS.

Witnesses:

EDGAR L. CROSSMAN,
H. T. ALBRO.