

F. G. FOWLER.
 SPRING DEVICE FOR CAR VESTIBULE DIAPHRAGMS.
 APPLICATION FILED JUNE 10, 1911.

1,019,777.

Patented Mar. 12, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

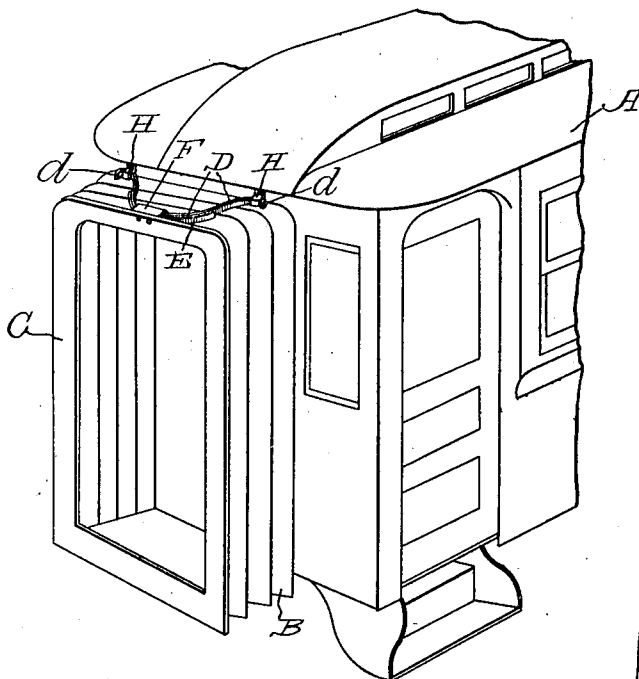


Fig. 2.

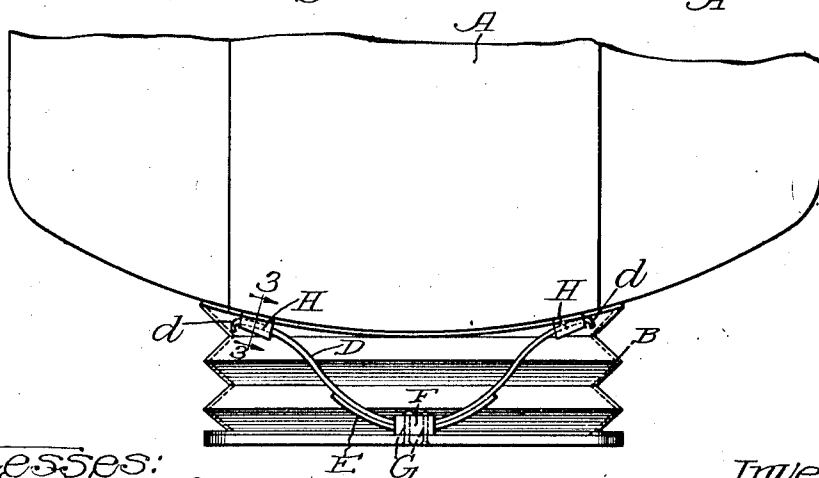
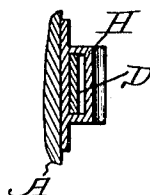


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

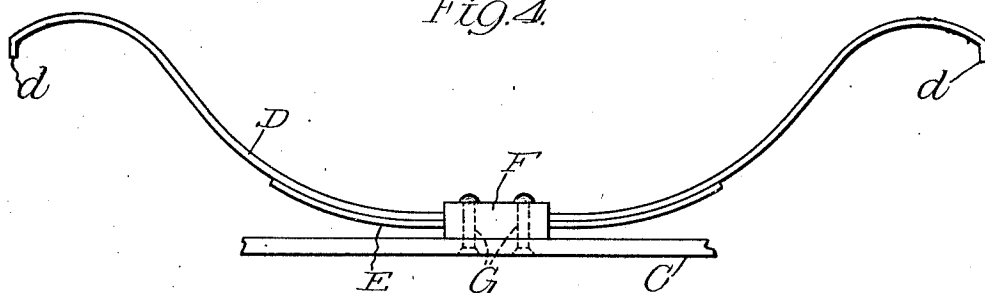


Fig. 5.

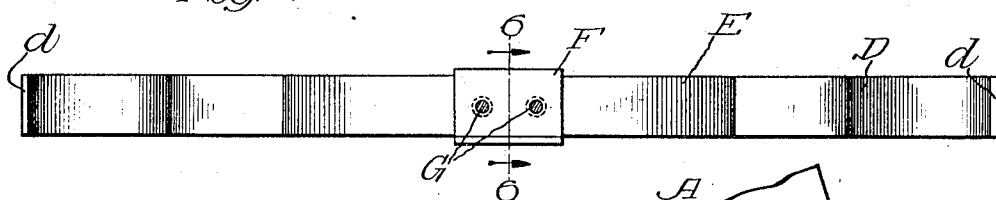


Fig. 7.

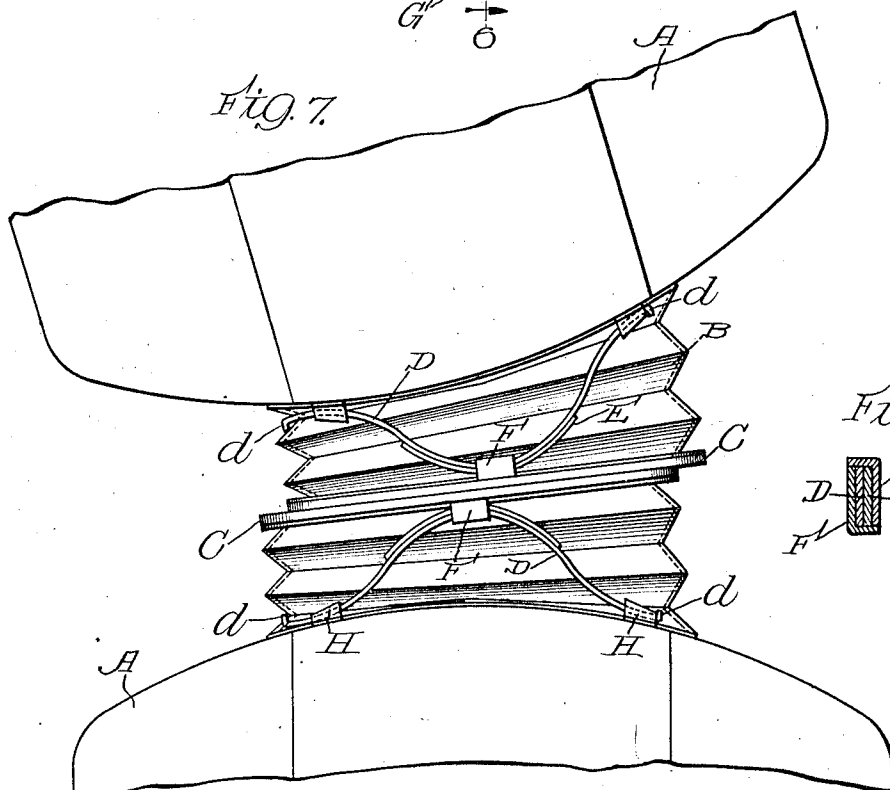
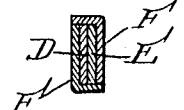


Fig. 6.



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UNITED STATES PATENT OFFICE.

FRANK G. FOWLER, OF ALTOONA, PENNSYLVANIA.

SPRING DEVICE FOR CAR-VESTIBULE DIAPHRAGMS.

1,019,777.

Specification of Letters Patent.

Patented Mar. 12, 1912.

Application filed June 10, 1911. Serial No. 632,438.

To all whom it may concern:

Be it known that I, FRANK G. FOWLER, a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Spring Devices for Car-Vestibule Diaphragms, of which the following is a specification.

My invention relates to railway car vestibules and particularly to the bellows diaphragms by which the vestibules of ordinary cars are connected, and the invention has for its object to provide a spring which is novel in this connection and which is arranged in a new and improved manner between the face plate of the diaphragm and the end of the car to maintain, or tend to maintain, the diaphragm and its face plate in the proper extended position; the improvement of my invention consisting in the fact that it provides a structure which is less costly, stronger and generally more desirable than the devices of this class heretofore in common use.

To be more specific, one of the primary objects of the invention is to provide a device of this sort consisting of a single bowed spring composed of one or more leaves, interposed between the face plate of the diaphragm and the end of the car and arranged so that it may be freely compressed and expand with the corresponding movements of the diaphragm while at the same time accidental displacement is prevented, and also so that when the face plate is forced to an oblique position in rounding curves or is laterally displaced due to irregularities in the track or other causes producing what is commonly termed chafing of the abutting face plates, a distortion is produced in the spring which, when the car bodies come back into normal alinement, tends to bring the face plate back to its ordinary position parallel with the end of the car.

The invention has for a further object to provide a noiseless diaphragm spring device, it being one of the great objections to devices heretofore commonly used that they are very noisy.

The invention has for a further object to provide a diaphragm spring device which is extremely simple and cheap to manufacture and which at the same time is strong and durable.

The invention herein claimed is shown

but not claimed in my Patent 966,818 dated August 9, 1910; this patent showing alternative constructions, one of which is specifically claimed, the other of which forms the subject matter of the present application.

The invention is illustrated, in a preferred embodiment, in the accompanying drawings, wherein—

Figure 1 is a perspective view of the vestibuled end of a railway car, showing the application thereto of the spring of my invention; Fig. 2, a plan view of the same parts; Fig. 3, a detail section taken on line 3—3 of Fig. 2; Fig. 4, a plan view of the spring; Fig. 5, a front elevation of the same; Fig. 6, a cross section on line 6—6 of Fig. 5, and Fig. 7, a diagrammatic plan illustrating the distortion of the springs when the train rounds a curve.

Like characters of reference indicate like parts in the several figures of the drawings.

Referring to the drawings, A designates a vestibuled railway car, B the bellows diaphragm, and C the usual face plate to which said diaphragm is attached.

D is a bowed spring preferably reinforced by the shorter leaf E, D and E being secured together by the angle plates F. The spring so formed is interposed between the face plate C and the end of the car. Preferably, although perhaps not essentially, the middle of the spring is secured to the face plate while the ends bear against the car. The attachment at the middle of the spring is a rigid one. For example, the spring may be secured to the face plate by rivets G which extend through the angle plates F. The ends of the spring pass freely through keeper boxes H so that the spring has the capacity of compressing and elongating when the diaphragm is compressed. However, an engagement is provided between the ends of the spring and the car which comes into effect when the face plate is forced into an oblique position, which occurs when the train rounds a curve, or when there is a lateral displacement or chafing, this engagement being such as to produce a distortion in the spring tending, when the train comes out onto the straight track, to return the face plate to its normal position. In the embodiment of my invention shown, this engagement is effected by bending over the ends of the spring D to form stops d.

As clearly appears from the diagram-

matic view of Fig. 7, when the train rounds a curve and the face plate of the car in question is forced into an oblique position one of the bent over ends *d* of the spring *D* engages with its keeper box *H* and this engagement produces a distortion in the spring which is rigidly secured to the face plate at the center, which distortion has a strong tendency to return the face plate to its normal position as soon as the cars of the train come back into alinement. Of course the return movement of the car would, to a certain extent, exert a straightening force on the face plate but because of the collapsible structure of the diaphragm this force is relatively slight and in many cases not sufficient to accomplish the desired result. A similar distortion of the spring is produced when the displacement of the face plate is mainly or entirely lateral.

While I have illustrated my invention in a preferred embodiment, it will be realized that certain modifications might be made in the form, construction and arrangement of the parts without departing from the invention. Therefore I do not limit myself to these particulars except so far as certain of the same are made limitations in certain of the claims herein.

I claim:

1. In combination with a face plate and diaphragm of a car vestibule, a bowed spring interposed between said face plate and the end of the car, the middle of which spring is rigidly attached to the face plate while the ends bear against the car, and retaining devices for the ends of the spring, said retaining devices and the ends of the spring being conformed so as to permit the ends of the spring to slip and so as to provide also an engagement between one extremity of the spring and its retaining device that becomes effective when the face

plate is forced into an oblique position with respect to the car in rounding curves, or when it is caused to chafe by the uneven running of the car, which said engagement distorts the spring and thereby creates a stress on the face plate tending to return the same to normal position when the car body moves back to place.

2. In combination with the face plate and diaphragm of a car vestibule, a bowed spring interposed between said plate and the end of the car, the middle of which spring is rigidly attached to one of said elements while the ends thereof bear against the other, and retaining devices for the ends of the spring; said retaining devices and the ends of the spring being conformed so as to permit the ends of the spring to slip and so as to provide also an engagement between one extremity of the spring and its retaining device that becomes effective when the face plate is forced into an oblique position with respect to the car in rounding curves, or when it is caused to chafe by the uneven running of the car, which said engagement distorts the spring and thereby creates a stress on the face plate tending to return the same to its normal position when the car body moves back to place.

3. In combination with the face plate and diaphragm of a car vestibule, a bowed spring which is interposed between the face plate and the end of the car and rigidly secured at the middle to one of said elements with its ends bearing against the other, and keeper boxes through which the ends of said spring slidably extend, the ends of said spring being provided with stops adapted to engage with the keeper boxes, substantially as described.

FRANK G. FOWLER.

Witnesses:

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