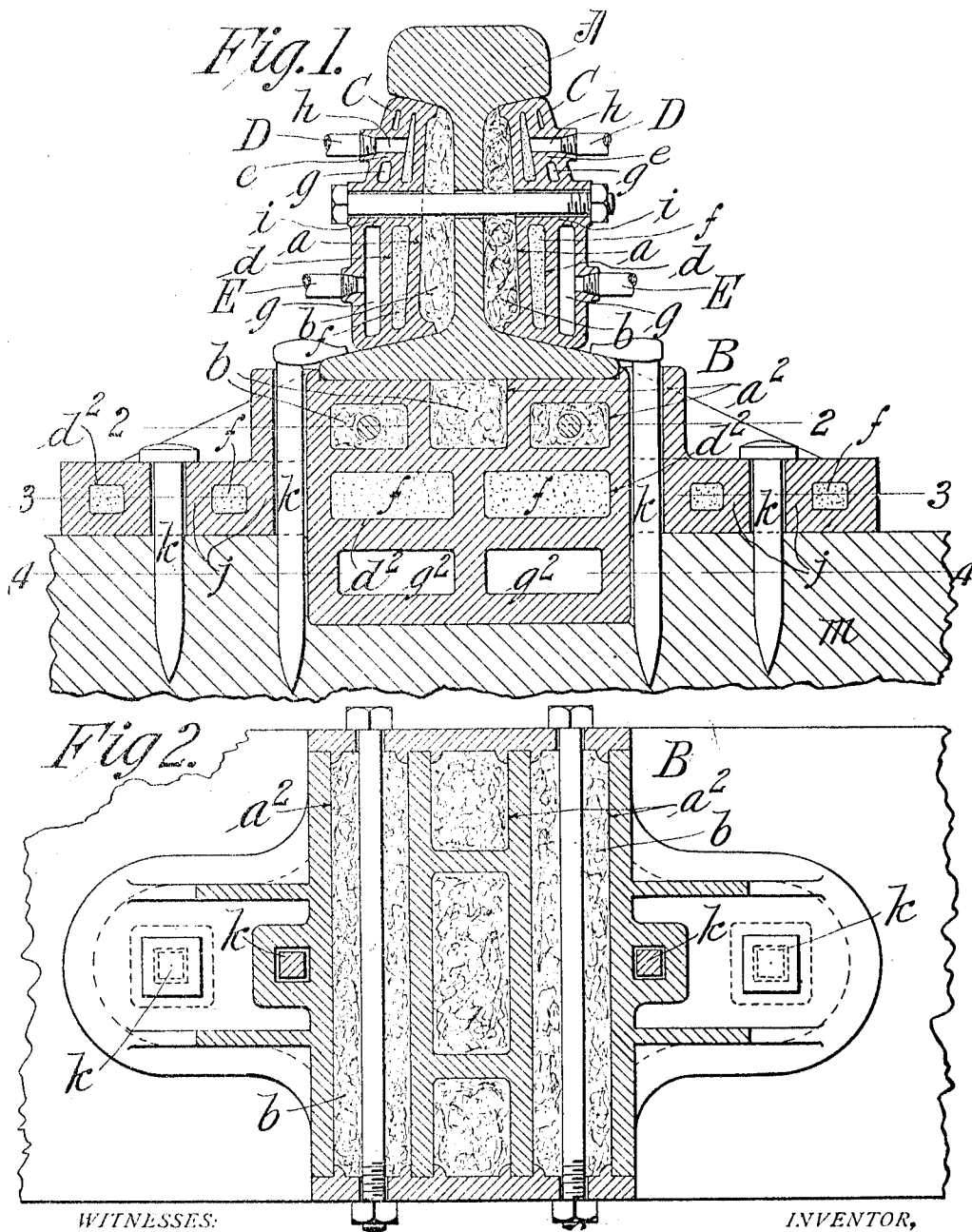


W. G. KNIGHT.  
SILENCER FOR RAILWAYS.  
APPLICATION FILED DEC. 28, 1911.

1,020,507.

Patented Mar. 19, 1912.

2 SHEETS—SHEET 1.



WITNESSES:  
*H. L. Sprague*  
*R. M. Mowry*

INVENTOR,  
*Wm. G. Knight,*  
BY *Wm. S. Bellows*  
ATTORNEY



# UNITED STATES PATENT OFFICE.

WILLIAM G. KNIGHT, OF SPRINGFIELD, MASSACHUSETTS.

## SILENCER FOR RAILWAYS.

1,020,507.

Specification of Letters Patent.

Patented Mar. 19, 1912.

Application filed December 26, 1911. Serial No. 667,913.

*To all whom it may concern:*

Be it known that I, WILLIAM G. KNIGHT, a citizen of the United States of America, and resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Silencers for Railways, of which the following is a full, clear, and exact description.

The object of this invention is to provide appliances for use in combination or conjunction with the track rails of railways which will be practicable and efficient for the deadening of sound caused by the running of cars thereover.

In the drawings:—Figure 1 is a sectional view transversely of the rail showing sound deadening devices both at the base and at opposite sides of the rail. Fig. 2 is a horizontal sectional view on line 2--2, Fig. 1. Fig. 3 is a horizontal sectional view on the lower plane indicated by line 3--3, Fig. 1. Fig. 4 is a horizontal sectional view on a still lower plane as indicated by the line 4--4, Fig. 1. Fig. 5 is a side elevation on a smaller scale showing certain pipe connections with the chamber appliances to be hereinafter referred to.

In the drawings:—A represents a track rail resting on chairs B B in which features of this invention are comprised.

C C represent appliances which longitudinally extend and are sidewise applied in opposition relatively to and in contact against the track rail; and each such appliance consists of an iron body or bar having a cavity or recess *a* within its side which is toward the rail and in which is contained a completely filling quantity of a compressible material *b*, such as felt or a like fibrous material. The bar-like body C, furthermore, includes an inclosed chamber *d* within its thickness located outwardly beyond the cavity *a* in which is contained a closer pack filling *f* of sand or other granular material. And each of the bar-like bodies, moreover, has a vacuum chamber *g* therein. Each of the bar-like bodies C is of such cross sectional shape, as represented in Fig. 1, as to closely fit in the convergent space outside of the neck of the rail and between the un-

der surface of the tread portion and the top surface of the base.

For the introduction of the sand *f* into the inclosed chamber *d* in each of the appliances C, a transverse passage *h* is formed through the wall and an integral web *e* cast in the body, which web traverses the vacuum chamber *g* and prevents communication between the passage *h* surrounded thereby and such vacuum chamber. With each passage *h* a pipe D is connected which, as indicated in Fig. 5, is a branch, individual for each section or bar-like member and extended from a main pipe D<sup>2</sup> which may range along the trackway for any indefinite length so as to have connection by branch pipes similar to the one shown at D with the successive appliances C along the railway. Through this pipe a gaseous fluid may be charged to permeate the sand filling in each of the appliances D to fill the interstices therein and for the purpose of increasing the sand deadening effect; and carbon dioxid may be stated as an example of a gas which may be advantageously used as a filling or packing for the sand.

The vacuum chamber *g* in each of the appliances is connected by pipe E branched from a main E<sup>2</sup> with which an exhaust pump or apparatus may be connected for the establishment of the vacuum, the pipe connection being closed and sealed by a suitable entirely closing valve which may be individually applied in relation to the branches or the main section pipe E<sup>2</sup>.

The appliances C C are held in confinement by the bolts F F which extend transversely through both thereof and the rail, the portion of the appliances C C through which the bolt hole is made comprising internally formed webs *i* so that there can be no communication between the sand chamber and the vacuum chamber. Each chair in addition to its function of a support for a rail is also a silencer being analogous in character and effect to the appliances C C. The cavities or recesses *a*<sup>2</sup> for the felt *b* are in the upper part of and open to the top of the chair while the chamber *d*<sup>2</sup> for the sand *f* is below and separated from the felt containing recesses while the vacuum cham-

ber  $g^2$  in each chair is in the lower portion thereof and below the sand chamber.

As a matter of proper design and for the strength of the rail support it is made webbed or ribbed so that it is rendered more or less cellular, and internally located webs  $j$  are provided to surround the vertical holes through which are passed the spikes  $h$   $h$  which confine the chair to the tie  $m$  or other base support therefor. The branches  $D^3$  connect the main gas supplying pipe  $D^2$  with each sand chamber  $d^2$  in the chairs, and other branches  $E^3$  connect the section pipe  $E$  with the vacuum chamber or chambers in each chair.

The felt  $b$  or filling of compressible material in the recesses or cavities in the sides of the appliances next adjoining the rails has a muffling effect on the rail; and the sound produced by the running of cars on the railway is further reduced,—the deadening effect being augmented by the incorporation therein of a gaseous fluid such as stated, while the maintenance of a vacuum in the chambers is provided therefor in the equipments and is effective for the interception of sound waves or vibratory impulses and still further to increase the silencing effect.

In long lengths of straight trackway the chambers  $g$   $g$  in the sidewise applied members  $C$   $C$  may be filled with sand or other granular material in which a gaseous fluid may be incorporated, or such chambers may be omitted. But at switches and cross-overs where the passing of cars is most frequent and the annoyance from noise is most generally greatest, the employment of devices having the chambers in which a vacuum is maintained is of the greatest advantage.

I claim:—

1. A rail silencer consisting of an appliance to lie in contact against the rail having a cavity in its side adjacent the rail, and provided with a compressible material in such cavity, and having an inclosed chamber within its thickness, in which a granular filling is provided.

2. A rail silencer consisting of an appliance, to lie in contact against the rail, having an inclosed chamber in which a vacuum is maintained.

3. A rail silencer consisting of an appliance to lie in contact against the rail having a cavity in its side, provided with a filling therein of compressible material and having an inclosed chamber in which a vacuum is maintained.

4. A rail silencer consisting of an appliance to lie in contact against the rail, having an inclosed chamber therein, in which a filling of granular material is provided and also having another inclosed chamber in which a vacuum is maintained.

5. A rail silencer consisting of an appliance to lie in contact against the rail having a cavity in its side adjacent the rail in which a compressible material is provided, having an inclosed chamber within its thickness in which a granular filling is provided and also having an inclosed vacuum chamber.

6. A rail silencer consisting of an appliance to lie in contact against the rail having an inclosed vacuum chamber and having a conduit connected thereto and communicating with said vacuum chamber.

7. A rail silencer consisting of an appliance adapted to lie in contact against the rail, having an inclosed chamber provided therein with a filling of granular material, the pores or interstices in which are filled with a gaseous fluid.

8. A rail silencer consisting of an appliance adapted to lie in contact against the rail having an inclosed chamber provided therein with a filling of granular material, and provided with a conduit having communication with said chamber for the introduction therethrough, into the chamber, of a gaseous fluid.

9. The combination of a rail with a pair of longitudinally extending and sidewise applied metallic bodies each having a cavity within its side toward the rail and containing a filling of compressible material, and each having a chamber within its thickness outwardly beyond the cavity provided with a filling of sand therein, and means extending transversely through both said bodies and the rail for holding them in confinement.

10. The combination of a rail with a pair of longitudinally extending and sidewise applied metallic bodies each having a cavity within its side toward the rail and containing a filling of compressible material, and each having a chamber within its thickness outwardly beyond the cavity provided with a filling of sand therein, each body, furthermore, having a vacuum chamber therein, and means extending transversely through both said bodies and the rail for holding them in confinement.

11. A base support or chair for a rail having a plurality of cavities in its top provided therein with a filling of compressible material and having below said cavities an inclosed chamber provided with a granular filling.

12. A base support or chair for a rail having a plurality of cavities in its top provided with a filling of compressible material therein and having, below said cavities, an inclosed vacuum chamber.

13. A base support or chair for a rail having a plurality of cavities in its top provided with a filling of compressible material therein, having an inclosed chamber pro-

vided with a filling of sand and also having an inclosed vacuum chamber therein.

Signed by me at Springfield, Mass., in presence of two subscribing witnesses.

14. A base support or chair for a rail having separated chambers within different portions of the height thereof, one thereof having a granular filling and in the other of which a vacuum is maintained.

WILLIAM G. KNIGHT.

Witnesses:

G. R. DRISCOLL,

L. C. GRANT.