

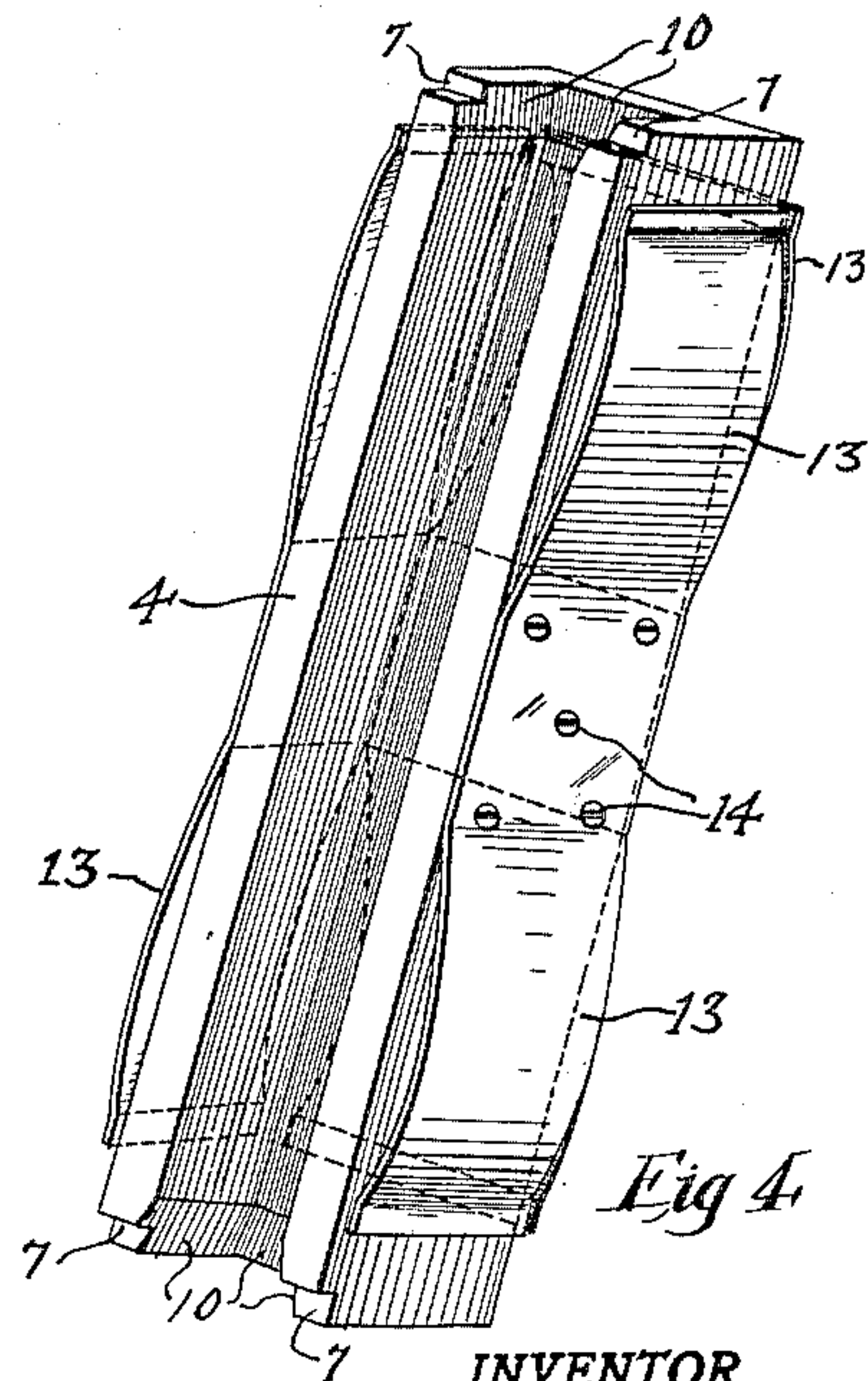
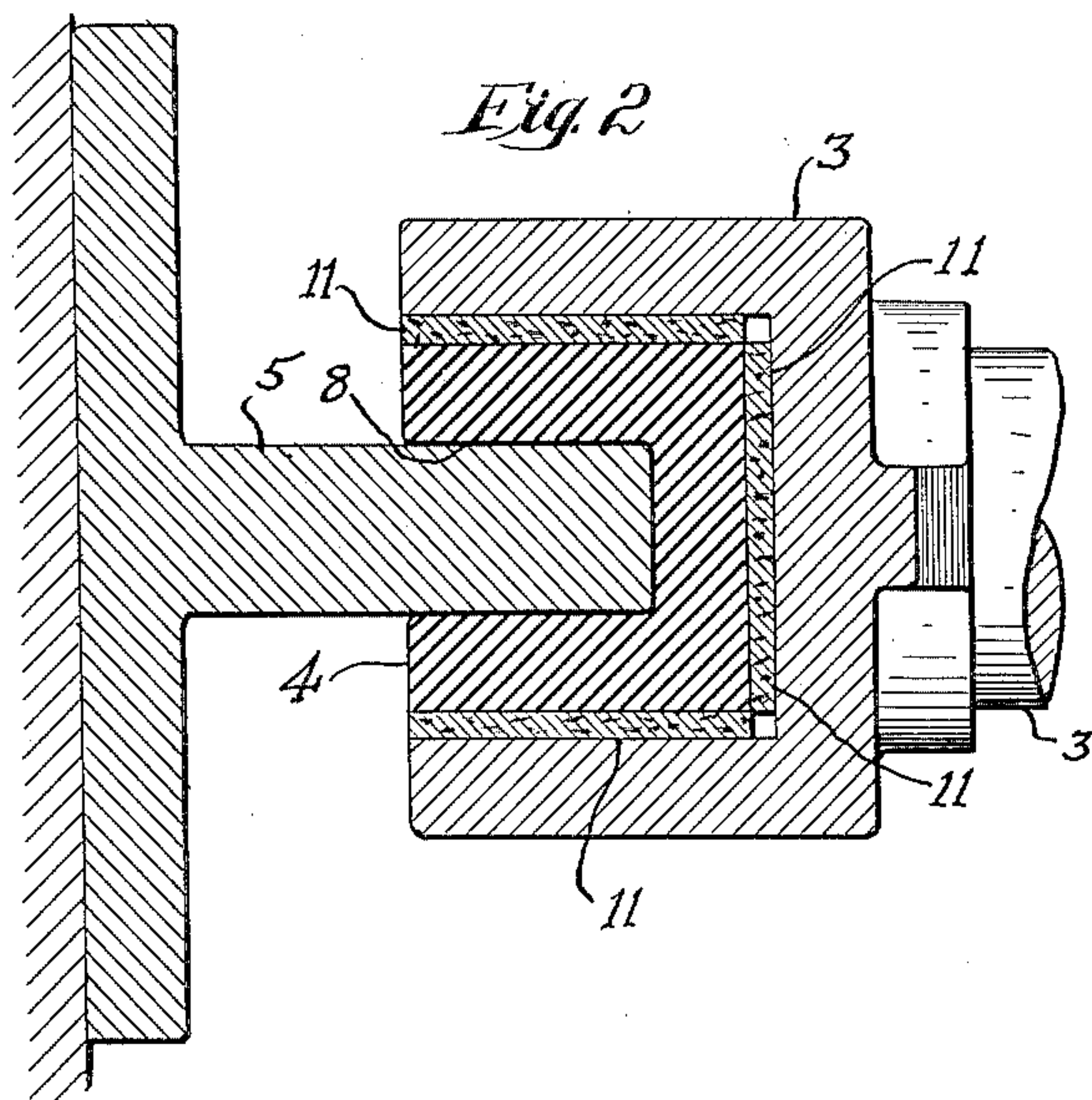
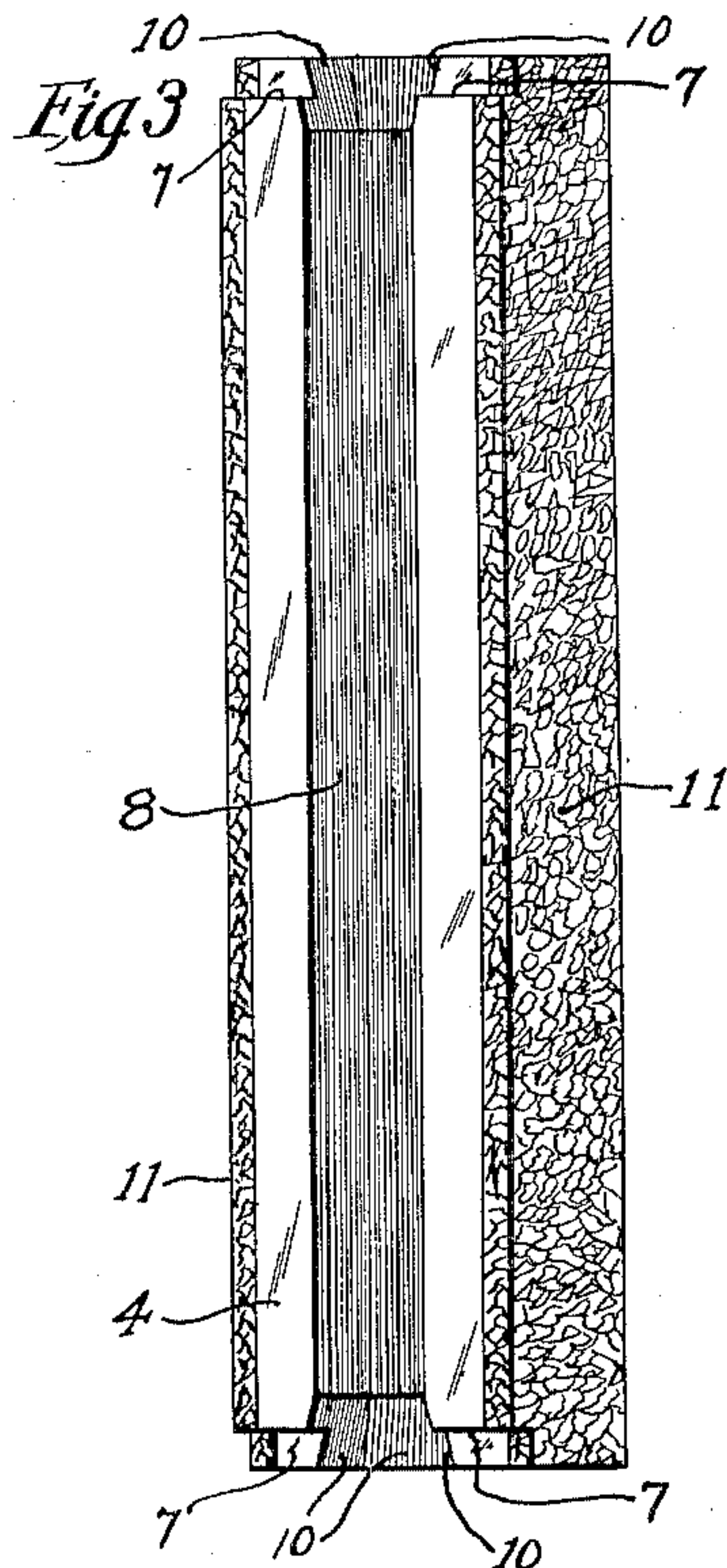
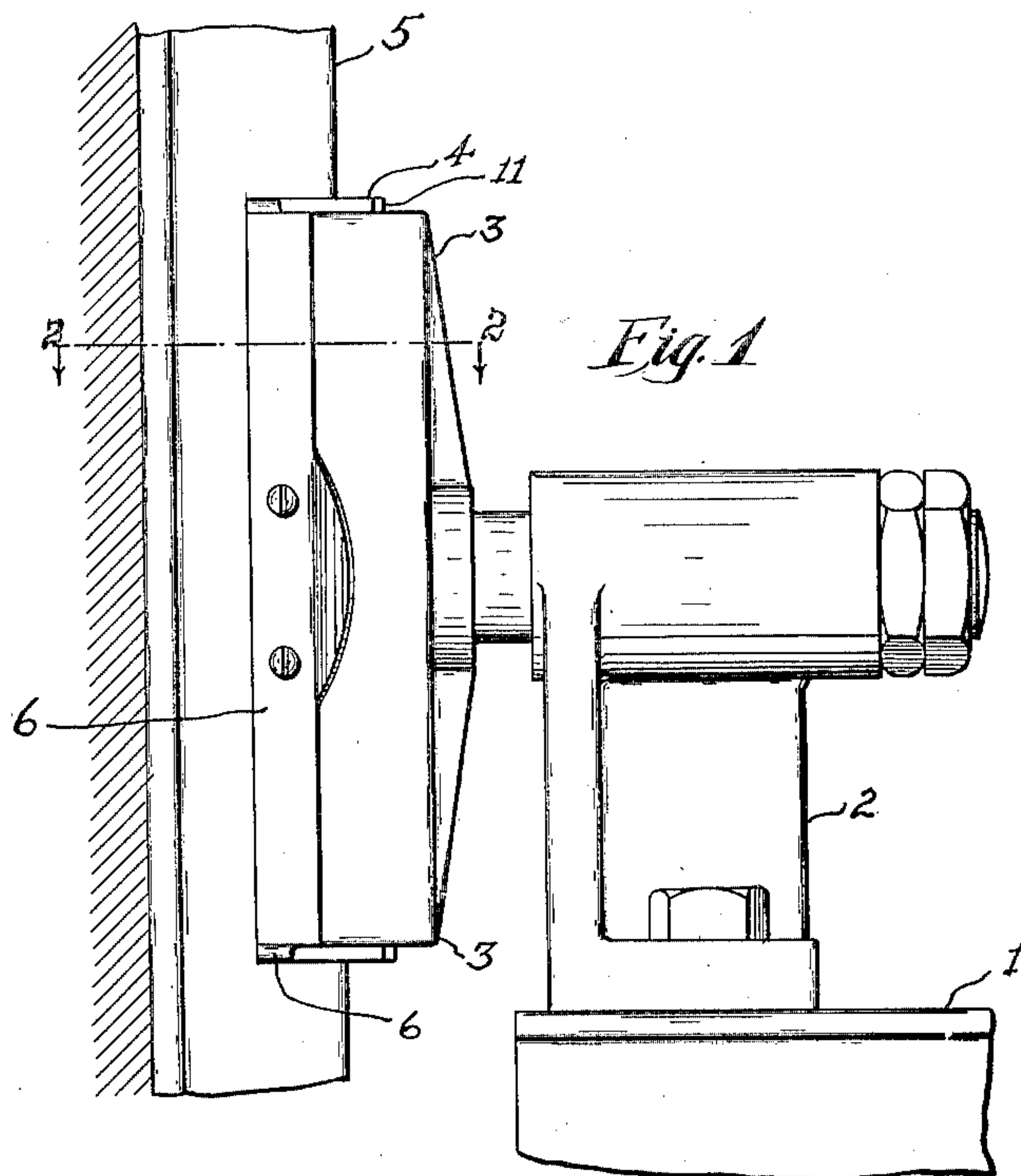
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R. L. HENRY

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ELEVATOR GUIDE SHOE

Filed April 11, 1931



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## UNITED STATES PATENT OFFICE

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## ELEVATOR GUIDE SHOE

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This invention relates, generally, to slide bearing guide shoes; and the invention has reference, more particularly, to a novel elevator guide shoe especially adapted for use on elevator cars for engaging the hatchway guide rails to guide the car in its movement up and down the hatchway.

Elevator guide shoes as heretofore generally constructed consist usually of metal members such as cast iron members which are fitted rigidly in guide shoe holders mounted on the elevator car frame. The use of these metallic guide shoes fixedly mounted in their holders is objectionable on present day high speed elevator equipment because of the noise they create and the jarring and pounding caused by the rapid movement of the metallic shoes along the guide rails, resulting in rapid wear of the guide shoes. It is impracticable to install and maintain adjoining guide rails in accurate alignment and consequently, as these rigidly supported guide shoes move along the guide rails, there is more or less vibration or noise as the same pass from one guide rail section to the next succeeding guide rail section, which noise increases in proportion to the elevator speed.

The principal object of the present invention lies in the provision of a novel elevator guide shoe which is provided with cushioning material on the surfaces thereof contacting with the guide shoe holder, whereby the shoe is rendered practically self-aligning in the holder and is substantially noiseless in operation due to the cushioning and sound-deadening action of the cushioning material.

Another object of the present invention is to provide a novel guide shoe which is adapted to be made not only of metal or other suitable material but also of molded material having self-lubricating properties, the said guide shoe having a cushioning and elastic covering as of cork interposed between the same and the guide shoe holder.

Other objects of this invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

The invention is clearly illustrated in the accompanying drawing, in which:—

Fig. 1 is a fragmentary view in elevation illustrating an elevator car frame having a holder provided with the novel guide shoe of the present invention for engaging the hatchway guide rail.

Fig. 2 is an enlarged sectional view taken along line 2—2 of Fig. 1.

Fig. 3 is a perspective view of the novel guide shoe of the present invention; and

Fig. 4 is a perspective view of a modified form of construction.

Similar characters of reference are employed in all of the above described views to indicate corresponding parts.

Referring now to said drawing, the reference numeral 1 designates an elevator car frame having a bracket 2 attached thereto, which bracket carries an elevator guide shoe holder 3 provided with the novel guide shoe 4 of the present invention. Guide shoe 4 engages the hatchway guide rail 5 to guide the elevator car in its movement along the hatchway. Clips 6 are illustrated as attached to the guide shoe holder 3 and engage in rabbets 7 provided in the ends of the guide shoes 4 for retaining the guide shoe within the holder 3.

As especially illustrated in Figs. 2 and 3, the guide shoe 4 comprises a substantially U-shaped body having an interior recess 8 for conforming to the guide rail 5. The guide shoe 4 may be made of any suitable material such as cast iron, but preferably the same is made of molded material having self-lubricating properties. It has been found in practice that a molded material consisting of asbestos, graphite and a condensation product such as bakelite, serves very well for this purpose. The asbestos ingredient gives the desired body to the composition or material, the graphite ingredient serves to give the composition the desired self-lubricating qualities and the condensation product serves as a binder.

A composition consisting of the following percentages by weight of these respective ingredients has been found to be very satisfactory in practice.



	Percent
Asbestos-----	60
Graphite-----	20
Condensation product (bakelite)-----	20

5 A simple method of forming the guide shoe 4 is to prepare an intimate mix of the above proportions of the ingredients in finely divided or powdered form, and then to place this mix into a mold of the proper shape and  
10 to either cold or preferably hot mold the mix with the application of suitable pressure. The guide shoe thus produced is found to be very rigid and strong and possesses the desired self-lubricating qualities for the use  
15 intended. The presence of the uniformly dispersed graphite throughout the body of the guide shoe serves, in conjunction with the other ingredients, to cause the shoe to have an extremely low coefficient of friction,  
20 so that the same will slide readily and easily along the guide rail 5 and with the expenditure of a minimum of tractive power.

It is desired to point out that in practice it has been found that the percentages of the  
25 several ingredients making up the composition of the guide shoe may be varied within reasonable limits, nor is it essential that the specific ingredients above listed shall be used. For example, instead of using 60% as-  
30 bestos in the above recited composition, it has been found that the percentage of asbestos may be reduced to 30%, and 30% feldspar added in lieu of the remaining portion of asbestos.

35 The upper and lower end portions of the guide rail receiving recess 8 is preferably outwardly flared as indicated at 10, thereby causing the guide shoe to ride easily from one guide rail section onto an adjoining section  
40 even if the sections are misaligned. The exterior surface portions of the guide shoe 4 which lie within the holder 3 are provided with a covering 11 of cushioning material. The covering 11 is illustrated in the drawing  
45 as made up of three sheets or panels which are secured as by gluing to the three exterior surfaces areas of the guide shoe positioned within the holder 3. The covering 11 is preferably of substantial thickness and acts to  
50 cushion the guide shoe within its holder and enables the guide shoe to align itself with the guide rail which it engages whether or not this guide rail is aligned with the guide shoe holder 3.

55 Various substances may be used in forming the cushioning material 11, but preferably comminuted cork held together by a suitable binder or adhesive and formed into panels or slabs is employed, though ordinary  
60 sheet cork may also be used. In practice, this cork cushioning material is glued or otherwise adhered to the guide shoe and when the guide shoe is mounted in its holder this cushioning material substantially eliminates  
65 noise regardless of the elevator car speed and

also renders the guide shoe substantially self-aligning so that there is no pounding or jarring of the guide shoe against this holder as the car moves up and down the hatchway. As the guide shoe moves onto a misaligned  
70 guide rail, the cushioning material 11 yields sufficiently to enable the guide shoe to adjust itself to the guide rail without unduly influencing or stressing the guide shoe holder 3.

Although cork is preferably used in forming the cushioning material 11, it is to be understood that other materials may be used satisfactorily. For example, rubber may be employed for this purpose, or even flat steel  
75 cushioning springs may be used as illustrated in Fig. 4. In this figure, the flat steel or leaf springs 13 are secured as by headed pins or screws 14 to the three exterior surfaces of the body 4 which fit within the guide shoe holder  
80 3. The springs 13 cushion the guide shoe body 4 in its holder and enable the guide shoe to align itself with the guide rail.

It will be noted that the novel guide shoe of the present invention is of extremely simple construction and is so designed as to be substantially noiseless, self-aligning and easy  
85 running in use, the same having a long life in practice. When the novel guide shoe is made of the preferred molded material, the same is self-lubricating and is well adapted for use  
90 on the highest speed elevators.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from  
100 the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:—

1. An elevator guide shoe for use in elevator guide shoe holders comprising, a rigid body provided with an elevator guide rail receiving recess therein, said body having an  
105 exterior surface portion shaped to conform to the guide shoe holder, and resilient cushioning means adhered to said exterior surface portion for interposition between the rigid body of said guide shoe and the guide shoe  
110 holder, whereby said guide shoe is rendered substantially self-aligning in the guide shoe holder and running noises are deadened.

2. An elevator guide shoe for use in elevator guide shoe holders comprising, a rigid  
120 bearing body provided with an interior elevator guide rail receiving recess, said body having an exterior surface portion adapted to conform to the guide shoe holder, and a layer of resilient cushioning material adhered to  
125 said exterior surface portion for interposition between the rigid body of said guide shoe and the rigid guide shoe holder, said resilient cushioning material serving to cause said guide shoe to be substantially self-aligning  
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in its holder and also serving as a sound-deadening medium, whereby the guide shoe and its holder may move at high speed without noise.

5 3. An elevator guide shoe for use in elevator guide shoe holders comprising, a rigid substantially U-shaped bearing body provided with an interior elevator guide rail receiving recess, said body having an exterior  
10 surface portion adapted to conform to the guide shoe holder, and a layer of resilient cushioning material adhered to said exterior surface portion for interposition between the rigid body of said guide shoe and the rigid  
15 guide shoe holder, said resilient cushioning material consisting of sheet cork and serving to cause said guide shoe to be substantially self-aligning in its holder and also serving as a sound-deadening medium, whereby the  
20 guide shoe and its holder may move at high speed without noise.

4. An elevator guide shoe for use in elevator guide shoe holders comprising, a rigid molded bearing body having self-lubricating  
25 properties, said body having an interior elevator guide rail receiving recess, and an exterior surface portion adapted to conform to the guide shoe holder, resilient cushioning material fixed upon said exterior portion for  
30 cushioning said guide shoe within its holder, said guide shoe being formed with recesses therein for receiving clamping means to hold the same in position in its holder.

5. In combination, an elevator guide shoe,  
35 a guide shoe holder having a receiving recess therein for receiving said elevator guide shoe, fasteners carried by said guide shoe holder and engaging said guide shoe for retaining said guide shoe in position within  
40 said holder recess, said guide shoe comprising, a rigid body provided with an elevator guide rail receiving recess therein, said body having an exterior surface portion shaped to conform to said guide shoe holder, and  
45 resilient cushioning means interposed between the rigid body of said guide shoe and said guide shoe holder, whereby said guide shoe is rendered substantially self-aligning in said guide shoe holder and running noises  
50 are deadened.

In testimony that I claim the invention set forth above I have hereunto set my hand this 28th day of March, 1931.

RALPH L. HENRY.

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