Nov. 18, 1930. P. FÜSGEN ET AL. 1,781,724

SPRING ARRANGEMENT

Filed Feb. 1, 1929

Fig. 1.

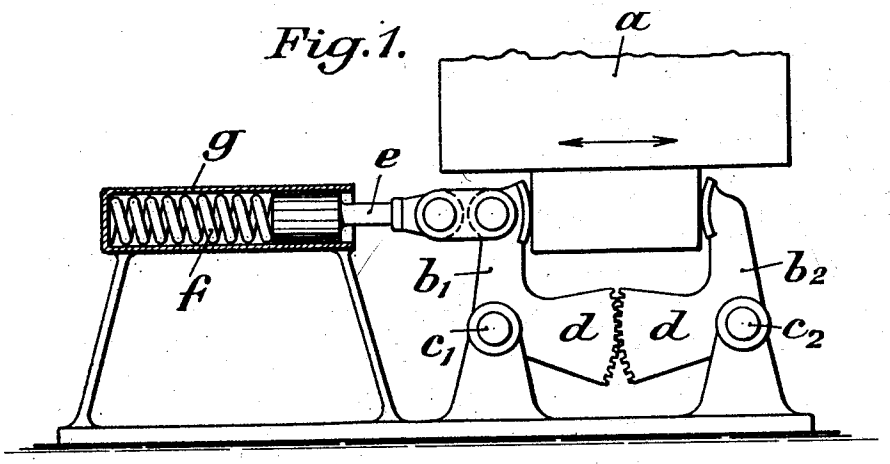
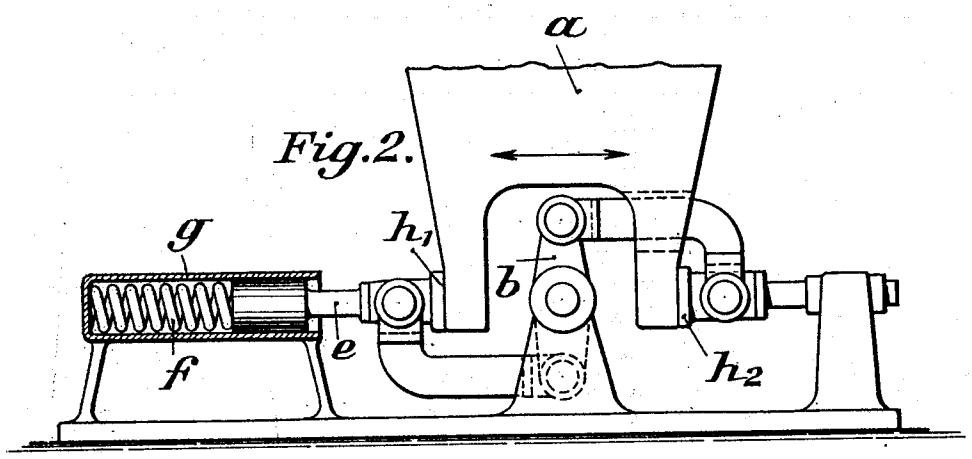


Fig. 2.



INVENTOR

Peter Füsgen
and Walter Kost

BY Louis Gamiel

ATTORNEY

Patented Nov. 18, 1930 1,781,724

UNITED STATES PATENT OFFICE

PETER FÜSGEN AND WALTER KOST, OF DUSSELDORF, GERMANY, ASSIGNORS TO RHEINISCHE METALLWAAREN- UND MASCHINENFABRIK, OF DUSSELDORF-DERENDORF, GERMANY

SPRING ARRANGEMENT

Application filed February 1, 1929, Serial No. 336,842, and in Germany June 16, 1927.

Spring arrangements are well known which act from two opposite directions upon a body to be held in a centre position and which in both directions offer a resilient resistance to the displacement of said body equal to the tension or compression of the spring. Such devices are, for instance, so arranged, that, on a movement of the body out of its centre position, the spring acting in the direction of this displacement is arrested by a stop, so that the force of this spring no longer affects said body and only the spring opposing this displacement presses against the body. On a displacement of said body in the opposite direction, the actions of both springs are exchanged. Spring arangements answering the same purpose but having one spring only are also well known. One and the same compressed or tensioned spring is hereby strained from one side, while the other end of the spring bears against a fixed stop. When the spring is strained in the opposite direction the operation is reversed.

Both these known devices require a very exact adjustment, so that on a displacement of the body out of its centre position to the one side, the spring at the other side or, in the case of a one-spring-arrangement, the one side of the spring is caused to bear against a fixed stop in the very moment in which the other spring or the other end of the spring respectively is affected by the body. Such exact adjustments, of course, cause rather high additional expenses in the manufacture of the device which often consists of relatively rough elements only. If, however, the adjustment is not exact no pressure or tension at all acts upon the body during a more or less great amount of displacement of the same out of the centre position, as either both springs or both ends of the spring are strained simultaneously and the compression or tension forces are balanced, or no compression or tension force acts upon the sides of the body when occupying its centre position.

These disadvantages are obviated by the present invention.

According to the invention two thrust members are connected together by a gear in such a manner, that they positively may be moved in opposite directions only. A common spring acts upon these thrust members in such a manner, that these members are caused to bear against a stop or stops provided at the body to be held resiliently. The spring and with the same the two thrust elements come at rest only, when both thrust members bear against the body to be held. The spring therefore tends to always bring the body in its centre position and to hold said body in this position by a compression or tension force acting from both sides, without an exact and therefore expensive adjustment being required.

In the accompanying drawing two constructions of a device according to the invention are shown by way of example in Figures 1 and 2.

As shown in Figure 1 the body a to be held resiliently, for instance, the cradle in the bogie of a railway carriage, is arranged between the ends of two angle levers b_1 and b_2 the pivots c_1 and c_2 of which are journalled in fixed points. The other ends of the angle levers are connected together by toothed segments d or in similar manner. Pivoted to the one of the angle levers, in the present case to the angle lever b_1, is a pressure rod e against the end surface of which acts the pressure of a compression spring f guided in a fixed sleeve g. If now the body a moves to the left in Figure 1, the spring f is compressed by the pressure rod e which in this manner finds the required resistance. If, however, the body a is moved to the opposite direction, the angle lever b_2 is turned about its fixed point c_2 in a clockwise direction and causes, by the engagement of the toothed segments d, the angle lever b_1 to turn about the fixed point c_1 in an anticlock-wise direction, so that the rod e is again forced to move to the left and the spring f therefore is compressed. The body a is therefore always subjected to the same resistance against movement, no matter whether it moves to the left or to the right. The spring f always tends to force the body a into the centre position, that is to say into the position in which both angle levers b_1 and b_2 engage the body a and act upon

the same with a force which corresponds to the compression or tension given to the spring.

In the construction illustrated in Figure 2 a two-armed lever b is connected to the stops h_1 and h_2 for the body a. The stop h_1 is also connected to the pressure rod e of the spring f, so that the operation of this device is exactly the same as described with reference to the construction shown in Figure 1.

Instead of using a compression spring, a tension spring or a compressed air buffer may also be employed.

Moreover, instead of the two oppositely arranged thrust elements, more than two such elements arranged in different angle positions may be provided, so that the body a may be resiliently held against movements into different directions. The thrust elements are in such a case connected together singly or by groups.

What we claim is:

1. In a spring arrangement, in combination, thrust elements engaging a body to be held resiliently and connected with each other so as to positively move together in opposite directions, a rod pivotally connected to one of said thrust elements, a sleeve, and a spring arranged in said sleeve and bearing at one end against the bottom of said sleeve and at the other end against said rod, said spring always tending to bring the said thrust elements in a position in which they engage said body.

2. In a spring arrangement, in combination, two angle levers each pivoted to a fixed point and one arm at each angle lever engaging a body to be held resiliently, a toothed segment carried by the other arm of each angle lever and meshing with one another, a rod pivotally connected to one of said angle levers, a sleeve, and a spring arranged in said sleeve and bearing at one end against the bottom of said sleeve and at the other end against said rod.

3. In a spring arrangement, in combination, a series of angularly arranged thrust elements engaging a body to be held resiliently, means for interconnecting said elements, and spring means acting upon said thrust elements and connected to one thereof.

4. In a spring arrangement, in combination, a series of angularly arranged thrust elements engaging a body to be held resiliently, means for connecting said elements in pairs, and springs acting upon one of said thrust elements connected in pairs.

5. A spring arrangement for a body comprising a plurality of thrust elements engaging the body to be held resiliently and interconnected to positively move together in opposite directions, a rod associated with one of said thrust elements, and a spring bearing against said rod to always tend to bring the thrust elements in a position in which they engage said body.

In testimony whereof we have affixed our signatures.

PETER FÜSGEN.
WALTER KOST.