Sept. 19, 1939. S. ROSENZWEIG 2,173,342

VIBRATION ISOLATION UNIT

Filed Nov. 16, 1938

Fig. 1.

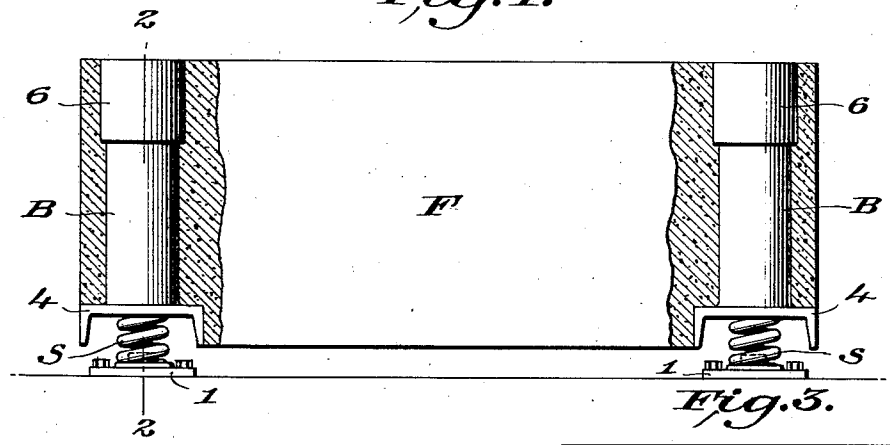



Fig. 3.

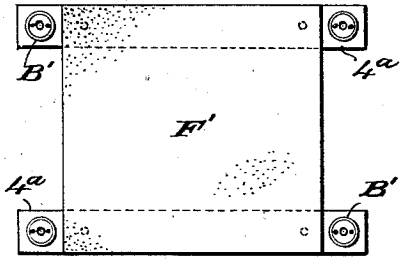
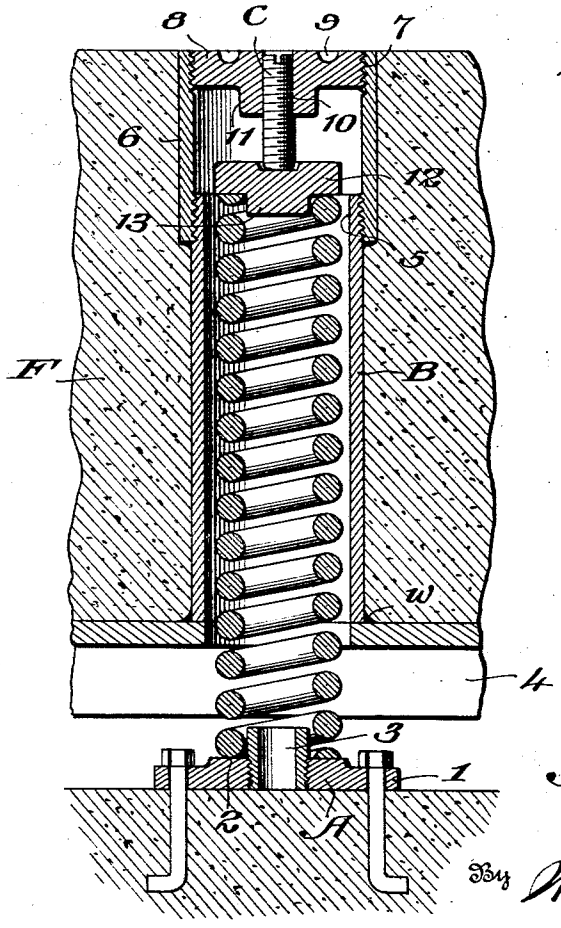



Fig. 2.



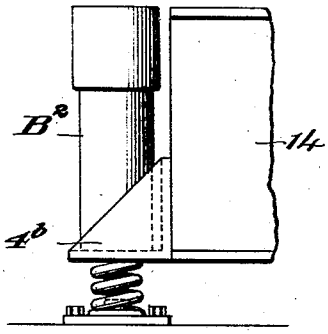




Fig. 4.

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# UNITED STATES PATENT OFFICE

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## VIBRATION ISOLATION UNIT

Siegfried Rosenzweig, Long Island City, N. Y.

Application November 16, 1938, Serial No. 240,836

1 Claim. (Cl. 248—20)

This invention relates to a novel vibration isolation unit of the type intended to be employed in connection with machines which are supported on a frame, which may or may not include a concrete foundation, and wherein the frame and foundation, together with the machine, is to be raised from the floor or sub-base by manipulating the damper itself in such a way as to lift the entire assembly to its yieldingly supported or suspended position.

A primary object of the invention is to provide a unit of compact design and sturdy construction which may be readily fabricated and assembled to meet the requirements of a particular installation. In that connection, the unit provides a housing for the coil spring used in this type of anti-vibration unit thereby protecting the spring while in use, and, at the same time, providing ready accessibility for adjustment.

A further object of the invention is to provide a construction which permits extremely critical adjustment of the springs to meet operating conditions at any time.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangements of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawing, in which:

Figure 1 is a vertical cross sectional view of an installation embodying the present improvements.

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a detail plan view of a modification where the foundation block rests on the channel irons which form a part of the foundation.

Figure 4 is a detail view illustrating a modified type of installation also using the present invention.

Similar reference characters designate corresponding parts throughout the several figures of the drawing.

The unit illustrated in the drawing comprises a base plate A for supporting a spring S contained within a tubular housing B, the said housing being provided in its upper end with suitable adjusting means C.

Referring first to the base plate A it will be observed that the same is provided with suitable marginal openings for receiving the anchor bolts 1 to anchor or secure the plate to the floor or sub-base. The central portion of the base plate is preferably raised as indicated at 2 to provide a spring supporting boss. This boss is fitted with a suitable lug or collar 3 which projects above the surface of the boss to enter the hollow core of the coil spring thereby to center the same properly on the base.

The tubular housing B is preferably welded at its lower end as indicated at *w* to the web of a channel iron 4 or other structural member forming a part of the machinery base or foundation. Thus, it will be apparent that the tubular member B which constitutes a housing for the spring S is rigidly united with a portion of the machinery base or foundation. The upper end of the tubular member B is preferably formed to detachably connect, as, for example, by the threads 5, with the mating end of an interiorly threaded tubular section 6 which forms a part of a cap or covering for the tubular member. The member 6 is also preferably internally threaded as indicated at 7 thereby to receive the mating threads of a cover disc 8. This cover disc is provided with suitable tool engaging recesses 8 and is also provided with a threaded opening 10 formed in an enlarged lug or boss 11. The threaded opening 10 of the cover disc 8 receives the threaded adjusting screw C which is preferably provided with a tool slot in the conventional manner. The screw C has its lower end in engagement with the central recessed portion of a compression plate 12 which is formed with a centering boss 13 for entering the hollow core of the spring S.

In practice the tubular member or damper housing B is first welded to the channel or other structural part 4 of the base. The base plates 1 are then correctly positioned and anchored to the floor or sub-base. If the present invention is to be used in connection with a machinery base having a concrete foundation, the entire sub-base or floor between the base plates 1 is covered with several layers of oil paper. The structural members 4 having the damper housings B welded thereto are then placed over the base plates 1 and the inner flanges of the channel or other structural member is caulked to prevent outward seepage of concrete. A wood form is then constructed around the perimeter of the foundation to the level of the damper cap 6 which, of course, is fitted to the damper housing B before the operation of pouring the concrete starts. The spring S is then placed in the housing with its lower end resting on the boss 2 of

the base plate 1, its lower open end also receiving the lug or collar 3. The compression plate 12 is then placed on top of the spring S, and the damper cover 8 is then screwed into the threads 7 of the cap 6. The adjustment screw C may then be inserted in the threaded opening 10 of the cover. After the foundation block has set it is only necessary to rotate the screw C to raise the entire foundation F from the floor and thus support it directly on the springs S.

It will, of course, be understood that any desired number of damper units may be used in a given installation, and after they are once installed it will be seen that the adjustment screw C is always available or accessible for rotation to effect any desired adjustment of the spring S.

While Figures 1 and 2 illustrate the concrete foundation F as enveloping the tubular spring casings or housings B2, it will be seen from Fig. 3 that the concrete foundation F' may be directly installed on the channel irons 4*a* without surrounding the tubular members.

As further illustrating the range of application of the invention, reference may be made to Figure 4 from which it will be observed that the unit B' which is of the same construction as the unit shown in Fig. 2 may be used in an installation where it is not necessary to employ a concrete foundation. In this case an angle member 4*b* may be used in place of a channel member. The damper housing or barrel which houses the spring may, therefore, be welded directly to the upper face of one flange of the angle member which is carried by the beam or other support 14 of the machine base. In this instance, the machinery base, including the structural members 14, is constructed while resting on the sub-base. When the foundation is complete and the machinery installed thereon, the entire assembly may be lifted from the floor or sub-base in the same manner as that described in connection with Figure 2.

Without further description, it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will, of course, be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claim.

I claim:

Means for isolating machinery bases from a sub-structure, comprising, in combination, a structural member for the base, an angle iron having its vertical leg secured to the said structural member whereby its horizontal leg extends outwardly of said member, an oblique fillet member connecting the vertical and horizontal legs of the angle iron, and an isolation unit mounted outwardly of the base, said unit including a base plate mounted on the sub-structure beneath said horizontal flange of the angle iron, a tubular member carried by the upper face of the angle iron, a coil spring having its lower end resting on said base plate and the body of said spring being housed within the tubular member, and means in the upper end of the tubular member for varying the compression of the spring.

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