May 30, 1950 A. L. NUGEY 2,509,274

COMPRESSION SPRING FOR PRESS RECOIL MECHANISMS

Filed Jan. 25, 1947

Fig. 1

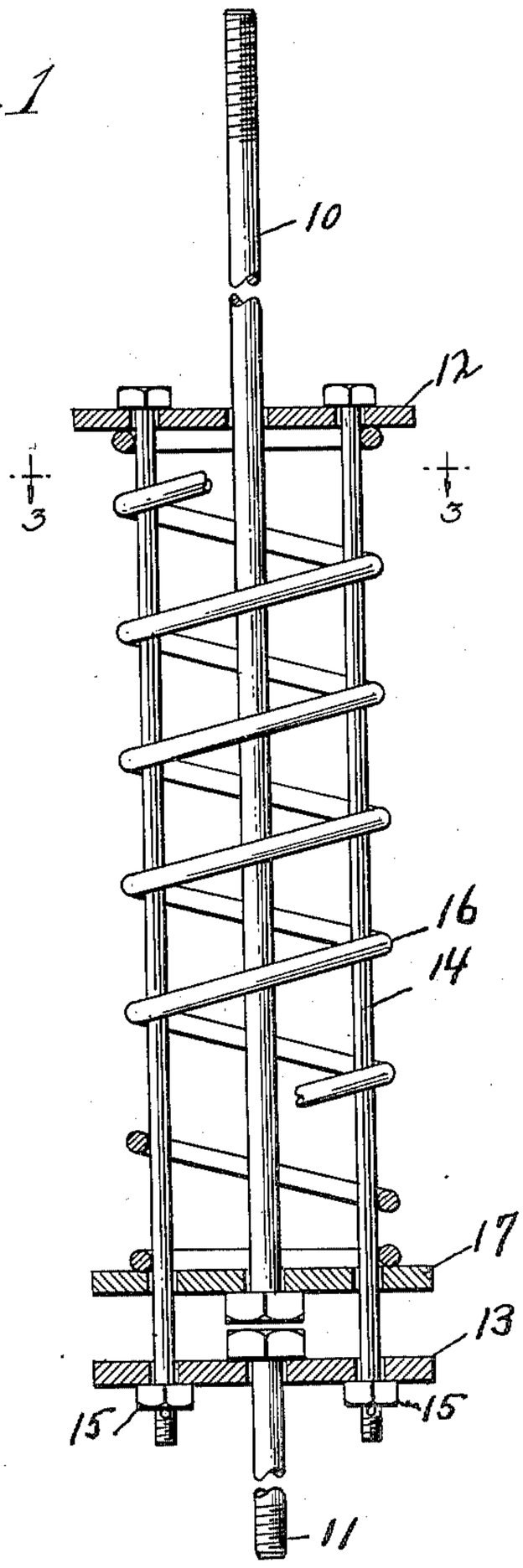


Fig. 2

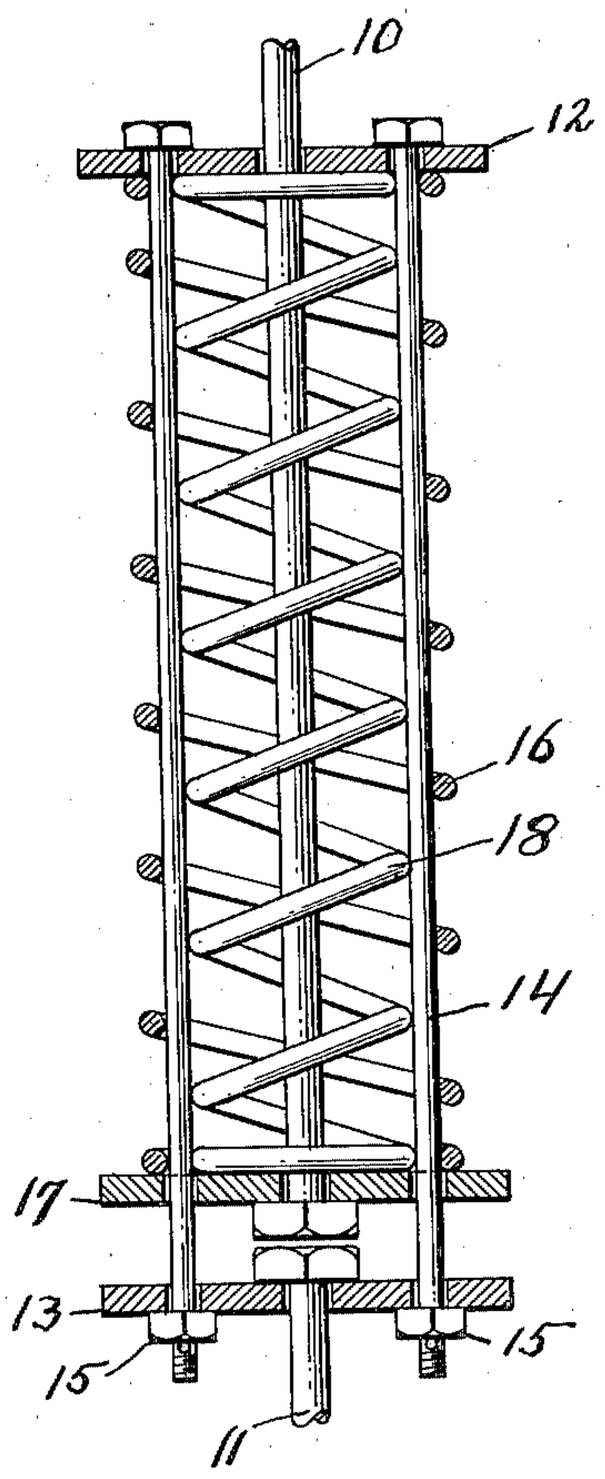
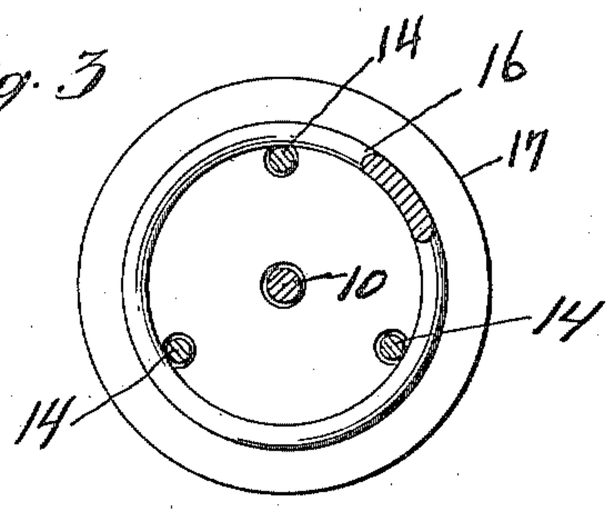


Fig. 3



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COMPRESSION SPRING FOR PRESS RECOIL MECHANISMS

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1 Claim. (Cl. 267—70)

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The invention relates generally to resilient connectors and has particular reference to such connectors as recoil mechanism used in such machinery as presses, mills, grinders and the like machines.

Previously in the employment of recoil mechanisms in presses and like machines, extension springs have been used and have generally been found unsatisfactory because of compound stresses being set up which this type of spring cannot satisfactorily handle. Under these circumstances, it has been found impossible to keep the extension springs equally loaded due to lateral movements of the springs which caused them to fail. It is an object of this invention therefore to employ a type of spring which will not have these defects and which is related to suitable structure which will prevent lateral displacement and its consequent objectionable results.

It is a further object to provide a simple structure which is much more easily adjusted, in which maintenance is reduced to a minimum, and in which the recoil action is much more positive.

A further object is to provide a simple, strong, durable, efficient device which is adaptable to be designed for the proper use of it with a wide variety of load conditions.

Further and more specific objects, features, and advantages will more clearly appear from a consideration of the specification hereinafter set forth especially when taken in connection with the accompanying drawings which illustrate a present preferred form which the invention may assume and which forms parts of the specification.

In brief and general terms, the invention comprises a compression spring device mounted on a housing which is provided with adjustable means to vary the tension in the spring device and also with simple and efficient means for guiding the spring device in its movement under compression to prevent lateral or axial displacement whereby its efficiency is maintained constant, with perfect alignment.

More particularly the invention comprises two connector elements which are to be relatively moved, the one supporting a housing on which is mounted a resilient recoil device the parts of the housing acting to tension and guide the resilient device and the other connected to a compression plate acting against one end of the resilient device to compress it as the connector is moved in the recoil action of the machine to which it is connected.

The present preferred form which the invention may assume is illustrated in the drawings, of which,

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Fig. 1 is a side elevation, partly in section, through one form of connector device;

Fig. 2 is a similar view through a modified form of device; and

Fig. 3 is a horizontal cross section taken on the line 3—3 of Fig. 1.

In the preferred form shown in Figs. 1 and 3, there are two connector elements in the form of rods 10 and 11 the latter of which is adapted in any suitable manner to be connected to a fixed part of a machine and to be permitted to pivot or swing thereon in any desired manner (not shown) and the former of which is connected to a moving part of the machine such as a recoil mechanism (not shown) and adapted to move therewith.

To the lower or relatively fixed connector 11 there is connected a housing formed of spaced plates 12 and 13 between which extend a plurality of tension elements such as rods 14 which are provided with adjusting means such as nuts 15 threadable thereon to vary the distance between the plates and therefore to alter the normal tension and position of the compression spring 16 which is wrapped around the rods. This spring bears against the under face of the upper plate 12 of the housing and against the upper face of an intermediate compression plate 17 which is apertured to slide along the housing rods and is connected to the upper connector element 10.

In this form it will be seen that as the movable connector 10 tends to move away from the other connector 11, the plate 17 or compression member connected thereto will move to compress the spring 16 and resist the movement but at the same time the nature of the housing constituted by the rods 14 will maintain the spring in proper axial alinement at all times and therefore will result in a definite determinable resistance of the spring to compression. Thus the spring in its reaction to compression is guided not only in its compressive motion but also against axial or lateral displacement and therefore there is avoided all the objectionable features of such lack of control formerly encountered in the employment of uncontrolled and guided springs.

In the form shown in Fig. 2 the action is substantially the same except that for heavier loads there is provided a second spring 18 extending between the plate 12 and the plate 17 but coiled within the area defined by the guide rods 14. This multiple springs acts in the same manner as above described and is adapted to effectively react with heavier loads when required.

Thus there has been provided a simple, efficient, strong, durable device which can be adjusted easily, maintained within minimum expense, and which is adapted to cooperate with a wide variety of loads. It is one in which the compressive resistance of one or more springs is employed instead of their extensive reaction and in which they are mounted on a housing connected to one of the relatively movable elements which housing not only acts as a controller of their normal tensive position but also to prevent any axial displacement while under stress.

While the invention has been described in detail with respect to present preferred forms which the invention may assume, it is not to be limited to such details and forms since many changes and modifications may be made in the invention without departing from the spirit and scope of the invention in its broadest aspects. Hence it is desired to cover any and all forms and modifications of the invention which may come within the language or scope of the appended claim.

What I claim as my invention is:

A resilient connection comprising, a relatively fixed connector rod, a movable connector rod, a housing connected to the fixed rod and comprising three spaced disks connected by guide rods, the disks being movable on the guide rods, a compression spring closely encircling the guide rods

on the outside of the same and bearing against two of the disks, a second coil spring coiled within and closely fitting the space between said guide rods and having its opposite ends bearing against the same two disks, one of the three disks being a compression disk apertured to slide along on and be guided by the guide rods, said compression disk being one of those against which the two springs bear and being connected to the movable rod and being located between the two remaining disks, the guide rods operating to prevent lateral distortion of both springs.

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