

DEVICE INCREASES THE MECHANICAL ENERGY

HOSTED BY AN ENGINE

1. Field of the Invention

The object of the present invention relates to a device that increases the mechanical energy provided by a motor, and can be applied in the motor industry.

2. Background

The use of large-sized engines means more energy consumption and at the same time, causing further contamination of the environment, when compared with smaller engines and capacity. However, usually, their use is justified by the technical characteristics demanded by the workload; for this reason, for some years now, numerous lines of research have been opened in search for devices that can be coupled to motors less power, and therefore consumption, so that they replace those engines of large size, without this compromise work load.

One of these works can be seen in the patent application JP 2002-005004, in which a flywheel is fixed to a main shaft that rotates by the transmission of an external force, and wherein further, said flywheel It possesses an eccentric shaft, with smaller eccentricity than the length of its radius, within which the output shaft which feeds the load is coupled; It is that it follows the rotation of the eccentric shaft. However, such a device is unstable, because the eccentric shaft is exposed to stresses of mechanical torque, even compromising its structure, making it impractical, as well as the difficulties that would require replacement of said shaft, its size makes this device often unfeasible in environments with limited space. Likewise, the applicant in the patent application PE000489-2010 revealed a force multiplication system comprising two parallel axes transversely attached to three parallel metal structures, being that on said shafts are disposed in the space between each structures, discs that act as flywheels; Also, each of the fasteners, axes with intermediate metal structure embraces an eccentric shaft in which the aforementioned rotating shafts; so that, when applying an external movement about a first axis, it transmits that movement to their respective disks, the eccentric shaft and, through the metal structure, located in the intermediate zone, the eccentric axis of the second shaft; It is that by rotating these eccentric shafts, constantly changing its center of gravity; and considering that both eccentric shafts rotate in opposite

directions, a movement about the first axis in the same direction of the outward movement is generated. However, because both axes are connected by a structure intermediate metal, and is directly influences the movement of both, this system has problems to effectively balance these movements, so that this results in power loss and large vibration; in addition, this system also occupies a large space, a lot of noise, and because of the number of components used, usually costly.

3. Description of the Invention

The aim of the present invention to provide a device that increases the mechanical energy provided by a motor, and that mitigates the deficiencies in the devices of prior art, regarding the loss of efficiency, stability, versatility and cost of implementation. As such, the device of the present invention comprises a main axis transversely attached to two support structures by two bearings, where also between the two support structures are an intermediate structure, also attached to the main shaft via one bearing; being that on the axis are arranged in the space between each of the structures, discs that act as flywheels; Also, the main shaft through the bearing, the intermediate structure, with a certain offset from the bearing center thereof, that because this bearing has a shaft with an eccentric hole which passes inside the main shaft. Finally, at the bottom of the intermediate structure below where the corresponding bearing is, an arrangement formed by a ball joint, a sliding shaft elements action-reaction and their respective supports and / or fasteners engages.

As a result of using only one axis, better use of the space, efficiency is increased because there is no longer the problem that demands working together of the two axes, and implementation costs are reduced. Another advantage of this invention is that the shaft to which is applied an external force, is the same one that performs work on the load, because it goes from end to end, significantly reducing the risk of abuse, especially when the start, when compared to those devices having more than one axis. Also it coupled to the intermediate structure according to dissipate the vibration caused by eccentricity.

4. Description of Figures

Figure 1 corresponds to the front view of the device increases the mechanical energy provided by a motor.

Figure 2 corresponds to the side view of the device increases the mechanical energy provided by a motor.

Figure 3 corresponds to the top view of the device increases the mechanical energy provided by a motor.

Figure 4 corresponds to the exploded isometric view of the device increases the mechanical energy provided by a motor. 5. Detailed Description of the Invention

Referring to Figure 1, the device increases the mechanical energy provided by a motor comprises a main shaft (6) with keyway and its respective pin, which rests on two supporting structures (1), and which is attached transversely thereto through two bearings (4), where also between these two support structures are an intermediate structure (9), also attached to the main shaft (1) through a bearing (2); being that on said shaft (6) are arranged in the space between each of the structures (1, 9), two discs (3) space; also at the bottom of the intermediate structure (9) an arrangement with sliding shaft (8) engages.

In relation to Figure 2, it can be seen that, complementarily to the sliding axis (8), the arrangement mentioned comprises a ball (11) and, at the bottom, a support (10) to accommodate said shaft (8). It should be noted that the arrangement with the visible parts (8, 10, 11) to one side of the bearing (2) is shown, although in this figure, it facilitates its assessment, this arrangement is coupled to the bottom of the intermediate structure (9) below it. Therefore, in Figure 3, which shows a top view of the device, it is not possible to appreciate the arrangement in question.

Then, referring to Figure 4 showing the exploded device, it further comprises a shaft with an eccentric hole (5), inside which the main shaft (6) engages; being that this occurs within the bearing (2), so that the main shaft (6) passes inside the bearing (2) with a certain offset from the center. Also returning to the arrangement with a sliding axis (8), it is coupled to the intermediate structure (9) via a support (12) which allows fastening to the head (11), and this in turn to the sliding axis (8), which is held at the bottom by a horn (13) located inside the support (10); being that inside the support (10) and the part of the sliding shaft (8) having contact with said support (10), are elements of action-reaction (not shown) that allow balancing the forces applied on the shaft (8), so that the vibrations sustained by the movement of the main shaft (6) is reduced. Finally, the support (10) is fixed to a flat surface, which may be parallel or be in the same

plane as the surface on which rest the support structures (1). In this figure, once again, it has run toward one side, fix position in the intermediate structure (9) with respect to the location of the bearing (2), because as already mentioned arrangement is by below said bearing (2).

Regarding the operation of the device, on one end of the main shaft (6) an external movement is applied (for example, via a motor), which causes it to rotate, transmitting said movement to the discs (3) , which act as flywheels, the eccentric shaft (5), that because of this eccentricity vary repeatedly its center of gravity during movement, resulting in a mechanical advantage that is used by the load located on the other main shaft (6). Also, due to the eccentricity mentioned, the intermediate structure (9) undergoes vibration, the same that are counteracted by arrangement with sliding shaft (8) located below the bearing (2), as to move the intermediate structure (9) also moves the slide shaft (8) and to be elements of action-reaction between it and the support (10) forces between these originate; being the patella (11) allows the slide shaft (8) has a degree of freedom, preventing it from any damages.

Additionally, in another embodiment of the invention, various arrangements, of the type comprising sliding axis (8), the intermediate structure (9), are added whenever they are placed in a multiple number of two and are positioned at a equidistant to the initial setup, bringing greater stability is achieved.

Finally, it is noteworthy that, although the main elements have been detailed to carry out the invention, others are omitted because it is already known elements in the prior art. It should also be understood that the invention is not specifically limited to the above elements, as a person skilled in the art can deduce, without much effort, these elements have their equivalents; For example, instead of a ball joint (11) can be employed an axial taxiing or any other element that provides the same functionality. Another example is given by the elements of action-reaction, which may well be implemented in the form of a spring, a magnetic element, an electromagnetic element or similar. Similarly, in this sense, the technical characteristics of the support structures (1) and the intermediate structure (9) can be of any shape or material known in the prior art.

Claims

A device that increases the mechanical energy provided by a characterized engine comprising: a main shaft (6) with keyway and its respective pin, wherein one end is connected to a motor and the other to a workload of so that the transmitted first to the second mechanical energy; two support structures (1) parallel, which rests on the main shaft (6), the same which is attached transversely across these two bearings (4); one parallel to the supporting structures (1) and attached to the main shaft (6) through a bearing (2) intermediate structure (9); at least two discs (3) on the main shaft (6), and which are arranged in the space between each of the structures (1. 9); a shaft with eccentric hole (5), inside which the main shaft (6) is coupled, being that said coupling occurs inside the bearing (2), so that the main shaft (6) passes inside of the bearing (2) with a certain offset from the center, so that the set of elements formed by the intermediate structure (9), bearing (2), shaft with eccentric hole (5) and the corresponding volume of the main shaft (6), repeatedly changing its center of gravity during movement of the main shaft (6), resulting in a mechanical advantage that is exploited by the load located in one end of the shaft (6); an arrangement which is coupled to the bottom of the intermediate structure (9) below the bearing (2), said arrangement comprising a sliding axis (8), a support shaft (10), and at least an element of action-reaction, located within the contact surface between the support (10) and the part of the sliding shaft (8) so that balances the

forces experienced by the sliding shaft (8) due the movement of the intermediate structure (9).

The device that increases the mechanical energy provided by a motor, according to claim 1, characterized in that the arrangement comprising the sliding axis (8), further comprising an upper support (12), so that it allows the arrangement engages the intermediate structure (9).

The device that increases the mechanical energy provided by an engine according to any of the preceding claims characterized in that the arrangement comprising the sliding axis (8), further comprising a non-rigid component (11), which allows the sliding shaft (8) have some degrees of freedom, so as to prevent it from being damaged due to the irregularity of the movement.

The device that increases the mechanical energy provided by an engine according to any of the preceding claims characterized in that the arrangement comprising the sliding axis (8), further comprising a speaker (13) holding the sliding shaft (8) to the support shaft (10).

5. The device that increases the mechanical energy provided by a motor, according to claim 3, wherein the non-rigid component (9) is a ball joint.

6. The device that increases the mechanical energy provided by a motor, according to claim 3, wherein the non-rigid component (9) is an axial set.

7. The device that increases the mechanical energy provided by an engine according to any of the preceding claims, characterized in that the "at least one element action-reaction" corresponds to at least a spring.
8. The device that increases the mechanical energy provided by an engine according to any of the preceding claims, characterized in that the "at least one element action-reaction" corresponds to at least one magnetic element.
9. The device that increases the mechanical energy provided by an engine according to any of the preceding claims, characterized in that the "at least one element action-reaction" corresponds to at least one electromagnetic element.
10. The device that increases the mechanical energy provided by an engine according to any of the preceding claims, wherein the support shaft (10) is fixed to a flat surface.
11. The device that increases the mechanical energy provided by an engine according to claim 10, wherein the planar surface is in the same plane as the surface on which rest the support structures (1).
12. The device that increases the mechanical energy provided by an engine according to claim 10, wherein the flat surface is in a plane parallel to the plane on which rest the support structures (1).
13. The device that increases the mechanical energy provided by an engine according to any of the preceding claims, characterized in that the device has

two or more arrays coupled to the bottom of the intermediate structure (9),
these are placed, wide, equidistant from the first arrangement.

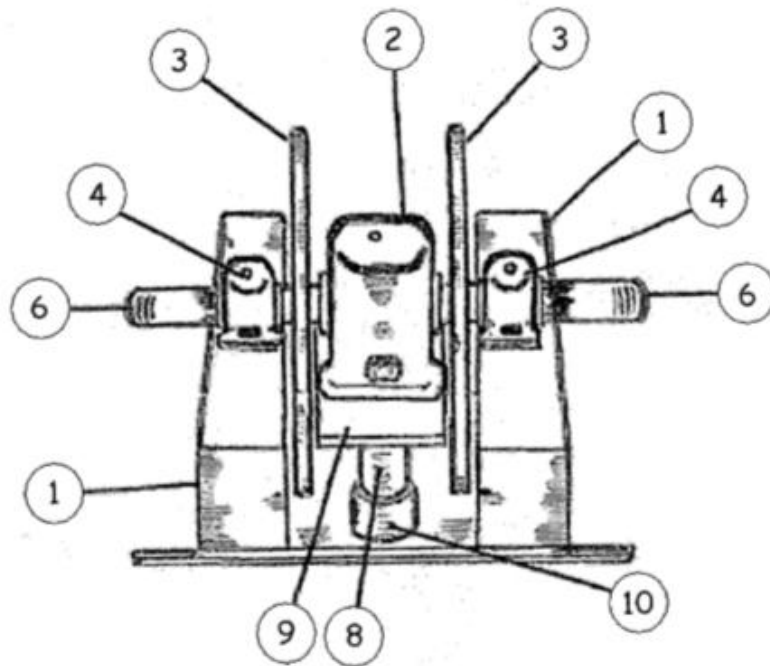


Figura 1

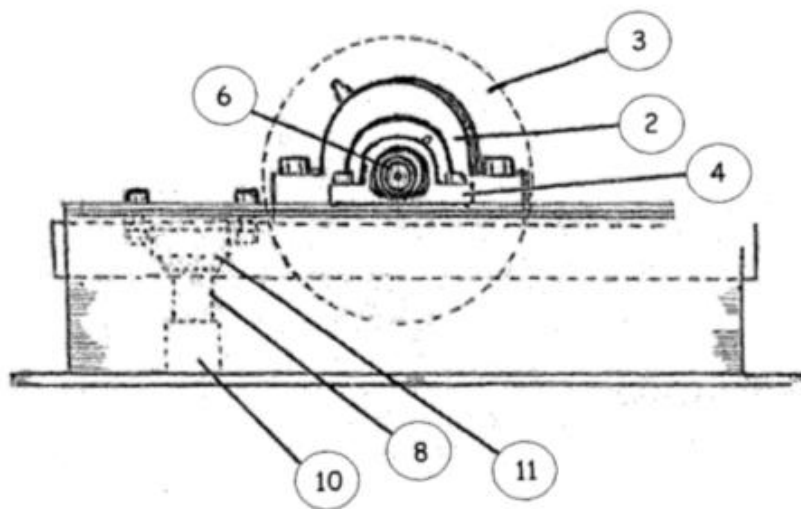


Figura 2

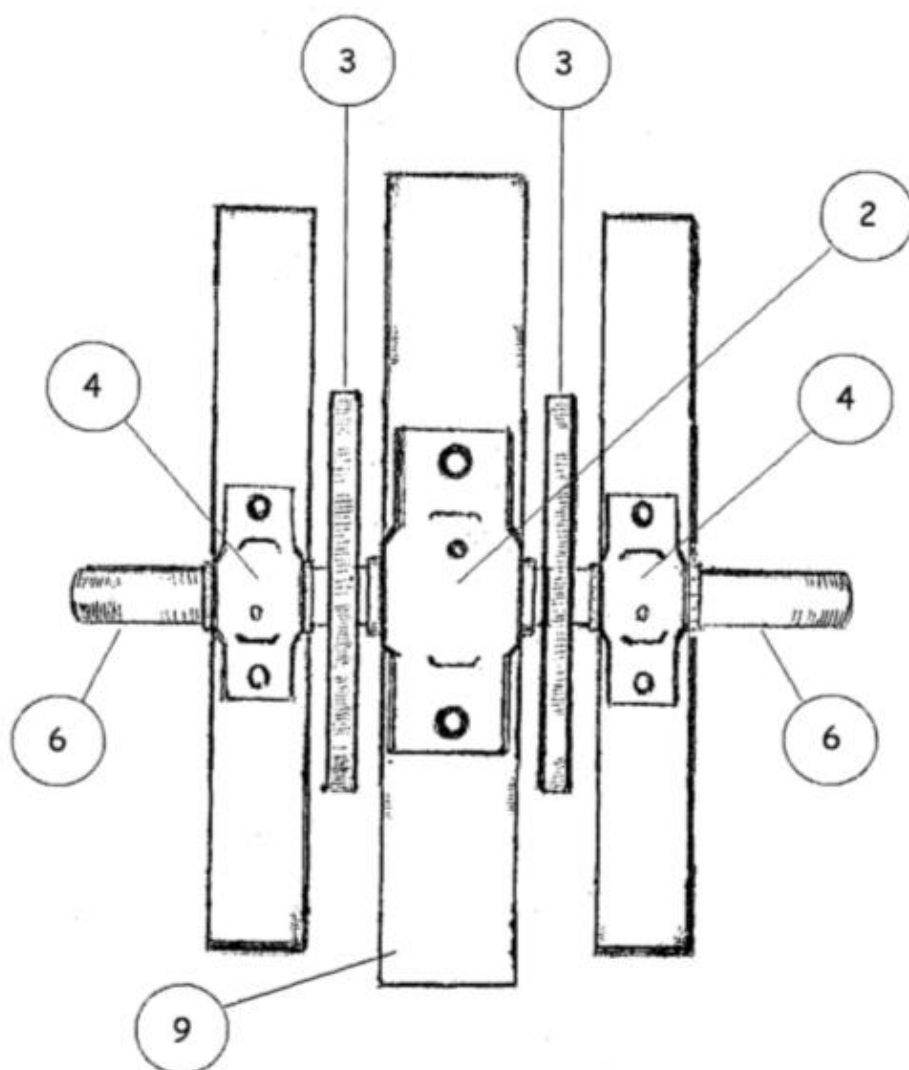


Figura 3

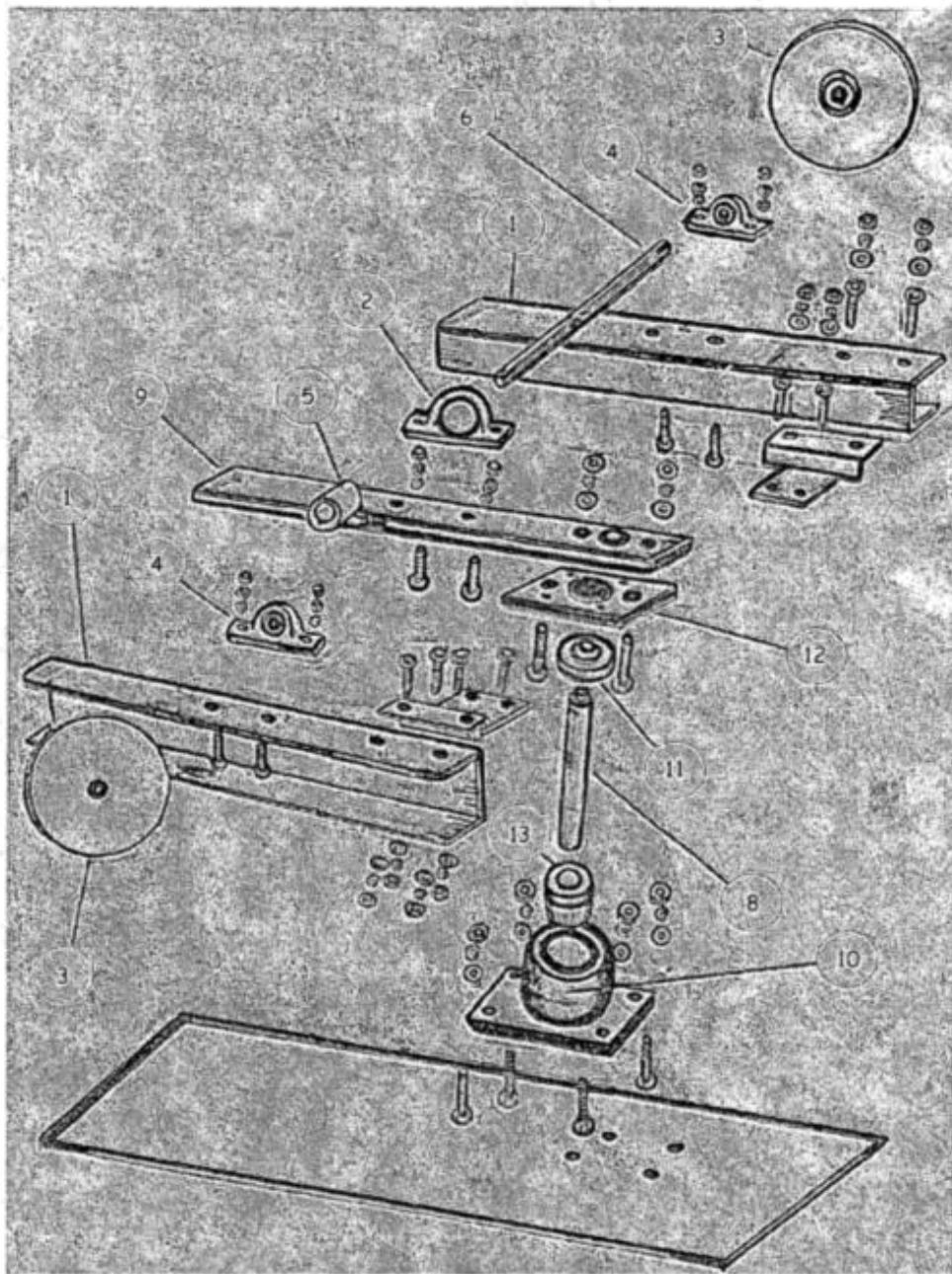


Figura 4