

Aug. 25, 1931.

K. MERZ

1,820,239

MEANS FOR AND METHOD OF COMPENSATING OSCILLATING MASSES

Filed June 18, 1928

Fig. 1.

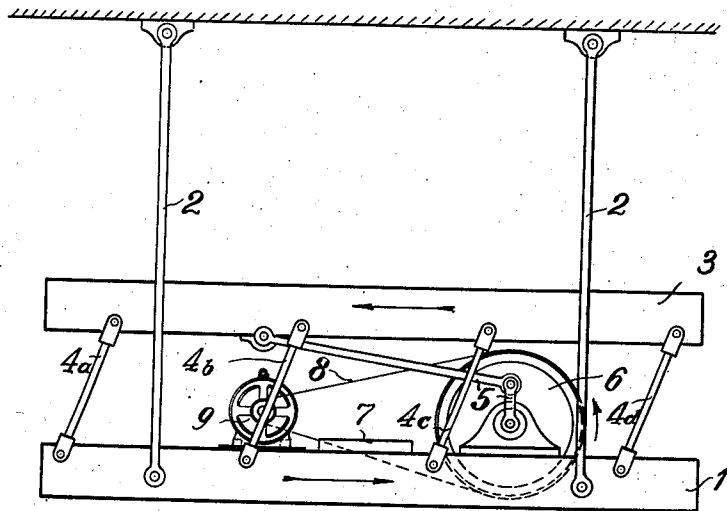
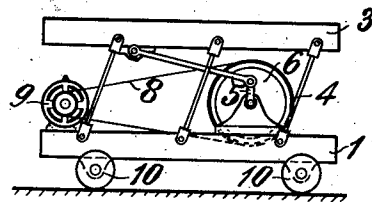


Fig. 2.



Inventor:

Karl Merz

By: W. E. Dore,

his Attorney.

UNITED STATES PATENT OFFICE

KARL MERZ, OF TIENGEN, GERMANY

MEANS FOR AND METHOD OF COMPENSATING OSCILLATING MASSES

Application filed June 18, 1928, Serial No. 286,434, and in Germany July 22, 1927.

My invention relates to mechanical devices and arrangements intended for preventing the occurrence of free forces in mechanical movements adapted to cause shocks in the supporting structure. It has special reference to oscillating masses such a swinging means for transportation like rocking or shaking troughs, which are likely to create free forces not compensated for, which forces are transmitted to the supporting structure or building, wherein they cause shocks and trembling movements of rhythmical character adapted to lead to early destruction of the structure or building.

My invention does away with these drawbacks by special arrangement of the oscillating masses in relation to each other, to the supporting structure, and to the mechanical movement driven by some machine. According to my invention the mechanical movement, with or without the driving machine, is so supported that it may slide horizontally on the supporting structure or it is hung to it adapted to swing like a pendulum. The same arrangement is provided with regard to the oscillating masses, they are also hung from the structure or otherwise so supported that they may slide horizontally.

The best effect aimed at can be had by arranging the members in the following manner, in accordance with my invention: One of the oscillating masses is supported by or from the structure in the described way; the second mass is not directly supported by or from the structure but by or from the first mass, but in the same resilient manner as described above; the mechanical movement, which for example may be a crank and lever driving, is inserted between the two masses. Thus the shocks on the supporting structure resulting from the moving masses especially when they change their direction of movement are reduced to a minimum or are even totally avoided.

If it should be considered necessary to alter the absolute moving distances of the individual masses this may be effected by adequate alteration of the masses themselves for

example by increasing or reducing their weights.

The operating engine, according to my invention, may form part of one of the oscillating masses, which may easily be provided when using an electro motor for example. But of course any other kind of engine may as well be made use of as a source of power and the mechanical movement between the two swinging masses may be driven by an elastic belt or the like.

Having given a general description of my invention I now want to point it out more in detail referring to the drawings which represent diagrammatic examples embodying my invention.

The figures are side views on the different systems.

In Fig. 1 mass 1 is suspended from the supporting structure S by means of rods 2. Mass 3 is resting on mass 1 by means of stiff rods 4 (a, b, c, and d). There is a crank and lever arrangement 5 inserted between masses 1 and 3. Electro motor 9 by means of belt 8 and fly wheel 6 drives crank 5. An additional weight 7 may be added to mass 1 for example for the purpose of adjusting the swinging distances of the masses.

Instead of hanging the masses to the fixed structure S they may as well be supported by it from below, like this is represented in Fig. 2. Here wheels 10 are provided for the purpose of allowing for the necessary sliding horizontal movement.

Rods 4 are assumed to be stiff in the examples shown in the drawings and accordingly they are journaled at both ends. They may as well be elastic rods like leaf springs, but then their ends have to be in rigid connection with the masses.

I do not want to be limited to the details described or shown in the drawings as many variations will occur to those skilled in the art.

What I claim is:

1. A device of the type described comprising a fixed supporting structure; a system of masses supported by said structure but free to oscillate horizontally as a whole; said system comprising two masses, one supported

by the other but free to oscillate horizontally with relation to each other, and a mechanical movement inserted between said two masses adapted to cause said masses to oscillate in relation to each other, and a prime mover adapted to drive said mechanical movement, said prime mover forming part of one of said oscillating masses.

2. A device of the type described comprising a fixed structure; a mass adapted to oscillate horizontally in relation to said structure and being suspended thereto; a second mass adapted to oscillate horizontally in relation to said first mass and being supported by said first mass; a crank and lever arrangement inserted between said two masses; and a motor for operating said arrangement; said motor forming part of one of said masses.

3. A device of the type described comprising a mass mounted to reciprocate and a second mass mounted on the first mass to reciprocate in the same direction as the first mass, reciprocating mechanism mounted on said first mass and connected to said second mass and a motor mounted also on said first mass to drive said reciprocating mechanism.

KARL MERZ.

30

35

40

45

50

55

60

65