

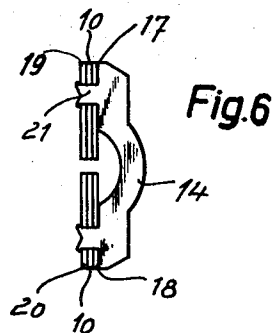
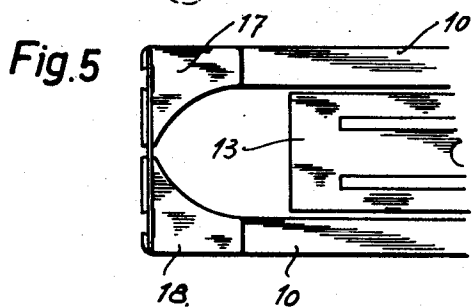
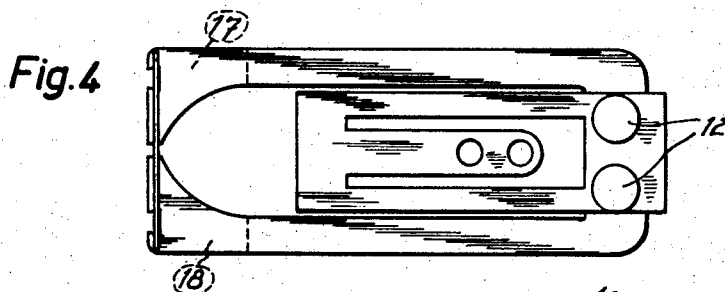
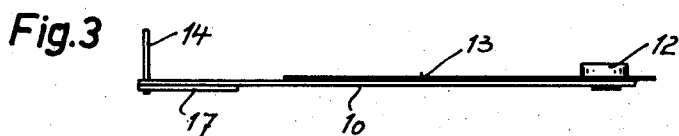
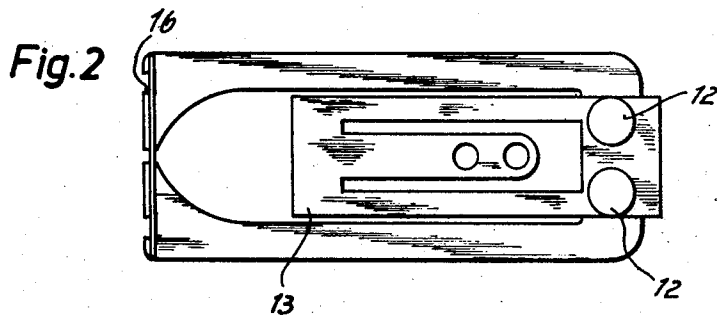
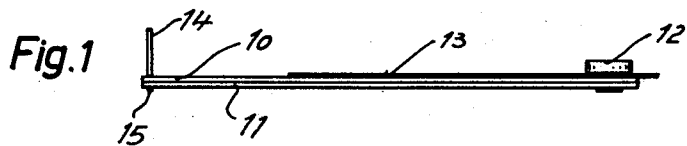
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G. GLASER ETAL  
MAGNETIC ESCAPEMENT

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2 Sheets-Sheet 1



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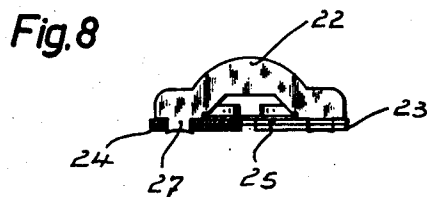
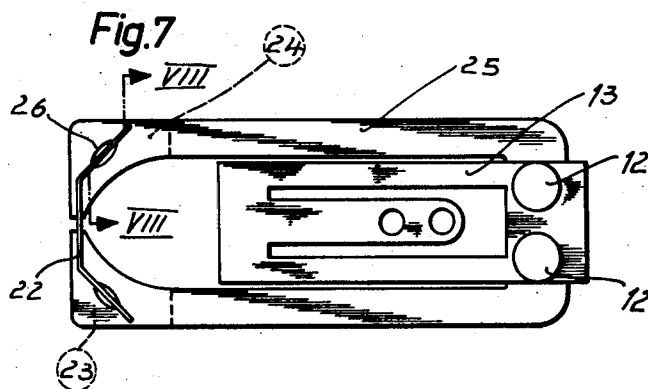
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## MAGNETIC ESCAPEMENT

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5 Claims. (Cl. 317-201)

The invention relates to a magnetic escapement with an oscillator comprising an oscillating spring and a magnet composed of at least two lamina pieces at least partly congruent which are stamped from sheet metal and held together preferably by a bridge-shaped run-through safety stop provided with rivet lugs engaging in punched apertures. In such magnetic escapements the individual laminae of the magnets are, according to an earlier invention of the applicant, held together at one end by the run-through-safety stop and at the other end by fixing means connecting the magnet to the oscillating spring. Hereby it may happen that the laminae do not lie flat one on the other between the holding means but gape slightly. This can cause asymmetry in the oscillatable assembly by which the natural frequency an amplitude of oscillation are influenced. This objection cannot, however, be overcome by a special treatment of the oscillating spring. Such an oscillator is therefore often useless.

According to the invention the individual laminae forming the magnet are connected together by metal cement in addition to the fixing means for the oscillating spring and eventually also for the run-through safety stop. The magnet may, for example consist of only one continuous lamina on the poles of which additional lamina pieces are fixed. The additional lamina pieces are preferably arranged on both sides of the poles of the continuous lamina. By this means any change in the symmetry of the magnet caused by the fixing means of the oscillating spring and of the run-through safety stop is prevented in a very reliable manner.

The invention is hereinafter explained in greater detail with reference to the accompanying drawings, in which:

FIGS. 1 and 2 show a magnet composed of two continuous laminae in side elevation and in plan view respectively;

FIGS. 3 and 4 are similar views of a magnet composed of only one continuous lamina on the poles of which additional lamina pieces are placed;

FIGS. 5 and 6 show in plan view and front elevation respectively a magnet according to FIGS. 3 and 4 in which lamina pieces are fitted on both sides of the poles, and

FIGS. 7 and 8 show a magnet in which the run-through safety stop fixing the additional lamina pieces is constructed in a special manner, FIG. 7 being a top plan view and FIG. 8 a front elevation in which the left portion of the magnet is in section taken on line VIII-VIII of FIG. 7.

In FIGS. 1 and 2, the two continuous laminae forming the horse-shoe magnet are designated by 10 and 11. Onto the surfaces of the laminae 10 and 11 facing each other a high-grade metal cement is applied, whereupon the laminae are pressed together and connected to the oscillating spring 13 by rivets 12 while the run-through safety stop 14 is wedged by means of its rivet lugs 15 in dove-tail guides 16. Instead of applying the metal cement before riveting the laminae, the laminae can first be riveted to-

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gether and then bent slightly asunder in the middle between the rivets with the aid of a tool, whereupon they are smeared with metal cement and finally pressed together again. The pressing together of the laminae 10 and 11 and the setting of the metal cement can be effected in a relatively short time and is dependent upon the kind of cement employed, and whether it is carried out in cold state or whether a heating arrangement is employed. To prevent the laminae from gaping, the magnet may be composed, for example according to FIGS. 3 and 4, of only one continuous lamina 10 of the same thickness as the lamina 10 shown in FIGS. 1 and 2. In this case additional lamina pieces 17 and 18 are placed on the poles of the lamina 10 and are of the same thickness as the continuous lamina 10. The lamina pieces are adapted to the shape of the poles of the continuous lamina 10 and, like the continuous lamina, have dove-tail guides 16 in which the run-through safety stop 14 is inserted and riveted. It has been found that the same high constant magnetic force is obtained as with a magnet according to FIGS. 1 and 2 composed of two continuous laminae.

In the embodiment illustrated by way of example in FIGS. 5 and 6 additional lamina pieces 17, 18 and 19, 20 are placed on both sides of the poles of the continuous lamina 10 in order to obtain a somewhat greater magnetic force. The additional lamina pieces 17, 18, 19, 20 are also in this case cemented to the continuous lamina and connected by riveting with the run-through safety stop 14. The run-through safety stop has, however, in this case only somewhat longer riveting lugs 21.

In the form of construction according to FIGS. 7 and 8, a particularly good bearing of the additional lamina pieces 23 and 24 against the continuous lamina 25 is attained by giving the run-through safety stop 22 a special shape. The ends of the safety stop 22 connecting the poles of the magnet are bent at an angle in relation to the middle portion. Oval holes 26 are punched in the poles of the continuous lamina 25 and in the additional lamina pieces 23 and 24 and the rivet lugs 27 of the run-through safety stop are inserted in these holes and upset. The run-through safety stop thus bears against the lamina 25 and the lamina pieces 23 and 24 along a relatively long stretch with the result that these lamina pieces bear tightly. At the same time, however, the run-through safety stop is hereby given a better hold and, after being riveted, positively assumes the correct position so that subsequent work is unnecessary. It is evident that a suitably bent run-through safety stop can also be employed on the magnets composed of two or more continuous laminae shown in FIGS. 1 and 2.

We claim:

1. A magnetic escapement with an oscillator comprising an oscillating spring and a magnet defining pole pieces and composed of at least two at least partly congruent lamina pieces of sheet metal held together by a metal cement and a bridge-shaped run-through safety stop engaging in punched apertures and provided with rivet lugs.

2. A magnetic escapement according to claim 1, in which additional lamina pieces are provided with the additional lamina pieces provided on the poles of the magnet, said magnet being composed of at least one continuous lamina.

3. A magnetic escapement according to claim 1, in which additional lamina pieces are provided with the addi-

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tional lamina pieces provided on the poles of the magnet, said magnet being composed of at least one continuous lamina, and the additional lamina pieces being arranged on both sides of the poles of the continuous lamina.

4. A magnetic escapement according to claim 1, in which the ends of the run-through safety stop connecting the magnet pole pieces are bent at an angle relative to, the middle part and in the direction of, the longitudinal axis of the oscillator.

5. A magnetic escapement according to claim 1, in which the ends of the run-through safety stop connecting the magnet pole pieces are bent at an angle relative to,

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the middle part and in the direction of, the longitudinal axis of the oscillator, and in which the magnet has in its pole pieces slotted holes extending in the direction of the bent ends of the run-through safety stop for fixing said stop.

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