Aug. 23, 1938. A. D. SHAW 2,128,058

ELECTRIC ALARM MAT

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Fig. 1.

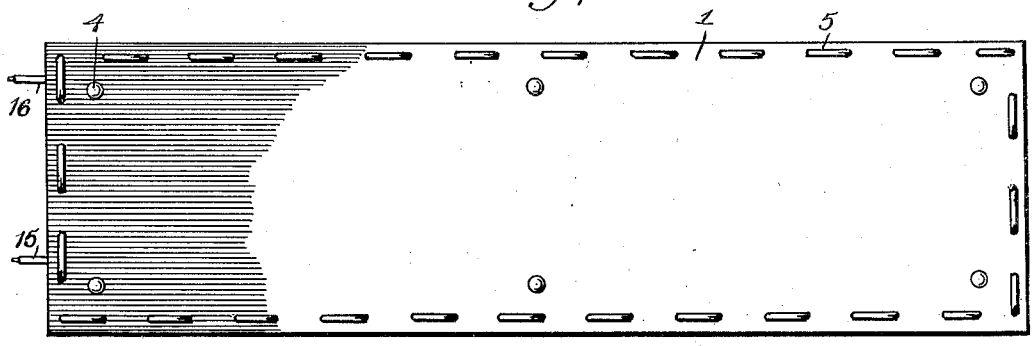


Fig. 2.

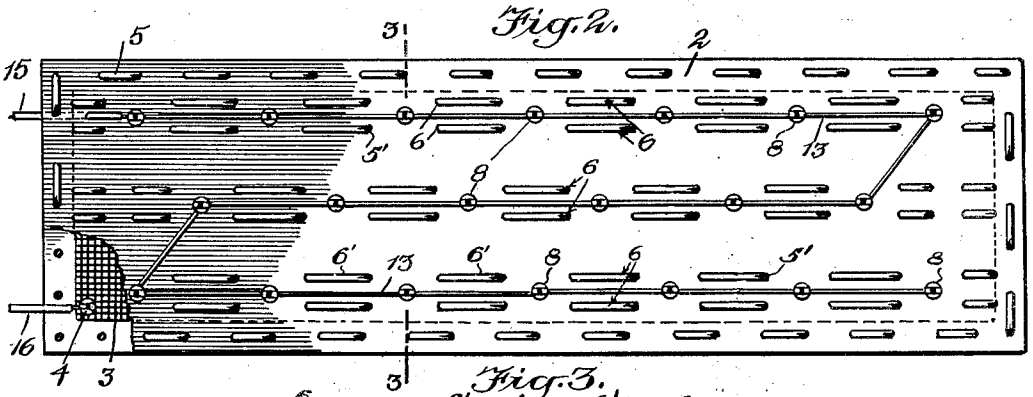


Fig. 3.

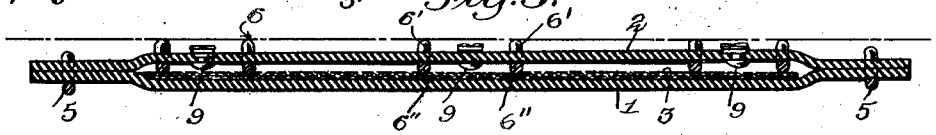


Fig. 4.



Fig. 5.

WITNESSES

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ELECTRIC ALARM MAT

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2 Claims. (Cl. 200—86)

This invention relates to alarm signalling devices, and particularly to an electric alarm mat, the object being to provide an improved construction of mat which will operate efficiently but will not give a false alarm.

Another object of the invention is to provide an alarm mat which is simple in construction but effective in that it will operate when engaged by either a heavy or comparatively light object.

A further object, more specifically, is to provide an alarm mat having suitable contacts and rubber strands or tubes acting to normally hold the contacts out of engagement.

In the accompanying drawing:

Fig. 1 is a bottom plan view of a mat disclosing an embodiment of the invention;

Fig. 2 is a top plan view of the mat shown in Fig. 1;

Fig. 3 is a transverse sectional view through Fig. 2 approximately on the line 3—3, the same being on an enlarged scale;

Fig. 4 is an enlarged detailed view of one of the contact members shown in Fig. 3;

Fig. 5 is a diagram for an alarm system including a part of a mat embodying the invention.

Referring to the accompanying drawing by numerals, 1 indicates the bottom member and 2 the top member of the mat. These members may be made from rubber, leather, or other desired material and also may be made of any desired thickness. However, it is preferable to make the members 2 and 3 rather thin so that the mat may be placed under a rug or carpet without being noticeable. It will also be evident that the mat could be used by placing it under a rug or carpet and that either surface of the mat may be uppermost, although ordinarily the top member 2 is uppermost.

From Figs. 2 and 3 it will be seen that a wire mesh member 3 is carried on the upper surface of member 1 and is secured to member 1 by suitable rivets 4. Near the periphery of both members 1 and 2 there are provided a number of apertures through which is threaded a rubber cable or yarn 5 that presents in a certain sense large stitches for holding the parts together. In addition, the top member 2 is provided with a plurality of pairs of rows of apertures 5′ and rubber cables or yarns 6 are threaded therethrough as shown particularly in Figs. 2 and 3. The upper loops 6′ of the rubber cable 6 act to support a rug or carpet so that the same will not bear with full force against the various contacts 8. The inner loops 6″ of cable 6 support the contact base 9 of each of the contacts 8 above and out of engagement with the wire mesh or ground contact 3.

It will be noted particularly from Fig. 2 that the respective contacts 8 are arranged between the respective cables 6 of each pair of cables. As shown in the accompanying drawing there are three pairs of cables and consequently three rows of contacts, although if desired there could be more or even less without departing from the spirit of the invention. The contacts 8 are formed as shown in Fig. 4, from which it will be seen that these contacts are really large headed rivets with the pointed ends turned over at 10 and 11 for gripping the washers 12. The respective washers 12 clamp a portion of the connecting wire 13 so that all of the contacts 8 are connected together. Preferably the wire 13 is looped around each of the stems 14 of the various contact members before the outer washer 12 is applied. This provides a good contact when the rivets are properly bent over or upset. The wire 13 is connected to a lead-out wire 15 forming part of the circuit shown in Fig. 5. The lead-out wire 16 is connected to one of the rivets 4 and forms part of the circuit shown in Fig. 5.

Referring particularly to Fig. 5 it will be seen that an alarm device 17 is provided which is illustrated as a bell. This bell is connected with what may be termed a secondary circuit 18 while the magnet 19 forms part of the primary circuit 20. The primary circuit 20 includes the lead-out wire 15, conductor 21, hand switch 22, conductor 23, the windings of magnet 19, wire 24, battery 25, conductor 26, and the lead-out wire 16. When any of the contacts 8 are forced into engagement with the wire mesh contact 3 the circuit of the battery or other source of supply will be closed and magnet 19 will be energized. This may be only momentarily but as soon as the magnet is energized it will immediately attract its armature 27 which will move against the rather delicate spring 28 until it is interlocked with the catch 29. After the end of the armature 27 has interlocked with catch 29 the auxiliary circuit 18 will remain closed even though the primary circuit 20 is immediately opened. As soon as the auxiliary circuit 18 has closed current will flow from battery or other source 25 through the conductor 24, conductor 30, the windings of the alarm device 17, conductor 31, armature 27, the latch or catch 29, and conductors 32 and 26 back to the source of current 25. This circuit will remain closed until someone manually disengages catch 29.

It will be understood that the bell or other

alarm device 17 may be placed outside of the building where the device is installed or at any desired point. Also the magnet 19, catch 29 and associated parts are preferably arranged in a cabinet at some convenient place which is preferably at a remote point to the mat with which they are connected. It will be understood that one mat may be connected up as shown in Fig. 5 or a large number may be connected to the same circuit so that in case any contact of any mat is closed the alarm device 17 will begin to function. The mat is adapted to be used in dwellings, stores or other places and may be used as an ordinary mat without anything covering the same or may be used under a carpet or fabric mat. Where the mat is used alone preferably the bottom member 1 is used uppermost so that the mat will not be particularly noticeable.

By reason of the fact that the contact end 9 of the respective contacts 8 is between two supporting rubber cables, it will be positively held out of engagement with the wire mesh 3 unless some weight is applied thereto. In this way the device will never give a false alarm but will readily respond to a comparatively light weight or to a heavy weight without being injured. The alarm circuit shown in Fig. 5 has been shown to illustrate one form of signal circuit, but it will be evident that the mat could be used with other forms of circuits without departing from the invention.

I claim:

1. An electric alarm mat comprising flexible top and bottom sheet members of non-conducting material, a wire mesh contact substantially covering the top surface of the lower member, a plurality of spaced contact members extending through the top member, and rows of rubber yarn carried by said top member and arranged as a seam, with each alternate loop on the outer surface and each alternate loop on the inner surface of said top member, said seam presenting supporting members arranged on each side of each contact for normally supporting the contacts out of engagement with said wire mesh contact.

2. An electric alarm mat including top and bottom members, each of said members being formed of flexible material having the characteristics of rubber, a seam extending around the perimeter of the top and bottom members, said seam being formed with rubber yarn, a plurality of pairs of rows of looped rubber yarn members carried by said top member arranged so that each alternate loop will lie on the inner surface of the top member, a row of metal contacts extending through said top member for each pair of rows of looped rubber yarn members, a wire connecting all of said metal contacts, a lead-out wire for said wire, a wire mesh contact carried by said bottom member and positioned to be engaged by any of the metal contacts of the top member when the same are depressed, and a lead-out wire for said wire mesh contact, said loops of rubber yarn on the inner surface of said top member acting as spaced resilient spacing members for holding said top and bottom members apart and said contacts normally out of engagement with said wire mesh.

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