Feb. 8, 1938. W. COLVIN, JR 2,107,598

RUG OR CARPET

Filed Oct. 11, 1935 3 Sheets-Sheet 1

Fig. 1.

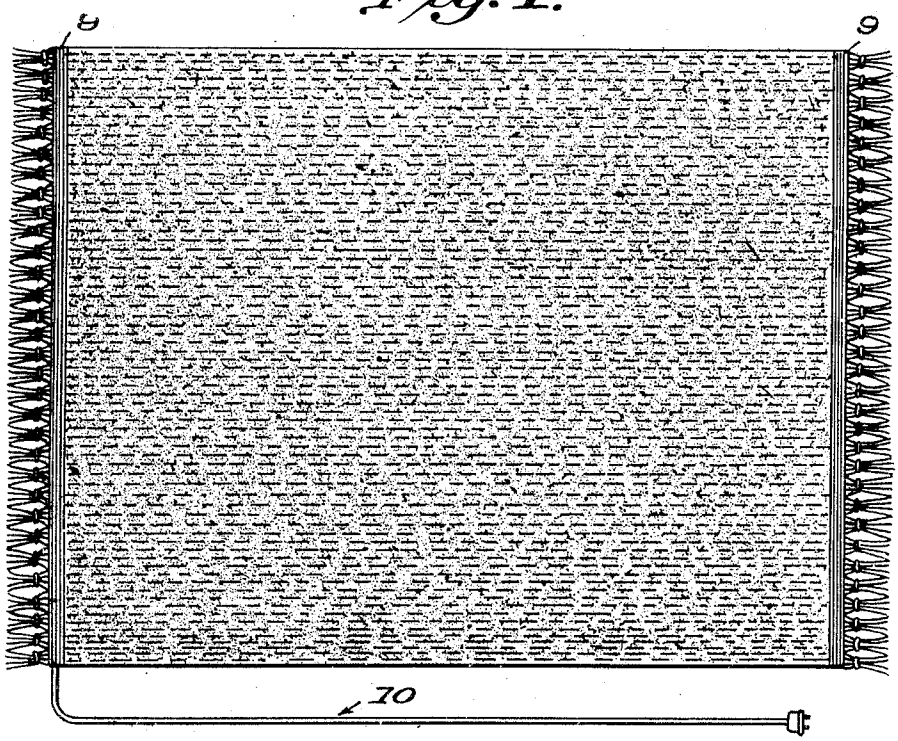


Fig. 2.

Fig. 3.

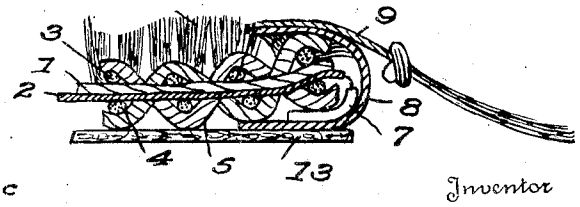
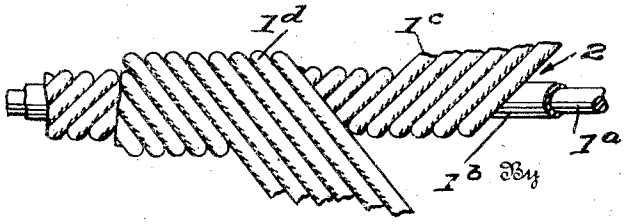


Fig. 7.



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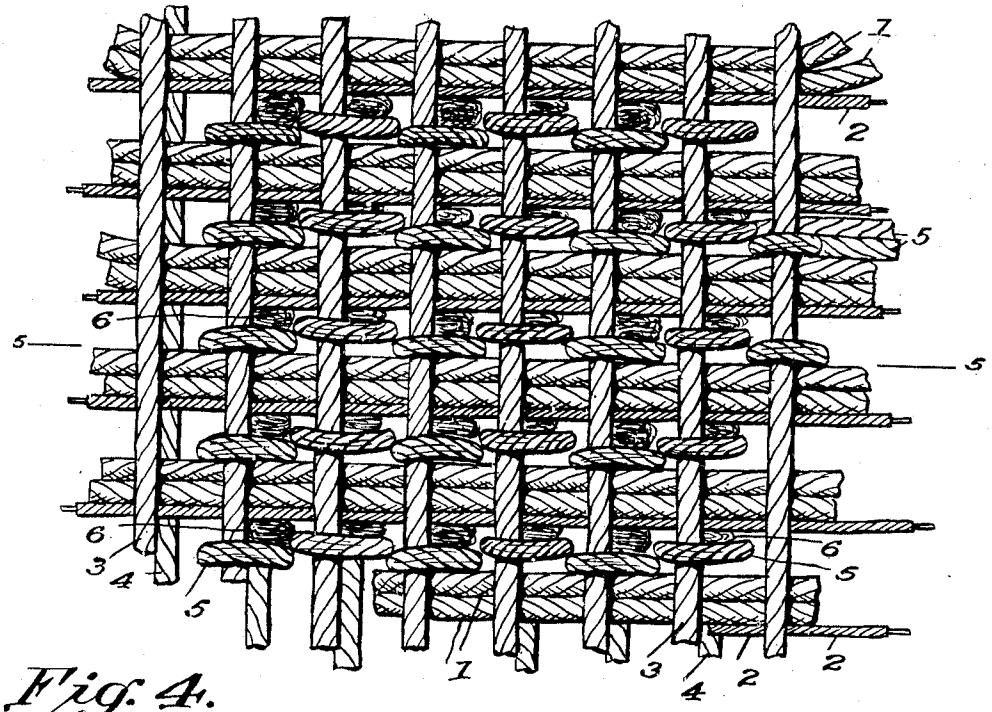


Fig. 4.

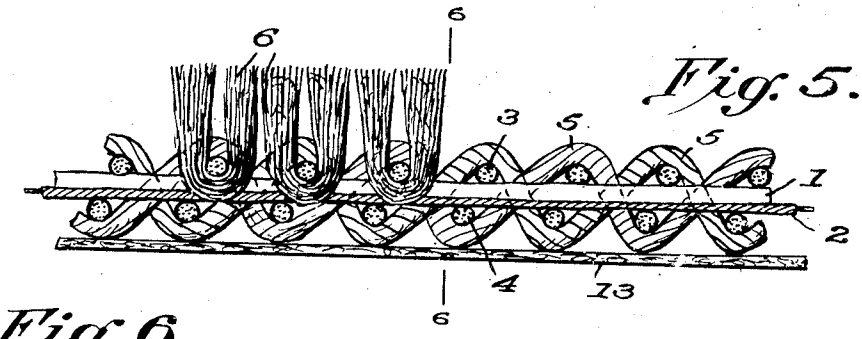
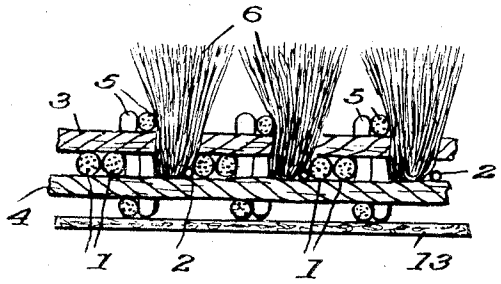


Fig. 5.

Fig. 6.



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RUG OR CARPET

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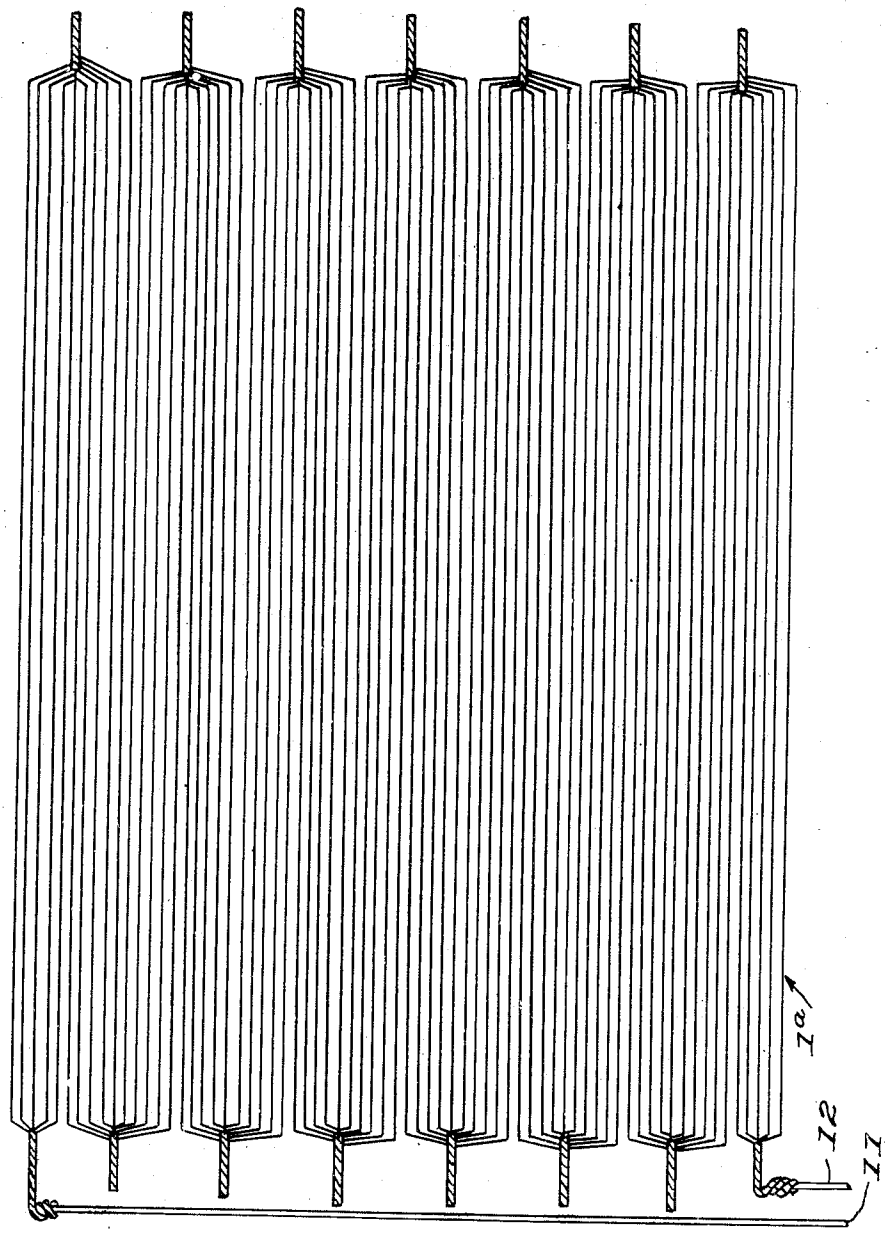

Fig. 8.

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UNITED STATES PATENT OFFICE

2,107,598

RUG OR CARPET

William Colvin, Jr., Troy, N. Y.

Application October 11, 1935, Serial No. 44,628

11 Claims. (Cl. 219—46)

This invention relates to improvements in rugs or carpets.

Objects of the invention are to provide an improved rug or carpet provided with electrical means for heating the same; to provide an improved floor covering of this character in which the heating elements are so located in the woven body of the covering as to efficiently heat the same and to be protected, and which will be of durable, efficient, satisfactory construction that can be produced at low cost.

Another object of the invention is to provide an improved floor covering of the character referred to, which while providing the desired heat will not have any harmful effect upon varnished floor surfaces.

The invention, with other objects and advantages thereof, and the particular construction, combination and arrangement of parts comprising the same, will be understood from the hereinafter contained detailed description when considered in connection with the accompanying drawings, forming part hereof and illustrating one embodiment of the invention.

In the drawings:

Figure 1 is a top plan view of a rug made in accordance with the present invention.

Fig. 2 is a side edge elevation.

Fig. 3 is a fragmentary longitudinal section.

Fig. 4 is a diagrammatic plan view of the woven body of the rug.

Fig. 5 is a diagrammatic warp-wise sectional view taken on the line 5—5 of Figure 4.

Fig. 6 is a diagrammatic sectional view taken on the line 6—6 of Figure 5.

Fig. 7 is a greatly magnified view of one of the composite metal and textile fiber threads of the rug.

Fig. 8 is a diagrammatic view showing the grouping and connections of the wire cores of the composite threads that form the electrical heating element for the rug.

While a specific embodiment of the invention is illustrated in the drawings, it will be understood that changes and modifications may be made in the particular construction shown, and the invention may be embodied in other forms as will appeal to those skilled in the art and falling within the scope of the appended claims, without departing from the spirit of the invention.

In providing my improved floor covering, I employ with the usual textile threads composed entirely of textile fiber, thread of the construction disclosed in my Patent No. 1,965,542 dated July 3, 1934, composed partially of wire and partially of textile fibers, the composite thread being woven with the usual textile fiber threads and forming part of the woven structure of the floor covering, and the wire cores of the composite threads being connected and utilized as an electrical heating element for the floor covering.

Referring to a detailed description of the particular embodiment of the invention illustrated in the drawings, the construction shown comprises body warp threads 1, 2, extending substantially in straight lines, weft threads 3, 4, disposed respectively above and below the body warp threads 1, 2, and binder warp threads 5 alternately passing over the upper weft threads 3 and under the lower weft threads 4, the body warp threads 1 and the binder warp threads being shown arranged in pairs. Between pairs of the body warp threads 1 and binder warp threads 5 are pile tufts 6, each looped under one of the upper weft threads 3 with its end portions extending upwardly above the same. The body warps 1, binder warps 5, weft threads 3, 4, and pile tufts 6, are textile fiber threads. The threads 2 are the composite threads hereinbefore mentioned. In the particular exemplification of the invention illustrated in the drawings, every sixth thread in the warp of the woven structure is a composite thread, but it will be understood that the number of composite threads 2 employed may be varied as desired. These composite threads, it will be noted, are disposed between the upper and lower weft threads 3, 4, alongside body warps 1 and the loop or base portions of the tufts 6.

As shown in Figure 7 of the drawings, each of the threads 2 comprises a fine easily flexible metal wire core 1^a having a flexible insulating coating of enamel 1^b and enclosed in two layers of wrappings 1^c, 1^d, of fibrous material such as threads of silk, wool, cotton or the like, the wrappings of thread being relatively disposed on the core so as to overcome any tendency of the composite thread to kink or snarl when used in a weaving machine. The wire cores of the threads may be made of copper, irons, low carbon steels or any other suitable metal or metal alloys. The wire cores of the threads 2 are connected to form an electrical heating element. As illustrated diagrammatically in Figure 8 of the drawings, the wire cores of groups of adjacent threads are connected together at their ends, and the adjacent groups of connected wire cores are in turn connected with each other at their ends. The number of wire cores connected in multiple

may be varied to best accomplish the desired results, depending upon the size of the wire cores, the size of the rug or carpet and the amount of heat required. In connecting the groups of wire cores, the fiber wrappings 1c, 1d, and enamel coatings are removed from the end portions thereof, and the bared end portions twisted together and solder applied. The connected end portions of the wire cores are then wrapped with insulating tape 7 or other practical insulating material and folded back upon the under side of the woven body. As shown in Figure 3, they are enclosed in binding strips 8 suitably secured to the ends of the woven body of the rug, said binding strips being in turn overlaid and concealed by suitably attached fringes 9. 10 designates a flexible conductor cord electrically connected with the terminals 11, 12, of the heating element for connecting the same to a source of electrical energy.

On the underside of the woven body is a backing or pad 13 of asbestos cloth or other heat insulating material such as hair felt. This heat insulating backing, which is cemented or otherwise suitably secured to the woven body, assists in securing the full effects of the heating element upon the upper part of the woven body of the rug, and serves to prevent injury to varnished floor surfaces in the use of the rug.

It will be noted that the invention provides a woven floor covering having an electrical heating element forming a part of the woven structure thereof and in which the heating element is so disposed therein as to efficiently heat the same and to be protected. The construction provided is of a durable, efficient, satisfactory nature, and can be produced at low cost.

What I claim is:

1. A woven floor covering having a portion of the warp thereof composed of wire threads, groups of said threads being connected together at their ends, and the groups of connected threads being in turn connected to each other at their ends to form an electrical heating element, and a heat insulating backing secured on the underside of the woven body, the connected end portions of the wire threads being folded back against the underside of the woven body and disposed between the same and the heat insulating backing.

2. A woven floor covering including body warp threads, weft threads disposed above the body warp threads, weft threads disposed below the body warp threads, binder warp threads alternately passing over the upper weft threads and under the lower weft threads, and pile tufts each looped under one of the upper weft threads with its end portions extending upwardly above the same, said body and binder warp threads, weft threads and pile tufts each being textile fiber threads, and warp threads extending parallel with said first mentioned body warp threads, each having an easily flexible metal wire core enclosed in wrappings of textile thread, the wire cores of a plurality of said threads being connected and constituting an electrical heating element.

3. A woven floor covering including body warp threads, weft threads disposed above the body warp threads, weft threads disposed below the body warp threads, binder warp threads alternately passing over the upper weft threads and under the lower weft threads, and pile tufts each looped under one of the upper weft threads with its end portions extending upwardly above the same, said body and binder warp threads, weft threads and pile tufts each being textile fiber threads, and warp threads extending parallel with said first mentioned body warp threads, each having an easily flexible metal wire core enclosed in wrappings of textile thread, the wire cores of a plurality of said threads being connected and constituting an electrical heating element, and a heat insulating backing secured on the underside of the woven body.

4. As a new article of manufacture, a rug comprising a wear resisting heat insulating base member adapted to rest on a floor, an interlaced fabric and electrically conducting heating unit on the upper surface of said base member and secured thereto, and tufts associated and correlated therewith with the spaces between the tufts open to the interlaced fabric whereby the heat will pass into and upwardly through and around said tufts from the relatively exposed upper face of the heating unit.

5. As a new article of manufacture, a rug comprising a wear resisting heat insulating base member adapted to rest on a floor, an interlaced fabric and electrically conducting heating unit on the upper surface of said base member and secured thereto, and tufts associated and correlated therewith with the spaces between the tufts open to the interlaced fabric whereby the heat will pass into and upwardly through and around said tufts from the relatively exposed upper face of the heating unit, in combination with edge binding strip portions for said heating unit.

6. As a new article of manufacture, a rug comprising a wear resisting heat insulating base member adapted to rest on a floor, an interlaced fabric and electrically conducting heating unit on the upper surface of said base member and secured thereto, and tufts associated and correlated therewith with the spaces between the tufts open to the interlaced fabric whereby the heat will pass into and upwardly through and around said tufts from the relatively exposed upper face of the heating unit, in combination with edge binding strip portions for said heating unit, said binding strip portions having under edge portions secured to said base portion.

7. As a new article of manufacture, a rug comprising a wear resisting heat insulating base member adapted to rest on a floor, an interlaced fabric and electrically conducting heating unit on the upper surface of said base member and secured thereto, and tufts associated and correlated therewith whereby the heat will pass into and upwardly through said tufts from the relatively exposed upper face of the heating unit, in combination with edge binding strip portions for said heating unit, and decorative fringe portions secured to and concealing said binding strip portions.

8. As a new article of manufacture, a rug comprising a wear resisting heat insulating base member adapted to rest on a floor, an interlaced fabric and electrically conducting heating unit on the upper surface of said base member and secured thereto, and tufts associated and correlated therewith with the spaces between the tufts open to the interlaced fabric whereby the heat will pass into and upwardly through and around said tufts from the relatively exposed upper face of the heating unit, in combination with decorative fringe portions extending from the outer tufts over and concealing the edge portions of the heating unit.

9. A floor covering having a portion thereof composed of wire threads connected together to form an electrical heating element, and a heat insulating backing secured to the underside of said heating element, end portions of the wire threads being folded back against the underside of said element and disposed between the same and the heat insulating backing.

10. A floor covering having a portion thereof composed of wire threads connected together to form an electrical heating element, in combination with an edge binding strip portion for the heating element, the binding strip portion having an underlying fold, and end portions of the wire threads being folded back and disposed between the underlying fold of the binding strip portion and said heating element.

11. A floor covering having a portion thereof composed of wire threads connected together to form an electrical heating element, and an underlying part, end portions of the wire threads being folded back and disposed between the underlying part and the heating element.

WILLIAM COLVIN, JR.