Nov. 15, 1949 E. A. SNAPE, JR 2,488,442

CARD CLOTHING

Filed March 10, 1948

FIG. 1.

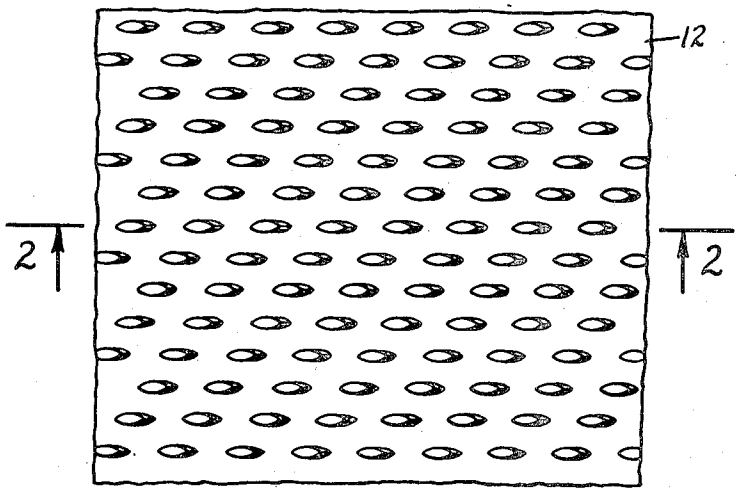


FIG. 2.

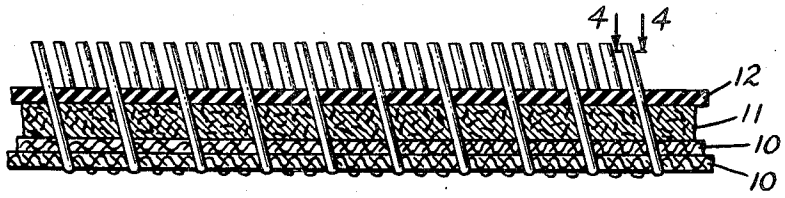


FIG. 3.

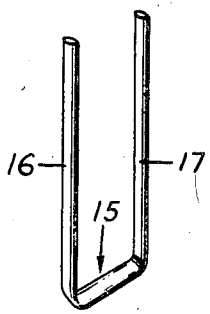
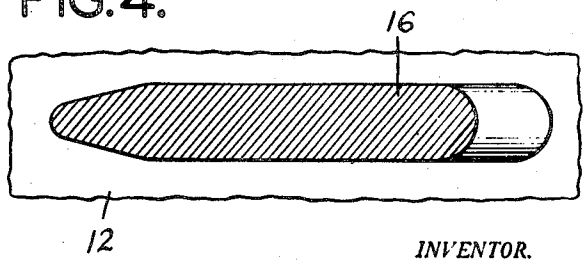


FIG. 4.



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CARD CLOTHING

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3 Claims. (Cl. 19—114)

1

This invention relates to card clothing for carding fibrous material, such as cotton or wool.

Card clothing as usually made comprises a fabric backing and this backing may consist of several layers or laminations of cotton or linen fabric cemented together. Outside the laminated fabric backing a relatively thick layer of wool felt has been cemented or secured to provide a resilient base or cushion for the wires which extend through the fabric and felt. This backing permits the wires to bend or "give" in use and to return to their original or initial positions. Moreover, the provision of a resilient cushion for the wires permits the shortening of the projecting portions of the wires beyond the wool felt layer.

However, it has been found that card clothing of the type just described, although having the advantages recited, is inefficient in operation, since the fibers, and particularly wool fibers, accumulate rapidly on the wires and wool felt and in a relatively short time the card chokes up and the stock will be rolled and pilled up instead of being carded, thus resulting in a poor job of carding. It then becomes necessary to shut down the machine and to clean out the accumulation of grease, foreign matter and fibers, this cleaning being done by hand or by a vacuum cleaner. In order to function properly and efficiently the type of card clothing above described must be cleaned once a day and the cleaning requires at least an hour, thus putting the machine out of commission and necessitating the expending of time and labor for the cleaning operation with resultant loss of production, which is very costly.

In order to eliminate this trouble and expense and to prevent such accumulation, a layer of rubber has been added outside of the wool felt layer. However, although this tends to cut down the collection or accumulation of fibers, the rubber deteriorates, due to the oil in the wool fibers or in the emulsion used to condition fibers of all kinds.

For a card clothing to operate efficiently the wires must have the proper pitch and must be rugged enough to stand up to the matted and tangled fibers of stock, shives, burrs, and other foreign matter. Moreover, the wire must have sufficient strength in the direction of movement thereof to hold its position in the backing or foundation and not become bent. Furthermore, the wires must be so constructed that the crosswise gauge will be fine, in order to give a large

2

number of contacts with the stock across the card.

With the above problems in mind, the invention has for its salient object to provide a card clothing so constituted that the accumulation of fibers in and around the wire will be substantially eliminated or cut down to a minimum, thus eliminating the need for shut downs to strip out the card, which are very costly, due to loss of production, plus the labor and expense involved in stripping or cleaning out the card.

Another object of the invention is to provide a backing or support for the card wires so constituted that it will be resilient and will be resistant to oil and water and will not injuriously affect the wires.

Another object of the invention is to provide a card clothing so constituted that the length of the projecting portions of the wires can be reduced to a minimum while still providing sufficient resiliency for the wires.

Another object of the invention is to provide a card clothing so constituted that a heavy gauge of wire can be used and, furthermore, so supporting the wire that the wire will last longer and will not lose its pitch.

Further objects of the invention will appear from the following specification taken in connection with the drawings which form a part of this application, and in which

Fig. 1 is a top plan view of a portion of card clothing embodying the invention;

Fig. 2 is a sectional elevation taken substantially on line 2—2 of Fig. 1, looking in the direction of the arrows;

Fig. 3 is a perspective elevation of one of the wire staples used in the card clothing; and

Fig. 4 is an enlarged sectional elevation taken substantially on line 4—4 of Fig. 3, looking in the direction of the arrows.

In the particular embodiment of the invention illustrated in the drawings, the card clothing comprises a plurality of layers or laminations 10 of woven fabric, which may be constructed of cotton or linen, these layers being cemented together by natural rubber cement. Although two layers 10 are shown, it should be understood that any desired number of layers of woven fabric may be used.

Over the upper layer 10, viewing Fig. 2, there is cemented a layer 11 of compressed wool felt. The layer 11 is cemented to the upper layer 10 by oil-glue or animal glue plasticized with oil.

Over or on top of the layer 11, viewing Fig. 2, there is secured a layer or sheet 12 formed of oil

and water resistant sheet material, such as a sheet of plastic material. This sheet is preferably formed of a resinous polymer selected from a group consisting of polyvinyl chloride and copolymers of vinyl chloride and vinyl acetate. This resinous polymer contains 85% to 95% vinyl chloride and 5% to 15% vinyl acetate. This material is plasticized with a suitable plasticizer, such, for instance, as dioctyl phthalate.

A sheet of plastic material, such as that above described, is cemented to the wool felt layers 11 by a suitable cement, such as a Buna-N base cement containing a combination of resins having self-curing characteristics.

The plastic sheet 12 of oil resistant and water resistant and, therefore, does not deteriorate but is long lasting and, furthermore, this material has the necessary elasticity or "give" to cushion the movement of the wires and to permit them to swing about the base and return to their initial positions without becoming bent.

In addition to the particular construction of card clothing above described, the invention incorporates in the card clothing a particular type of wire. The wire, as shown particularly in Fig. 3, is made in the form of staples 15 having parallel legs 16 and 17 and attention is directed to the cross section of the wire which, as shown is a flattened, substantially oval or torpedo shaped. The oval cross section, as shown, has an elongated major axis and a relatively short minor axis. The preferred shape is shown in the enlarged cross section in Fig. 4. The staples are mounted in the base in the usual manner, as shown in Fig. 2. The major axes of the staple legs are disposed parallel to each other and in the direction of movement of the wires when the card clothing is in use. The wires are therefore strong and rugged and stand up in use. Moreover, because of the construction and mounting of the wires, the portion of the wire projecting outside the plastic sheet 12 is relatively short in comparison with most card clothing structures, this further tending to cut down the accumulation of fibers on the wires. Moreover, the tendency of the fibers to collect or accumulate on the wires is also very materially reduced because of the smooth outer surface presented by the sheet 12 of plastic material.

It will be noted that the wires are spaced closer together transversely than longitudinally on the card clothing, this being made possible by the smaller transverse or minor dimension or axis of the cross section of the wire. If the transverse dimension were the same as the longitudinal dimension of the cross section, viewing Fig. 1, it would not be possible to insert a sufficient number of wires transversely of the clothing to card the stock properly.

The upper ends of the wires are ground and can be reground when dull. This is advantageous since the ground wire is not as hard on the stock and card clothing loses its value without a sharp point on the wire. Most wire of this type has cut points and when a cut point becomes dull or bent over it cannot be resharpened to its original keenness. The wires preferably have a pitch of approximately 60° and extend approximately 7/64" or less above the base or beyond the outer surface of the sheet or layer 12.

From the foregoing specification it will be clear that a card clothing constructed in the manner set forth will successfully carry out the objects of the invention and will be long lasting and efficient in operation. Furthermore, this card clothing will eliminate or cut down to a minimum the accumulation of fibers in and around the wire, thereby eliminating frequent shut downs for cleaning, the expenditure of time and labor for this operation, and loss of production.

Although one specific embodiment of the invention has been particularly shown and described it will be understood that the invention is capable of modification and that changes in the construction and in the arrangement of the various cooperating parts may be made without departing from the spirit or scope of the invention, as expressed in the following claims.

What I claim is:

1. Card clothing including a backing comprising a plurality of layers of woven fabric cemented together, a layer of wool felt cemented to one outer layer of fabric, and a sheet of flexible, plastic material cemented to the outer surface of the wool felt layer, said plastic material being formed of a resinous polymer selected from a group consisting of polyvinyl chloride and copolymers of vinyl chloride and vinyl acetate, plasticized with a suitable plasticizer.

2. Card clothing as defined in claim 1 characterized by carding wire staples secured to and extending through said backing and plastic layer and projecting beyond the plastic layer, the legs of said wire staples having a flattened, substantially oval cross section and said staples being mounted with the major axes of said legs parallel.

3. Card clothing as defined in claim 1 characterized by carding wire staples secured to and extending through said backing and plastic layer and projecting beyond the plastic layer, the legs of said wire staples having a flattened, substantially oval cross section and said staples being mounted with the major axes of said legs parallel, the major axes of said legs extending in the direction of movement of the wires when the card clothing is in use, and the minor axes of said flattened, substantially oval-shaped legs enabling a closer transverse spacing of the legs of the staples across the card clothing.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,685,658	Platt et al.	Sept. 25, 1928
1,731,148	Otto	Oct. 8, 1929
2,233,985	Knowland	Mar. 4, 1941
2,323,562	Nugent	July 6, 1943

FOREIGN PATENTS

Number	Country	Date
186,006	Great Britain	Sept. 21, 1922
309,986	Great Britain	Jan. 29, 1929
347,704	Great Britain	Apr. 28, 1931
605,236	France	Feb. 13, 1926