Nov. 27, 1945. J. J. BROWN 2,389,952

BOX PICKER AND THE MANUFACTURE OF THE SAME

Filed July 8, 1944 2 Sheets-Sheet 1

Fig. 1.

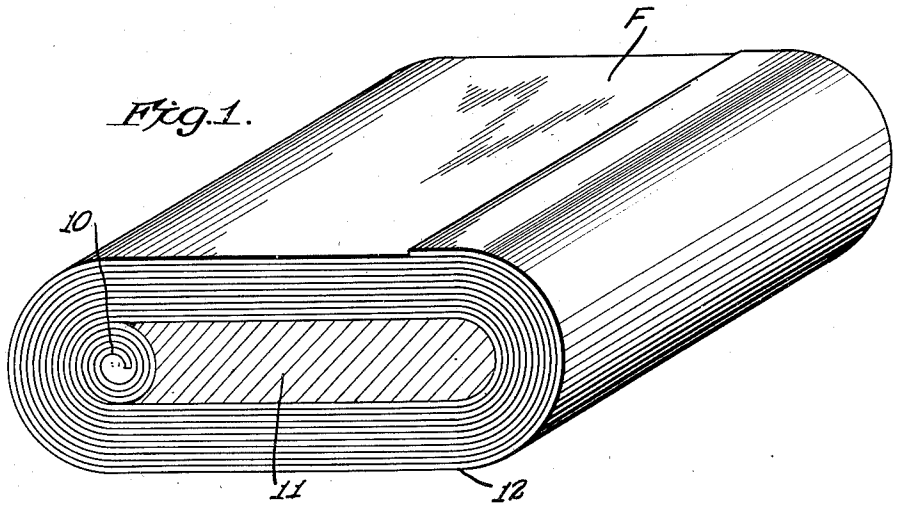
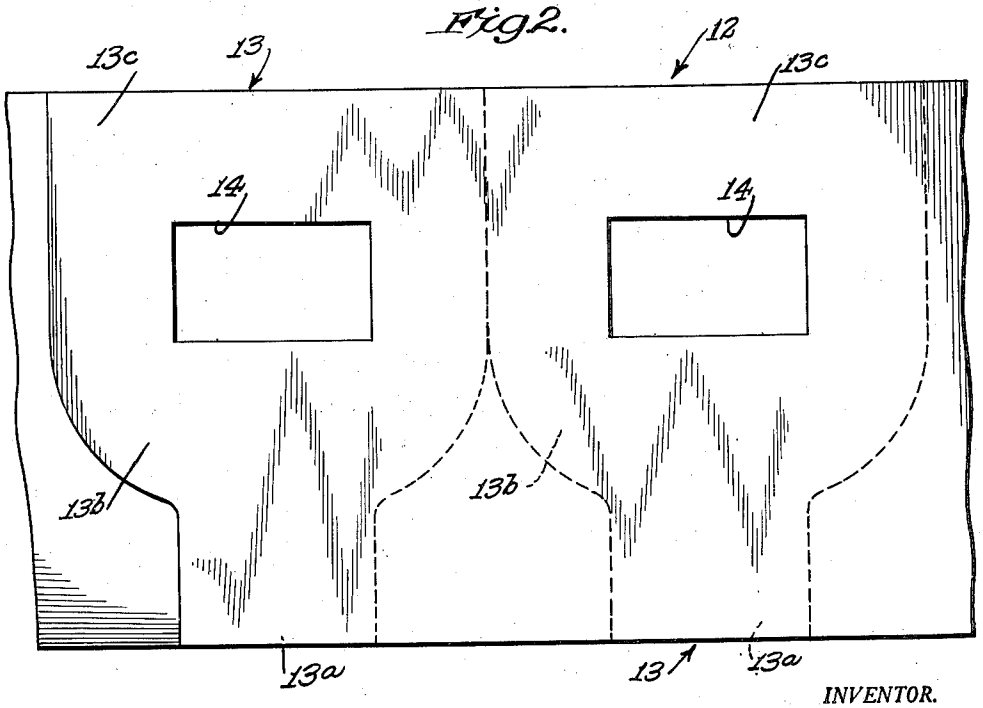


Fig. 2.



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Fig. 3.

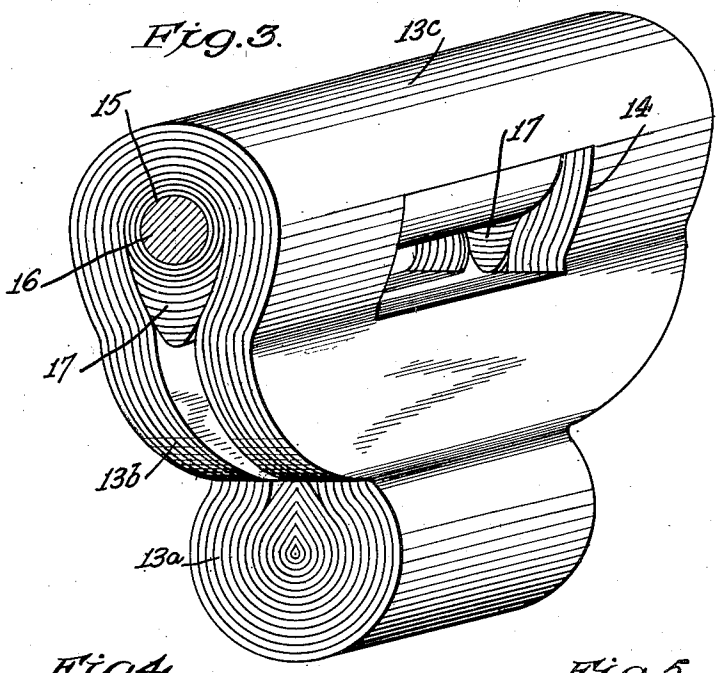


Fig. 4.

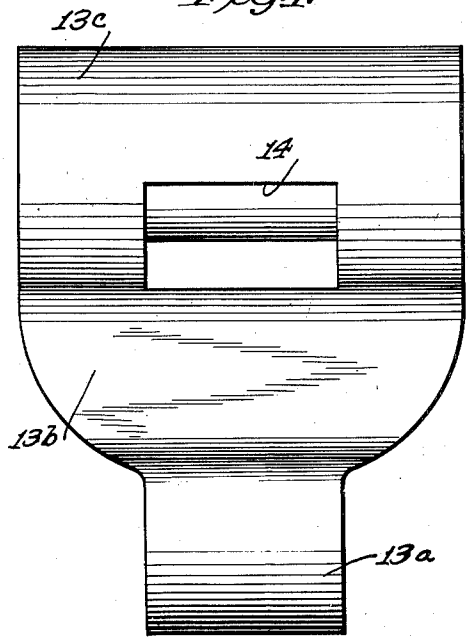
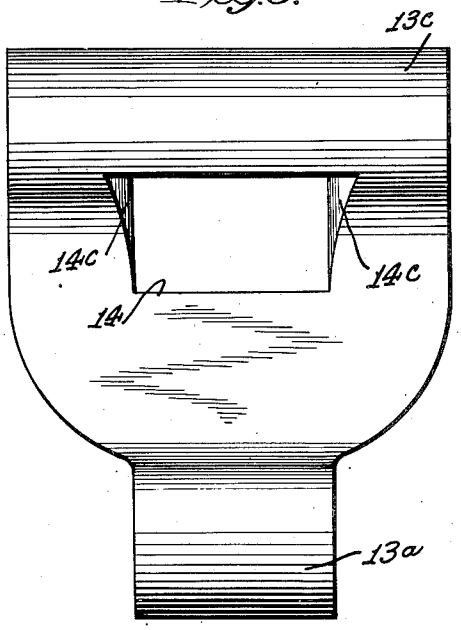


Fig. 5.



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Patented Nov. 27, 1945 2,389,952

UNITED STATES PATENT OFFICE

2,389,952

BOX PICKER AND THE MANUFACTURE OF THE SAME

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Application July 8, 1944, Serial No. 544,018

7 Claims. (Cl. 139—159)

This invention relates in improvements in loom pickers and methods of making the same, and it relates particularly to loom pickers which are formed of impregnated textile fabrics.

The best prior type of loom picker has a body formed of rawhide and a bearing portion permitting the device to be mounted on a slide rod for reciprocation therealong by means of a picker stick that engages in an aperture in the web of the picker. The opposite end of the picker is provided with a knob or head which is adapted to engage the loom shuttle.

Numerous attempts have been made heretofore to produce pickers from textile fabrics which are impregnated with resinous or rubbery materials. Usually such pickers are formed by wrapping the impregnated textile fabric around a flat form to provide a blank having a plurality of layers or laminations. This multi-layer sheet of material is then cut into a suitable shape and a tube of resin-impregnated paper or other similar material is inserted in one end to form a bearing for receiving the rod on which the picker is mounted. With the tube and a supporting mandrel in place, the multi-layer picker blank is subjected to pressure and vulcanization to mold it into the desired shape.

Pickers of this type have not been very satisfactory for the reason that the molding operation almost invariably forms wrinkles in the web of the picker between the bearing portion and the picker head with the result that the picker is weakened and breaks at this point. Moreover, the resin material impregnating the bearing tube must be of a type that can be vulcanized, polymerized, or condensed to an extremely hard condition in order to withstand the wear to which it is subjected. Inasmuch as this resin is only in a partially set condition prior to vulcanization of the picker, it softens and flows down into the aperture in which the picker stick is received. Upon setting, the resinous material becomes almost as hard as metal and as a result, it abrades and wears out the end of the picker stick.

Attempts have been made to overcome this defect by omitting the bearing tube, but the results have been unsatisfactory for the reason that oil flows onto the picker from the slide rod of the loom and causes deterioration of the rubber in the picker.

An object of the present invention is to provide a picker which is not subject to the defects of prior textile fabric pickers of the type described above.

Another object of the invention is to provide a picker formed of impregnated and vulcanized textile fabric which is free of wrinkles and zones of weakness.

Another object of the invention is to provide a vulcanized textile fabric picker which is so constructed and arranged that the resinous material used for impregnating the bearing tube therein cannot flow into the aperture for receiving the picker stick.

Another object of the invention is to provide a method of producing pickers which overcomes the formation of wrinkles and zones of weakness in the picker and prevents the flow of hard resinous material into the picker stick aperture.

Other objects of the invention will become apparent from the following description of a typical form of picker illustrating the present invention.

Pickers embodying the present invention are characterized by a body including a picker head, a web and a bearing portion formed generally of multi-layer fabric impregnated with rubber or synthetic rubber and having a bearing sleeve formed of resin-impregnated material having a very hard bearing surface. Such pickers are particularly characterized by the presence of triangular wedges of impregnated fabric interposed between the bearing portion of the picker and its web which act to provide a smoothly tapering web portion which is free from wrinkles. The wedges serve the additional purpose of preventing the leakage of the resin from the bearing sleeve into the picker stick aperture in the web during the vulcanizing operation.

In general, pickers of the type embodying the present invention are formed by rolling the edge of a sheet of fabric to a suitable diameter, then wrapping the sheet of fabric around a generally flat form to produce a laminated tubular sheet. After the form is removed and the sheet has been cut into blanks generally of the outline of the finished picker, a mandrel carrying a rolled sleeve formed of paper or similar material containing a partially set resinous material is inserted in the laminated fabric, at the end opposite to the rolled edge of the sheet. Wedges are then placed in the web portion of the picker adjacent to the bearing tube and the whole is vulcanized under heat and pressure in a suitable mold.

During the vulcanization and molding operation, the wedges prevent flow of the resinous material from the bearing tube into the opening of the web which receives the picker stick and at the same time permit the fabric in the web to conform itself to the shape of the mold without being distorted or wrinkled.

For a better understanding of the present invention, reference may be had to the accompanying drawings, in which:

Figure 1 is a perspective view illustrating the first step in the preparation of pickers embodying the present invention;

Fig. 2 is a plan view of a rolled web of material produced in the manner disclosed in Fig. 1 and illustrating the shape of the picker blanks cut from the rolled web;

Fig. 3 is a perspective view of a partially shaped picker just prior to insertion thereof in a mold for vulcanization;

Fig. 4 is a plan view of the partially formed picker disclosed in Fig. 3; and,

Fig. 5 is a plan view of the completed picker.

Pickers of the type embodying the present invention may be suitably formed from a sheet of fabric, such as chafer, osnaburg, or a square woven fabric which has been calendered or covered on both sides with a vulcanizable compound such as an unvulcanized material or synthetic rubber compound. A sheet F of such fabric, for example, about five feet wide, may be supported upon a roll behind a table and may be drawn off of the roll and the forward edge coiled or rolled to form a roll or pigtail 10. The fabric F may then be wound around the pigtail 10 and a board or bar of metal 11 to produce a multiple layer roll or flattened tube 12 of a desired thickness. After the fabric F has been shaped into this form, the bar 11 may be removed and a sheet of paper or strips of cardboard substituted for the bar 11 in order to prevent the opposite sides of the web from adhering together. This roll 12 may then be delivered to a cutting device where the roll is cut into a plurality of separate pieces 13 which are generally of the outline of a conventional picker and have an aperture 14 punched through the mid-portion thereof for reception of a picker stick in the usual way, as shown in Fig. 2. The partially formed tubular blanks 13 have a short, but thick edge portion 13*a* containing the roll or pigtail 10 and therefore a greater number of laminations than the remainder of the blank, a mid-portion 13*b* forming the web of the picker, and a longer bearing receiving portion 13*c*.

After the blanks 13 have been cut, the sheets of paper or cardboard therein may be removed and a tube 15 of cardboard, heavy strong paper, or other similar fibrous material, impregnated with a partially condensed thermo-setting resin, such as a phenol formaldehyde resin, is inserted in the longer end 13*c* of the form, as best shown in Fig. 3.

The bearing tube 15 may be formed by rolling the paper upon a metal rod or mandrel 16 which remains in the tube during subsequent operations. After insertion of the tube 15 and mandrel 16, generally wedge-shaped blocks 17, preferably formed of fabric which has been impregnated with a vulcanizable compound, such as an unvulcanized natural or synthetic rubber compound, or formed of other suitable material like a synthetic resin or the like, are inserted in the web portion beneath the tube 15 and between the edges of the blank and aperture 14 therein. These wedge-shaped portions tend to maintain a gradual taper of the web portion from adjacent the bearing down into the web 13*b* so that sharp bends in the fabric are avoided and formation of wrinkles therein is prevented.

After the wedges 17 have been inserted, the web 13*b* is pressed together with a suitable clamp and the whole assembly is placed in a two-part mold where it is subjected to heat and pressure to vulcanize the rubber in the fabric, to bond the various plies together and at the same time set or condense the resin in the bearing tube 15. Also, the compression of the material reduces the blank to a smaller size by compression, as best illustrated in Figs. 4 and 5, in which Fig. 4 is the picker prior to vulcanization and molding, and Fig. 5 is the completed picker. During vulcanization, the wedges 17 prevent the flow of the resinous material from the ends of the bearing tube 15 into the aperture 14 and thereby prevent deposits of hard material which would cause undesirable wear on the picker stick.

The mold is so arranged that the edges 14*c* of the opening are beveled or curved slightly during molding in order to permit free oscillation of the picker stick in the opening 14 and the edge portions 13*a* and 13*c* are shaped into generally cylindrical form. Also, any portion of the web which may extend into the opening 14 is molded tightly against the under surface of the bearing tube 15, leaving the opening 14 unobstructed and relatively smooth.

After completion of the molding and vulcanizing operation, the mandrel 16 may be knocked out of the bearing tube 15 and the picker is then ready for use.

From the preceding description of a typical form of picker and method of producing the same set forth above, it will be apparent that the principal defects of such fabric pickers have been overcome thereby. Thus, the web of the picker may be formed smoothly without structural defects that might cause breakage in use and a smooth hard but non-abrasive surface is provided in the picker stick aperture which greatly prolongs the wear of the picker sticks in operation.

It will be understood, of course, that the pickers according to the present invention may be made in various shapes and sizes as the purpose demands, and, therefore, the form of picker described above should be considered as illustrative only and not as limiting the scope of the appended claims.

I claim:

1. In a method of preparing a loom picker, the steps comprising forming a flattened tubular blank consisting of a plurality of laminations of fabric impregnated with a vulcanizable compound, having a short edge containing a greater number of laminations than the remainder of said blank, a longer opposite edge and an intermediate web portion containing an aperture in its mid-portion, inserting in said blank adjacent said longer edge a bearing tube of fibrous material impregnated with a partially set, thermosetting resin, inserting wedges in the ends of said blank on opposite sides of said aperture and adjacent said bearing tube, said wedges tapering from said bearing tube toward said short edge and being substantially coextensive with the ends of said aperture, placing the assembly in a mold, and subjecting the assembly to heat and pressure.

2. A method of preparing a loom picker comprising rolling up one edge of a sheet of fabric impregnated with a vulcanizable compound, wrapping said fabric around a form and said rolled edge to form a laminated tube, cutting said tube to form a picker blank having a narrower knob portion containing a portion of said rolled edge, a wide bearing receiving portion and an interconnecting web having a picker stick aper-

ture therein, inserting a resin-impregnated bearing tube in said bearing receiving portion, inserting wedges on opposite sides of said aperture and substantially in contact with said bearing tube, and subjecting said blank, tube and wedges to heat and pressure to vulcanize said vulcanizable and resinous compounds and form a unitary structure.

3. A method of preparing a loom picker comprising rolling up one edge of a sheet of fabric impregnated with a vulcanizable compound, wrapping said fabric around a form and said rolled edge to form a laminated tube, cutting said tube to form a picked blank having a narrower knob portion containing a portion of said rolled edge, a wide bearing receiving portion and an interconnecting web having a picker stick aperture therein, inserting a resin-impregnated bearing tube in said bearing receiving portion, inserting wedges formed of laminated fabric impregnated with a vulcanizable compound on opposite sides of said aperture and substantially in contact with said bearing tube, and subjecting said blank, tube and wedges to heat and pressure to vulcanize said vulcanizable and resinous compounds and form a unitary structure.

4. In a method of preparing a loom picker, the steps comprising winding fabric on a support to form a tubular blank containing a plurality of laminations of fabric impregnated with a vulcanizable compound, cutting said blank to provide a tubular member having a short edge containing a greater number of laminations than the remainder of said blank, a longer opposite edge and an intermediate web portion containing an aperture in its mid-portion, inserting in said blank adjacent said longer edge a bearing tube of fibrous material impregnated with a partially set, thermo-setting resin, inserting wedge-shaped members adjacent said bearing tube at opposite ends of said aperture, said wedge members being substantially coextensive in length with the width of said aperture and tapering from said bearing tube toward said narrow edge, placing the assembly in a mold, and subjecting the assembly to heat and pressure to bond said laminations together.

5. A loom picker comprising a tubular bearing portion, a picker head portion for engaging a shuttle, a relatively thinner web portion connecting said bearing and head portions and having an aperture therein for receiving a picker stick, said bearing portion having a resin-impregnated tube of fibrous material therein, wedge members at, and substantially coextensive with, the ends of said aperture and tapering inwardly from said bearing portion toward said web portion to provide a smooth taper from said bearing portion to said web portion, said bearing, web and head portions consisting essentially of an endless band of laminated fabric, having a loop at one end containing said tube and its opposite sides bonded together to form said thinner web portion.

6. A loom picker comprising a bearing portion, a picker head portion for engaging a shuttle, a relatively thinner web portion connecting said bearing and head portions and having an aperture therein for receiving a picker stick, said bearing, picker head and web portions comprising an endless band of laminated fabric having opposite side portions bonded together with a vulcanized rubbery compound to form said web and provide a loop at said bearing portion, a resin-impregnated tube of fibrous material in said loop and bonded thereto, and wedge members formed of vulcanized laminated fabric between and bonded to said side portions at, and substantially coextensive with, the ends of said aperture to provide a smooth taper from said bearing portion to said web portion.

7. A loom picker comprising a tubular bearing portion, a shorter, cylindrical picker head portion for engaging a shuttle, a relatively thinner web portion connecting said bearing and head portions and having an aperture therein for receiving a picker stick, said bearing portion having a resin-impregnated tube of fibrous material therein, and wedge members formed of vulcanized laminated fabric at, and substantially coextensive with, the ends of said aperture to provide a smooth taper from said bearing portion to said web portion, said web and bearing portions consisting of an endless band of laminated fabric including a coil of fabric in one end of the band forming the picker head, and in which said fabric is bonded with a vulcanized rubbery compound and opposite sides of said band are vulcanized together to form said web portion.

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