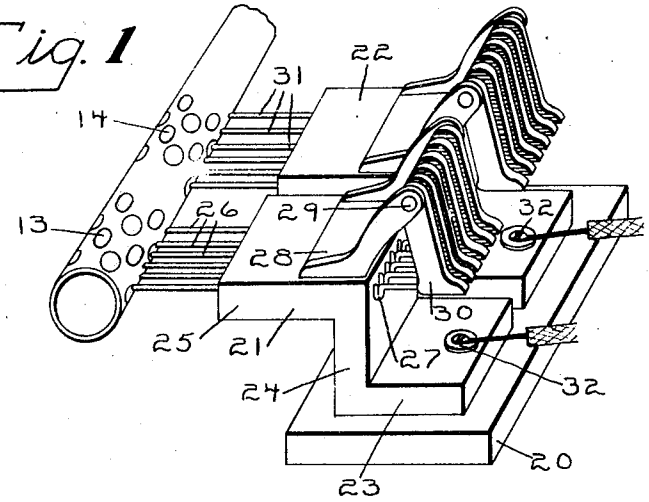
June 24, 1930. W. H. WAKEFIELD 1,766,861

BOBBIN FOR ELECTRIC WEFT DETECTORS

Filed Aug. 10, 1929

Fig. 1



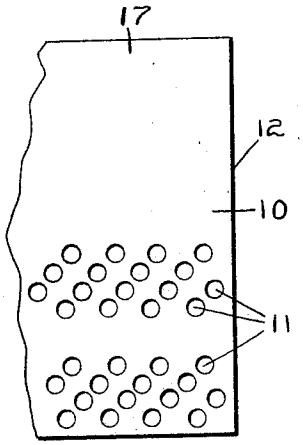


Fig. 4

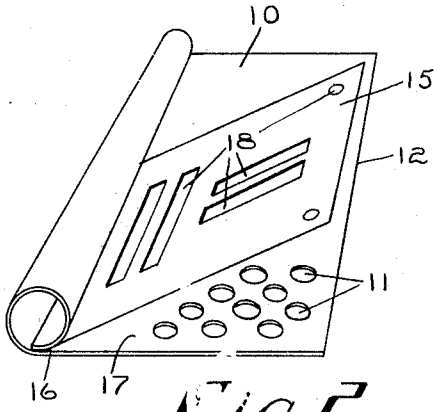


Fig 2

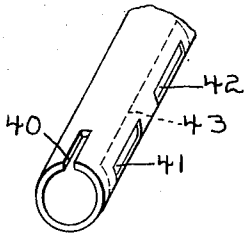


Fig. 5

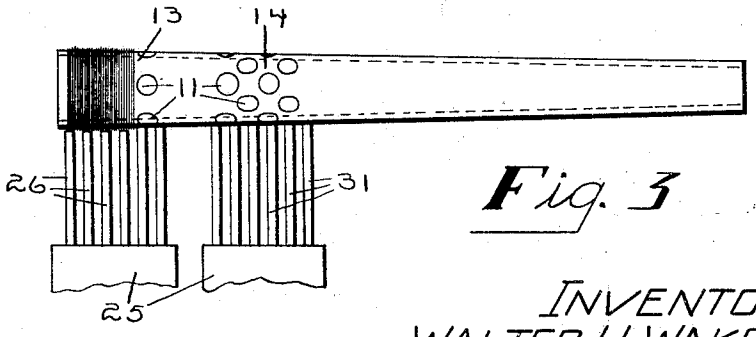


Fig. 3

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BOBBIN FOR ELECTRIC WEFT DETECTORS

Application filed August 10, 1929. Serial No. 384,868.

This invention relates to improvements in bobbins or tubular cops for electrical weft detectors and it is the general object of the invention to incorporate into the construction of the bobbin or cop a metallic foil or similar substance portions of which are exposed to have contact with electrically charged detector elements.

Paper cops or bobbins are usually formed by winding a sheet of sized paper about a mandrel or other former, the size or adhesive holding the several wraps of paper together so that when finished there are several coils of paper wound spirally on themselves to present a tube. It is a further object of my present invention to introduce a strip of metallic foil between successive wraps of the bobbin and to perforate that part of the paper which forms the last wrap or outer layer so that the foil will be exposed through the perforations for contact with electrical detector elements. It is a more specific object of my invention to provide two groups of detector needles of opposite electrical charge and to form the bobbin with two groups of perforations, one for each set of needles.

With these and other objects in view which will appear as the description proceeds my invention resides in the combination and arrangement of parts hereinafter described and set forth in the claims.

In the accompanying drawings wherein two convenient embodiments of my present invention are set forth,

Fig. 1 is a perspective view showing a weft detector in contact with an empty bobbin formed according to the preferred form of my present invention.

Fig. 2 is a perspective view showing the method of rolling the paper on itself to form the preferred form of bobbin,

Fig. 3 is a plan view of the structure shown in Fig. 1 showing the manner of establishing electrical contact between the two groups of needles,

Fig. 4 is a development of the paper forming the preferred form of the invention, and

Fig. 5 is a perspective view of a modified form of bobbin.

Preparatory to wrapping or forming the cop I provide a strip of suitable paper 10 near one corner of which I form a series of perforations 11 as shown on Fig. 4. The perforations are so formed that a line parallel to the axis of the bobbin or edge 12 of paper 10 will always pass through at least one of the perforations. As shown herein I form the paper with two groups of perforations designated in Fig. 1 at 13 and 14, respectively.

During the latter part of the wrapping operation I introduce a strip of metal foil 15 in the bight 16 formed between the wrapped and unwrapped portions of the paper. The surface 17 of the paper 10 as shown in Fig. 2 is coated with suitable adhesive and in order that this adhesive may have contact with the previously rolled portion of the cop I may provide the foil with several openings or slots 18 of suitable form so that a paper to paper contact may be effected within the outline of the foil. It is to be understood, however, that the strip of foil is a continuous piece of current carrying material and the openings are so located as not to come opposite any of the perforations 11. When finished the perforations will be evenly distributed around the periphery of the cop.

The detector to cooperate with my improved bobbin is set forth in Figs. 1 and 3 and comprises a base 20 of insulating material on which is mounted a pair of detector holders 21 and 22 to correspond, respectively, to the postive and negative sides of an electric circuit not shown. Each of said holders has a foot 23 and an upright 24 from which rearwardly projects a guide 25. As set forth herein there are two groups 26 and 31, respectively, each having six metallic wires 26 slidably mounted in the corresponding guide 25. The forward end of each wire is provided with a crimp or offset 27 which acts as a stop to limit rearward movement of wire. Each holder is provided with a small stand 28 having a pivot pin 29 on which are loosely mounted for pivotal movements in vertical planes a series of weights 30. There is one weight for each

of the wires and the wires are so disposed and offset relative to the pivot pin 29 that they hold the wires 26 yieldingly in rear position.

It is to be understood that the holders 21 and 22 are substantially identical so that two groups of wires are provided, one corresponding to the negative side of the circuit and the other for the positive side. Each holder has a binding post 32 to receive the corresponding wire.

In operation the wires of each group will present substantially a straight line at their rear ends and the groups will be sufficiently wide to cooperate with the groups 13 and 14. When sufficient weft for continued weave is present a majority of the holes will be covered, at least the holes of the group 13 near the butt of the bobbin will be under the mass of yarn remaining on the bobbin. When the supply of weft is depleted, however, the holes of the two groups will be uncovered and one or another of the wires of each group will be permitted to pass through one of the holes of the corresponding group of perforations in the cop. Inasmuch as this affords contact between each group of wires and the metal foil 15, said groups will be electrically connected and therefore current can flow from the holder 21 through the contacting wire 26, foil 15 and back from the bobbin through the contacting wire 31 to the holder 22, thereby closing the circuit which is external to the detector but not set forth therein.

It is to be understood that the wires and holders or supports therefor are of current conducting material so that current may flow from the external circuit through the holder and through any of the wires into the foil 15. The detector set forth herein is merely for illustrative purposes only and it is to be understood that my present invention relates to the bobbin or cop. The arrangement of the perforations and the relation which they bear to the wires is very similar to that shown in the prior patent to Ryon No. 1,221,768.

In the form of the bobbin already described it is possible to place the weft carrier in the shuttle in any angular position but where stopping of the loom is the effect achieved by the detector it is possible to employ a modified and simpler type of bobbin such as shown in Fig. 5. In this latter form of bobbin a small slot 40 is provided in the cop to cooperate either with a part of the shuttle spindle not shown or to permit the weaver to place the bobbin in the shuttle in a predetermined angular position. When so constructed the bobbin may have two elongated openings 41 and 42 on the front side thereof which afford opportunity for the detector electrodes to have contact with a foil plate 43 held in position substantially the same as is plate 15 in the preferred form of the invention. With a single wire in each of the groups 26 and 31 it would be possible to use a single short slot in the bobbin, as for instance, slot 42 alone.

From the foregoing it will be seen that I have provided a weft bobbin formed by wrapping paper on itself and providing the paper with perforations to afford contact with a metal foil which is made as a part of the bobbin and located between successive wraps of the paper. The foil may be of any suitable thickness or material and is held in position very securely because of the fact that it is wound between the coils of paper of which the bobbin is made. It will further be understood that there is a sufficient depth of paper under the foil to prevent the latter from being penetrated or disrupted by the wires. Again, it will be seen because of the arrangement of the perforations in the preferred form the bobbin may be placed in any angular position relative to the shuttle and the wires will be able to cooperate properly therewith. Where the filling detector operates to stop the loom the modified form of the cop may be used.

Having thus described my invention it will be apparent that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details herein disclosed but what I claim is:

1. A weft cop formed of a sheet of paper wound on itself to form a tube, a sheet of metallic foil located between successive winds of the paper, the last wrap of the paper having a perforation through which the foil is accessible to an electric weft detector.

2. A weft cop formed of a sheet of paper wrapped on itself, there being a perforation in the last wrap of the paper, and an electric current conducting substance located between the last two wraps of the paper and accessible to an electric weft detector through the perforation.

3. A weft cop formed of a sheet of paper wrapped on itself, an electric current conducting material interposed between the last two wraps of paper, a portion of the last wrap being removed to render the material accessible to an electric weft detector.

4. A weft cop formed of a sheet of paper wrapped on itself, a sheet of metallic substance interposed between successive wraps of the paper, portions of the paper being removed to render the metallic substance accessible to an electric weft detector.

5. A weft cop formed of a sheet of paper wrapped on itself, an electric current carrying material interposed between successive wraps of the paper, portions of the paper

being removed to render the material accessible to an electric weft detector.

6. A weft cop formed of a sheet of paper wrapped on itself, a sheet of metallic substance interposed between successive wraps of the paper, portions of the paper being removed to render the metallic substance accessible to an electric weft detector, the sheet of metallic substance being perforated to prevent adhesion of successive wraps of the paper through said perforated part of the sheet of metallic substance.

7. A weft cop formed of a sheet of paper wrapped on itself, an electric current conducting substance interposed between successive wraps of the paper, portions of the paper being removed around the periphery of the cop to render the substance accessible to an electric weft detector in any angular position the cop may assume relatively to the detector.

In testimony whereof I have hereunto affixed my signature.

WALTER H. WAKEFIELD.