

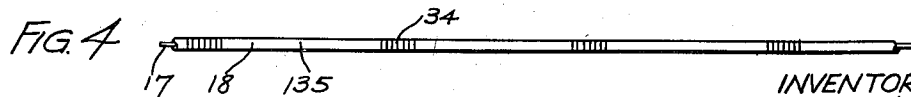
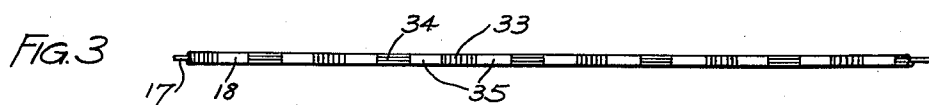
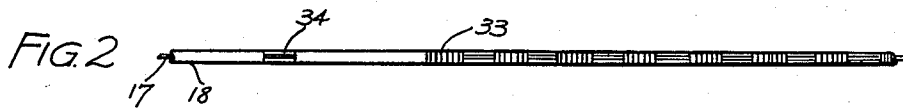
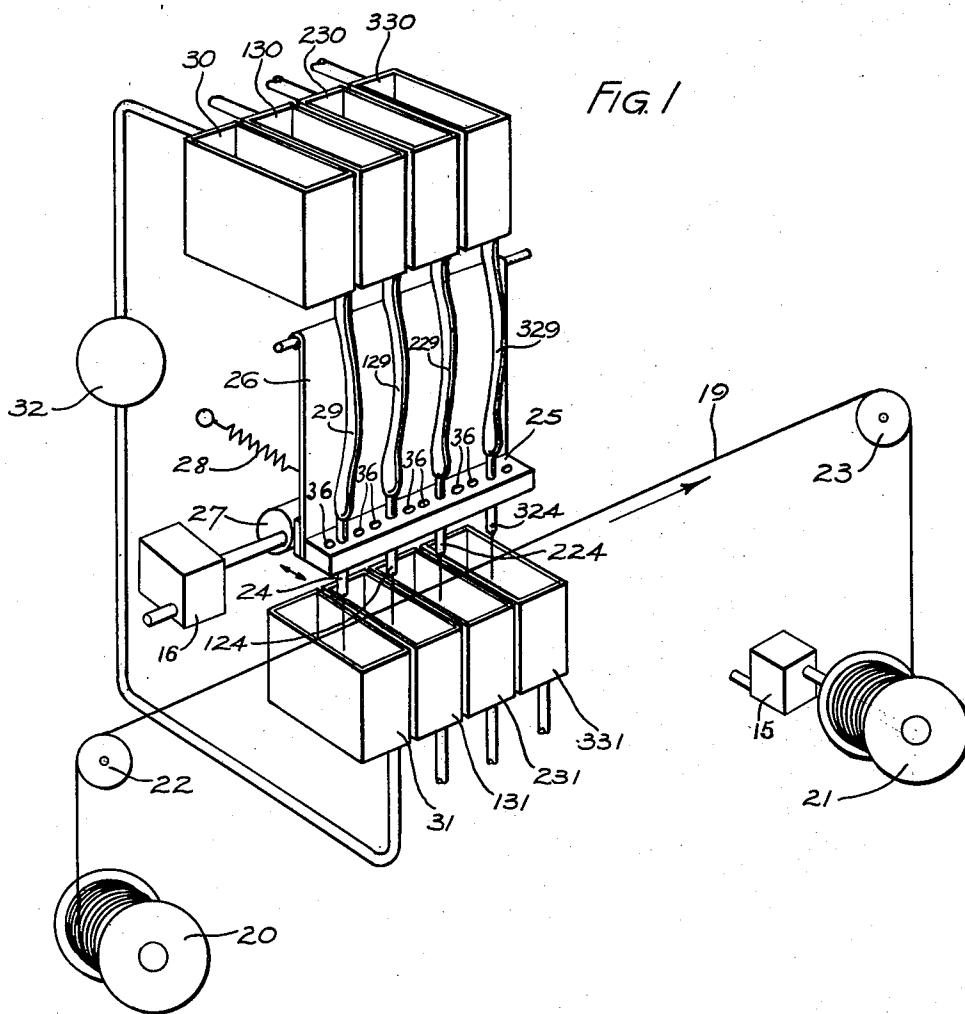
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STRAND MARKING APPARATUS

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STRAND MARKING APPARATUS

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This invention relates to strand marking apparatus, and more particularly to apparatus for marking insulated wire provided with an absorbent, fibrous sheath.

In multi-conductor cable comprising a plurality of individually insulated conductor wires, it is often desirable to have the insulation of the wires marked to distinguish one wire from another by inspection of a short length at one end. Wires which have an insulating sheath or layer of absorbent material can be marked for identification by applying ink, dye or the like to the absorbent layer during manufacture to create therein a distinctive pattern of recurrent cycles of successive short colored and uncolored or variously colored sections.

An object of the present invention is to provide a simple, durable and reliable device or apparatus for marking a longitudinally advancing strand with a predeterminedly arranged cyclically repeated pattern of differently colored portions in longitudinal sequence.

With the above and other objects in view, the invention may be embodied in an apparatus through which a longitudinally advancing strand may pass to be marked, the apparatus comprising one or more successively arranged jets of liquid coloring material in alignment along the path of the strand, and means to cause the jets to swing with regular oscillating motion across the advancing strand.

Other objects and features of the invention will appear from the following detailed description of one embodiment of the invention taken in connection with the accompanying drawing in which the same reference numerals are applied to identical parts in the several figures and in which

Fig. 1 is a diagrammatic view in perspective with parts broken away of an apparatus constructed in accordance with the invention;

Fig. 2 is a side view of a length of wire as marked in one pattern by the apparatus of Fig. 1;

Fig. 3 is a similar view showing another pattern; and

Fig. 4 is a similar view showing a third pattern.

In Fig. 1 there is disclosed a strand 19 travelling longitudinally from some conventional supply 20 to some conventional advancing means or takeup 21, over guide sheaves 22 and 23. At some convenient point in its path the strand 19 passes under the mid position of one or more (here four) nozzles 24, 124, 224 and 324, aligned along the path of the strand and reciprocable transversely of the strand by being mounted in a common support 25 carried on a pendulum member 26 which

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is swung to and fro in a small arc by a cam roller 27 acting against a tension spring 28. Each nozzle is connected by a flexible pipe 29, 129, 229 or 329 respectively, to a reservoir 30, 130, 230 or 330 respectively, lying at a higher level. Below each nozzle is an individual catch basin tank 31, 131, 231 or 331 respectively. A pump 32 has its intake connected to the tank 31 and its output connected to the tank 30, to circulate excess liquid discharged by the nozzle 24 and caught in the tank 31 back to the tank 30 and so through the nozzle 24 again. Similar pumps (not shown in the drawing) are provided to circulate liquid through each of the other nozzles in similar fashion.

The nozzles will ordinarily be so dimensioned as to emit a slender, uninterrupted jet of liquid. The cam 27 is so proportioned that the jet from any nozzle intersects the strand 19 only at the mid point of the excursion to and fro of the nozzle, i. e. twice during each revolution of the cam.

Assume now that the tanks 30 and 31 contain a red coloring liquid, the tanks 130 and 131 contain a blue coloring liquid, and the other tanks are dry. Let the strand 19 be a wire 18 (Fig. 2) having a white or light gray absorbent sheath 17 thereon, e. g. seamless paper pulp or served cotton thread or the like. Then if the relative longitudinal speed of the wire and rotary speed of the cam be properly adjusted so that the jet from the nozzle 124 strikes and colors the portion 33 of the sheath red while, at the same time, the jet from the nozzle 24 is striking and coloring the segment 34 of the sheath blue, the product may be that indicated in the right hand part of Fig. 2. Here the entire sheath is colored in abutting segments of red and blue. By an alteration of the speed of the member 25 and the spacing of the nozzles therein, the arrangement described may be made to produce the product shown in Fig. 3, where alternate red and blue segments 33 and 34 are separated by uncolored segments 35. If only the nozzle 24 be used and the speed of the strand be considerably increased, the product shown in Fig. 4 is obtained where short blue segments 34 alternate with long uncolored segments 135.

By varying the relative speeds, for example, by means of speed control devices 15 and 16, by increasing or decreasing the number of nozzles in action and the colors of their jets, and by altering the relative spacing of the jets, e. g. by inserting the nozzles into variously selected ones of a row of bores 36 in the member 25, the patterning of the product may be almost indefinitely varied.

Although the particular apparatus described employs a liquid such as ink or a solution of a dye

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to be jetted from the nozzles, it will be evident that a dry powder falling through the nozzles or blown through them in a substantially continuous jet will fall equally within the purview of the invention.

What is claimed is:

1. Apparatus to mark a longitudinally advancing strand with a predeterminedly arranged and cyclically repeated pattern of differently colored portions in longitudinal sequence, the said apparatus comprising a support adjacent to and reciprocable transversely of the path of a longitudinally advancing strand, a plurality of nozzles aligned in the support along the said path and directed to throw each a jet of liquid across the path, an individual tank to supply an individual coloring liquid to each nozzle, an individual tank disposed to receive all the liquid from each jet not deposited on the strand and means to reciprocate the support sufficiently widely to carry jets from the nozzles to sweep to and fro across the said path and beyond the same on either side thereof sufficiently widely to cause the jets to impinge upon the strand on spaced portions thereof only.

2. Apparatus to mark a longitudinally advancing strand with a predeterminedly arranged and cyclically repeated pattern of differently colored portions in longitudinal sequence, the said apparatus comprising a support adjacent to and reciprocable transversely of the path of a longitudinally advancing strand, a plurality of nozzles aligned in the support along the said path and directed to throw each a jet of liquid across the path, means to vary the interspacing of the nozzles in the support, individual means to supply an individual coloring liquid to each nozzle, and means to reciprocate the support sufficiently widely to carry jets from the nozzle to sweep to and fro across the said path and beyond the same on either side thereof sufficiently widely to cause the jets to impinge upon the strand on spaced portions thereof only.

3. Apparatus to mark a longitudinally advancing strand with a predeterminedly arranged and cyclically repeated pattern of differently colored portions in longitudinal sequence, the said apparatus comprising a support adjacent to and reciprocable transversely of the path of a longitudinally advancing strand, a plurality of nozzles aligned in the support along the said path and directed to throw each a jet of liquid across the path, an individual tank to supply an individual coloring liquid to each nozzle, an individual tank disposed to receive all the liquid from each jet not deposited on the strand, individual means to return liquid from each receiving tank to its corresponding supply tank, and means to reciprocate the support at a selected speed and sufficiently widely to carry jets from the nozzles to sweep to and fro across the said path and beyond the same on either side thereof sufficiently widely to cause the jets to impinge upon the strand on spaced portions thereof only.

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4. Apparatus to mark a longitudinally advancing strand with a predeterminedly arranged and cyclically repeated pattern of differently colored portions in longitudinal sequence, the said apparatus comprising a support adjacent to and reciprocable transversely of the path of a longitudinally advancing strand, a plurality of nozzles aligned in the support along the said path and directed to throw each a jet of liquid across the path, means to vary the interspacing of the nozzles in the support, an individual tank to supply an individual coloring liquid to each nozzle, an individual tank disposed to receive all the liquid from each jet not deposited on the strand, and means to reciprocate the support sufficiently widely to carry jets from the nozzles to sweep to and fro across the said path and beyond the same on either side thereof sufficiently widely to cause the jets to impinge upon the strand on spaced portions thereof only.

5. Apparatus to mark a longitudinally advancing strand with a predeterminedly arranged and cyclically repeated pattern of differently colored portions in longitudinal sequence, the said apparatus comprising a support adjacent to and reciprocable transversely of the path of a longitudinally advancing strand, a plurality of nozzles aligned in the support along the said path and directed to throw each a jet of liquid across the path, means to vary the interspacing of the nozzles in the support, an individual tank to supply an individual coloring liquid to each nozzle, an individual tank disposed to receive all the liquid from each jet not deposited on the strand, individual means to return liquid from each receiving tank to its corresponding supply tank, and means to reciprocate the support sufficiently widely to carry jets from the nozzles to sweep to and fro across the said path and beyond the same on either side thereof sufficiently widely to cause the jets to impinge upon the strand on spaced portions thereof only.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,263,009	Williams	Apr. 16, 1918
2,128,302	Katz	Aug. 30, 1938
2,194,941	Hinsky	Mar. 26, 1940
338,096	Meikle	Mar. 6, 1886
1,868,804	Purinton	July 26, 1932
1,944,822	Church et al.	Jan. 23, 1934
2,218,811	Chaussabel	Oct. 22, 1940
1,726,055	Campbell	Aug. 27, 1939
2,111,761	Eckert	Mar. 22, 1938
1,956,220	Johnson	Apr. 24, 1934
2,274,432	Repsher	Feb. 24, 1942