Dec. 26, 1967 R. L. COMET 3,359,844

ELECTRICAL WIRE CODING MACHINE OR DEVICE

Filed Aug. 10, 1962 2 Sheets-Sheet 1

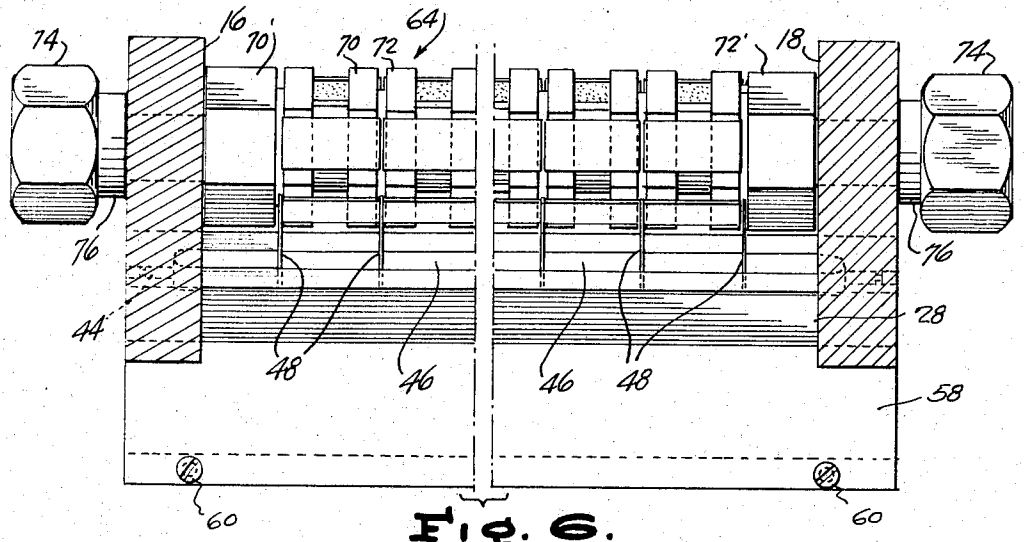
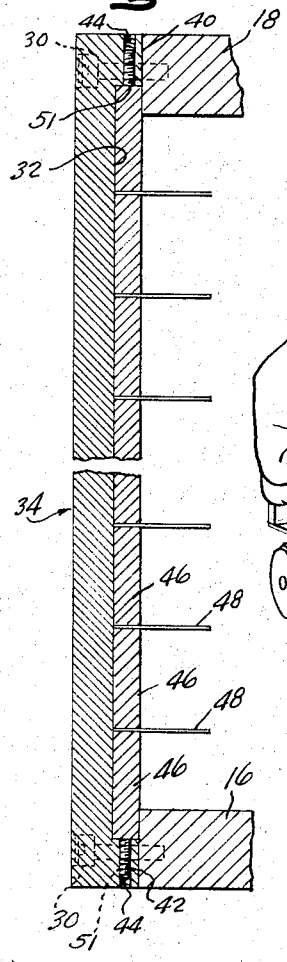


Fig. 6.

Fig. 7.



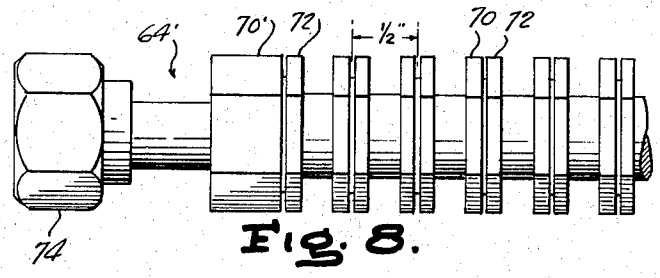
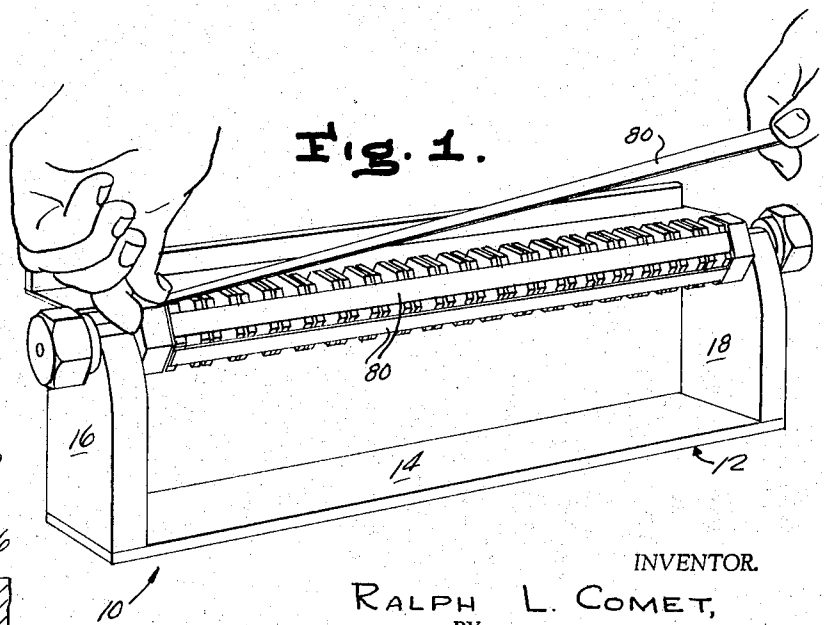


Fig. 8.

Fig. 1.



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ELECTRICAL WIRE CODING MACHINE OR DEVICE

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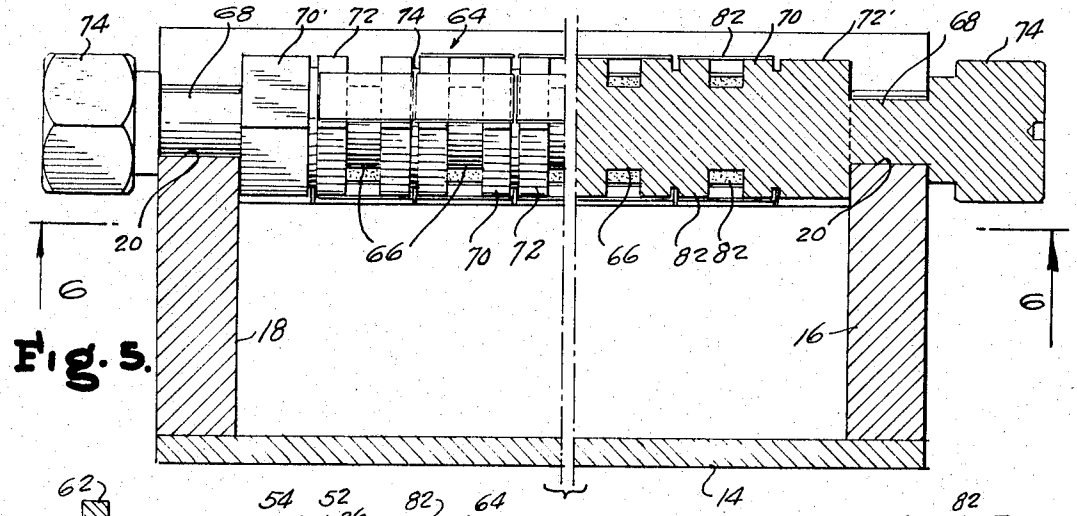


Fig. 5.

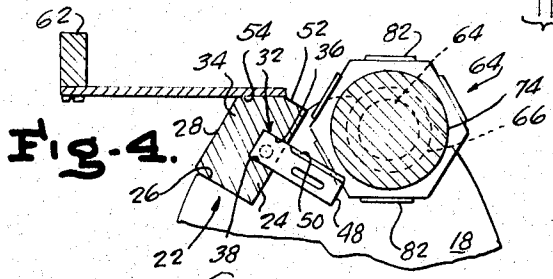


Fig. 4.

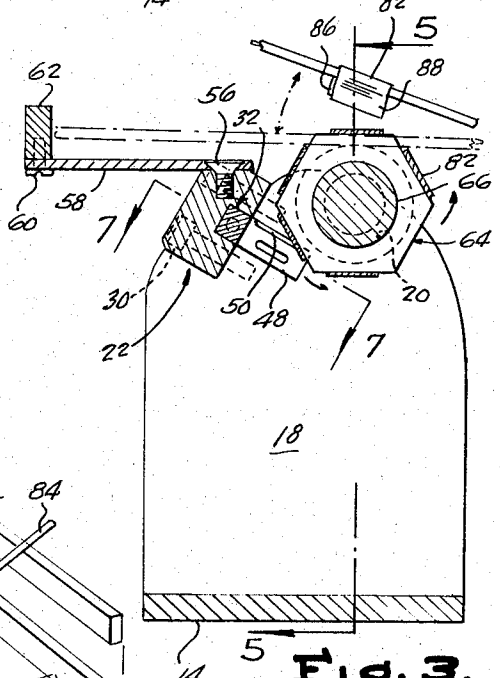


Fig. 3.

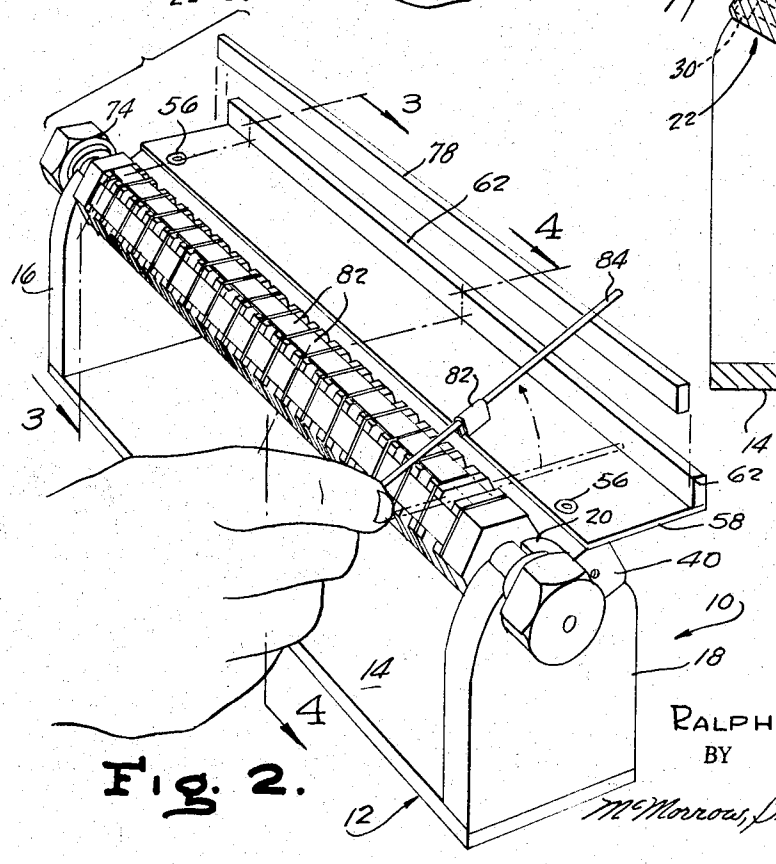


Fig. 2.

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ELECTRICAL WIRE CODING MACHINE OR DEVICE

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Filed Aug. 10, 1962, Ser. No. 216,158
10 Claims. (Cl. 83—435)

ABSTRACT OF THE DISCLOSURE

A device for making tabs from a strip of tape and for applying such tabs to wires for coding thereof, having a support, a shaft rotatable in the support, a plurality of pairs of axially spaced wiper blades in the form of discs having polygonal continuous edges mounted on the shaft, each pair being spaced apart and the adjacent pairs of wiper discs being spaced to define cavities for reception of wires to be coded, a plurality of cutter blades fixedly mounted on the support having portions extending between each of said pairs of wiper discs and said discs having tape supporting edges disposed in alignment in a common plane to receive an axially extended strip of tape thereon parallel to the shaft and overlying said cavities.

This invention relates to the general field of identification and, more specifically, the instant invention pertains to the provision of a machine or device employed in the marking, coding or identification of wires used in electrical circuits.

The electrical industry and technicians employed therein have long realized and understood the importance of coding, marking or otherwise identifying electrical wires used in wiring systems, not only to facilitate the installation of a given electrical circuit, but also to insure and safeguard those persons engaged in wiring installations against shock and electrocution which could ultimately prove to be fatal. As a general rule, the well-known type of electrical coding involves the introduction of coloring agents into the wire insulating covering or sheath and/or providing the insulator with a fabric cover in which is woven a plurality of different colored threads. The latter is most frequently seen in cables consisting of a plurality of wires, such as, for example, the conventional telephone cable.

While this type of coding has had salutary results, it is not uncommon for electrical technicians to be faced with a wiring problem wherein coded wires are not immediately available when making either a permanent or temporary electrical circuit installation. It is, therefore, one of the primary objects of this invention to provide a machine or device for the making of indicia for application to electrical wires whereby identification of a given wire may be easily and promptly ascertained.

Another object of this invention is to provide a machine or device for making electrical wire identifying tabs of pre-selected colors and in accordance with code requirements.

A further object of this invention is to provide a machine or device of the type generally referred to supra, the machine being portable and adjustable to provide electrical wire identifying tabs for differing sized wires.

This invention contemplates, as a still further object thereof, the provision of an electrical wire tab identification means, the machine or device being non-complex in construction and assembly, inexpensive to manufacture and maintain, and which is durable in use.

Other and further objects of this invention will become more manifest from a consideration of the following

specification when read in conjunction with the annexed drawings, in which:

FIGURE 1 is a perspective view of the machine or device constructed according to this invention and showing the mode of application of an electrical coding tape thereto;

FIGURE 2 is a perspective view of the machine shown in FIGURE 1, with the further showing of the application of an electrical coding tab to an electrical conductor;

FIGURE 3 is an enlarged, transverse, detail cross-sectional view, FIGURE 3 being taken substantially on the vertical plane of line 3—3 of FIGURE 2, looking in the direction of the arrows;

FIGURE 4 is a fragmentary, detail cross-sectional view, FIGURE 4 being taken substantially on the vertical plane of line 4—4 of FIGURE 2, looking in the direction of the arrows;

FIGURE 5 is a longitudinal cross-sectional view, FIGURE 5 being taken substantially on the vertical plane of line 5—5 of FIGURE 3, looking in the direction of the arrows;

FIGURE 6 is a detail longitudinal, cross-sectional view, FIGURE 6 being taken on the horizontal plane of line 6—6 of FIGURE 5, looking in the direction of the arrows;

FIGURE 7 is a detail longitudinal, cross-sectional view, FIGURE 7 being taken on the inclined plane of line 7—7 of FIGURE 3, looking in the direction of the arrows; and

FIGURE 8 is a fragmentary side elevational view of a modified coded tape-bearing spindle.

Referring now more specifically to the drawings, reference numeral **10** designates, in general, a machine or device for manufacturing tabs from flexible adhesive-coated tapes for use in the coding of individual wires used in electrical circuitry to identify the same, the machine or device being constructed in accordance with the teachings of this invention. Essentially, the machine or device **10** is designed to provide coding tabs for use on wires employed in electrical wiring systems in order to reduce, to a minimum, the possibility of miswiring, giving rise to short circuits, overloads and other malfunctions which may arise through the mistaken identity of a given wire, and to safeguard the electrical technician engaged in installing the circuitry from electrical shocks and electrocuttion which could prove to be fatal. To prevent such errors and accidents, the code machine **10** has been devised and is seen to comprise an open substantially U-shaped frame **12** which includes a normally horizontally-elongated, substantially rectangular base or bight member **14** to the opposed ends of which are rigidly secured, respectively, by conventional means not shown, the identically-shaped ogive upright standards **16, 18**. In view of the identity of the standards, a description of the construction of one constitutes the description of the structure of the other.

Thus, and reference being made specifically to the standard **18**, it is seen that the same is formed with an inwardly and transversely-extending, substantially semi-cylindrical bearing or seat **20** (see FIGURES 2, 3 and 5) offset with respect to the apex of the standard **18**, but positioned adjacent thereto. The bearings **20** of the standards **16, 18** are confronting and coaxially aligned. The standard **18**, on the opposite side of its apex, is provided with a downwardly and outwardly, transversely-extending L-shaped notch **22**, see FIGURES 3 and 4, having leg and foot sides **24, 26**, respectively. The notches **22** formed in the standards **16, 18** are disposed in registry, one with the other, and the leg portions **24**, as seen, form an acute angle with respect to the vertical axis of the standards.

Reference numeral **28** denotes an elongated, substantially rectangular cutter blade support member, the opposed ends of which are received in the notches **22** and

are releasably secured therein by Allen screws **30** threaded into the leg sides **24** thereof. One side of the support member **28** is formed with a medially-positioned, longitudinally-extending, substantially U-shaped and downwardly-opening groove **32** giving rise to a bight portion **34** having laterally-spaced, parallel and longitudinally-extending side arms **36**, **38**, and opposed longitudinally-spaced end walls **40**, **42**. To serve a purpose to be described, each end wall **40**, **42** is provided with a transversely-extending opening **44**.

Disposed within the groove **32** are a plurality of elongated substantially rectangular spacer blocks **46** between each adjacent pair of ends of which is interposed one end of an elongated substantially rectangular cutter blade **48** having an upwardly-facing cutting edge **50** (see FIGURE 4). The spacer blocks **46** in the remotely-disposed ends of the groove **32** have ends juxtaposed with respect to the side walls **40**, **42**, and the assembly of blocks **46** and blades **48** is releasably clamped in the groove **32** by compression exercised by the Allen screws **51** which are threaded into the openings **44** for engagement with the adjacent ends of the remotely-disposed spacer blocks **46**.

The upper side **52** of the cutter blade support member **28** is beveled to form a planar surface **54** perpendicular to the vertical axis of the standards **16**, **18**, and to this beveled side is fixedly secured by Allen screws **56** one longitudinally-extending marginal edge of an elongated substantially rectangular plate **58**. Fixedly secured to the oppositely-disposed longitudinal marginal edge of the plate **58**, by screws **60**, is an elongated substantially rectangular stop bar **62**, the function of which will be detailed below.

Reference numeral **64** denotes, in general, an elongated spindle having an elongated substantially cylindrical shaft **66** terminating at its opposed ends in journals **68** which seat in the bearings **20** of the standards **16**, **18**. Coaxial with and projecting laterally from the shaft **66** is a plurality of pairs of longitudinally-spaced hexagonal wiper blades **70**, **72** formed integral therewith. Disposed between each pair of wiper blades **70**, **72** is a substantially cylindrical spacer element **74** also integrally formed with the shaft **66** and having a somewhat larger diameter. As is seen in the several figures of the drawings, the peripheral edges of the wiper blades **70**, **72** are arranged in coplanar rows.

The remotely-disposed wiper blades **70'**, **72'** have a greater axial length than their counterparts **70**, **72**, respectively, and their remotely-disposed sides are juxtaposed in surface-to-surface contact with the adjacent sides of the standards **16**, **18** to function as anti-thrust members.

The remotely-disposed ends of the journals **68** terminate in manually-operable hexagonal knobs **74** and anti-thrust cylindrical flanges **76** which abut, respectively, against the remotely-disposed sides of the standards **16**, **18**.

In the construction of the machine **10**, as described above, it is seen and is to be understood that the length of the cutting blades **48** and the angularity thereof with respect to the longitudinal axis of the shaft **66** is such as to cause the free ends of the cutting blades **48** to extend between each adjacent pair of wiper blades **70**, **72** to a point inside their respective peripheries, it being understood, of course, that the spacer bars **46** are properly dimensioned of effect the centering of the cutter blades between the wiper blades, for the clearance between the cutter blades **48** and the wiper blades **70**, **72** is quite small.

To serve a function to be described, the device or machine **10** may be, optionally, provided with an auxiliary stop bar **78** which may be removably disposed on the plate **58**. The auxiliary stop bar **78** is, preferably, of rectangular configuration and when employed, has a longitudinally-extending side thereof in abutting engagement with the stop bar **62**.

To carry out the intended functions of the machine **10**, one or more strips **80** of conventional flexible tapes having adhesive applied to a side thereof, and of the same or differing colors, are applied to the coplanar edges of the wiper blades **70**, **72** and **70'**, **72'** in the manner shown in FIGURE 1. The strips **80** extend axially of the shaft **66** and preferably are of such length as to extend between the remotely-disposed wiper blades **70'**, **72'**. The strips **80** are applied, of course, with the adhesive sides in engagement with the wiper blades **70**, **72** and **70'**, **72'**.

After one or more strips **80** are positioned on the spindle **64**, the operator grasps and turns one of the knobs **74** thereby effecting rotation of the shaft **66** and consequently, of the wiper blades **70**, **72** and **70'**, **72'**. This rotation causes the leading longitudinal edge of one of the tapes **80** to engage against the cutting edges **50** of the cutter blades **48** to initiate the cutting of one of the tapes **80** into tabs **82** (see FIGURE 2), it being understood that continuous rotation of the wiper blades effects severance of the tape **80** completely transversely thereacross. It is of importance that the cutting action commence at an edge of the tape or strip **80** to provide a clean cut, whereby tabs **82** are formed, each having uniform dimensions.

To apply identifying code tabs **82** to a selected wire or conductor, the operator or electrician passes one end of the wire **84** over the shaft **66** between the wiper blade **70** or **72** of one pair of wiper blades and the reverse counterparts **72** or **70**, respectively, of the immediately adjacent pair of wiper blades, and below the adhesively-coated side of the tab **82**. It is understood, of course, that in carrying out this operation, the tabs **82** have been rotated into substantially parallel position relative to the plate **58**. The selected free end of the wire **84** is extended across the plate **58** until it engages against the stop bar **62** at which time the wire **84** is raised to engage the selected tab **82** and to move the same upwardly out of contact with its formerly-associated wiper blades **70**, **72** (see FIGURES 3 and 4). The tab **82** now embraces substantially the upper half of the wire or conduit **84** and assumes a substantially U-shaped configuration including depending free arms **86**, **88**. These are subsequently pinched together by the operator, thereby securely connecting the tab **82** to the wire **84**.

In the event the spacing between the free end of the wire **84** and the tab **82** is to be decreased, the auxiliary stop bar **78** is placed on the platform **58**, in the manner described above.

In the event wires smaller in diameter than the wire **84** are to be coded through the application of tabs **82**, the spacing between each adjacent pairs of wiper blades **70**, **72** and **70'**, **72'** is reduced, as is shown in FIGURE 8, and the thickness of the wiper blades **70**, **72** may be reduced, if desired. In all other respects, the spindle **64'** shown in FIGURE 8 follows the construction of the spindle **64**.

The spindles **64**, **64'** are, of course, interchangeable. It will be recognized, of course, that the spacing between each adjacent pair of wiper blades **70**, **72** may be varied, and that upon exchange of spindles, such as, the replacement of the spindle **64** with the spindle **64'**, the spacer blocks **46** must be withdrawn and other similar blocks (not shown) inserted in the groove **32** to insure that each blade **48** is clearly insertable between its associated wiper blades.

It will be recognized, of course, that while the above specification is directed primarily to the description of a tape-cutting machine for coding electrical wires or conductors, the device **10** has application in other fields wherein it is desired to form substantially uniform tabs from a strip or length of tape.

Aside and apart from achieving all of the objectives noted above, it is pointed out that the structure of this machine or device **10** is such that accidental injuries due to physical contact of the fingers or other portions of the user's body with the cutter blades **46** is, to all intent and purposes, eliminated. Through reference to FIGURE 4 of the drawings, it is seen that the clearance between the wiper blades **70**, **72** and the adjacent edge of the upper

side 52 of the cutter blade support is relatively small, and that while the support member 12 constitutes a substantially open U-shaped frame permitting the entry of the hand and fingers of the user, still, since the blades 48 have their cutting edges 50 facing upwardly, there is but little possibility that the user could be cut.

Having described and illustrated this invention in detail, it will be understood that the same is offered merely as an example, and that the scope of the invention is only to be limited by the appended claims.

What is claimed is:

1. A device for making tabs from a strip of tape and for applying such tabs to wires for coding thereof, comprising a support member, a shaft, means supporting said shaft for rotation on said support member, a plurality of pairs of axially-spaced wiper blades carried on said shaft and projecting laterally therefrom, the adjacent pairs of wiper blades being spaced to define cavities for reception of wires to be coded, a plurality of cutter blades corresponding in number to the number of said pairs of wiper blades, means on said support member for mounting said blades in longitudinally-spaced relation with each cutter blade, respectively, having a portion thereof extending between each of said pairs of wiper blades, and said wiper blades having tape supporting edges disposed in alignment in a common plane to receive an axially-extended strip of tape thereon parallel to said shaft and overlying said cavities, whereby rotation of said shaft in a direction toward said cutter blades causes said tape to engage said cutter blades for transverse severance from its leading edge to its trailing edge thereby forming said tabs.

2. A device according to claim 1 wherein each of said wiper blades has a continuous peripheral edge surrounding said shaft a portion of which is planar, said planar portions being aligned with one another axially of said shaft to receive a tape strip.

3. A device for making electric wire identification tabs comprising a support member, a shaft, means supporting said shaft for rotation on said support member, a plurality of pairs of axially-spaced wiper blades carried on said shaft and projecting laterally therefrom, each of said wiper blades having a continuous polygonal peripheral edge with the surfaces of said peripheral edges being disposed in axially-extending rows with said surfaces of any given row disposed in a common plane, a plurality of cutter blades corresponding in number to the number of said pairs of wiper blades, means on said support member mounting said cutter blades in longitudinally-spaced relation with each cutter blade, respectively, having a portion thereof extending between each of said pairs of wiper blades, and said surfaces of each of said rows being adapted to receive thereon an axially-extending flexible tape whereby rotation of said shaft in a direction toward said cutter blades causes said tape to engage said cutter blades for transverse severance from its leading edge to its trailing edge to form said tabs.

4. A device for making electric wire identification tabs comprising a support member, a plurality of cutting blades fixedly secured on said support member in longitudinally-spaced relation, tape-supporting means comprising a pair of elements for each of said blades, and means mounting each of said pairs of elements on said support member in juxtaposition to and on opposite sides of each blade, respectively, said last-named means being movable to effect an engagement of said cutter blades with an edge of said tape and with the attendant and consequent severance of said tape into tabs, said pairs of elements being spaced apart and together with said mounting means defining cavities for reception of wires to be coded, whereby after severance of the tape into tabs wires may be inserted in the cavities and lifted to remove the tabs from said elements and adhere them to the wires.

5. A device for making electric wire identification tabs comprising a substantially U-shaped support member including an elongated base having a pair of spaced upright standards thereon, each of said standards having a bearing formed therein, said bearings being disposed in confronting relation relative to each other, each of said standards having an outwardly-opening notch formed therein, said notches being disposed in confronting relation relative to one another, an elongated cutter blade support bar having ends supported in said notches, a plurality of cutter blades spaced longitudinally on said bar, an elongated shaft having journals at the opposed ends thereof seated in said bearings, a plurality of pairs of polygonal wiper blades mounted for rotation on said shaft in axially-spaced relation, each of said cutter blades projecting toward said wiper blades with a portion of one blade being positioned between, respectively, each pair of wiper blades, said wiper blades having their respective surfaces at the peripheral edges thereof arranged in axially-extending rows with the surfaces of each row disposed in a common plane, and each row of surfaces being adapted to receive an adhesively-coated side of a flexible tape thereon and extending axially of said shaft whereby rotation of said shaft toward said cutter blades causes the leading longitudinal edges of said tapes and the subsequent severance of said tapes to form said tabs.

6. A device for making electric wire identification tabs as defined in claim 5, and an elongated substantially rectangular plate having one of its longitudinally-extending marginal edges fixedly secured to said spacer support bar and projecting laterally therefrom, and an upstanding substantially rectangular stop bar fixedly secured to the other longitudinally-extending marginal edge of said plate.

7. A device according to claim 1 wherein said wiper blades are discs each having a polygonal peripheral edge, the planar surfaces of said peripheral edges being disposed in rows parallel to said shaft with the surfaces of any given row disposed in a common plane.

8. A device according to claim 7 wherein said wire receiving cavities are defined between said wiper blades by the outer surface of said shaft, there being a guide plate mounted on said support member substantially tangent to said outer shaft surface to receive the ends of wires to be coded.

9. A device according to claim 5 wherein said blade support bar is provided with a longitudinal slot for receiving and supporting the ends of said cutter blades.

10. A device according to claim 9 wherein said cutter blades are separated by spacer blocks seated in said slot, said support bar having walls at the ends pierced by threaded apertures, and screws passing through the apertures and engaging the assembled spacer blocks and cutter blades to exert longitudinal clamping compression.

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