June 13, 1944. A. C. NYSTROM 2,351,224

MARKING DEVICE

Filed April 5, 1941

FIG. 6

FIG. 7

FIG. 1

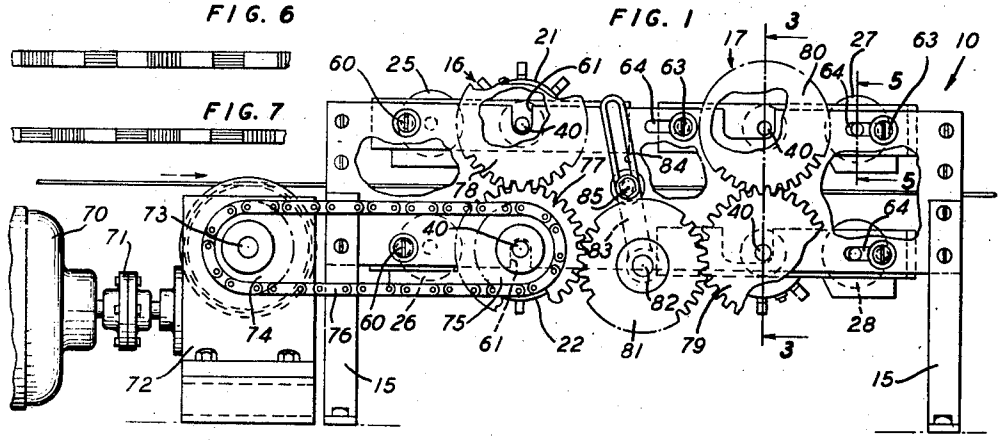


FIG. 2

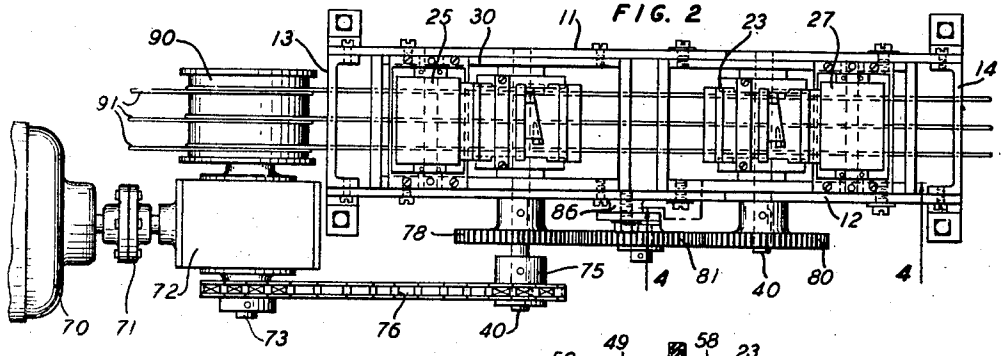


FIG. 3

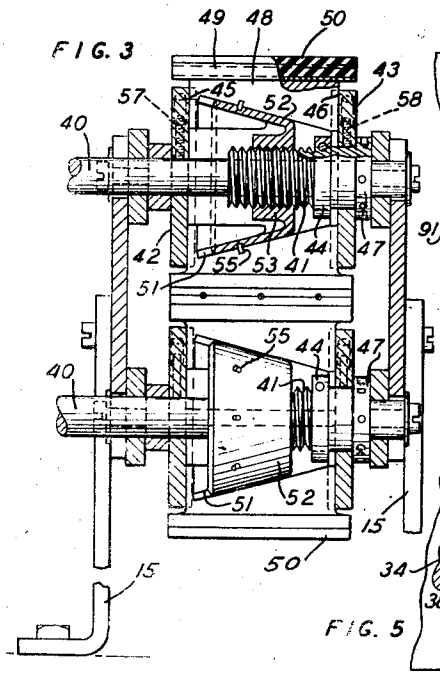


FIG. 4

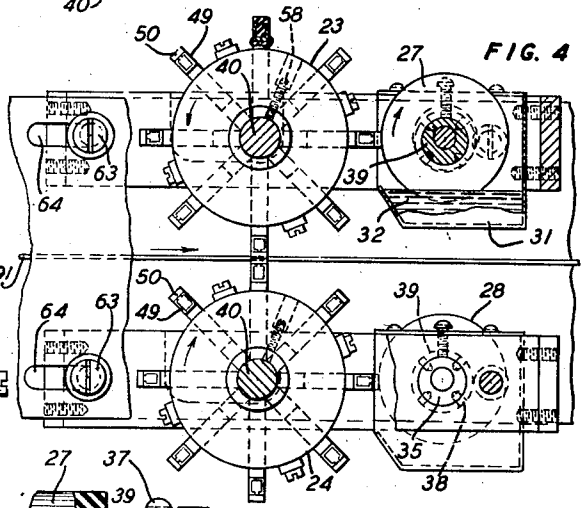
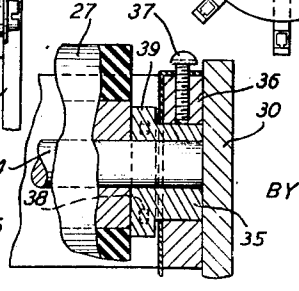


FIG. 5



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MARKING DEVICE

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Application April 5, 1941, Serial No. 386,959

2 Claims. (Cl. 101—376)

This invention relates to marking devices, and more particularly to devices to make distinguishing marks on ribbon, strands and the like.

In various electrical arts, particularly in the communication arts, where cables formed of a plurality of insulated conductors are used, the coverings or insulations on the conductors are of various colors to distinguish them one from another. The greater the number of conductors in such cables the greater will be the number of color combinations required, and it has been found advantageous to employ color combinations which may be widely modified to indefinite numbers yet readily distinguishable from each other.

An object of the invention is to provide a marking device which is highly efficient in forming variable distinguishing marks on material.

With this and other objects in view, the invention comprises spaced marking units with the marking elements carried thereby and rotated relative to an advancing material to form marks of selected colors on the material, variations being made possible to vary the relative spacing of the marks on the material and the relative number of marks made on the material by each unit in given distances.

Other objects and advantages will be apparent from the following detailed description when taken in conjunction with the accompanying drawing, wherein

Fig. 1 is a side elevational view of the device, portions thereof being broken away;

Fig. 2 is a top plan view of the device;

Fig. 3 is an enlarged vertical sectional view taken along the line 3—3 of Fig. 1;

Fig. 4 is an enlarged fragmentary sectional view taken substantially along the line 4—4 of Fig. 2;

Fig. 5 is an enlarged fragmentary sectional view taken along the line 5—5 of Fig. 1, and

Fig. 6 and 7 are fragmentary views illustrating different color combinations on electrical conductors.

Attention is now directed to the drawing illustrating the device, which has a main frame indicated generally at 10 with side walls 11 and 12 secured at spaced positions by end members 13 and 14, while the entire frame is supported by legs 15. Between the walls 11 and 12 are disposed two pairs or sets of marking units indicated generally at 16 and 17. These units consist generally of marking wheels 21, 22, 23 and 24 having their respective supply rolls 25, 26, 27 and 28. The units including the marking wheels and supply rolls are identical in structure one with the other, and a description of one will apply to them all.

In each unit there is a supporting frame 30 rectangular in general contour and of a size to be positioned between the side walls 11 and 12 of the main frame. At a desired position in the frame 30 a fluid tank 31 is disposed adjacent its supply roll. The supply tank 31 is formed to receive a fluid 32 so that during rotation of the roll associated therewith the fluid will be supplied to the outer surface of the roll. The rolls 25 to 28 inclusive are mounted upon their respective shafts 34, the ends of which are rotatably supported in eccentric bearings 35, Fig. 5. The bearings 35 in turn are supported by apertured members 36 carried by the supporting frame 30. A set screw 37 in the apertured member 36 is conditioned to hold its respective eccentric bearing 35 in any desired adjusted position. Each end of the shaft 34 is provided with such a bearing and supporting structure and when adjustments are to be made like adjustments are made to each bearing. These adjustments may be made through the aid of a suitable tool to engage apertures 38 in a flanged portion 39 of the bearing. Rotation of the bearings will not only vary the positions of the rolls laterally toward or away from their respective marking wheels, but will also vary their positions vertically relative to the fluid 32.

Attention is now directed to the marking wheels, particularly to the illustrations thereof in Figs. 3 and 4. Each wheel has a shaft 40 rotatably supported by its respective supporting frame 30 and having a hollow threaded adjusting member 41 mounted thereon. As illustrated in Fig. 3 the marking wheel shown in the upper portion of this figure consists of head members 42 and 43, the former being mounted upon the shaft 40 and the latter upon the threaded member 41 between a flanged portion 47 and a collar 44. The head members 42 and 43 have like radially projecting slots 45 and 46 respectively, these slots being eight in number in the present instance. Marking elements 48, identical in structure, are formed to be slidably adjustable in the slots of the head members and to be supported at definite positions therein. The outer portions of the elements are U-shaped in cross-section, as illustrated in Fig. 4 and indicated at 49, and are formed to partially receive and retain elongate marker shoes 50. It will be observed by viewing Fig. 3 that the marker shoes with the U-shaped portions 49 are of sufficient length to extend over the outer peripheries of

the head members 42 and 43. The inner portions of the elements 48, those portions which are positioned between the head members, have diagonally extending slots 51 to receive an adjusting cam 52. The adjusting cam is of the truncated cone contour illustrated in Fig. 3 and has a threaded portion 53 mounted upon the threaded adjusting member 41 so that by rotation of the latter the cam 52 may be moved to the left, moving the elements inwardly toward the shaft 40 simultaneously, or be moved to the right to move the elements outwardly simultaneously. Regardless of the adjustments of the cam 52, the outer surfaces of the marker shoes 50 are equal distances from the axis of rotation of the marker wheel. A plurality of pins 55 is disposed in the cam and projects outwardly therefrom adjacent the elements to serve as means to hold the cam against rotation relative to the elements. Suitable means such as set screws 57 and 58 disposed in threaded apertures of the head members 42 and 43, respectively, serve to secure these members to the shaft 40 and the adjustable threaded member 41.

Attention is now directed to the pairs of units illustrated in Fig. 1. The pair of units 16 is removably held in definite positions in the main frame 10 by screws 60, the shafts 40 extending through notches or recesses 61 in the main frame. The pair of units 17 is similarly supported by the main frame 10 through the aid of screws 63, but these screws pass through elongate apertures 64 in the side walls 11 and 12 of the main frame to permit longitudinal adjustment of the units 17 relative to the units 16.

The driving means for these units includes a motor 70, operatively connected as at 71 to a reduction gear unit 72 which drives a shaft 73 having a sprocket 74 mounted thereon. The sprocket 74 is connected to a sprocket 75 upon the shaft 40 of the lower unit 16 through the aid of a chain 76. A gear 77 is also mounted upon this shaft 40 and interengages a similar gear 78 mounted upon the shaft 40 of the upper unit 16. Similar gears 79 and 80 are respectively mounted upon the shafts 40 of the lower and upper unit 17. An idler gear 81 is adjustably supported to operatively connect the gear 77 with the gear 79. The supporting means for the gear 81 consists of the shaft 82 supported by an arm 83, the upper end of which is provided with an elongate aperture 84 associated with a securing means 85 in the form of a nut and washers threadedly supported by an embossed portion 86, Fig. 2, of the wall 12.

In the present embodiment a capstan 90 is supported by the end of the shaft 73 opposite the sprocket 74 to aid in the advancement of material, for example, insulated electrical conductors 91, through the device. Other means (not shown) may be employed to further advance the material through the device, or if desired the motor 70 and the capstan 90 may be disposed at the opposite end of the device and serve to pull the material therethrough.

During the operation of the device the motor 70 is energized, driving the sprocket 75 through the connection 71, the unit 72, the shaft 73, sprocket 74 and chain 76. The rotation of the sprocket 75 causes rotation of the shaft 40, of the lower unit 16, clockwise, causing counterclockwise rotation of the shaft 40 of the upper unit 16. Through the aid of the idler gear 81, the gear 79 is rotated clockwise at the same speed as the sprocket 75, and through the interconnection of the gears 79 and 80 the latter will be rotated counterclockwise at the same speed as the gear 78. This constitutes the driving means for the marking wheels, the respective marking wheels traveling at the same speeds as their gears. It will be apparent, therefore, that the marking wheels of the units 16 are rotated in synchronism one with the other so that the marker shoes will engage the strands or conductors simultaneously at opposing positions to form marks around the entire circumference of the strands. This is made possible due to the flexible nature of the marker shoes, each being pressed toward the strands, the meeting pairs of marker shoes partially surrounding the strands at each meeting position. The radial positions of the marker shoes determine the spaces between each mark on each strand made by the marking wheels of these units. The color depends upon the color of the fluid disposed in the respective tanks of the associated supply rolls. The flexible nature of the marker shoes serves still another purpose, that being to cause rotation of their respective supply rolls, this eliminating the necessity of other means to rotate the rolls to bring fresh supplies of fluid on the surfaces thereof to the marker shoes.

If desired the colors of the fluids in all of the tanks 31 may be the same if it is desirable to make spaced markings of like colors throughout the lengths of the strands. In this manner one group of color combinations may be formed, for example, on a conductor with a white insulating cover spaced markings of other colors may be made by applying the selected other color by both sets of units 16 and 17. Still other color combinations may be formed by using the units 16 to apply one color and the units 17 to apply another color. For example, if these colors should be respectively blue and red and applied to conductors having white insulated coverings thereon, the resultant strands would have spaced red and blue marks with intermediate uncolored white portions. With this same color combination another variation may be had by adjusting the units 17 relative to the units 16 so that the markings of one unit will be adjacent the markings of the other unit, as illustrated in Fig. 7, rather than spaced therefrom as previously described and as illustrated in Fig. 6.

Other adjustments of the device are made possible through the adjusting cams 52 to vary the positions of the elements 48, and to vary the positions of the rolls other adjustments may be made through the eccentric bearings 35.

The embodiment of the invention herein disclosed is merely illustrative and may be modified and departed from in many ways without departing from the spirit and scope of the invention as pointed out in and limited only by the appended claims.

What is claimed is:

1. A marking device comprising a wheel rotatable in a direction relative to an advancing material and including spaced heads with opposing sets of radial grooves therein, marking elements, to make distinguishing marks on the material, disposed with their ends in their respective sets of grooves and having slots therein extending diagonally with respect to the axis of the heads, and a supporting element having portions extending into the slots and movable relative thereto to move the marking elements in their grooves toward and away from the axis of the wheel, and means to move the supporting element.

2. A marking device comprising a wheel rotat-

able in a direction relative to an advancing material and including spaced heads with opposing sets of radial grooves therein, marking elements, having resilient marking portions to make distinguishing marks on the material, disposed with their ends in their respective sets of grooves and having slots therein extending diagonally relative to the axis of the wheel, and a cone-shaped cam having portions receivable in the slots mounted for movement relative to the elements to move them in their sets of grooves toward and away from the said axis, and means to move the cam.

AXEL C. NYSTROM.