

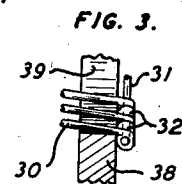
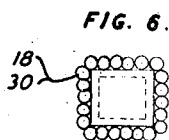
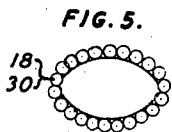
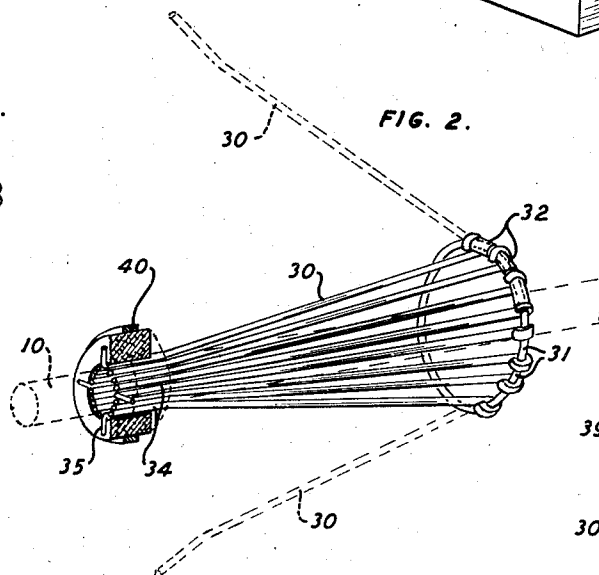
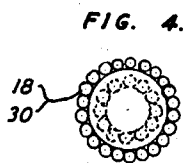
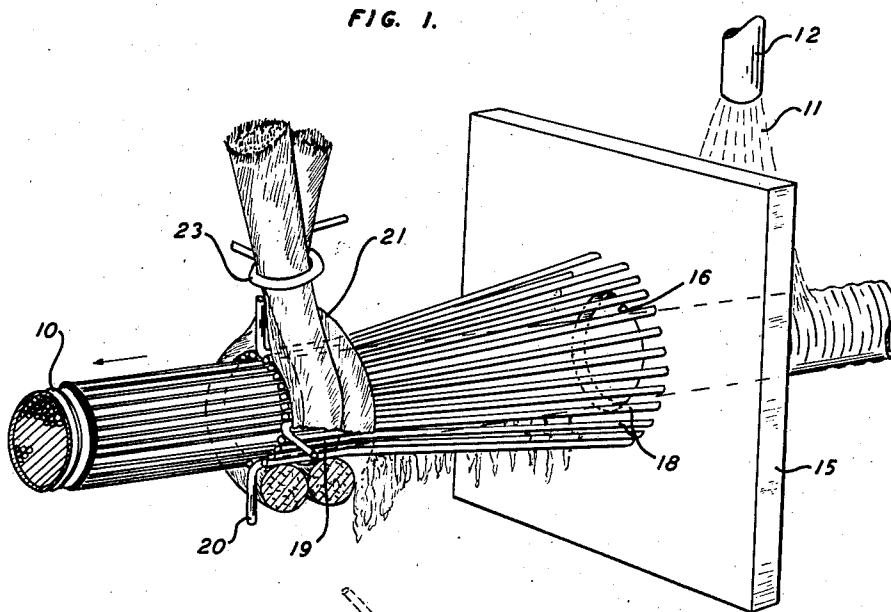
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S. C. CAWTHON ET AL

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WIPING DIE

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INVENTORS
S. C. CAWTHON
W. MORSING.

BY

E. R. Nowlan

ATTORNEY

UNITED STATES PATENT OFFICE

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WIPING DIE

Samuel C. Cawthon, North Plainfield, and William Morsing, Irvington, N. J.; said Cawthon assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York, and said Morsing assignor to Western Electric Company, Incorporated, New York, N. Y., a corporation of New York

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8 Claims. (Cl. 91—53)

This invention relates to a wiping die and more particularly to a device for wiping excess coating material from a core.

In various arts materials are coated while advancing, for example, through a bath of coating solution, and subsequently passed through a die to wipe the excess coating solution from the material. Usually, such dies are designed for the particular material being coated and are oftentimes designed especially for the contour of that material.

An object of the invention is to provide an efficient, practical and variably adjustable wiping die.

With this and other objects in view one embodiment of the invention comprises a plurality of resilient elements such as wires mounted at one end on a suitable support apertured to accommodate the passage of a coated material therethrough, the other end of selected elements being held in engagement with the coated material to wipe the excess coating therefrom.

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

Fig. 1 is a perspective view of one embodiment of the invention;

Fig. 2 is a perspective view of another embodiment of the invention;

Fig. 3 is a fragmentary sectional view of a portion of the embodiment of the invention shown in Fig. 2;

Fig. 4 is an end elevational view illustrating how either embodiment of the invention may be varied for materials of different sizes, and

Figs. 5 and 6 are end elevational views of the embodiments shown in Figs. 1 and 2 illustrating the arrangement of the elements associated with materials with other than round cross sections.

To illustrate the invention the device is shown removing excess coating material from a cable, the embodiment shown in Fig. 1 being round in cross section and for the purpose of the specification and claims may be referred to as coated material 10. The term "coated material" includes the material or cable 10 with a coating solution thereon. In the present illustration the material 10 is advanced longitudinally and during its advancement it travels through the path

of a coating solution 11, such as a thermo-plastic cement, supplied from a suitable source indicated at 12. A supporting member 15, mounted in any suitable frame (not shown) to hold it against movement with the material 10, is apertured at 16 to allow the passage of the material therethrough. In this embodiment of the invention resilient elements 18, such as spring wire, have their inner ends fixed to or embedded in the supporting member 15 in spaced positions concentric with the aperture 16. These elements extend outwardly from the support in a truncated cone arrangement to positions short of their outer ends, where they are bent into substantially straight parallel formation as indicated at 19 so that these portions may be positioned in engagement with the coated material. Certain of the elements have substantially right angle extensions 20 integral with their outer ends to serve as stop members for a retaining member 21. In this embodiment of the invention the retaining member 21 is composed of a suitable wrapping of jute or the like with its ends secured together by suitable means such as a wire 23. The member 21 has a three-fold purpose; first, to hold a selected number of the elements 18 into engagement with the coated material; second, to stop the excess material removed by the elements from overflowing the outer ends of the elements and forming a deposit on the wiped portion of the coated material; and, third, to provide suitable flexibility to allow high portions in the coated material to pass through the wiping die.

During advancement of the material 10 it is flooded with the coating solution 11 before it passes through the aperture 16. The outwardly flared or truncated arrangement of the elements 18 spaces the elements so that the excess coating solution on the material advancing from the aperture 16 to the wiping end of the elements may drop between the elements into a tank (not shown) therebeneath. Furthermore, the downward slant of the lower elements from the wiping ends causes such excess material as might drop thereon to flow away from the wiping end of the die.

The cross sectional contour of the elements is circular and as a result thereof a fluted coating is formed on the material 10.

The embodiment of the invention shown in Fig. 2 is similar to that shown in Fig. 1, the difference in structure lying mainly in the mounting of the elements. In this embodiment the elements are indicated at 30 and have their inner ends bent around an annular member 31 so as to pivotally mount the elements thereon. Spacing elements 32 disposed upon the annular member 31 between the elements 30 serve as means to space the inner ends of the elements the desired distance apart. Other than the formation of the inner ends of the elements 30 about the annular member 31, the remaining portions thereof are substantially identical to the elements 18 shown in Fig. 1. In other words, together they have a truncated cone formation extending inwardly to where their outer ends are bent, as at 34, into substantially parallel formation, with certain of the elements 30 having integral extensions 35.

With this embodiment of the invention a suitable support 38 (Fig. 3), similar to that shown at 15 in Fig. 1, is mounted upon a stationary frame and apertured at 39 to receive the assembly of elements 30 shown in Fig. 2, their curved portions and the spacing sleeves abutting the back wall of the support 38 to prevent movement of the elements with the coated material. A suitable retaining member 40 may be removably disposed upon the ends 34 of the elements 30 to serve the same purposes as defined in the foregoing description relating to the retaining member 21. In this embodiment the retaining member 40 is formed of sponge rubber, annular in formation and reinforced by a metallic ring. This retaining member 40 is placed over the ends of the elements 30 prior to the feeding of the cable through the wiping die. At this time the free ends of the elements 30 may be moved closer together, especially the elements having the integral extensions 35, to permit the free movement of the retaining member 40 in place. The ends of the elements 30 in the retaining member assume their equally spaced positions when the cable is fed through the wiping die.

In either embodiment of the invention any desired number of the elements may be moved outwardly so as not to be included with those positioned around the coated material, making it possible, as illustrated in Fig. 4, to condition the wiping die for materials of smaller cross sectional dimensions. It is also apparent from viewing Figs. 5 and 6 that the elements of the wiping dies may be suitably positioned about materials of various cross sectional contours, and of course contours varying in size. Instead of showing separate views in the drawing to illustrate the adaptability of each embodiment, reference numerals 18 and 30 are both applied to the elements in Figs. 4, 5 and 6. The elements 18 and 30 are resilient and those that are positioned out of use may rest upon their respective retaining members 21 and 37 or the elements 30 may be swung about their pivotal connection with the annular member 31 and positioned upon the opposite side of the suggested supporting member.

Materials being coated frequently have high spots which tend to cause wear on coating dies and make it difficult at such points to apply an even coating thereon. However, the elements 18 and 30 are resilient and, aided by the flexibility of the retaining members 21 and 37, make it possible for the wiping dies, shown in Figs. 1 and 2, to adapt themselves to such unexpected conditions and vary with such variations in the ma-

terial to cause an even coating to be applied to the material.

Although the elements 18 and 30 are circular in cross section, by being disposed in successive engagement, they allow only a limited amount of coating material to pass therethrough, which amount may be varied by varying the size of the cross sectional dimensions of the elements.

The embodiments of the invention herein disclosed are illustrative only and may be widely 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 die for wiping excess coating material from a coated article comprising a plurality of elements, and means to hold a selected group of the elements in engagement with a coated article and hold the remaining elements free of the article.
2. A die for wiping excess coating material from a coated article comprising a plurality of cylindrical elements, and means to hold a selected group of the elements in engagement with a coated article.
3. A die for wiping excess coating material from a coated article comprising a plurality of elongate elements, and means to selectively position less than the entire number of elements in engagement with a coated article, and means to hold the elements against movement with the article while advancing.
4. A die for wiping excess coating material from a coated article comprising a support apertured for the advancement of the article therethrough, a plurality of elongate elements held at their rearward ends to the support in spaced positions about the aperture, the forward ends of the elements engaging the article in successively adjacent positions to wipe the excess coating material from the article, and means disposed adjacent the forward ends of the elements to limit the forward flow of the excess material.
5. A die for wiping excess coating material from a coated article during relative movement of the die and article comprising a plurality of separable resilient wires, and means to support the wires to cause engaging portions thereof to be normally urged into engagement with the coated article in successively adjacent positions therearound.
6. A die for wiping excess coating material from a coated article during relative movement of the die and article comprising means to apply a coating of material on the article during movement thereof, a plurality of elements disposed about the article to remove the excess material therefrom, an absorbent member disposed about the elements and article to limit movement of the excess material with the article, and means to hold the absorbent member against displacement.
7. A die for wiping excess coating material from articles variable in size comprising a plurality of elongate elements having article engaging portions, means to support the elements to cause the engaging portions thereof to be disposed in adjacent successive positions to jointly surround a coated article and form a wiping die portion therefor, and means to vary the number of engaging portions disposed in the said positions to vary the size of the wiping die portion for coated articles varying in size.
8. A die for wiping excess coating material

from articles variable in size comprising a plurality of elongate elements having article engaging portions, means to support the elements to cause the engaging portions thereof to be disposed in adjacent successive positions to jointly surround a coated article and form a wiping die

portion therefor, and means to cause variations in the positions of the engaging portions to vary the contour of the wiping die portion for coated articles of different contours.

SAMUEL C. CAWTHON. 5
WILLIAM MORSING.