March 27, 1962 N. B. OWEN ETAL 3,027,419

DEVICE FOR HARNESSING MULTIPLE WIRES

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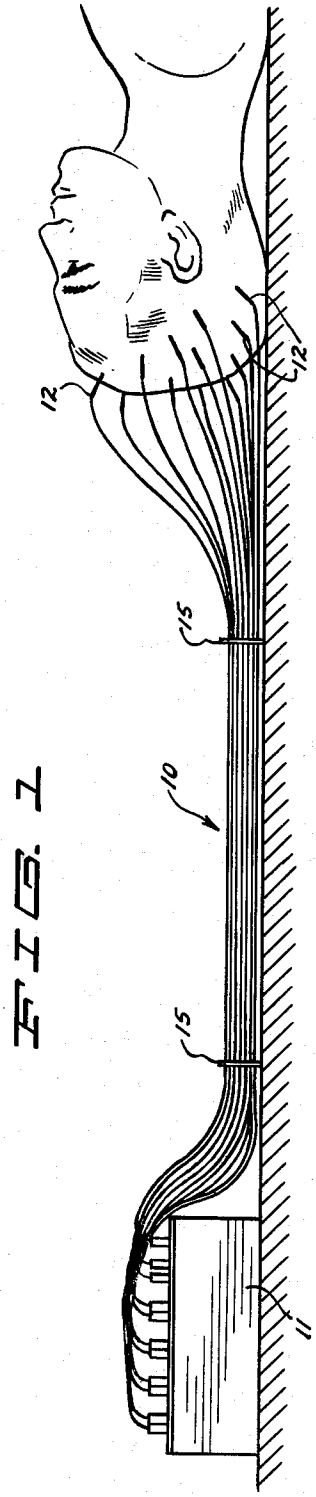


FIG. 1

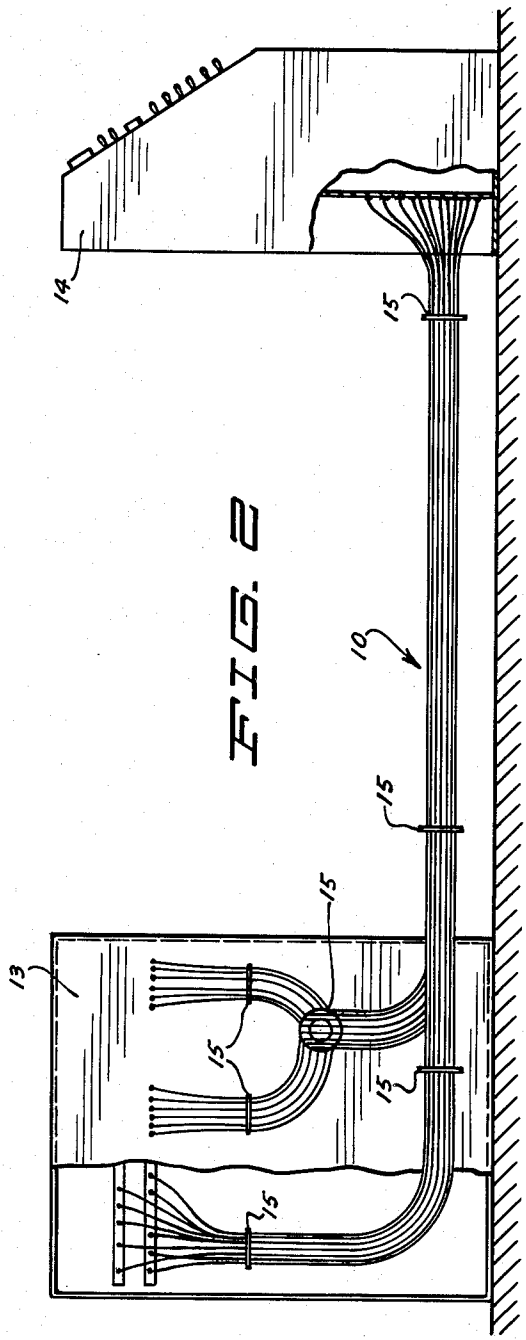


FIG. 2

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FIG. 3

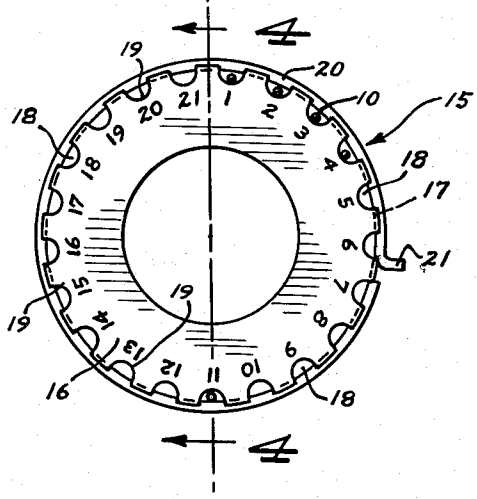


FIG. 4

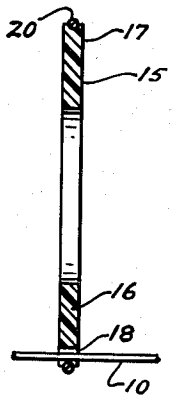
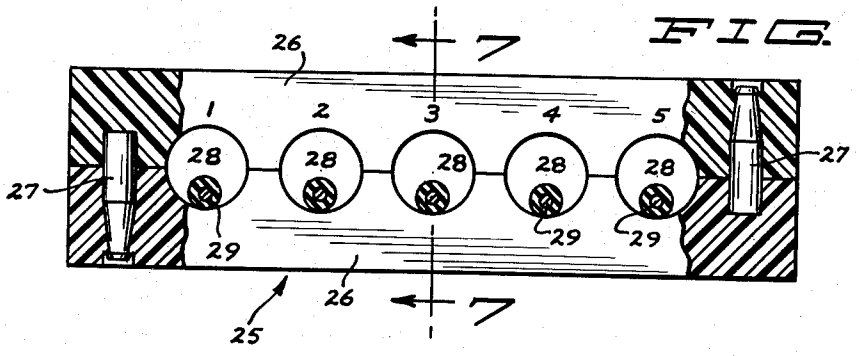


FIG. 5



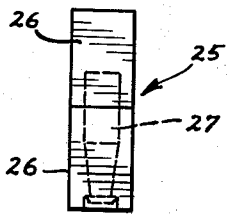


FIG. 6

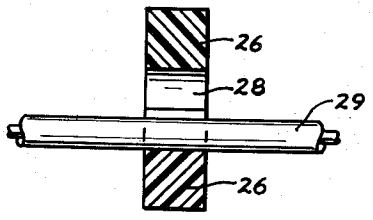


FIG. 7

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DEVICE FOR HARNESSING MULTIPLE WIRES

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1 Claim. (Cl. 174—72)

The invention herein has relation to a device for harnessing electric current transporting flexible wires as employed in various apparatuses, such, for example, as electroencephalographs, electrocardiographs, computers, etc., wherein side by side multiple flexible wires, extending from a source to a location of use therefor, are employed.

Side by side multiple flexible wires heretofore employed in apparatuses of the general nature as hereinbefore mentioned have frequently become twisted and entangled with each other and untwisting and straightening out of the wires has been accomplished only by expenditure of considerable time and laborious effort. And, too, it is fact that undesired and unintentional capacitance, known as stray capacitance, can exist between side by side electric current conveying multiple flexible wires by reason of their coming into too closely adjacent relation with each other.

The object of the present invention is to provide a harnessing device for electric current conveying side by side multiple flexible wires which effectively can be applied to situate and retain them spaced apart, each one from all the others, at distances prohibitive of the occurrence of stray capacitance between the flexible wires and also to preclude the possibility of the multiple flexible wires, or any of them, becoming twisted or entangled.

In the accompanying drawings forming a part of this specification,

FIG. 1 is a diagrammatic view of an electroencephalograph as when in use, disclosing harnessing devices each made according to the invention slidably applied to multiple flexible wires of said electroencephalograph to maintain them straight and appropriately spaced;

FIG. 2 is a diagrammatic view of a computer including side by side multiple flexible wires extending between a control station and actuating mechanism of said computer, disclosing devices according to the invention for harnessing said multiple flexible wires slidably assembled therewith to retain them in spaced relation and to prevent them from becoming twisted or entangled;

FIG. 3 is an enlarged plan view of one of the duplicate harnessing devices disclosed in FIGS. 1 and 2;

FIG. 4 is a sectional view, taken on line 4—4 in FIG. 3;

FIG. 5 is a longitudinal sectional view of a device of modified construction for harnessing multiple wires incorporating features and characteristics of the invention;

FIG. 6 is an end elevational view of the device disclosed in FIG. 5; and

FIG. 7 is a transverse sectional view, taken on line 7—7 in FIG. 5.

An electroencephalograph disclosed in FIG. 1 is for the purpose of making electroencephalograms and includes side by side multiple flexible wires, each denoted **10**, extending between a control box **11** and contact elements **12** to be attached to the head. The multiple flexible wires **10** disclosed in said FIG. 1 could just as well be those of an electrocardiograph (not shown) for making electrocardiograms, or of any other electrical measuring apparatus.

A computer as disclosed in FIG. 2 could be made useful for many purposes. It includes side by side multiple flexible wires **10** extending between a control station **13** and actuating mechanism **14** of said computer.

The disclosures of FIGS. 1 and 2 are merely illustrative of various kinds of measuring apparatuses which include electric current transporting side by side multiple flexible wires, such as **10**, to be maintained in appropriately spaced relation and against twisting or becoming entangled by application thereto of harnessing devices made according to the invention.

In each of FIGS. 1 and 2, duplicate harnessing devices, each denoted **15**, are disclosed applied to the flexible wires of the sets, respectively, of side by side multiple flexible wires **10** in accordance with the principle of the invention.

Each harnessing device **15** is of construction as very clearly disclosed in FIGS. 3 and 4. As there shown, the harnessing device includes a body **16** constituted as an annular disc having a circumferential groove **17** in a peripheral surface thereof. The body or disc **16** need not be annular. An opening through the center of said body or disc, bounded by an interior margin thereof, is for rendering the body or disc more readily and easily manipulatable. Conveniently, however, the exterior peripheral surface of the body or disc, provided with the circumferential groove **17**, will be of circular configuration.

An exterior marginal portion of the body or disc **16** is cut away to provide equally, circumferentially spaced recesses, each indicated **18**, which are bounded or defined by part-cyclindrical surfaces, each represented **19**, of said body or disc. There are twenty-one of the spaced recesses **18** in the disclosure as made each bounded or defined by a part-cylindrical surface **19**, and the exterior side of each of said spaced recesses is contiguous with the circumferentially grooved peripheral surface of the body or disc **16**. Each of the spaced recesses **18** is for the reception of one of flexible wires, such as **10**, of side by side multiple flexible wires as disclosed in FIGS. 1 and 2, and as shown each part-cylindrical surface **19** is extensive throughout an arc of 180 degrees, more or less. Stated otherwise, the outer extremities of each of the part-cylindrical surfaces **19** terminate at the exterior margin of the body or disc **16** and are at the opposite sides of and in equally circumferentially spaced relation to a plane passed perpendicularly through and bisecting said body or disc.

A confining band **20** of the harnessing device, of any material suitable to its purpose, is constituted as a part-circular element snugly situated in and extending about the circumferential groove **17** in the exterior peripheral surface of the body or disc **16** to be manually rotatably slidable therealong. Desirably, opposite ends of said confining band will be space apart but at a distance no greater than a measurement representing the distance at which recesses **18** which are adjacent to each other are spaced, and an exteriorly extending flange **21** integral with one of the ends of said confining band is for ready and easy accomplishment of its slidable rotation along the circumferential groove **17** relative to the body or disc **16** and the spaced recesses **18** therein.

Customarily, each of flexible wires, such as **10**, of side by side multiple flexible wires of apparatuses as disclosed in FIGS. 1 and 2 of the drawings is identified, as by numerals. The body or disc **16** of the harnessing device of the present invention includes indicia, constituted as the numbers 1 to 21, inclusive, distinguishing each of the equally space recesses **18** from all of the others.

Each of the flexible wires **10** of each set of side by side multiple flexible wires can be assembled with the harnessing device **15**, in its corresponding one of the spaced recesses **18**, merely by manual sliding of the confining band **20** to position where the space between its opposite ends is alined with the intended recess, inserting the flexible wire in the recess and rotating said confining band to position where overlying the recess which received said flexible wire thus to cause it to be confined and retained in said recess. The construction and arrangement will be such that each of the harnessing devices will be

manually slidable along all of the flexible wires of any set of side by side multiple flexible wires with which assembled.

In FIG. 1 there are two of the duplicate harnessing devices **15** applied to and spaced apart along the set of side by side multiple flexible wires there disclosed, and in FIG. 2 a number of the spaced harnessing devices are assembled with the flexible wires **10** of the set there shown. In each instance, the flexible wires are for the purpose of conveying electric current, and harnessing devices applied to or assembled with the flexible wires are for the purpose of causing them to be situated and retained spaced apart at distances appropriate to insure that there will be no stray capacitance between said flexible wires, as well as for the purpose of precluding their becoming twisted or entangled.

In FIGS. 5 to 7, inclusive, there is disclosed a harnessing device **25** of modified construction incorporating features and characteristics of the invention. As there shown, the harnessing device is constituted as complementary blocks, each denoted **26**, or any material suitable to their purpose, detachably connected, as at **27**, and providing a body with equally spaced openings **28** between the blocks for the slidable reception of individual flexible wires, each represented **29**, of a set of multiple flexible wires for conveying electric current. The manner in which the harnessing device **25** is to perform its intended function will be apparent from the description of the disclosures of FIGS. 1 to 4, inclusive.

What is claimed is:

The combination with multiple side by side flexible electrical wires, of a substantially flat harnessing device including a flat circular plate having a circumferential groove in the outer periphery thereof and a plurality of wire receiving openings open to the periphery thereof, said device also including a non-continuous part circular ring slidably mounted in said circumferential groove and having opposite ends spaced apart at a distance at least as great as the diameter of the largest wire to be harnessed, and each opening in said plate being of dimension and configuration to cooperate with said ring to encompass and positively confine one of said wires for free sliding movement of said wire with respect to said harnessing device longitudinally of said wire when said ring is in covering relationship to said opening.

References Cited in the file of this patent

UNITED STATES PATENTS

240,776	Sewall	Apr. 26, 1881
289,165	Strohm	Nov. 27, 1883
354,892	Du Bois	Dec. 28, 1886
1,705,584	Overstall et al.	Mar. 19, 1929
2,299,140	Hanson	Oct. 20, 1942
2,865,979	Klassen	Dec. 23, 1958
2,975,807	Waninger	Mar. 21, 1961

FOREIGN PATENTS

191,728	Germany	Oct. 8, 1907