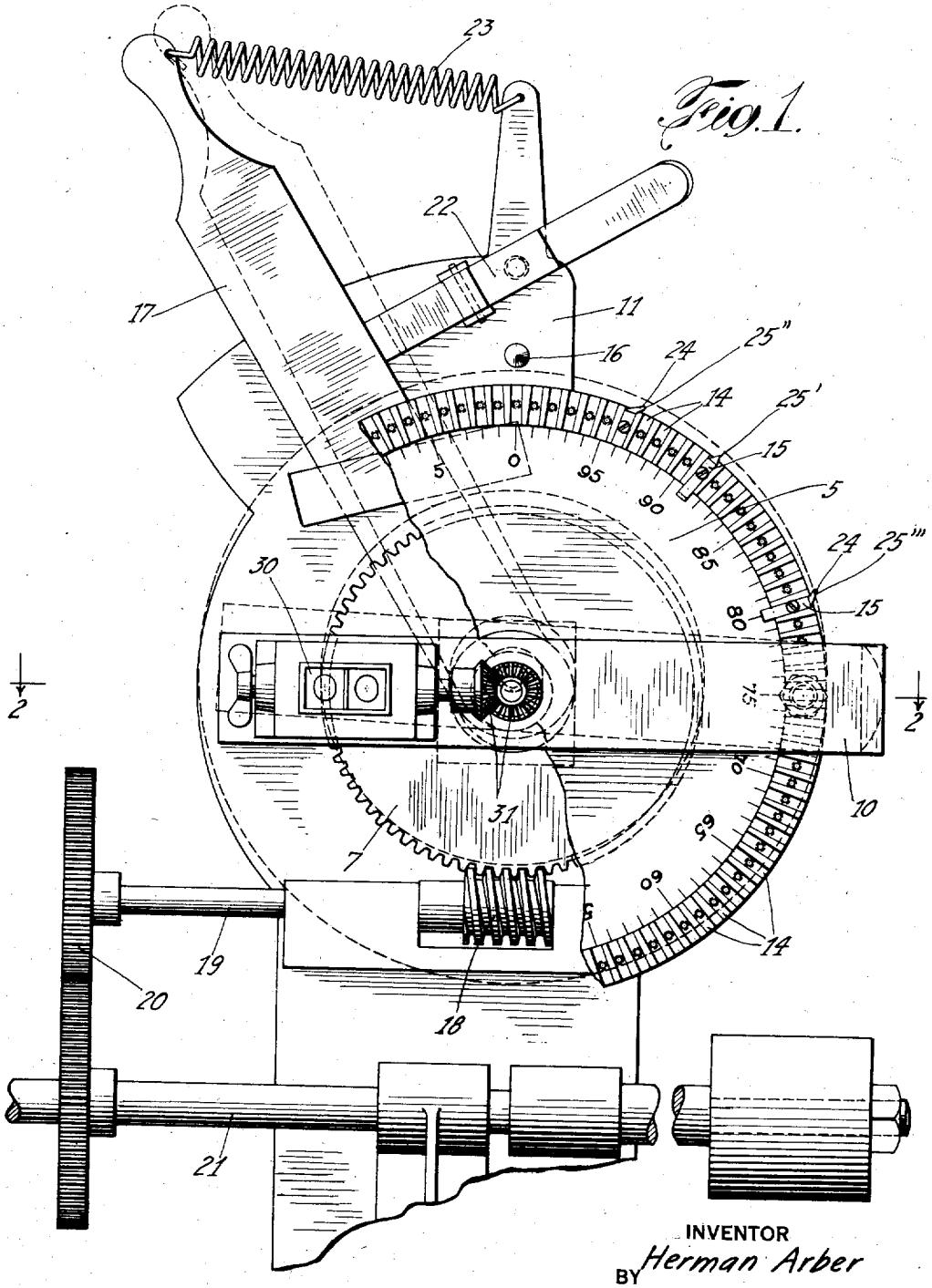
Oct. 29, 1935. H. ARBER 2,019,286

COIL TURN COUNTER

Filed Jan. 7, 1931 2 Sheets-Sheet 1



INVENTOR
BY Herman Arber
Emery Booth Varney & Whittemore
ATTORNEYS

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Fig. 2.

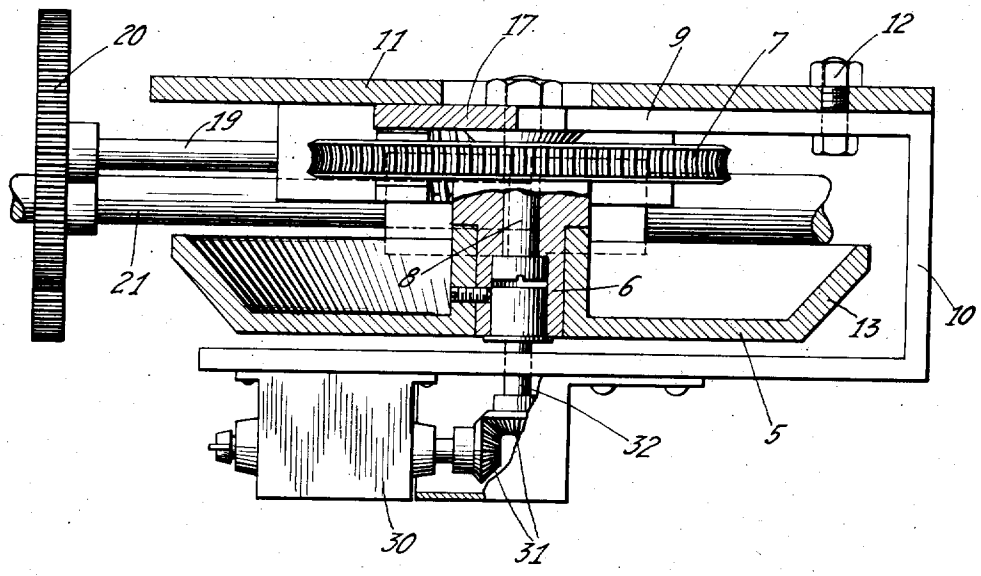
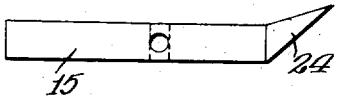


Fig. 3.



INVENTOR
BY Herman Arber
Emery Booth Varney & Whittemore
ATTORNEYS

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COIL TURN COUNTER

Herman Arber, Fort Wayne, Ind., assignor to General Cable Corporation, New York, N. Y., a corporation of New Jersey

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1 Claim. (Cl. 235—122)

This invention relates to coil winding machines and more particularly to a counting mechanism for indicating when a predetermined number of turns have been wound by the machine in the manufacture of a given coil.

In winding coil units in which numerous circuits are incorporated and provided with individual terminals, or in which are embodied groups of windings differing in the size of wire, number of turns, or points at which terminals must be connected, it is essential for the operator to be able to determine at any given instant the exact stage of the winding. An object of this invention is to provide a mechanism of the type described constructed and arranged to indicate the completion of any predetermined number of turns or fraction of turns at successive points in the winding of any given coil.

A further object is to provide a turn counting mechanism having an improved arrangement of parts which are simple and rugged in construction and reliable and accurate in operation.

These and other objects which will be apparent to those skilled in this particular art are accomplished by means of the invention illustrated in the accompanying drawings in which—

Fig. 1 is a view in elevation of a turn counting mechanism constructed in accordance with one embodiment of this invention, parts being broken away to show certain details of construction, and

Fig. 2 is a transverse sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a view in elevation of an index finger.

The particular embodiment of the present invention which has been chosen for illustration includes an indicating disc 5 secured to the extended hub 6 of a worm gear 7 rotatably mounted on a supporting stud 8 secured in one arm 9 of a U-shaped frame 10 which is pivoted to a supporting bracket 11 on a frame supporting bolt 12. The beveled periphery 13 of the disc 5 is provided with a circumferential series of outwardly extending slots 14 adapted to receive index fingers 15 for cooperating with a marker 16 or pin positioned on the bracket 11 adjacent the periphery of the indicating disc. The slots are spaced apart a distance equal to the amount of rotation of the disc for each turn of wire wound.

A handle 17 is formed on or connected to the U-shaped frame 10 for moving the same about the supporting pivot 12 for the purpose of connecting or disconnecting the disc driving worm gear 7 with a driving worm 18 on a counter shaft 19 which is driven through the gearing 20 from the winding spindle 21 of the associated coil winding machine. A pivoted latch arm 22 is mounted on the bracket 11 for engaging the handle to hold the gear 7 and worm 18 in driving connection, and a spring 23 is connected to the handle for raising the gear 7 to disconnect it from the worm when the latch 22 is released. The index fingers are provided with points 24 which extend laterally from the associated finger so as to be offset from the longitudinal axis of the finger. As a result of this arrangement a given finger can be mounted in any predetermined slot so that the point will lie in the axis of the slot as indicated at 25' in Fig. 1, to the right of the slot as indicated at 25'' or to the left of the slot as indicated at 25''', depending upon whether the pin is placed in a slot so as to position the offset point in a line with the associated slot, or to the right, or to the left, respectively. The formation of the point is such that when extending laterally as indicated at 25'' or 25''' it cooperates with the marker 16 to indicate the completion of a fractional number of turns when opposite the marker 16, while when employed as shown at 25' it indicates the completion of a whole number of turns when it reaches a position opposite the marker. Hence, if it is required that a certain winding have 80½ turns, for example, or that a tap shall be applied to a winding at the end of 80½ turns, an index finger would be so located that its point would cooperate with the marker 16 to indicate the completion of 80½ turns, as shown at 25''', at which stage in the winding the operator would stop the machine, to connect the necessary terminal, to change the type of wire or to perform any other requisite operation. On the other hand, when a coil winding having 89 turns, for example, is required, or it is desired to apply a tap or the like to a winding at the end of 89 turns, an index finger 15 will be located in the slot numbered 89 with the point 24 in line with the axis of the slot, as shown at 25'. Then when the disc reaches a position in which the point is opposite the stationary marker 16 the operator knows that exactly 89 turns have been wound. Similarly, if it should be again necessary to stop the machine after winding say 93½ turns, an index finger would be located in the slot numbered 94 with the point turned to the right as indicated at 25''. The point 24 would then be positioned exactly half way be-

tween the slots numbered 93 and 94, and when moved by rotation of the disc to a position opposite the stationary marker 16 would indicate the completion of 93½ turns.

In the illustrated embodiment, the disc 5 has 100 slots 14 which are designated in numerical order on the face of the disc by a suitable dial or scale, and the gearing between the disc and the winding spindle 21 of the associated machine is in the ratio of 100 to 1, so that one revolution of the winding spindle rotates the disc 5 a distance exactly equal to the distance between adjacent notches 14.

A revolution counter 30 for indicating the number of revolutions of the disc 5 is positioned on the frame 10 and connected to the disc through gearing 31 and shaft 32 secured to the extended hub 6 of the driving gear 7. It will be apparent that in the present arrangement, in which the disc 5 revolves once for every hundred turns, that the counter 30 will indicate hundreds of turns.

In the operation of the device the dial is set at zero and the handle 17 moved to connect the disc 5 with the driving mechanism, the latch 22 serving to hold the handle 17 in such position. Operation of the machine produces rotation of the disc 5 in which the operator has placed the index fingers 15 to indicate the successive points in the winding of the coil at which terminals are to be connected, or other operations performed in accordance with coil specifications. As the coil is wound, the disc 5 is rotated and the operator is able to stop the machine at the predetermined successive points in the winding of the coil as indicated by the movement of the successive index fingers to positions opposite the marker 16. The distance between the center of each slot 14 equals the amount of rotation of the disc for each turn of coil wound. Obviously, any number of index fingers can be employed to indicate any number of successive points in a given coil. The counter is reset by releasing the latch 22 and disconnecting the driving mechanism to permit free turning of the disc to any desired starting point.

I claim as my invention:—

The combination in a turn counting mechanism of a rotatable machine driven disc having a plurality of index fingers receiving slots formed therein, a stationary marker associated with the circumference of said disc, and an index finger having an axially offset index point, said finger being adapted to be located in one of said slots with said point in alignment with said slot or with said point located at one side of said slot to cooperate with said stationary marker for indicating the completion of a predetermined number of complete or fractional turns.

HERMAN ARBER.