

July 24, 1928.

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A. D. PETTEE

CABLE MARKING MACHINE

Filed March 9, 1927

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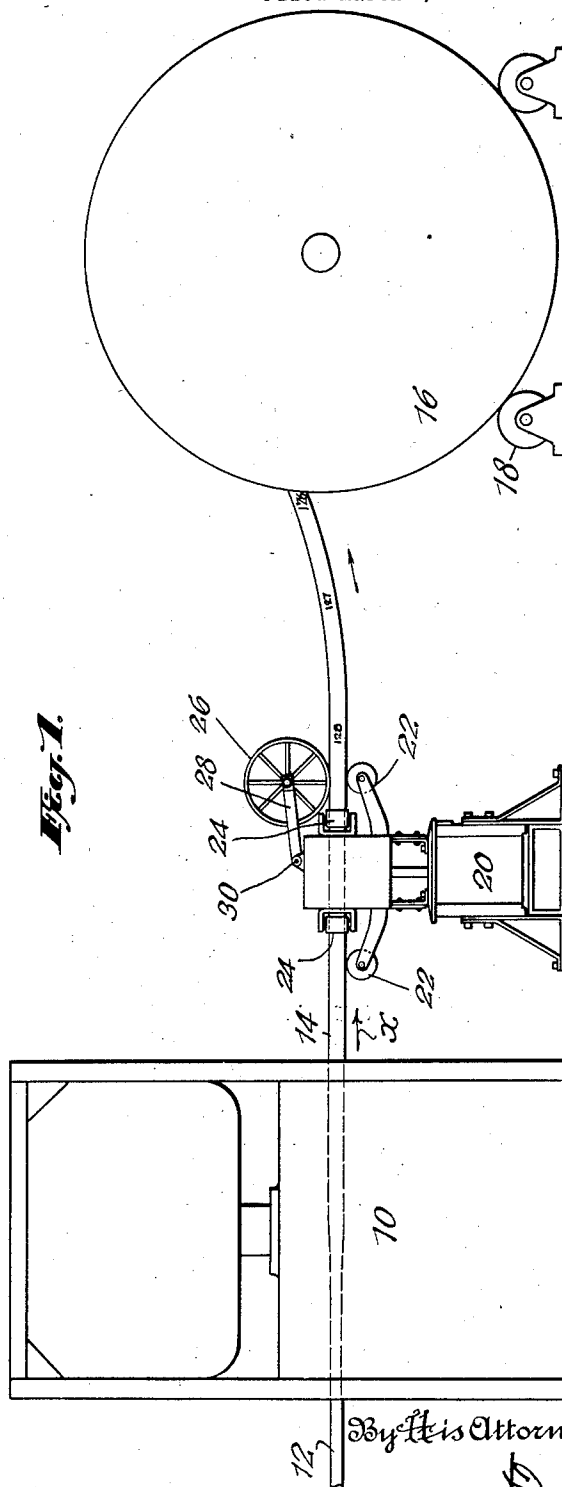
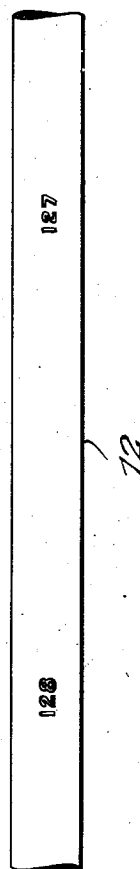


Fig. 1.



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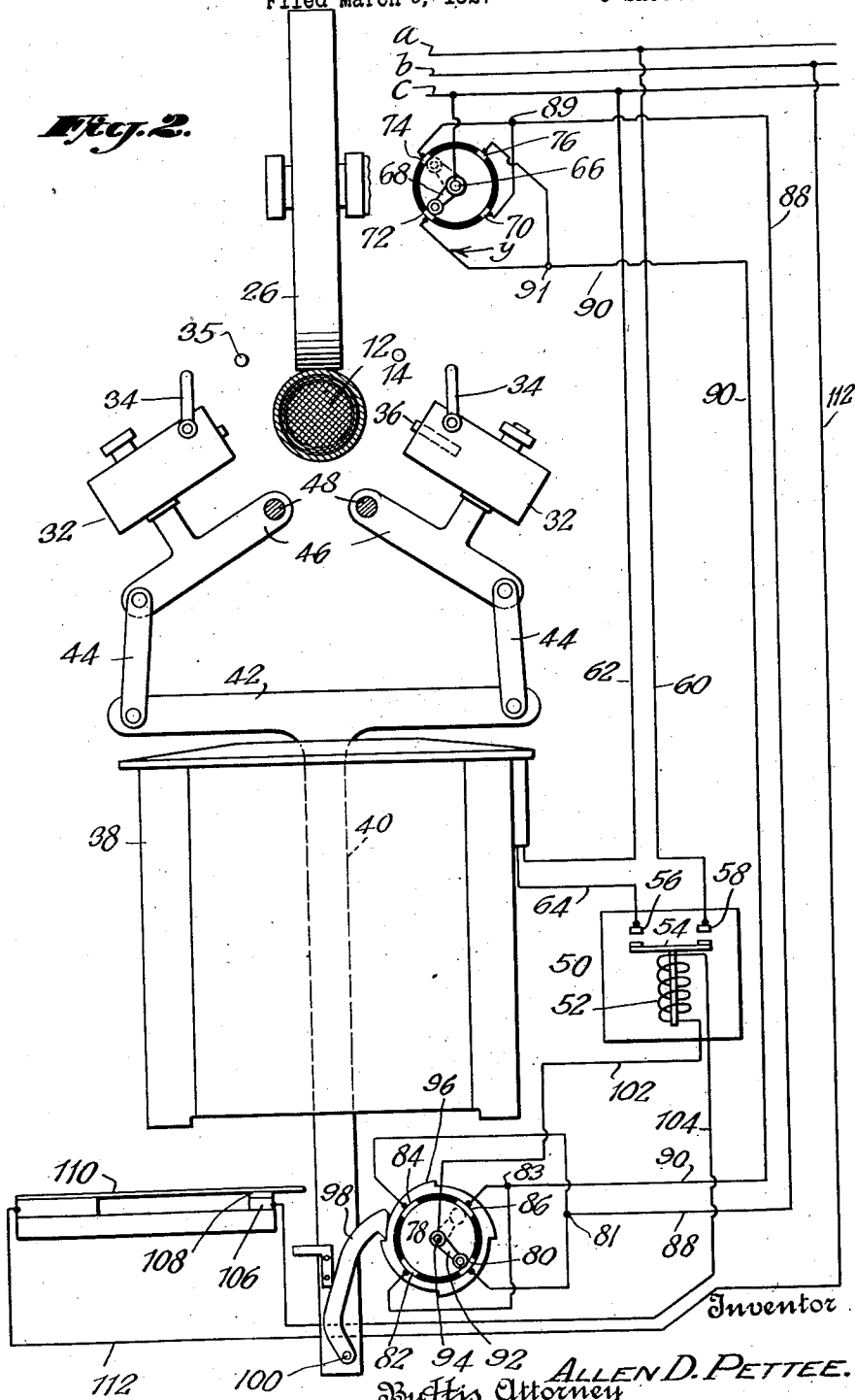
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Fig. 2.



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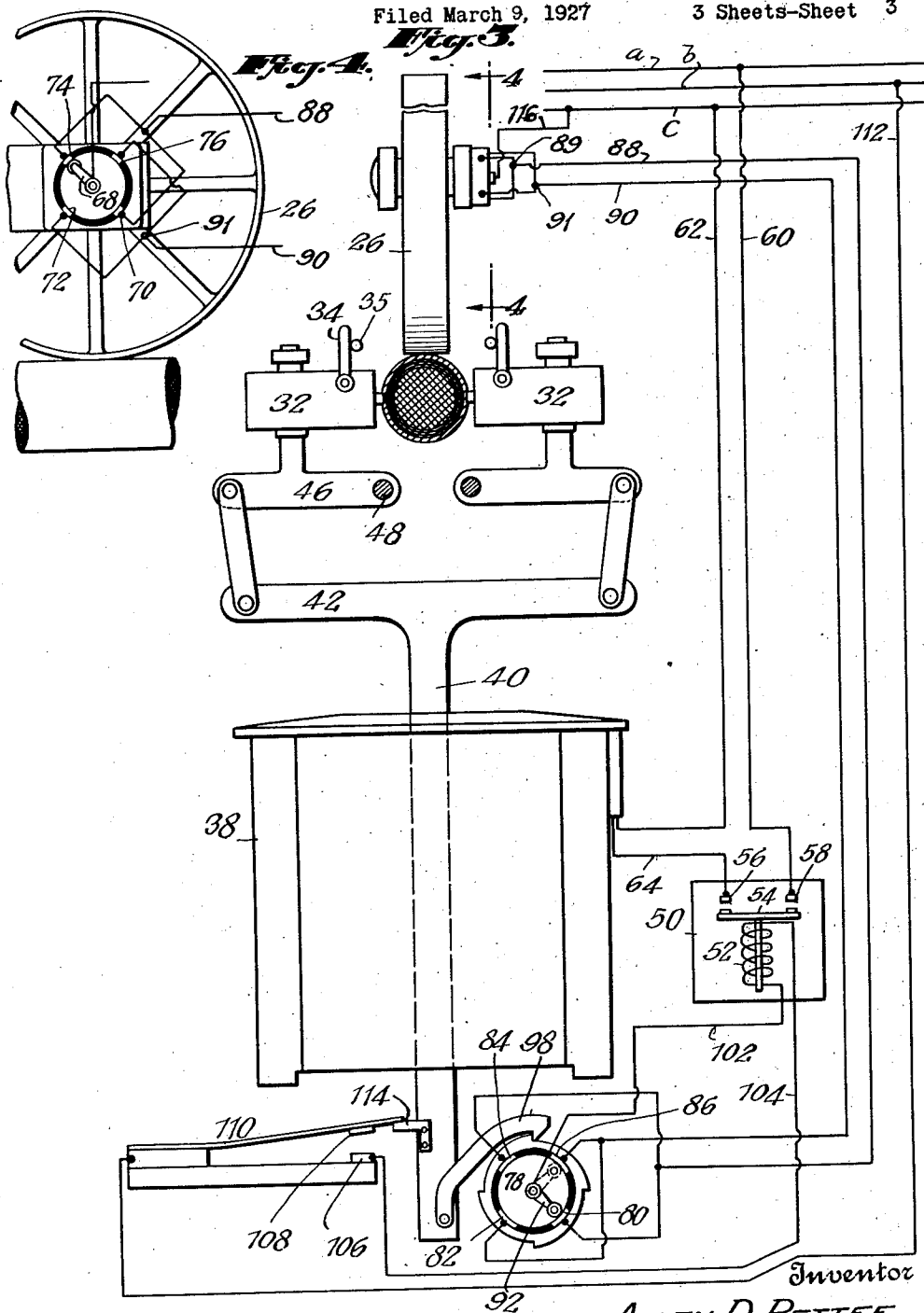
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CABLE MARKING MACHINE

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UNITED STATES PATENT OFFICE.

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CABLE-MARKING MACHINE.

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This invention aims to provide a machine adapted to automatically impress measurement markings on any extremely long article such as wire or cable. While not limited thereto the embodiment of the invention illustrated is especially well adapted for impressing consecutive numbers at intervals of one foot on a lead sheathed cable as the latter is paid off by the lead press and wound on a suitable stock reel.

The invention will be apparent from the following specification when read in connection with the accompanying drawings and the features of novelty will be defined with particularity in the appended claims. In the drawings—

Fig. 1 is a somewhat diagrammatic view showing my improved marking and measuring machine mounted in juxtaposition to a lead press and storage reel and arranged to impress consecutive numbers at regular intervals on the cable as it is fed from the lead press to the storage reel;

Fig. 1^a is a view of a section of cable showing measurement marks impressed thereon;

Fig. 2 is a diagrammatic view showing in skeleton form the main operating elements of my machine;

Fig. 3 is a view similar to Fig. 2 but showing the parts in the position they assume at the instant the impression is being made on the cable;

Fig. 4 is a detail view on line 4—4 of Fig. 3 illustrating the position of the contact arm corresponding to the position of other parts shown in Fig. 3.

Referring in detail to the drawings, 10 represents a lead press of known design and construction which is adapted to encase a cable 12 with an outer sheath 14 of lead and to feed the sheath cable from the machine in the direction of the arrow *a*. A stock reel 16 is supported on suitable rollers 18 and between the lead press and the stock reel is mounted my automatic measuring and marking machine indicated as a whole by numeral 20. This machine includes suitable bearing or guide rollers 22 and 24 arranged to ensure that the cable passes underneath the measuring wheel 26. This wheel is mounted for rotation in the free end of an arm 28 which is pivoted at 30 to a suitable bracket secured to the frame of a machine. As the lead sheathed cable is fed from the lead press 10 to the take-up, or storage roll

16, the measuring wheel 26 is rotated by frictional contact. In the embodiment of the invention illustrated, the measuring wheel is of such diameter that its circumference measures exactly four feet. The machine illustrated is intended to impress a mark at intervals of each foot throughout the length of the cable. Therefore, means are provided so that for each quarter revolution of the measuring wheel, mechanism to be hereinafter more fully described is set in operation to cause a stamping head to advance and strike a blow. These stamping heads carry type number wheels which are advanced one step each time the heads are actuated. I preferably provide two stamping heads so as to simultaneously impress measurement marks on opposite sides of the cable. Thus if the mark on one side of the cable is mutilated in handling the cable, the chances are the mark on the other side will still be visible.

For simplicity of illustration the operating elements have been shown in skeleton form in Figs. 2 and 3, the frame work being omitted in the interest of clearness. The machine illustrated is electrically operated and the circuits are diagrammatically shown in connection with the mechanical elements which they control. The machine includes a pair of stamping heads 32 of known construction which carry suitable type wheels which are adapted to be advanced one unit each time the stamping head is actuated. These stamping heads are of known construction and they operate by ratchet mechanism such as found in various numbering machines. Further description thereof will not be made as the construction of the stamping head forms no part of the present invention. Each stamping head is provided with an outwardly extending finger 34 which strikes a suitable fixed pin 35 arranged to advance the wheel one unit each time the head is advanced from the position of Fig. 2 to the position of Fig. 3. The printing face of the stamping wheel is indicated at 36. Each time this face is moved to the position of Fig. 3, a different number is impressed on the cable.

The stamping heads are actuated by means of a solenoid or equivalent electro-motive device such as indicated at 38. This solenoid is adapted to actuate a core 40 having secured at the top thereof laterally extending

arms 42 connected by links 44 with the stamp head supporting arms 46 which are pivotally mounted at 48.

The energization of the solenoid 38 is controlled by an electromagnetic relay switch indicated as a whole by numeral 50. This switch includes an electromagnetic coil 52 capable of lifting the switch member 54 so as to close a circuit across the contacts 56 and 58 which are connected in series with the solenoid 38 across the power supply lines *a* and *c* by means of the wires 60, 62 and 64.

Mounted on the same shaft 66 with the timing wheel 26 and movable in unison therewith is a contact arm 68 carrying a contact roller which is adapted to coact with the four fixed contacts 70, 72, 74, 76 which contacts are located at 90° intervals around the circle. The arrangement is such that each time the roller of the contact arm 68 engages either of the contacts 70, 72, 74 and 76 a circuit will be made through the coil 52 of the relay switch above mentioned, hence, the solenoid will be energized and an impression marked in the cable. However, in order to prevent the stamping heads from marking the same number twice on the cable in the event that the measuring wheel should stop while the contact roller of the arm 68 rests on one of the contacts, I provide a selector switch indicated as a whole by numeral 78. This switch is provided with four contacts 80, 82, 84 and 86. The contacts 80 and 84 are connected electrically with the contacts 70 and 74. Similarly, the contacts 82 and 86 are connected with the contacts 72 and 76. These connections are made by conductors 88 and 90. The diametrically opposite contacts 70 and 74 are electrically connected to the wire 88 at terminal 89. Similarly, the diametrically opposite contacts 72 and 76 are electrically connected to the wire 90 at terminal 91. Similarly, contacts 80 and 84 are electrically connected to wire 88 at terminal 81. Opposite contacts 82 and 86 are electrically connected to the wire 90 at terminal 83.

Coacting with the contacts 80, 82, 84 and 86 is a selector switch contact arm 92 which is secured to a shaft 94 which carries a four-toothed ratchet 96 which is arranged to be periodically turned one-quarter of a revolution by means of a pawl 98 pivotally secured at 100 near the lower extremity of the solenoid plunger 40. As the plunger reaches the end of its upward stroke as shown in Fig. 3, the pawl 98 engages the uppermost tooth of the ratchet 96 and on downward movement of the plunger 40, the ratchet is moved through a quarter of a revolution. This arrangement alternately connects the roller carried by the contact arm 92 with the wires 88 and 90 leading, respectively, to the opposite pairs of contacts 70, 74 and 72, 76 associated with the timing wheel. The shaft

94 which carries the arm 92 is electrically connected by means of wire 102 with the coil 52 of the magnetic relay. The circuit through this relay is through wire 104, switch terminals 106 and 108 of a circuit breaker 110 and wire 112 leading to the neutral wire *b* of the three-wire current supply. Normally, the circuit breaker 110 is closed, the contacts 108 and 106 being connected as shown in Fig. 2. When the solenoid 38 is energized so as to move the stamping heads 32 to printing position as shown in Fig. 3, the core 40 is lifted. This core carries a projection 114 which on its upward movement strikes the circuit breaker 110 and separates the contacts 106 and 108 thus opening the circuit of the coil 52. This results in deenergizing said coil and permits the switch member 54 to drop, thus opening the circuit across the contacts 56 and 58. This deenergizes the solenoid 38 whereupon the core descends.

In operation, assuming the parts to be in the position illustrated in Fig. 2 in which position the contact arm 68 is electrically connected with contact 72, no circuit is applied through the arm in this position because wire 90 leads to the contacts 82 and 86 neither of which in this position are opposite the circuit closing arm 92 of the selector switch. As the cable 12 passes through the lead press 10 and is encased with the lead sheath, the sheath cable travels forward and turns the measuring wheel 26. Inasmuch as this wheel is four feet in circumference, when it is turned a quarter of a revolution the cable is fed forward exactly one foot. Such quarter revolution of movement will turn the arm 68 clockwise in Fig. 2 to the dotted position shown in which the roller engages contact 74. The shaft 66 of the measuring wheel is electrically connected by means of wire 116 with feed wire *c* of the supply circuit. As contact arm 68 engages contact 74, circuit from feed wire *c* is completed through wire 88, contact 80 and arm 92 of the selector switch and wire 102 through the coil 52 of the relay and wire 104 through the then closed contacts 106 and 108 of the circuit breaker 110 and wire 112 which leads to the neutral wire *b* of the feed supply. Completion of this circuit energizes coil 52, thus lifting the switch element 54 and closing the circuit across the contacts 56 and 58 thereby closing the circuit from feed wires *a* and *c* through the solenoid 38. This energizes the solenoid and causes the core thereof to be lifted so as to actuate the stamping heads. Upon the completion of the stamping or printing movement of the heads, the projection 114 strikes the circuit breaker 110 and separates contacts 106 and 108 thus breaking the circuit through the coil 52 and thereby permitting the switch member 54 to drop.

This opens the circuit across contacts 56 and 58 and deenergizes the solenoid. As the solenoid core 40 moved up the pawl 98 moved to the position of Fig. 3. Upon deenergization of the solenoid, the pawl will turn the ratchet 96 one-quarter of a revolution in counter-clockwise direction. This will move the contact arm 92 from the full line position to the dotted line position shown. With the contact arm 68 in the dotted position, it is apparent that upon the next quarter revolution of the measuring wheel 26, the circuit through the coil 52 of the relay will be made through contacts 76 and 86 respectively which are connected by wire 90. It is thus seen that upon each downward stroke of the solenoid core 40 the selector switch arm 92 is advanced one-quarter of a revolution and the connections are such that the circuit through the electromagnetic relay coil 52 is alternately completed through wires 88 and 90. Thus it is seen that the function of the selector switch is at each stroke of the solenoid to select an alternative circuit to be energized when the arm 68 driven by the measuring wheel makes contact with that alternative circuit.

While I have described with great particularity the specific embodiment of the invention illustrated, it is not to be construed that I am limited thereto since changes in arrangement and substitution of equivalents may be made by those skilled in the art without departing from the invention as defined in the appended claims.

What I claim is:—

1. A machine for measuring and marking cable including a stamping head carrying a numbering device, electrically operated means for moving said head to impress a number on said cable, and a measuring wheel actuated by the movement of the cable and arranged to control the operation of the head moving means.

2. A machine for measuring and marking cable including a stamping head carrying a numbering device, a solenoid, mechanism operatively connected with said stamping head arranged to be actuated by said solenoid, a measuring wheel driven by frictional contact with the cable fed through the machine, and means actuated by said wheel for controlling the energization of said solenoid.

3. The combination with a lead press adapted to apply a lead sheath to a cable, of means for measuring and marking the cable including measuring wheel driven by frictional contact with the cable fed from the press, and electrically actuated means responsive to the movement of said wheel for impressing numbers at regular intervals along the cable sheath.

4. A machine for measuring and marking cable including a stamping head mov-

able toward and from the cable, an electro-motive device for actuating said head, a measuring wheel driven by frictional contact with the cable to be marked, a magnetic relay including a switch member controlling a circuit through said electro-motive device and means responsive to the movement of said wheel arranged to periodically close a circuit through the magnet of said relay.

5. A machine for measuring and marking cable including a stamping head movable toward and from the cable, an electro-motive device for actuating said head, a measuring wheel driven by frictional contact with the cable to be marked, a magnetic relay including a switch member controlling a circuit through said electro-motive device, and means responsive to the movement of said wheel arranged to periodically close a circuit through the magnet of said relay and means actuated upon the completion of the stamping movement of said head for breaking the circuit through said relay magnet.

6. A machine for measuring and marking cable including a stamping head movable toward and from the cable, an electro-motive device for actuating said head, a measuring wheel driven by frictional contact with the cable to be marked, a circuit closing member operated by said wheel, contacts in the path of said member, a selector switch including a contact selector arm, a plurality of selector contacts, conductors connecting certain of the first named contacts with certain of the selector contacts, a conductor connecting said circuit closing member with a source of electric current, a relay including an electromagnetic coil, a conductor connecting the latter with said arm, a circuit breaker connected to said coil and to a source of current, means causing said breaker to open automatically upon the completion of the stamping movement of said head, a relay switch actuated by said coil controlling the supply of current to said electro-motive device, and means for intermittently moving said selector arm so as to alternately complete the circuit of said coil through different sets of said contacts.

7. A machine of the class described including a stamping head, an electro-motive device for actuating said head, a magnetically actuated switch controlling the energization of said electro-motive device, a measuring wheel and a contact arm movable therewith, a plurality of contacts associated with said arm, and means actuated by said electro-motive device arranged to alternately select different conductors for conveying current through said contacts and said electromagnetic switch.

8. A machine of the class described including a stamping head carried by a movable member, electro-magnetic means ar-

ranged to move said member, a measuring wheel, means actuated thereby for establishing a circuit through said electro-magnetic means and means for automatically breaking the circuit of said electro-magnetic means.

9. The combination with a lead press adapted to apply a lead sheath to a cable, of means for measuring and marking the

cable including a measuring wheel driven by frictional contact with the cable fed from the press, and means responsive to the movement of said wheel for impressing numbers at regular intervals along the cable sheath.

In witness whereof, I have hereunto signed my name.

ALLEN D. PETTEE.