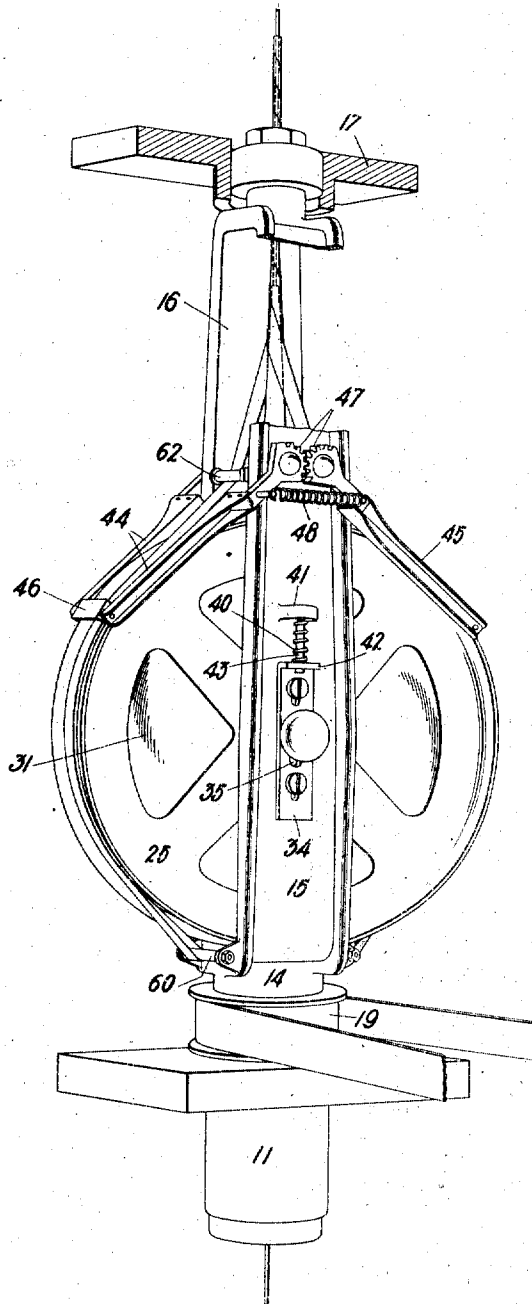


1,247,463.

Patented Nov. 20, 1917.
2 SHEETS—SHEET 1.

Fig. 1.



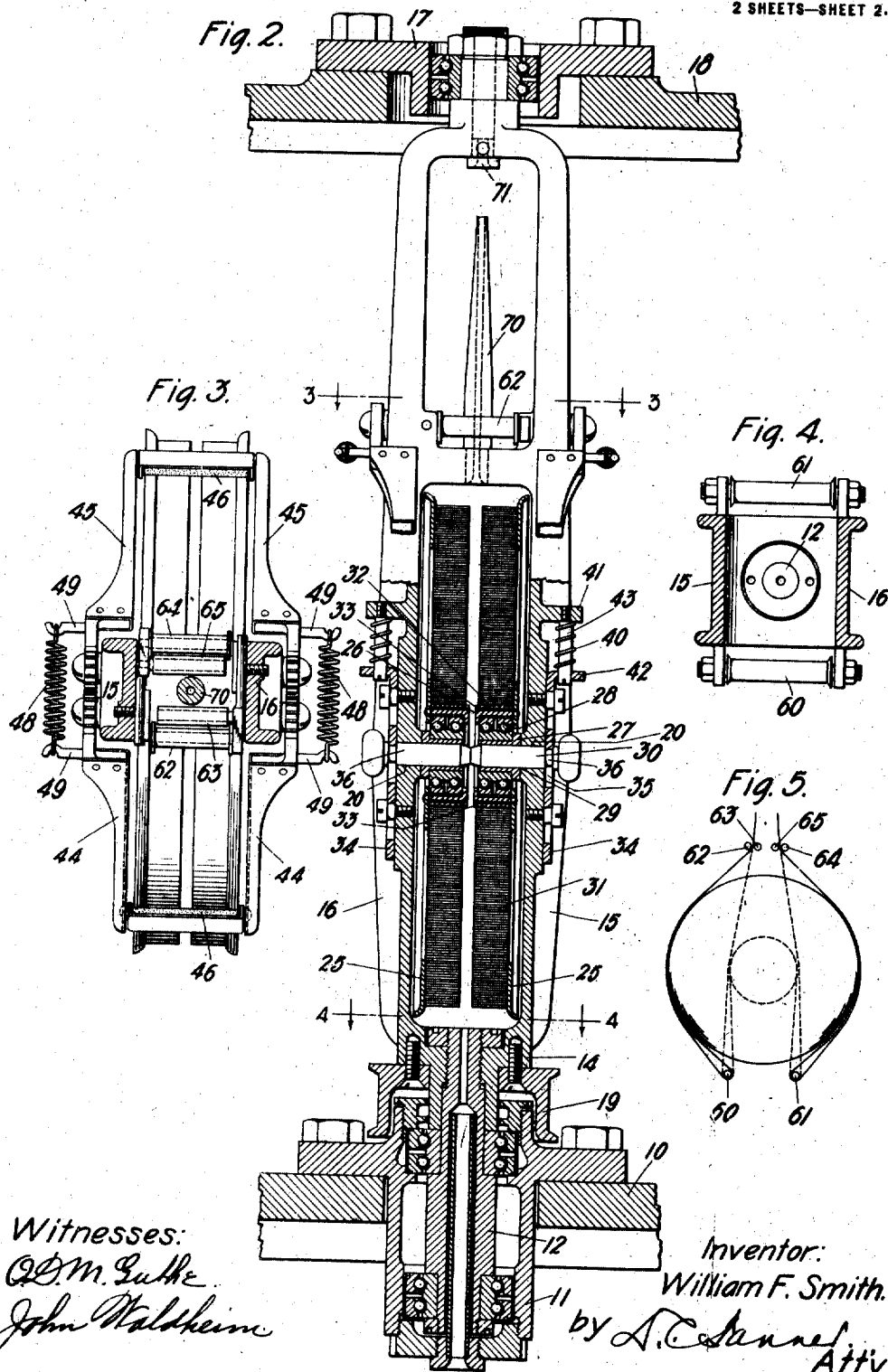
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WILLIAM F. SMITH, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO WESTERN ELECTRIC COMPANY, INCORPORATED A CORPORATION OF NEW YORK.

WINDING-HEAD.

1,247,463.

Specification of Letters Patent.

Patented Nov. 20, 1917.

Application filed December 29, 1914. Serial No. 879,452.

To all whom it may concern:

Be it known that I, WILLIAM F. SMITH, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Winding-Heads, of which the following is a full, clear, concise, and exact description.

This invention relates to winding heads and has for its object the production of a high speed winding head for uniformly covering conductors with tape of relatively low tensile strength.

Among the features of this invention are the improved means for supporting the rolls of tape, the automatic means for controlling the tension on the tape, the means for automatically preventing overrunning of the tape rolls, and other details of structure and combinations of parts, as will herein-after more clearly appear.

This invention is illustrated in the accompanying drawings in which the same reference characters are used throughout to designate the same parts, and in which—

Figure 1 is a view in perspective of a tape winding head embodying this invention;

Fig. 2 is an elevation, partly in section, of the winding head shown in Fig. 1;

Fig. 3 is a sectional view on line 3—3 of Fig. 2;

Fig. 4 is a sectional view on line 4—4 of Fig. 2; and

Fig. 5 illustrates the automatic means for controlling the tension on the tape rolls.

Referring to the drawings, 10 is a bed plate supporting a housing 11 in which is journaled a hollow shaft 12. To the upper end of the hollow shaft 12 is secured a rotatable frame 14, having side members 15 and 16, joined at their upper extremity to form a hollow shaft which is journaled in a cap plate 17 secured to a cross plate 18. A pulley 19 for driving the rotatable frame 14 is secured to the lower end thereof.

In order to provide supports for rolls of tape, a rotatable face plate 25 is removably mounted on each of the members 15 and 16 of the rotatable frame 14. Each face plate 25 has a hub 26 and a bushing 27, coupled together by means of a set of ball bearings 28 which permits free rotation of the face plate 25. Each member 15 and 16 is provided with an opening 29 into which a

pin 30 is adapted to fit. The pin 30 also fits into the bushing 27 and forms a support or pivotal shaft for the face plate 25. A tape roll 31 is supported on and rotated with the face plate 25, due to the engagement of a center tube 32 of the tape roll with a series of knife like edges 33 in the hub 26 of the face plate 25. Means for locking the pin 30 in the arm 15 comprises a plate 34 slidably mounted on the member 15 and having an opening 35, the lower portion of which is larger than the pin 30 for permitting the passage of the pin there-through, and the upper portion of which is smaller than the pin 30 for engaging the reduced portion 36 thereof, thereby locking pin 30 in the member 15. Normally the plate 34 is maintained in locking position, due to the action of a coiled spring 40, the upper end of which engages an extension 41 of the member 15 and the lower end an angular extension 42 of the plate 34. The spring 40 encircles a pin 43 secured to extension 41 and registering with an opening in extension 42. A similar means is provided for locking another pin 30 in 16.

When starting and stopping winding heads heretofore in use, considerable trouble has been experienced, due to entanglement of the tape caused by what is known as "overrunning" of the tape roll. One of the features of this invention is the means provided for preventing this overrunning. The means referred to comprises a pair of brakes 44 and 45, each pivoted to the members 15 and 16, and each supporting a friction shoe 46 made of some buffing material such as leather, felt or fiber, which is normally in position to press on the periphery of the face plates 25, 25. To insure that both shoes 46, 46 are at all times in the same relative position with respect to the periphery of the face plates 25, 25, each of the brakes 44 and 45 is provided with sector gears 47, 47, which mesh and cause both brakes to move together. The brakes 44 and 45 are connected together by means of spiral springs 48, 48, secured at their ends to pin extensions 49, 49 of the brakes, and these springs tend to prevent the movement of the brakes.

The winding heads in use prior to this invention, could not be used in covering wires with tape of very low tensile strength, for there was always excessive breakage of the tape, due to the tension on the tape, this

port to exert thereon a pressure varying inversely with the speed of rotation of said frame, whereby the stopping of the rotation of said frame causes said brake to exert sufficient pressure to stop the rotation of said support.

3. In a winding head having a passage therethrough for the wire to be wound, a rotatable frame, a tape roll, a rotatable support for said tape roll carried by said frame, centrifugally operable means carried by said frame and adapted to engage the periphery of said support to control the speed thereof, and means for causing the tape to have frictional engagement with the periphery of the roll for automatically maintaining a constant tension on the tape as it is wound on the wire.

4. In a winding head, a rotatable frame having a passage therethrough for the wire to be wound, a rotatable tape support carried by said frame, a tape guiding spindle also carried by said frame, and means for guiding the tape from the periphery of the roll to the wire and for causing the tape to have frictional engagement with the periphery of the roll, whereby a constant tension on the tape is automatically maintained.

5. In a winding head, a rotatable frame, a rotatable support for the tape roll mounted therein, a friction brake carried by said rotatable frame and adapted to engage the periphery of said rotatable support to control the speed thereof, and means for causing the tape drawn from the roll to pass back over the periphery thereof in a direction opposite to the rotation of the roll for automatically maintaining a constant tension on the tape.

6. In a winding head, a rotatable frame

having a passage therethrough for the wire to be wound, a rotatable support for a tape roll mounted in said frame, centrifugally operable means adapted to engage the periphery of the tape roll support for regulating the tension on the tape, and means for guiding the tape from the periphery of the roll to the wire and for causing the tape to have frictional engagement with the periphery of the roll, whereby a constant tension on the tape is automatically maintained.

7. In a winding head, a rotatable frame having a passage therethrough for the wire to be wound, a rotatable support for the tape roll movably mounted in said frame, means for locking said support in said frame, means on said support for securing thereto the tape roll, whereby said support and the tape roll rotate together, means for guiding the tape from the periphery of the roll to the wire and for causing the tape to have frictional engagement with the periphery of the roll, whereby a constant tension on the tape is automatically maintained, and a friction brake carried by said rotatable frame and having engagement with said rotatable support, to exert thereon a pressure varying inversely with the speed of rotation of said frame, whereby the stopping of the rotation of said frame causes said brake to exert sufficient pressure to stop the rotation of the tape roll.

In witness whereof, I hereunto subscribe my name this 28th day of January, A. D. 1914.

WILLIAM F. SMITH

Witnesses:

E. EDLER,

K. L. STANT.