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MEANS FOR AND METHOD OF SERVING A MATERIAL

Filed March 15, 1924

Fig. 1.

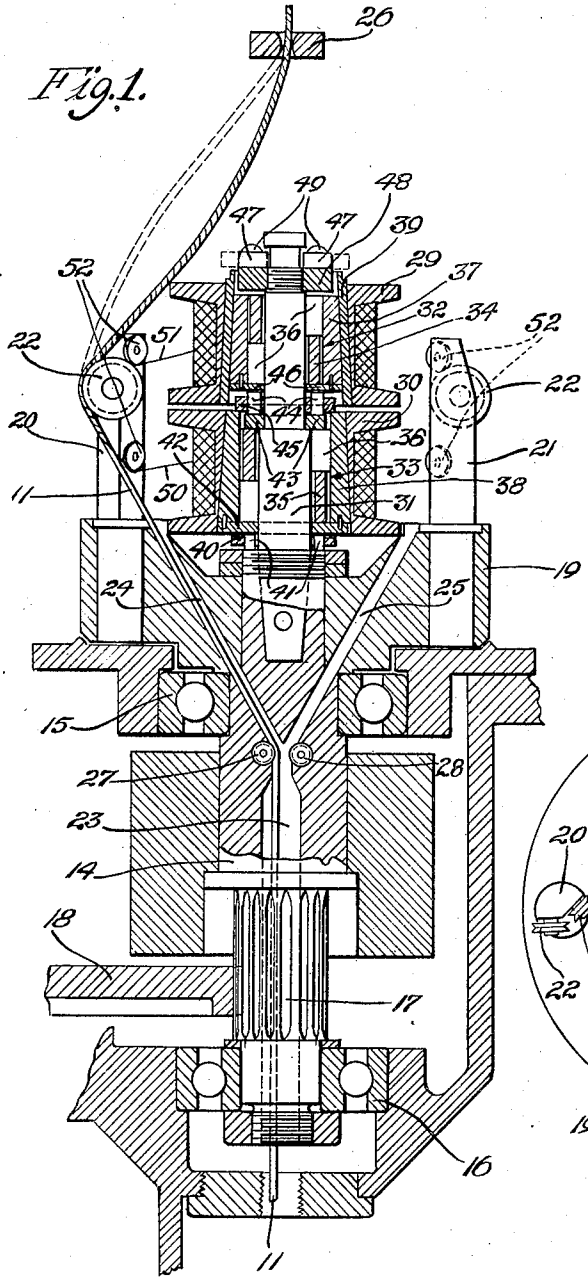


Fig. 3.

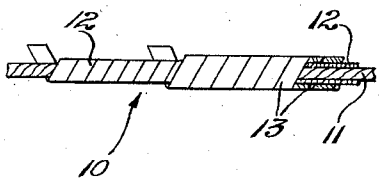
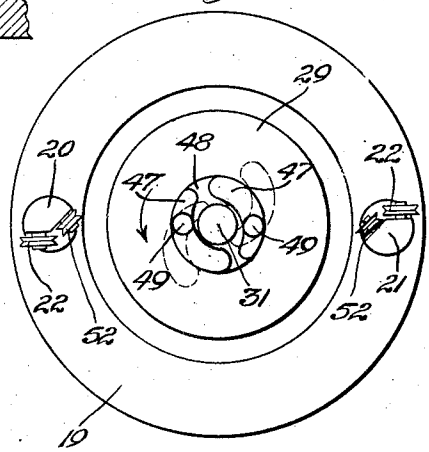


Fig. 2.



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UNITED STATES PATENT OFFICE.

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MEANS FOR AND METHOD OF SERVING A MATERIAL.

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This invention relates to means for and method of serving a material to a traveling core.

The primary object of the invention is to provide an improved method and apparatus for serving a material to a traveling core.

Another object of the invention is to provide an improved method and apparatus for supplying a plurality of strands of serving material to a traveling core.

A further object of the invention is to serve a traveling core from a supply of material around which the core is carried.

A still further object of the invention is to provide an improved means for controlling the position of the axis of a serving head during the rotation thereof.

The invention is preferably embodied in a serving head secured to one end of a rotatable shaft having a central bore through which the core is drawn to guiding means carried by the serving head and spaced from the axis of rotation thereof. That section of the core which is held spaced from the axis of rotation of the serving head is supplied with serving material which is carried by the serving head in such a postion that the core travels around the supply of serving material when the shaft is rotated. The construction of the serving head is such that the operator may replenish or replace the serving material without first breaking the core. To prevent accidental breakage of the serving material or the core, a weight is associated with the head in such a manner that it holds the axis of the serving head in the normal position thereof.

Other objects of the invention will become apparent as the detailed description progresses, reference being had to the accompanying drawing wherein,

Fig. 1 is a central section taken through a serving head which embodies the invention;

Fig. 2 is a plan view of the serving head shown in Fig. 1, and

Fig. 3 is a detailed view of a section of tinsel served core, in the manufacture of which a serving head embodying the invention is particularly adapted to be employed.

It is believed that a complete understanding of the improved method will be procured by a description of the preferred apparatus by which it may be performed.

In the drawing an embodiment of the invention is shown which is particularly adapted to be employed in serving machines of the type wherein a core is withdrawn from a supply spool and delivered to a take-up spool, means being interposed between the supply spool and take-up spool to serve a material on the core.

Fig. 3 shows a conductor which a serving head embodying the invention is particularly adapted to produce. The conductor is designated generally by the reference character 10, and comprises a cotton core 11 upon which are served superimposed layers 12 and 13 of tinsel. The invention has to do with a method of and apparatus for serving the superimposed layers 12 and 13 on the cotton core 11.

Referring now to Fig. 1, the reference character 14 designates a rotatable shaft mounted in a plurality of journals 15 and 16, the journals 15 and 16 being parts of a serving machine. A pinion 17 formed integral with the shaft 14 provides means whereby a gear 18 may drive the shaft, the gear 18 being driven by any suitable means (not shown).

Rigidly secured to the shaft 14 at its upper end is a disc 19 from which projects a plurality of posts 20 and 21. The posts 20 and 21 are diametrically and equi-distantly disposed with respect to the axis of the shaft 14 and each post carries a sheave or a grooved roller 22 adapted to guide a core 11 which is drawn through the serving head. To accommodate the core 11 the shaft 14 is provided with a central bore 23 which connects at its upper end with a plurality of bores 24 and 25, the bore 24 registering with the roller 22 on the post 20, and the bore 25 registering with the roller 22 on the post 21. It is apparent that the core 11 may be drawn through the bores 23 and 24 and passed around the guide roller 22 on the post 20 and then passed through a guide 26 disposed coaxially with the shaft 14. It is also apparent that the core 11 could be drawn through the bores 23 and 25 around the guide roller 22 on the post 21 and then passed to the guide 26. The plurality of posts and guide rollers are employed so as to have a balanced construction. This con-

struction is also followed in the provision of a plurality of grooved rollers 27 and 28 which are disposed within the shaft 14 at the junction of the bore 23 with the bores 24 and 25, to guide the core 11.

A plurality of cops 29 and 30 are mounted on a pin 31 which is secured in the upper end of the shaft 14 and has its axis of rotation disposed coincident with the axis of rotation of the shaft. The cops 29 and 30 are rotatably journaled with respect to the pin 31, a plurality of roller bearings 32 and 33 being provided for this purpose. In the preferred form of the invention, the roller bearings 32 and 33 comprise sleeves 34 and 35 respectively, which carry a plurality of rollers 36 adapted to ride upon the pin 31. Each roller bearing also comprises an outer race, the outer race of the roller bearing 32 being indicated at 37, and the outer race of the roller bearing 33 being indicated at 38. It will be noted that the outside diameter of the race 37 is less than that of the race 38 and that the race 37 seats a tapering bushing 39. This construction enables the operator to remove the cop 30 from serving head without first removing the roller bearing 32 from the pin 31, it only being necessary to remove the tapering bushing 39 from the race 37. As shown the cop 29 is seated upon the tapering bushing 39 and the cop 30 is seated upon the race 38.

Friction means are preferably provided whereby the shaft 14 may rotate the cops 29 and 30. This means comprises a washer 40 disposed around the pin 31 and interposed between the roller bearing 33 and the upper end surface of the shaft 14. The washer 40 is provided with a plurality of friction inserts 41 which are adapted to engage the upper end surface of the shaft and are also adapted to engage an apertured disc 42 rigidly secured to the race 38 by any suitable means. When the shaft 14 is rotated it tends to rotate the race 38 through the medium of the friction inserts 41, and the race 38 tends in turn to rotate the cop 30. The cop 29 is driven in a like manner, but the pin 31 is employed to transmit the motion of the shaft 14 to the cop, the pin 31 having secured to it a washer 43 which is engaged by a plurality of friction inserts 44 carried in a washer 45, rotatably journaled on the pin 31. An apertured disc 46 secured to the race 37 engages the friction inserts 44 and thereby provides means whereby the race 37 may transmit the rotary motion of the pin 31 to the cop 29.

To prevent longitudinal displacement of the cops 29 and 30 relative to the pin 31 there is preferably provided a plurality of locking members 47 carried by a collar 48 threaded upon the upper end of the pin 31, the locking members 47 being pivotally mounted upon the collar 48 by means of pins 49. As best shown in Fig. 2, the locking members 47 are so designed that they will assume the positions shown in dotted lines in that figure when the serving head is rotated at high speed. The locking members will then prevent the cops from leaving the pin 31. Each of the cops 29 and 30 is adapted to hold a supply of material to be served on the core 11. For the purposes of this disclosure, each of the cops 29 and 30 may be said to hold tinsel which is to be served on the cotton core 11 to produce the conductor 10 having superimposed layers 12 and 13 of tinsel. Thus as shown in Fig. 1, a thread, strand or ribbon 50 is supplied to the core 11 from the cop 30, and a thread, strand, or ribbon 51 is supplied to the core from the cop 29. Means are provided for guiding the ribbons 50 and 51, the means comprising a plurality of grooved rollers 52 having axis of rotation disposed at an angle with respect to the axis of rotation of the grooved roller 22.

In the operation of the device, the core is drawn through the serving head by any suitable means (not shown), the serving head being rotated in a clock-wise direction (Fig. 2). That section of the core 11 which is spaced from the axis of rotation of the shaft 14 will then wrap or wind a single turn of tinsel from each of the ribbons 50 and 51 about itself during each revolution of the serving head, the turns obtained from the ribbon 51 being superimposed upon preceding turns of the ribbon 50. Of course, as the core 11 winds the turns of ribbon about itself, it will rotate the cops 29 and 30 in a counter clock-wise direction (Fig. 2) relative to the disc 19. It is for this reason that the friction inserts 41 and 44 are employed.

It is readily understood that the cops 29 and 30 are not accurately balanced with respect to their common rotary axis when they are positioned upon the serving head and that as the speed of the serving head increases, the unbalanced weight of the cops will tend to throw the axis of the serving head out of a normal position. This oftentimes results in injury to or breakage of the serving material. The invention contemplates means for holding the geometric axis of the serving head in the normal position thereof. The means comprises a weight disposed intermediate the journals 15 and 16 and rigidly secured to the shaft 14. The weight has its geometric axis disposed coincident with the axis of rotation of the shaft and the weight is so designed and located with respect to that portion of the serving head disposed above the disc 19 that it resists any tendency of vibration in the cops 29 and 30 and in the means for mounting them. Thus, if the geometric axis of the pin 31 tends to leave its normal position, the motion will be transmitted to the weight through the shaft 14. The weight then

functions to resist the force which tends to displace the geometric axis of the serving head relative to its normal position, and as the geometric axis of a rotating body seeks to coincide with its axis of rotation, the weight will at all times resist any tendency of the shaft 14 and the pin 31 to vibrate.

An advantage attending a serving head embodying the novel features of the invention is the ease with which the cops may be replaced as the construction of the serving head permits the operator to remove and replace the cops without first breaking the core.

While one form of the invention has been described, it is evident that the specific construction shown in the accompanying drawing need not be employed but that various changes can be made without departing from the spirit of the invention. Thus, it is evident that a single cop could be used to supply serving material to the core if so desired, or that three or more cops could be used if it were desired to produce a conductor having three or more strands of serving material on its core. Again, while in the above described embodiment of the invention a section of the traveling core is so carried transversely around an axis of rotation that it generates a circle, it is evident that the section could be carried transversely through an endless path of any desired configuration, and that the section would wrap a serving material around itself if the serving material were properly disposed with respect to the section or if the serving material were properly guided to the section.

What is claimed is:

1. A serving head embodying means for carrying a traveling core around a supply of serving material, and means for guiding the serving material to the core.

2. A rotatable serving head embodying means for carrying a traveling core around a supply of serving material, and means concentric with the axis of rotation of the serving head for guiding the serving material to the core.

3. A rotatable serving head embodying means for carrying a section of a traveling core around the axis of rotation of the serving head, and means rotatable relative to said serving head for supplying serving material to said section of the traveling core.

4. A rotatable serving head embodying means for carrying a section of a traveling core around the axis of rotation of the serving head and for keeping said section of core spaced from said axis, and means for supplying serving material to said section of the traveling core.

5. A rotatable serving head embodying means for carrying a section of a traveling core around the axis of rotation of the head and for keeping said section of core spaced from said axis, and means concentric with said axis and rotatable relative to the first mentioned means for holding a supply of material to be served to the core.

6. A rotatable serving head embodying means for carrying a section of a traveling core around the axis of rotation of the head and for keeping said section of core spaced from said axis, and means making frictional engagement with the first mentioned means and adapted to hold a supply of serving material for application to the traveling core.

7. In a rotatable serving head, the combination with means for carrying a section of a traveling core around the axis of rotation of the serving head, of means for supplying contemporaneously, a plurality of strands of serving material to said section of the traveling core.

8. In a rotatable serving head, the combination with means for carrying a section of a traveling core around the axis of rotation of the serving head, of means for carrying a plurality of cops concentric with said axis to supply serving material to said section of traveling core.

9. A rotatable serving head embodying means for carrying a section of a traveling core around the axis of rotation of the head and for keeping said section of core spaced from said axis, means making frictional engagement with the first mentioned means and adapted to hold a cop for serving a material to the core, and means making frictional engagement with the last mentioned means and adapted to hold a second cop for serving a second material to the core.

10. A rotatable serving head embodying means for carrying a section of a traveling core around the axis of rotation of the serving head and for keeping said section spaced from said axis, and a plurality of cops concentric with said axis for contemporaneously supplying strands of covering material which are drawn from the cops by said section of traveling core.

11. In a serving machine a rotatable shaft, a journal for the shaft, a serving head rotatable with the shaft and disposed at one side of the journal, and means disposed at the other side of the journal for controlling the position of the axis of the serving head during the rotation therof.

12. In a serving machine, a rotatable shaft, a journal for the shaft, a serving head rotatable with the shaft and disposed at one side of the journal, and a weight carried by the shaft and disposed at the other side of the journal for holding the axis of the serving head in its normal position during the rotation thereof.

13. In a serving machine, a rotatable shaft, a journal for the shaft, a serving

head rotatable with the shaft and disposed to one side of the journal, a second journal disposed to the other side of the first mentioned journal, and a weight carried by the shaft and interposed between the journals for holding the axis of the serving head in its normal position during the rotation thereof.

14. In a serving machine, a rotatable shaft, a serving head rotatable with the shaft, and means rotating with the shaft to hold the axis of the serving head in its normal position during the rotation thereof.

15. The combination with a rotatable shaft having a longitudinal bore therein, of a serving head carried by the shaft and comprising means for guiding a traveling core passing from the bore, said guide means being positioned to hold a section of the traveling core spaced from the axis of the shaft, and means rotatably journaled on the shaft for supplying serving material to said spaced section of the traveling core, and friction means making a driving connection between the last mentioned means and the shaft.

16. The combination with a rotatable shaft having a longitudinal bore therein, of a serving head secured to the shaft and comprising means for guiding a traveling core passing from the bore, said guide means being positioned to carry a section of the traveling core around the axis of the shaft, and means substantially concentric with said axis for supplying serving material to said section of the traveling core.

17. The combination with a rotatable shaft having a longitudinal bore therein, of a serving head secured to the shaft and comprising means for guiding a traveling core which traverses said bore, said guide means being positioned to carry a section of the traveling core around the axis of the shaft, a cop concentric with the shaft for supplying serving material to said section of the core, friction means for making a driving connection between the shaft and the cop, a second cop concentric with the shaft for supplying serving material to said section of the core, and a second friction means for making a driving connection between the shaft and the second cop.

18. The combination with a rotatable shaft, of a serving head comprising frictional means for driving a cop of serving material disposed concentric with the shaft, and means rotatable with shaft for carrying a section of a traveling core around the cop to serve the material on said section of core.

19. The combination with a rotatable shaft having a longitudinal bore therein, of a serving head comprising a disc secured to the shaft and having a bore communicating with the bore in the shaft, a roller carried by the disc for receiving a traveling core which traverses the bores and for keeping a section of the core spaced from the axis of the shaft, and means for carrying a cop of material to be served to the core.

20. The method of serving a traveling core which consists in carrying a section of the traveling core around an axis of rotation to draw the serving material from means disposed within the circle generated by said core section.

21. The method of serving a traveling core which consists in carrying a section of the traveling core around an axis of rotation to draw a plurality of strands of serving material from a plurality of means disposed within the circle generated by said core section.

22. The method of serving a traveling core which consists in carrying the traveling core around a supply of serving material which is fed to the core.

23. The method of serving a traveling core which consists in having the traveling core draw serving material from a supply around which the traveling core is carried.

In witness whereof, I hereunto subscribe my name this 4th day of March, A. D., 1924.

GEORGE ALFRED BOUVIER.