Jan. 23, 1934. E. SNYDER 1,944,582

MANDREL

Filed Aug. 12, 1930

Fig. 1.

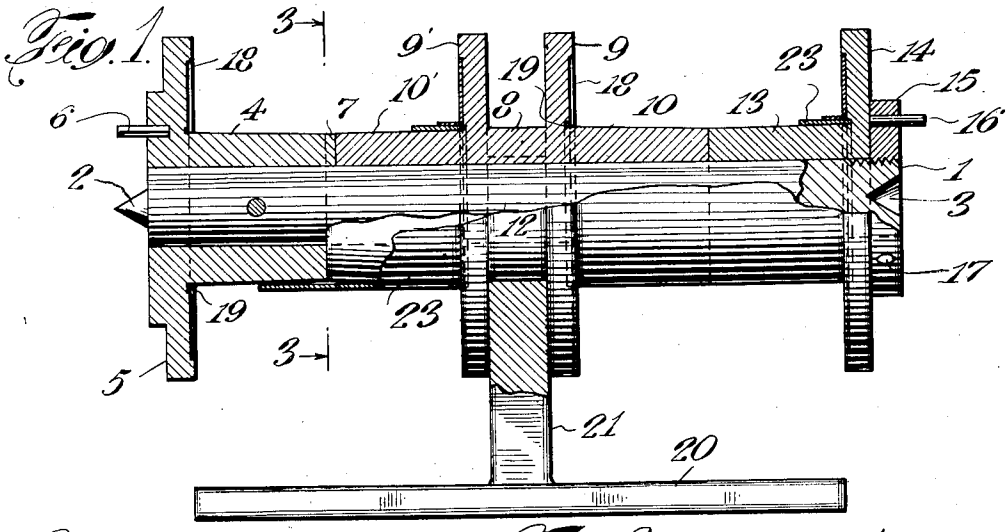


Fig. 2.

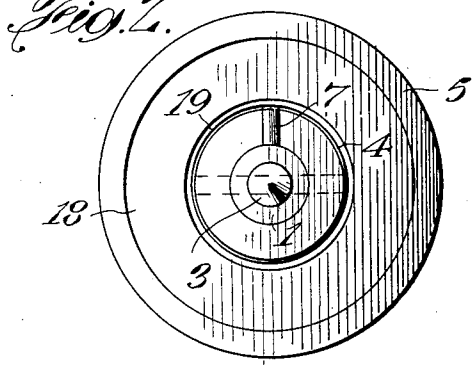


Fig. 3.

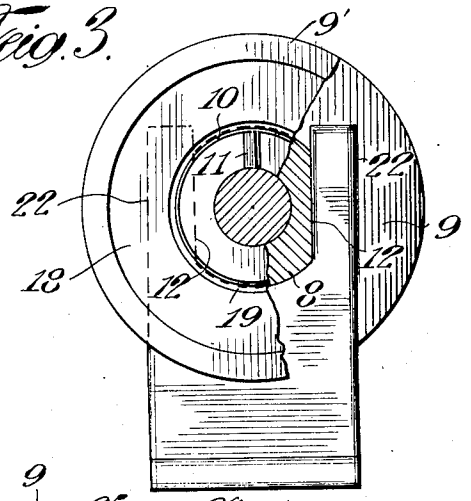
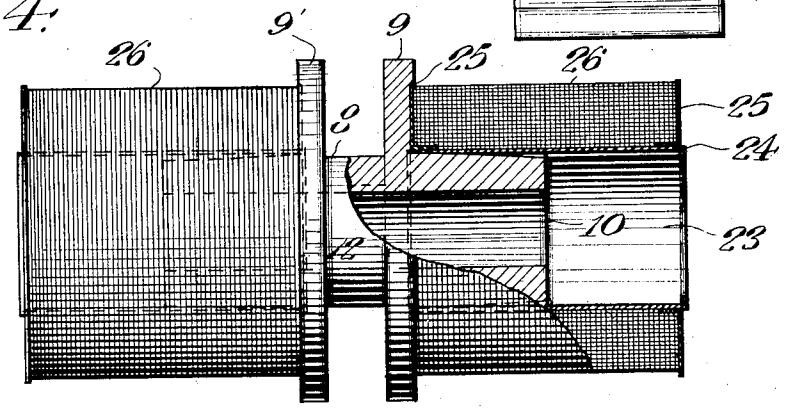


Fig. 4.



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MANDREL

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3 Claims. (Cl. 242—68)

This invention relates to winding mandrels or arbors such as are commonly employed, for example, in coil winding machines for supporting a spool or the like on which a coil is being wound by rotation of the mandrel which is mounted between supporting centers on the machine.

An object of this invention is to provide a winding mandrel of the type set forth constructed and arranged to facilitate the placing of winding spools in position preparatory to the winding operation, and their removal after the finish of the winding 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 drawing in which—

Fig. 1 is a side elevation of a coil winding arbor construction in accordance with an embodiment of this invention and showing the arbor positioned upon a support, portions being broken away;

Fig. 2 is a rear end view of the head and shaft upon which the head is fixed;

Fig. 3 is a cross section of Fig. 1 on the line 3—3 thereof, a portion being broken away; and

Fig. 4 is a side view of an intermediate spool supporting member forming part of the mandrel, which view includes also spools of wire wound thereon positioned on said member, partly in section.

The invention consists of a shaft 1 having a male center 2 at one end and a female center 3 in the other end. Upon one end of the shaft is pinned a hub 4 having at its outer end a radial flange 5 forming an end face and provided with a dog pin 6 that projects longitudinally from its outer face, and the opposite end of the hub 4 is provided with a key 7.

An intermediate member 8 is loosely mounted upon the shaft 1, and has a pair of radially disposed end face forming flanges 9—9′ spaced apart and corresponding outwardly extending hubs 10 and 10′, in the end face of one of which hubs 10′ is made a key slot 11 for the reception of the key 7 on the hub 4 of the head, that portion of said member between the flanges 9 being provided with opposite flat faces 12.

Upon the rear end of the shaft is loosely mounted a hub 13 having a radially disposed flange 14 forming an end face at its outer end, and a collar 15 threaded on the extreme end of the shaft is provided for clamping the latter hub and the intermediate member in place upon the shaft between the collar and the hub 4, or the head. The collar 15 is provided with a dog pin 16 that projects from its outer face 1 and also a peripheral socket 17 made for the reception of a tool (not shown) for turning the collar.

The opposing faces of the flanges 5 and 9′, and 14 and 9, have made therein corresponding recesses 18, and each flange has also made therein an annular groove 19 contiguous with its hub.

A support for the mandrel is provided, which consists of a base 20 having an upright bracket 21, the upper end of which is bifurcated, and between the arms 22 of which the middle part of the intermediate member fits, the flat faces 12 being suitably spaced apart so as to fit against the corresponding inner faces of said arm whereby turning of the intermediate member in the bracket is prevented.

In utilizing the invention, the arbor is positioned on the bracket, and the collar 15 is unscrewed from the shaft. The hub 13 is then removed from the shaft, and the shaft together with the hub 4 is withdrawn, leaving the intermediate member supported on the bracket. A spool 23 is then positioned on each of the hubs 10—10′ by sliding them endwise thereon. The shaft is then reinserted through one of the spools and the intermediate member, the hub 4 of the head being inserted into the end of the adjacent spool and with its key 7 engaged in the slot 11 of the hub 10′. The hub 13 is then positioned on the projecting end of the shaft so as to extend into the end of the corresponding spool. The parts thus assembled are secured together by applying the collar 15 upon the rear end of the shaft when the assembly can be removed from the supporting bracket for use in any suitable coil winding machine.

The spools 23, shown in the drawing, are constructed of paper or similar material, each of which is comprised of a barrel 24 having mounted thereon adjacent each end a flange 25. The ends of the barrel project a short distance outwardly from the corresponding flange and when the spool is mounted upon the mandrel, the projecting ends extend into the corresponding grooves 19, and the adjacent flanges are received respectively in the corresponding recesses 18. Thus, only the inner faces of the flanges of the spools and the external faces of their barrels are exposed when the spools are mounted upon the mandrel in readiness for the reception of the wire to be wound thereon to form the coils 26. The flanges 25 of the spools being sheltered in the recesses 18 admits of winding the wire upon the spools without interference between the wire and flanges.

After the coils have been wound upon the spools,

the collar 15 and the hub 13 are removed from the shaft 1, and the shaft together with the hub 4 is withdrawn from the intermediate member, while the spools and the coils wound thereon are left supported by the intermediate member, and from which they are subsequently removed.

The particular structure of the mandrel and its support affords facility in the assemblage and dissemblage of the mandrel and spools.

The dog pin 6 is provided for engagement in a slot in the drive head of the winding machine in which the mandrel is mounted for the coil winding operation, and the dog pin 16 is provided for the purpose of imparting rotary movement to the tail center of the winding machine which is also provided with a radially extending pin with which the dog pin 16 has engagement. In this manner the tail center of the machine is rotated with the arbor, in its own bearing, and thus, friction of the tail center in the arbor is obviated.

Although I have described a specific embodiment of this invention in more or less detail, it will be apparent that various changes, additions, omissions and substitutions can be made therein without departing from the spirit of this invention or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. The combination in a winding arbor of a central hub member, separable hub members adapted to cooperate with the opposite ends of said central hub member, circular flanges on said members forming end faces means for clamping said hub members together to form coil winding spools and means for non-rotatably supporting said central hub member.

2. The combination in a winding arbor of a supporting shaft, a central hub member having spaced circular flanges, separable hub members co-operating with the ends of said central hub member and provided with circular flanges co-operating with said central flanges to provide coil supporting spools, means for securing said hub members together on said shaft, a support for engaging said central hub member between said flanges and means for preventing rotation of said arbor on said support.

3. In combination, a winding arbor, a central hollow hub member having a pair of radially extending flanges formed thereon, separable hub members associated with the opposite ends of said central hub member and provided with radially extending flanges co-operating with the radially extending flanges on said central hub member to form a pair of axially aligned spool supporting mandrels, clamping means for pressing said members together arranged to permit removal of said separable hub members whereby spools of material wound on said aligned arbors may be supported by said central hub member.

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