Jan. 8, 1929. 1,698,610

F. F. SCHMIEGE

COMBINED SHUTTLE, BOBBIN, AND WINDING DEVICE

Filed Oct. 27, 1926 2 Sheets-Sheet 1

Fig. 1.

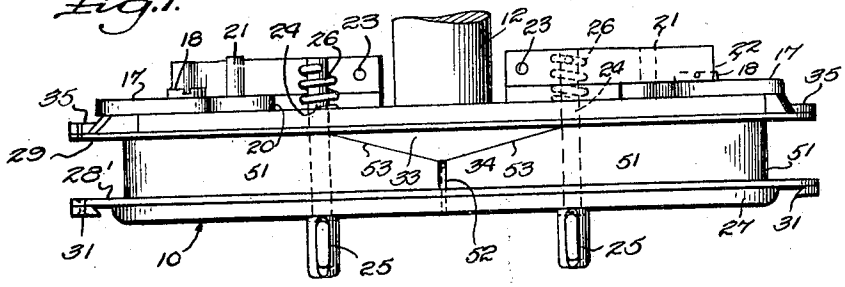


Fig. 2.

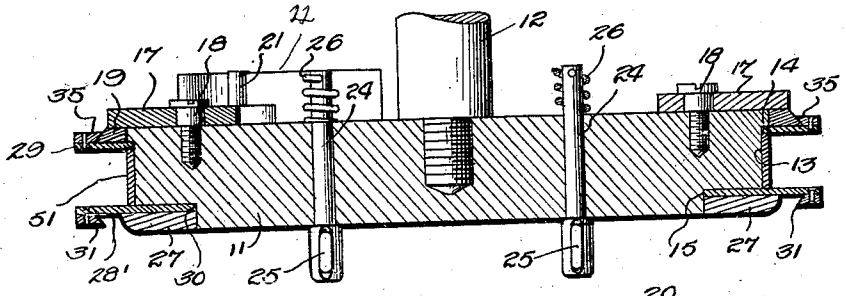


Fig. 3.

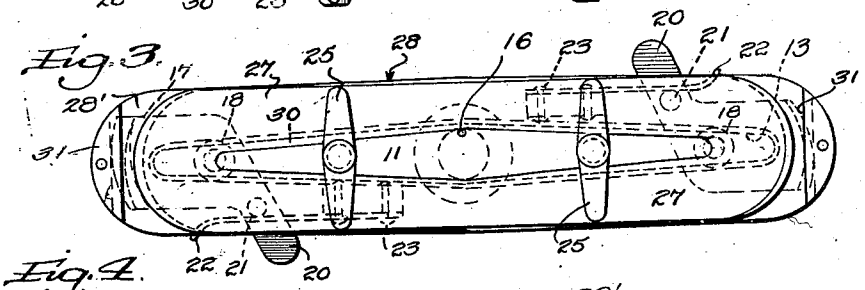


Fig. 4.

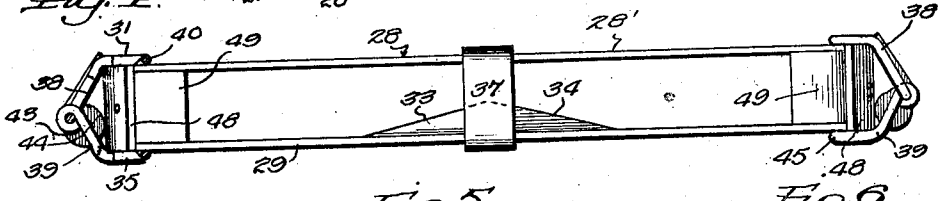


Fig. 5.

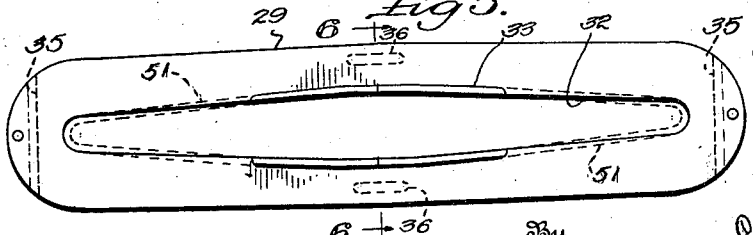


Fig. 6.



Inventor
F. F. SCHMIEGE

By

Attorney

Jan. 8, 1929. 1,698,610

F. F. SCHMIEGE

COMBINED SHUTTLE, BOBBIN, AND WINDING DEVICE

Filed Oct. 27, 1926 2 Sheets-Sheet 2

Fig. 7.

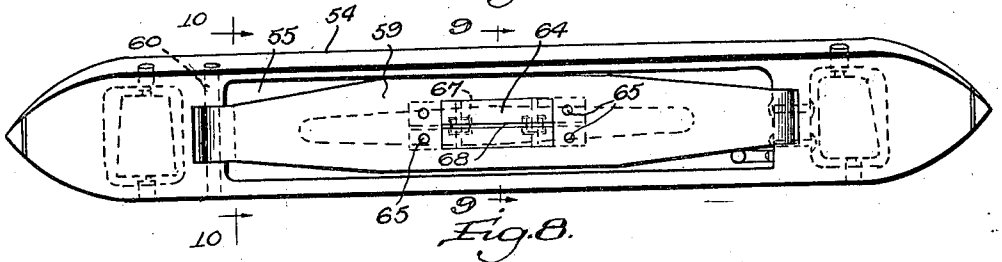


Fig. 8.

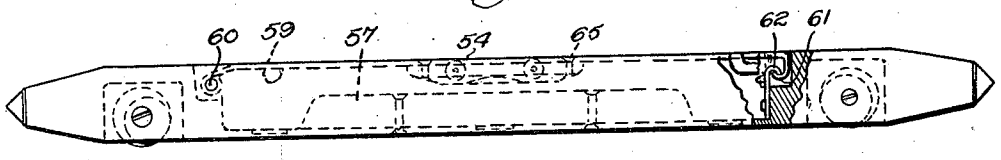


Fig. 9.

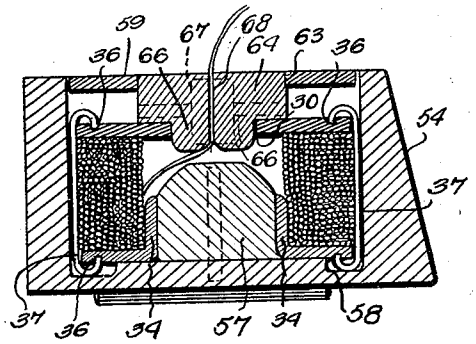


Fig. 10.

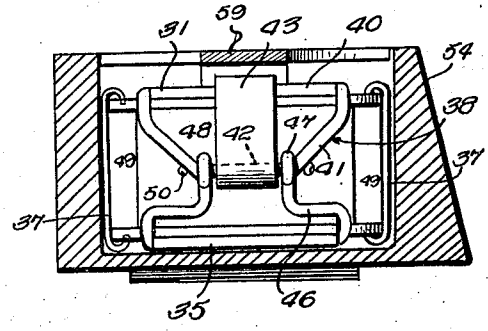


Fig. 11.

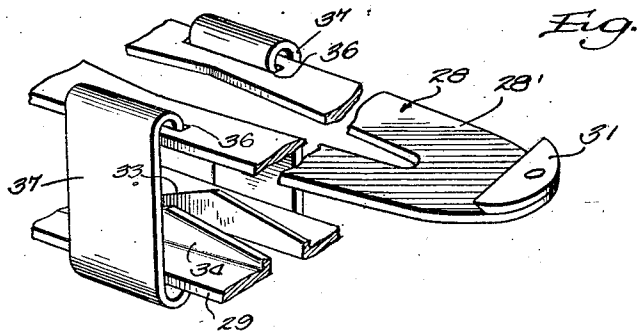
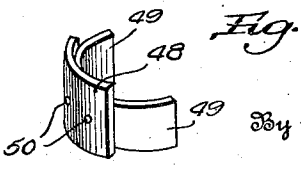


Fig. 12.



Inventor

F. F. SCHMIEGE

By

Attorney

Patented Jan. 8, 1929. 1,698,610

UNITED STATES PATENT OFFICE.

FRANK F. SCHMIEGE, OF APPLETON, WISCONSIN.

COMBINED SHUTTLE, BOBBIN, AND WINDING DEVICE.

Application filed October 27, 1926. Serial No. 144,572.

This invention relates to shuttles and bobbins and more particularly to such devices adapted for use in connection with wire weaving machines.

An important object of the invention is to provide a bobbin and shuttle construction wherein the wire is fed from the bobbin from the inner turns of the wire instead of from the outer turns thereof, thus relieving the wire from the strain resulting from the revolving of the bobbins and also eliminating the difficulty incident to the removal of soft wire and the too rapid removal of hard wire from the usual cone shaped bobbins especially when the latter are confined to thin flat shuttles.

A further object is to provide a bobbin having an inner face portion upon which the wire or the like is wound, the inner face portion being removable prior to the insertion of the bobbin in the shuttle to permit the wire to be fed from the inner turns instead of the outer turns of the wire in the bobbin.

A further object is to provide a novel form of bobbin having one of the side plates thereof provided with an opening to permit the removal of the portions of the bobbin upon which the wire is initially wound.

A further object is to provide a bobbin including a pair of side plates separated and detached from each other, the plates being provided with means for clamping them in proper position with respect to each other when it is inserted in the shuttle.

A further object is to provide a novel form of shuttle for the improved bobbin.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawings I have shown one embodiment of the invention. In this showing,

Figure 1 is a plan view of the bobbin in position on the winding device,

Figure 2 is a central longitudinal sectional view through the same,

Figure 3 is a side elevation of the same,

Figure 4 is an edge elevation of the complete bobbin removed from the winding device,

Figure 5 is a face view of one of the bobbin plates,

Figure 6 is a detail section on line 6—6 of Figure 5,

Figure 7 is a plan view of the shuttle,

Figure 8 is an edge elevation of the same,

Figure 9 is a transverse sectional view on line 9—9 of Figure 7, showing the bobbin in position,

Figure 10 is a similar view on line 10—10 of Figure 7,

Figure 11 is a fragmentary perspective view of a portion of the bobbin,

Figure 12 is a detail perspective of one of the bobbin plate spacing members.

Referring to Figures 1 to 3 inclusive, the numeral 10 designates a bobbin winder as a whole including a body portion 11 mounted upon a shaft 12 to be rotated thereby. The body portion is provided centrally thereof with a substantially elliptical portion 13, for a purpose to be described. Inwardly of the portion 13, the body of the winder is provided with a shallow flange 14, while adjacent its opposite edge, the body portion is provided with a recess 15. The body portion of the device is provided with a small opening 16 extending through the outer face of the body to a point communicating with the space outwardly of the central portion 13 thereof to permit the insertion of the end of a wire to be wound upon the bobbin in a manner to be described.

A pair of locking members 17 are pivotally connected as at 18 with the inner face of the body of the device and each of the locking members is provided with a cam 19 at its outer end and an operating handle 20 at its inner end. Each of the handles 20 is provided with an upstanding pin 21 which is adapted to engage the inner face of a leaf spring 22 secured at one end to the body of the device as at 23. A pair of clamping members 24 are rotatably mounted in the body of the device and are provided at their outer ends with clamping heads 25. The opposite ends of the clamping members extend beyond the inner face of the body of the device and are surrounded by compression springs 26 which serve to maintain the heads 25 in snug contact with the outer face of the body of the device. As shown in Figures 1 to 3 inclusive, a ring 27 is arranged to extend partially into the recess 15 for a purpose to be described, and this ring is adapted to be maintained in position by the heads 25.

Referring to Figures 1 to 6 inclusive, the numeral 28 designates a bobbin as a whole including spaced plates 28′ and 29. The plate 28′ is provided with a central elongated opening 30 which is adapted to fit into the

recess 15 as shown in Figure 2. The plate 28′ is adapted to be maintained in position by the ring 27, as will be apparent. Lugs 31 are secured against the outer face of the plate 28′ adjacent opposite sides thereof and are provided with under cut inner edges as shown for a purpose to be described. The plate 29 also is provided with a central elongated opening 32, this opening being considerably larger than the opening 30, and slightly larger than the central portion 13 of the body of the winding device, as shown in Figure 2. The plate 29 is provided on opposite sides of the central portions of the opening 32 with flanges 33. These flanges are shaped as shown in Figure 4, having upwardly inclined edge portions 34. The plate 29 also is provided with lugs 35 similar in shape and arrangement to the lugs 31 previously described. The outer faces of the plates 28′ and 29 are provided adjacent opposite edges thereof with grooves or recesses 36, (see Figure 9) to receive the opposite ends of clips 37. The end portions of the plates 28′ and 29 are adapted to be secured together by complementary clamping members 38 and 39. As shown in Figures 4 and 10, the clamping member 38 is provided with a transverse portion 40 adapted to be arranged inwardly of one of the lugs 31, and outwardly of the transverse portion the member 38 is provided with arms 41 terminating in a relatively short transverse portion 42 to which is pivotally connected a locking member 43. This locking member is provided with a cam 44 for a purpose to be described. Each clamping member 39 is similarly provided with a transverse member 45 adapted to be arranged inwardly of one of the lugs 35. The locking member 39 also includes arms 46 which terminate in eyes 47 turned about the transverse portion 42 of the corresponding locking member 39. The cams 44 are adapted to engage against arcuate plates 48 secured to inner arcuate plates 49. The arcuate plates 48 are relatively short and are adapted to engage against the end portions of the bobbin plates, while the plates 49 are somewhat longer and are arranged between the bobbin plates to act as spacing means therefor in a manner to be described. The plates 48 and 49 may be secured together by rivets or the like 50. The clip 37, clamping elements 38 and 39, and plates 48 and 49 are used in connection with the shuttle only after the wire or the like has been wound thereon and the device has been removed from the winding device. The actual winding of the wire is adapted to take place upon inner face members 51, illustrated in Figures 1 and 2. These members fit snugly against the central portion 13 of the body of the winding device and the end or turned portions of the face members are arranged with their outer faces inwardly of the extremities of the opening 32, for a purpose to be described. The inner extremities 52 of the inner face members are slightly spaced to permit the insertion of the end of the wire which passes through the opening 16 previously referred to. Adjacent the extremities 52, each of the inner face members is tapered as at 53, and these tapered edges are arranged against the edges of the flanges 33.

Referring to Figures 7 to 10 inclusive, the numeral 54 designates a shuttle having a bobbin receiving recess 55 therein. The recess 55 is provided with a block 57 which is adapted to be received in the opening 32 of the bobbin plate 29 when the device is ready for operation, as shown in Figure 9. Adjacent the central portion of the block 57 and on opposite sides thereof, the lower portion of the member 54 is provided with depressions 58 to receive the looped portions of the clips 37.

A clamping member 59 is pivotally connected to the shuttle as at 60, the opposite end of the clamping member being turned downwardly and curved inwardly to form a hook 61 which is adapted to engage beneath the coacting hook 62 carried by the shuttle whereby the clamping member may be maintained in operative position. The clamping member 59 is provided with a central opening 63 to receive a pair of blocks 64 having slightly spaced inner edges as shown in Figures 7 and 9, whereby an opening 68 is formed between the block 64. These blocks may be secured to the clamping member by rivets or the like 65. The inner faces of the blocks are provided with projections 66 adapted to enter the opening 30 in the plate 28′. Rollers 67 are journalled in the blocks 64 and are arranged transversely of the space therebetween.

The operation of the device is as follows:

It will be apparent that the first step in using the bobbin and shuttle is to wind the wire or other material on the bobbin. In order to accomplish this, the plate 29 is first arranged in the position shown in Figures 1 and 2. The locking members 17 are then swung about their pivots to the position indicated in Figure 3, the pins 21 forcing the free ends of the springs 22 outwardly during this operation. The springs 22 maintain the locking members in position, and the cam portions 19 of the locking members engage against the inner edges of the lugs 35, thus securely holding the plates 29 in position. The other plate 28′ is then slipped into position on the body of the winding device and arranged in the groove 15, whereupon the ring 27 is arranged against the outer face of the plate 28′. The clamping members 25 are then turned to the position shown in Figure 3 to hold the ring 27 in proper position. The inner face members or plates 51 are then slipped over the central portion 13 of the body of the winding device, between the

plates 28′ and 29. These plates are shaped at their ends as shown in Figure 1, whereby the extremities of the plates are slightly spaced while the inclined portions 53 thereof fit against the edges of the flanges 33. The device is now ready for the winding operation, and the free end of the wire or the like is inserted between the inner ends 52 of the plate 51, and through the opening 16, the extremity of the wire being wound around one of the clamping members 25 to secure it. The shaft 12 is then rotated in the usual manner and the wire is wound upon the plates 51. Suitable guiding and feeding means may be employed for the wire, whereby the latter may be evenly wound upon the device. After the winding operation is completed, the locking members 17 are released, and the members 48 and 49 placed in position, after which the clamping members 38 and 39 are applied. The transverse portions of the clamps are arranged against the inner edges of the lugs 31 and 35 whereupon the cam members 44 are rotated to the positions shown in Figure 4. In turning the cam members, the high points thereof pass a plane through the pivot points of the cams, whereby the latter are held in locked position. The clamping members 25 are then turned to positions in alinement with each other, whereupon the bobbin is removed from the winding device, the clamping members 38 and 39 firmly holding the plates 28′ and 29 against spreading. To further insure the proper positioning of these plates, the clips 37 are then secured in position with their extremities arranged in the grooves 36. As previously stated, the opening 32 in the plate 29 is relatively large, and when the device is assembled in the manner described, the plates 51 will occupy the positions indicated in dotted lines in Figure 5. The free ends of these plates are swung inwardly after the completion of the operations above referred to, and the plates are removed through the opening 32 leaving the wire or the like accessible from the inside.

The bobbin is inserted in the shuttle by lifting the clamping member 59 shown in Figures 7 to 10 inclusive. The block 57 is adapted to frictionally engage the inner faces of the flanges 34 as clearly shown in Figure 9. The inner end of the wire is then threaded through the space 68 between the blocks 64 and rollers 67, whereupon the clamping member 59 is snapped shut. This action causes the projections 66 of the blocks 64 to engage within the opening 30, and thus it will be apparent that the bobbin will be firmly held in position. The shuttle is then ready for operation in the usual manner, but it will be apparent that the wire is fed from the inner turns thereof instead of from the outer turns thus eliminating the usual strain placed on the wire due to the rotation of the shuttle. For any position of the shuttle, it will be apparent that the wire will be fed outwardly very freely without placing any strain thereon. When the bobbin is empty, it is apparent that it may be removed by opening the clamping member 59, and the plates 28′ and 29 readily may be separated by removing the clips 37 and clamping members 38 and 39. The plates 51 are provided merely as a form upon which the wire is wound, these plates then being removed to permit the use of the device in the shuttle in the manner referred to.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A bobbin comprising a pair of spaced separate side plates, a detachable member arranged between said plates and adapted to have a thread of material wound thereon, one of said plates being provided with a relatively large opening through which said detachable member is adapted to be removed.

2. A bobbin comprising a pair of spaced elongated side plates, a pair of complementary inner face members adapted to be arranged between said plates and to have a thread of material wound thereon, one of said plates being provided with a relatively large opening corresponding generally in shape to said complementary members and adapted to permit the removal of the latter therethrough, and means for clamping the edge portions of said plates toward each other.

3. A device of the character described comprising a pair of spaced elongated side plates, a holder for said plates, a pair of independent complementary inner face members adapted to surround a portion of said holder between said plates and to have a thread of material wound thereon, one of said plates being provided with a relatively large opening corresponding generally in shape to said inner face members whereby the latter may be removed through said opening, and means for clamping the edge portions of said plates toward each other.

4. A bobbin comprising a pair of spaced elongated side plates, a pair of complementary inner face members adapted to be arranged between said plates to act as spacing members therefor and adapted to have a thread of material wound thereon to substantially fill the space between said plates, one of said plates being provided with a relatively large opening corresponding generally in shape and size to said inner face members and adapted to permit the removal of the latter therethrough whereby said plates will be maintained in spaced relation by the ma-

terial wound thereon, and means for clamping the edge portions of said plates toward each other.

5. A bobbin comprising a pair of spaced elongated side plates, a pair of complementary inner face members adapted to be arranged between said plates to act as spacing members therefor and adapted to have a thread of material wound thereon to substantially fill the space between said plates, one of said plates being provided with a relatively large opening corresponding generally in shape and size to said inner face members and adapted to permit the removal of the latter therethrough whereby said plates will be maintained in spaced relation by the material wound thereon, and a pair of holding members having end portions adapted to engage the outer faces of said plates.

6. A bobbin comprising a pair of spaced elongated side plates, a pair of complementary inner face members adapted to be arranged between said plates to act as spacing members therefor and adapted to have a thread of material wound thereon to substantially fill the space between said plates, one of said plates being provided with a relatively large opening corresponding generally in shape and size to said inner face members and adapted to permit the removal of the latter therethrough whereby said plates will be maintained in spaced relation by the material wound thereon, the outer faces of said plates being provided adjacent opposite sides thereof with recesses, a pair of clips having end portions adapted to be received in said recesses, and means for clamping the end portions of said plates toward each other.

7. A bobbin comprising a pair of elongated spaced plates, an inner face member adapted to be arranged between said plates to act as spacing means therefor and adapted to have a thread of material wound thereon, one of said plates being provided with a relatively large opening corresponding generally in size and shape to said inner face member to permit the removal of the latter therethrough, and a pair of flanges projecting inwardly from the opening in said last named plate and having outer faces forming substantial continuations of said inner face member.

8. A combined bobbin and shuttle comprising a pair of spaced elongated plates between which a thread of material is adapted to be wound, one of said plates being provided with an opening, a shuttle having a recess therein, a block arranged in said recess and adapted to be frictionally received in the opening in said plate, and means for holding said plates within said recess.

9. A combined bobbin and shuttle comprising a pair of spaced parallel elongated plates between which a thread of material is adapted to be wound, one of said plates being provided with an opening therethrough and having flanges extending inwardly at opposite sides of the edge portions of said opening, a shuttle having a recess therein adapted to receive said plates, a block arranged in said recess and adapted to be frictionally received between said flanges, and means for holding said plates within said recess.

10. A device constructed in accordance with claim 8 wherein said holding means comprises a pivoted member carried by said shuttle and having a central portion adapted to engage one of said plates, said central portion being provided with an opening through which the inner end of the material wound between said plates is adapted to be withdrawn.

11. A device constructed in accordance with claim 8 wherein said holding means comprises a clamping member pivotally connected at one end to said shuttle adjacent one end of said recess, means for securing the free end of said clamping member to said shuttle adjacent the opposite end of said recess, a pair of blocks arranged in the central portion of said clamping member and adapted to engage one of said plates, said pair of blocks being slightly spaced to provide a passage through which the inner end of the material wound between said plates is adapted to be withdrawn, and a pair of rollers arranged between said pair of blocks and defining the ends of said passage.

In testimony whereof I affix my signature.

FRANK F. SCHMIEGE.