March 7, 1939. E. J. RODDA 2,149,631

WIRE SPOOL HOLDER FOR STITCHING MACHINES

Filed Jan. 21, 1937

Fig. 1.

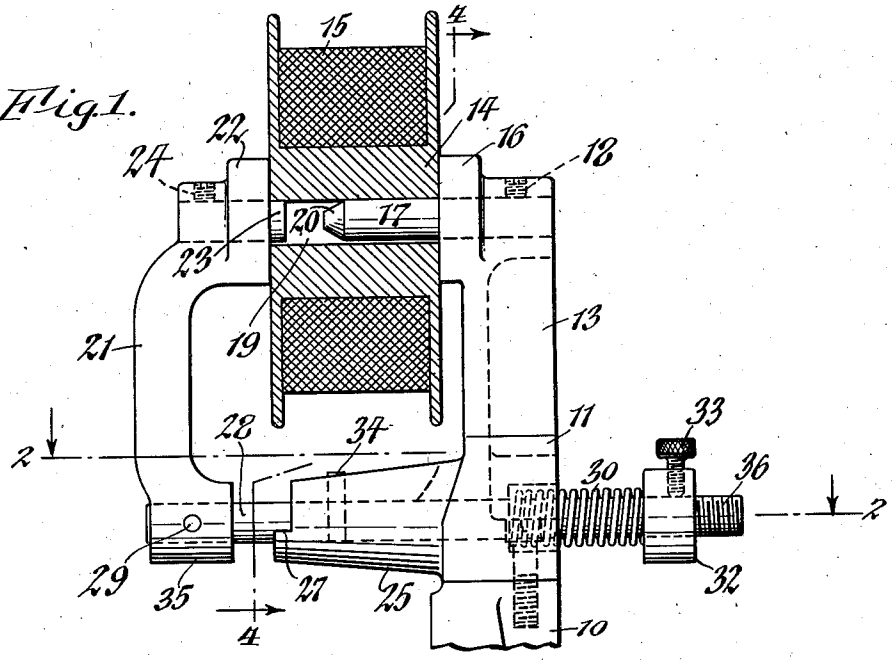
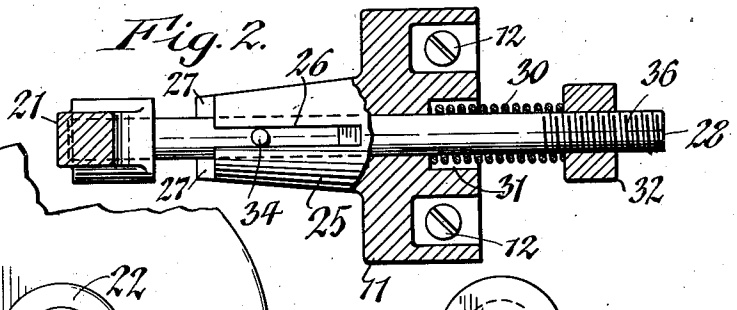


Fig. 2.



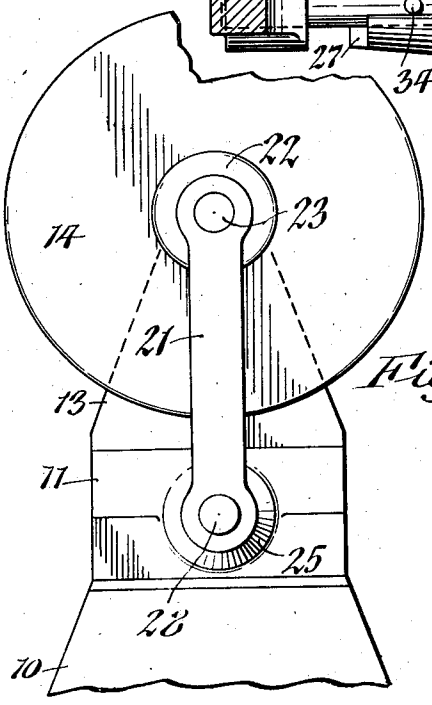


Fig. 3.

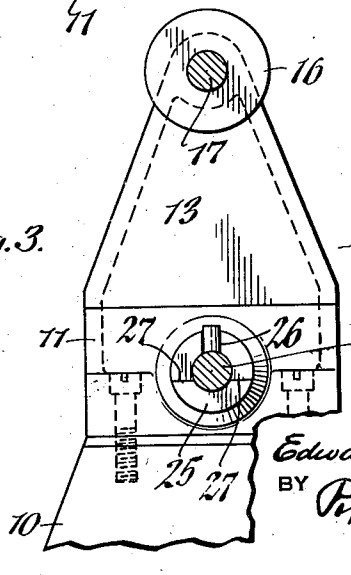


Fig. 4.

INVENTOR
Edward J. Rodda
BY Popp & Popp
ATTORNEYS

Patented Mar. 7, 1939 2,149,631

UNITED STATES PATENT OFFICE

2,149,631

WIRE SPOOL HOLDER FOR STITCHING MACHINES

Edward J. Rodda, Niagara Falls, N. Y., assignor to Niagara Falls Wire Stitchers, Inc., Niagara Falls, N. Y., a corporation of New York

Application January 21, 1937, Serial No. 121,403

4 Claims. (Cl. 242—134)

This invention relates to a spool or bobbin holder which is more particularly designed for supporting a wire loaded spool on the frame of wire stitching machines so that the wire can be fed from the spool to the mechanism which cuts the wire into sections and converts the same into the form of staples and drives the same through the material which is to be fastened or bound together.

The holders for wire loaded spools heretofore in common use have been unsatisfactory inasmuch as the same included loose parts which not only required considerable time to release an empty spool and replace the same by a filled one but the loose parts were liable to be misplaced or become lost while detached from the machine and thus incur delays in the operation of the machine.

The means heretofore employed for holding wire loaded spools in the machine were also objectionable inasmuch as the replenishing of the wire supply required readjustment of the tension on the wire spool whenever a new one was substituted for an empty one, thereby wasting the time of the operator and reducing the capacity of the machine as well as rendering it possible to vary the tension on the wire spool instead of maintaining it uniform during the operation of the machine while using a succession of wire spools.

The object of this invention is to provide a spool holder which not only avoids the use of any loose or detachable parts capable of being readily removed from the machine in the operation of replenishing the supply of spooled wire but which can also be operated very rapidly and conveniently for removing an empty spool and replacing the same by a filled spool and which will also maintain a uniform tension on the spool instead of requiring readjustment of the tension every time that a new wire spool is mounted in the machine, as has been the case heretofore.

In the accompanying drawing:

Fig. 1 is a side elevation of a spool or bobbin holder embodying a satisfactory form of my invention and showing the same holding a wire filled or loaded spool which latter is in section.

Fig. 2 is a horizontal section taken on line 2—2, Fig. 1.

Fig. 3 is a front elevation of the spool holder and a spool mounted thereon.

Fig. 4 is a vertical cross section taken on the correspondingly numbered line in Fig. 1.

In the following description similar characters of reference indicate like parts in the several figures of the drawing.

The numeral 10 represents the upper front part of the main frame or head of a wire stitching machine upon which the holder for supporting the wire filled spool is usually mounted.

The frame of the spool holder includes a lower base 11 which is secured to the top of the main frame of the wire stitcher by means of screws 12 or other suitable means. This base is provided with an upwardly projecting rear arm 13, the upper part of which bears against the rear side of the spool or bobbin 14 which is loaded with the wire 15 to be used in the wire stitching machine. For the purpose of increasing the area of contact between this arm and the spool the upper end of the same is enlarged in the form of a disk 16 which projects slightly forward from the upper part of this arm and provides a bearing surface of considerable extent for engagement with the rear side of the spool and thus increases the friction of engagement between this arm of the spool for retarding the rotation of the spool in the direction in which it is turned when the wire is fed therefrom to the stitching mechanism.

The wire spool is pivotally mounted on the rear arm of the holder by means of a horizontal rear pivot pin 17 which is arranged at its rear end in an opening in the upper end of the rear arm and secured therein by a clamping screw 18. The front part of this pivot pin enters the rear part of the axial opening 19 in the spool and is preferably tapered forwardly as shown at 20 so as to facilitate the application of this spool on this pin.

The numeral 21 represents an upright front arm which is arranged in front of the spool and which normally bears at its upper end against the front side of the spool. This front arm is so mounted on the frame of the holder that the same is capable of moving horizontally in a direction parallel with the axis of the rear pivot pin 17 and also rotatable laterally relative to said pivot pin for the purpose of engaging the upper end of this arm with or disengaging the same from the front side of the spool during the operation of removing an empty spool and replacing the same by a filled one. For the purpose of increasing the frictional contact between this front arm and the front side of the spool the upper end of this arm is enlarged in the form of a disk 22 which provides an increased bearing surface on its rear side for engaging the front side of the spool and producing a greater

frictional contact between these members and thus cooperates with the frictional engagement of the rear arm with the rear side of the spool for providing the necessary tension which resists unwinding rotation of the spool as the wire is fed therefrom to the stitching mechanism of the machine.

On its upper end the front arm is provided with a horizontal front pivot pin 23 which is normally axially in line with the rear pivot pin 17 and has its rear end entering the front part of the bore 19 of the spool while its front end is arranged in an opening in the front arm and is secured therein by a clamping screw 24.

Although various means may be employed for so mounting the front arm on the holder frame that it is capable of horizontal longitudinal movement as well as turning laterally relative to the stationary rear pivot pin 17 and the spool mounted thereon, the specific means which are shown in the drawing for this purpose are constructed as follows:

The numeral 25 represents a guide sleeve which projects horizontally forward from the front side of the base portion 11 of the holder frame. Slidable lengthwise in this sleeve and the adjacent part of the holder base 11 and also rotatable therein is a horizontal slide rod 28 of cylindrical form which has its front end arranged in an opening in the lower end of the front arm 21 and secured thereto by a cross pin 29. Upon sliding the rod 28 forwardly together with this front arm the latter is moved out of engagement from the front side of the spool and upon now moving the upper part of this arm laterally so as to clear the spool then the latter may be readily removed from the stationary rear pivot pin 17 and replaced by another spool. After a new spool has been placed on the rear pivot pin the front arm is again turned so as to swing its upper part across the front side of the spool and then this arm is moved rearwardly for engaging its front pivot pin 23 with the bore of the spool and also engaging its friction disk 22 with the front side of the spool.

Spring means are provided which yieldingly resist the forward movement of the sliding rod 28 and the front arm and operate to press the front and rear bearing disks 22, 16 against the front and rear sides of the spool in order to provide the desired frictional resistance against the unwinding action of the wire from the spool. Various means may be employed for accomplishing this purpose but those shown in the drawing are simple in construction and have been found satisfactory in practice and for these reasons are preferred. These spring tension means include a helical spring 30 surrounding the rear part of the slide rod 28 and bearing at its front end against the bottom of a recess 31 on the rear side of the holder base 11 while the rear end of this spring bears against a collar 32 arranged on the rear part of this rod. For the purpose of enabling the tension of this spring to be adjusted in order to vary the frictional engagement of the bearing disks 16, 22 with the rear and front sides of the spool to suit the requirements of a particular size of spool or to suit other requirements of the stitching mechanism, the collar 32 is capable of longitudinal adjustment on the slide rod 28. This adjustment is preferably effected by providing the bore of this collar with an internal screw thread which works on an external thread 36 formed on this rod. After the adjusting collar 32 has been moved lengthwise on the rod to the desired position by turning the collar either forwardly or backwardly the same is preferably held against displacement by means of a clamping screw 33 working in the collar and engaging with the side of the rod 28, as shown in Fig. 1.

Means are provided for retaining the front arm in its normal upright position when the upper end of the same is in engagement with the front side of the spool and the front pivot pin is in engagement with the front part of the bore of this spool but still permit this arm to be turned when the same and its pivot pin have been withdrawn from the spool. The preferred means for this purpose comprise a longitudinal slot 26 formed in the upper part of the guide sleeve 25 and extending to the front end thereof, and a locking pin 34 projecting upwardly from the guide rod and adapted to either engage with the slot 26 or to be moved across the front end of the guide sleeve. When the spool holder is in operation and the friction disks of both supporting arms are in engagement with the opposite sides of the spool then the locking pin 34 is in engagement with the longitudinal slot 26, as shown in Figs. 1, 2 and 4, whereby this rod and the front arm are free to be drawn rearwardly by means of the spring 30 for the purpose of frictionally engaging opposite sides of the friction disks 16, 22 with the spool but the presence of the locking pin 34 in this slot 26 prevents the front arm 21 from turning and thus reliably maintains the two pivot pins 23, 17 in axial alignment so that the spool is properly centered and will turn properly for delivering the wire effectively to the stitching mechanism which is being served with wire.

Upon moving the rod 28 forwardly and withdrawing the front supporting arm from the spool a sufficient extent to disengage the locking pin 34 from the slot 26 and then turning this rod and the parts carried thereby so that the locking pin passes across the front end of the guide sleeve 25 on one or the other side of the slot 26, then this pin, upon releasing the forward pull on this rod and its arm, will cause the locking pin 34 to engage with the respective part of the front end of the guide sleeve 25 and thereby holding the front supporting arm 21 in its forwardly projecting position in order to permit of freely removing a spool from the rear pivot pin 17 and substituting another spool therefor. After such replacement of the spool has been effected it is only necessary to turn the front supporting arm into a position in which its front pivot pin 23 is in line with the rear pivot pin 17 and when this occurs the front arm will be automatically drawn backwardly by the spring 30 so as to engage the front friction disk 22 with the front side of the spool and also engage the front pivot pin 23 with the front part of the bore of the spool inasmuch as this is permitted at this time due to the locking pin 34 coming in line with the locking slot 26 and moving lengthwise therein.

Inasmuch as it is only necessary to turn the front supporting arm 21 laterally a quarter turn in one direction or the other for the purpose of clearing the space in front of the spool, stop means are provided to limit this rotation of the front arm and thus expedite restoring the parts to their operative position. These stop means preferably consist of two upwardly facing stops or shoulders 27 arranged on diametrically opposite sides of the front end of the guide sleeve 25, as shown in Figs. 1, 2 and 4. Upon turning the front supporting arm and rod 28 after the locking pin 34 has been moved forwardly a sufficient extent to clear the slot 26, this locking pin will engage either one or the other of the stops 27 and thereby definitely

limit the rotation of the front supporting arm 21 to one quarter of a turn. This is sufficient to carry the front friction disk 22 and the front pivot pin 23 out of the path of the spool and thus avoid any obstruction which would interfere with the quick substitution of one spool for another on the holder.

Owing to the fact that none of the parts of this holder are loose and normally not capable of being wholly removed from the apparatus there is no liability of losing or misplacing such parts and as the tension of the spring 30 after having been once set for a particular size of spool or to meet other conditions no further disturbance of the same can occur, it necessarily follows that the tension on successive spools is always uniform and repeated adjustment for this purpose is not required thereby insuring uniform quality in the work of the stitching mechanism.

For the purpose of facilitating the forward and lateral movement of the front arm 21 of the holder the central part of the arm is preferably offset forwardly to some extent between the lower hub 35 of this arm and the friction disk 22 at the upper end thereof, as shown in Fig. 1, whereby the central part of this arm serves as a handle which can be conveniently grasped by the hand of the operator for manipulating the parts during the operation of releasing one spool preparatory to replacing the same by another.

As a whole this spool holder is very simple in construction and composed of parts which are sturdy and not liable to get out of order even under severe use and as none of the parts are loose or normally incapable of being detached from the machine, there is virtually no liability of any of the parts becoming misplaced which otherwise would interfere with the most efficient operation of the machine.

I claim as my invention:

1. A spool holder comprising a frame having an upright rear arm adapted to bear at its upper end against the rear side of a spool, a pivot pin arranged on the upper end of said rear arm and adapted to enter the rear end of a spool, a front arm adapted to bear with its upper end against the front side of said spool, a slide rod connected with the lower end of said front arm and slidable on the frame parallel with said pivot pin and also rotatable laterally thereon for moving said front arm into and out of engagement with the front side of said spool, and spring means for drawing said rod backwardly and causing the upper ends of said arms to bear frictionally against the front and rear ends of said spool, said spring means being arranged in the rear of the frame and including a collar secured to the rear end of said rod, and a spring surrounding said rod and bearing at its front end against the rear side of said frame and at its rear end against said collar.

2. A spool holder comprising a frame having an upright rear arm adapted to bear at its upper end against the rear side of a spool, a pivot pin arranged on the upper end of said rear arm and adapted to enter the rear end of a spool, a front arm adapted to bear with its upper end against the front side of said spool, a slide rod connected with the lower end of said front arm and slidable on the frame parallel with said pivot pin and also rotatable laterally thereon for moving said front arm into and out of engagement with the front side of said spool, and spring means for drawing said rod backwardly and causing the upper ends of said arms to bear frictionally against the front and rear ends of said spool, said spring means being arranged in the rear of the frame including a spring surrounding the rod with its front end engaging the bottom of a recess in the rear side of the frame, a collar screwed on the rear part of said rod and engaging with the rear end of said spring, and a clamping screw arranged on said collar and bearing against said rod.

3. A spool holder comprising a frame having a rear arm adapted to bear against the rear side of a spool, a front arm adapted to bear against the front side of a spool, a slide rod connected with said front arm and slidable on said frame and also rotatable laterally relatively thereto for moving the front arm into and out of engagement with said spool, and means for normally holding said front arm with its upper end in line with the front side of said spool but permitting lateral movement of said front arm relative to the spool including a guide sleeve arranged on the frame and receiving said rod and provided with a longitudinal slot, and a locking pin arranged on said rod and movable lengthwise in said slot and rotatable laterally across the end of said sleeve.

4. A spool holder comprising a frame having a rear arm adapted to bear against the rear side of a spool, a front arm adapted to bear against the front side of a spool, a slide rod connected with said front arm and slidable on said frame and also rotatable laterally relatively thereto for moving the front arm into and out of engagement with said spool, and means for holding said front arm with its upper end in line with the front side of said spool but permitting lateral movement of said front arm relative to the spool including a guide sleeve arranged on the frame and receiving said rod and provided with a longitudinal slot, and a locking pin arranged on said rod and movable lengthwise in said slot and rotatable laterally across the end of said sleeve, said sleeve being provided on its diametrically opposite sides of its front end with stops adapted to be engaged by said locking pin for limiting the rotary movement of the same and the rod and front arm connected therewith.

EDWARD J. RODDA.