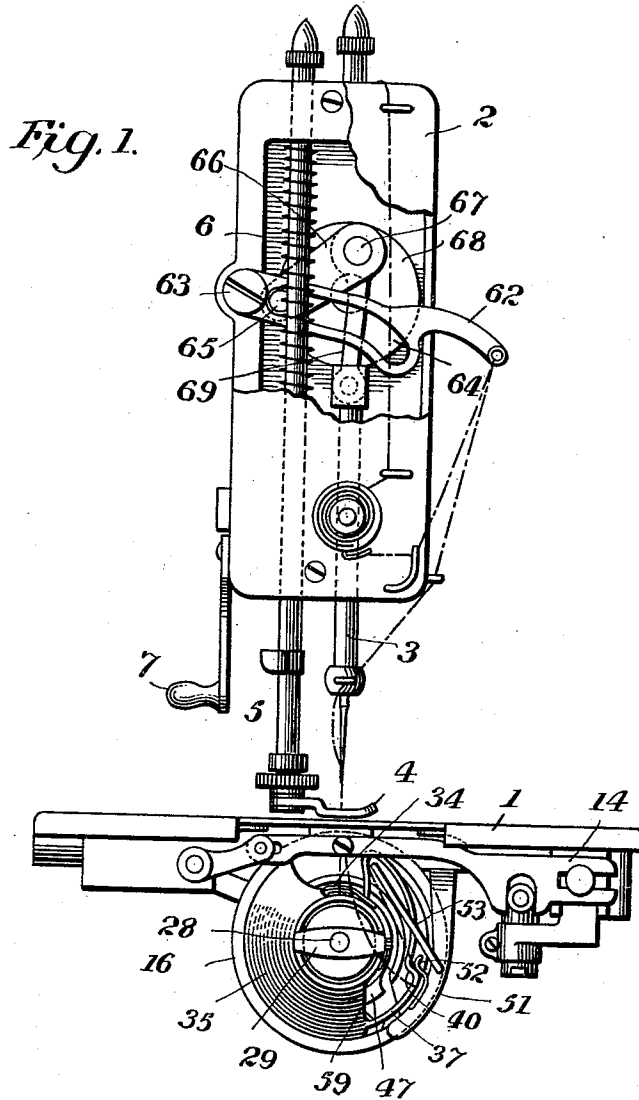


R. K. HOHMANN.  
 ROTARY SEWING MACHINE.  
 APPLICATION FILED AUG. 16, 1909.

1,007,106.

Patented Oct. 31, 1911.

3 SHEETS—SHEET 1.



Witnesses  
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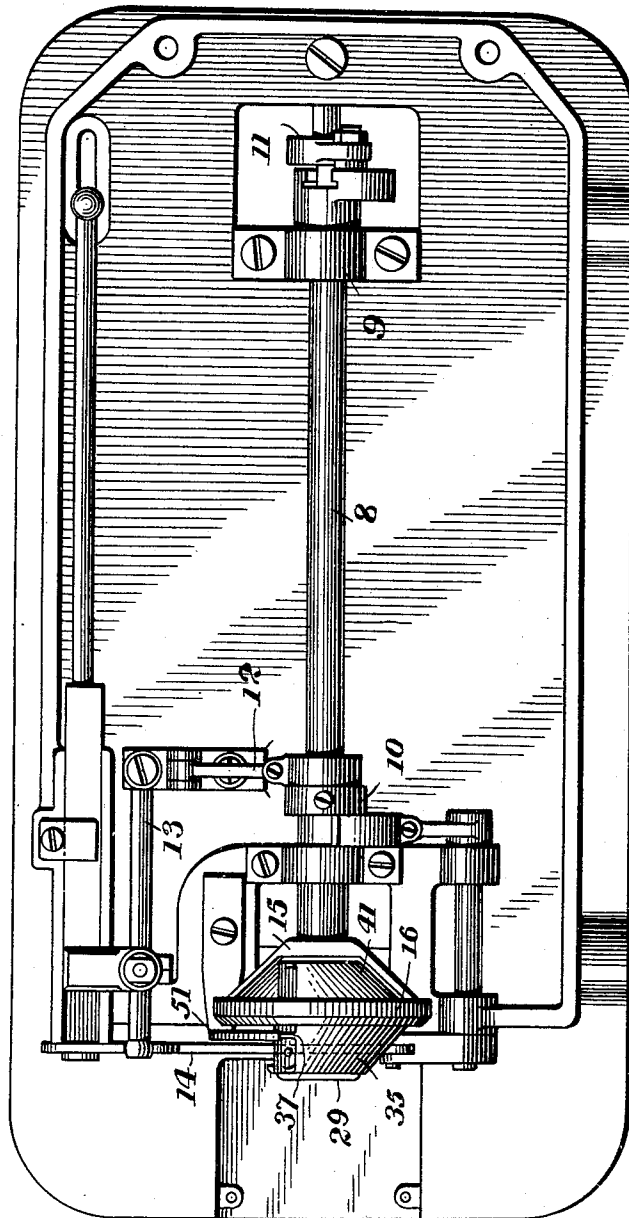
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

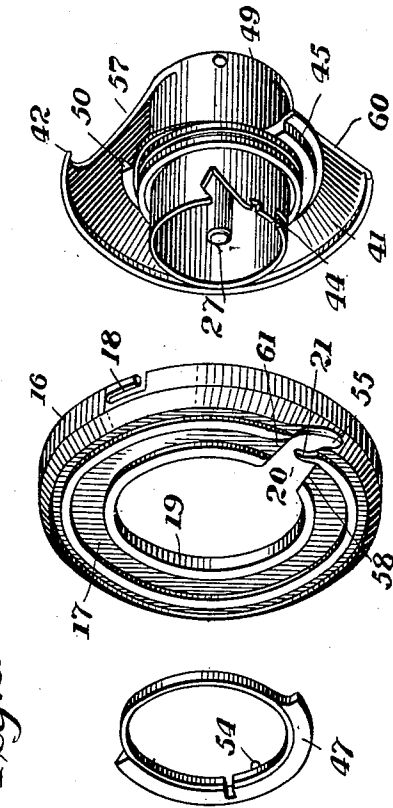


Fig. 6.

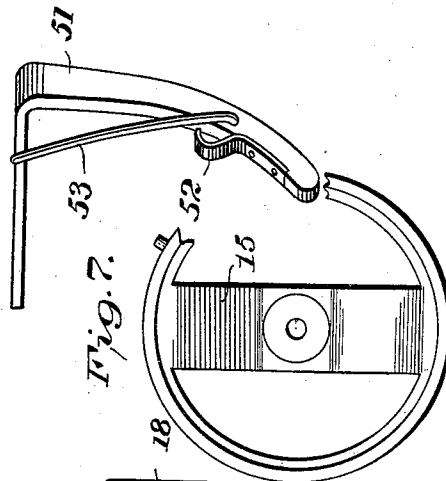


Fig. 5.

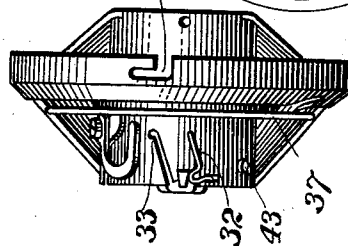
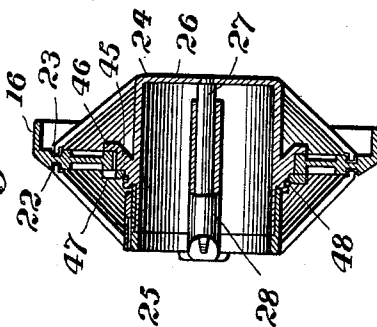
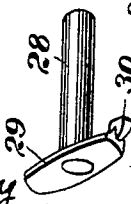


Fig. 4.



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# UNITED STATES PATENT OFFICE.

RICHARD K. HOHMANN, OF SAN DIEGO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO  
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## ROTARY SEWING-MACHINE.

1,007,106.

Specification of Letters Patent.

Patented Oct. 31, 1911.

Application filed August 16, 1909. Serial No. 513,185.

*To all whom it may concern:*

Be it known that I, RICHARD K. HOHMANN, a citizen of the United States, and resident of San Diego, in the county of San Diego and State of California, have invented certain new and useful Improvements in Rotary Sewing-Machines, of which the following is a specification.

This invention relates to rotary sewing machines and is particularly adapted to carry an ordinary spool for the lower thread.

It consists in the various novel features pointed out in the following description in connection with the accompanying drawings.

It includes among other things novel means for carrying the loop of thread around the large holder containing an ordinary spool and a rotary bearing for said holder so arranged and of such small size as to reduce the friction as far as possible.

In the accompanying drawings,—Figure 1 is a front view of the stitching mechanism of the sewing machine embodying my invention. Fig. 2 is a bottom plan view of the plate of the machine showing my invention applied thereto. Fig. 3 is an enlarged detailed perspective view of the parts which go to make up my spool holder. Fig. 4 is a longitudinal section of the spool holder with the parts assembled. Fig. 5 is a side view of the spool holder as shown in Fig. 4. Fig. 6 is a detailed perspective view of the arm which prevents rotation of the holder during the operation of the machine, and Fig. 7 is an end view, partly broken away, of the spider head which carries the revolving hook.

In these drawings 1 represents the plate of the machine which is of usual construction and 2 represents the head which carries the needle bar 3 and the presser foot 4 carried on the vertical movable bar 5. The presser foot is held down by the spring 6 and is elevated by the handle 7 but these features constitute no part of my invention. Below the plate 1 there is a horizontal rotary shaft 8 mounted in bearings 9 and 10 and this shaft is rotated in the ordinary way by crank connections 11 operated as usual from the drive shaft. Thus shaft 8 through the link connection 12, shaft 13 and arm 14 operates the usual feed dog which engages the cloth fed to the machine beneath the presser foot.

My invention relates directly to the holder

for containing the lower thread and its details are best shown in Figs. 3 to 6. It also includes the means for supporting the holder and for passing the loop of thread around it. In order to make a loop of thread pass around a holder containing a bobbin or spool it is necessary to provide means for directing the sides of the loop upon opposite sides of the holder and this means must have a considerable angle in order to make the thread pass freely down around the holder. If the angle is too abrupt the thread will bind and will not pass around the holder particularly during the rapid operation which is necessary in sewing machines. When the holder therefore is made large enough to contain an ordinary spool of thread longitudinally at the center the outer margin of the means employed to direct the loop around it will necessarily be at considerable distance from the spool itself and will result in a holder of considerable diameter. If rotary means is employed to support the holder by a bearing at the outer margin of the guiding means and to pass a loop of thread around the holder the bearing surface will be of large diameter thus making considerable friction. According to my invention the bearing connection between the holder and its rotary support is made within the outer margin of the guiding means and close around the spool itself thus making a bearing of comparatively small radius, notwithstanding the size of the thread holder. As shown in Fig. 2 the shaft 8 has secured to its forward end a frame or spider head 15 which has at its outer edge a ring fitting within the flange 16 of the ring like support 17 and this support 17 is secured to the head 15 by the engagement of the pin on the head 15 with the angular slot 18 in the flange 16 thus making a bayonet joint and securing the parts together in such a way that they can easily be detached. The support 17 extends inwardly at right angles from the flange 16 and has at its inner edge the circular bearing 19. Extending from this bearing 19 outward to the flange 16 there is a cut away portion 20 the sides of which flare inwardly and near the flange 16 there is a loop engaging hook 21 extending into the cut away portion and projecting slightly on the forward side of the support. Immediately adjacent this hook and on the opposite side

from the bearing there are annular grooves 22, 23 in the face of the support extending entirely around it. It will be observed that this support being secured to the shaft 8 rotates with that shaft carrying the hook 21 around with it.

The spool holder proper includes a central cylindrical portion of proper size to receive an ordinary spool of thread and it is preferably made up of two telescoping sections, 24, 25 so that it is separable between its ends. It will be understood, however, that the particular means making the holder separable between its ends is not essential and that I do not limit myself to a separable holder. In the particular form shown the two ends are made separable for convenience in manufacturing the parts and in assembling them. One end of the tubular holder is closed by wall 26 and mounted in this end there is a central spindle 27 adapted to receive the sleeve 28 on the retainer 29 which extends across the open end of the cylindrical holder. The retainer 29 is pushed in until it is almost flush with the open end of the cylindrical holder and does not materially project beyond the end thereof. This retainer has an angular lug 30 on one end which fits within angular slot 31 in the tubular section 25 and there is a spring 32 which bears against one side of this lug and this yieldingly maintains it in position. It will be understood that the spool to be used is placed on the sleeve 28 and before that sleeve is pushed into place on the spindle 27. The cylindrical part 25 is provided with the usual thread slot and opening 33 and with a tension device 34. From the outer edge of this part 25 a flange 35 extends at an angle toward the ring like support 17 the shape of the flange as a whole being that of a part of a cone and it will be seen that the flange is cut away for nearly one half of the circumference. The outer edge of this flange fits in the groove 22 in the support 17 and is provided at its forward edge with a thread engaging hook 36. To the outer edge of the flange near its circumference there is secured an arm 37 which is preferably in the form of a bent wire brought to the point 38 near the hook 36 and at that end secured to the cylindrical portion at 39. This wire or arm has an inward bend at 40 almost on a level with the axis of the cylindrical portion. The purpose of this bend being to engage an arm fixed to the machine and operating to prevent the rotation of the holder.

The cylindrical portion 24 has a flange 41 similar to the flange 35 and the edge of this flange fits in the groove 23 so that the hook 42 is opposite the hook 36. The part 24 is secured to the part 25 by means of a pin 43 working in the angular slot 44 making the bayonet joint. Closely surrounding the cylindrical part 24 there is a bearing surface

45 having the side flanges 46, 47 making a bearing groove. The flange 46 may be made integral with the part 45 but the flange 47 is preferably made in the form of a removable ring so as to permit the bearing 45 to slide within the circular bearing 19 of the support 17. The ring 47 in the particular form shown is held in place by a spring catch 48 which is in the form of a split wire ring fitting within a groove immediately adjacent to the flange 47. It will be observed particularly by reference to Fig. 3 that the bearing 45 and the flange 46 are cut away throughout a part of the circumference or from the point 49 to the point 50. The point 50 is behind the forward edge of the flange 41 or in other words behind the hook 42 whereas the point 49 is somewhat in advance of the rear edge of the flange. In other words the part 49 is out beyond the edge of the flange. The ring 47 is also partially cut away to correspond with the cut away portion of the bearing. The purpose of this being to leave an open space between the bearing ring 19 and the bearing surface 45 throughout a portion of the circumference and it is through this cut away portion that the loop of thread is drawn.

The holder is prevented from rotating with the rotary support 17 by means of an arm 51 which may be secured to the plate of the machine and which is provided with a rounded spring 52 in such position as to bear upon the arm 37 at the bend 40 and it will be understood that the loop of thread which is being drawn up along the arm 37 will pass between the spring 52 and the arm, the rounded spring serving to prevent an undue friction and catching of the thread. Extending from the arm 51 there is a finger 53 which extends up within the point 38 as will be seen by reference to Fig. 1. This finger along with the arm 37 serves to prevent twisting of the loop of thread after it is passed around the flanges of the holder and has been released therefrom.

To assemble the parts of the spool holder the cylindrical part 24 is inserted within the ring support 17 with the bearing 19 slidably fitting over the bearing 45 and the ring 47 is then slipped into place. The pin 54 on that ring being made to enter a hole in the bearing to prevent rotation. The spring retainer 48 is then slipped into place thus locking the ring 47 against removal. The cylindrical part 25 is then slipped over the open end of the part 24 and the pin 43 entering the slot 44 and by a slight twist the parts are locked together. The sleeve 28 carrying the spool and having the retainer 29 on its end is then placed in position. The ring like support 17 may be secured to the end of the head 15 at this time or previously by simply pushing it into place and turning it slightly so that the pin will be locked in the slot 18.

The thread brought out through the opening 33 passes under the tensioning device 34 and up to the needle.

It is believed that the operation of the device may be understood from the above description of the construction. The needle which descends in advance of the ring like support 17 forms the loop of thread which is engaged by the hook 21 and which is carried forward toward the two hooks 36, 42 on opposite sides of the support immediately behind the needle. These hooks 36, 42 engage the loop on opposite sides of the ring-like support 17 stretching the thread through the opening 55 which extends from the hook 21 out beyond the edge of these flanges. As the part 17 rotates one portion of the thread will be stretched across the edges 56, 57 of the flanges extending down through the cut away portion of the bearing 45 near the end 50. It passes down through this cut away portion by sliding down the inclined face 58 of the slot 20. As the part 17 continues to rotate the sides of the loop ride up the inclined flanges 35, 41 of course being stretched from the point 55 up over the flanges to the needle. When the opening 55 reaches the rear edges 59, 60 the sides of the loop will have practically passed over the center of the holder and at this point it is necessary to commence taking up the thread which has formed this long loop passed around the holder and this operation is performed by the take up mechanism hereafter described. The loop is drawn up over the inclined surface 61 and enters the cut away portion of the bearing 45 which is in communication with the notch 20 at this moment. If, however, the loop were allowed to be drawn up freely by the take up it would be likely to twist and become tangled and it is in order to prevent this that I use the curved arm 37. This arm holds the loop extended and prevents it from twisting while at the same time it does not exert any material tension on the loop and consequently does not prevent it from being drawn up easily. The finger 53 also bears on one side of the loop and assists in keeping it straight until it reaches the point 38 immediately adjacent to the needle. In order to draw up properly such a long loop it is necessary to have a peculiar form of take up. In Fig. 1 I have shown such a take up which embodies an arm 62 pivoted to the head of the frame on one side at 63 and having longitudinally of it a slot 64 which has a downward curve at its forward end. A pin or roller 65 works in this slot and is secured to the end of an arm 66 which is in turn rigidly fastened to a pin 67 carried by the disk 68 mounted on the rotary shaft which operates the needle bar through the link connection 69. It will be observed that the pin 65 closely approaches the pivot

point 63 and that therefore it gives to the arm 62 a quick and long upward throw. The downward curve at the outer end of the slot is for the purpose of more gradually stopping the arm at the bottom of this throw.

It will be understood that I do not confine myself to the specific construction of the various parts and that modifications may be made without departing from the spirit of my invention.

Where I use the term "spool holder" it will of course be understood that the word "spool" applies to thread wound either upon an ordinary spool or upon a bobbin, since, as above explained, either may be used.

What I claim and desire to secure by Letters Patent is—

1. A thread holder for rotary sewing machines comprising a tubular portion adapted to receive a spool of thread, a rotary bearing for said holder closely surrounding said tubular portion between its ends and means on said holder extending out beyond the circumference of said bearing for engaging a loop of thread and guiding it around said holder and means for passing said loop around the holder.

2. A thread holder for rotary sewing machines comprising a tubular portion adapted to receive a spool of thread, a rotary bearing for said holder closely surrounding said tubular portion between its ends, inclined flanges on said tubular portion extending out beyond said bearing for engaging a loop of thread and guiding it around said holder and means for passing said loop around the holder.

3. A thread holder for rotary sewing machines comprising a tubular portion adapted to receive a spool of thread, a rotary bearing for said holder closely surrounding said tubular portion between its ends and a ring like disk having a central opening fitting said rotary bearing and inclined flanges extending from the ends of said tubular portion to said disk out beyond said bearing.

4. A thread holder for rotary sewing machines having means at the center for supporting a spool of thread longitudinally, a central circular bearing for said holder surrounding said spool and slightly larger than the circumference of said spool, means on said holder extending from the ends thereof beyond the circumference of said bearing for directing a loop of thread around it, the said means including a thread engaging hook and a ring-like support for said bearing adapted to pass a loop of thread around the holder.

5. A thread holder for rotary sewing machines comprising a central tubular spool holding portion, a concentric bearing closely surrounding said tubular portion between

its ends exterior flanges extending at an angle from the ends of said tubular portion toward the middle portion thereof and leaving a ring like opening between their edges and a ring-like support for said bearing adapted to pass a loop of thread around the holder.

6. A thread holder for rotary sewing machines comprising a central tubular spool holding portion separable between its ends, a concentric bearing closely surrounding said tubular portion between its ends exterior flanges extending at an angle from the ends of said tubular portion toward the middle portion thereof and leaving a ring like opening between their edges and a ring-like support for said bearing adapted to pass a loop of thread around the holder.

7. A thread holder for rotary sewing machines comprising a central tubular spool holding portion separable between its ends, a concentric bearing closely surrounding said tubular portion between its ends exterior flanges extending at an angle from the ends of said tubular portion toward the middle portion thereof and leaving a ring like opening between their edges, the said flanges being similarly cut away throughout a part of their circumference and being provided at the outer margin with thread engaging hooks and a ring-like support for said bearing adapted to pass a loop of thread around the holder.

8. A thread holder for rotary sewing machines comprising a central tubular spool holding portion a concentric bearing closely surrounding said tubular portion at the center the said bearing being cut away for a portion of the circumference, exterior flanges extending beyond said bearing at an angle from the ends of said tubular portion to a point adjacent each other the said flanges being cut away for a part of the circumference and means for passing a loop around the holder.

9. A thread holder for rotary sewing machines comprising a central tubular spool holding portion, made up of two separable tubular sections, a concentric bearing closely surrounding said tubular portion at the center the said bearing being cut away for a portion of the circumference, exterior flanges extending at an angle from the ends of said tubular portion to a point adjacent each other outside of said bearing the said flanges being cut away for a part of the circumference and means for passing a loop around the holder.

10. In a rotary sewing machine the combination with a rotary shaft of an annular disk secured to the end of said shaft and provided with a central circular bearing opening, a concentric tubular thread holder having on its surface a bearing fitting said opening throughout a portion of the circum-

ference and inclined thread guiding flanges extending from the ends of said holder to said disk near its periphery the said flanges extending only a portion of the way around the holder.

11. In a rotary sewing machine the combination with a spool holder of a ring like support having a central rotary bearing for said holder, a loop engaging hook near the outer margin and a cut away portion between said hook and bearing and a circular groove on the side of said support concentric with said bearing and adjacent said hook.

12. In a rotary sewing machine the combination with a spool holder of a ring like support having a central rotary bearing for said holder, a loop engaging hook near the outer margin and a cut away portion between said hook and bearing and circular grooves on opposite sides of said support concentric with said bearing and adjacent said hook.

13. In a rotary sewing machine the combination with a spool holder of a concentric ring like support having a central rotary bearing for said holder and a cut away portion extending from said bearing outwardly with a thread engaging hook near the outer margin and flanges partly cut away extending from said holder to said ring like support on opposite sides adjacent said hook and provided with hooks cooperating with said first mentioned hook.

14. A thread holder for rotary sewing machines comprising a tubular spool holder separable between its ends having thread guiding means around and extending from said ends and a rotary bearing between its ends and within the margin of said thread guiding means in combination with rotary means for passing a loop of thread around said holder.

15. A thread holder having a surrounding grooved rotary bearing one wall of the groove being in the form of a removable ring and a spring retaining collar fitting against said ring to hold it in place in combination with rotary means for passing a loop of thread around said holder.

16. In a rotary sewing machine the combination with a spool holder of a flange extending from a point adjacent the needle about half way around the holder for directing a loop of thread over the end thereof, and an arm constituting a continuation of said flange for preventing the twisting of the loop when it is released from said flange and fixed finger secured to a fixed part of the machine and extending along said arm.

17. In a rotary sewing machine the combination with a spool holder of a flange extending from a point adjacent the needle about half way around the holder for directing a loop of thread over the end thereof,

and an arm constituting a continuation of said flange for preventing the twisting of the loop when it is released from said flange and a fixed arm having a part in the path of said first mentioned arm to prevent rotation of said holder.

18. In a rotary sewing machine the combination with a spool holder of a flange extending from a point adjacent the needle about half way around the holder for directing a loop of thread over the end thereof, and an arm constituting a continuation of said flange for preventing the twisting of the loop when it is released from said flange and a fixed arm having a part in the path of said first mentioned arm to prevent rotation of said holder, and a rounded spring on one of said arms constituting the point of contact.

19. A thread holder for rotary sewing ma-

chines comprising a central tubular spool holding portion, a concentric bearing closely surrounding said tubular portion between its ends and exterior flanges extending at an angle from the ends of said tubular portion toward the middle portion thereof and leaving a ring like opening between their edges the said flanges being cut away for a portion of the circumference and the said bearing being correspondingly cut away in combination with a ring-like support for said bearing having means for passing a loop of thread around the holder.

In testimony whereof I affix my signature in presence of two witnesses.

RICHARD K. HOHMANN.

Witnesses:

JOHN G. HINKEL,  
HUGH M. STERLING.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."