

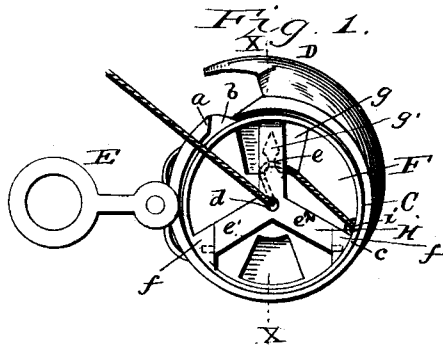
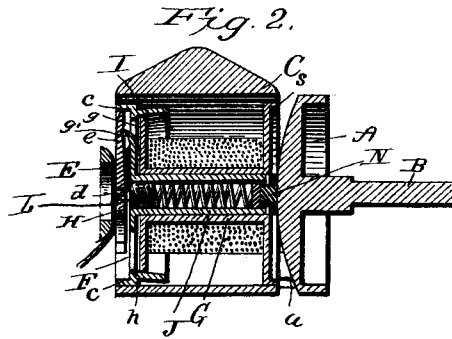
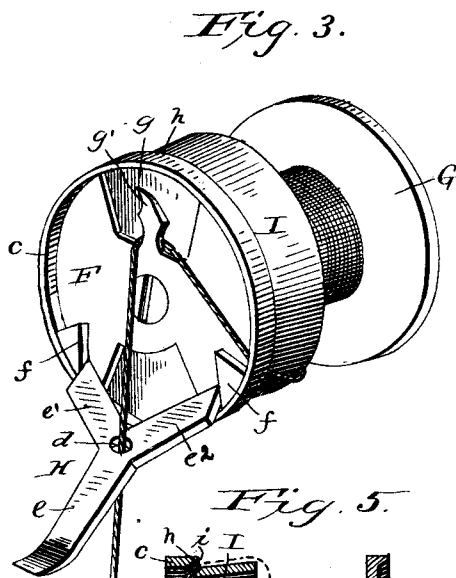
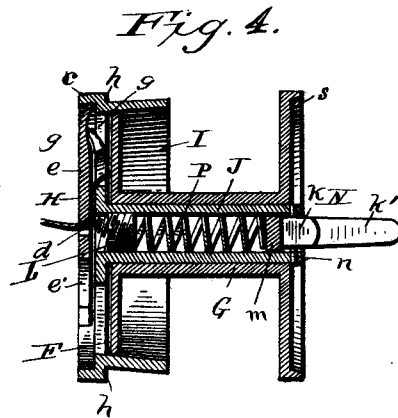
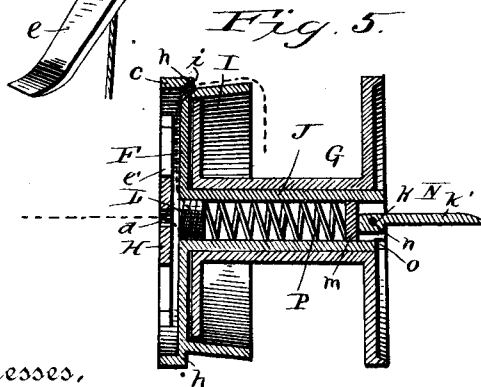
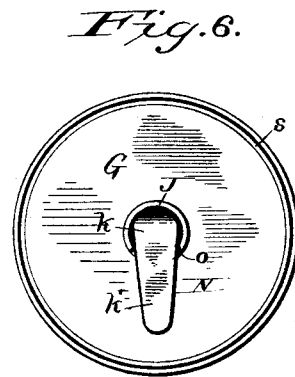
(No Model.)

J. VANNETT.

OSCILLATING HOOK FOR SEWING MACHINES.

No. 388,323.

Patented Aug. 21, 1888.



Witnesses,
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UNITED STATES PATENT OFFICE.

JASPER VANNETT, OF TIFFIN, OHIO, ASSIGNOR OF ONE-THIRD TO GEORGE S. YINGLING, OF SAME PLACE.

OSCILLATING HOOK FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 388,323, dated August 21, 1888.

Application filed October 27, 1887. Serial No. 253,530. (No model.)

To all whom it may concern:

Be it known that I, JASPER VANNETT, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented certain new and useful Improvements in Sewing-Machine Bobbins, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an oscillating hook for sewing-machines, it being particularly designed as an improvement upon the device patented by me February 16, 1886, and numbered 336,456, as will presently fully appear.

The hook covered by the above-mentioned patent, after having been experimented with and practically tested for some time, was found to be insufficient and impractical in several respects, and it is the special object of this invention to supply these insufficiencies and obviate the impractical features of this device. It will be observed by reference to this patent that the thread from the bobbin as it passes to engage with the needle-thread is drawn out through an aperture in the edge or periphery of the loosely-contained bobbin case or cylinder within the oscillating casing. This manner of drawing or feeding the bobbin-thread is impractical, for the reason that it often happens that more thread is drawn from the bobbin than is necessary to form the stitches being made, the surplus or slack thread thus unwound from the bobbin making the machine perform a loose and very irregular character of work, as is evident, the slack thread also at times being broken by becoming entangled or caught by the hook in its movements. When in starting the machine, or for that matter at any time during its operation, the thread-aperture in the edge of the loosely-contained bobbin case or cylinder should for any reason whatever happen to be at its farthest point from the needle-hole in the bed-plate of the machine, (it being evident that when the thread-aperture happens to be thus situated there will be drawn from the bobbin sufficient thread to reach to the fabric being sewed,) and from this position be brought by a partial revolution of the bobbin-casing in the hook-cylinder to its nearest point to the needle-hole, it is obvious that there will be a surplussage of

slack thread about equal in length to the diameter of the said bobbin, which, if it is not broken, will cause the machine to perform its work in a very loose and irregular manner. Another disadvantage arising from this manner of feeding or drawing the thread from the bobbin is that in the oscillation of the hook about its axis the thread is often subjected to a sudden pulling or jerking motion, which has a tendency to cause it to snarl or bind upon the bobbin.

It is the design of this invention to remedy the above noted defects in my former hook, and also to improve and simplify its construction generally, whereby I am enabled to provide a device that will possess practically all the desirable features of a machine of this character, as will be presently pointed out.

In order to enable others to construct and use my invention, I will now proceed to describe its construction, reference being had to the accompanying drawings, in which—

Figure 1 represents an end view of the device with its door thrown open to show the position and direction of the bobbin-thread; Fig. 2, a longitudinal sectional view taken on the plane indicated on Fig. 1 by the line X X; Fig. 3, a perspective view of the bobbin and its holder or head detached, the hinged thread guide or door being opened for the purpose of threading; Fig. 4, a sectional view in detail of the bobbin and its head, also taken on the line X X, Fig. 1, showing more clearly the tension device; Fig. 5, a sectional view of the bobbin-holder and bobbin, showing the direction the thread takes on its way to the tension device; and Fig. 6, a rear end view of the bobbin and its holder.

Referring to the drawings by letter, A designates a disk, which has its face slightly rounded, and B a pin projecting centrally from the rear side of the disk for attaching the same to the oscillating shaft of the machine. Upon one edge of the disk A, having a single point of contact with it at *a*, is attached the bobbin or hook-cylinder C, broken in its continuity by the mouth *b*, and having formed upon it the usual loop-hook, D. Pivoted in ears erected upon the periphery of the cylinder C is the hinged door E, adapted to be held in any desired position by a spring,

which acts upon its pintle. As these parts of my device are substantially the same as in my former patent above alluded to, I do not deem it necessary to further particularize upon their construction and operation in this application.

In the hook-cylinder is loosely placed the bobbin-head F and bobbin G, which I will now proceed to describe. The bobbin-head F has a recess or depression formed in its face by the annular flange *c*, and in this recess or depression is pivoted the thread-guide H, which has a central aperture, *d*, which, when the guide is in a closed position, is concentric with the axis of the oscillating hook. This thread-guide, it is evident, may be any convenient shape; but in this instance it is constructed of three radial arms, *e e' e''*, two of which, *e' e''*, have formed on them small pivots which set and work in recesses in the bearing-blocks *f*, secured to or formed integral with the inner surfaces of the flange *c*, whereby the guide will be pivotally attached thereto, and may be readily opened, as shown in Fig. 4, for the purpose of threading, cleaning, adjusting tension-screw, or other purposes. When the thread-guide is closed, as shown in Fig. 1, its radial arm *e* impinges against the inner surface of the flange *c*, and securely holds the guide in that position during the operation of the machine, the guide being of such thickness as to be practically flush with the outer edge of the flange *c*.

In the bobbin-head is an opening, *g*, into which projects a radially-disposed pin or projection, *g'*, preferably in a plane parallel with the arm *e* of the thread-guide when the said arm is in its operative position, the said pin being preferably formed integral with the bobbin-head, as shown. This pin, around which the bobbin-thread is passed, as will presently appear, has usually the form of an arrow or spear head, and is slightly bent outwardly and tapered off at its end, terminating in close proximity to or touching the inner side of the radial arm *e* of the thread-guide.

Projecting rearwardly from the bobbin-head and formed integrally therewith is an annular flange or short cylinder, *I*, which is slightly smaller in diameter than the adjacent flange *c*, forming the shoulder *h*, through which is the thread passage or hole *i*.

Projecting rearwardly from the center of the bobbin-head and formed integrally therewith is the tubular bobbin-spindle J, the passage through which is closed at its forward end by the screw-threaded adjustable plug L, for the passage of which the bobbin-head is centrally perforated, as shown.

Upon the spindle J is placed the bobbin G, the smaller disk of which fits loosely within the short cylinder I of the bobbin-head, and the larger disk, being of the same diameter as the flange *c*, will rest upon the interior side of the hook-cylinder, as shown in Fig. 2. The bobbin is held normally forward upon its spindle by means of the spring-actuated lever or

arm N, which consists of an angular head or enlargement, *k*, and the flat arm or portion *k'*. The head *k* of this lever is pivotally secured within the end of the tubular spindle by means of a transverse pin, N. In the tubular spindle, between the screw-plug L and the angular head of this lever, is placed a spiral spring, P, the tension of which may be regulated by the said screw-plug, and which exerts a constant and steady pressure on the angular head of the said lever through the medium of an interposed loose washer or disk, M, and serves to hold the lever in either one of the two positions shown in Figs. 4 and 6 of the drawings, it being evident that when the lever is adjusted to hold and lock the bobbin upon the spindle, as shown in Fig. 6, the gentle steady pressure upon the lever exerted by its spring will be transmitted to the bobbin, for the purpose hereinafter set forth.

It will be observed that one side of the tubular bobbin-spindle is notched or cut away at *o*, so that when the lever is turned down it will rest within this notch or recess and be practically flush with the inner end of the tubular spindle. The large disk of the bobbin on its outer edge is provided with a short annular flange, *s*, which forms a recess or depression in the outer face of the bobbin for the arm of the lever N to rest in, so that when the thread passes around between the hook-cylinder and the disk A in the operation of the machine it will not be caught or injured by the lever, as is evident. After the bobbin is placed and locked upon its spindle in the manner described, the thread is passed over the inner edge of the flange I, thence through the aperture *i*, then looped around behind the pin *g'*, the loop being pressed down between the pin and the outer face of the small bobbin-disk, so that the bobbin will exert a gentle pressure upon the thread, and thence through the centrally-located aperture in the thread-guide, and the thread guide being closed by a slight pressure of the finger, the device is ready for operation.

An essential feature of this invention, it will be perceived, consists in arranging the final aperture through which the bobbin-thread passes on its way to engage the needle-thread concentric with the axis of the hook, thereby avoiding the possibility of there being drawn from the bobbin any surplus or slack thread, as is frequently the case with the class of devices which have their thread-openings on the edge or at any distance from the center of the bobbin head or holder, as hereinbefore stated, for the reason that the aperture will always be the same distance from the fabric being sewed.

Another feature of my invention which is of paramount importance is the manner in which I apply and regulate the necessary tension of the thread as it passes from the bobbin to engage with the needle-thread, this being accomplished by means of the spring-actuated lever N, which constantly and gently presses the bobbin forward, the pressure being ex-

erted upon the thread as it passes between the hook or pin g' and the small disk of the bobbin, as shown clearly in Fig. 4. The tension on the thread, it is evident, is regulated by means of the screw-plug L, which may be adjusted to increase or decrease the tension on the spiral spring in the tubular spindle.

It will be observed by reference to Fig. 2 that the flange c of the bobbin-head and the large disk of the bobbin also rest upon the interior surface of the hook-cylinder, the object in this being to distribute or equalize the friction generated by the operation of the hook-cylinder between the bobbin-head and bobbin, thereby preventing the bobbin from revolving on its spindle until it is revolved by the withdrawing of the thread, the friction between the large disk and the interior surface of the hook-cylinder being sufficient to prevent any premature unwinding of the thread.

The flange I, projecting inwardly from the bobbin-head a short distance, provides for taking the thread from the bobbin centrally, so as to prevent it from coming in contact with the disks of the bobbin while it is revolving. The object in making this flange I smaller in diameter than the bobbin-head is to prevent the thread from coming in contact with the interior surface of the hook-cylinder, as is evident.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the oscillating hook, the bobbin, the bobbin-head provided with an annular flange, c , and the thread-guide pivoted in the recess formed by the said flange in the face of the bobbin-head and provided with a centrally-located aperture for the passage of the thread, substantially as described.

2. The combination of the oscillating hook, the bobbin-head therein and provided with a bobbin-spindle projecting from its rear face, and a rearwardly-extending flange, I, and a forwardly-extending flange, c , the latter forming a depression in the face of the bobbin-head, and the said flange I being smaller in diameter than the flange c , for the purpose described, a thread-guide pivoted to the said bobbin-head in the depression in its face, and the bobbin placed upon the said spindle and having one of its disks enlarged, the said bobbin-head being perforated at i for the passage of the thread, substantially as described.

3. The combination of the oscillating hook, the bobbin-head provided with a bobbin-spindle, and a rearwardly-extending flange, I, slightly smaller in diameter than the bobbin-head proper, forming a shoulder, n , through which a perforation, i , is made for the passage of the thread, the bobbin secured upon the said spindle and having one of its

disks equal in size to the said bobbin, and resting on the interior surface of the oscillating hook-cylinder head, and a thread-guide, substantially as described.

4. The combination of the oscillating hook, the bobbin, the bobbin-head perforated at g , and provided with a pin, g' , projecting into the said perforation and around which the thread is passed, the said bobbin-head being also provided with an aperture, i , for the passage of the thread, the bobbin, and the thread-guide, substantially as described.

5. The combination of the bobbin-head recessed at g , a pin, g' , formed on said bobbin-head and projecting into the said recess g in the same, a tubular spindle projecting from the rear face of the bobbin-head, a bobbin placed upon this spindle, and a spring-actuated angular lever pivoted in the free end of this spindle and adapted to exert a forward yielding pressure upon the bobbin, whereby a variable tension is exerted upon the thread as it passes between the forward disk of the bobbin and the pin g , substantially as described.

6. The combination, with a bobbin-head provided with a flange, c , forming a depression in the face of the bobbin-head, of a thread-guide pivoted in the said depression and provided with a radial arm which engages with the said flange c , the thread-aperture in the said thread-guide being centrally located with reference to the bobbin-head, and a bobbin, substantially as described.

7. The combination, with the oscillating hook, bobbin-head provided with a depression in its face, and a rearwardly-extending spindle, the said bobbin-head also being provided with an opening, g , into which projects a bent radial pin, g' , a thread-guide pivoted in the said depression in the face of the bobbin-head, and being perforated centrally for the passage of the thread, the said thread-guide also having a radial arm, c , which serves to hold it closed, and a bobbin held upon the said spindle, substantially as described.

8. The combination of the oscillating hook, the bobbin-head placed therein and provided with a rearwardly-extending spindle, a thread-guide upon said bobbin-head, and a bobbin placed loosely upon said spindle, the forward disk of said bobbin being somewhat smaller than the bobbin-head and the rear disk being equal in diameter to the bobbin-head and adapted to rest upon the interior surface of the oscillating hook, as and for the purposes herein set forth.

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

JASPER VANNETT.

Witnesses:

GEO. S. YINGLING,
ROBERT LYSLE.