W. C. MEYER.

BOBBIN HOLDING DEVICE FOR LOCK STITCH SEWING MACHINES.

APPLICATION FILED AUG. 16, 1905.

1,048,565. Patented Dec. 31, 1912.

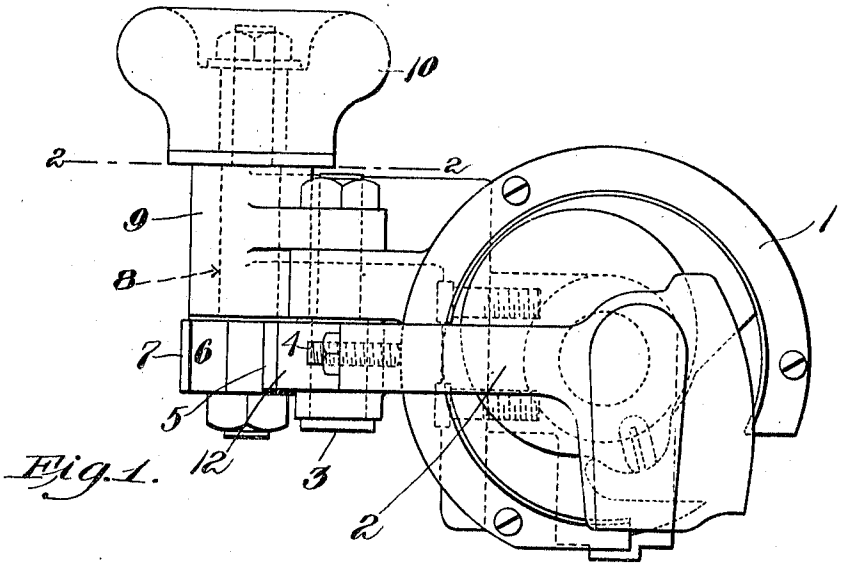

Fig. 1.

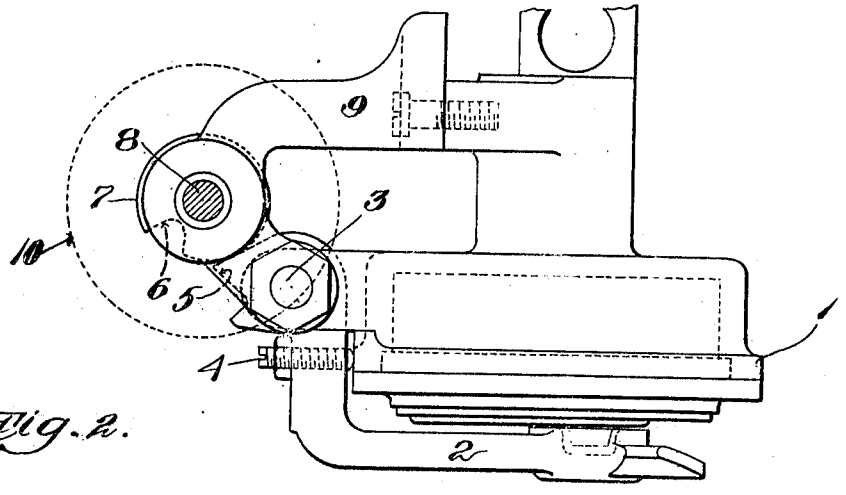

Fig. 2.

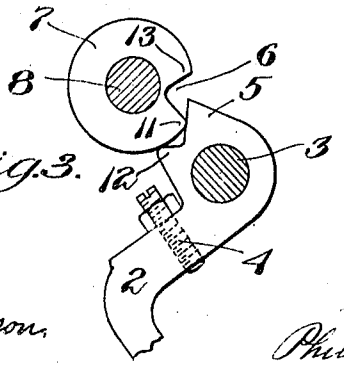

Fig. 3.

Witnesses

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BOBBIN-HOLDING DEVICE FOR LOCK-STITCH SEWING-MACHINES.

1,048,565. Specification of Letters Patent. **Patented Dec. 31, 1912.**

Application filed August 16, 1905. Serial No. 274,356.

To all whom it may concern:

Be it known that I, WILLIAM C. MEYER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Bobbin-Holding Devices for Lock-Stitch Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to an improvement in bobbin holders for lock stitch sewing machines.

In the Goodyear "Rapid" stitcher, which is illustrated with substantial accuracy in the patent to French and Meyer, No. 473,870, the bobbin case, or bobbin, as the bobbin and bobbin case are generally referred to, is placed loosely in the oscillating shuttle and held there during the operation of the machine by a bobbin holding arm which engages the face of the bobbin and prevents its displacement. For convenience in removing and replacing the bobbin the bobbin holding arm is pivoted to a bolt supported in a bracket projected from the side of the shuttle race. By tightening the nut on the bolt the bobbin holding arm is frictionally held in place. A leather washer under the nut is relied upon to create the necessary friction to hold the bobbin arm from displacement in the operation of the machine. The construction constitutes an embodiment of the invention described in the patent to French and Meyer, No. 424,966, from the illustrated embodiment of which, however, it differs in that the bolt is extended upward through the arm and the bracket on the frame and the nut on the upper end is provided with a handle. The nut and bolt are threaded left-hand, so that in turning the handle to loosen the nut, after the nut has become slightly loosened, the friction between the parts is sufficient to enable the operator by the continued turning of the handle to open the bobbin holding arm, thus swinging it away from the bobbin so that the bobbin may be removed from the shuttle. These means for operating the bobbin holding arm to open and close it and to hold it closed have been found ineffective owing to the fact that the operation of the bobbin holding arm and the holding of it in place depended upon friction between the parts, and much difficulty has been experienced with this device in the use of the "Rapid stitcher" owing to these facts.

The objects of the present invention are to reorganize and improve the construction and operation of bobbin holding means in order to secure positively acting mechanism for opening and closing the bobbin holding arm and for positively holding said arm in closed position.

To the above ends the present invention consists in the devices and combinations of devices hereinafter described and particularly defined in the claims.

In the accompanying drawings illustrating the preferred form of the invention Figure 1 is a front elevation of the shuttle race and bobbin holding means. Fig. 2 is a plan of the same, the parts being shown as adapted to be incorporated in the machine of said Patent No. 473,870, to which for a description of the parts not hereinafter mentioned, reference may be had, and Fig. 3 is a plan of a portion of the bobbin holding arm and its operating means.

The shuttle race 1, adapted to receive the shuttle and within the shuttle the bobbin, is substantially the same as in said patented machine. The bobbin holding arm 2 is pivotally mounted upon the bolt 3 which is secured in a projection from the shuttle race. A stop screw 4 provided with a set nut is screwed through a threaded aperture in the bobbin holding arm and is adapted to engage the periphery of the shuttle race and to limit the movement of the bobbin holding arm toward the bobbin so as to allow sufficient clearance between the bobbin and bobbin holding arm to permit the free movement of the bobbin and the passage of the thread between the parts.

Means are provided for opening and closing the bobbin holding arm and for locking it in its closed position. To this end the bobbin holding arm is provided with a tooth or projection 5 which is adapted to enter a notch 6 in the cam 7 which is secured to the hand wheel shaft 8. The hand wheel shaft 8 is carried in a bracket 9 supported from the head of the machine and carries upon its upper end the hand wheel 10 which is also secured thereto. This con-

struction is such that when the hand wheel 10 is turned to the left the shoulder 11 of the cam 7 engages the projection 5 of the bobbin holding arm 2 and swings the bobbin holding arm from the position shown in Fig. 2 to the position shown in Fig. 3. A stop 12 upon the bobbin holding arm limits this opening movement of the bobbin holding arm. The peripheral surface of the cam 7 is spiral in shape, the shoulder 13 being somewhat nearer the center of the hand wheel shaft 8 than the shoulder 11. When it is desired to close the bobbin holding arm or to turn it from the position in which it is shown in Fig. 3 to the position in which it is shown in Fig. 2, the hand wheel 10 is turned to the right whereupon the shoulder 13 strikes the projection 5 and thereby turns the bobbin holding arm about the bolt 3 into the operative or closed position. The spiral peripheral surface of the cam 7 acts as a wedge to force the projection 5 in the direction to move the bobbin holding arm toward the bobbin until it brings the stop 4 against the periphery of the shuttle race. Therefore after the bobbin holding arm has been swung into the position shown in Fig. 2 it locks the bobbin holding arm against opening, holding it positively in operative position. It will be observed that in this construction the mechanism for operating the bobbin holder operates positively (simply as distinguished from frictionally) to move the bobbin holding arm to open and close the same.

It is not intended in this application to claim broadly the combination with a bobbin of a bobbin holding arm mounted to swing toward and from the bobbin and a latch to engage and positively hold the bobbin holding arm in operative position, as that construction forms the subject-matter of the copending application of Joseph E. Thayer, filed February 15, 1905, Serial No. 245,697, to which by permission reference is had.

It is to be understood that while in the claims a bobbin is referred to as the device which is adapted to be held in place by the bobbin holding arm, the invention is not limited to the use of a bobbin as it is within the contemplation of the invention to apply the construction to sewing machines in which the entire shuttle is held in position by a holder.

Having thus described the invention what is claimed is:—

1. A lock-stitch sewing machine, having, in combination, a bobbin, a bobbin holding arm movable from closed to open position and provided with a projection and means for moving the bobbin holding arm comprising a notched spiral faced cam the shoulders of the notch operating by engagement with the projection to move the bobbin holding arm, and the spiral face operating to lock the bobbin holding arm in position, substantially as described.

2. A lock-stitch sewing machine having, in combination, a pivotally-mounted bobbin-holding arm for holding the bobbin in place, a manually operable rotatable device for swinging the arm into and out of operative position about its pivotal support, and connections between the arm and the rotatable device arranged and constructed to lock the arm in operative position, substantially as described.

3. A lock stitch sewing machine, having, in combination, a bobbin, a normally stationary bobbin holding arm movable from closed to open position for holding the bobbin in place, and mechanism including a normally stationary cam engaging the bobbin holding arm for moving the arm.

4. A lock stitch sewing machine, having, in combination, a bobbin, a normally stationary bobbin holding arm movable from open to closed position for holding the bobbin in place, and mechanism including a normally stationary actuating and locking cam engaging the bobbin holding arm and arranged to move the bobbin holding arm and lock it in closed position.

5. A lock stitch sewing machine, having, in combination, a bobbin, a normally stationary bobbin holding arm for holding the bobbin in place, and mechanism for moving the arm toward and from its closed position including a normally stationary cam engaging the arm and acting to lock the arm in closed position.

6. A lockstitch sewing machine, having, in combination, a bobbin, a pivotally mounted bobbin-holding arm, a rotary shaft extending transversely of the plane of movement of the arm, and a normally stationary cam carried by the shaft arranged to engage the arm on the opposite side of the pivot from the bobbin and lock the arm in closed position.

7. A lockstitch sewing machine, having, in combination, a bobbin, a pivotally mounted bobbin-holding arm, and a normally stationary movable cam arranged to engage the arm on the opposite side of the pivot from the bobbin and lock the arm in closed position.

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

WILLIAM C. MEYER.

Witnesses:
HORACE VAN EVEREN,
ALFRED H. HILDRETH.