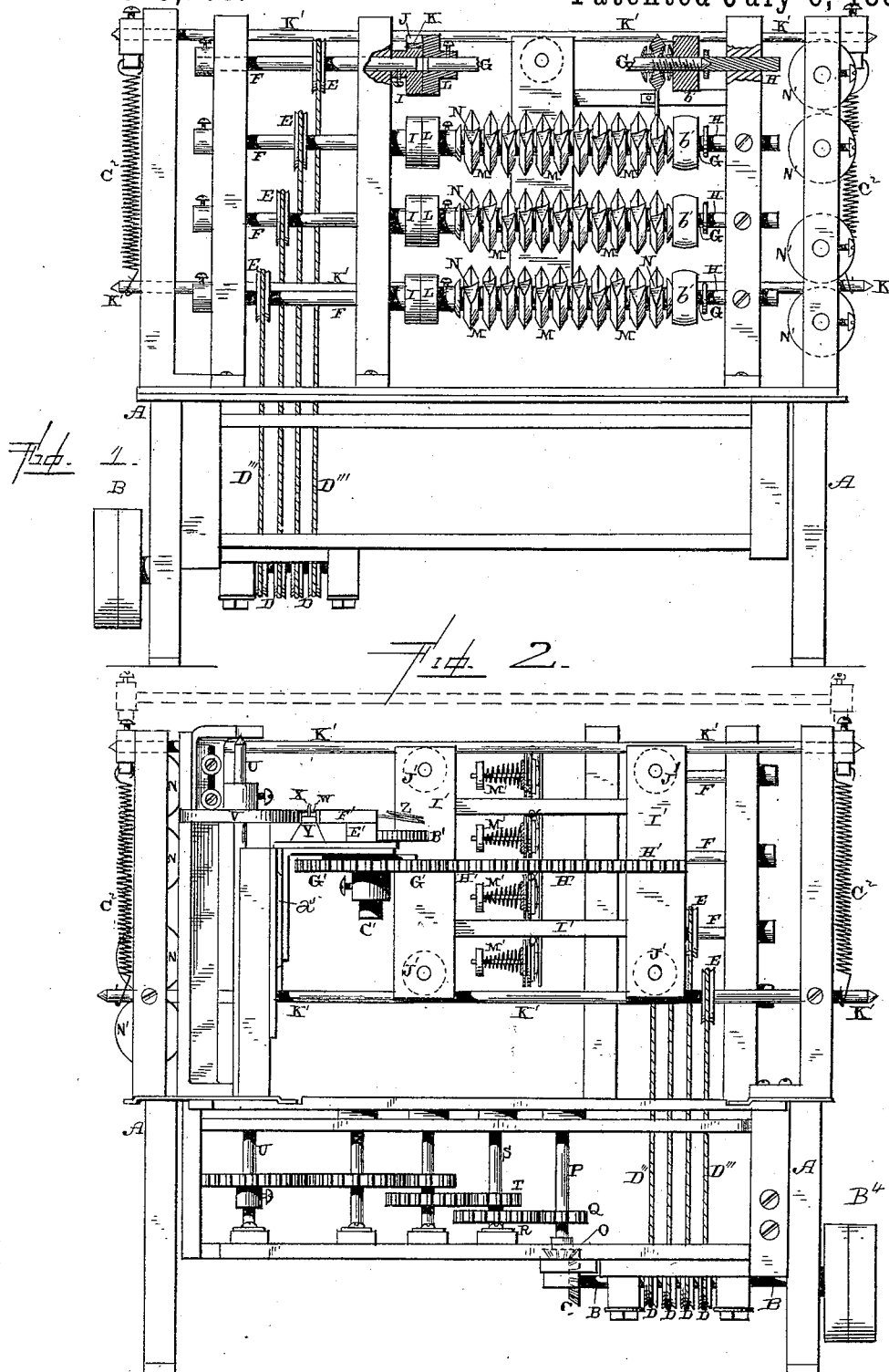


H. A. BEHN.

MACHINE FOR WINDING SEWING MACHINE SHUTTLE BOBBINS.

No. 345,208.

Patented July 6, 1886.



Witnesses.
L. J. Gardner
A. W. Brecht

Inventor.
H. A. Behn,
per P. A. Lehmann, atty.

(No Model.)

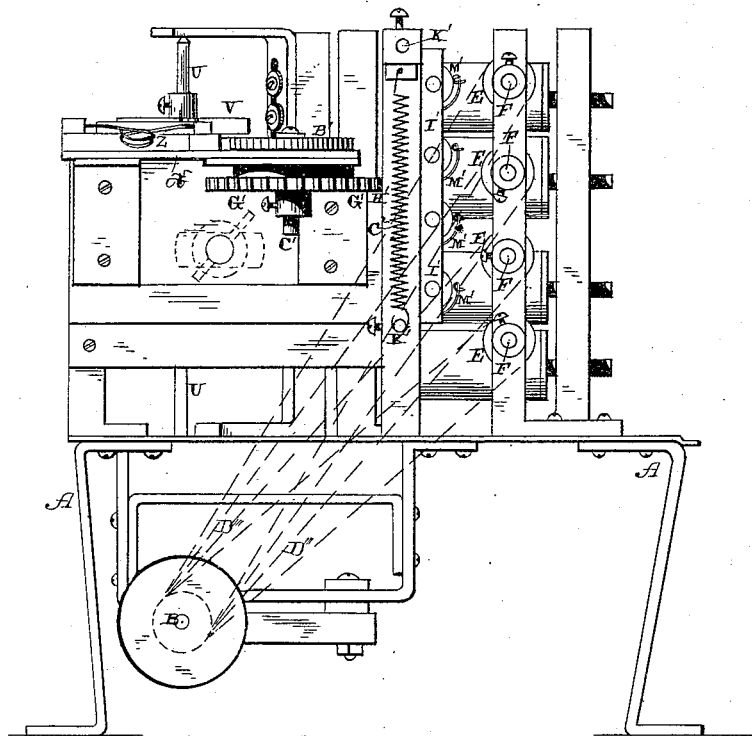
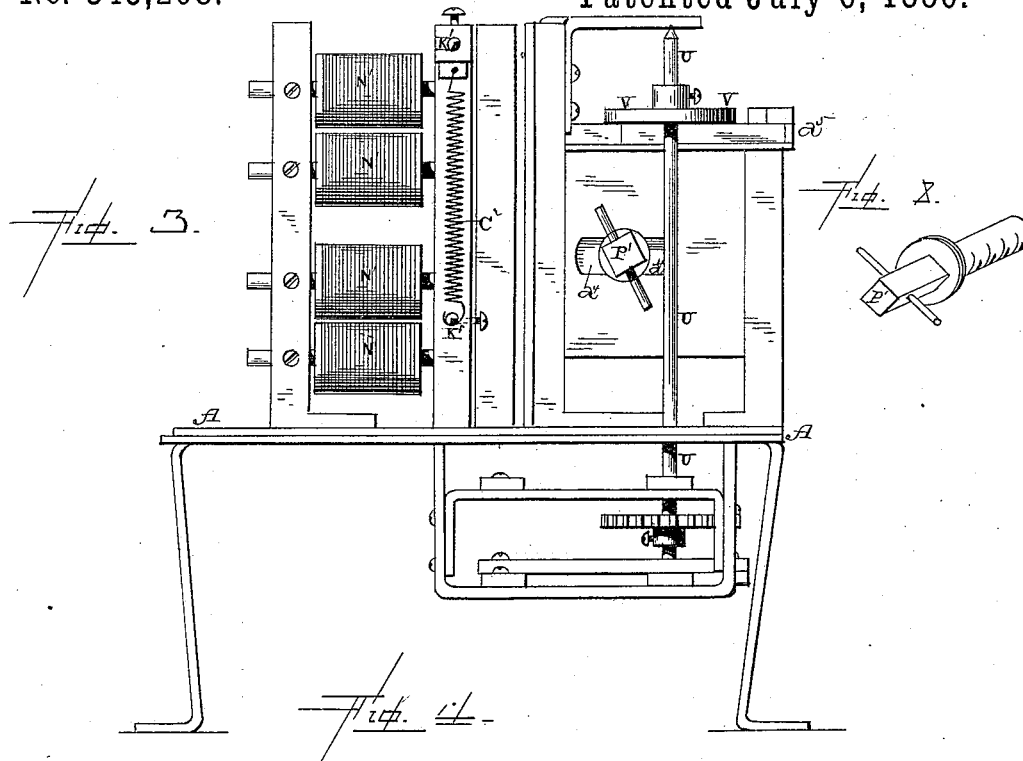
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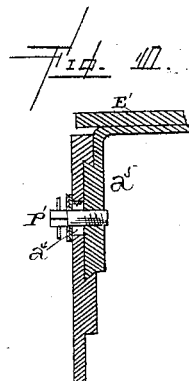
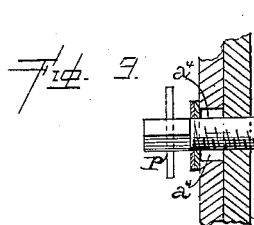
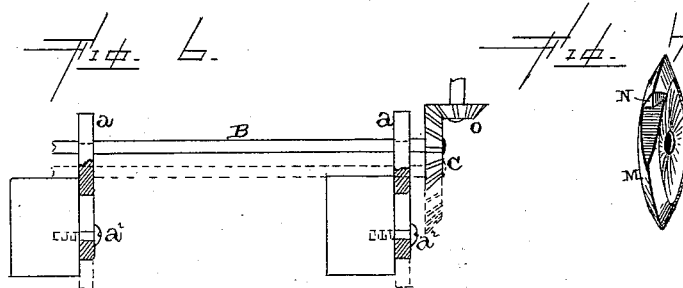
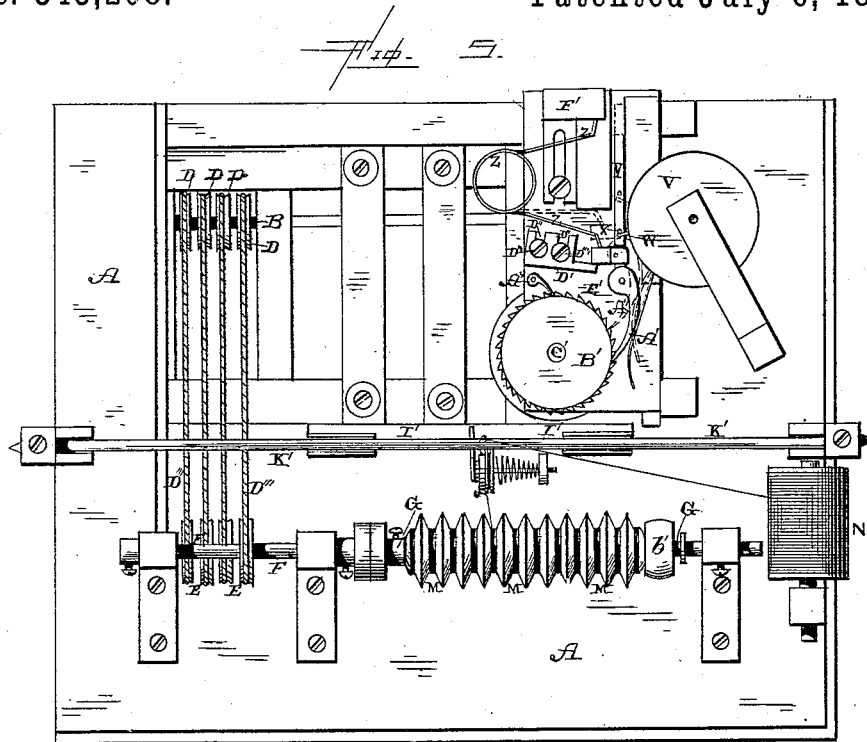
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UNITED STATES PATENT OFFICE.

HENRY A. BEHN, OF UNION HILL, NEW JERSEY.

MACHINE FOR WINDING SEWING-MACHINE-SHUTTLE BOBBINS.

SPECIFICATION forming part of Letters Patent No. 345,208, dated July 6, 1886.

Application filed April 2, 1886. Serial No. 197,578. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. BEHN, of Union Hill, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Machines for Winding Sewing-Machine-Shuttle Bobbins; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to machines for winding sewing-machine-shuttle bobbins; and it consists in, first, the combination with the revolving shafts and a driving mechanism for causing them to revolve, with the bobbins placed thereon, of the disks, provided with hooks and placed between the bobbins; second, a disk having recessed sides, so as to correspond to the shapes of the bobbins, and provided with a hook for the purpose of transferring the thread from one bobbin to the other; third, the combination of the shafts upon which the bobbins are placed, a mechanism for driving them, the disks placed between the bobbins, a sliding carriage which guides and moves the threads from one bobbin to another, and mechanism, substantially as described, for shifting the carriage and moving the threads as fast as the bobbins are filled; fourth, the combination of the driving-shaft, provided with pulleys, the shafts for revolving the bobbins and which are provided with pulleys, the belts for driving the shafts, the shafts on which the bobbins are placed, the hooked disks, the sliding carriage, and mechanism for moving the carriage; fifth, the combination of the driving-shaft, a train of reducing-wheels, the vertical shaft having a wheel with an arm secured to its upper end, the spring-actuated slide carrying a dog, the ratchet-wheel, a spur-wheel, the carriage, the tension devices for holding the threads, the bobbin-shafts, operating mechanism for causing the bobbin-shafts to revolve, and the disks; sixth, in a bobbin-winding machine, the combination of the shafts upon which the bobbins are placed, with the disks which separate the bobbins, and which are provided with hooks and V-shaped edges,

all of which will be more fully described hereinafter.

The object of my invention is to produce a bobbin-winding machine in which any desired number of bobbins are placed upon the same or different shafts, and in which the bobbins are successively filled, and the threads automatically shifted to other bobbins as fast as the bobbins are filled, and which will require no care or attention upon the part of the operator, except when the bobbins have all been filled, when the machine will have to be stopped for the purpose of removing the shafts upon which the filled bobbins are placed, in order to replace them with empty ones.

Figures 1 and 2 are side elevations taken from opposite sides of a machine embodying my invention, Fig. 1 being partly in section. Figs. 3 and 4 are end views. Fig. 5 is a plan view. Figs. 6, 7, and 8 are detail views. Fig. 9 is a detail view showing the clamp, and Fig. 10 is an enlarged detail view of the supporting device or table and clamp.

A represents a suitable frame-work of any desired construction, and in which the main driving shaft B is journaled. This shaft is provided at its outer end with tight and loose pulleys B¹, in the usual manner, so that the belt can be shifted and the machine instantly stopped, whenever so desired. The boxes a, in which this shaft is journaled, are made vertically adjustable, so that the shaft can be moved at any time in order to enable a larger or a smaller wheel or gear, C, to be placed upon its inner end. As shown in Fig. 6, both boxes a are slotted near their lower ends, and through these slots are passed screws or bolts, a², which hold the boxes in any position in which they have been adjusted. This change in gears is made for the purpose of varying the number of revolutions which the main shaft shall make before the shifting mechanism is made to move for the purpose of transferring the threads to other bobbins. By this construction larger or smaller sewing-machine bobbins can be filled, as may be desired. It is the intention to give this main driving-shaft, for instance, six hundred revolutions before the shifting mechanism is moved, to fill one size of bobbins; but if a larger or smaller bob-

bin is substituted, the time at which the shifting mechanism must be moved is varied according to the size of the bobbins which are to be filled. Upon this main driving-shaft B are placed a number of tight pulleys, D, from which extend belts D'', which pass around corresponding pulleys, E, upon the shafts F, which drive the bobbin-holding shafts G. The bobbin-holding shafts G are supported at one end by suitable adjustable boxes or supports, H, and are connected to the shafts F by means of suitable connecting devices. In the present instance there is placed a disk, I, upon the end of the shaft F, and this disk is provided with a hole at its center to receive the end of the bobbin-holding shaft, and a slot, J, in its periphery to receive a corresponding projection, K, upon a corresponding disk, L, upon the bobbin-holding shaft. When the shaft F is made to revolve by the driving belts and pulleys, the shaft-holding bobbin is made to revolve at the same time. There may be any desired number of these driving shafts F and bobbin-holding shafts G, according to the number of bobbins which are to be filled.

Upon each bobbin-holding shaft G are loosely placed a suitable number of bobbins of any description, and in between every pair of bobbins is loosely placed a disk, M, having concaved sides, so as to correspond to the shapes of the bobbins, and each disk M is provided with a hook, N, and V-shaped edges, as shown. These hooks N are cut away at a suitable angle upon one side for the purpose of more perfectly guiding the thread toward the next succeeding bobbin after one of the bobbins has been filled. These hooks, as soon as the shifting mechanism moves the threads at an angle, which is done as soon as the bobbins being wound are filled, catch the threads and shift them over toward the next bobbins. After each one of the bobbins on all of the different holding-bobbin shafts have been filled the belt is shifted from the tight to the loose pulley upon the driving-shaft, so as to stop the machine, and then the different shafts G are removed, the filled bobbins taken off, and empty ones put in their places, each pair of empty bobbins being separated, of course, by the hooked disks, as above described. The bobbins and disks are clamped together on their shafts by the nuts b', and are thus caused to revolve with their shafts by frictional contact alone.

Gearing with the wheel or gear C, on the inner end of the main driving-shaft, is a wheel, O, upon the lower end of the shaft P, which has the gear Q also secured to it. This gear Q meshes with a larger wheel, R, placed upon the shaft S, which is provided with a smaller wheel, T, for engaging with a larger wheel upon another shaft. There will be any desired number of shafts provided with wheels, which are of different sizes, for the purpose of decreasing the speed from the main shaft. The object in using a decreasing mechanism is to impart to the shaft U about one revolution to

every six hundred revolutions of the main driving-shaft B. I do not limit myself to the particular decreasing mechanism which is here shown, for any other equivalent mechanism that will answer the same purpose may be used. The object of giving such a relatively-slow movement to the shaft U is to only operate the shifting mechanism when the bobbins have been filled.

Upon the shaft U is secured a wheel, V, which carries a projection or pin, W, which engages with a corresponding projection, X, upon the slide Y at every revolution of the wheel V, for the purpose of moving the slide endwise. Connected to this slide is a suitable spring, Z, which returns the slide to position as soon as it is free to move. Connected to the inner end of this slide Y is a spring-actuated dog, A', which engages with the ratchet-wheel B', placed upon a short shaft, C'. A second dog, A'', or friction-brake of any kind, is used in connection with the ratchet-wheel B' for the purpose of preventing any backward movement as the slide Y is being drawn backward. Each time that the slide is moved endwise by the wheel V the dog causes the ratchet-wheel to move partially around. In order to regulate the distance that this ratchet-wheel B' shall be moved, a regulating-stop, D', is placed upon the support E', upon which the slide and dog move. When it is desired that the ratchet-wheel B' shall be turned one, two, or more teeth, this regulating-stop, which is provided with slots D'' and held in position by set-screws D''', is moved accordingly. In order to increase or decrease the tension of the spring Z, a corresponding slotted stop, F', is also used. This stop F', by being moved inward, increases the tension of the spring, and by being moved outward decreases it. By means of the stop for regulating the movement of the slide Y, the distance that the shifting mechanism is moved is regulated.

Placed upon the shaft C' is a spur-wheel, G', which engages with the rack H' upon the carriage I'. This carriage I' is provided with suitable friction-rollers, J', which move upon the two guides K'. The upper one of these guides K' is secured to the lower one by means of the two springs c'', as shown, so as to allow the guide to move vertically, and thus give in case the carriage encounters any obstruction, and at the same time the movable guide acts as a brake upon the carriage to prevent it from moving too readily. If the guides K' are made stationary, they are liable to hold the carriage too tightly, and if one of the guides is made simply adjustable vertically without being made to exert any pressure upon the carriage, then the carriage is liable to move further than is necessary or desirable. This carriage is provided with a number of tension mechanisms, M', of any suitable construction, according to the number of bobbin-shafts which are used. The spools N' from which the bobbins are to be filled are placed upon suitable holding devices, and then the

thread is passed from these spools through the tension devices upon the carriage to the bobbins. When the first bobbins upon the shaft G are being filled, the carriage is moved inwardly as far as possible toward the spools; but as the bobbins are gradually filled the carriage is moved endwise by means of the spur-wheel upon the shaft C'. When the carriage has been moved its full distance, the bobbins upon the shafts G have all been filled, and the machine is stopped by shifting the belt from the tight to the loose pulley. Then the clamp P', connected to the supporting device E', upon which the slide, dog, wheels, and shaft C' are placed is loosened, and then the spur-wheel upon the shaft C' is moved back out of contact with the rack upon the carriage, and then the carriage can be moved freely back into position.

20 The clamp P' consists of a simple bolt which passes through the slot a^4 in the frame into the bracket a^5 of the sliding frame E', and thus holds it in position.

The supporting device E' consists of a sliding table having a bracket, a^5 , which is dovetailed in the frame, and which can be moved horizontally by hand, for the purpose of moving the wheel G' in and out of gear with the rack H'. After the wheel has been moved in gear the supporting device or table is locked in place by the clamp P'.

Having thus described my invention, I claim—

35 1. The combination, with the revolving shafts and a driving mechanism for causing them to revolve with the bobbins placed thereon, of the disks provided with hooks and placed between the bobbins, substantially as described.

40 2. The disk M, having recessed sides so as to correspond to the shapes of the bobbins, and provided with the hook N, for the purpose

of transferring the thread from one bobbin to the other, substantially as set forth.

3. The combination of the shafts upon which the bobbins are placed, a mechanism for driving them, the disks placed between the bobbins, a sliding carriage which guides and moves the threads from one bobbin to another, and mechanism, substantially as described, for shifting the carriage and moving the threads as fast as the bobbins are filled, substantially as specified.

4. The combination of the driving-shaft provided with pulleys, the shafts F, provided with pulleys E, the belts for driving the shafts F, the shafts G, means whereby shafts G are connected to the shafts F, the hooked disks, the sliding carriage, and mechanism, substantially as described, for moving the carriage as the bobbins become filled, substantially as shown.

5. The combination of the driving-shaft, a train of reducing-wheels, the shaft U, the wheel V, provided with an arm for moving the slide, the spring-actuated slide carrying a dog, the ratchet-wheel, a spur-wheel, the carriage which is moved by the spur-wheel, the tension devices for holding the threads, the shafts G, and operating mechanism for causing the shafts to revolve, and the disks, substantially as described.

6. In a bobbin-winding machine, the combination of the shafts upon which the bobbins are placed with the disks which separate the bobbins, and which are provided with hooks and V-shaped edges, substantially as shown and described.

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

H. A. BEHN.

Witnesses:

B. LEWIS BLACKFORD,

F. A. LEHMANN.