No. 610,340. Patented Sept. 6, 1898.

R. ATHERTON.

WEFT THREAD WINDING AND QUILLING MACHINE.

(Application filed May 11, 1898.)

(No Model.)

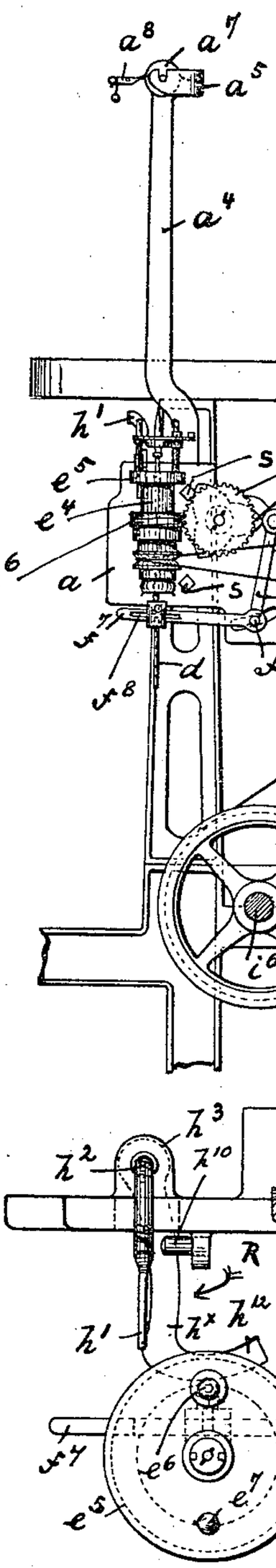

Fig. 1.

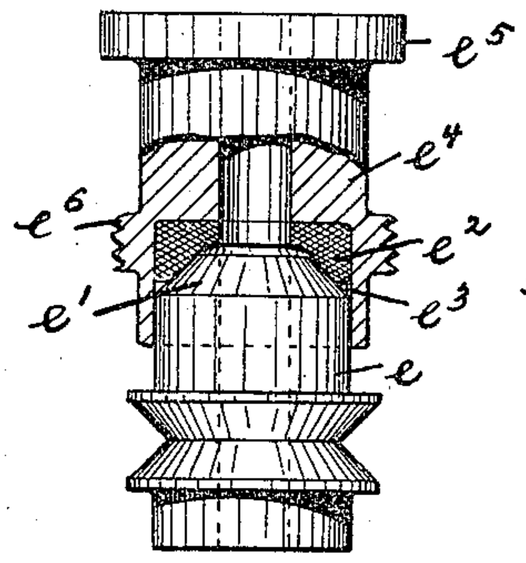

Fig. 4.

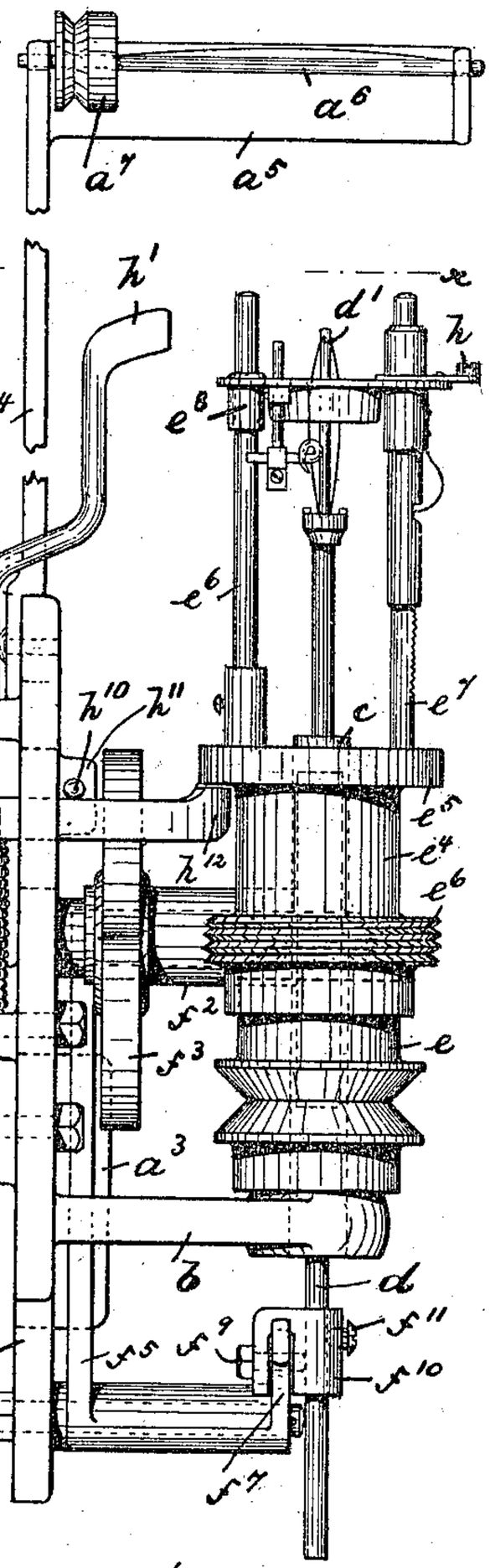

Fig. 2.

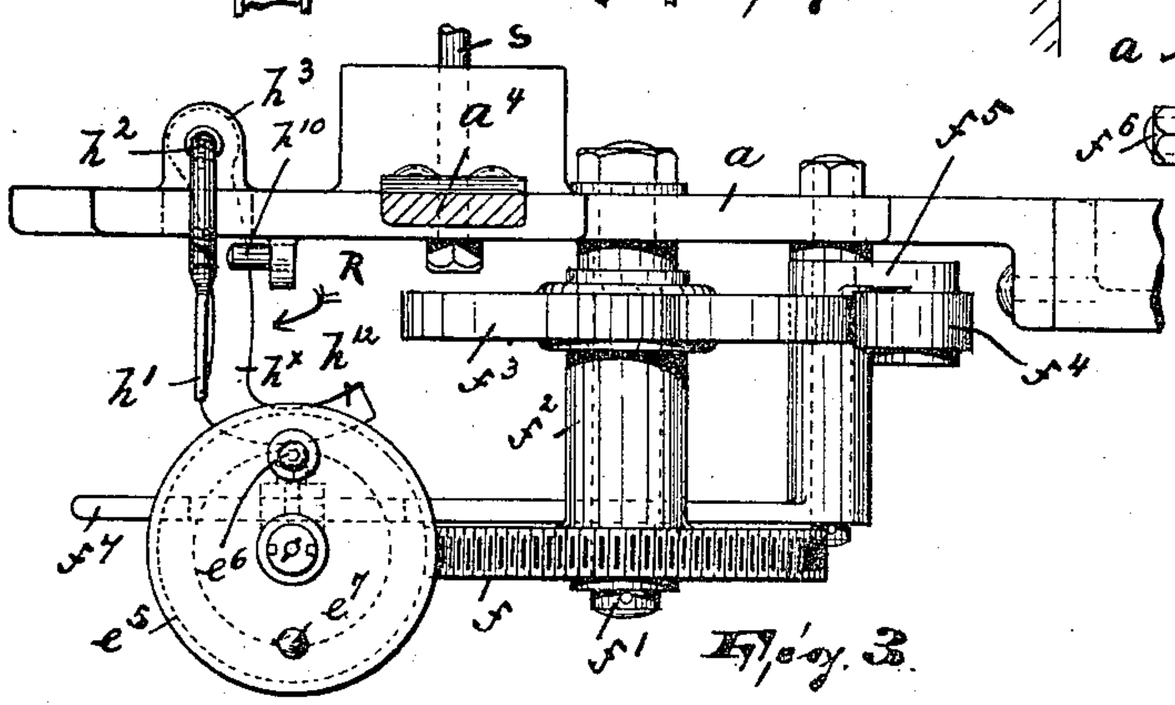

Fig. 3.

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ROBERT ATHERTON, OF PATERSON, NEW JERSEY.

WEFT-THREAD-WINDING AND QUILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 610,340, dated September 6, 1898.

Application filed May 11, 1898. Serial No. 680,359. (No model.)

To all whom it may concern:

Be it known that I, ROBERT ATHERTON, a citizen of the United States, residing in Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Weft-Thread-Winding and Quilling 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in quilling or weft-thread-winding machines; and its object is to provide a so-called "individual" quiller of simple, strong, and durable construction, reliable and efficient in operation, and capable of being readily attached to and detached from the frames of looms of different make and construction.

A further object of the invention is to provide said quiller with an automatic stop-motion by means of which the said quiller is thrown out of operation when the cop or quill is filled without stopping the motion of the loom to which it is attached.

The invention consists in the improved quiller, in the thread-guide-carrier operating and controlling mechanism, and in the combination and arrangement of the various parts, substantially as will be hereinafter more fully described, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is a front elevation of my improved quiller and its supporting-frame attached to a portion of a loom-frame, and also showing the means for transmitting motion from the loom to the quiller; Fig. 2, an enlarged side elevation of the quiller and of its supporting-frame; Fig. 3, a sectional view on the line $x\,x$ of Fig. 2, the thread-guide carrier being removed; and Fig. 4, a detail view, partly in section, of a portion of the thread-guide-carrier supporting and operating mechanism.

In said drawings, a represents the frame of the quiller, having a forwardly-projecting arm b, supporting the hollow vertical shaft c, which latter is penetrated by the spindle d, adapted to receive at its upper portion d' a cop or quill in the usual and well-known manner.

On the stationary shaft c is revolubly mounted a sleeve-whirl e, having its upper portion preferably conical-shaped, as at e', and bearing against a washer e^2, of leather, fiber, or any other suitable non-metallic substance. The said washer e^2 is inserted and secured within the cylindrical chamber e^3, arranged in the lower portion of a sleeve e^4, also revolubly mounted on the shaft c and provided at its top portion with a circular disk e^5, carrying the upwardly-projecting rods e^6 e^7, which latter support the thread-guide carrier e^8 in the usual and well-known manner, reference being made to United States Letters Patent No. 596,794.

On the sleeve e^4 is arranged a worm e^6, normally meshing with a gear-wheel f, revolubly mounted on the horizontal stub-shaft f', which latter is secured to and projects from the frame a, as clearly illustrated in Figs. 2 and 3 of the drawings.

On the hub f^2 of the gear-wheel f is securely mounted a three-point cam f^3, adapted to operate an antifriction-roller f^4, arranged at the free end of one arm of the angle-lever f^5, having an adjustable fulcrum f^6 in the frame a and provided in its other arm f^7 with an elongated slot f^8, which is penetrated by a pin or bolt f^9, carried by the slotted block f^{10}, which latter is adjustably arranged, by means of a set-screw f^{11}, on the downwardly-projecting portion of the spindle d.

The projecting lug or hammer h of the thread-guide carrier e^8 is adapted to engage, when the cop or quill is filled, the substantially horizontal portion h' of a crank-shaft h^2, slidingly and revolubly mounted in lugs h^3 and h^4, projecting horizontally from the rear of the frame a.

On the crank-shaft h^2 is adjustably secured, by means of a set-screw h^0, a horizontal arm $h^\times$, penetrating an opening in the frame a and extending with its free end below the circular disk e^5 of the worm-carrying sleeve e^4. When in normal position, said arm bears against the under side of a pin or stop h^{10}, projecting from a lug h^{11} on the frame a, but is adapted to clear said pin whenever the

crank-shaft h^2 is operated, as hereinafter described.

It must be remarked that the free end of the arm $h^\times$ is curved eccentric to its fulcrum, (crank-shaft h^2,) so that when the arm $h^\times$ is thrown out of engagement with the pin h^{10} the said eccentric or curved portion h^{12} bears against the outer periphery of the sleeve e^4 and creates sufficient friction to almost instantly stop the rotation of said sleeve and accordingly of the thread-guide carrier.

A spiral spring h^{13}, normally under compression, is arranged on the crank-shaft h^2 and bears with one end against the lug h^4 and with its other end against the said horizontal arm $h^\times$, thereby keeping said arm in contact or engagement with the projecting pin h^{10}.

The sleeve-whirl e is operated through the endless belt i, passing over the grooved pulley i', mounted on an auxiliary shaft i^2, secured to a horizontal bracket a^3, projecting from the frame a. With the grooved pulley i' is connected a smaller grooved pulley i^3, operated through the endless belt i^4, passing over a grooved pulley i^5, which latter is secured on a revolving shaft i^6 in the loom A.

To the upwardly-projecting bracket a^4 of the frame a is secured an auxiliary bracket a^5, furnishing bearings for a horizontal spindle a^6, adapted to receive the weft-thread-delivery bobbin in the usual manner, and is provided with a grooved pulley a^7, in frictional contact with the weighted fulcrumed lever a^8, substantially in a manner described in the pending application, Serial No. 676,720, of April 7, 1898.

The frame a is secured to the loom-frame by two or more bolts $s\,s$, as illustrated in Figs. 1, 2, and 3 of the drawings; but it will be manifest that other means can be used for the above purpose.

In operation when the cop or quill is filled and accordingly the lug or hammer h has been moved, together with the thread-guide carrier e^8, into the plane of the substantially horizontal projection h' of the crank-shaft h^2 the said projection h' is engaged by said lug or hammer h and moved in the direction of the arrow R, Fig. 3, whereby the horizontal arm $h^\times$, carried by said crank-shaft, is moved out of engagement with the pin h^{10} and is forced upward, together with the crank-shaft h^2, by action of the spiral spring h^{13}. While the said arm $h^\times$ is moved out of engagement with the pin h^{10} its curved or eccentric portion h^{12} is thrown into engagement with the sleeve e^4, while its top surface engages the under side of the disk e^5 and moves the latter, together with the sleeve e^4, upward and out of frictional contact with the sleeve-whirl e. The sleeve e^4, disk e^5, and thread-guiding means e^8 are thus almost instantly stopped, while the sleeve-whirl e continues to revolve.

After a new cop or quill has been placed on the spindle d the crank-shaft h^2 is returned to its normal position, as will be manifest.

To insure a good frictional contact between the disk-carrying sleeve e^4 and sleeve-whirl e, the teeth on the gear f and the thread on the worm e^6 are cut left-handed, thus exerting a downward pressure upon the said worm and accordingly on the sleeve e^4.

The raising and lowering of the spindle d is accomplished by the fulcrumed angle-lever f^5, which in turn is operated by the three-point cam f^3, as will be manifest.

I do not intend to limit myself to the precise construction as shown and described, as various alterations can be made without changing the scope of my invention; but

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

1. The combination with the frame, of a vertical stationary shaft mounted on said frame, the vertically-reciprocating cop or quill carrying spindle penetrating said shaft, a sleeve-whirl revolubly mounted on said shaft, the thread-guide-carrier-supporting disk also revolubly mounted on said shaft and in frictional contact with the sleeve-whirl, a spring-controlled crank-shaft supported by the frame and vertically movable thereon, an arm projecting from said crank-shaft and extending below the thread-guide-carrier-supporting disk, a pin for holding said projecting arm and the crank-shaft in normal position, and means connected with the thread-guide carrier for operating the crank-shaft, substantially as and for the purposes described.

2. The combination with the frame, of a vertical stationary shaft supported by said frame, the vertically-reciprocating cop or quill carrying spindle penetrating said shaft, a sleeve-whirl revolubly mounted on said shaft, a thread-guide-carrier-supporting disk also revolubly mounted on the shaft and in frictional contact with the sleeve-whirl, a spring-controlled crank-shaft revolubly mounted on the frame and vertically movable thereon, an arm projecting from said crank-shaft and extending below the thread-guide-carrier-supporting disk, means carried by the frame for holding said crank-shaft and projecting arm in normal position against the action of the spiral spring, means connected with the thread-guide carrier for operating the crank-shaft, and means for reciprocating the cop or quill carrying spindle, substantially as and for the purposes described.

3. The combination with the frame, of a vertical stationary shaft mounted on said frame, the vertically-reciprocating cop or quill carrying spindle penetrating said shaft, a sleeve-whirl revolubly mounted on the shaft, a sleeve also revolubly mounted on said shaft and in frictional contact with the sleeve-whirl and provided with the thread-guide-carrier-supporting disk, a spring-controlled crank-shaft revolubly mounted on the frame and vertically movable thereon, an arm projecting from the crank-shaft and having its curved or eccentric free end in close proxim-

ity to the sleeve and the thread-guide-carrier-supporting disk, a pin projecting from the frame for holding said arm and crank-shaft in normal position, and means connected with the thread-guide carrier for operating said crank-shaft, substantially as and for the purposes described.

4. The combination with the stationary vertical shaft and with the vertically-reciprocating cop or quill carrying spindle penetrating said shaft, of a sleeve-whirl revolubly mounted on the shaft, a sleeve also revolubly mounted on said shaft and provided in its lower portion with a cylindrical chamber, a non-metallic bushing secured within said cylindrical chamber and normally in frictional contact with the sleeve-whirl, the thread-guide carrier supported by the sleeve, and means controlled by the thread-guide carrier for throwing said sleeve and its bushing out of frictional contact with the sleeve-whirl, substantially as and for the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand this 4th day of May, 1898.

ROBERT ATHERTON.

Witnesses:
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WM. D. BELL.