(No Model.)

L. W. HUYCK.

SPINDLE ATTACHMENT.

No. 503,240. Patented Aug. 15, 1893.

Fig. 1

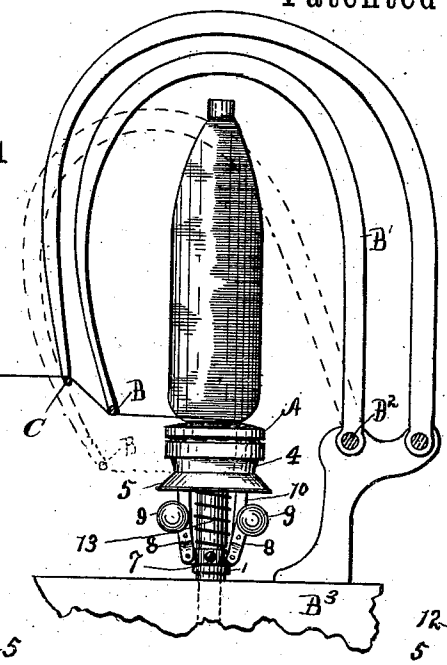


Fig. 2.

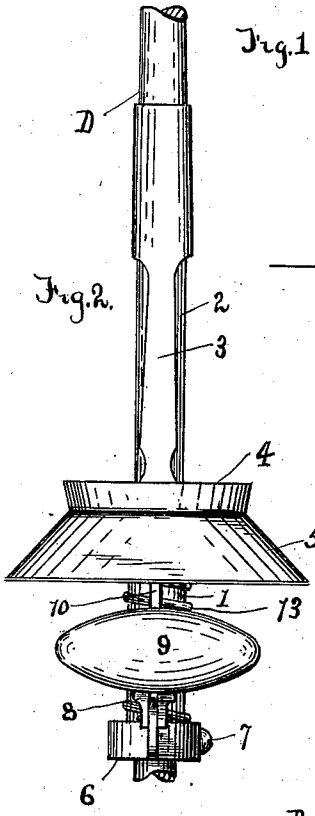


Fig. 3.

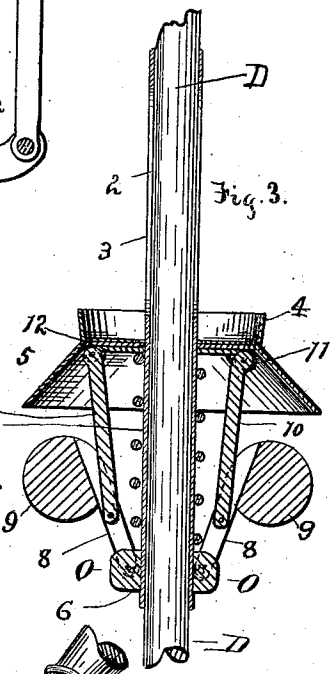


Fig. 4.

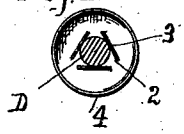


Fig. 5.

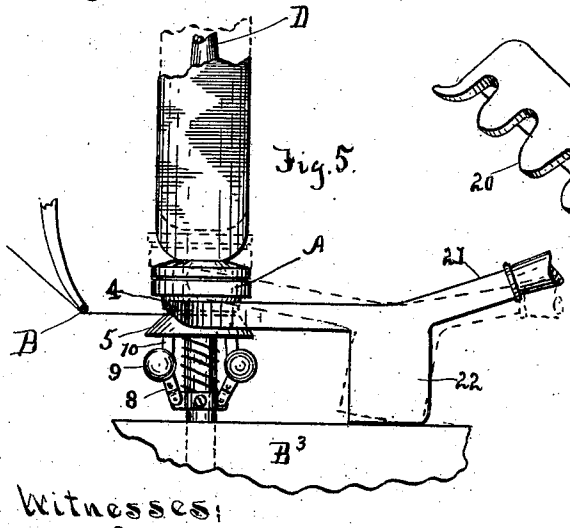
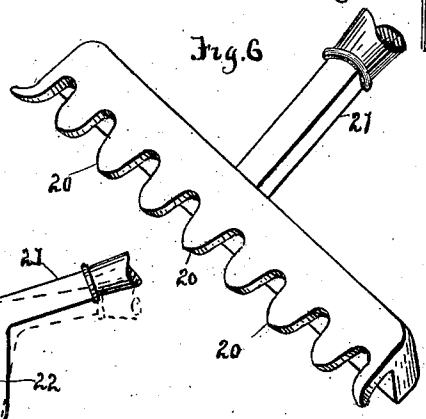


Fig. 6



Witnesses:
H. E. Wates
A. Kelly

Inventor,
Leonard W. Huyck
By Church & Church
his Attys.

UNITED STATES PATENT OFFICE.

LEONARD W. HUYCK, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-HALF TO ETHAN ALLEN, OF SAME PLACE.

SPINDLE ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 503,240, dated August 15, 1893.

Application filed January 21, 1893. Serial No. 459,188. (No model.)

To all whom it may concern:

Be it known that I, LEONARD W. HUYCK, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Spindle Attachments; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals and letters of reference marked thereon.

My present invention has for its object to improve the construction and operation of that class of spindle attachments described in my prior patent, No. 471,976, dated March 29, 1892, in which not only is a packing provided for the bobbin for securing it tightly to the spindle, but a device for holding the end of the yarn, when the full bobbin is removed, and it consists, in part, of means for causing the removal of the end of the yarn from between the gripping jaws of the yarn-holding device and it further consists in certain novelties in construction and combinations of of parts, all as will be hereinafter fully described and the novel features pointed out particularly in the claims at the end of this specification.

In the accompanying drawings: Figure is a side elevation of a spindle and a part of the carriage of a mule showing the application of my invention thereto. Fig. 2 is a side elevation of the attachment; Fig. 3, a longitudinal section; Fig. 4, a cross-section; Fig. 5, a side elevation showing the manner of opening the jaws of the yarn-holder and removing the bobbin; Fig. 6, a view of a convenient tool for co-operating with the attachment.

Similar reference numerals and letters of reference in the several figures indicate similar parts.

My present invention resembles the one contained in my prior patent in embodying, preferably in a single structure, a bobbin packing consisting of metallic fingers, adapted to grasp the interior of the bobbin, preferably, substantially as shown in my prior patent and in Fig. 4, and separable jaws between which the yarn is held, as shown, and the bobbin packing consists in the present structure of a sleeve or tubular portion 1 constructed of a single piece of sheet metal with its upper portion slitted at 2, 2, forming a series of tongues or fingers 3 connected at their upper ends by the metal of which the sleeve is formed, said fingers being flattened somewhat and bearing at their center portions on the spindle, while their free edges are in position to grasp the bore of the bobbin, as in Fig. 4. The lower end of the sleeve is split so as to be clamped on the spindle.

4 indicates the stationary yarn-holding jaw, preferably composed of sheet metal, soldered or otherwise rigidly connected to the tubular body 1, and 5 the movable jaw, also preferably stamped out of sheet metal and sliding loosely on the tubular body 1, the diameter being greater than that of the upper jaw 4, and the outer portion being inclined downwardly, as shown. The lower end of the tubular portion 1 is split and encircled by a collar 6, through which passes a screw 7 engaging the part 1 and clamping it on the spindle and also holding the collar rigidly, and to suitable ears on this collar are pivoted arms 8 having at their upper ends balls or weights 9, and pivoted to these arms a short distance above their lower ends, are links 10 also pivoted to suitable ears 11 formed on the lower side of a ring 12 encircling the tubular part 1 and arranged to operate on the under side of the movable jaw 5. Between the ring 12 and the collar 6 is a spring 13 which holds the jaws 4 and 5 in contact and tends to strengthen out the toggles formed by the links 10 and arms 8, the weights 9 being heavy enough, so that when the spindle is rapidly rotated they will fly out by centrifugal force, drawing the collar and movable jaw downward, against the tension of the spring, as in Fig. 3, and permitting the end of the yarn grasped between them to fly out. The upper or stationary jaw 4 is preferably smaller than the base of the bobbin A on the spindle D, with which it is adapted to be used and the faller wire B supported on arms B′ on a shaft B^3 on the carriage B^3 of the mule, is constructed as usual, so that it may be depressed below the lower end of the bobbin when in position on the spindle, so that the yarn may draw between the jaws.

The operation of the device will now be readily understood.

Assuming the bobbin secured to the spindle by means of the fingers 3 on the tube 1, in the manner described in my previous patent and shown herein in Fig. 4, the operator desiring to remove the full bobbins from the mule, presses the faller wire until it is at about the level of the opening between the jaws of the yarn-holder, and the spindles are rotated a short distance until the yarn is drawn down on the line between the jaws, as in Fig. 1, and then he stops the mule. He then takes a tool, such as shown in Fig. 6, embodying a series of teeth 20 secured to a handle 21 and having a rib 22 on its lower side and resting this on the top of the carriage, presses the fingers inward and against the projecting portion of the lower movable jaw 5 of a series of yarn-holders, moving said jaws downward against the tension of their springs and allowing the yarn to draw in between them by its own elasticity, and then depresses the outer end of the handle pivoting it on the rib 22, and raises the fingers, engaging the lower sides of the bobbins and removing the latter from the packing or holding devices on the spindle, and as he does this the jaws of the yarn-holders are pressed together by their springs, gripping the yarn tightly and breaking it as the bobbins are raised and leaving the end extending to the main or twisting part of the mule grasped between the jaws. This operation is completed the whole length of the mule frame or carriage until all of the full bobbins have been removed and empty ones substituted for them, the faller wire B having been previously raised from the position in dotted lines. The lower faller wire indicated by C is then raised and the spindles rotated one or two revolutions to permit the yarn to draw on the bobbins and then the mule is started in the usual manner, the carriage or frame B^3, carrying the spindles, moving inward and winding the yarn upon the bobbins. As soon as the spindles begin to rotate with any speed the balls 9 fly outward, opening the jaws of the yarn-holder against the tension of the spring 13 and permitting the end of the yarn previously grasped by the jaws to fly out, when the operation of spinning is proceeded with in the usual manner and when the bobbins are full, they may be removed and empty ones substituted in the manner described.

By the use of this device, it will be seen that, the bobbins can be removed, a number at a time, if desired, and the ends of the yarn retained without wasting any yarn whatever, and the spindles will always be clean and no loose ends retained between the gripping jaws. Therefore there will be no waste yarn and the operation of the mule can be carried out rapidly and economically.

It will be understood that while I, by preference, make the upper yarn-holding jaw stationary and the lower one movable and that this is desirable for many reasons, it is not essential, and where in the claims I have referred to the movable and stationary jaws, I wish to be understood as meaning jaws that are relatively movable or separable. Also, the ring beneath the movable jaw is simply for the purpose of convenience in construction and economy in weight and cost, and the links could be connected directly to the jaw if desired.

The construction of a governor actuated by centrifugal force or air pressure could be varied, if desired, without departing from the spirit of my invention.

I claim as my invention—

1. In a yarn-holder for spindles, the combination with the separable yarn-holding jaws and a spring for closing them, of an automatic device for separating said jaws by the rotation of the spindle, substantially as described.

2. In a yarn-holder for spindles, the combination with the separable yarn-holding jaws, of an automatic device for separating said jaws by the rotation of the spindle, substantially as described.

3. In a yarn-holder for spindles, the combination with the separable yarn holding jaws and a spring for closing them, of a rotary governor device connected to one of the jaws and separating them when the spindle is in motion, substantially as described.

4. In a yarn-holder for spindles, the combination with the separable yarn-holding jaws and a spring for closing them, of the toggle arms connected to the spindle and operating on one of the jaws, one of the arms of each toggle being weighted, substantially as described.

5. In a yarn-holder for spindles, the combination with the separable yarn-holding jaws, the ring engaging one of the jaws, and the spring for moving it, of the toggles formed by the weighted arms and links pivoted together and also pivoted to the spindle and ring, substantially as described.

6. As an article of manufacture, a yarn-holder adapted to be applied to a spindle, consisting of a tubular body having a bobbin holding device and separable yarn-holding jaws thereon, of a jaw-opening device operated by the movement of the spindle operating to separate the jaws when the spindle is rotated, substantially as described.

7. As an article of manufacture, a yarn-holder adapted to be applied to a spindle, consisting of a tubular body having bobbin holding devices thereon and separable yarn-holding jaws, the jaw next the bobbin being relatively smaller than the other one and smaller than the base of the bobbin, and a spring for closing the jaws, substantially as described.

8. As an article of manufacture, a yarn-holder adapted to be applied to a spindle, consisting of a tubular body having bobbin holding devices and the lower split portion, yarn-holding jaws on said body, the collar

encircling the lower split portion having the securing screw, weighted toggle arms connected to the collar and operating on the movable yarn-holding jaw, and the spring arranged between the collar and the yarn-holding jaw for holding it closed, substantially as described.

9. In a yarn-holder, the combination with two separable jaws, the upper one relatively smaller than the lower, and smaller than the base of the bobbin, and a spring for holding said jaws together, whereby the jaws may be separated and the bobbin removed by a single tool, substantially as described.

LEONARD W. HUYCK.

Witnesses:
GRACE A. RODA,
FRED F. CHURCH.