

W. B. LEATHERS.
BOBBIN STRIPPER.
APPLICATION FILED AUG. 6, 1909.

1,048,324.

Patented Dec. 24, 1912.

2 SHEETS-SHEET 1.

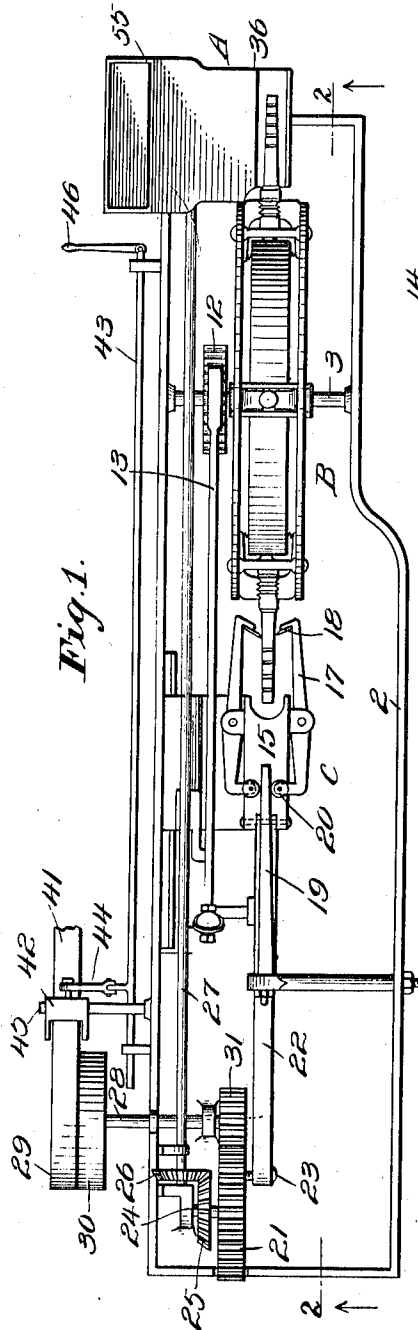


Fig. 1.

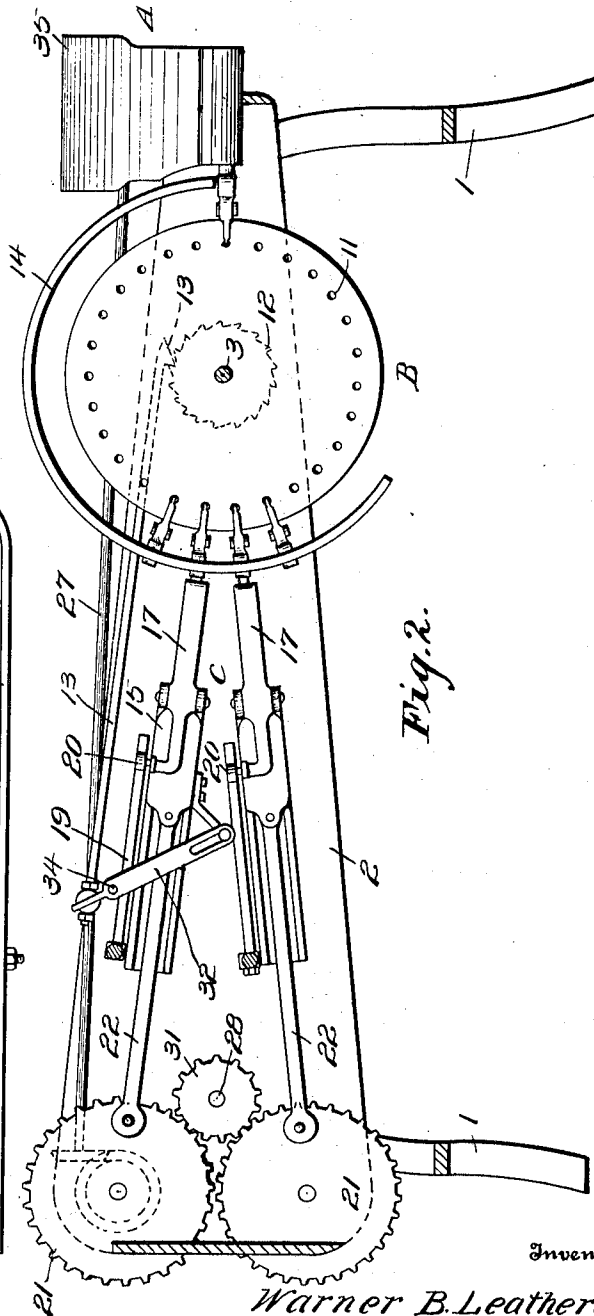


Fig. 2.

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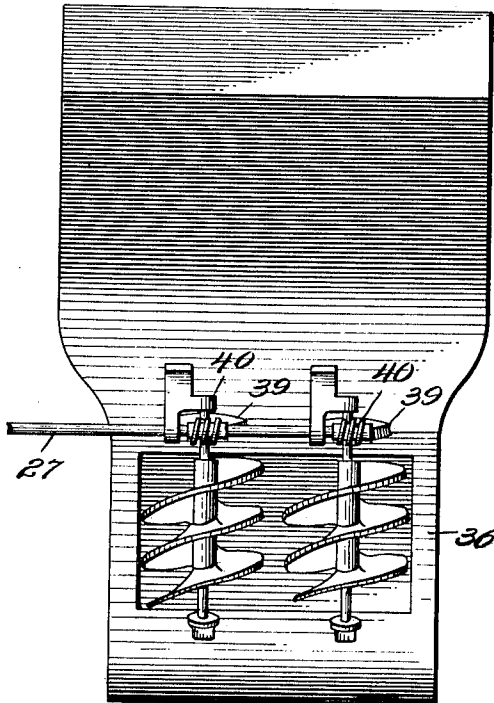
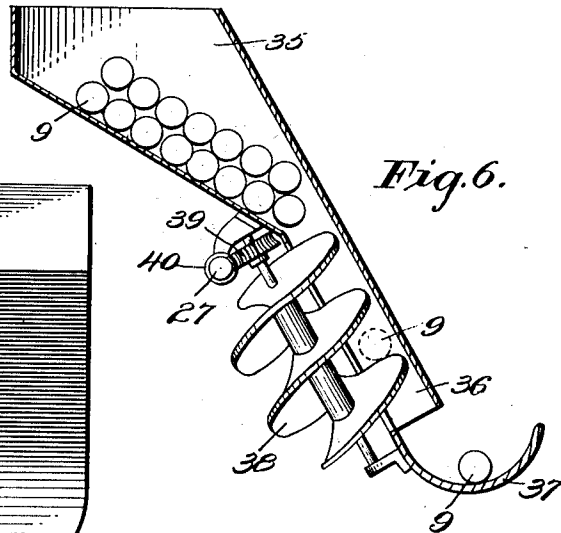
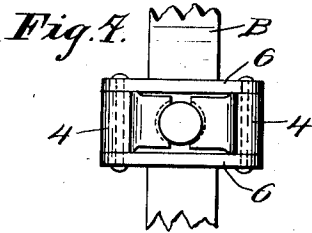
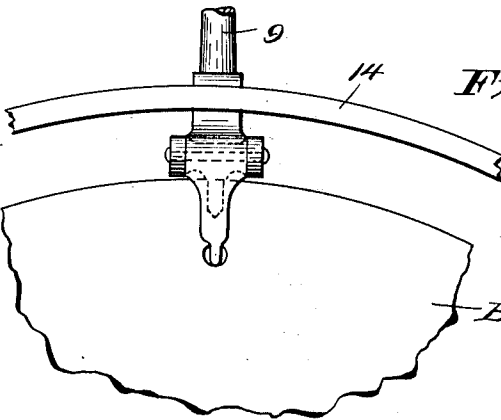
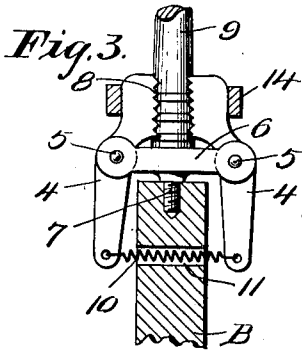


Fig. 7.

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UNITED STATES PATENT OFFICE.

WARNER B. LEATHERS, OF ATLANTA, GEORGIA.

BOBBIN-STRIPPER.

1,048,324.

Specification of Letters Patent.

Patented Dec. 24, 1912.

Application filed August 6, 1909. Serial No. 511,566.

To all whom it may concern:

Be it known that I, WARNER B. LEATHERS, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented new and useful Improvements in Bobbin-Strippers, of which the following is a specification.

The purpose of this invention is to devise a novel mechanism for stripping the small amount of thread or yarn remaining upon bobbins or quills when removed from the shuttles of looms preliminary to supplying such bobbins with new thread or yarn.

The invention has for its object to provide unique and effective stripping mechanism and to combine therewith a templet or stripper guide which tapers in a manner similar to the taper of the bobbins or quills so as to cause the stripping mechanism to act uniformly throughout the length of the bobbins or quills when removing the thread or yarn therefrom.

A further purpose of the invention is the provision of a holder for securing the bobbins or quills and presenting the same to the stripping mechanism, said holder being automatic in operation to receive the bobbin or quill and to release the same when the yarn or thread has been removed therefrom by the action of the stripping mechanism.

The invention also has for its object to supply a carrier provided with a plurality of holders and to arrange means for cooperation with the holders to automatically close the same upon the bobbins or quills and to release the latter at a predetermined point in the travel of the carrier whereby the said bobbins or quills may automatically discharge at a given point.

The invention also has for its object to provide a novel feeding mechanism for supplying the bobbins or quills to the holders in successive order and in proper position to be taken up by the holders and advanced by the carrier to the stripping mechanism.

A further purpose of the invention is to combine with the carrier novel actuating means moving the same intermittently or step by step whereby the carrier is at rest during the active operation of the stripping mechanism and whereby said carrier is moved forward during the time when the stripping mechanism is returning to an initial position preliminary to operating upon the next bobbin or quill in position to have the yarn or thread removed therefrom.

A still further purpose of the invention is the provision of a machine of the character and for the purpose aforesaid which is simple and effective in construction and operation and in which the several steps are automatically performed, the several parts being so timed and proportioned as to effectively perform the desired results and which will admit of the several parts being readily accessible for repairs, cleaning, oiling and the like.

The invention consists of the novel features, details of construction and combinations of parts which hereinafter will be more particularly set forth, illustrated in the accompanying drawings and pointed out in the appended claims.

Referring to the drawings forming a part of the specifications: Figure 1 is a top plan view of a bobbin stripping machine constructed in accordance with and embodying the essential features of the invention. Fig. 2 is a vertical longitudinal section on the line 2-2 of Fig. 1. Fig. 3 is a detail view of a holder showing a portion of the carrier and the means for closing the gripper members of the holder. Fig. 4 is an end view of the parts shown in Fig. 3. Fig. 5 is a side view of the parts illustrated in Fig. 3. Fig. 6 is a sectional view of the hopper and chute of the feeding mechanism showing one of the spiral feeders. Fig. 7 is a rear view of the parts illustrated in Fig. 6.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The working parts are suitably mounted upon a frame-work embodying legs 1 and a frame 2. In arranging the parts, the feeding mechanism A is located at one end of the machine with the carrier B intermediate of the feeding mechanism and the stripping mechanism C. This disposition of the parts has been found economical and advantageous. The stripping mechanism is provided in duplicate, each being substantially like the other, both in construction and operation and by providing the stripping mechanism in duplicate the capacity or output of the machine is materially increased without enlarging or requiring an extra amount of driving power proportionate to the effective work.

The carrier indicated by the letter B may

be of any construction so long as it serves the purpose of receiving and supporting the bobbin or quill holders. In the specific construction illustrated the carrier consists of a disk arranged vertical and mounted upon a shaft 3 which is arranged horizontally and mounted in bearings applied to or forming a part of the frame-work. Inasmuch as the several holders are of like construction and mounted in a similar manner, a detailed description of one only will be given. The holder consists of similar gripper members 4 which are pivoted intermediate of their ends at 5 upon a cross head 6 which is connected by means of a stem 7 to the carrier. Each gripper member 4 consists of a lever, the outer end of which is toothed upon its inner face as indicated at 8 to make positive engagement with the grooves or ribs provided at the inner or heel end of the bobbin or quill 9. The gripping faces of the members 4 are of such formation as to make firm engagement with the sides of the bobbin or quill to prevent possible slipping thereof. The gripping members 4 are arranged upon opposite sides of the carrier and their inner ends are connected by means of a contractile spring 10 whereby the outer ends of the gripper members have a tendency to normally stand apart or open so as both to receive a bobbin or quill and to release the same after the thread or yarn has been stripped therefrom. The contractile spring 10 extends through an opening 11 of the carrier. A ratchet wheel 12 is fast to the shaft 3 and coöperates with a pawl 13 to impart an intermittent or step by step movement to the carrier in the operation of the machine.

The gripper members are closed and held in gripping position by means of curved bars 14, the latter being arranged concentric with the shaft 3 and extending approximately three-fourths of a circle. The curved bars 14, two in number, are located so as to engage with the respective gripper members of the holders upon opposite sides of the carrier. The curved bars 14 are spaced from the carrier and one end is arranged adjacent the feeding mechanism so as to close the gripping members of the holder after the latter has reached a position to receive the inner end of a bobbin or quill between them. The opposite ends of the curved bars extend beyond the stripping mechanism to a convenient point so as to release the holders and permit the bobbins or quills to automatically discharge after the same have been cleared of the yarn or thread remaining thereon when removed from the loom shuttles. It is to be understood that the bars 14 conform to the outline of the carrier and are uniformly spaced therefrom so as to effect closing of the holders upon the bobbins or quills and keep said

holders closed until after the operation of the stripping mechanism after removing the thread or yarn from the bobbin. The bars 14 constitute in effect a track upon and between which the gripper members travel and are held compressed against the action of the springs 10 which latter come into play to effect opening of the holders the instant the same clear the bars or track 14.

The stripping mechanism is provided in duplicate, the duplicate mechanisms being arranged in the same plane with each other and with the carrier. Each stripping mechanism comprises a slide or head 15 which is mounted upon a suitable guide 16 whereby it is held in place and directed in its reciprocating movements. A pair of levers 17 are mounted between their ends upon the slide 15 and move therewith. The ends of the levers 17 adjacent the carrier are provided with strippers 18 which may consist of blades or devices of any desired structure which will effect positive and certain removal of the thread or yarn from the bobbins or quills. The opposite ends of the levers 17 are adapted to coöperate with a templet or stripper guide 19 which tapers inversely to the taper of the bobbins or quills so as to maintain uniform action of the strippers 18 upon the bobbins or quills throughout their length. Rollers 20 are provided at the ends of the levers 17 so as to ride upon the templet or stripper guide 19 and reduce the construction to the smallest amount possible. The forward movement of the slide 15 is that which carries the stripping mechanism toward the carrier or holder and the outward stroke is that which moves the stripping mechanism away from the carrier. During the forward stroke of the slide 15, the strippers 18 move apart and upon the outward stroke of the slide 15 the strippers 18 are moved inward by the outer ends of the levers 17 riding upon opposite sides of the templet or stripper guide 19. Any means may be employed for effecting a reciprocating movement of the slide 15. In the present instance, a gear wheel 21 is provided and a pitman 22 connects a wrist pin 23 fitted to the gear wheel 21 with the slide 15, the parts being of such relative proportions as to insure a movement of the stripping mechanism to effect operation thereof upon the bobbins or quills throughout the entire length of the latter. The gear wheel 21 is fast to a shaft 24 and a bevel gear 25 fast to the shaft 24 is in mesh with a bevel gear 26 fast to a longitudinal shaft 27 mounted in bearings applied to the frame-work. A power shaft 29 is provided at its outer end with a loose pulley 29 and a tight pulley 30 and a gear wheel 31 at its inner end which is in mesh with the gear wheel 21 to impart movement thereto. It is to be remembered that the stripping

mechanisms are in duplicate and both receive movement from the power shaft 28 by means of gear wheels 21 and similar power transmitting means as indicated most clearly in Fig. 2.

Intermittent movement is imparted to the gear wheel 12 and pawl 13. A lever 32 is connected at one end to the pawl 13 and is pivotally mounted at its opposite end upon a pin or other support 33 and is pivotally connected at 34 to one of the pitmen 22. As the pitman 22 moves the lever 32 is oscillated and imparts a reciprocating movement to the pawl 13 which latter causes an intermittent rotary movement of the carrier B by coöperative action with the teeth of the ratchet wheel 12 in the manner well understood.

The feeding mechanism comprises a hopper 35 which is adapted to receive a number of bobbins or quills from which the thread or yarn is to be stripped. A chute 36 leads from the lower end of the hopper and is of a width to admit of the passage of one bobbin or quill only between the inner and outer walls and is of a length to properly position the bobbins or quills so as to insure the holders receiving the same in proper position. A tray 37 is provided at the lower end of the chute to receive a bobbin or quill. A series of spiral feeders 38 coöperate with the chute 36 to regulate the movement of the bobbins or quills therethrough. The spiral feeders 38 consist of feed screws, the planes or flights of which extend through openings in a wall of the chute so as to obstruct the passage of the bobbins or quills therethrough and regulate their movement. As shown, the feed screws are preferably located in the rear of the chute and their shafts are provided at their upper ends with worm wheels 39 which are in mesh with worm threads 40 secured to the forward end of the longitudinal shaft 27. The feed screws 38 receive a like movement and are arranged so as to gradually advance the bobbins or quills through the chute, in horizontal position. As each quill or bobbin is discharged from the chute, it is received by the tray 37 in position to be taken up by a holder and carried thereby to the stripping mechanism.

The operation of the machine may be briefly stated as follows: The bobbins or quills from which the thread or yarn is to be stripped are placed in the hopper 35 and in the operation of the machine, said bobbins are slowly fed through the chute 36 by means of the feed screws 38. As the carrier B moves, the holders are brought in position to receive the shell or base ends of the bobbins and are closed by means of the track bars 14 in the manner herein stated. When the bobbins reach a position opposite and in line with the stripping mechanisms, the strippers operate thereon to move the

thread or yarn, the strippers 18 being held in close contact with the bobbins throughout their length by the action of the templets or stripper guides 19 in forcing the outer ends of the stripper levers 17 apart. After the strippers 18 clear the bobbins, they continue to move outward a distance to enable the pawl 13 to move the carrier a distance to bring the next two holders in position to be engaged by the stripping mechanisms in the next operation or outward stroke thereof. When the holders clear the track bars 14, the gripper members 4 are released from the restraining force of said track bars and the springs 10 come into play to move the gripping ends of the members 4 apart and thereby release the bobbins or quills which may be received in a suitable receptacle, not shown, arranged for the discharge of the same.

The machine is adapted to be driven from any source of power by means of a drive belt 41, arranged to coöperate with the pulleys 29 and 30. A stripper 42 is arranged to move the drive belt 41 from one pulley to the other. A rock shaft 43 arranged lengthwise of the machine has an arm near one end connected by means of a link 44 with the stripper 42 so as to slide the same upon a guide 45 projected outward from the frame 2. A lever 46 at the opposite end of the rock shaft 43 provides convenient means for throwing the machine into and out of action from the feed end.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what is claimed is—

1. In a bobbin stripping machine, a bobbin holder, a stripper arranged to engage the bobbin, means for moving the stripper longitudinally of the bobbin, and a stripper guide arranged to coöperate with the stripper to hold the same in contact with the bobbin throughout the length of the latter.

2. In a bobbin stripping machine, the combination of a bobbin holder, a reciprocatory slide, a pair of levers pivoted thereto, stripping members at one end of said levers, and a stationary tapered guide arranged to engage and spread opposite ends of said levers, the taper of the guide corresponding to the taper of the bobbin.

3. In a bobbin stripping machine, the combination of a bobbin holder, a reciprocatory slide, a pair of levers pivoted thereto, stripping members at one end of said
5 levers, a tapered guide with which the opposite ends of the levers engage, and means for holding the ends of the levers in engagement with said guide.

4. In a bobbin stripping machine, the
10 combination of a carrier, a plurality of bobbin holders mounted upon the carrier, a bobbin stripping mechanism, means for imparting a step by step movement to the carrier, and means for operating the stripping mechanism to effect removal of the thread or yarn
15 from the bobbins in successive order as they are presented to and aline with the stripping mechanism.

5. In a bobbin stripping machine, the
20 combination of a plurality of bobbin stripping mechanisms, a carrier, a plurality of bobbin holders mounted upon the carrier, and means for imparting a step by step movement to the carrier to bring the bobbins
25 in position to be operated upon by the respective bobbin stripping mechanisms.

6. In a bobbin stripping machine, the combination of a stripping mechanism, a carrier, a plurality of holders mounted upon
30 the carrier, means for imparting an intermittent movement to the carrier, and a feeding mechanism for supplying the bobbins to the holders in successive order.

7. In a bobbin stripping machine, the
35 combination of a stripping mechanism, a carrier, a bobbin holder mounted upon the carrier, means for supplying bobbins to the holder, and means for closing the holder upon the bobbin.

8. In a bobbin stripping machine, the
40 combination of a stripping mechanism, a carrier provided with a plurality of holders, and a feeding mechanism for supplying bobbins to the holders, the same comprising
45 a chute, and a feed screw having a portion of the spiral plane or flight of the feed screw operating in the space of the chute to regulate the feed of the bobbins to the holder.

9. In a bobbin stripping machine, the
50 combination of a stripping mechanism, a carrier provided with a plurality of holders, a hopper, a chute leading from the hopper, and a plurality of feed screws each having a portion of its spiral plane or flight operating

across the space of the chute to regulate the
55 feed of the bobbins to the holders.

10. In a bobbin stripping machine, a bobbin holder, a plurality of strippers arranged to engage the bobbin, means for moving said
60 strippers longitudinally of the bobbin, and a stripper guide tapered to correspond to the shape of the bobbin.

11. In a bobbin stripping machine, a bobbin holder, a pair of stripping members arranged to engage the bobbin, means for
65 moving said stripping members longitudinally of the bobbin, and a stationary tapered guide arranged to gradually force the stripping members toward each other to compensate for the gradual decrease in diameter of
70 the bobbin from the base to the tip.

12. In a bobbin stripping machine, a bobbin holder, a reciprocatory slide, a pair of levers pivoted thereto, bobbin engaging
75 members at one end of said levers, a tapered tongue with which the opposite ends of the levers engage, the tongue being tapered to correspond to the taper of the bobbin, and means for holding the ends of the levers in
80 engagement with said tongue.

13. In a bobbin stripping machine, a series of bobbin stripping devices acting simultaneously, and means for presenting a
85 plurality of bobbins at the same time to the bobbin stripping devices.

14. In a bobbin stripping machine, a bobbin holder, a series of strippers each arranged to engage a bobbin, means for
90 presenting a plurality of bobbins simultaneously to the series of strippers, and means for moving said strippers longitudinally of the bobbins.

15. In a bobbin stripping machine, a carrier for a series of bobbin holders, means for
95 imparting step by step advancing movement to the said series of bobbin holders, a series of stripping devices, means for moving said devices simultaneously into operative relation to a plurality of bobbins at a time, and
100 means carried by the stripper supporting means for causing the simultaneous closing of the strippers upon a plurality of bobbins.

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

WARNER B. LEATHERS.

Witnesses:

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T. A. BARRETT.