Feb. 9, 1937. E. R. ALDERMAN 2,070,193

BOBBIN STRIPPING MACHINE

Filed Aug. 19, 1935 2 Sheets-Sheet 1

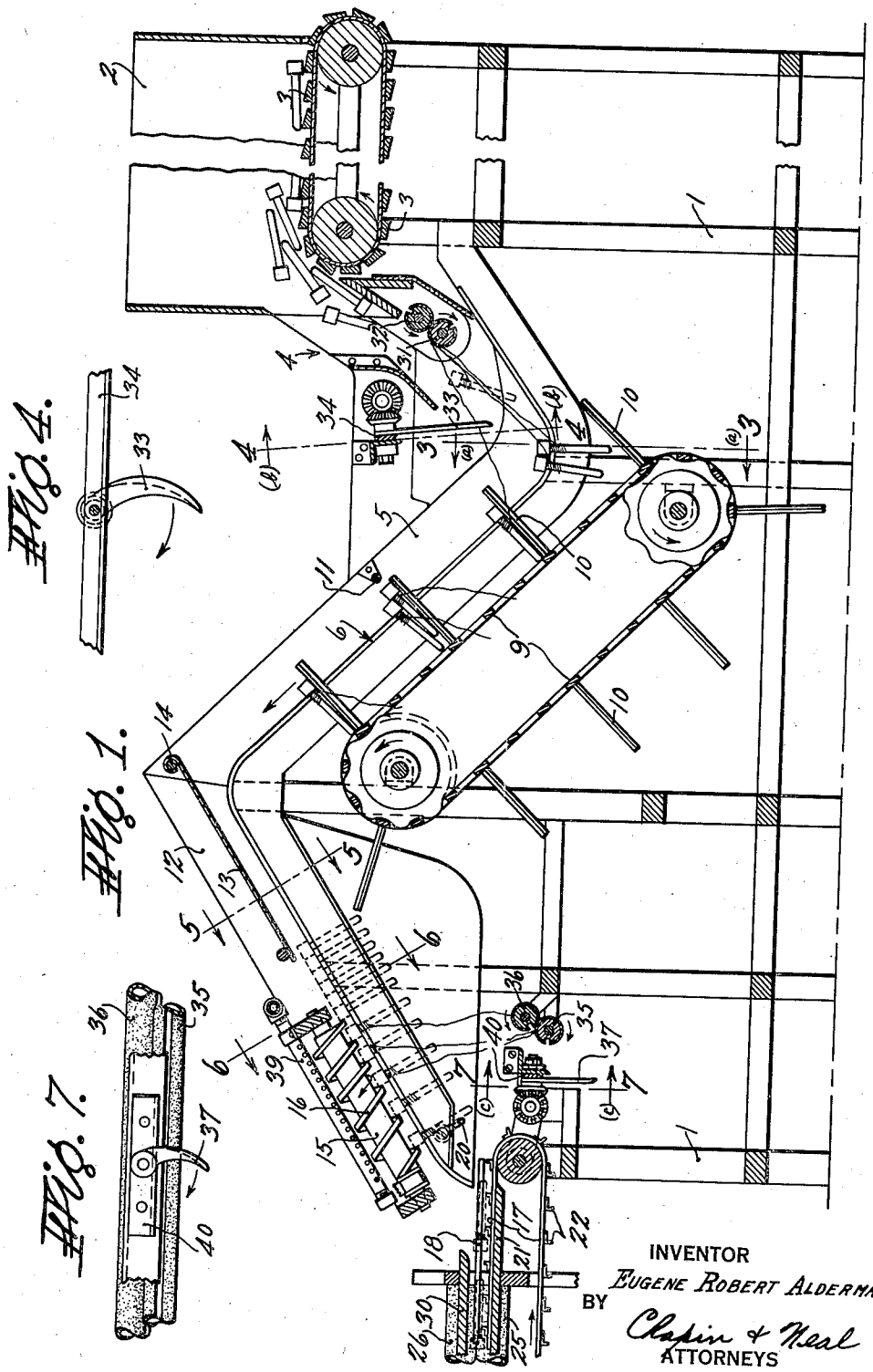


Fig. 4.

Fig. 1.

Fig. 7.

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Fig. 2.

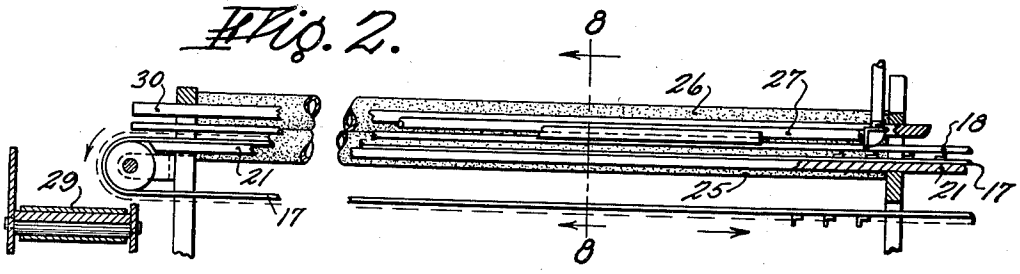


Fig. 3.

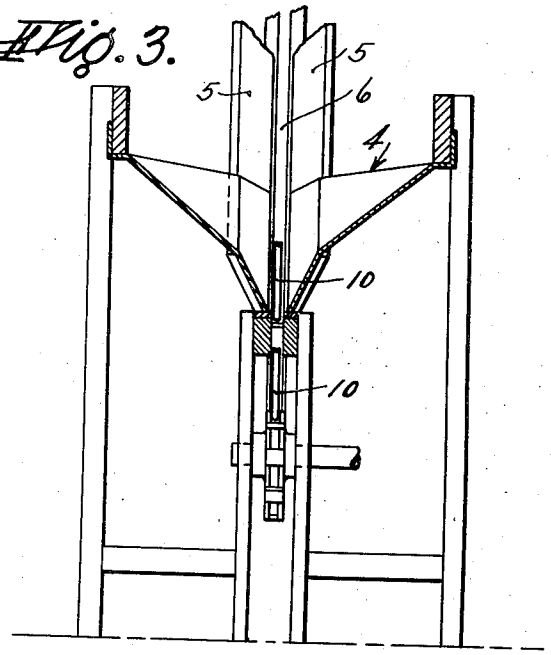


Fig. 6.

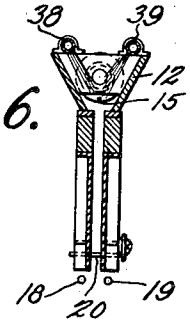


Fig. 8.

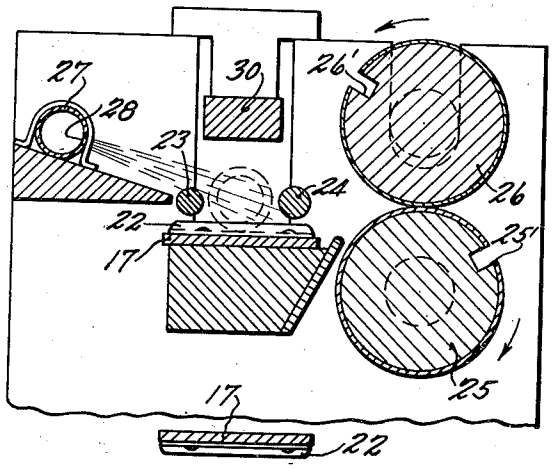
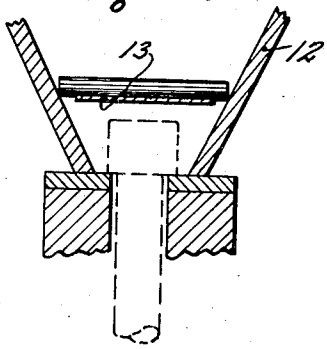


Fig. 5.



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2,070,193

BOBBIN STRIPPING MACHINE

Eugene Robert Alderman, South Hadley, Mass.

Application August 19, 1935, Serial No. 36,800

9 Claims. (Cl. 28—19)

This invention relates to a bobbin stripping machine and has for its object the provision of means for removing the remnant of weft thread which remains on a bobbin after its discharge from a shuttle in a weft replenishing operation.

The invention is particularly useful in connection with the modern type of bobbin replenishing mechanism used in rayon weaving wherein the weft thread of the exhausted bobbin is cut off very close to the end of the bobbin when discharged from the shuttle. In such mechanisms there is usually not enough length of weft remnant trailing from the discharged bobbin to be caught for unwinding by the usual bobbin stripping devices customarily attached to replenishing looms.

For rayon weaving as with silk weaving it is important in stripping the bobbins to avoid roughing up or cutting the bobbin stems, and the present invention accomplishes this stripping without contact of any cutter, scraper or abrasive tool with the stem, but by unwinding the weft from the stem and by providing for free and easy rotation of the bobbin during such unwinding operation.

Furthermore, the present improved machine is designed to make the operation of stripping bobbins completely automatic from beginning to end, that is to say, the bobbins containing remnants of weft thread to be removed may be dumped indiscriminately into a hopper at one end of the machine and removed at the other end of the machine with the thread completely stripped therefrom.

Referring to the drawings which show the preferred embodiment of my invention,

Fig. 1 is a longitudinal section of the forepart or bobbin feeding portion of the machine;

Fig. 2 is a similar view of the after part or bobbin stripping portion of the machine, it being understood that the part shown in Fig. 2 is a continuation of that shown in Fig. 1;

Fig. 3 is a transverse section of a portion of the machine through line 3—3 of Fig. 1 looking in the direction of arrow (*a*);

Fig. 4 is a similar transverse section along line 4—4 of Fig. 1 looking in the direction of arrow (*b*);

Fig. 5 is an enlarged detail cross section of the delivery trough along line 5—5 of Fig. 1;

Fig. 6 is a similar cross section (but not enlarged) along line 6—6 of Fig. 1;

Fig. 7 is a detail section along line 7—7 of Fig. 1, looking in the direction of arrow (*c*); and

Fig. 8 is a cross section enlarged of the stripping table and appurtenances along line 8—8 of Fig. 2.

The supporting frame work of the machine is indicated in general at 1, and it may be of any suitable form designed to carry the parts hereinafter described. At the forepart of the frame 1 is mounted a hopper 2 at the bottom of which is provided a slatted endless conveyor 3 designed to feed the bobbins contained in said hopper outwardly therefrom to discharge chute indicated generally at 4. The slatted bottom 3 may be given an intermittent movement by means of any suitable ratchet driving mechanism not shown.

The contour of the discharge chute 4 as provided by the sides and the bottom thereof is designed to converge the mass of bobbins being fed therethrough into a single file for progressive travel up an inclined trough 5. As shown in Fig. 1 the bobbins in said discharge chute 4 will fall downwardly into the lower end of said inclined trough 5, the sides of which are shown clearly in Fig. 3, as sloping and converging downwardly toward an open slotted bottom portion indicated at 6. It will be understood that hopper 2 may be much wider than the inclined trough 5 and that the sides and bottom of the discharge chute 4 are suitably flared from the outlet of the hopper to a smooth juncture with the lower end of trough 5. The open bottom slot 6 of said trough 5 is wide enough to permit passage therethrough of the bobbin stems but not of the bobbin heads, whereby the bobbins falling into the lower end of said trough 5 will eventually hang suspended with their heads engaged by the sides of the slot 6 as shown in Fig. 1.

The trough 5 is inclined upwardly and beneath the same is mounted an endless chain or belt 9 having flexibly mounted upwardly projecting fingers 10 spaced at intervals thereon. The fingers 10 will project through the slot 6 of trough 5 and during the travel of said belt 9 said fingers 10 successively travel upwardly through the slot 6 and carry one or more of the bobbins in front of the same to the top of the trough 5. In order to avoid an interlocked jam of several bobbins being carried upwardly by the fingers 10, they are made of springy material and across the top of said trough 5 is a fixed transverse overhead rod 11 which prohibits passage of any bobbins higher than the ends of fingers 10. This part of the machine is the same as that shown and described in my previous Patent No. 1,496,080, dated June 3, 1924.

The upper end of the guide trough 5 is con-

tinued into a downwardly inclined trough of a similar nature indicated at 12. At the upper portion of the trough 12 a yielding cover plate 13 is pivotally connected at 14 so as to hold down the tops of the bobbins as they travel along said trough 12. At the lower discharge portion of the trough 12 is mounted a separating device for spacing the individual bobbins apart as they slide down in single file in the trough 12. This separating device comprises a rotating screw 15 with a thread 16 of gradually increasing pitch mounted above and substantially parallel with the trough 12 as shown in Fig. 1. The screw 15 is rotated to insert the leading end of its spiral thread 16 in between the heads of two bobbins in file for separating the same and the continued rotation of the screw due to its expanding thread, gradually increases the spacing between the bobbins until when the lowermost bobbin of the file is discharged onto the traveling conveyor belt 17 it will be far enough in advance of the following bobbin so that it will not be interfered with during the subsequent stripping operation. In other words, the bobbins will be deposited on the belt 17 lengthwise thereof and in spaced apart relation.

During the operation of the machine a sufficient supply of bobins will be fed to the upper end of trough 12 so that a continuous file of said bobbins will be sliding down the trough 12 by gravity subject to the restraining influence of the separating screw 15. Mounted below and parallel to the slotted bottom of the trough 12 are a pair of guide rods 18, 19 (see Figs. 1 and 6) which embrace and guide the depending ends of the bobbins sliding down trough 12. Below the lower end of said trough 12 is a tripping bar 20 extending transversely of the path of the depending ends of the bobbins sliding in said trough 12 whereby as said bobbins are discharged from said trough 12 they are tipped over and deposited in prone position upon the stripping conveyor or travelling belt 17 with their axes lengthwise of the travel of said belt all as shown in Fig. 1.

The endless conveying belt 17 has its upper run supported on a table or bar 21 of the main frame so as to travel horizontally and the surface of said belt is provided with a series of equally spaced but narrow edge cleats 22 which serve to support the bobbins on the belt with a minimum of friction when turned on their axes in the unwinding of the weft thread therefrom. As shown in Fig. 8, along each lateral side of said conveyor belt 17 are mounted guide rods 23 and 24 to retain the bobbins in proper position lengthwise on said belt 17. Also extending longitudinally with the conveyor belt 17 and above the same is a hold down bar 30 which serves to confine the bobbins on said belt. Closely adjacent one side of the conveyor belt 17 is mounted a stripping device comprising preferably two long rolls 25 and 26 coextensive in length with the upper run of the traveling belt 17 and parallel thereto as shown. Each roll is covered with a rough surface or thread catching material such as sand paper and a long slot 25' and 26' is formed in the surface of each roll for cutting off an accumulated mass of thread thereon. Preferably the lower roll 25 is mounted in fixed bearings and is rotated from a suitable drive (not shown) in the direction of the arrow in Fig. 8. The upper stripping roll 26 has trunnions in slotted bearings and rests by gravity against roll 25 so as to be driven frictionally thereby. The rolls 25, 26 are mounted closely adjacent one side of the conveyor belt so as to readily catch even a short end of weft thread from the bobbins on said belt.

At the opposite side of the conveyor belt 17 from the stripping rolls is mounted a long compressed air pipe 27 with a series of discharge openings 28 directed toward the belt 17 so as to discharge an air blast across said belt toward the stripping rolls 25 and 26. The air blast thus created will blow or waft the end of the thread hanging from a bobbin over into engagement with the rolls 25 or 26 and will also tend to rotate the bobbins on their cleats for easy unwinding. The rotation of said rolls 25 and 26 will thus unwind the thread from the bobbin, the bobbin meanwhile rotating easily upon the supporting cleats of the belt 17. During its travel on the conveyor belt each bobbin will be entirely stripped of its thread and will finally be discharged at the end of said conveyor belt 17 upon a transversely arranged discharge belt or conveyor 29 shown in Fig. 2 which will carry the bobbins to any suitable receptacle.

It is advantageous to remove as much of the weft thread from the bobbins as possible during their progress from the hopper to the stripping table and conveyor belt 17. For this purpose I have mounted in the discharge chute 4 a stripping device comprising two sand paper covered rolls 31 and 32. These thread catching rolls 31, 32 extend transversely across the lower side of said chute 4 near the upper end thereof and are mounted and operated in the same manner as the stripping rolls 25, 26. The bobbins fed out of the hopper 2 will ride over said stripping rolls 31, 32 and some of the bobbins will have any loose hanging weft thread caught by the rolls. Generally a tangle of loose weft threads will extend from several of the bobbins at the bottom of trough 5 back to said rolls 31 and 32 and means are provided to intermittently cut off this tangle from the bobbins. Opposite said rolls 31 and 32 is mounted a rotating sickle-shaped knife 33 (see Fig. 4) which swings across the path of the threads which may extend from the discharged bobbins back to the stripping rolls 31 and 32. This knife gathers up the snarl of threads and severs the same against the knife bar 34. It will be understood that the bobbins in the hopper and as discharged from the chute are in generally indiscriminate position and that the weft threads thereon may and often do become snarled with one another. Such snarling of the threads from a mass of bobbins will be caught by the stripping rolls 31 and 32 and severed by the knife 33 so that the bobbins will be free to pass up the inclined slotted trough 5.

Another preliminary stripping device is located near the lower bottom end of the trough 12. It comprises a pair of rotating sand paper covered stripping rolls 35 and 36 mounted and rotated similarly to the previously described rolls. At the rear of said stripping rolls 35 and 36 is mounted a rotating sickle-shaped knife 37 (see Fig. 7). Above the screw separator 15, one at each side thereof (see Fig. 6) are mounted air blast pipes 38, 39 with downwardly facing perforations for directing an air blast downwardly along the depending ends of the bobbins to carry the threads thereon over toward said stripping rolls 35 and 36 so as to be caught thereby. Thus any weft threads hanging from the bobbins as they travel down trough 12 will be caught by the rolls 35, 36 and severed by the rotating knife 37 against its knife bar 40, so as to allow each bobbin

to pass onto the conveyor belt without interference from a hanging weft thread.

In the operation of the machine the action of the stripping rolls **31** and **32** and stripping rolls **35** and **36** will serve to remove a large part but not all of the thread on the bobbins so that the bobbins are finally completely stripped of their thread by being deposited on the conveyor belt **17** and carried along for action by the air blast pipe **27** and stripping rolls **25** and **26**. Bobbins of quite different shape and design may be stripped on the present machine inasmuch as the conveyor belt **17** is adapted to carry and allow the unwinding operation of almost every shape of bobbin.

The driving mechanism for the various parts of the machine need not be specifically shown or described. It will be understood that the several rotating shafts shown may be driven by suitably connected mechanism from a convenient source of power and that a properly synchronized movement of the various parts may be readily attained.

I claim:

1. In a bobbin stripping machine in combination, a hopper to receive a supply of bobbins having a remnant of weft thread thereon to be stripped, means for feeding the bobbins from said hopper in a single file, a traveling conveyor, means for spacing apart the bobbins of said single file and depositing the same one by one upon said traveling conveyor comprising means for suspending said bobbins with downwardly directed ends prior to being deposited on said conveyor, a stripping device located below the ends of said suspended bobbins, pneumatic means for wafting threads from said bobbins downwardly to said stripping device, a knife mounted adjacent said stripping device and movable across the path of a thread from a bobbin end to said stripping device for severing said thread, a stripping device mounted at one side of said conveyor, and pneumatic means for wafting the thread from a bobbin on said conveyor into engagement with said stripping device.

2. In a bobbin stripping machine in combination, a traveling belt conveyor, means to deposit bobbins on said conveyor in prone position and lengthwise of said belt travel, a stripping device comprising one or more thread catching rolls rotatably mounted adjacent one side of said belt, and pneumatic means located adjacent said belt for wafting the thread from a bobbin laterally of said belt into engagement with said stripping device.

3. In a bobbin stripping machine in combination, a traveling belt conveyor, said belt comprising spaced cleats to support bobbins for easy rotation thereon, means to deposit bobbins on said conveyor in prone position and lengthwise of said belt travel, a stripping device comprising one or more thread catching rolls rotatably mounted adjacent one side of said belt, and pneumatic means located adjacent said belt for wafting the thread from a bobbin laterally of said belt into engagement with said stripping device.

4. In a bobbin stripping machine in combination, a traveling conveyor belt, said belt comprising spaced cleats to support bobbins for easy rotation thereon, means to deposit bobbins on said conveyor in prone position and lengthwise of said belt travel. a stripping device comprising one or more thread catching rolls rotatably mounted adjacent said belt and extending parallel to and substantially coextensive therewith, pneumatic means located adjacent said conveyor for wafting the thread from a bobbin into engagement with said stripping device, and guide bars extending parallel to said conveyor and spaced therefrom acting to retain the bobbins in position on said conveyor during the action of the pneumatic means thereon.

5. In a bobbin stripping machine in combination, a hopper to receive a supply of bobbins having a remnant of weft thread thereon to be stripped, a stripping conveyor, feeding means to receive bobbins from said hopper and to deliver them to said stripping conveyor, said feeding means comprising, devices for arranging said bobbins in single file, devices for spacing apart said single file bobbins, and devices for depositing said spaced apart bobbins successively in prone position upon said stripping conveyor, a stripping device mounted at one side of said stripping conveyor, and pneumatic means for wafting the thread from a bobbin on said conveyor into engagement with said stripping device.

6. In a bobbin stripping machine in combination, a hopper to receive a supply of bobbins having a remnant of weft thread thereon to be stripped, a stripping conveyor comprising a traveling belt, feeding means to receive bobbins from said hopper and to deliver them to said stripping conveyor, said feeding means comprising, devices for arranging said bobbins in single file, devices for spacing apart said single file bobbins, and devices acting to tip said spaced apart bobbins successively into prone position for depositing the same upon said stripping conveyor with their axes lengthwise of the travel of said belt.

7. In a bobbin stripping machine in combination, a hopper to receive a supply of bobbins having a remnant of weft thread thereon to be stripped, said hopper having a discharge chute, a stripping conveyor, feeding means to receive bobbins discharged from said hopper and to deliver them to said stripping conveyor, a stripping device comprising one or more thread catching rolls over which said bobbins pass in being discharged from said hopper, and a thread cutting knife mounted adjacent said stripping device and moving across the path of threads extending from discharged bobbins to said stripping device.

8. In a bobbin stripping machine in combination, a hopper to receive a supply of bobbins having a remnant of weft thread thereon to be stripped, a stripping conveyor, feeding means to receive bobbins from said hopper and to deliver them to said stripping conveyor, said feeding means comprising devices for arranging said bobbins in single file and in vertically suspended position prior to being deposited on said stripping conveyor, a stripping device comprising one or more thread catching rolls mounted below the ends of said suspended bobbins, pneumatic means for wafting threads from said suspended bobbins downwardly to said stripping device, and a thread cutting knife mounted adjacent said stripping device and moving across the path of threads extending from said suspended bobbins to said stripping device.

9. In a bobbin stripping machine in combination, a hopper to receive a supply of bobbins having a remnant of weft thread thereon to be stripped, said hopper having a discharge chute, a stripping conveyor, feeding means to receive bobbins discharged from said hopper and to deliver them to said stripping conveyor, a stripping device comprising one or more thread catching rolls over which said bobbins pass in being discharged from said hopper, a thread cutting knife mounted adjacent said stripping device and moving across

the path of threads extending from discharged bobbins to said stripping device, said feeding means comprising devices for arranging said bobbins in single file and in vertically suspended position and devices for spacing apart said single file bobbins prior to being deposited on said stripping conveyor, a stripping device comprising one or more thread catching rolls mounted below the ends of said suspended bobbins, pneumatic means for wafting threads from said suspended bobbins downwardly to said stripping device and a thread cutting knife mounted adjacent said stripping device and moving across the path of threads extending from said suspended bobbins to said stripping devices.

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