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ARTIFICIAL SILK SPINNING APPARATUS.

APPLICATION FILED APR. 8, 1918.

1,399,690. Patented Dec. 6, 1921.

Fig. 2.

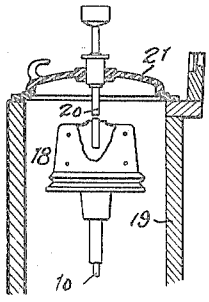


Fig. 1.

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ARTIFICIAL-SILK-SPINNING APPARATUS.

1,399,690. Specification of Letters Patent. Patented Dec. 6, 1921.

Application filed April 8, 1918. Serial No. 227,350.

To all whom it may concern:

Be it known that I, JAMES CLAYTON, a subject of the King of Great Britain, residing at 12 Middleborough road, Coventry, England, have invented certain new and useful Improvements in Artificial-Silk-Spinning Apparatus, of which the following is a specification.

My inventon relates to artificial silk spinning apparatus and particularly to apparatus of the general type shown in my prior Patent 1,240,675, the special object of my invention being to provide means for lifting the spinning boxes to accessible position for the removal of the cake of spun fiber. While the construction shown is useful with other types of boxes, it is especially designed with reference to a spinning box of the novel type shown in my application of event date herewith.

In the accompanying drawing,

Figure 1 is a vertical section through so much of a spinning apparatus as is necessary for the disclosure of the present invention. In this view the spinning boxes are shown raised to position for the removal of the fiber cake.

Fig. 2 is a similar view of portion of the apparatus showing one of the spinning boxes in normal working position.

In its main features, the present apparatus bears a resemblance to that shown in my prior patent above mentioned, in that each spinning spindle 10 is driven by an electric motor 11 mounted on a longitudinal rail 12, which is vertically reciprocated in the guideway 13 by one or more rock arms 14 keyed to a main shaft 15. Each rail 12 is freely supported from its rock arm by a stirrup or hanger pin 16 jointed at its upper end to the rock arm, passing down through a hole in the rail, and having a supporting nut 17 which freely engages the lower face of the rail. During the spinning operation, the spinning boxes 18 occupy a position within the housing 19, as indicated in Fig. 2, and are reciprocated up and down, during their rotation, through the rising and falling movement imparted to the rails 12 by the rock shaft 15 and rock arms 14. The fiber entering the boxes through a funned 20, carried by the housing lid 21, is drawn into and coiled within the spinning chamber of the box. After the spinning operation has progressed a sufficient time, a fiber cake 22 is formed within the box. Where the spinning box is of the type shown in my prior patent, the custom has been to thereupon lift the box from the spindle, carry it to a suitable position of discharge, and empty it of the fiber cake. In order to lift the box, the operator must not only remove the housing lid 21, but must reach down into the area inclosed by the housing 19 and lift the relatively heavy box from the spindle. This operation is not only rather inconvenient, but requires considerable strength, since the box is quite heavy—especially when filled with the fiber cake and wedged down firmly on the spinning spindle.

By my present improved construction I provide means by which the rails may be bodily lifted from the rock arm hangers and elevated to such position that the spinning boxes are exposed at the upper ends of the housing and are thus readily handled by the operator. To this end, I mount on the frame 23, at suitable intervals, cylinders 24 underlying the rails. Extending downward from the latter and entering the cylinders, are plungers 25. Piping 26 leads to the cylinder heads 27 any suitable pressure medium from some controlled source. Upon the admission of the pressure medium to the cylinders, the plungers 25 are forced upward, lifting the rails 12 from their normal dotted position to the position shown in full lines in Fig. 1. The motor 11, spindle 10, and boxes 18 are thereby lifted to such position that the boxes are now handled without reaching down into the casing 19 to lift them from the spindles.

While this construction is of value in apparatus of the type shown in my prior patent, it is particularly designed with reference to a spinning box of the type shown in my co-pending application filed herewith and also indicated in the present drawing. This box comprises a base 28 fixed to the spinning spindle 10 and carrying a readily detachable, basket-like cover 29. This cover is normally held upon the base by latching devices 30 which engage the annular ring 31 of the cover as set forth in detail in my application above mentioned. When the box

has been lifted to discharge position, shown in Fig. 1, and the cover 29 removed, the fiber cake 22 remains on the base 28, and the operator has merely to lift the cake from the base, return the cover to position, and discharge the pressure from the cylinders 24, in order to return the apparatus to condition for the succeeding spinning operation.

As a convenient means of disposing of the fiber cakes, I have provided an endless belt conveyer 32, resting on the top 33 of the frame and traveling longitudinally thereof to a convenient point of discharge. The conveyer may be led back over return rolls 34 carried by a bracket 35.

In addition to affording means for lifting the spinning boxes to discharge position, the cylinders 24 may be utilized for the further function of balancing the work of the rock arms 14. Thus, if the spinning has progressed to a greater extent on one side of the machine than on the other, the rock lever on one side of the shaft 15 will be called upon for heavier duty than that on the other side, or there may be slight variations in weight of the boxes, or other factors which create an unbalanced condition. If the cylinders 24 be interconnected by piping 36 and a low pressure fluid be admitted to the cylinders, it is obvious that not only will the work imposed on the shaft 15 be lessened, but that it will be equalized on both sides by reason of the communication between the cylinders through the piping 36. Obviously the low pressure fluid admitted to the cylinders 24 tends to lift the weight of the rails, motors and spinning boxes from the arms of the rock lever 14, while the working of the plungers 25 in the cylinders 24, which are interconnected through the pipings 36, tends to steady any irregularity of reciprocation incident to overweight on one side or the other of the main shaft 15. This function of the cylinders is, of course, equally valuable whether the spinning boxes be of the old type or of the improved type shown.

I do not limit my invention to the details of construction shown and illustrated, which may be variously modified to accomplish substantially the same results without departing from what I claim as my invention.

I claim:—

1. In apparatus for spinning artificial silk, a rotary spinning box, a housing within which said box rotates, and means for lifting said box to the upper part of the housing on the completion of the spinning operation to facilitate its discharge.

2. In apparatus for spinning artificial silk, a rotary spinning box, means for vertically reciprocating the same during the spinning operation, a housing within which said box is reciprocated, and means for lifting said box to the upper part of the housing on the completion of the spinning operation to facilitate its discharge.

3. In apparatus for spinning artificial silk, a spinning box, means for rotating and vertically reciprocating said box during the spinning operation, a housing having a lid beneath which said box is confined during the spinning operation, and means for lifting said box to the position occupied by the lid to facilitate the removal of the spun fiber.

4. In apparatus for spinning artificial silk, a rotary spinning box, means supporting the same, means for vertically reciprocating said support to impart an up and down motion to the box during its rotation, and means for lifting said box from the reciprocating means after the spinning operation has been completed.

5. In apparatus for spinning artificial silk, a rotary spinning box, a rail on which the same is freely supported, means for vertically reciprocating the rail to impart an up and down motion to the box during its rotation, and means for lifting said rail and box from said reciprocating means at the completion of the spinning operation to facilitate the removal of the spun fiber from the box.

6. In apparatus for spinning artificial silk, a rotary spinning box, a vertically reciprocated rail on which the same is freely supported, a power cylinder beneath the rail, and a plunger therein engaging the rail and serving to lift the same from the reciprocating means on the completion of the spinning operation in order to facilitate the removal of the fiber.

7. In apparatus for spinning artificial silk, a pair of spinning boxes, a rocker bar engaging said spinning boxes respectively on opposite sides of its axis, and pressure means operatively interposed between said boxes to equalize the weights thereof on the rocker bar.

8. In apparatus for spinning artificial silk, a rotary spinning box and a housing within which said box rotates, said box comprising a base and a removable basket-like cover, together with means for lifting said base substantially to the level of the spinning box to facilitate the removal of the box cover and the fiber cake from the base.

9. In apparatus for spinning artificial silk, a rotary spinning box and a housing within which said box rotates and vertically reciprocates during the spinning operation, said box comprising a base and a removable basket-like cover, together with means for vertically reciprocating the box in its housing during the spinning operation, and independent means for lifting the box substantially to the level of the housing top upon the completion of the spinning operation to facilitate the removal of the box

cover and fiber cake from the base, substantially as described.

10. In apparatus for spinning artificial silk, a rotary spinning box, a housing within which said box rotates, a box supporting spindle passing downward through the bottom of the housing, a motor on the spindle below the housing, and means for lifting said spindle and motor on the completion of the spinning operation to a position in which said box is located at substantially the top of the housing to facilitate its discharge.

In testimony whereof I have signed my name to this specification.

JAMES CLAYTON.