Oct. 18, 1932. J. C. FERGUSON 1,883,358

SPINNING FRAME CLEANER

Filed Aug. 8, 1930 2 Sheets-Sheet 1

Fig. 1.

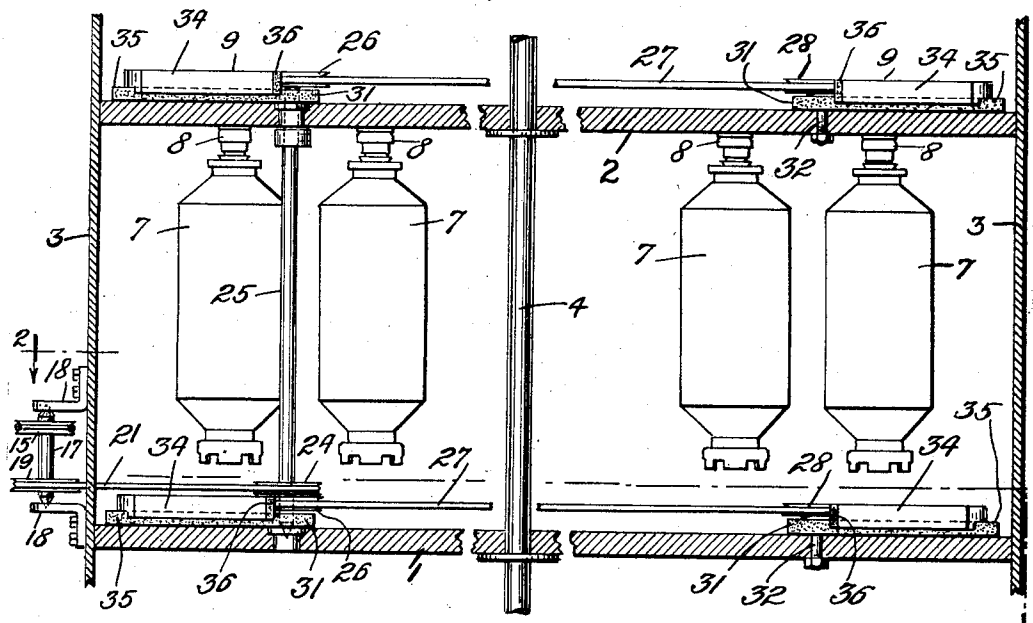

Fig. 2.

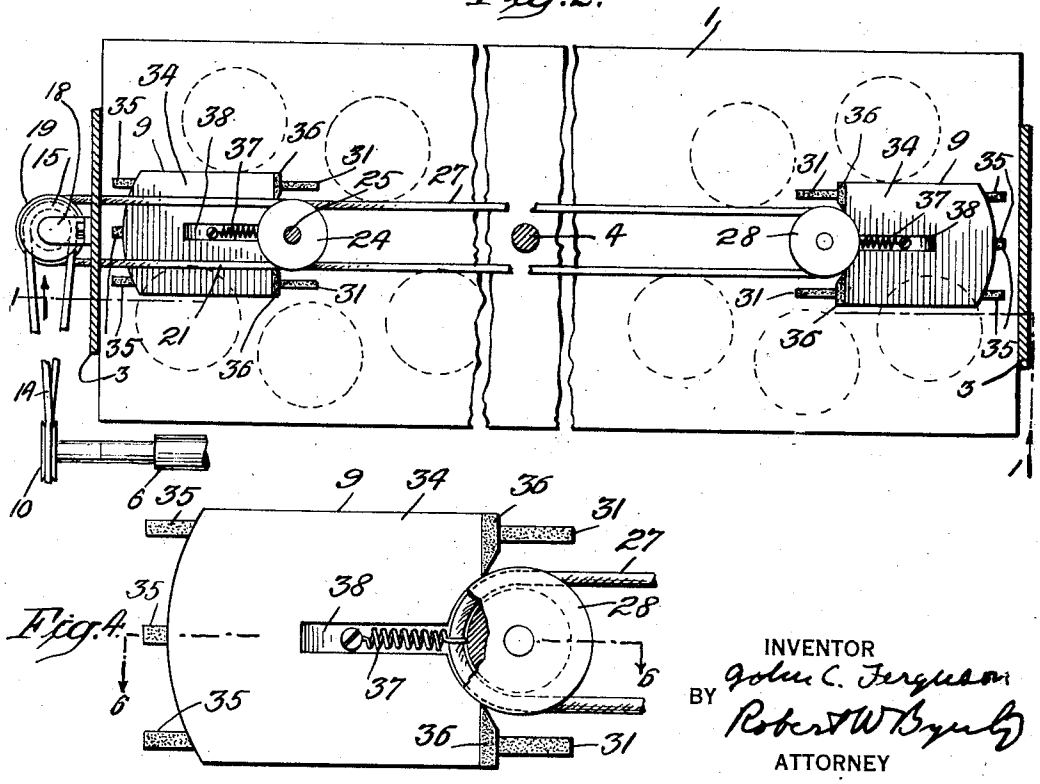

Fig. 4.

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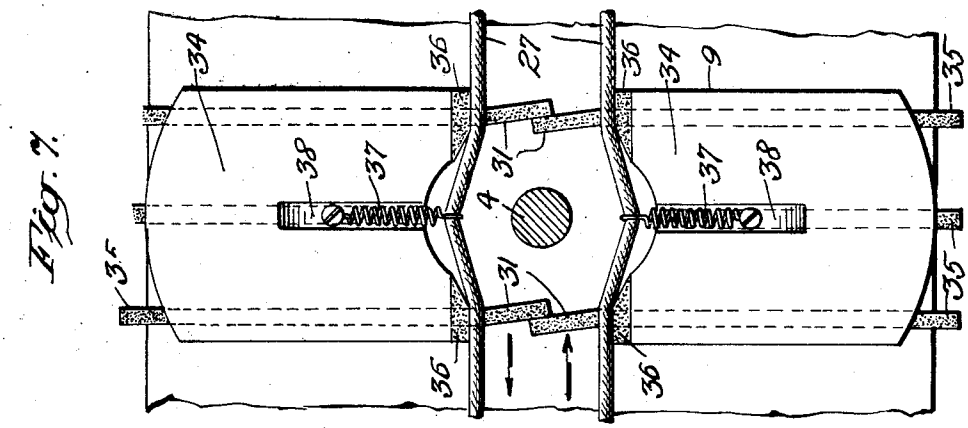


Fig. 7.

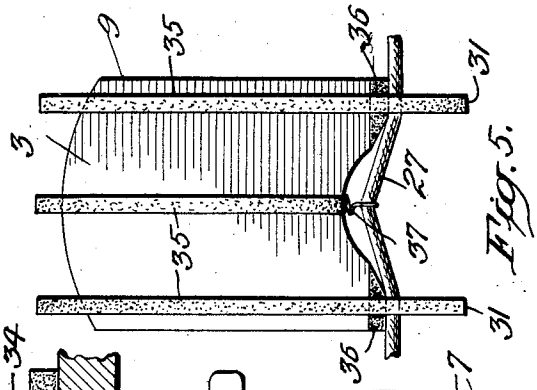
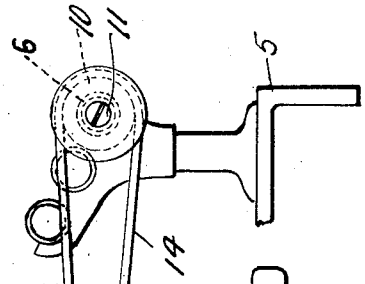


Fig. 5.



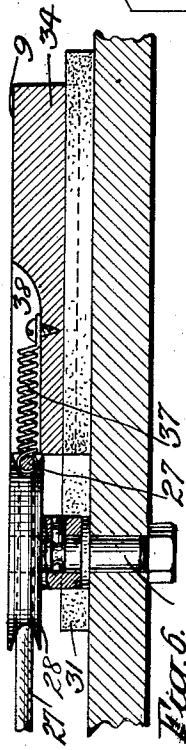


Fig. 6.

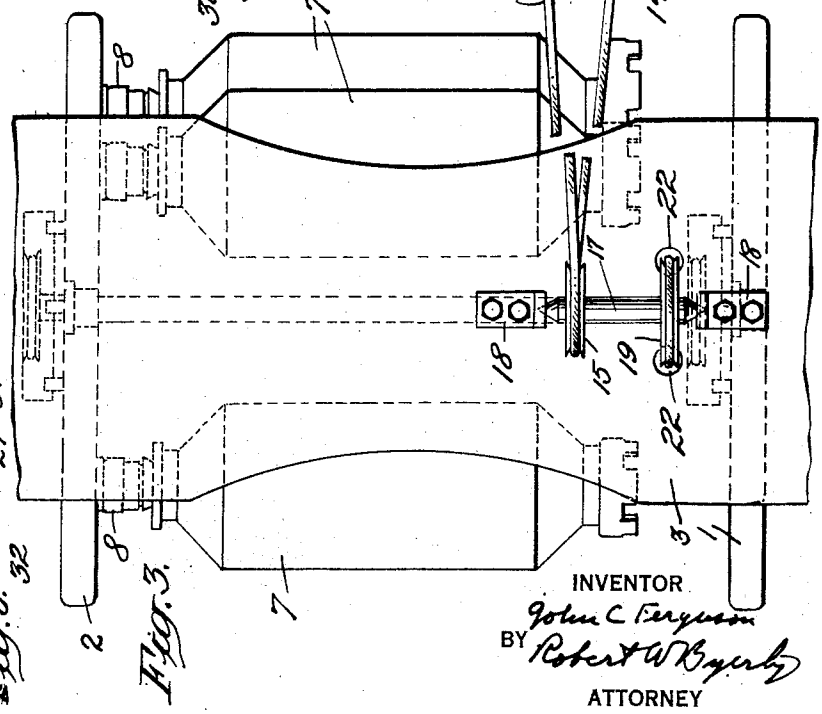


Fig. 3.

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Patented Oct. 18, 1932 1,883,358

UNITED STATES PATENT OFFICE

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SPINNING FRAME CLEANER

Application filed August 8, 1930. Serial No. 473,831.

This invention relates to spinning frame cleaners. During the operation of spinning frames, fly and dust are deposited on the creel boards in such quantities that, unless the creel boards are frequently cleaned, parts of the fly become attached to the rovings being drawn from the creel causing breakages in the drawing rolls or imperfections in the spun yarn. Notwithstanding the importance of creel board cleaning, such cleaning has heretofore invariably been done manually, and has been subject to the uncertainties of any manual operation. Thus, inattentiveness or neglect by operatives or the use of an insufficient number of operatives have frequently resulted in allowing fly to collect on the creel boards with consequent imperfections in the yarn.

The present invention provides automatic means for effecting the important operation of creel board cleaning, thereby preventing imperfections in the yarn and reducing the amount of labor required in spinning mills.

In accordance with the invention, a wiper is movably mounted on the upper surface of each of the creel boards on which fly is likely to collect, and is moved about substantially the whole upper surface of this creel board by means actuated from a power-driven part of the frame. Thus, whenever the frame is in operation, the wiper is also in operation.

In order that my invention may clearly be understood, I will describe in detail the specific embodiment of the invention which is shown in the accompanying drawings in which:

Fig. 1 is a side elevation of part of the creel of a spinning frame showing the cleaners;

Fig. 2 is a plan view of one of the creel boards with upstanding parts sectioned on the line 2—2 of Fig. 1;

Fig. 3 is an end elevation of part of a spinning frame showing the manner in which the cleaner actuating mechanism is connected with a drawing roll;

Fig. 4 is a plan view of the cleaner showing the manner in which it is attached to the pulley belt;

Fig. 5 is a bottom view of the cleaner shown in Fig. 4;

Fig. 6 is a section on the line 6—6 of Fig. 4; and

Fig. 7 is a plan view of the cleaners showing the manner in which they are enabled to pass each other.

The drawings show a spinning frame creel consisting of superposed creel boards 1, 2 supported in vertical end frames 3. They indicate a part 4 of one of the vertical control rods of the spinning frame which customarily extend upward through the middle of the creel. The drawings also indicate a roll stand 5 and the lower drawing rolls including a power-driven fluted draft roll 6.

Roving bobbins 7 are suspended from the upper creel board (not shown) and the intermediate creel board 2 by means of depending bobbin holders 8 engaging the upper ends of the bobbins 7.

Wipers 9 rest on the upper surfaces of the lower and intermediate creel boards 1, 2, and are moved about these surfaces under the lower ends of the bobbins 7 by mechanism driven from a power-driven part of the spinning frame. In the form shown, the power is taken from a belt pulley 10 which is fixed by means of a screw 11 on one end of the power-driven fluted draft roll 6. Through a cross belt 14, this pulley 10 drives a pulley 15 fixed on a short spindle 17 journalled in brackets 18 secured to the outer side of one of the end frames 3 of the creel. Another pulley 19 fixed on this spindle 17 is connected by a belt 21 passing through holes 22 in the end frame 3 with a pulley 24 fixed on a vertical shaft 25 journalled in the lower and intermediate creel boards 1, 2 and extending a short distance above the intermediate creel board 2. Pulleys 26 are fixed on this vertical shaft a short distance above the upper surfaces of the lower and intermediate creel boards 1, 2, and serve to drive endless belts 27 which lie close to the upper surfaces of the lower and intermediate creel boards 1, 2 and pass around idler pulleys 28 secured to the creel boards. The wipers 9 are secured to these belts 27 and by them are carried about the upper surfaces of the creel boards.

As clearly shown in Fig. 2, the fixed pulleys 26 and idler pulleys 28 are so positioned that the endless pulley belts 27 have their reaches close to, and at opposite sides of, the middle lines of the creel boards 1, 2, so that the control rods 4 of the spinning frame, one of which is shown in Figs. 1 and 2, pass between the two reaches of each belt 27. One or more wipers 9 are secured to each endless belt 27 so as to extend outwardly therefrom. In the form shown in the drawings, two wipers are used on each belt, but this is not essential. The wipers 9 are long enough to extend outwardly from the reaches of the belt 27 to the outer edges of the creel board, and outwardly from the pulleys 26, 28 substantially to the ends of the creel board, so that, as they travel around on the belt 27, they wipe substantially the entire surface of the creel board, except the middle portion of it which is located inside the belt, that is, between the two reaches of the belt. To provide for wiping this portion, the wipers 9 are provided with wiping extensions 31 at their inner ends. These extensions 31 are lower than the main body of the wiper 9 so that they may pass under the belt 27. They are slightly longer than the radius of the pulleys 26, 28 or half the distance between the two reaches of the belt 27. In order to enable the extensions 31 to pass the shaft 25 on which the driving pulley 26 is fixed and the dead shaft 32 of the idler pulley 28, and to pass the control shaft 4 of the spinning frame, the extensions 31 are made flexible and resilient so that they yield and bend when striking one of these obstructions and re-assume their normal position after passing it. When two or more wipers are used on a single belt, their wiping extensions 31 yield to pass each other, as shown in Fig. 7.

It will be understood that the arrangement which has been described results in continual wiping of all portions of the upper surfaces of the creel board.

While the invention in its broader aspects is independent of the specific form of the wipers or the means by which they are attached to the belts 27, a feature of the invention consists in a wiper 9 of a particular construction which I have found to possess special advantages. This wiper construction is best illustrated in Figs. 4, 5, 6 and 7.

The wiper illustrated has a rigid body 34 in whose lower surface are longitudinal grooves in which are secured strips 35 of felt which do the actual wiping. These strips 35 project some distance from the lower surface of the body 34, and two of them extend beyond the inner end of the body to provide the low wiping extensions 21. In the middle of the inner end of the body is an arcuate recess having substantially the same radius as the pulleys 26, 28. The spaced portions of the inner end of the body at the opposite sides of this recess are the belt-engaging portions of the body and are most desirably provided with felt pads 36. The wiper 9 is attached to the belt 27 by means of a tension spring 37 having one of its ends secured to the body 34 and the other to the belt 27 and lying in a longitudinal groove 38 extending into the body 34 from the middle of the arcuate recess.

The advantages of the construction described are that the wiper always extends straight out from the belt and passes around the pulleys without materially changing the tension of the belt. When the wiper 9 is on a straight reach of the belt 27, the spring 37 draws the belt 27 into the arcuate recess, holding it in firm contact with the spaced belt-engaging portions 36 of the body 34, so that the wiper projects outwardly at right angles to the belt. When the wiper 9 is on a part of the belt 27 which is passing around one of the pulleys 26, 28, this arcuate portion of the belt engages the arcuate recess in the body 34 of the wiper, so that the wiper projects radially from this portion of the belt.

What I claim is:

1. The combination with the creel of a spinning frame having superposed creel boards, of a vertical shaft extending between two of the creel boards, pulleys fixed on said shaft just above each of said creel boards, idler pulleys on said creel boards, belts adjacent to the upper surfaces of said creel boards passing around said shaft pulleys and said idler pulleys, wipers attached to said belts and resting on the upper surfaces of said creel boards, and a direct driving connection between a continuously rotating power-driven part of the spinning frame and said shaft.

2. The combination with a spinning frame, of a creel board wiper, an actuating shaft for said wiper extending vertically between a plurality of creel boards, a countershaft secured externally to one of the end frames of the creel, pulleys fixed on said countershaft, a pulley fixed on a power-driven draft roll of the frame, and belts connecting said pulley to a pulley on said countershaft and connecting another pulley on said countershaft to said actuating shaft and passing through holes in said end frame.

3. The combination with the creel of a spinning frame, of a horizontal endless belt located above the upper surface of a creel board, a wiper resting on the creel board secured to said belt and extending externally therefrom to wipe the portions of said creel board outside said belt, and a low wiping projection extending from the inner end of said wiper under the belt to wipe the portion of said creel board within said belt.

4. The combination with the creel of a spinning frame having control rods for the spinning frame extending vertically through its middle, of shafts extending upwardly from

a creel board on its middle line near its ends, pulleys on said shafts just above the upper surface of the creel board, an endless belt passing around said pulleys, a wiper secured to said belt and extending outwardly therefrom, a low wiping extension at the inner end of said wiper longer than the radius of said pulleys, said extension being flexible and resilient to permit it to pass said shafts and said control rods.

5. The combination with the creel of a spinning frame, of an endless belt mounted on a creel board just above its upper surface with its reaches parallel to and at opposite sides of the middle line of the creel board, a plurality of wipers secured to said belt and extending outwardly therefrom, wiping projections extending at the inner ends of said wipers below the belt and having a length greater than the distance between the reaches of the belt, said extensions being flexible and resilient so that those of one wiper may pass those of another wiper.

6. The combination with a creel board, a pair of pulleys mounted thereon and an endless belt extending around said pulleys, a wiper having a body containing a recess in its inner end, and a spring secured to said body and to the belt and tending to draw the belt into said recess and to hold the inner corners of the body firmly against the belt.

7. The combination with a creel board, a pair of pulleys mounted thereon and an endless belt extending around said pulleys, of a wiper comprising a body having at its inner end spaced yieldable belt-engaging members and a recess between them, and a tension spring secured to the body and to the belt and tending to draw the belt into said recess and against said members.

8. The combination with a creel board, a pair of pulleys mounted thereon and an endless belt extending around the pulleys, of a wiper comprising a body having at its inner end an arcuate recess of a radius substantially equal to that of the pulleys, and a tension spring secured to the body and to the belt and tending to draw the belt into said recess.

9. A wiper for the creel of a spinning frame, comprising a body having an arcuate recess in the middle of one of its ends and a groove extending inwardly from the middle of said recess, a tension spring in said groove having one end secured to the block and another end adapted to be secured to a belt, and a plurality of longitudinal strips of felt secured to the lower surface of the body, some of which extend beyond the inner end of the body.

10. The combination with the creel of a spinning frame, of a plurality of strips of felt each having a length equal to not less than one-half the width of the creel board, a rigid member pressing said strips against the upper surface of the creel board, and means for moving said rigid member so as to move said strips laterally over the entire upper surface of the creel board.

11. The combination with a creel board, of a pair of pulleys mounted on the middle line of said creel board at distances from its opposite ends substantially equal to one-half its width, means for driving one of said pulleys continuously in one direction, an endless belt extending around said pulleys, a rigid member secured to said belt and projecting outwardly therefrom, and strips of felt secured to the lower surface of said rigid member and projecting beyond its inner end a distance equal to the radius of said pulleys.

12. The combination with a creel having a plurality of superposed creel boards, of bobbins suspended from an upper creel board, and a wiper comprising a strip of wiping material and a rigid member pressing said strip against the upper surface of the creel board, and means for moving said wiper over substantially the entire upper surface of the creel board beneath said bobbins.

13. The combination with a creel having creel boards, of two pulleys mounted on the top of a creel board with their axes vertical, an endless belt passing around said pulleys and lying close to the upper surface of said creel board, with its two reaches closely spaced at opposite sides of the middle line of the creel board, a wiper comprising a strip of wiping material and a rigid member pressing said strip against the upper surface of the creel board, said wiper being secured to said belt, projecting outwardly therefrom, and means for rotating one of said pulleys continuously in one direction.

In testimony whereof I have hereunto set my hand.

JOHN C. FERGUSON.