C. SHARP.

FEED REGULATING DEVICE FOR COMBING ENGINES.

APPLICATION FILED MAR. 12, 1910.

1,004,092.

Patented Sept. 26, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

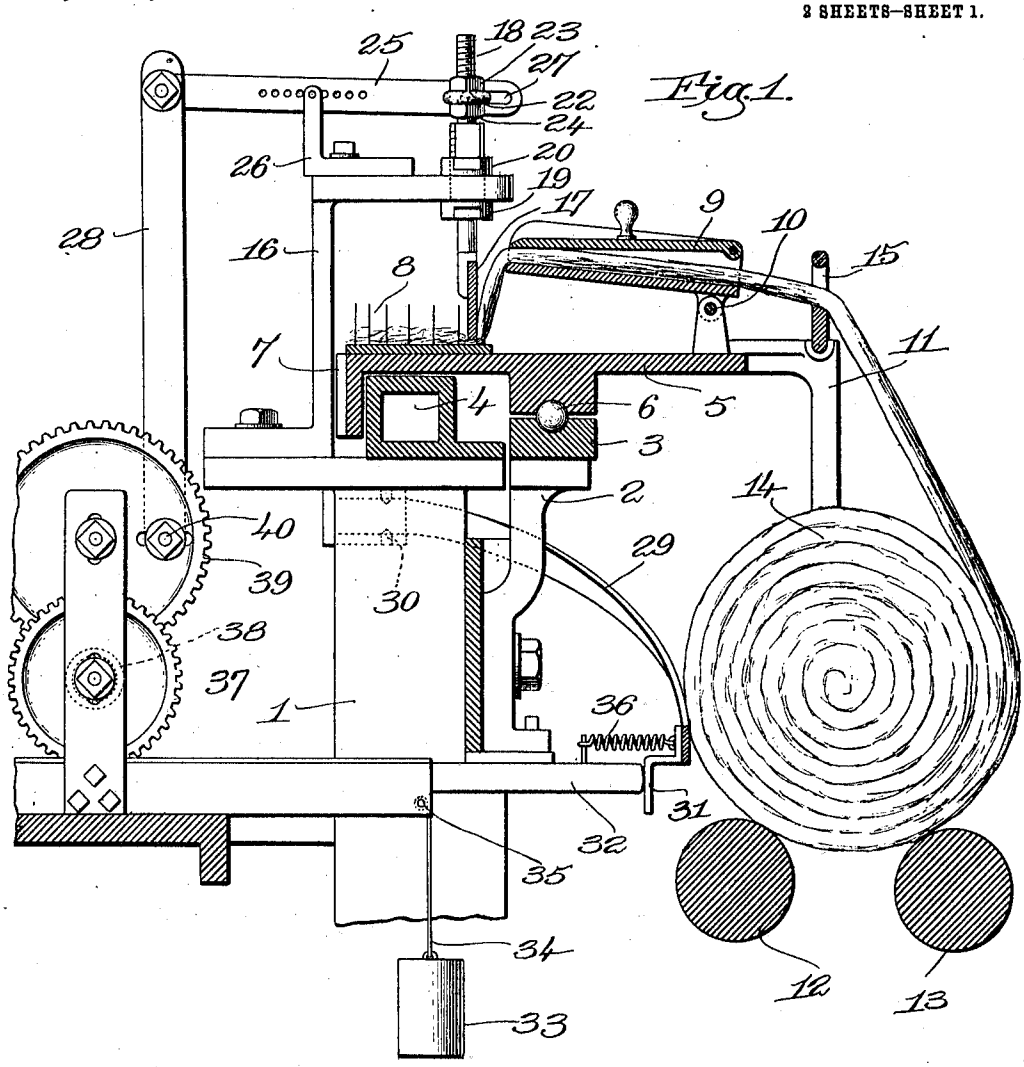
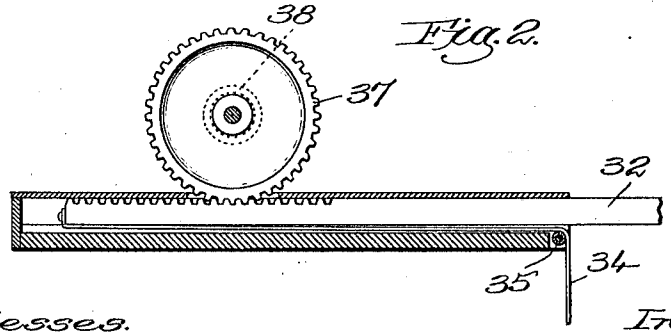


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

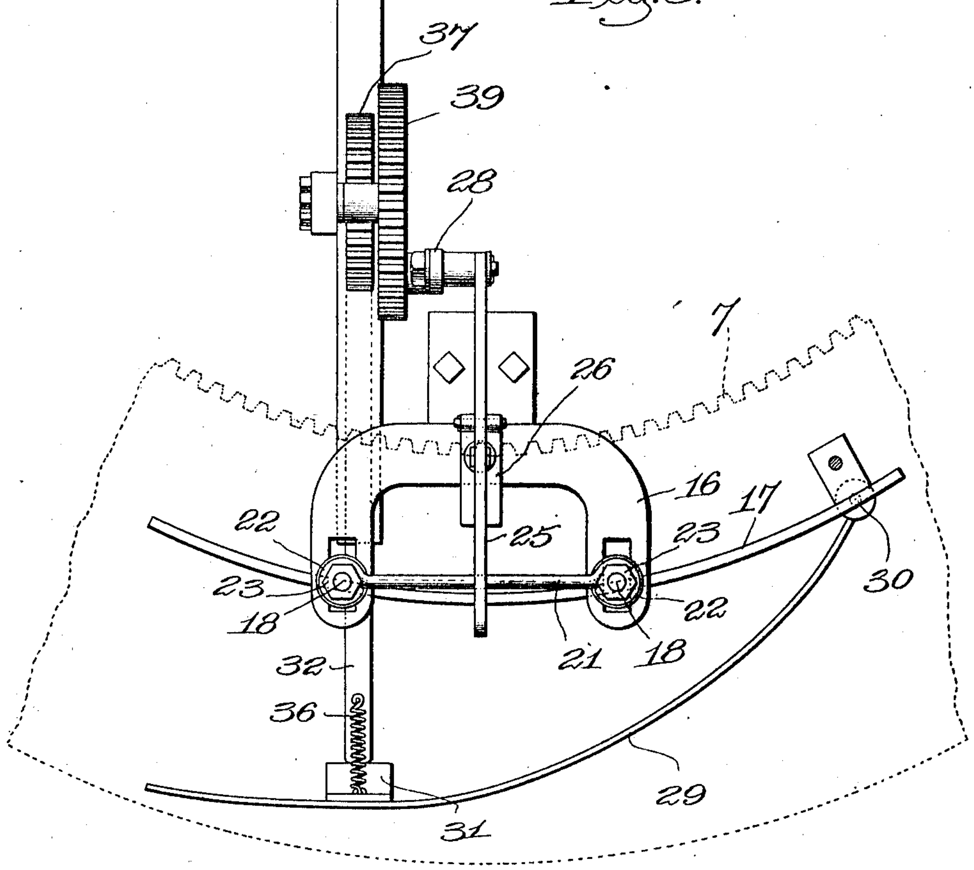
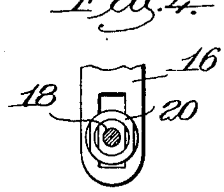
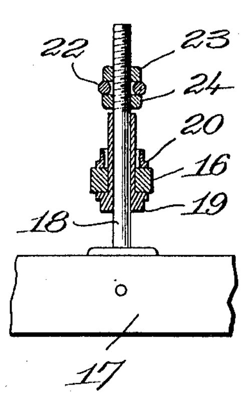


Fig. 5.

Fig. 4.





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UNITED STATES PATENT OFFICE.

CRAVEN SHARP, OF SANFORD, MAINE, ASSIGNOR OF ONE-HALF TO GOODALL WORSTED COMPANY, OF SANFORD, MAINE, A CORPORATION OF MAINE.

FEED-REGULATING DEVICE FOR COMBING-MACHINES.

1,004,092. Specification of Letters Patent. Patented Sept. 26, 1911.

Application filed March 12, 1910. Serial No. 548,934.

To all whom it may concern:

Be it known that I, CRAVEN SHARP, a citizen of the United States, and resident of Sanford, county of York, State of Maine, have invented an Improvement in Feed-Regulating Devices for Combing-Machines, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to a means for automatically controlling or regulating the feed of a combing machine of the type commonly known as the Noble comb. It has been found in combing machines of this type that the amount of sliver fed to the comb varies with the tension of the sliver, and this tension varies with the size or diameter of the sliver ball.

It is the object of the present invention to provide means for automatically maintaining substantially constant the amount of sliver fed to the comb circle. In the particular embodiment of the invention illustrated this result is secured by a follower pressing against the sliver balls and connected to the feed knife and acting automatically to raise and lower the feed knife in accordance with the varying diameters of the sliver balls.

The nature of the invention will more fully appear in the accompanying description and drawings and will be particularly pointed out in the claims.

The drawings represent so much of a combing machine of the Noble type as is necessary to illustrate the present invention, together with the preferred form of apparatus designed as an embodiment of the said invention.

In the drawings Figure 1 is a vertical, radial cross section of a portion of a combing machine of the Noble type showing a preferred form of attachment for securing the carrying out of the present invention. Fig. 2 is a detail partially in cross section showing a portion of the follower, its actuating cord, and the gear actuated by it; Fig. 3 is a top plan view of the portion of the construction shown in Fig. 2; Fig. 4 is a detail showing a top plan view of one of the connections to the feed knife; Fig. 5 is a detail partially in vertical cross-section showing the connections to the feed knife.

To obtain an understanding of the present invention it is unnecessary to describe the construction or operation of the combing machine, because that machine is familiar to the art, and in the form illustrated is of the Noble type.

A portion of the frame of the combing machine is shown at 1, this frame carrying bolted thereto an annular bracket for supporting the annular ball race 3. The frame also supports at 4 an annular steam chest. The annular carriage 5 is supported in the usual way upon the ball 6 in the ball-race 3, and is given its rotation by the gear teeth 7 at its inner edge. This carriage supports at its inner portion and above the steam chest the great comb circle 8, and near its outer periphery the sliver boxes 9 are pivotally mounted at 10 in the usual manner. Brackets 11 depend from the outer periphery of the carriage and support creel rollers 12, 13. The sliver ball is shown at 14 resting upon the creel rolls with the sliver passing through a guide 15 at the top of the bracket 11 and thence through the sliver box to the comb circle. These machines as commonly constructed carry sliver balls wound to deliver four slivers, and the guides 15 and sliver boxes 9 are, therefore, arranged in groups of four about the annular carriage. The frame 1 also carries a bracket 16 projecting over the comb circle and having supported thereon for vertical adjustment a feed knife 17.

The elements thus far described are all such as are familiar in this type of machine.

In the operation of combing machines of this type the sliver boxes traveling with the annular carriage have their forward ends tipped down close to the carriage until in their travel they come opposite the feed knife. They are then gradually elevated by a cam incline, while the end of the sliver in the comb circle is held down by the feed knife. As a result the sliver is fed out through the sliver box and then after the sliver box passes the feed knife it moves downwardly, casting the sliver over onto the comb circle. It is found in practice that the sliver being very elastic, if the tension placed upon it between the sliver box and the knife varies, the amount of sliver fed to the comb circle will vary. The tension upon the sliver depends chiefly upon the size or diameter of the sliver ball. When the sliver ball is full size, or nearly so, the tension is at its greatest and decreases as the ball is un-

wound. The result is that unless adjustment is made to vary the relative movement between the end of the sliver box and the feed knife the amount of sliver fed to the comb circle will vary, often causing great waste by an undue proportion of the fibers remaining in the comb circle and being discharged in the form of noils. It has been the practice for the operator manually to adjust the feed knife upwardly once in a while as the balls decrease in diameter. This requires constant attention to the machine and is at best but a minimizing of the difficulty, and does not secure any uniformity of feed. By the present invention means are provided for automatically maintaining substantially constant the amount of sliver fed through the sliver boxes to the comb circle. As a preferred form of the invention the construction illustrated is suggested, and will now be described.

The feed knife 17 is supported as usual by two vertical rods or standards 18 guided in bearings 19 held in place by nuts 20 in the bracket 16. A bridge piece 21 connects the rods 18, having formed at each end loops 22 through which the rods 18 pass, and are adjustably secured thereto by means of the lock nuts 23 and 24. A lever 25 is fulcrumed on a bracket 26 bolted to the bracket 16, and this lever is slotted at 27 at its forward end to engage the bridge piece 21, while at its rear end it is pivoted to a link 28.

A follower, herein shown as a metal strip 29, is pivoted at one end at 30 to the frame of the machine and extends below and in front of the feed knife. The follower is curved downwardly and outwardly so that each ball as it is carried by the carriage 5 around the frame and comes into position opposite the feed knife will press against the follower and move it. The follower is provided near its free end with a bracket 31 against which a rack bar 32 abuts. This rack bar 32 is mounted to slide radially of the machine, and is normally forced outwardly toward the creel by means of a weight 33 attached to a cord 34 running over an idler 35 and connected to the rear end of the rack bar. At its forward end the rack bar is connected by a spring 36 to the follower bracket 31. The rack bar 32 engages a gear 37 carrying a pinion 38, which pinion engages and drives a gear 39. The link 28 is pivoted eccentrically to the gear 39 at 40. It will thus be seen that when the ball in its bodily rotation about the frame of the machine arrives opposite the feed knife 17 it will press against the follower 29, and through the follower, rack bar, gearing, link, lever, and other connections described will determine the vertical position of the feed knife 17, thus automatically controlling the extent of the relative feeding movement between the sliver box and the feed knife. It will thus be seen that as the ball in its bodily rotation about the frame comes successively into contact with the follower, the follower, owing to the decreasing diameter of the ball, will move outwardly under the influence of the weight 33, thus causing, through the connections described, the raising of the feed knife 17. Hence, as the tension on the sliver decreases, owing to the decreasing diameter and weight of the ball, the feeding movement between the end of the sliver box and the feed knife is decreased to compensate for the decrease in tension, and a substantially uniform feed of the sliver to the comb circle is thus secured.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a circle comb, the combination of the comb circle, the sliver boxes concentric thereto, and means controlled by the variation in diameter of the sliver balls for automatically maintaining substantially constant the amount of sliver fed from the boxes to the comb circle.

2. In a circle comb, the combination of the comb circle, the sliver boxes concentric thereto, the feed knife, means for giving a relative vertical movement to said knife and boxes to feed the sliver to the comb circle, and means controlled by the variation in diameter of the sliver balls for automatically varying the extent of said relative feeding movement to compensate for varying tension on the sliver and secure a substantially uniform feed of the sliver to the comb circle.

3. In a circle comb, the combination of the comb circle, the sliver boxes concentric thereto, the feed knife, means for giving a relative vertical movement to said knife and boxes to feed the sliver to the comb circle, and means controlled by the variation in diameter of the sliver ball for automatically varying the extent of said vertical movement to maintain substantially constant the amount of sliver fed from the boxes to the comb circle.

4. In a circle comb, the combination of the comb circle, the sliver boxes concentric thereto, a vertically-movable feed knife, and means for automatically varying in either direction the vertical position of said feed knife.

5. In a circle comb, the combination of the comb circle, the sliver boxes concentric thereto, a vertically-movable feed knife, and means controlled by the variation in diameter of the sliver balls for automatically varying in either direction the vertical position of said feed knife.

6. In a circle comb, the combination of the comb circle, the sliver boxes concentric thereto, a vertically-movable feed knife, a follower, means for yieldingly pressing the follower against the sliver balls, and con-

nections between the feed knife and the follower to cause the movement of the follower to be transmitted to the knife whereby upon decrease or increase in the diameter of the sliver balls the feed knife will be correspondingly raised or lowered to secure a substantially uniform feed of the sliver to the comb circle.

7. In a circle comb, the combination of the comb circle, the sliver boxes concentric thereto, a vertically-movable feed knife, and means controlled by the variation in diameter of the sliver balls for automatically varying the extent of said vertical movement of the feed knife to compensate for varying tension of the sliver and secure a substantially uniform feed of the sliver to the comb circle.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

CRAVEN SHARP.

Witnesses:
SAMUEL O. NICHOLLS,
GEORGE A. FIELD.