

C. V. BOYS & J. W. TIERNEY.
 CONSTRUCTION OF AND MEANS FOR ACTUATING THE DABBERS OF WOOL COMBING MACHINES.
 APPLICATION FILED NOV. 9, 1908.

955,752.

Patented Apr. 19, 1910.

3 SHEETS—SHEET 1.

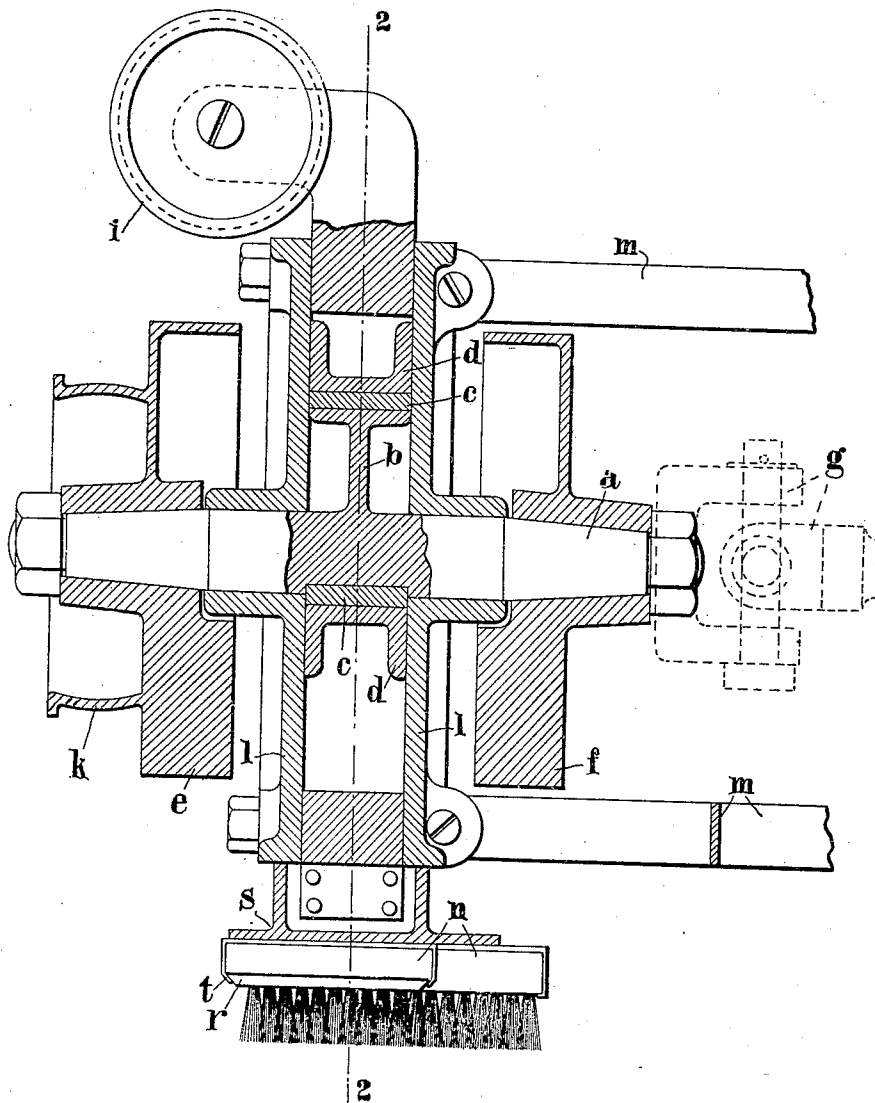


Fig. 1.

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Inventors:

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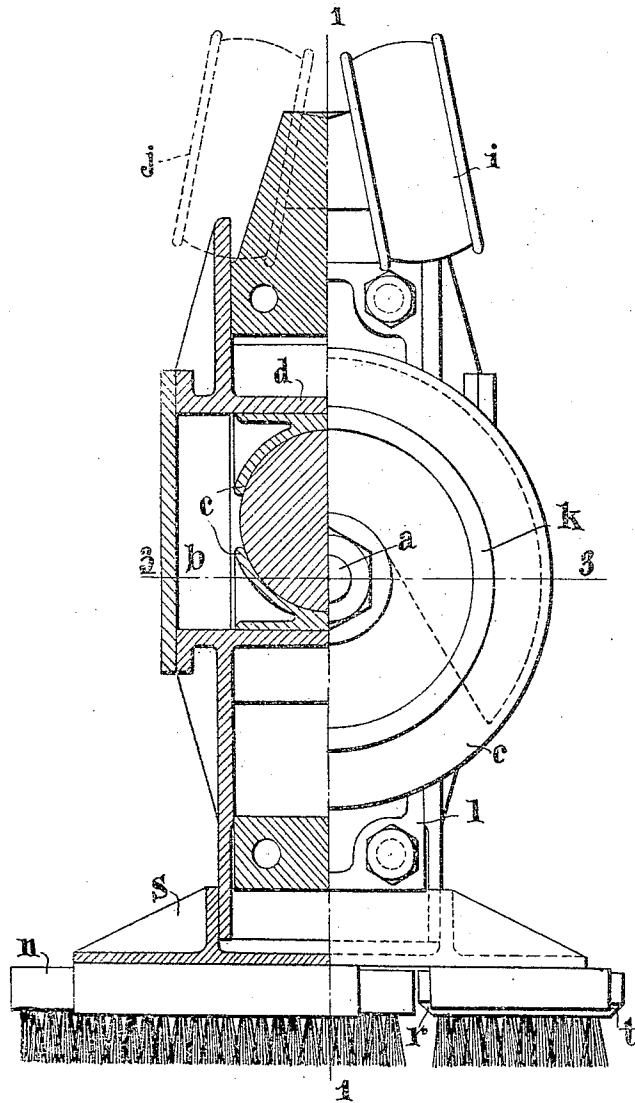


Fig. 2.

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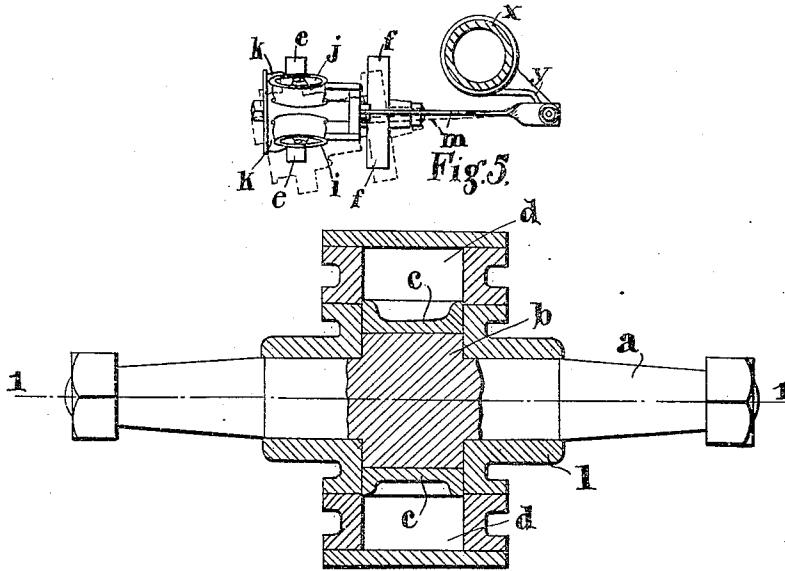


Fig. 3.

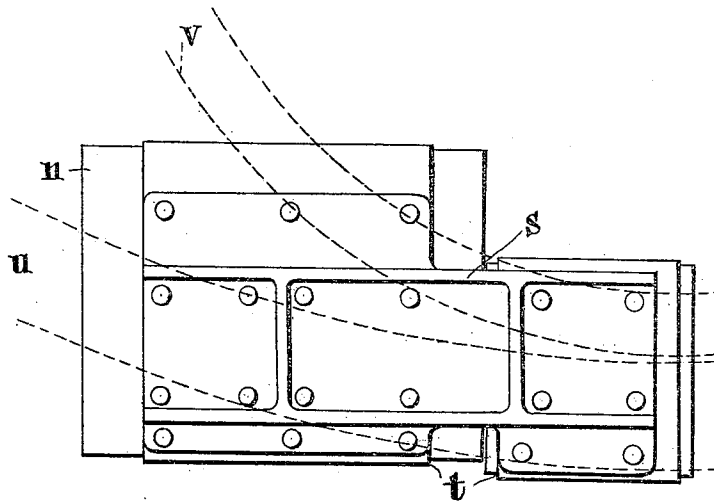


Fig. 4.

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UNITED STATES PATENT OFFICE.

CHARLES VERNON BOYS AND JOHN WILBUR TIERNEY, OF LONDON, ENGLAND.

CONSTRUCTION OF AND MEANS FOR ACTUATING THE DABBERS OF WOOL-COMBING MACHINES.

955,752.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed November 9, 1908. Serial No. 461,775.

To all whom it may concern:

Be it known that we, CHARLES VERNON Boys, a subject of the King of Great Britain and Ireland, and residing at 66 Victoria street, Westminster, in the county of London, England, and JOHN WILBUR TIERNEY, a citizen of the United States, and residing at 150 Queen Victoria street, in the county of London, England, have invented certain new and useful Improvements in the Construction of and in Means for Actuating the Dabbers of Wool-Combing Machines, of which the following is a specification.

Our invention relates to the construction of the dabbling brushes of wool combing machines and in the means for giving them the rapid reciprocating motion necessary for their proper action on the wool. Taking the Noble comb as an example the rate at which the rings can be turned and the wool combed depends upon the rate at which the dabbers can be actuated. Great care has therefore been taken by means of balance weights and good construction to increase the speed of reciprocation up to the highest practicable limit. If it were possible to actuate the dabbler at a still higher speed there would be no difficulty in causing the other parts of the machines to move at correspondingly increased rates and so the production could be increased. Another difficulty is found which results from imperfect balance in consequence of which the whole machine is subject to vibration and less close approximation of working parts and generally less exact operation is attained than would be possible if vibration did not occur. Wear of the brushes also makes such constant renewals necessary as to be an important item in the cost of working.

Now it is the object of our invention to remove or in great measure to reduce these difficulties so that a machine may do more useful work or do the same amount of work with more perfection and at less cost than at present is possible.

Attempts have been made to attain these objects at least in part by giving a lateral motion to the dabber by means of positive motion determined by a second eccentric so that the dabber while in engagement with the pins of the comb shall partake of their horizontal motion. The methods employed however, far from reducing the trouble

caused by imperfect balance have tended to increase it.

Our invention consists in a method and means depending upon want of lateral balance for causing the brushes at the time that their bristles are engaged with the pins of the combs to partake of the horizontal motion of the combs so that the pins are not dragged laterally through the bristles of the brushes so reducing wear and making a greater comb speed for a given vibration speed or a less vibration speed for a given comb speed permissible.

Our invention consists in the means depending upon want of lateral balance for permitting and causing a lateral movement of the dabber actuating frame in proper relation to the vertical dabbling motion whereby the brush and comb move together laterally when in engagement and whereby the brush at the upper part of its stroke reverses its lateral movement so that any point in it describes in its complete up and down stroke a long ellipse or curve approximating thereto.

Our invention further consists in the means carrying the dabber actuating frame upon a support which is elastically held laterally but which relatively is rigid vertically and is so situated and constructed that the dabber brushes are guided in their short lateral movement in a path approximating to that of the combs while in engagement therewith and in the means depending upon want of balance in the lateral direction which is preferably not introduced in the vertical direction in the actuating gear in consequence of which the lateral movement is produced in time with and in the proper phase relation with the preferably balanced vertical motion of the dabber so that the desired path may be attained and the machine as a whole may be unaffected by vibration.

The invention also consists in the improved means for operating the dabbers in combing machines hereinafter described.

As heretofore constructed the balanced actuating gear consists of a shaft carrying an eccentric which actuates the dabber and of an eccentric on one side of the former to actuate a balance weight in opposition to the motion of the dabber itself. The eccentrics impart their vertical movements by means of eccentric blocks running in transverse slides.

The vibration resulting from this construction is greatly reduced as compared with an unbalanced dabber. If a pair of eccentrics were used to replace either of these single

eccentrics and were mounted on either side so as to produce real symmetry the balance would be still more perfect and it is this which we use as a basis of our laterally unbalanced construction.

According to our invention we set the shaft carrying the eccentrics in line with the central axis of the machine and support the frame on an elastic support which may be in the form of a plate or frame thin enough to support the dabber frame elastically and to permit of its small lateral excursions and deep enough to be sensibly rigid and long enough to reach and be secured to the main frame at some point between the center of the whole machine and the center of the side ring or small circle or thereabout.

According to our invention we retain the eccentric actuating the dabber and its transverse slide and in the place of the eccentric and slide-operated balance weight we place two eccentric balance weights upon the shaft on either side of the dabber operating eccentric of such magnitude as to balance in the vertical direction the dabber, slides and eccentric.

As in spite of the best attempt at obtaining perfect vertical balance some small residue of want of balance may remain or may be developed in use, we prefer to make the frame while rigid in the vertical relative to the horizontal direction yet sufficiently elastic in the vertical direction to allow the infinitesimal vertical motion which the slight imperfection of balance in the vertical sense may require. It is also desirable that the dabber operating mechanism as a whole should be so proportioned as to balance about the axis of the driving shaft if set in a horizontal position.

Referring to the accompanying drawings, Figure 1 is a sectional elevation of the part of the machine operating the dabber taken on the lines 1—1, Figs. 2 and 3. Fig. 2 is a front elevation partly in section on the line 2—2, Fig. 1. Fig. 3 is a sectional plan of part of the apparatus on the line 3—3, Fig. 2. Fig. 4 is a plan showing the back of the brush or dabber and of its holder. Fig. 5 is a plan view of the dabber and its flexible support.

In the form of the invention illustrated the shaft *a*, carries the driving eccentric, *b*, which moves an eccentric block *c* running in transverse slides *d*. At the ends of the shaft *a* are mounted eccentric balance weights *e*, *f*. The driving is effected either by means of flexible coupling such as *g*, or flexible shaft or by means of the pair of pulleys *i*, *j*, driving the pulley *k*. The object of this arrangement of pulleys, is to prevent the driv-

ing band from interfering with the free lateral reciprocation of the dabber operating the shaft.

The frame *l*, carrying the dabber mechanism is mounted on a thin framework, *m*, sufficiently thin to allow the required lateral movement that is, toward and away from the observer as regards Fig. 1, and from left to right as regards Fig. 2 and sufficiently deep to be relatively rigid in the vertical direction. This frame, *m*, is secured to the main frame of the machine at some point between the center of the whole machine and the center of the side ring or small circle or thereabout. In Fig. 5 the support *m* is shown secured to a bracket *y* upon a pillar *x* in the center of the combing machine. The ends of each of the metal strips forming the support are rigidly secured as can be seen from Figs. 1 and 5 to the pillar and dabbing device respectively.

As no part of the balance weights, *e*, *f*, is made to work in a vertical slide as has been usual heretofore the balance laterally is imperfect so that the center of gravity of the dabber, *n*, and its operating frame *l*, would if the frame were at rest move backward and forward in a straight line. As however the frame *l*, is held elastically in the horizontal sense the center of gravity will not so oscillate but will remain at rest and the frame itself will oscillate carrying the dabber with it and further the phase relation of the vertical and horizontal motions of the dabber will be such that either is at its maximum velocity when the other is at its maximum displacement. By this means an approximately elliptic movement of the dabber is obtained. By suitably proportioning the speeds of the dabber shaft and combs and the weights of the dabber actuating frame and of the moving parts the horizontal motion of the dabber may be made sensibly equal to that of the combs while it is in engagement therewith. For instance the horizontal velocity of the dabber may be increased by increased speed of revolution of the shaft or by increasing the weights of the parts which balance one another in the vertical sense as compared with the remaining parts of the dabber actuating frame and attachments thereto. Conversely it may be reduced by corresponding reductions. While obtaining the advantage of sensibly equal horizontal motion of combs and dabber while they are in engagement we reduce the cost and the friction and wear by getting rid of the sliding balance weight and at the same time obtain a perfect balance in the vertical direction which would only be possible by the use of a pair of eccentrics and sliding balance weights in the present form of construction.

We prefer to divide the usual single brush into two parts and to construct them of

square or oblong shape as shown in Fig. 4 so that they are reversible and provide on the sides of the leading brush a leading-in slope or chamfer, *r*, to assist the pressing down and entrance of the sliver and we make the brush holders, *s*, in the form of slides with dovetailed flanges *t*, into which the brushes may be pushed and clipped in position. In Fig. 4 the dotted lines, *u*, *u*, *v*, *v*, indicate the positions of the large and small circles or combs respectively.

We have above described the most simple and perfect means we know for producing a properly timed lateral reciprocation, but it is evident that positive means, depending upon the use of an extra eccentric or crank and connecting rod attached to some fixed part of the frame might be used to produce the same result.

Having now described our invention what we claim as new and desire to secure by Letters Patent is:—

1. In dabber actuating mechanism for wool combing machines a reciprocating dabber, a shaft and eccentric operating said dabber and an elastic support for said shaft and dabber, as and for the purposes described.

2. In wool combing machines a reciprocating dabber and mechanism actuating said dabber, said mechanism being unbalanced in the horizontal plane for the purpose of giving a lateral movement to said dabber sensibly the same as that of the combs when

said dabber is in engagement therewith, as set forth.

3. In wool combing machines a dabber actuating frame, a support for said frame, said support permitting movement in a horizontal direction, dabber actuating gear balanced in the vertical plane carried by said frame, said actuating gear being unbalanced in the horizontal plane, as and for the purposes described.

4. In a wool combing machine, dabber actuating mechanism comprising an eccentric or crank and a vertical slide operating therewith, two eccentrically placed balance weights, said weights being balanced in the vertical plane but unbalanced in the horizontal plane and means for operating said eccentric or crank, substantially as described.

5. In wool combing machines dabber actuating mechanism comprising a frame, a support elastic in the horizontal direction carrying said frame, a shaft turned in said frame, an eccentric on said shaft, a slide operated by said eccentric, balance weights balancing said slide and parts moving therewith in the vertical direction and a dabber carried by said slide as set forth.

In testimony whereof, we affix our signatures in presence of two witnesses.

CHARLES VERNON BOYS.
JOHN WILBUR TIERNEY.

Witnesses:

W. SEYLER ADAMS,
BERTRAM H. MATTHEWS.