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2,483,931

COMBING MACHINE FOR COMBING TEXTILE FIBERS

Filed May 23, 1946

4 Sheets-Sheet 1

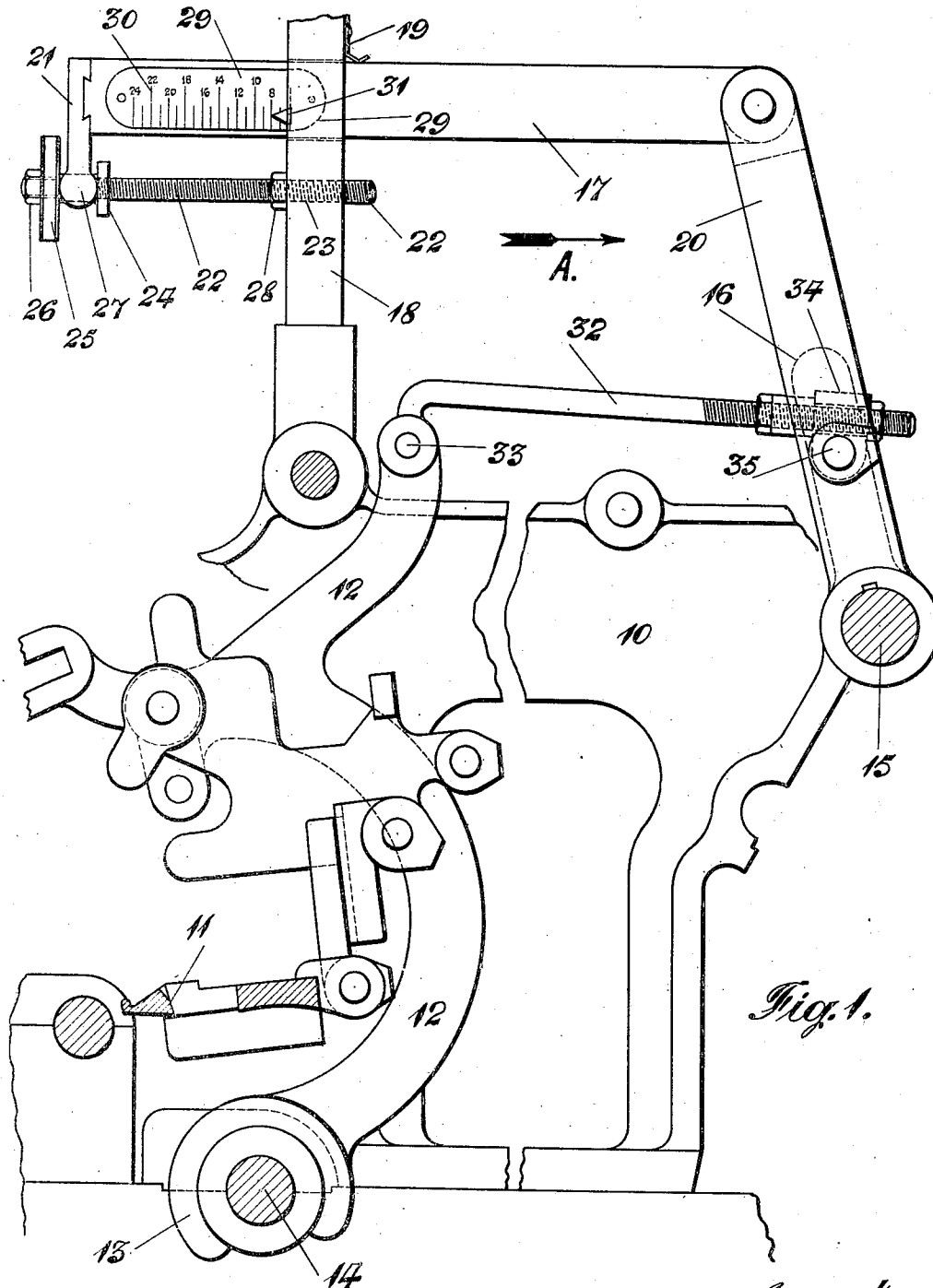


Fig. 1.

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4 Sheets-Sheet 2

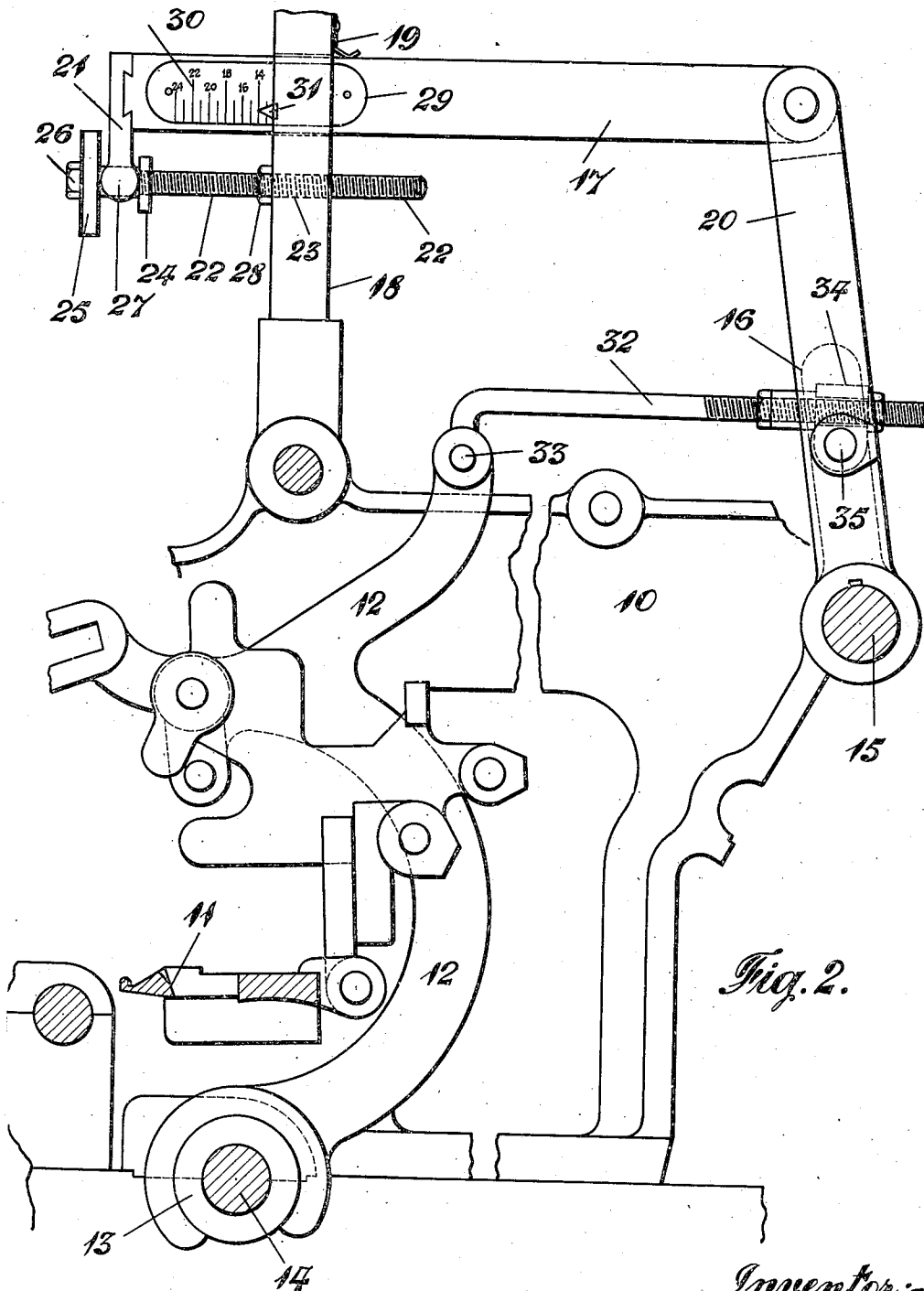


Fig. 2.

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4 Sheets-Sheet 3

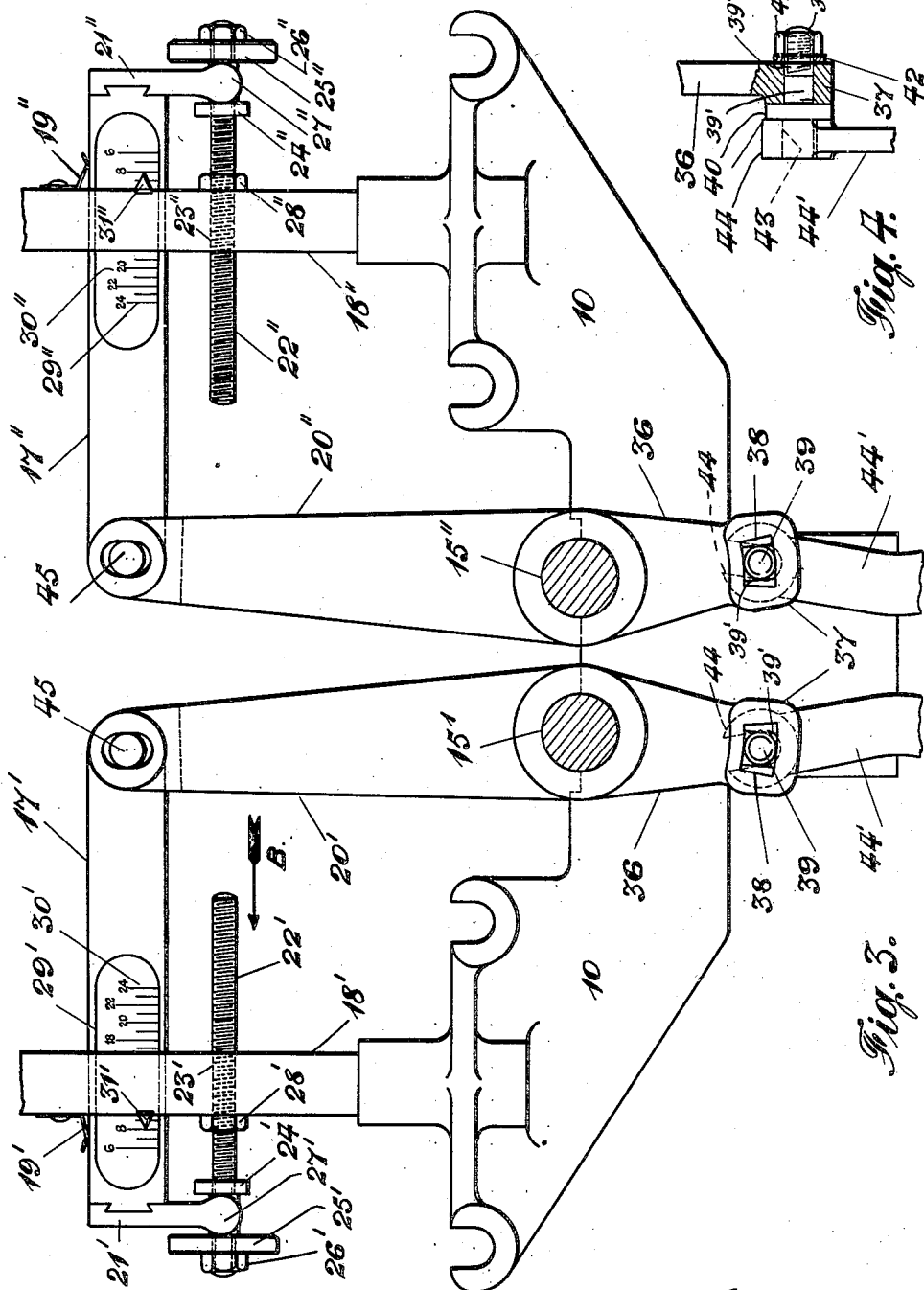


Fig. 4.

Fig. 3.

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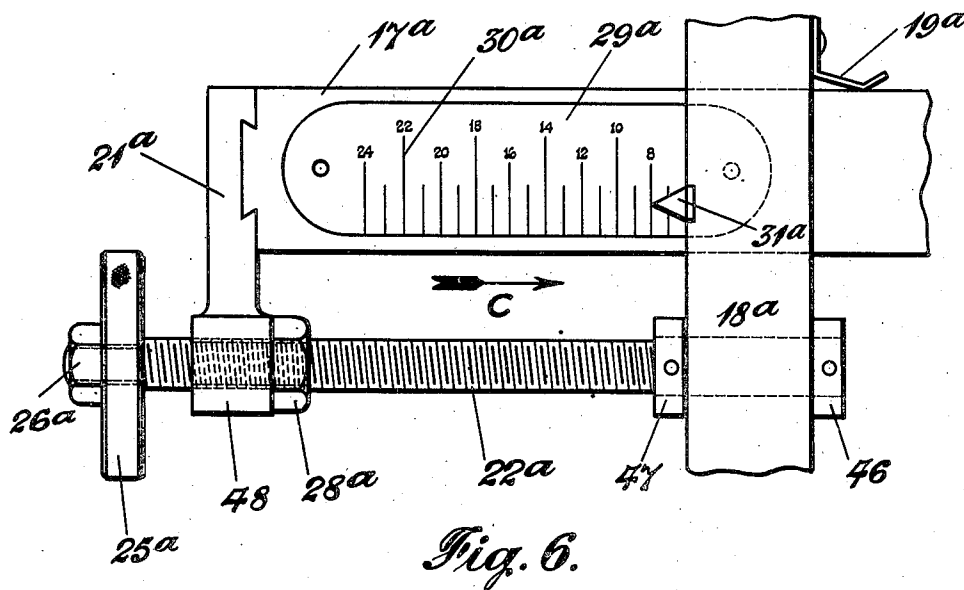
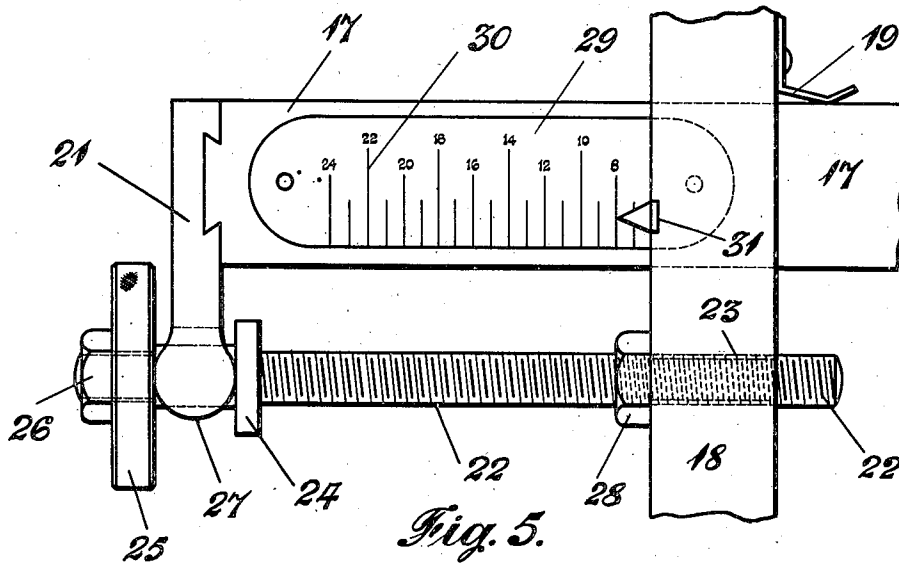
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COMBING MACHINE FOR COMBING TEXTILE FIBERS

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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

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COMBING MACHINE FOR COMBING
TEXTILE FIBERSDonald Pierrepont, Chadderton, Oldham, Eng-
land, assignor to Platt Brothers and Company
Limited, Oldham, EnglandApplication May 23, 1946, Serial No. 671,755
In Great Britain July 6, 1945

5 Claims. (Cl. 19-116)

1 This invention relates to combing machines for combing textile fibres, and in particular, to apparatus for setting the nippers of said machines. For convenience in the following description reference will be made only to a Nasmith combing machine but it is to be understood that with suitable modifications the invention is applicable to other types of combing machines.

In a Nasmith combing machine as at present constructed, the setting of the nippers is effected by turning the nipper setting shaft through the medium of a quadrant located at one end of said shaft.

Due to the excessive torque imparted to the shaft by the turning movement being applied at one end only, it is practically impossible to obtain a uniformly accurate setting of all the nippers connected to the shaft, and individual attention to the nippers is necessary, particularly to the nippers located towards that end of the shaft remote from the end where the turning movement is applied. Further, the confined position of the quadrant does not facilitate access thereto and also the index markings on the quadrant are not readily viewed in relation to the fixed marking on the frame.

The present invention provides apparatus for setting the nippers of a combing machine and in particular a Nasmith combing machine which overcomes the aforesaid disadvantages, and, by reducing torque on the nipper setting shaft to a minimum, facilitates the simultaneous, accurate, and uniform setting of all the nippers of a combing machine, in which the index markings are plainly visible, and the apparatus for setting the nippers is easily accessible, and may be operated with a minimum of manual effort.

According to this invention, the improved apparatus for setting the nippers of Nasmith combing machines includes an easily accessible graduated setting arm located at approximately mid-position in the length of the combing machine and in operative connection with the nipper setting shaft, said arm being adapted for adjustment in a guide in the machine frame by means of a manually operable screw-threaded rod whereby to transmit turning movement to said nipper shaft and with a minimum of torque on said shaft, said setting arm being furnished with an easily visible index gauge to indicate the precise setting of the nippers.

In a double-sided Nasmith combing machine the setting apparatus will be duplicated and each set independently operated. In this connection it is to be understood that each side of a double-

2 sided Nasmith combing machine is independent and it is not essential that the nippers on one side of the machine shall have the same degree of setting as the nippers on the opposite side of the machine.

The invention will now be described with the aid of the accompanying drawings, in which only so much of a Nasmith combing machine is shown as is necessary for a clear understanding of the invention.

Fig. 1 is a fragmentary cross-sectional view through a single-sided Nasmith combing machine with nipper-setting apparatus according to the invention applied thereto; Fig. 2 is a similar view to Fig. 1, showing parts in an alternative position of adjustment; Fig. 3 is a fragmentary cross-sectional view through a double-sided Nasmith combing machine with duplicate sets of nipper-setting apparatus according to the invention applied thereto; Fig. 4 is a fragmentary side view, partly sectional, of a detail part of Fig. 3; Fig. 5 is a fragmentary side view, drawn to a larger scale, of an adjusting screw and indicator of the apparatus shown separated; Fig. 6 is a similar view to Fig. 5, showing a modification later to be described.

The same reference numerals indicate corresponding parts in the several figures of the drawings, distinguished in some instances by the addition of exponents.

Referring to Figs. 1 and 2, 10 indicates the frame of a single-sided Nasmith combing machine, 11 one of the nippers, 12 one side leg of the nipper, it being understood that there is a similar leg at the opposite side of the nipper, both legs being fulcrumed on the collar of the bearing 13 of the cylinder shaft 14; 15 denotes the nipper-setting shaft. Fast on the nipper-setting shaft 15 is a number of spaced radial arms, one of which is indicated in dotted lines at 16, there being a radial arm for each leg of each pair of nipper side legs, to which it is adjustably connected by a rod, as will later be described.

Nipper-setting apparatus according to the invention comprises a setting arm 17 extending from front to back of the machine and slidably mounted in guides in a vertical frame member 18 carried on the frame 10 of the machine, the setting arm 17 being retained on its setting in the guide by a leaf spring 19 secured to the frame member 18. The frame member 18 carrying the setting arm 17 is located at mid-position of the machine, which frame member, in conjunction with the end frames supports the usual overhead rack, not shown, for holding the spare laps.

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At its rear extremity, the setting arm 17 is connected to the adjacent radial arm on the nipper-setting shaft 15, said radial arm, indicated at 20, being longer than the remaining radial arms 16.

At its forward extremity, the setting arm 17 is furnished with a downwardly projecting bracket 21 in the lower end of which is mounted, in substantial parallelism with the setting arm 17, a screw-threaded rod 22, hereinafter referred to as the adjusting rod. The adjusting rod 22 is engaged at the end remote from the bracket 21 in a correspondingly screw-threaded aperture 23 in the frame member 18. The adjusting rod 22 is adapted for turning movement in the bracket 21 but is restrained against sliding movement relatively thereto by a collar 24 fast on the rod 22 on one side of the bracket 21, and a handwheel 25, also fast on the rod 22, at the opposite side of the bracket 21 and held thereon by a nut 26.

In order to reduce friction to a minimum, the bracket 21 is ball-ended at 27 where it is contacted by the collar 24 and handwheel 25.

The adjusting rod 22 is furnished with a lock-nut 28 to retain it in a position of adjustment, or with other means for the like purpose.

The setting-arm 17 is furnished with a graduated gauge, which, as shown, may be a plate 29 inserted in a recess in one of the sides of the setting-arm 17 and inscribed with index markings 30. A fixed index pointer 31 is secured to the frame member 18 to point to the appropriate index markings.

The radial arms 16, 20 are each connected to the respective side legs 12 of the nippers by adjustable rods. One of said rods is indicated at 32 and is pivotally connected at 33 to the side leg 12. The other end of the rod 32 is screw-threaded and engages in a small fitting 34, pivoted to the radial arm 20 on a pivot pin 35.

It is to be understood that the nipper of each head of the machine is similarly connected at each side of each head, but in these cases the screw-threaded rod connection is to a short radial arm 16, the long radial arm 20 being only necessary at the one position in the centre of the machine.

To set the nippers of a combing machine, say to a wider setting than that shown in Fig. 1, the locknut 28 of the adjusting rod 22 is released and the handwheel 25 is rotated in clockwise direction, thereby turning the adjusting rod 22 and causing it to traverse through the screw-threaded aperture 23 in the frame 18 in the direction indicated by the arrow A, Fig. 1. The setting-arm 17 is thereby caused to slide in the guides in the frame 18 and, by means of the radial arm 20, to turn the nipper-setting shaft 15 to adjust the setting of the nippers. The turning of the nipper-setting shaft 15 simultaneously moves all the radial arms 16 to adjust the respective nippers.

Turning movement of the adjusting rod 22 is continued until the index pointer 31 indicates on the graduated gauge 29 that the desired setting of the nippers has been attained. The adjusting rod 22 is then locked in adjusted position and the setting apparatus and the nippers are retained in position against accidental displacement, see Fig. 2.

Each nipper leg is also locked to the machine frame in known manner.

With the turning movement applied at the longitudinal centre of the nipper-setting shaft 15, the torque on the shaft 15 is reduced to a minimum, thereby facilitating the uniform and ac-

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curate setting of all the nippers on the nipper shaft.

The manual effort required to turn the nipper-setting shaft 15 as described is considerably less than the effort required to turn a nipper-setting shaft from one end in the normal manner, and a more uniform and accurate setting of all the nippers on the nipper shaft is simultaneously effected than has heretofore been possible.

The nipper-setting apparatus may be applied to existing Nasmith combing machines with a minimum of structural alteration to the machine.

The application of the invention to a double-sided Nasmith combing machine is illustrated in Fig. 3, in which parts corresponding to those described with reference to Figs. 1 and 2 are indicated by the same numerals distinguished by the addition of the exponent "1" for the parts on the left-hand side of the machine, the duplicate parts of the apparatus on the other side of the machine being indicated by the same numerals distinguished by the addition of the exponent "11".

In this double-sided construction, the radial arms 20¹ and 20¹¹ are each formed with an extension 36 having at its lower end a boss 37 with a curved slot 38 therein in which is secured a stud 39. The stud 39 is formed with a squared portion 39¹ fitting into the slot 38 and the stud is held in position in the boss 37 as between a collar 40 formed on the stud 39 and a nut 41 on a screw-threaded part 39¹¹ of the stud 39 and washer 42, see Fig. 4. For clearness of illustration in the drawings the nuts 41 and washers 42 are omitted from Fig. 3.

A projecting part 43 of the stud 39 is engaged in the jaw 44 of a lever arm 44¹ operatively connected to the side leg of a nipper.

The side legs of the remaining nippers are operatively connected to short downwardly projecting arms on the nipper shaft 15¹ corresponding to the extension 36 and are adjusted simultaneously.

To adjust, say the left-hand nippers to a wider setting than that shown in Fig. 3, the adjusting rod 22¹ is turned in the frame member 18¹ in a direction opposite to that described in reference to Figs. 1 and 2, i. e., counter-clockwise, thereby causing the setting rod 17¹ to move in the direction indicated by the arrow B in Fig. 3, and, rocking the radial arm 20¹ and the shaft 15¹ causes the stud 39 to move the lever arm 44¹, whereupon the respective nipper is set to the required degree, the other nippers being simultaneously set.

The pin-and-slot connection, indicated at 45, of the radial arm 20¹ to the setting arm 17¹ compensates for the radial movement of said arm 20¹.

The index markings 30¹ on the indicator plate 29¹ are in the reverse position to those shown in Figs. 1 and 2.

In the modification illustrated in Fig. 6, in which parts corresponding to those shown in Fig. 5 are indicated by the same reference numerals, distinguished by the addition of the letter a, the adjusting rod 22^a is free to turn in the frame member 18^a but is held against sliding movement relatively thereto by collars 46, 47 pinned to the rod 22^a on opposite sides of the frame member 18^a.

The bracket 21^a is formed at its lower end with a boss 48 screw-threaded internally to receive the screw-threaded rod 22^a.

When it is desired to adjust the nippers to a wider setting, the lock-nut 28^a is slackened back and the rod 22^a turned in clockwise direction by means of the hand-wheel 25^a, whereupon the

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bracket 21 is traversed along the screw-threaded rod in the direction indicated by the arrow c and the setting arm 17^a is slid through the guide frame member 18^a to bring about the desired adjustment of the nippers.

What is claimed is:

1. Apparatus for simultaneously setting the nippers of a combing machine for combing textile fibres having a frame, at least one set of nippers, and at least one nipper-setting shaft mounted in said frame, radial arms mounted on said shaft, connections between said arms and the nippers, an easily accessible setting arm located approximately midway of the length of the machine and in operative connection with one of said radial arms, a guide member supported by said frame, said setting arm being adjustable in said guide member, a manually operable screw-threaded adjusting rod mounted in approximate parallelism with said setting arm and operatively connected to said setting arm, whereby turning movement of the adjusting rod transmits endwise movement to the setting arm, and an easily visible index gauge comprising co-operating members mounted on said setting arm and said guide member to indicate the setting of the nippers.

2. Apparatus as claimed in claim 1, including a spring for retaining the setting arm in its position of adjustment, a bracket on one end of the setting arm affording a bearing for the rod, means for turning said rod, and means for retaining said rod in a position of adjustment.

3. Apparatus as claimed in claim 1, in which

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the setting arm is provided with a bracket and the screw-threaded rod is engaged with a depending part of said bracket, whereby movement of said rod causes said bracket to move with the setting arm in approximate parallelism with said rod.

4. Apparatus as claimed in claim 1, in which the setting arm is provided with a bracket having a depending portion, and the screw-threaded rod is provided with means engaging the said depending portion whereby endwise movement of said rod is transmitted to said setting arm.

5. Apparatus as claimed in claim 1, in which the setting arm is provided with a bracket having a depending portion penetrated by the screw-threaded rod whereby turning movement of said rod causes said setting arm to move endwise of said rod and thereby to move said setting arm in approximate parallelism with said rod.

DONALD PIERREPONT.

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