

A. G. HAGSTROM.
TRIMMER.

APPLICATION FILED AUG. 23, 1919.

Patented Aug. 30, 1921.

3 SHEETS—SHEET 1.

1,389,302.

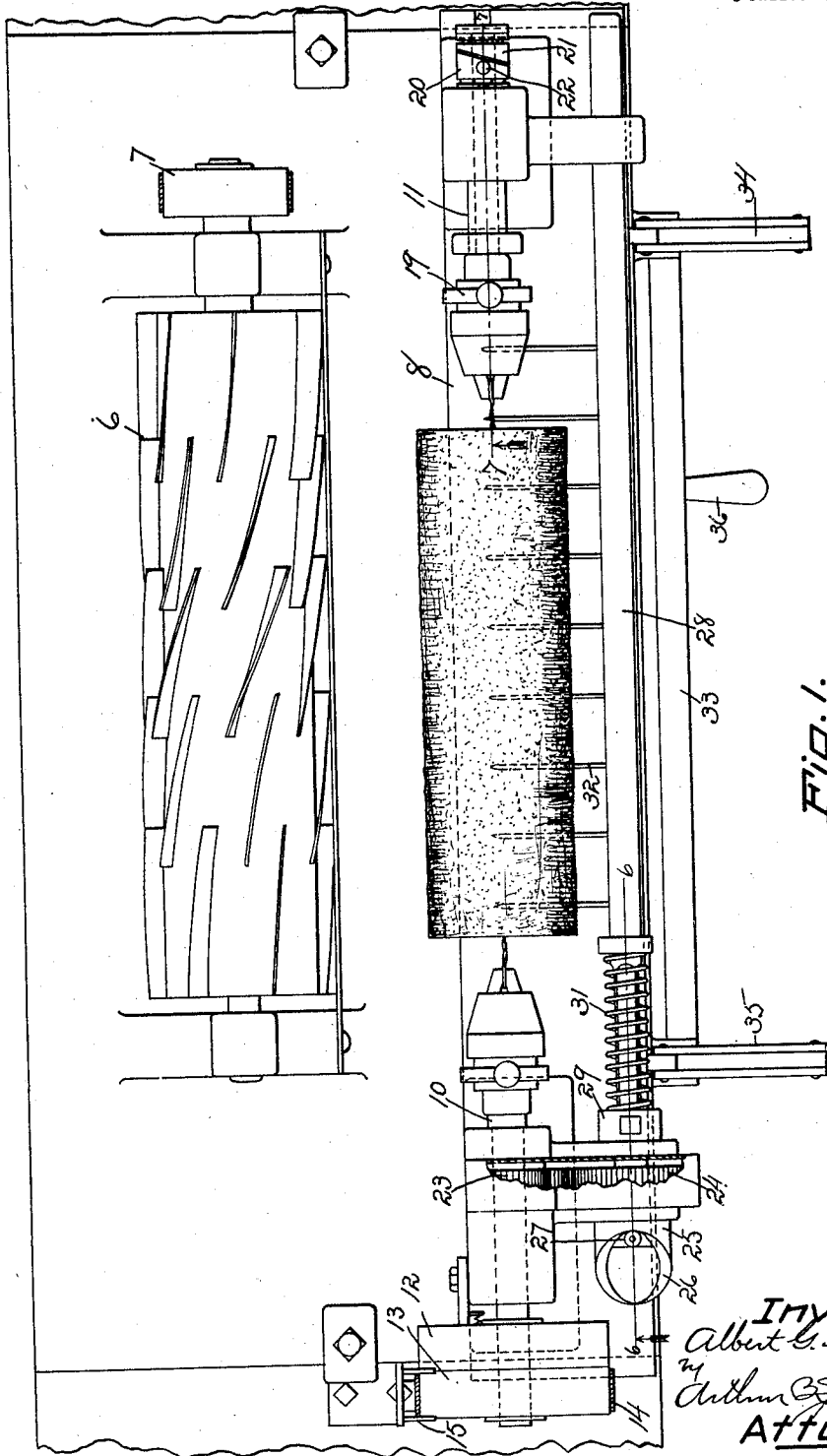


Fig. 1.

Inventor
Albert G. Hagstrom.
by Arthur G. Jenkins.
Attorney

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Fig. 2.

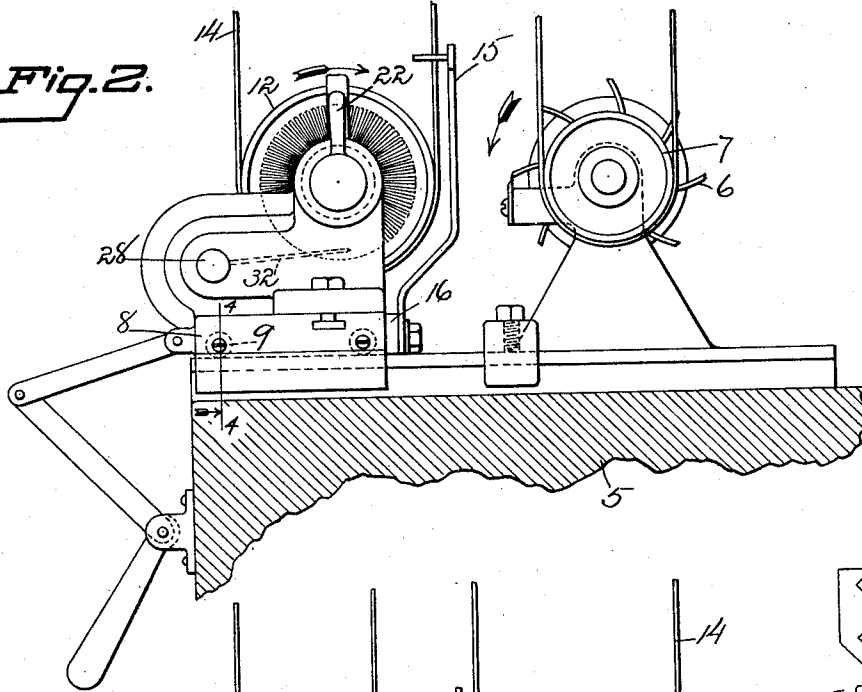


Fig. 3.

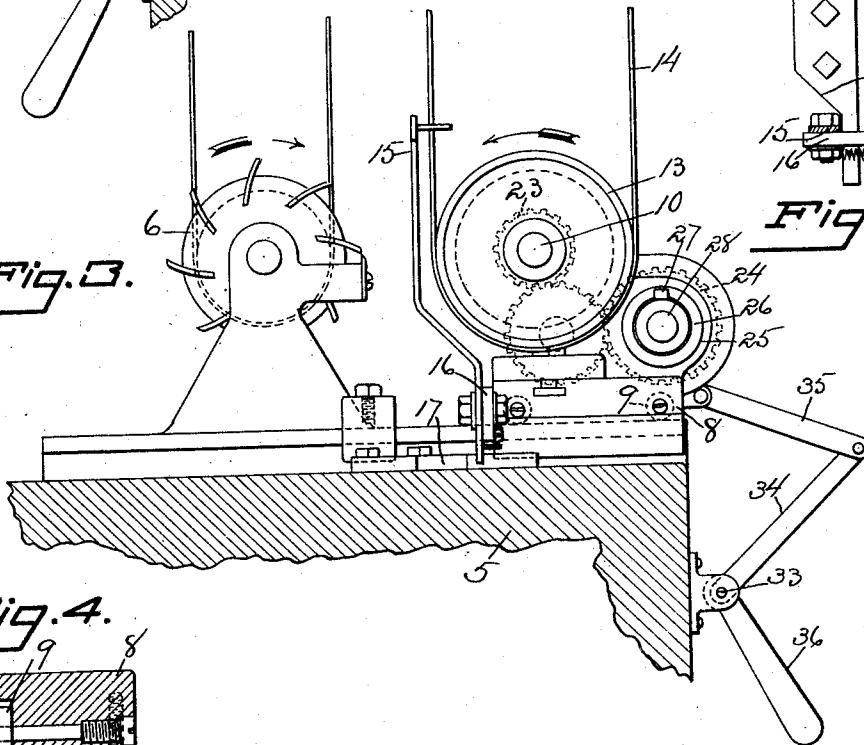


Fig. 4.

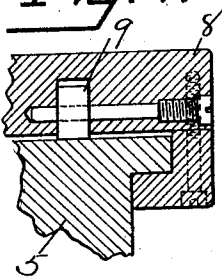
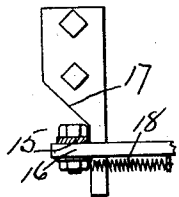


Fig. 5.



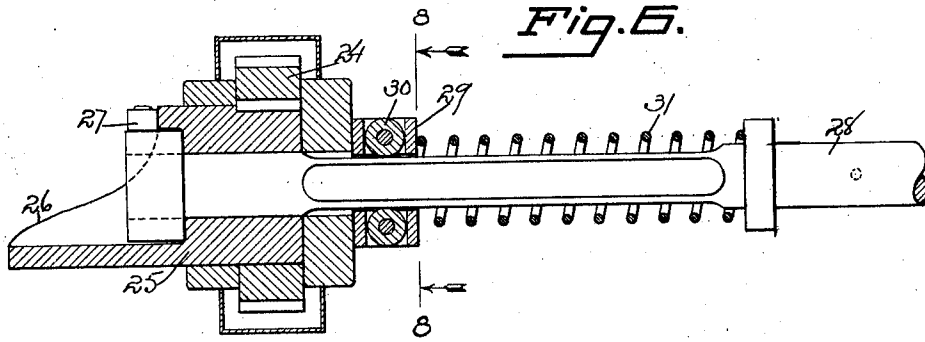
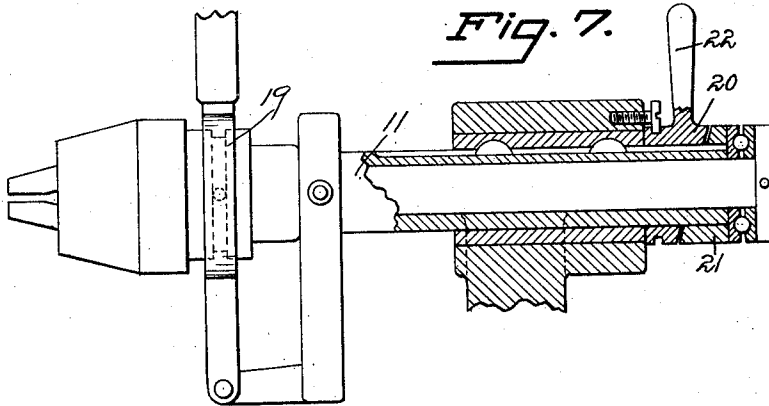
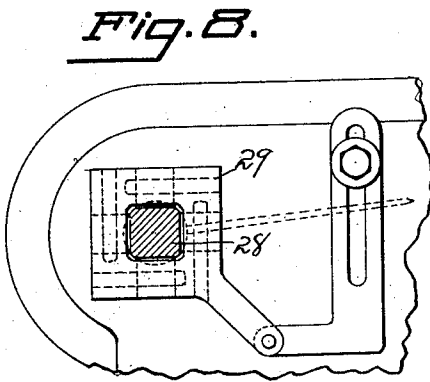
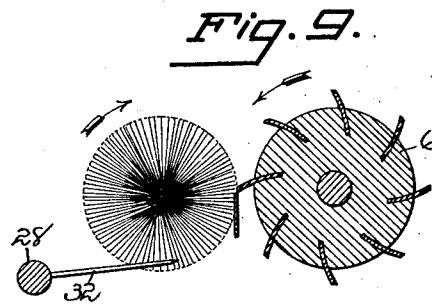
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Albert G. Hagstrom

By *Arthur B. Jenkins*
Attorney

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By Arthur E. Jenkins,
Attorney

UNITED STATES PATENT OFFICE.

ALBERT G. HAGSTROM, OF EAST HARTFORD, CONNECTICUT, ASSIGNOR TO THE FULLER BRUSH COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

TRIMMER.

1,389,302.

Specification of Letters Patent.

Patented Aug. 30, 1921.

Application filed August 23, 1919. Serial No. 319,304.

To all whom it may concern:

Be it known that I, ALBERT G. HAGSTROM, a citizen of the United States, residing in East Hartford, in the county of Hartford and State of Connecticut, have invented a new and Improved Trimmer, of which the following is a specification.

My invention relates to the class of machines employed for trimming the ends of fibers or other threads or bristles comprising mops, brushes, &c., and an object of my invention, among others, is to provide a trimmer by the use of which brushes and mops and similar articles may be rapidly and efficiently trimmed.

One form of trimmer embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained, is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a portion of a machine embodying my invention, with parts broken away to show construction.

Fig. 2 is an end view of the same.

Fig. 3 is an end view looking in the opposite direction from the point of view of Fig. 2.

Fig. 4 is a detail view, scale enlarged, illustrating the mounting of the table.

Fig. 5 is a detail view, scale enlarged, illustrating the cam for operating the belt shifter.

Fig. 6 is a detail view, scale enlarged, in section through the finger supporting bar operating mechanism on plane denoted by dotted line 6—6 of Fig. 1.

Fig. 7 is a detail view, scale enlarged, illustrating the chuck operating mechanism.

Fig. 8 is a view in section on plane denoted by dotted line 8—8 of Fig. 6.

Fig. 9 is a detail view illustrating the operation of the fingers in separating the threads.

In the accompanying drawings the numeral 5 indicates the base of my improved trimming machine on or adjacent to which a rotating cutter 6 of any desired construction is mounted and driven as by means of a belt passing around a pulley 7 secured to the shaft of the cutter.

A carrier 8 is mounted on the base, as on rollers 9, this carrier supporting a live spindle 10 and a dead or tail spindle 11. The live spindle has a fast pulley 12 secured thereto and a loose pulley 13 mounted there-

on and driven by a belt 14 that is shifted by a shifter 15 pivotally mounted on a shifter support 16 projecting from the base. A shifter cam 17 is mounted in the path of the lower end of the shifter lever in its movement caused by the operation of the carrier. When the carrier is moved in one direction the shifter engages the cam and shifts the belt to the fast pulley, and when the carrier is moved in the opposite direction the cam releases the shifter and a shifter spring 18 operates the shifter to shift the belt to the loose pulley to stop the operation of the live spindle. Both the live and dead spindles have chucks of any suitable construction operated as by means of a handle on a chuck operating sleeve 19. Any suitable construction of chuck may be employed on each of the spindles, those herein shown comprising self-closing chucks that are opened as by means of said handles, that on the dead spindle especially being thus operated by force tending to move the dead spindle in a direction away from the live spindle.

This dead spindle is shiftable longitudinally in its bearings but is non-rotatable therein, and it supports a chuck comprising a head which is rotatably mounted on the spindle in a manner that will be readily understood. This spindle has a tension device comprising a movable tension cam 20 rotatably mounted on the spindle and a stationary cooperating tension cam 21 fixed on the spindle, the movable cam having a handle 22 by means of which it may be manually rotated to move the dead spindle in a direction away from the live spindle, and thus tension the wire with threads of fiber or other material secured thereto that may be held by the chucks, the pitch of the cam being sufficient to retain the parts in any position in which they may have been placed. A pinion 23 on the live spindle meshes with an intermediate pinion, that in turn meshes with a gear 24 on a cam sleeve 25 rotatably mounted in a bearing on the carrier and having a cam 26 engaging a roller 27 on a finger supporting bar 28 extending through said bearing and sleeve and also through a bearing at the opposite end of the carrier. Said bar has a longitudinal reciprocating movement in its bearings, and it projects through a roller bearing frame 29 having rollers 30 engaging rectangular shaped portions of the bar adjacent to its bearing in the gear 24

within which it is splined. A spring 31 moves the bar in one direction and the cam moves it in the opposite direction. This bar has fingers 32 spaced at suitable distances
 5 apart to effectively engage the threads secured to a wire held in the chucks to separate and straighten said threads and keep them in this condition and thus avoid any tangle in the threads while being cut, said threads
 10 and wire comprising a brush, mop or similar device which, when rapidly rotated to cause the threads or bristles to be thrown outward by centrifugal action, is moved by the carrier into position for the ends of the threads to
 15 be trimmed by the knives of the cutter.

As a means for moving the carrier I employ a rock shaft 33 having arms 34 connected by links 35 with the carrier, a handle 36 secured to the shaft serving as a means
 20 for manual operation of the carrier.

In the operation of the device the operating handles for the chucks are moved to open the jaws, the ends of the wire are placed within the jaws and the handles being released the jaws are automatically closed to
 25 secure the wire. The handle 22 of the tensioning plate is then operated to impart the proper tension to the wire. The rock shaft 33 is then rotated as by means of its handle 36 and the carrier is moved toward the trimming knives, the extreme ends of the threads or bristles of the rotating brush, mop or other device coming in contact with the rotating knives by which they are trimmed.
 30 In this movement of the carrier the belt shifter 16 is moved into engagement with its cam 17 and shifts the belt onto the fast pulley to start rotation of the chucks and the brush, mop or like device held thereby, this before the trimming position of the carrier is reached. When the carrier is moved away from the trimming knives by the operation of the rock shaft, the belt shifter is automatically moved by its spring to shift
 35 the belt to its loose pulley, the shifter cam being positioned to permit this operation, and the rotation of the chucks and the brush, mop or like device carried thereby.

In accordance with the provisions of the patent statutes, I have described the principles of operation of my invention, together with the device which I now consider to represent the best embodiment thereof; but I desire to have it understood that the device shown is only illustrative, and that the
 50 invention may be carried out by other means.

I claim—

1. A trimmer including trimming knives, a carrier movable toward and from the trimming knives, chucks oppositely mounted on the carrier, chuck rotating means, and means operable by the movement of the carrier to control the rotating movement of the chucks.

2. A trimmer including trimming knives, a carrier movable toward and from the trim-

ming knives, a live spindle mounted on the carrier, a chuck operated by said live spindle, a fast and a loose pulley secured to said spindle, a belt shifting lever mounted on the carrier, and a cam located in the path of
 70 movement of said lever to actuate it to shift the belt from one to the other of said pulleys.

3. A trimmer including trimming knives, a carrier movable toward and from the trimming knives, means on the carrier to receive and hold an article comprising threads, and for rotation of said article while being trimmed, means for rotating said receiving and holding means, and a bar supported by
 80 the carrier and having fingers projecting therefrom in position to engage the threads of the article being trimmed to preserve an untangled condition of the threads as said article is rotated.

4. A trimmer including trimming knives, a carrier movable toward and from the trimming knives, means on the carrier to receive and hold an article comprising threads, and for rotation of said article while being
 90 trimmed, means for rotating said receiving and holding means, a bar longitudinally movable on the carrier, means for imparting longitudinal movement to said bar, and fingers projecting from said bar to engage the
 95 threads of the rotating article and preserve them in an untangled condition while being trimmed.

5. A trimmer including trimming knives, a carrier movable toward and from the trimming knives, means mounted on the carrier to receive and hold an article comprising threads, and for rotation of said article while being trimmed, means for rotating said receiving and holding means, a bar longitudinally
 105 movable on the carrier, means controlled by the movement of the carrier to impart longitudinal movement to said bar, and fingers projecting from said bar to engage the threads of the article and preserve them in
 110 an untangled condition while being trimmed.

6. A trimmer including trimming knives, a carrier movable toward and from the trimming knives, means mounted on the carrier to receive and hold an article comprising
 115 threads, and for rotation of said article while being trimmed, means for rotating the receiving and holding means, a cam sleeve rotatably mounted on the carrier, a bar mounted on the carrier and extending
 120 through said cam sleeve to receive longitudinal movement therefrom by an operative connection therewith, means for operating the sleeve, and fingers projecting from the bar to engage threads of the article and pre-
 125 serve them in an untangled condition while being trimmed.

7. A trimmer including trimming knives, a carrier movable toward and from the trimming knives, means mounted on the car- 130

rier to receive and hold an article comprising threads, and for rotation of said article while being trimmed, a cam sleeve rotatably mounted on the carrier, means controlled by 5 the movement of the carrier to operate said cam sleeve, a bar extending through said sleeve and receiving longitudinal movement therefrom by an operative connection therewith, and fingers extending from said bar to 10 engage threads of an article and preserve them in an untangled condition while being trimmed.

8. A trimmer including trimming knives, a carrier movable toward and from the trimming knives, a live spindle, means on the live spindle to receive and hold an article being trimmed, a fast and a loose pulley secured to the spindle, a belt shifter mounted on the carrier, a cam mounted in the path of 20 movement of said shifter, a cam operatively connected with said live spindle, a longitudinally movable bar operatively connected with said cam, and fingers projecting from said bar in position to engage threads of an 25 article being trimmed.

9. A trimmer including trimming knives, a carrier supported upon rollers and movable toward and from the trimming knives, means upon the carrier to receive and hold 30 an article comprising threads, and for rotation of said article while being trimmed, means for rotating said receiving and hold-

ing means, a rock shaft, means for operating the rock shaft, and a link connection between said rock shaft and carrier for operation of 35 the latter.

10. A trimmer including trimming knives, means to receive and hold an article comprising threads, and for rotation of said article while being trimmed, a bar longitudinally 40 movable to engage the threads of an article to maintain them in an untangled condition while being trimmed, means for imparting longitudinal movement to said bar, a roller bearing frame surrounding said bar, and 45 rollers mounted in said frame and supporting said bar in its longitudinal movement.

11. A trimmer including trimming knives, means to receive and hold an article comprising threads, and for rotation of said article 50 while being trimmed, a cam sleeve rotatably mounted, means for rotating said sleeve, a bar projecting through said cam sleeve in cooperative relation to the article being 55 trimmed, means operatively connecting said bar and said cam sleeve for longitudinal reciprocation of the former, a roller bearing frame supported adjacent to said cam sleeve, rollers mounted in said frame on opposite 60 sides of said bar to support it, and fingers projecting from said bar to engage the threads of the article to preserve them in an untangled condition while being trimmed.

ALBERT G. HAGSTROM.