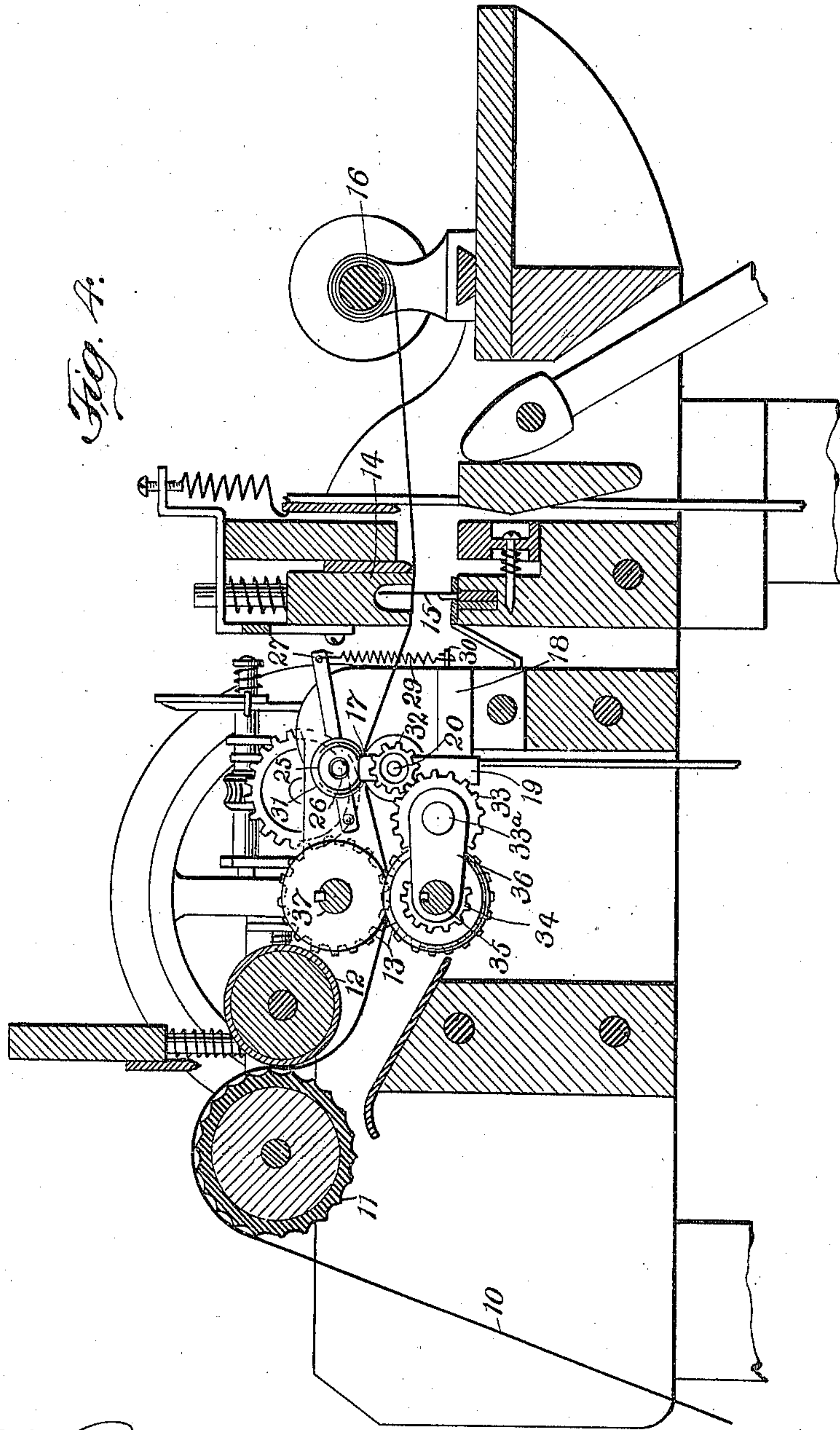


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E. O. ENGBERG.
WINDOW SHADE MACHINE.
APPLICATION FILED SEPT. 10, 1908.

2 SHEETS→SHEET 2.



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UNITED STATES PATENT OFFICE.

EPHRAIM O. ENGBERG, OF SALT LAKE CITY, UTAH, ASSIGNOR TO JOHN BEECHER PATTON, OF KENT, OHIO.

WINDOW-SHADE MACHINE.

984,127.

Specification of Letters Patent.

Patented Feb. 14, 1911.

Application filed September 10, 1908. Serial No. 452,365.

To all whom it may concern:

Be it known that I, EPHRAIM O. ENGBERG, a citizen of the United States, and a resident of Salt Lake City, county of Salt Lake, and State of Utah, have invented certain new and useful Improvements in Window-Shade Machines, of which the following is a full, clear, and exact description.

This invention relates to means for creasing shade material at the side edges thereof for forming a side hem, and particularly such machines, as is disclosed in my Patents Nos. 883,793 and 883,795, dated April 7, 1908.

The primary object of the invention is to provide a simple and efficient attachment for window shade machines which is adapted to form a clearly defined side hem in the shade material ready for sewing the same as the shade is being made, and which may be readily adjusted to adapt the same for forming side hems of different widths.

A further object of the invention is to provide means in combination with cutting mechanism and movable therewith whereby the shade material may be properly trimmed the desired width and the hem formed the required distance from the edge of the shade material in perfect alinement therewith.

With these and other objects in view, the invention will be hereinafter more particularly described with reference to the accompanying drawings, which form a part of this specification, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is a fragmentary front view of one form of means embodying my invention. Fig. 2 is a fragmentary plan view. Fig. 3 is a transverse section taken on the line III—III of Fig. 2; and Fig. 4 is a longitudinal section, showing the invention in elevation and applied to a window shade machine.

The shade material 10 may be fed from a roll and passed around and between the feed rolls 11 and 12 and from there to the edge-trimming knives or cutters 13, from which it passes to the creasing and loop-forming mechanism 14 for forming the loop for the shade slat. The shade is cut transversely by means of a movable knife 15 and one end of the shade is fastened in any desired manner to a shade-roller 16 and is wound thereon after being fastened to said

roller. The features of the machine shown and thus described are substantially the same as in my Patent No. 883,795, hereinbefore referred to, and such features are not claimed specifically herein.

The shade material as it passes through the machine is trimmed lengthwise thereof at either or both edges by means of the trimming devices or cutters 13, one for each edge, and interposed between the cutters 13 and loop-forming mechanism 14 are the creasing devices 17, one for each edge, and each device is substantially the same in construction and are each supported by a bracket 18 which serves as the supporting means for the trimming cutters 13. Either or both brackets 18 are adjustable, though ordinarily one is normally fixed and the other movable so as to adapt the same to be quickly adjusted transversely of the machine for cutting the shades to different widths as set forth in my patents.

A standard 19 is secured to each of the brackets 18 and between said standard and the brackets 18 is journaled a shaft 20, and on said shaft 20 is a rotary creasing element or member 21. This member is suitably held to rotate with the shaft 20 and is provided with a plurality of grooves 22, 23 and 24 which may be substantially V-shaped and arranged at different distances from the trimming cutters 13 to adapt different widths of hems to be formed, and above said creasing member 21 is a second creasing member 25 which is adjustable along a rod 26. This rod 26 is held to an arm 27 and said arm 27 is pivoted at 28 to the bracket 18 and its outer end is normally forced downward by means of a spring 29, one end of which is secured to one end of the arm 27 and the other end is fastened to a lug or other part 30 carried by said bracket. By raising the arm 27 the member or element 25 may be readily adjusted along the rod 26 and by reason of the V-shaped rib 31 carried by said element, which is adapted to fit into any one of the grooves 22, 23 or 24, the said material will be forced into said grooves with a yielding pressure sufficient to form a clearly defined crease in the material.

Any suitable means may be employed for driving one or both of the creasing elements. As shown, a gear 32 is secured to each shaft 20, and this gear is in mesh with a gear 33

held on a stud 33^a, and said gear is positively operated by means of the gear 34 which is held to rotate with the shaft 35 of one of the trimming cutters 13, there being
 5 an arm 36 projecting from said shaft 35 to the stud 33^a of the intermediate gear 33. The cutter shaft 35 and shaft 37 of the cutters are positively driven by gears located thereon from a portion of the machine as in
 10 Patent No. 883,795, so that the creasing elements are not only adjustable with the cutters and their brackets but are also positively driven by the means which operate the cutters.

15 While I have shown the invention as applied to a particular form of shade machine and arranged in a particular manner, it will be understood that the invention may be applied to shade machines of various constructions and may be operated in any desired
 20 way without departing from the character of the invention.

From the foregoing it will be seen that simple and efficient devices which may be
 25 readily adjusted for different widths of hems are provided; that said devices will form a positive and clearly defined crease in the shade material in perfect alinement with the edge trimming cutters; and that
 30 said device or attachment may be readily applied to the machine or arranged in such a way that the shade may be made with or without the side hem.

Having thus described my invention, I
 35 claim as new and desire to secure by Letters Patent:—

1. The combination with means for supporting shade material, of means for trimming the shade material lengthwise thereof
 40 and for forming a loop for the shade slat, a device interposed between the loop-forming mechanism and the trimming means and comprising two independent rotary elements, and means whereby said elements may be
 45 rotated as the material is fed through the machine.

2. The combination with means for supporting shade material, of means for cutting the shade material lengthwise thereof and
 50 for forming a loop for the shade slat, and a lengthwise creasing device interposed between the loop-forming mechanism and the trimming means.

3. The combination with means for supporting shade material, of means for cutting the shade material lengthwise thereof and for forming a loop for the shade slat, and a plurality of devices interposed between the
 55 loop-forming mechanism and the cutting means and comprising two rotary elements, and means whereby said elements may be rotated as the material is fed through the machine.

4. In a window shade machine, the com-
 65 bination with means for supporting shade

material, of means for forming a shade-slat loop, a bracket, means for supporting cutting means on the bracket, a creasing device comprising two rotary elements supported by the bracket, and means for positively
 70 driving one of the creasing elements from the cutting operating means.

5. In a window shade machine, the combination with means for supporting shade material, of means for forming a shade slat
 75 loop, an adjustable bracket, a creasing device mounted on the bracket and comprising two rotary elements supported by the bracket, and means for positively driving one of the creasing elements. 80

6. In a window shade machine, the combination with means for supporting shade material, of an adjustable bracket, cutting means mounted on the bracket, and a creasing device comprising two rotary elements
 85 supported by the bracket.

7. In a window shade machine, the combination with a plurality of brackets one of which is adjustable transversely thereof, of trimming cutters mounted on said bracket,
 90 shafts for positively driving said cutters, a rotary creasing element supported on each bracket and having a plurality of grooves therein, gears operated by the cutter shafts for rotating said element, a second rotary
 95 element having a substantially V-shaped rib adapted to enter the grooves in the first-mentioned element to force the material therein, an arm for supporting the creasing element with the rib, and a spring for normally forcing the arm and element carried
 100 thereby into engagement with the element having the grooves.

8. In a window shade machine, the combination with a bracket, of a rotary creasing
 105 element supported on the bracket and having a plurality of grooves therein, gears for rotating said element, a second rotary element having a substantially V-shaped rib adapted to enter the grooves in the first-
 110 mentioned element to force the material therein, a pivoted arm for supporting the creasing element with the rib, and a spring for normally forcing the arm and element carried thereby into engagement with the
 115 element having the grooves.

9. In a window shade machine, the combination with a bracket, of cutting means mounted on the bracket, a rotary creasing element held on said bracket and having a
 120 plurality of grooves therein, and a second rotary element having a substantially V-shaped rib adapted to enter the grooves in the first-mentioned element to force the material therein and positively driven by
 125 the cutting means.

10. In a window shade machine, the combination with a support, of a rotary creasing element held on said support and having a plurality of grooves therein, a second rotary
 130

element having a substantially V-shaped rib adapted to enter the grooves in the first-mentioned element to force the material therein, a pivotally holding arm for supporting the creasing element with the rib, and a spring for normally forcing the arm and element carried thereby into engagement with the element having the grooves.

11. In a window shade machine, the combination with a support, of a rotary creasing element held on said support and having a plurality of grooves therein, a second rotary element having a substantially V-shaped rib adapted to enter the grooves in the first-mentioned element to force the material therein, and a yieldingly and pivotally held arm for supporting the creasing element with the rib.

12. In a window shade machine, the com-

bination with a plurality of brackets one of which is adjustable transversely of driving shafts, a rotary creasing element supported on each bracket and having a plurality of grooves therein, gears operated by the shafts for rotating said element, a second rotary element having a substantially V-shaped rib adapted to enter the grooves in the first-mentioned element to force the material therein, and a pivotally and yieldingly held arm for supporting the creasing element with the rib.

This specification signed and witnessed this 3rd day of September A. D. 1908.

EPHRAIM O. ENGBERG.

Witnesses:

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