

No. 739,461.

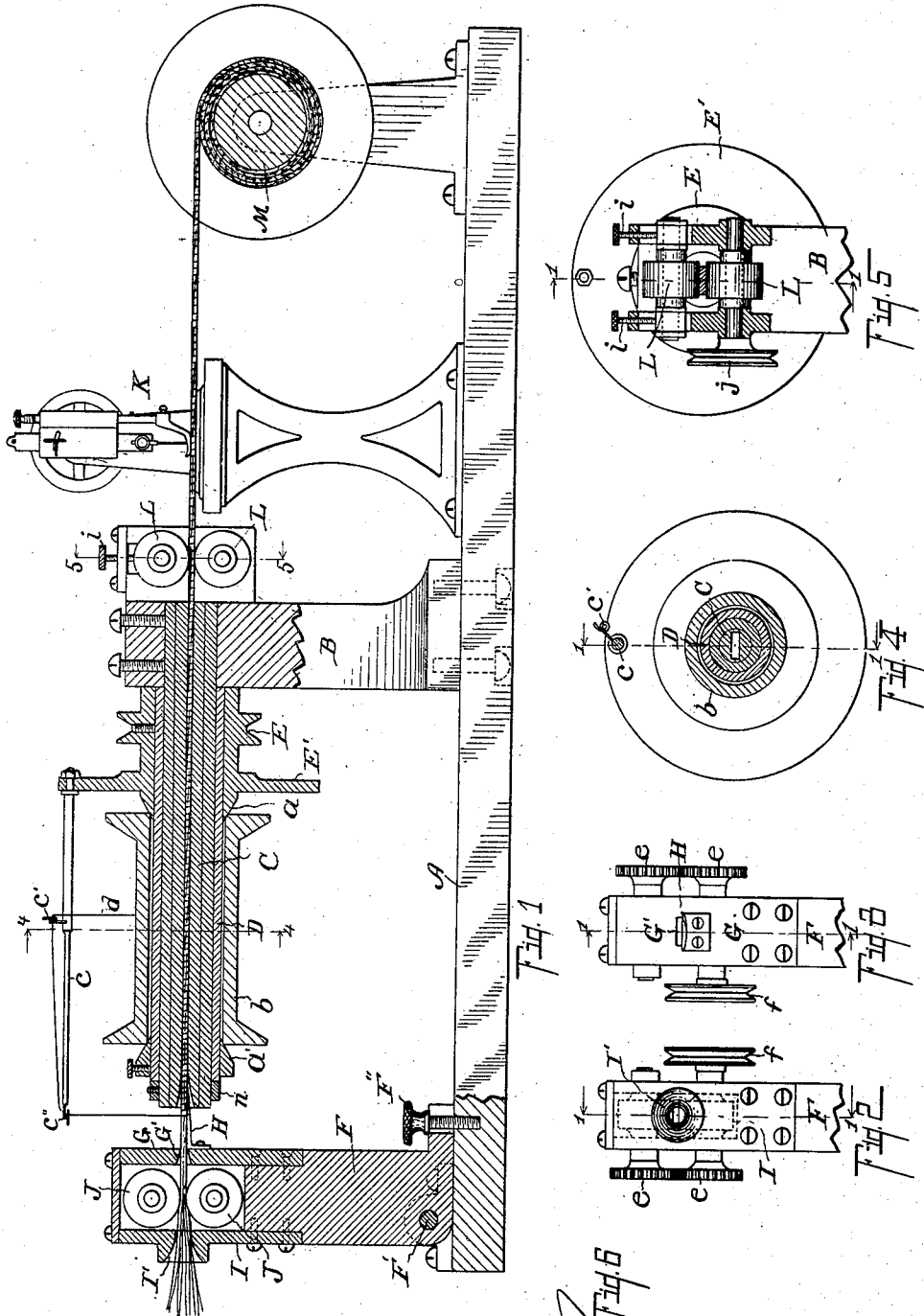
PATENTED SEPT. 22, 1903.

E. K. WARREN.

MACHINE FOR MANUFACTURING STIFFENING MATERIAL.

APPLICATION FILED FEB. 20, 1901.

NO MODEL.



Witnesses:

Edmund Wood,
Otis A. Earl

Inventor.

Edward K. Warren
By *Edw. L. Chappell*
Att'y.

UNITED STATES PATENT OFFICE.

EDWARD K. WARREN, OF THREEOAKS, MICHIGAN.

MACHINE FOR MANUFACTURING STIFFENING MATERIAL.

SPECIFICATION forming part of Letters Patent No. 739,461, dated September 22, 1903.

Application filed February 20, 1901. Serial No. 48,044. (No model.)

To all whom it may concern:

Be it known that I, EDWARD K. WARREN, a citizen of the United States, residing at the village of Threeoaks, in the county of Berrien and State of Michigan, have invented certain new and useful Improvements in Machines for Manufacturing Stiffening Material, of which the following is a specification.

This invention relates to an improved machine for the manufacture of corset-stiffeners from fibrous material.

The objects of the invention are, first, to provide a machine which shall properly manipulate and hold fibers, so that they can be wound into a flat bundle, wind them there, and then secure the same in such flat blade or bundle by suitable stitching.

The machine is particularly adapted for the manufacture of the stiffening material called "featherbone," although it is adapted to produce stiffeners from any stiff fibrous material.

An object is to provide a machine where it will be possible to easily regulate the amount of fiber fed into the same; second, to properly wind the same into a flat blade without such winding reducing the bundle of fiber to a cylindrical form, and then providing a mechanical means for delivering the same in this flattened condition into a sewing-machine and sewing it all in a continuous operation.

From these statements and the detailed description which follows the complete objects of the various parts of the machine will fully appear.

I accomplish the objects of my invention by the devices and means described in this specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying and illustrating the features of my invention appears in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a longitudinal vertical detail sectional elevation taken on a line corresponding to lines 1 1 of Figs. 2, 3, 4, and 5 of a machine embodying my invention, the driving means for the different parts being omitted and the same being reduced to a very simple form for the purposes of the illustration, it being desired to remark that the machine in practice will be provided with ten-

sion devices and compensating devices and various expedients and couplings to insure their continuous and satisfactory operation. As my invention does not pertain to these subsidiary devices, I have not illustrated them. Fig. 2 is an end view from the left-hand end of the feeding device, showing the circular aperture for the reception of the fibers in the first instance. Fig. 3 is a view from the right-hand side of the feeding device, showing the flattened throat at G' for the discharge of the fiber on its way to the winder or flier and presenting an end view of the support H. Fig. 4 is a detail transverse sectional view on line 4 4 of Fig. 1. Fig. 5 is a detail view, partly in section, on line 5 5 of Fig. 1, showing a pair of feed-rolls for compressing the blade and delivering it perfectly flattened to the sewing-machine K. Fig. 6 is a detail perspective view of the finger or support H over which the flattened bundle of fiber is delivered as it is being wound, so that it will preserve the flattened form under such treatment.

In the drawings similar letters of reference refer to similar parts throughout the several views, and all of the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines.

Referring to the lettered parts of the drawings, A is a suitable base on which the various parts of my improved machine are supported. It is not attempted to show these different parts drawn to a scale.

B represents a central standard or bracket which supports a flier or winder, the same revolving on a central hollow spindle C, the aperture through the spindle being rectangular in cross-section and being formed in an independent core for convenience in manufacture. On this spindle is a revoluble sleeve D, on which is the driving-pulley E, and a disk E', which carries a guiding-finger or arm c, with suitable loops c' c'', for the thread d from the spindle. The spool b is supported on the spindle adjustably on cones a a', so that it will revolve thereon with slight friction.

On the left-hand end of the base A is supported a bracket F on hinge F', adjustable in position by set-screw F''. On the front of this bracket is supported a plate I, through which is a round perforation having a funnel-

shaped guide I'. A pair of feed-rolls J J, with suitable means, as interlocking gears *e e* and pulley *f*, for actuating the same, are supported in the upper portion of the bracket. To the right of this bracket F is supported a plate G, having rectangular aperture G', through which the fiber is delivered on its way to the winder, the plate G being suitably beveled away to form a guide into this throat G'. A little support H, tapered to a point, is secured just beneath this flattened throat G' and extends outwardly a suitable distance therefrom, over which the flattened bundle of fibers passes. The point of this support is so situated as to extend a little distance within the mouth of the aperture of the spindle C, and the winding-thread is delivered in such manner in the winding operation as to embrace the support H at the same time that it embraces the bundle of fibers. This prevents the winding of the thread upon the flat blade of the fiber compressing it into a round cord again. The blade is then delivered through the rectangular aperture in the spindle C, passes out between the delivery-rolls L L at the right hand of the flier, which rolls are also provided with suitable actuating means, as appears in Fig. 5, and with means for putting tension upon the same, so that the flattened blade of stiffening material will be delivered in the best form to receive the row of stitches made by the sewing-machine K through the center of its length, which retains the fiber in a flat blade by a single winding and a single row of stitches.

I am aware that it will probably be desirable to provide tension devices between the rolls L L and the sewing-machine K, which will avoid the necessity of actuating these two machines at substantially the same rate. An appropriate tension device appears in a satisfactory structure not invented by me, and as such tension devices are not a part of my invention I do not show them here.

The blade when it passes from the sewing-machine can be wound onto a reel M or otherwise properly taken care of for storage or use. It will be seen that fiber delivered to this machine through the throat I', having the circular aperture, can be very evenly fed into the same. The rolls J J then compact the same into a flattened cord or blade, which passes through the rectangular throat G' over the flat support H. While the flattened cord or blade is passing over this support H it receives a wrapping-thread, which also embraces the flattened support H at the same time and is thereby prevented from compacting the same into a round cord again. The blade before it has opportunity to collapse is passed into the rectangular passage of the spindle and drawn by carrying-rolls L L out therefrom and still further flattened or compressed thereby and delivered to the sewing-machine K, where a row of stitches passes down through the center of the same, binding

the wrapping-thread securely in place on the flat cord or blade.

The reel M serves a very useful purpose in putting tension on the cord and holding it perfectly flat and straight while the sewing-machine is performing its work and is useful in that way. It is not an absolute essential, however.

I have here produced a machine which performs operations which greatly economize the manufacture of flat blades or cords from fibrous stiffening material. The structure I have illustrated is largely diagrammatic. There is a great variety of ways of arranging the feed-rolls and of supporting and of driving them. The number of winding devices that can be employed is also very large, and in place of a single thread being wrapped around the bundle of fibers the winder might be double or triple. A single winder, however, is sufficient for the purpose. The blade might be delivered from this winder direct to the sewing-machine without the compression-rolls L intervening, but they are found to serve a very useful purpose. The sewing-machine can be of any variety. These different parts can be geared to operate in unison or can be separately operated, so I have not shown gearings for connecting the various parts, as that would be readily accomplished by the skilled mechanic. It is thus apparent that the details of the structure can be greatly varied without departing from my invention.

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

1. In a machine for manufacturing flat stiffening-blades from fiber, the combination of the feed device consisting of feed-rolls J, J, with a round throat or passage leading thereto and a flattened or rectangular throat or passage leading therefrom; a tapering support supported in proximity to the rectangular passage, to serve as a support for the stiffening-blade; a winder revolving on a spindle, having a rectangular axial passage for the stiffening-blade and delivering the wrapping-thread at such point as to embrace the said tapering support and blade of stiffening material; compression and feed rolls for drawing the flattened cord or blade from the winder; a sewing-machine arranged to stitch through the center of the flattened blade; and a reel to put tension on the blade and wind up the same, all coacting for the purpose specified.

2. In a machine for manufacturing flat stiffening-blades from fiber, the combination of the feed device consisting of feed-rolls J, J, with a flattened or rectangular throat or passage leading therefrom; a tapering support supported in proximity to the rectangular passage to serve as a support for the stiffening-blade; a winder revolving on a spindle having a rectangular axial passage for the stiffening-blade and delivering the wrapping-thread at such point as to embrace the said

tapering support and blade of stiffening material; compression and feed rolls for drawing the flattened cord or blade from the winder; a sewing-machine arranged to stitch through the center of the flattened blade and a reel to put tension on the blade and wind up the same, all coacting for the purpose specified.

3. In a machine for manufacturing flat stiffening-blades from fiber, the combination of the feed device consisting of feed-rolls J, J, with a round throat or passage leading thereto and a flattened or rectangular throat or passage leading therefrom; a tapering support supported in proximity to the rectangular passage to serve as a support for the stiffening-blade; a winder revolving on a spindle having a rectangular axial passage for the stiffening-blade and delivering the wrapping-thread at such point as to embrace the said tapering support and blade of stiffening material; a sewing-machine arranged to stitch through the center of the flattened blade; and a reel to put tension on the blade and wind up the same, all coacting for the purpose specified.

4. In a machine for manufacturing flat stiffening-blades from fiber, the combination of the feed device consisting of feed-rolls J, J, with a flattened or rectangular throat or passage leading therefrom; a tapering support supported in proximity to the rectangular passage to serve as a support for the stiffening-blade; a winder revolving on a spindle having a rectangular axial passage for the stiffening-blade and delivering the wrapping-thread at such point as to embrace the said tapering support and blade of stiffening material; a sewing-machine arranged to stitch through the center of the flattened blade; and a reel to put tension on the blade and wind up the same, all coacting for the purpose specified.

5. In a machine for manufacturing flat stiffening-blades from fiber, the combination of the feed device consisting of feed-rolls J, J, with a round throat or passage leading thereto and a flattened or rectangular throat or passage leading therefrom; a tapering support supported in proximity to the rectangular passage to serve as a support for the stiffening-blade; a winder revolving on a spindle having a rectangular axial passage for the stiffening-blade and delivering the wrapping-thread at such point as to embrace the said tapering support and blade of stiffening material; compression and feed rolls for drawing the flattened blade from the winder; a sewing-machine arranged to stitch through the center of the flattened blade, all coacting for the purpose specified.

6. In a machine for manufacturing flat stiffening-blades from fiber, the combination of feed-rolls with a round throat or passage lead-

ing thereto, and a flattened or rectangular throat or passage leading therefrom; a suitable winder for delivering the wrapping-thread onto the flattened blade as it emerges from the flattened throat; and a sewing-machine arranged to stitch through the center of the flattened blade and hold the wrapping-thread in position, as specified.

7. In a machine for manufacturing flat stiffening-blades from fiber, the combination of feed-rolls with a round throat or passage leading thereto, and a flattened or rectangular throat or passage leading therefrom; a tapering support supported in proximity to the rectangular passage to serve as a support for the stiffening-blade; and a suitable winder for delivering the wrapping-thread onto the flattened blade as it emerges from the flattened throat; and a sewing-machine arranged to stitch through the center of the flattened blade and hold the wrapping-thread in position, as specified.

8. In a machine for manufacturing flat stiffening-blades from fiber, the combination of feed-rolls with a flattened or rectangular throat or passage leading therefrom; a tapering support supported in proximity to the rectangular passage to serve as a support for the stiffening-blade; a suitable winder for delivering the wrapping-thread onto the flattened blade as it emerges from the flattened throat; and a sewing-machine arranged to stitch through the center of the flattened blade and hold the wrapping-thread in position, as specified.

9. In a machine for making a flattened blade from fiber, the combination of a feed device for the fiber, to deliver the same through a rectangular or flattened throat; a winder positioned to deliver a wrapping-thread around the fiber as it is delivered and retained in the flattened condition by said throat; and a sewing-machine arranged to stitch through the flat blade and retain the wrapping-thread in position, for the purpose specified.

10. In a machine for making a flattened blade from fiber, the combination of a feed device for the fiber to deliver the same through a rectangular or flattened throat, with a support projecting outwardly therefrom to serve as a guide; a winder positioned to deliver a wrapping-thread around the fiber as it is delivered and retained in the flattened condition by said throat; and a sewing-machine arranged to stitch through the flat blade and retain the wrapping-thread in position, for the purpose specified.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

EDWARD K. WARREN. [L. S.]

Witnesses:

MORRIS G. MCGAWN,

MARY A. DAVIDSON.