

Oct. 28, 1941.

G. C. WARNER

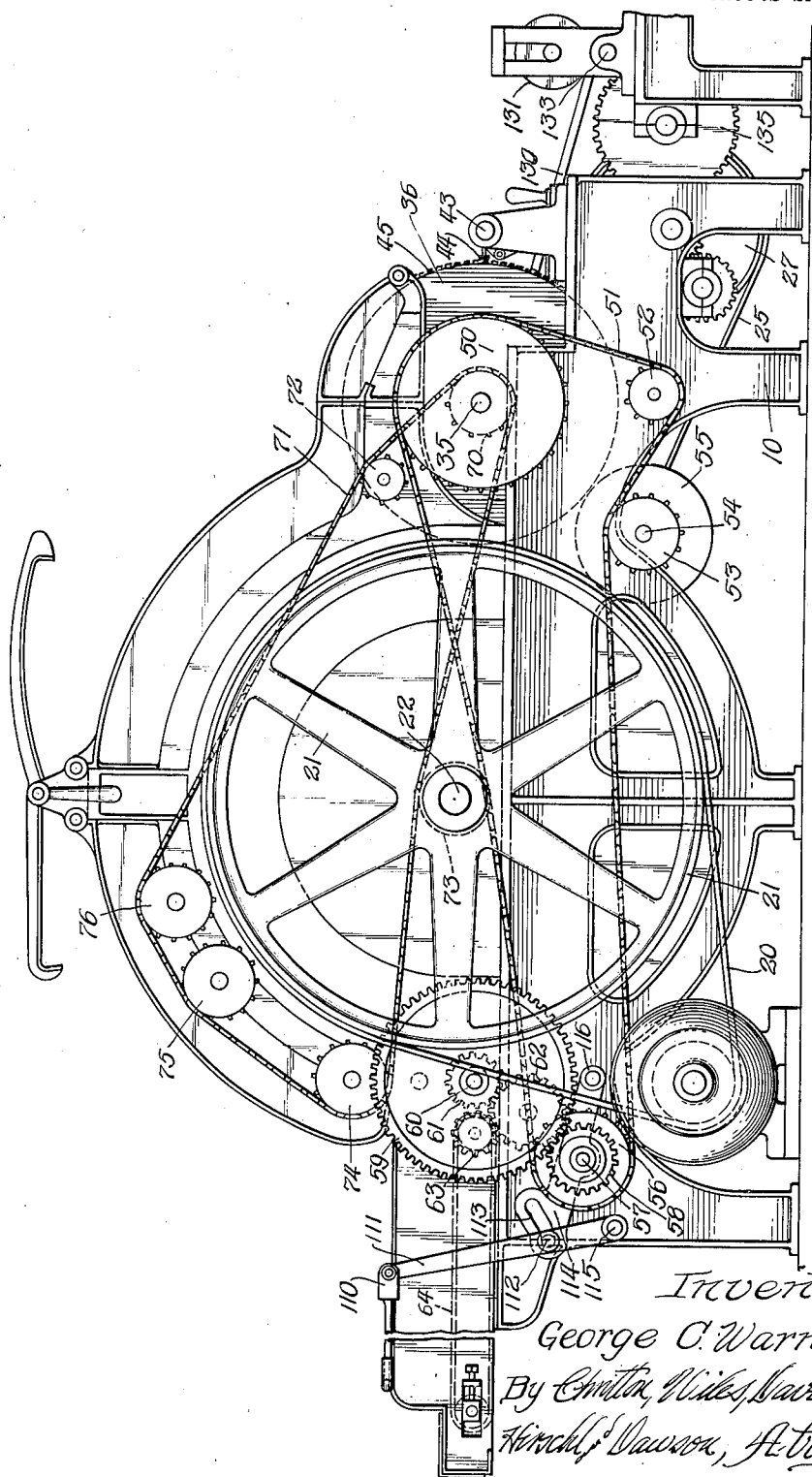
2,260,355

COTTON STRIPPING PROCESS

Filed Feb. 5, 1938

4 Sheets-Sheet 1

Fig. 1.



Oct. 28, 1941.

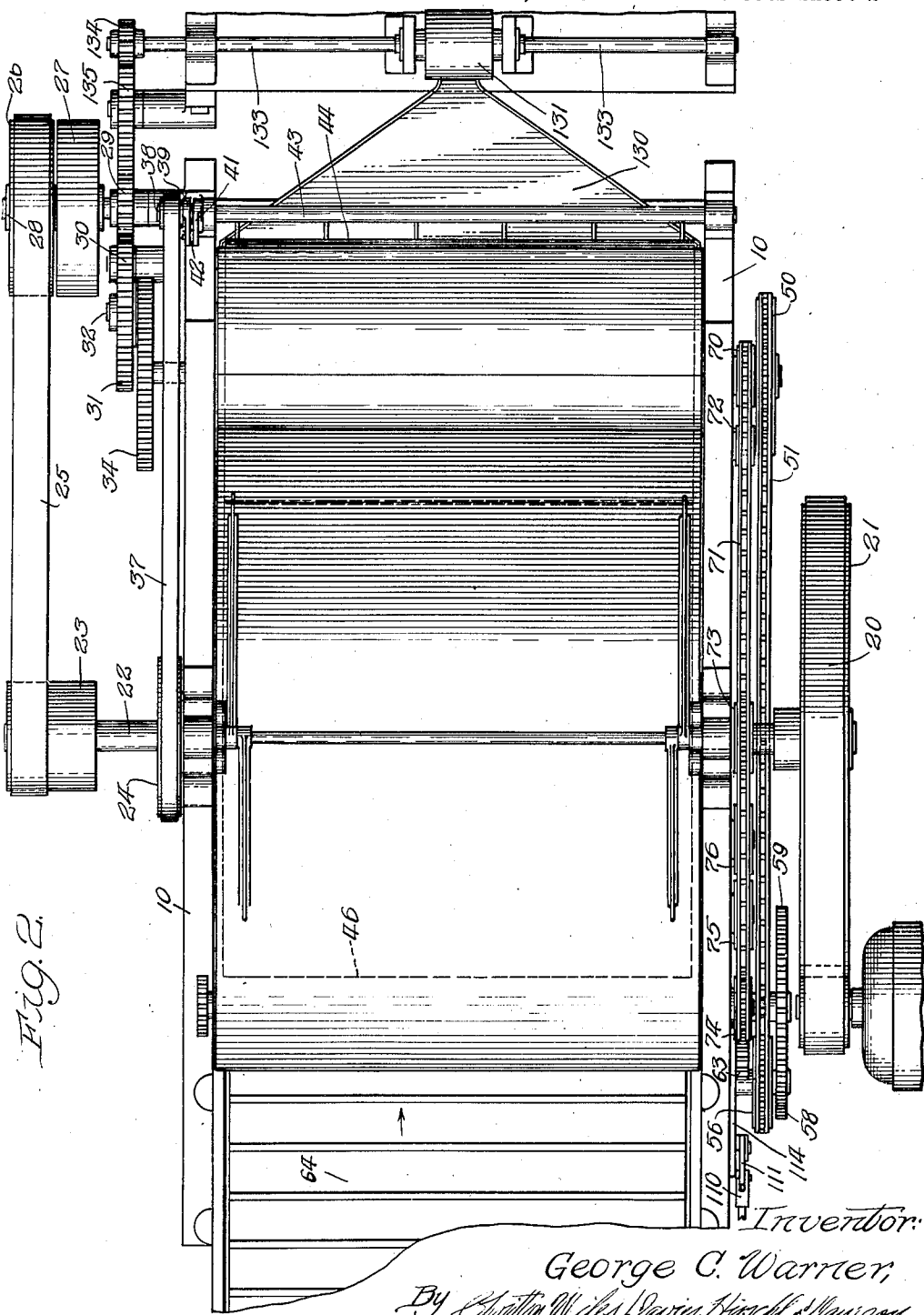
G. C. WARNER

2,260,355

COTTON STRIPPING PROCESS

Filed Feb. 5, 1938

4 Sheets-Sheet 2



Inventor:
George C. Warner,
By Chas. W. Wiles, Davies, Hirsch & Dawson,
Attys.

Oct. 28, 1941.

G. C. WARNER

2,260,355

COTTON STRIPPING PROCESS

Filed Feb. 5, 1938

4 Sheets-Sheet 3

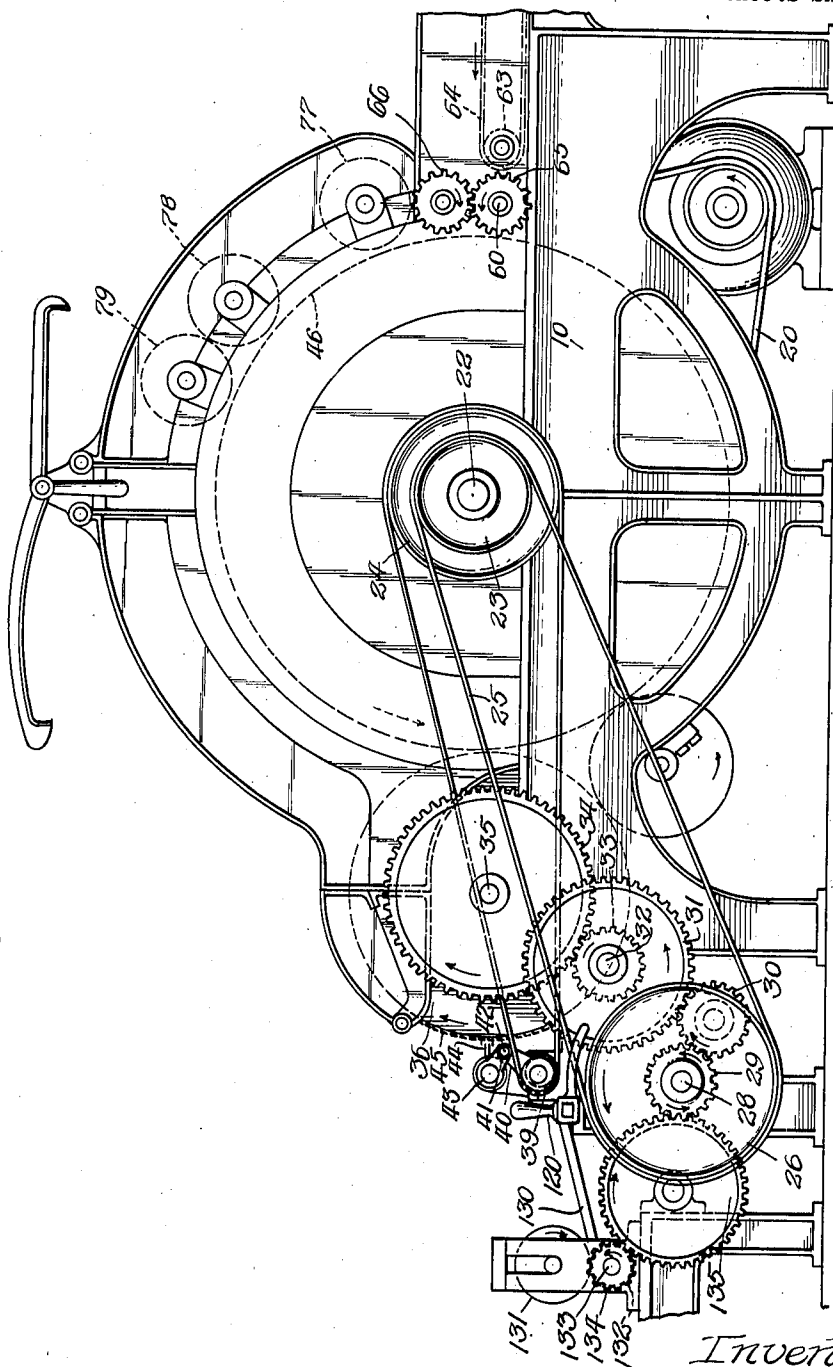


Fig. 3.

Inventor:
George C. Warner,
By *Clinton, Wiley, Jarvis, Kirsch, & Dawson,*
Attys.

Oct. 28, 1941.

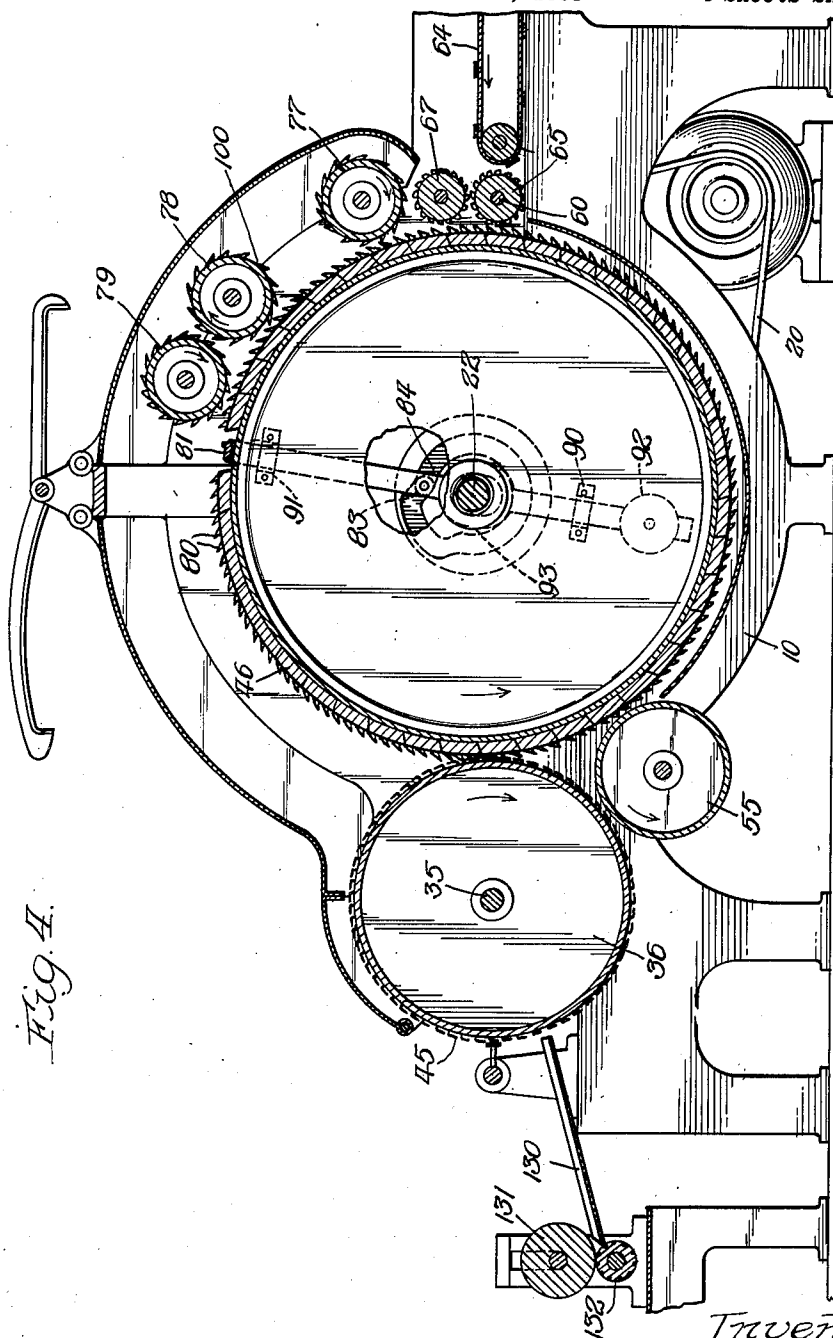
G. C. WARNER

2,260,355

COTTON STRIPPING PROCESS

Filed Feb. 5, 1938

4 Sheets-Sheet 4



Inventor.

George C. Warner,

By *Clinton, Mills, Davis, Kimball & Sharrow,*
Attorneys.

UNITED STATES PATENT OFFICE

2,260,355

COTTON STRIPPING PROCESS

George C. Warner, La Porte, Ind., assignor to
Deluxe Products Corporation, a corporation of
Indiana

Application February 5, 1938, Serial No. 189,017

1 Claim. (Cl. 19—83)

This invention relates to a cotton stripping machine, and more particularly a machine designed to produce cotton strands of a suitable size and length for the production of filter cartridges in accordance with Hurn application No. 69,217, filed March 16, 1936.

For this purpose the starting material is preferably pure cotton thread free from lint and short ends. It is known in the trade as thread stock in knotted form consisting of broken bobbins of various size threads. These broken bobbins are partially wound spools of thread in which the thread has broken before completion of the spool. These broken bobbins are sold in an entangled mass partially wound and partially unwound. As sold the material is worthless for oil filtration purposes because of the irregularity of its structure. Before use the wound portions thereof must be broken into threads of the proper length. A preferable material is known as No. 659 white yarn waste and preferably has a minimum thread size of 70 and a maximum of not over 40 and in the form of yarns containing from 10 to 200 threads in each strand.

The device here shown is adapted to take raw material of this type and put it into the ribbon form described in Hurn application 69,217.

The device is illustrated in the drawings in which: Figure 1 is a somewhat diagrammatic longitudinal elevation partly in section viewing the machine from the right; Figure 2 is a plan view; Figure 3 is a longitudinal elevation viewing the machine from the left; and Figure 4 is a sectional view corresponding to Fig. 3.

The apparatus comprises a base 10 upon which is mounted a fly wheel 21 on the shaft 22 and which is driven by the belt 20. The shaft 22 extends through the machine and on its opposite ends (as shown in Fig. 2) are mounted two pulleys 23 and 24.

The outer pulley 23 is provided with a belt 25 connected to the pulley 26, which is secured on shaft 28. An idler pulley 27 is likewise provided on the shaft to which the belt may be shifted when desired.

A pinion 29 (see Fig. 3) is mounted on the shaft 28 and meshes with idler 30, which, in turn, meshes with gear 31 on the shaft 32. A pinion 33 on the shaft meshes with gear 34 on the shaft 35. A doffer roll 36 is mounted on this shaft and is provided with a plurality of teeth 45, which are slanted backwardly with reference to the direction of motion of the doffer.

The pulley 24 is a relatively high speed pulley provided with a belt 37 leading to shaft 38, upon

which cam 39 is mounted. Cam 39 oscillates the arm 40 which is pivotally connected at 42 to another arm 41, which is on the shaft 43 carrying the combing bar 44.

A sprocket wheel 50 is mounted on the shaft 35 of the doffer roll and a chain 51 carried by the sprocket passes over the idler 52 (see Fig. 1), and over the sprocket 53 on shaft 54. A roll 55 is mounted on shaft 54 and operates an anti-draft device in connection with the doffer roll and the main roll 46.

The sprocket chain 51 also passes over sprocket 56 on the stub shaft 57. A gear 58 is provided on this same shaft in front of the sprocket, and meshes with gear 59 on shaft 60. Also on shaft 60 is a pinion 61 which meshes with an idler 62, which, in turn, meshes with pinion 63 driving conveyor 64.

Shaft 60 passes completely through the apparatus and runs the feed roll 65 which operates pinion 66 operating the upper feed roll 67.

The doffer 36 is provided with an inner sprocket 70 with a chain 71 passing over the idler 72 (see Fig. 1) and another idler 73 and also a series of sprockets 74, 75 and 76, which are on the rolls 77, 78 and 79.

The large drum 46 is carried by the shaft 22 and is provided with a U-member 81 slidably mounted on the drum at 90 and 91 and provided with a counterweight 92. The U-member carries a yoke 93, which passes over the shaft 22. A box cam 84 is provided on the frame and a roller 83 carried by the U-member 81 runs in the box cam. The cam is so arranged that the U-member 81 loosens the cotton on each revolution of the device just before it reaches the doffer roll 36.

The roll 46 is provided with teeth 80 sloping in the direction of movement of the roller. Roll 46 is operated so much more rapidly than doffer roll 36, that the motion of the cotton is across the teeth 45, which thus operate to remove the cotton although the roll itself is carried in the same direction as roll 46.

Rolls 77, 78 and 79, however, likewise provided with teeth 100, are run with slow speed.

The preferred speed for the doffer is 10 R. P. M., for the drum 200 R. P. M., for the feed rolls 6 R. P. M. and for the stripper rolls 10 R. P. M. The diameter of the drum for such speeds is 4 feet, for the doffer roll 2 feet, for the feed rolls 4½ inches and for the stripper rolls 7 inches.

The stripper roll 77 and the working rolls 78 and 79 operate to make the cotton on the device more uniform in texture.

A clutching device 110 is provided for stopping

the feed of the device. This comprises an arm 111 carrying a roll 112, which is mounted in a slot 113 in the arm 114. Arm 111 is preferably mounted at 115 and arm 114 is pivotally mounted at 116. The arm 114 carries the stub shaft 57 and on movement of the clutching device, arm 114 is depressed and disengages 58 from gear 59.

A forked member 120 is provided in connection with the belt 25 for shifting it from the operating pulley 26 to the idler 27.

In operation of the device, broken bobbins, as heretofore described, are fed on the conveyor 64 and carried to the feed rolls 65 and 67, by which they are forced upon the rotating drum 46 and are picked up by the teeth thereof. The cotton is stretched out into long parallel strands which are constantly reworked by the stripper rolls 77, 78 and 79. Inasmuch as the shape of the teeth causes the cotton to adhere firmly thereto, the U-member 81 is required to loosen the cotton upon the teeth and adapt it for stripping by the doffer roll.

The doffer roll strips the cotton from the roll 46 in long ribbons which are removed therefrom by the combing bar 44 and deposited upon the incline tray 130, from which they are removed by the rolls 131 and 132. Roll 131 is mounted on shaft 133, an extension of which carries the

gear 134 which meshes with the idler 135, which, in turn, is driven by the pinion 29.

The speed at which the various rolls are driven is of vital importance. If they are driven too slowly or at improper relative speeds, the cotton will not be properly sorted and ribboned, and on the contrary, if the motion is too rapid, the cotton is wrapped into short segments.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claim should be construed as broadly as permissible in view of the prior art.

I claim:

The method of preparing cotton threads in snarled thread form for manufacture into oil filter cartridges which comprises: feeding snarled thread material by rotating feeder rolls to a rapidly rotating toothed drum to form a ribbon of long threads upon the drum, working the threads while on the drum with other rotating toothed wheels, and removing the thread from the drum in a long ribbon having threads of an average length of at least several feet, the peripheral speed of the drum being approximately 2500 feet per minute in excess of the peripheral speed of the feeder rolls.

GEORGE C. WARNER.