(No Model.)

J. B. CARTER.

FIBER DISINTEGRATING MACHINE.

No. 515,193. Patented Feb. 20, 1894.

Fig. 1

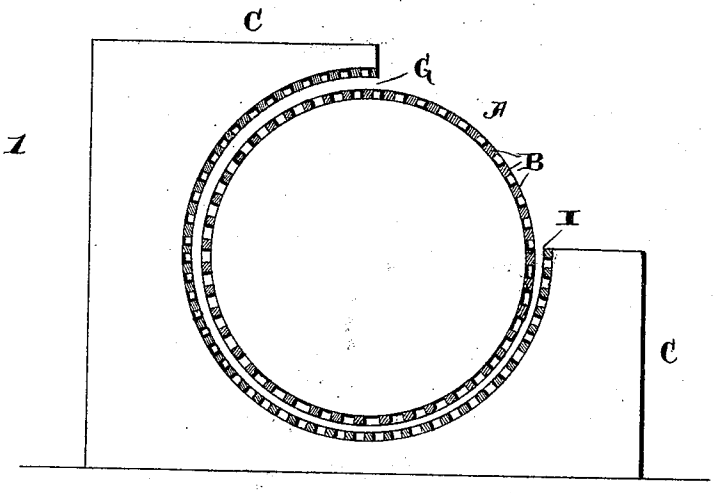
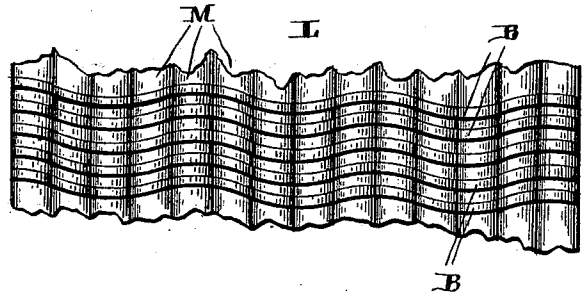


Fig. 2.



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JOHN B. CARTER, OF KOKOMO, INDIANA.

FIBER-DISINTEGRATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 515,193, dated February 20, 1894.

Application filed April 10, 1893. Serial No. 469,787. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. CARTER, of Kokomo, in the county of Howard and State of Indiana, have invented certain new and useful Improvements in Fiber-Disintegrating Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in fiber disintegrating machines, and it has relation to that class of machines which effect the disintegration by rolling the material to be reduced upon its own axis under pressure.

The object of my present invention is to facilitate the more rapid disintegration of the fibrous stock being operated upon, by keeping as much as possible of the billet or wad on top of the teeth of the roll and concave which are reducing it, and thus keeping as much as possible of the billet from between the teeth while it is being rolled upon its own axis, whereby a much more rapid disintegration of the fibrous material is accomplished, while at the same time sufficient of the billet is caught between the teeth to insure its continual rotation between the rolling surfaces, and splitting of the billet also thereby prevented. With this end in view, I provide a concave surface and a roll acting in conjunction therewith, each of which is provided with transverse annular ridges and with wave teeth which extend in a continuous line from one end of the roll to the other, and preferably parallel to each other, all of which will be more fully described hereinafter.

In the drawings, Figure 1, is a transverse vertical sectional view of a roll and concave, which embody my invention. Fig. 2, is a plan view of a portion of a roll embodying my invention.

A represents a roll which is of any desired diameter best calculated for the purpose intended, and which is provided with a series of transverse ridges M, across which a series of longitudinal wave teeth B, extend from one end of the roll to the other. These wave teeth are preferably parallel one with the other and vibrate or vary from a straight line about one-eighth of an inch or less.

C is a concave which preferably extends about three fourths of the way around the roll B, and which gradually approaches the periphery of the roll B from the inlet end G to the outlet end I, whereby the billet or wad of the material which is placed in the inlet, is gradually compressed and rolled upon its own axis until it passes out of the exit I, as will be clearly understood. This concave is provided with transverse ridges and wave teeth extending from one edge thereof to the other in the same manner as the roll, and which do not therefore need any further description.

The billet or wad of the stock to be disintegrated is first softened and is then placed in the inlet G, and the roll B being revolved at the proper speed, causes the billet to rotate between the roll and the concave upon its own axis.

By providing the roll and concave with longitudinal wave teeth, a less amount of the soft billet is forced between the teeth, owing to the fact that the teeth cross and recross the grain of fibers of the wad or billet, and this keeps a greater amount of the wad on top of the teeth, whereby the disintegration is very much more rapid than if the teeth extended in a line with the grain. Where the teeth extend in a line with the grain they are more readily forced into the stock being operated upon, and that portion which is forced into the stock is subjected to a less pressure than that which is between the teeth. By having the teeth in a wave line extending from one end of the roll to the other, the teeth cross and recross the grain or fibers of the stock, so that the fibers are subjected to a greater amount of pressure owing to the fact that the teeth cross the fibers, thus operating directly upon them for the purpose of disintegrating and separating them one from the other as the stock is being rolled upon its own axis.

Owing to the teeth crossing and recrossing the grain of the billet being operated upon, it is prevented from being split, which it is necessary to avoid, and which would be likely to occur if the teeth extended in a straight line across the roll and concave, while at the

same time a sufficient quantity of the billet is forced between the teeth to keep it continually revolving upon its own axis until it passes out at the exit end.

A single passage of the billet through this machine will reduce the stock to about half or three quarter stock, and it is then in a condition to be further reduced and given the felting quality.

The transverse ridges give the billet movement in two directions, while the wave teeth give the billet a movement in two other directions. This accomplishes when used together a very rapid disintegration of the stock.

While I have described my invention as being especially applicable to rolls and concaves in connection with which I preferably use them I do not limit myself to this particular application, for it will be readily understood that this invention could be used in connection with two flat surfaces, and the billet or wad rolled between the two surfaces upon its own axis without departing from the spirit of my invention.

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

1. A fiber disintegrating machine having a rolling surface consisting of transverse ridges and longitudinal teeth extending in a wave line across said ridges.

2. A fiber disintegrating machine comprising a roll and a concave having transverse ridges and a series of teeth extending in a wave line across said ridges from end to end of the surface.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN B. CARTER.

Witnesses:
O. L. MOULDER,
H. M. COOPER.