

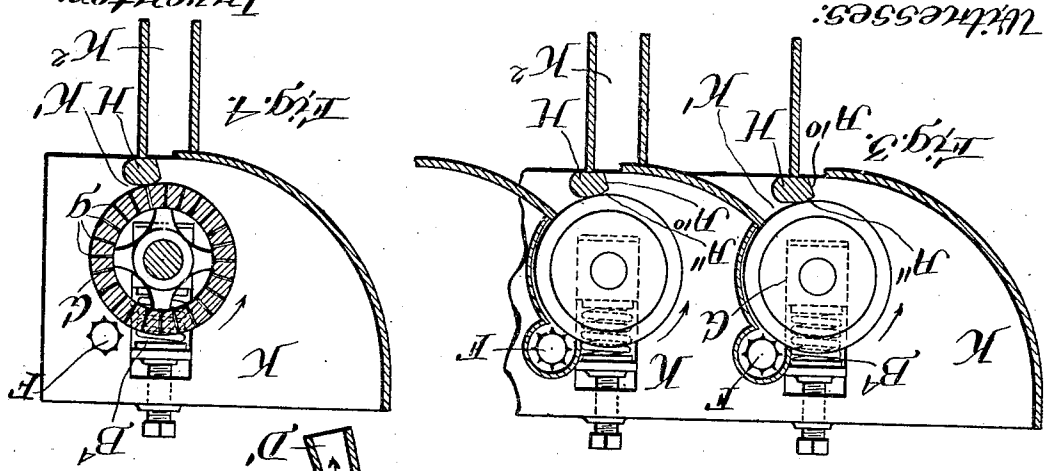
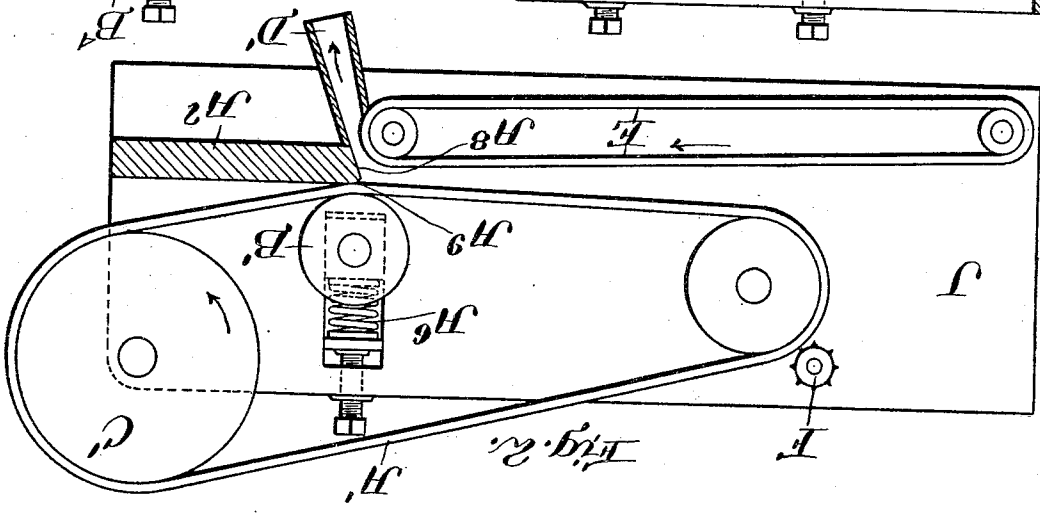
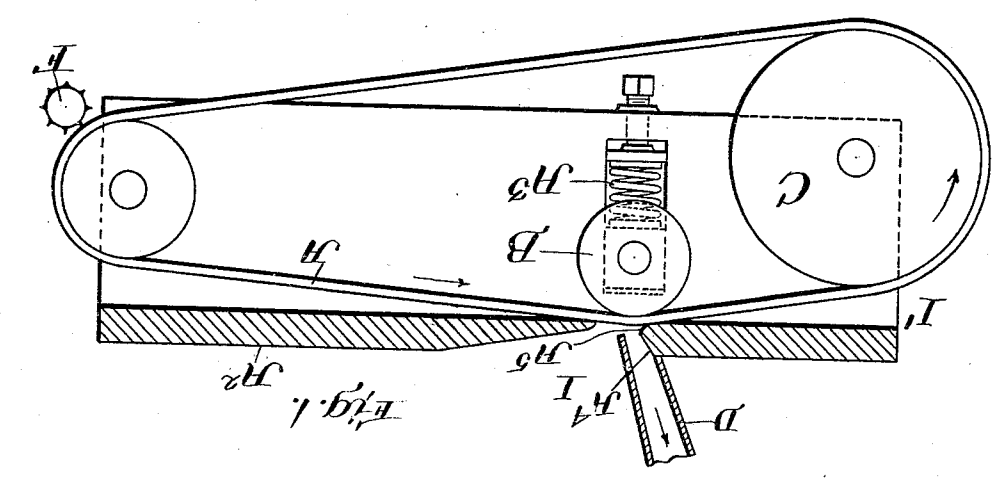
W. M. RHEEM.

COTTON GIN.

APPLICATION FILED FEB. 20, 1901.

Patented Aug. 24, 1909.

931,801.



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UNITED STATES PATENT OFFICE.

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COTTON-GIN.

931,801.

Specification of Letters Patent. Patented Aug. 24, 1909.

Application filed February 20, 1901. Serial No. 48,102.

To all whom it may concern:

Be it known that I, WILLIAM M. RHEEM, a citizen of the United States, residing at East Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Cotton-Gin, of which the following is a specification.

This invention relates to cotton gins.

The object of the invention is to provide a construction and arrangement of apparatus for ginning cotton or similar material and separating the same from the seeds.

Referring to the accompanying drawing, and to the various views and reference signs appearing thereon,—Figure 1, is a view in vertical section of an apparatus embodying the principles of my invention, and wherein is employed a slotted cap and a cooperating traveling belt or surface. Fig. 2, is a similar view showing a modified construction wherein traveling belts are employed in connection with a shoulder or abutment. Fig. 3, is a similar view of another modified construction embodying the principles of the invention, wherein rollers are employed in conjunction and cooperating with abutments. Fig. 4 is a similar view of another modified construction wherein a roller is employed.

The same part is designated by the same reference sign wherever it occurs throughout the several views.

Gins have heretofore been proposed in which a slotted plate is employed and means for grasping the fiber of the material to be ginned and drawing the same through the slot, provision being made at the same time for restraining the seeds and preventing their passage through the slot, thus stripping and forcibly removing the fiber from the seeds, and having also means for removing the seeds after they have been thus separated from the fiber.

The apparatus heretofore proposed has provided for gathering the stripped fibers into a compressed mass in the machine which does the ginning, the mass when completed being suitable for being tied into bales for transportation; and in such machines one surface of the compressed mass has been employed for grasping and pulling the fibers through the slot. The means for restraining the seeds may consist in the narrowness of the slot or opening so that the seeds cannot follow the fibers through it; or the seeds may

be restrained by shaping the edge of the slot, under which the fibers pass, in such manner that it, in conjunction with the adjacent surface of the compressed mass, presents an opening or throat which is large enough to receive the fibers which are drawn thereinto, but which is not large enough to admit the seeds attached to such fibers. Such apparatus, however, contemplates compressing the fiber immediately and simultaneously with the ginning operation. It may sometimes be desirable to effect the ginning and compressing operations separately, and it is to this end that the present invention is directed.

In the generic conception of the ginning apparatus above referred to, relatively moving surfaces are employed; or, to state the generic idea in a different way, an abutment and a cooperating moving surface are employed in conjunction with means for preventing the seeds from being drawn between such abutment and relatively moving surface. I have found that, instead of employing the compressed material as the relatively moving surface which cooperates with the head plate or cap, or other suitable abutment, to effect the ginning operation, any other traveling surface may be substituted, and particularly where the ginned material is not designed to be immediately and simultaneously compressed. In the drawing I have shown various constructions as embodiments of my invention.

Referring to Fig. 1 of the drawing, reference sign A^2 , designates a slotted cap plate or abutment, A, a traveling belt, and C, a driving pulley therefor. The traveling belt A, is arranged directly underneath the head plate or cap to travel in a path transverse with respect to the slot in said head plate or cap. An idler roller B, is arranged directly under the slot, and the belt operates over said roller and between the same and the inner surface of the head plate. If desired, this roller may be yieldingly mounted in suitable bearings, and any form of yielding mechanism may be used, such as a spring A^3 . A flue D, may be arranged above the slot in the head plate through which the air may be exhausted in order to draw away or remove the seeds. It will be observed that the far edge or lip of the slot in the head plate or cap with reference to the direction of travel

of the belt A, as indicated by the arrows, is of peculiar construction; that is to say, the upper edge or surface of said lip is inclined or beveled, as shown at A⁴, and the lower edge or surface of said lip is beveled or rounded as at A⁵, in the opposite or reverse direction, and the beveled or rounded surface A⁵, meets the beveled or inclined surface A⁴, at a point below the medial line of the lip, that is, at a point below the medial line with reference to the thickness of the head plate or cap. In this respect the present construction is similar to one form of means heretofore proposed for preventing the seeds from being drawn through the slot; for it will be seen that by the construction and peculiar shape of the lip of the slot as above described a flaring mouth is avoided, and by arranging the belt A, to be pressed against the under surface of the head plate or cap immediately below the slot therein the surface of the belt coöperates with the beveled or rounded surface A⁵, to grasp or grip the fibers of the material, thereby drawing such fibers between the surface of the belt and the under surface of the head plate or cap, the surface of the belt being held with sufficient resistance against the under surface of the head plate or cap to prevent the seeds from also being drawn along with the fibers. Moreover, the seeds themselves when stripped of the fiber, being of rounded or oval shape and presenting a smooth polished surface, also aid in preventing any tendency to be drawn through the slot, by rolling on the surface of the belt and against the edge of the lip or slot, until they are removed by the current through flue D.

The operation of the form of construction shown in Fig. 1 is as follows: The material to be ginned is supplied in the space I, upon the upper surface of the head plate or cap. Motion is imparted to belt A, by suitable actuation of pulley C, and in the direction indicated by the arrows. The fiber of the cotton to be ginned is grasped or gripped between the surface of the belt A, and the beveled surface A⁵, of the lip, and is drawn between the under surface of the cap or head plate and the contacting surface of the belt A, and thereby stripped from the seeds, the latter being removed through the flue D, and the lint cotton being finally delivered at the point I'.

In Fig. 2 is shown a modified construction wherein is employed a traveling belt A', a driving pulley C', therefor, and a presser-roller B', yieldingly mounted against the action of a spring A⁶, these parts being similar in construction to that set forth above with respect to Fig. 1. Instead, however, of using a slotted head plate or cap, as described with reference to Fig. 1, a traveling feed belt or carrier E, may be employed, and the ginning belt A', may coöperate with a

plate or abutment A⁷, having an inclined surface A⁸, and a beveled surface A⁹, similar to the inclined surface A⁴, and beveled surface A⁵, above described with reference to Fig. 1; and in the arrangement disclosed in Fig. 2 the traveling ginning belt A', is arranged over the shoulder or abutting edge of the plate A⁷, and is held under pressure in close contact therewith by means of the roller B'.

The operation of the apparatus disclosed in Fig. 2 is as follows: The material to be ginned is placed or supplied in the space J, and a travel is imparted to belt A', which, coöperating with the traveling feed belt E, presents or feeds the material to the point where the surface of belt A', coöperates with the beveled edge A⁹, of the abutment or plate A⁷. At this point the fibers of the material are drawn between the contacting surfaces of belt A', and abutment or stop A⁷, and are forcibly stripped from the seeds, which latter drop down through flue D', as indicated by the arrow. In this construction an exhaust blast may or may not be employed through flue D'.

In Fig. 3 is shown another modified construction embodying the principles of my invention, wherein I use a roller G, instead of a belt, for effecting the ginning operation, the peripheral surface of the roller coöperating with a stop or abutment H, said abutment being provided with an inclined surface A¹⁰, and a beveled surface A¹¹, similar in construction and function to the beveled surface A⁵, and inclined surface A⁴, of Fig. 1, and the bevel A⁹, and inclined surface A⁸, of Fig. 2. The rollers G, may be yieldingly held in efficient contact with the stops or abutments H, in any suitable manner, as, for instance, by means of the springs B⁴.

The operation of the construction shown in Fig. 3 is as follows: The material to be ginned is placed in the space marked K, and rotation in any desired manner is imparted to the ginning roll, the fiber of the material being grasped or gripped between the peripheral surface of the roll and the beveled surface A¹¹, of the abutment H, and drawn therebetween and stripped from the seeds, the latter dropping or falling through the channel K², and the lint cotton being carried on into the compartment K'.

It is desirable that the surface of the ginning belts A, or A', or the peripheral surface of the rollers G, may efficiently engage the fiber of the material to be ginned. To this end the belts may be of canvas, walrus hide, or other suitable material having a roughened surface to which the fibers of the cotton would naturally cling. The same is true of the material or covering for the peripheral surface of the rollers G. If desired, however, the clinging effect of the fibers of cotton to the surface of the belt or rollers may be in-

creased by roughening the surface of such belt or roller. In Figs. 1 and 2 I have shown a spiked roller F, arranged to perform the function of roughening the surfaces of belts A and A', to secure a clinging effect of the fiber to the surface of such belt. The same result may be attained by making the rollers G, hollow, as shown Fig. 4, and having radial openings *g*, therethrough. The roller in Fig. 4 is open at one or both ends so that by placing at the open end or ends the suction pipe of an air blower a current of air may be drawn through the small holes *g* and through the interior of the hollow roller; thus producing a clinging effect of the fiber to the surface of the roll by the current of air passing in through the holes *g*. The said holes *g* are arbitrarily represented or indicated in Fig. 4 of the drawing by the radial lines marked *g*.

It is obvious that the ginning apparatus as above described may be duplicated as often as desired in the same machine, and this idea is disclosed in Fig. 3, wherein two rollers are employed, each one of which effects a ginning operation.

Having now set forth the object and nature of my invention and various constructions embodying the principles thereof, I desire it to be understood that my invention is not limited to the exact details shown and described, as many other modifications, variations and changes, would readily suggest themselves to persons skilled in the art, and still fall within the spirit and scope of my invention. But

What I do claim as new and useful and of my own invention, and desire to secure by Letters Patent, is:

1. A cotton gin including an abutment, a carrier coöperating with said abutment to grasp or grip the fibers of the material to be ginned therebetween, means for actuating said carrier, and means for holding said carrier and abutment in efficient contact with each other, the surfaces of said abutment and carrier adjacent to the beginning of contact being arranged to form a throat contracting in width toward the point of contact and too narrow at its mouth to permit the entrance of seeds, as and for the purpose set forth.

2. A cotton gin including a fixed abutment, a traveling carrier operating past and in contact with said abutment, means for yieldingly pressing said carrier and abutment into contact with each other, the side of said abutment next the carrier being provided with a slightly beveled surface adja-

cent to the point of contact of said carrier therewith, as and for the purpose set forth.

3. A cotton gin including a fixed abutment, a traveling carrier operating past and in contact with said abutment, means for yieldingly pressing said carrier and abutment into contact with each other, the side of said abutment next the carrier being provided with a slightly beveled surface adjacent to the point of contact of said carrier therewith, and means for discharge of the seeds, as and for the purpose set forth.

4. In a cotton gin, a fixed abutment having a slightly beveled edge, a traveling carrier contacting with said abutment at a point adjacent to said beveled edge, and coöperating therewith to grip the fiber of the material to be ginned, and means for causing the fiber of the material to cling to the surface of said carrier, as and for the purpose set forth.

5. In a cotton gin, the combination with an abutment, of a relatively moving carrier contacting with said abutment, said abutment provided with a slightly beveled edge arranged to coöperate with the surface of said carrier to grasp or grip the fibers of the material to be ginned therebetween, and means for roughening the surface of said carrier to cause the fiber of the material to be ginned to cling thereto, as and for the purpose set forth.

6. In a cotton gin, a hopper adapted to contain seed cotton, a plurality of carriers within the hopper, a plurality of abutments adjacent thereto, each carrier being arranged to coöperate with an abutment, and means for pressing each carrier and abutment together into coöperating contact, as and for the purpose set forth.

7. In a cotton gin, an abutment, a traveling carrier operating past and in contact with said abutment, a cylinder arranged to support said carrier close to said abutment, a journal bearing for the cylinder, and means to press the bearing yieldingly toward the abutment, the side of said abutment next the carrier being provided with a slightly beveled surface adjacent to the point of contact between it and the carrier, as and for the purpose set forth.

In witness whereof, I have hereunto set my hand this 14th day of February, 1901, in the presence of the subscribing witnesses.

WILLIAM M. RHEEM.

Witnesses:

R. G. BLANC,
LOUISE CORNELL.