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PATENTED OCT. 29, 1907.

J. HODGKINSON.

COTTON GIN.

APPLICATION FILED JUNE 29, 1907.

Fig. 1.

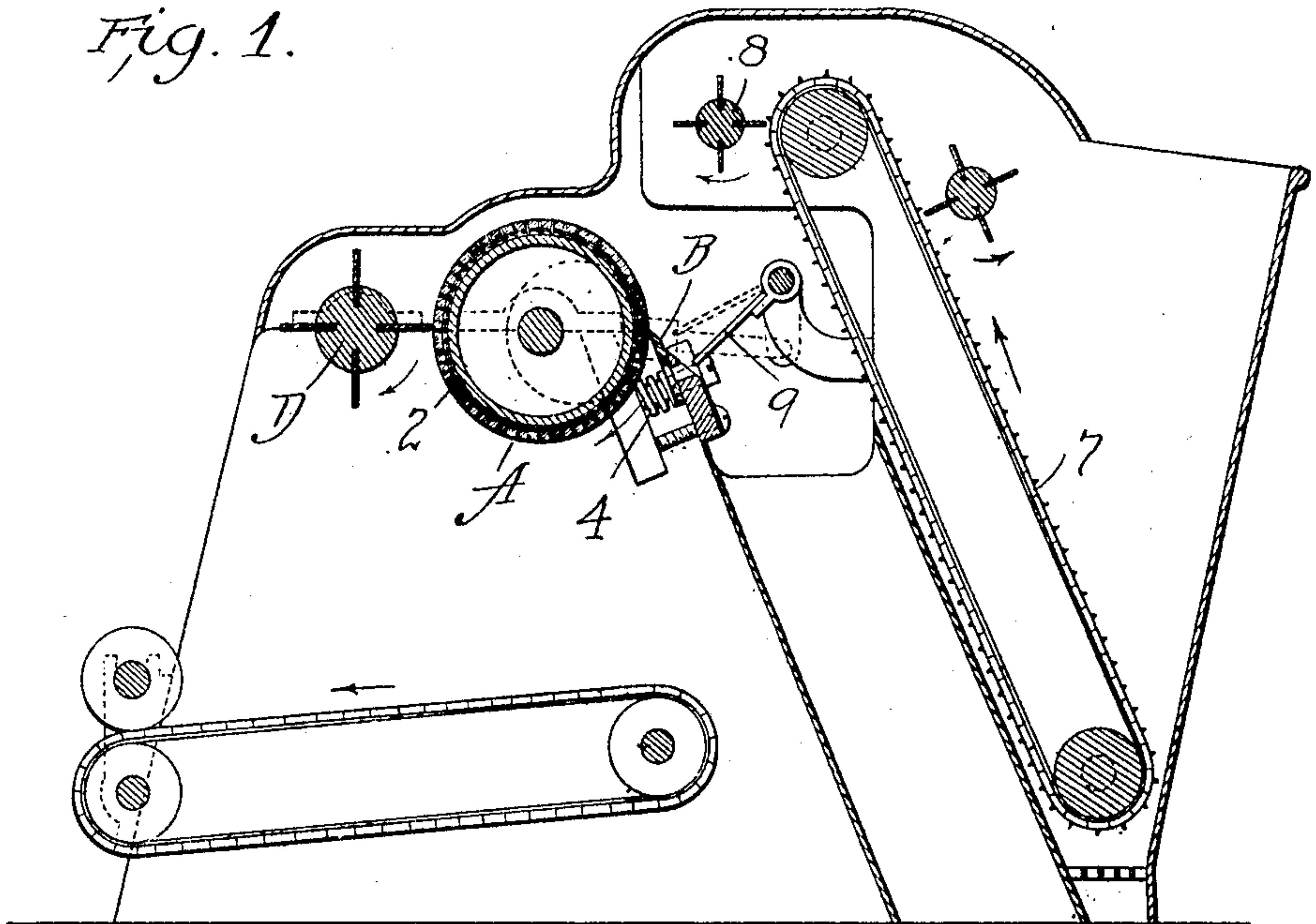


Fig. 2.

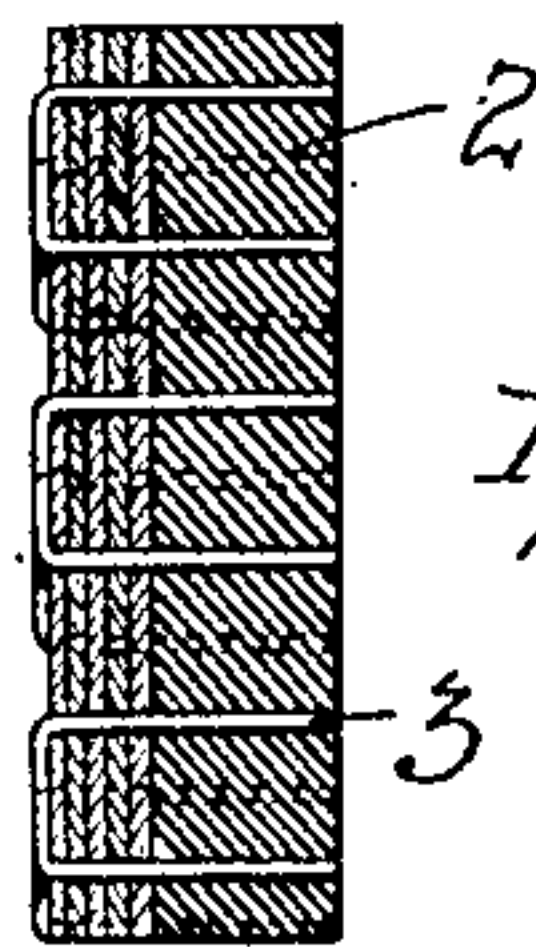
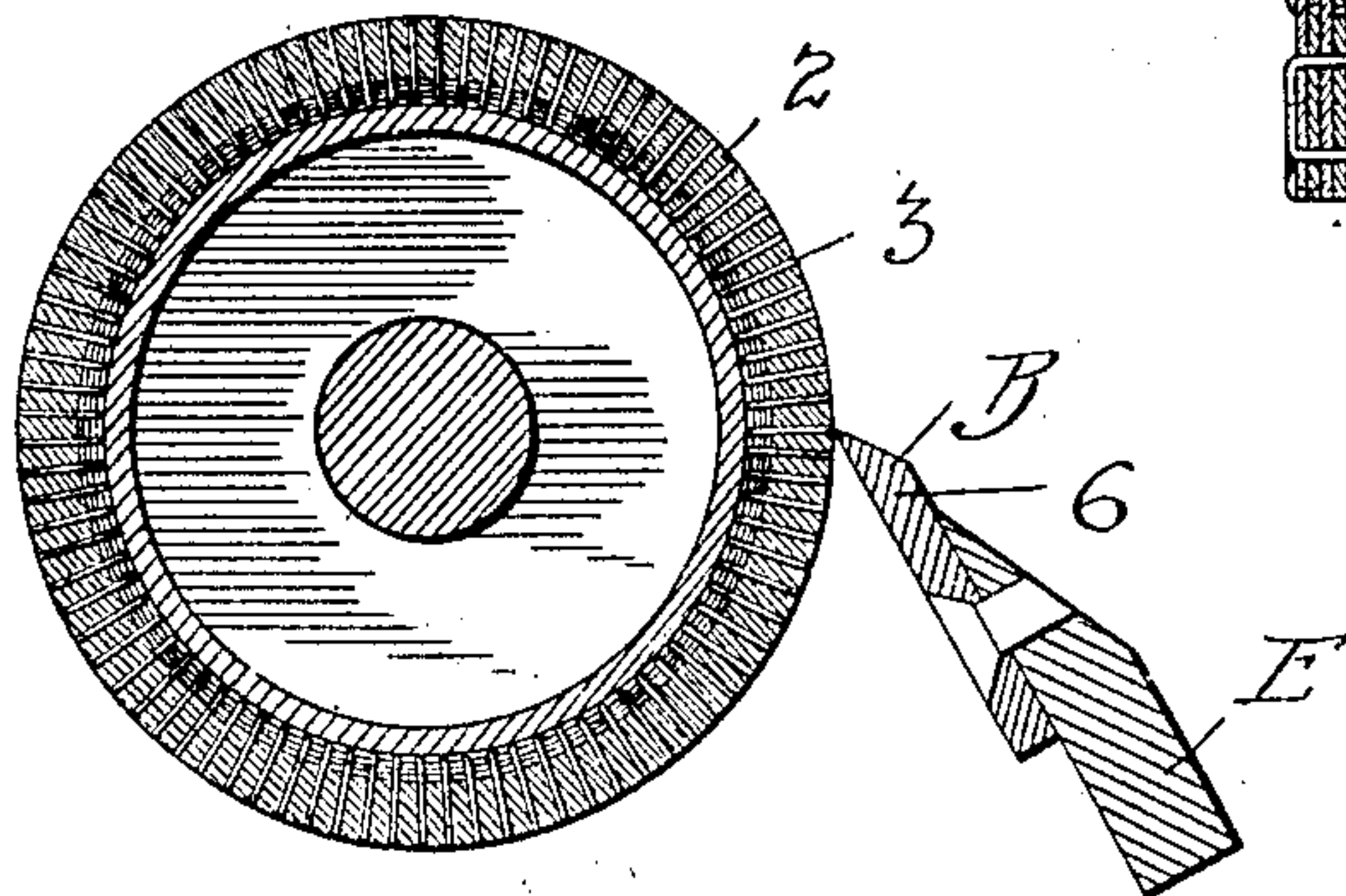


Fig. 3.

Attest:

S. B. Middleton  
Edward N. Sartor

Inventor.

James Hodgkinson  
by Wm. Wallace White  
Att'y



# UNITED STATES PATENT OFFICE.

JAMES HODGKINSON, OF SALFORD, MANCHESTER, ENGLAND.

## COTTON-GIN.

No. 869,633.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed June 29, 1907. Serial No. 381,439.

*To all whom it may concern:*

Be it known that I, JAMES HODGKINSON, a subject of the King of Great Britain, residing at Salford, Manchester, England, have invented certain new and useful Improvements in Cotton-Gins, of which the following is a specification.

My herein described invention relates to apparatus for removing hard substances from fiber with which such substances are mixed, and especially to the removal of the seed from the cotton fiber.

It consists essentially of a body having a somewhat elastic covering forming a bed in which is embedded a series of pins or teeth, the outer ends of which are practically flush with surface, under normal conditions. said body being combined with a blade and the body or blade being movable one in relation to the other, whereby one, (the body for example) may move past and in contact with the other and whereby, also, when fiber, such as cotton is brought into contact with the body, it will be drawn between body and blade, press back the yielding bed and expose the ends of the teeth on the line of the knife, which exposed teeth catch and draw the fiber away from the seed or other material to be excluded.

I have shown my invention in a form adapted to be used as a cotton gin and it is illustrated in the accompanying drawing in which:

Figure 1 is a vertical section through the machine. Figs. 2 and 3 are detail views.

In these drawings the body carrying the teeth indicated at A is shown in the form of a roller, or drum and as moving in relation to the blade. It is mounted on a shaft arranged to turn in ordinary bearings and may be rotated by any suitable means. Opposite the periphery of the drum and in line parallel with its axis, is set a blade B, the form shown not being material, but well suited to the purpose. The edge of the blade (which need not be sharp) is set against and is practically in light contact with the periphery of the drum so that when the fiber is drawn in between blade and drum it is pressed by the blade against the drum. The body of this drum may be made of wood, metal or any suitable material. But the surface has a yielding covering 2, such as thick leather, for example, the thickness and character of which will appear from the function to be described. In this bed which covers the drum, are set pins 3, equally distributed over the surface, as in rows and projecting radially through the bed, so that their outer ends are practically flush with the outer surface of the drum. As shown these pins are made in staple form like tine of the ordinary card cloth and preferably they pass through a backing of cloth set beneath the leather and bear at their cross bar part upon the drum. The body of these pins or teeth is therefore embedded in an elastic yielding material. When, therefore, material

to be acted upon by the machine, is brought to the surface of the drum moving in the direction of the arrow, the advance fibers are brought between the drum and the blade and, wedging between, press back the yielding bed, cause the pins to project beyond the surface on the line or in the region of the blade, and on that line or region catch the fiber in continuous succession and drag it onward. This projection of the pins and their engagement with the fiber as teeth is only instantaneous for any given pin or line of pins but is followed by succeeding pins or lines of pins, and each pin or line of pins, on passing the blade is again and instantly covered by the resilient return of the bed to its normal contour. Therefore the body of fiber is acted upon in any part, only once, and is there caught by a slight projection and when under pressure, and moves under pressure with the pin or pins engaging it at that point so that the fiber is carried and no tearing or rupture of the fiber can occur. The reëmbodding or covering of the pins by the return of the bed to its normal form, leaves the fiber free to fall from the drum as soon as the fiber passes the blade, but revolving brushes such as shown at D may be used to brush from the drum any fiber adhering by reason of the natural tendency of the fiber to stick in small quantities to a surface. The blade is shown as inclined downward from the drum so that the edge is directed toward the movement of the drum and the fiber is drawn over the edge of the blade, the seeds or other expelled matter drop outside and to any receptacle. Manifestly the forms of these parts may be changed but there must be a yielding surface and the pins embedded there practically flush with said surface and means placed against said surface, and one of the parts must move in relation to the other.

I have shown the blade set sloping down from the drum, but it may be turned upward and incline from the rear edge downward to the drum instead.

The blade is formed of two pieces. A bar E projecting at the end bears at these ends on stiff coiled springs 4 located at the ends and resting on the frame of the machine. It is held by screw bolts passing through the springs and threaded into the frame and with their heads bearing on the bar in about a central longitudinal line of the bar. These press the bar upon the springs. Two other screw bolts nearer the outer edge of the bar pass through the bar and in similar arrangement and by means of these springs and bolts the edge of the blade may be adjusted to the bars and vibration lessened.

The blade edge 6 is preferably made separate and securely attached to the bar, so that it may be removed when worn.

In the operation of this apparatus the bolls or unginned cotton for which the apparatus is mainly de-

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signed, is brought to the drum above the blade by any suitable apparatus, the drum moving in the direction of the arrow. The light fibers adhere to the drum and are carried down and drawn in between the drum and  
 5 blade which being rigid, crowds the body of fiber against the drum and this depresses the yielding bed or forces it back thus causing the ends of the pins or teeth to project above the surface of the material in which they are normally embedded. This projection  
 10 is slight but sufficient in connection with the pinch on the fiber and the movement of the drum to carry the mass of fiber forward bodily, while the seed or foreign substance is excluded by the blade thus the seed rests or rolls on the blade while the fiber is gradually un-  
 15 wound and drawn from it and the action is such that the seed is left comparatively clear of fiber and falls out of the way.

I have shown in Fig. 1 suitable feed mechanism consisting of a traveling belt 7 with detaching brush 8 and  
 20 oscillating chute 9 having movement as indicated in dotted lines in Fig. 1.

A cleaning brush may be provided as shown at D. From this the fiber drops upon an inclined chute down which it moves and passes to a pair of rollers which  
 25 receive and compress it into a sheet.

The moving parts above described are operated by any convenient mechanism of ordinary construction.

I claim:

1. A machine for separating fibers from solid substances intermixed therewith, comprising a moving body  
 30 having a yielding surface, and having pins or teeth embedded therein with their ends practically flush with the said yielding surface and a blade set against the surface of said body, substantially as described.

2. In a machine for separating fibers from solid substances intermixed therewith, such as seeds, a rotary drum having a covering of yielding material and pins or teeth embedded therein and with their ends practically flush with the exterior surface of said covering and a blade set against the surface of said covering substantially as described.  
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3. In a machine for separating fibers from solid substances intermixed therewith, the combination of a moving body of yielding material carrying pins or teeth with means for holding said fiber against the moving body, the material of said body yielding in respect to said holding means and the pins or teeth, to leave the same slightly projecting as they, together with the fiber, pass said holding means, substantially as described.  
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In testimony whereof, I affix my signature in presence  
 50 of two witnesses.

JAMES HODGKINSON.

Witnesses:

HENRY E. COOPER,  
 C. S. MIDDLETON.