

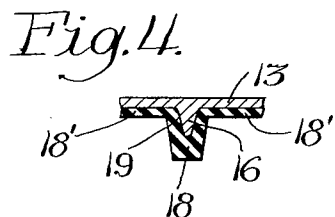
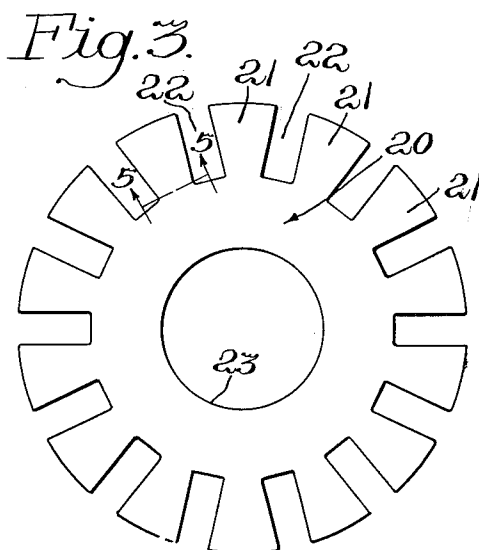
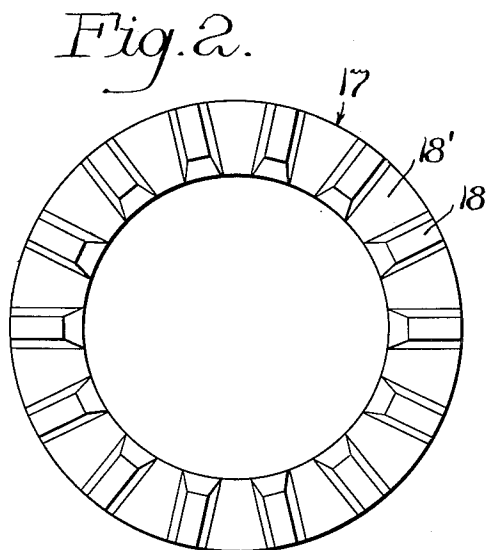
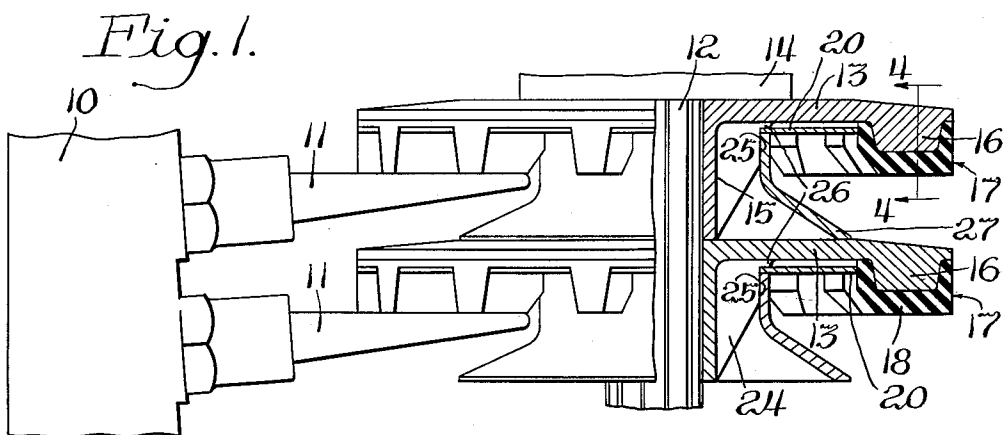
July 1, 1941.

C. R. HAGEN

2,247,682

COTTON PICKER

Filed March 18, 1939



Inventor
Clarence R. Hagen
By Paul O. Pippel
Att'y.

UNITED STATES PATENT OFFICE

2,247,682

COTTON PICKER

Clarence R. Hagen, Chicago, Ill., assignor to International Harvester Company, a corporation of New Jersey

Application March 18, 1939, Serial No. 262,751

7 Claims. (Cl. 56—41)

This invention relates to a cotton picker. More specifically it relates to a doffer construction for removing the cotton from the spindles of a rotating spindle type of cotton picker.

In cotton pickers utilizing rotating type of spindles, teeth are usually employed on the spindles to increase their aggressiveness in removing cotton from the plants and from partially open bolls. It has also been found desirable to taper the spindles, particularly when employing teeth thereon in order to facilitate removal of the cotton fibers, a substantial portion of which are wrapped around the spindle during the picking operation. As an additional method of improving the effectiveness of doffers for conical picking spindles, a doffing area has been provided by angling the conical spindles with respect to the axis of their supporting and carrying means so that one edge of the spindle at all times lies in a plane. This construction constitutes the subject-matter of the Johnston Patent 1,888,506, November 22, 1932. In such a construction, a doffing area is provided as determined by the overlapping portions of the surface defined by the edges of the doffing elements which engage the spindles and the area defined by the spindles during movement of the carrier on which they are mounted. It is to a doffer for a construction as shown in the above identified patent that the present invention relates.

The principal object of the present invention is to provide an improved doffer construction which is effective to remove cotton fibers from conical picking spindles over a long period of time without excessive wear or adjustment.

A subsidiary object is to provide a doffer element as a one-piece rubber construction molded to accurately fit the supporting structure and to embody spindle-engaging portions properly designed to remove cotton from picking spindles.

Another object is to provide a doffer structure in which the rubber doffing element is adequately supported by a simple and positive one-piece clamping member.

The above objects and others which will be apparent from the detailed description to follow are accomplished by a structure in which spaced rigid supporting members having a plurality of projections thereon are utilized to support a resilient doffing element formed with doffing projections engaging the projections on the supporting member and held in position thereon by a simple clamping means.

In the drawing:

Figure 1 shows a portion of a picker drum

structure including two conical doffing spindles and a doffing structure, one-half of which is shown in section;

Figure 2 is a bottom plan view of one of the resilient doffing elements shown in Figure 1;

Figure 3 is a bottom plan view of one of the doffer clamping elements shown in elevation and in vertical section in Figure 1;

Figure 4 is a section taken on the line 4—4 of Figure 1; and,

Figure 5 is a section taken on the line 5—5 of Figure 3.

Referring to Figure 1, a vertical support 10 represents a carrier member for rotatable spindles 11. This structure may be of any type but is preferably of the type shown in the Johnston patent, previously referred to. A plurality of the supports 10 is mounted on the supporting structure and carry a plurality of the vertically spaced spindles 11 which are moved past the doffer structure during operation of the picker. As the invention resides in the doffer mechanism, only such parts of the picker construction have been shown as are necessary to illustrate the invention.

The doffer mechanism consists essentially of a vertical shaft 12 mounted for rotation at the proper relative speed with respect to the movement and rotation of the spindles 11, as shown in the Johnston patent. For each row of spindles 11, a separate doffer mechanism is provided.

Each doffing mechanism consists of a rigid supporting member 13 splined on the shaft 12. The drawing illustrates the upper member 13 as abutting a member 14 at the top of the shaft 12 which forms a shoulder. The supporting member 13 is provided with a sleeve portion 15 in which the splines are formed for mating with the splines on the shaft 12. A plurality of integral projections 16 is formed around, in circumferentially spaced position, the periphery of the member 13. Said projections are tapered in cross-section and are generally apical in shape, as shown in Figure 4.

A resilient doffing element designated in its entirety by the numeral 17 is preferably formed of reasonably hard good grade rubber, such as used in the treads of automobile tires. Such rubber is very tough and is suited to use in the doffer mechanism of the invention. The doffer element 17 is annular in shape and is provided with a plurality of circumferentially spaced, radially arranged projections 18 which form the doffing portions of the element. Said portions are formed integrally with pockets 19 of the

same shape and size as the projections 16 on the supporting member 13. It will be noted that said projecting portions 16 are angled in all directions to permit easy assembling of the doffing element thereover. It will also be noted in Figure 1 that the projections 16 are spaced inwardly from the outer edge of the member 13 so that the outer edge of the doffing element 17 substantially coincides with the outer edge of the supporting member 13. To complete the doffing element 17, the portions 18 are connected by relatively thin webs 18' of a uniform thickness.

After fitting the doffing element 17 on the supporting member 13, a clamping member 20 is fitted over the doffing element to secure it firmly in position. Said clamping member is provided with a plurality of spaced clamping portions 21 diverging in size toward the outer ends. Said portions or wings, as they may be termed, fit between the doffing portions 18 of the doffing element, lying on the web portions 18', being spaced apart. The wings 21 form slots 22 therebetween through which the doffing portions 18 extend.

The clamping member 20 is provided with a large central aperture 23 which fits over the hub portion of the clamping member 13. To provide centering means and a seat for the clamping member 20, a plurality of diagonally extending webs 24 extend outwardly from the sleeve portions 15 of the doffing member joining the disk portion at the top. Said webs are formed with machined surfaces 25 of the same general diameter as the opening 23 in the clamping member, whereby said member may be slipped over the webs being accurately centered thereby. At the upper ends of the surfaces 25, surfaces 26 are machined on the webs 24 to form stop shoulders against which the clamping member 20 abuts. Said shoulders are spaced from the underneath surface of the supporting member 13 a distance substantially the same as the thickness of the webs 18' of the doffing element.

Referring to Figure 5 which is a cross-section through the base of one of the wing extending portions 21, the clamping member is formed slightly arcuate in cross-section at these locations. This cross-section gives additional strength to the clamping portions and forms a certain amount of resiliency whereby the doffing element may be securely clamped in position. To secure each of the clamping members 20 in position and to form a shield for facilitating discharge of the doffed cotton, a member 27 is inserted between each pair of supporting members 13. Said member is provided with a cylindrical upper portion which fits the surfaces 25 on the webs 24. The upper end of the cylindrical portion engages the underneath side of the corresponding clamping member 13, thereby holding said member rigidly in position against a shoulder formed by the surface 26 on the webs. The lower portion of the member 27 extends outwardly as a flat cone to engage the upper surface of the adjacent supporting member. As shown on the portion in elevation in Figure 1, the shape of the member 27 allows room for adjustment of the vertical position of the doffer with respect to the spindles while at the same time providing a passage of proper clearance and contour for the discharge of cotton doffed from the spindles.

The operation of the doffer constituting this invention has been explained in connection with the description. It will be understood that a

doffing unit is provided for each vertical row of spindles. As is conventional in doffers of this type, vertical adjustment is provided to locate the doffing portions of the doffing elements at the proper relative position with respect to the spindles. As wear occurs, the doffing elements may be brought closer to the spindles. The resilient nature of doffing elements constituting this invention results in long life and freedom from excessive wear or damage to the spindles. When the useful life of the elements has been reached, they may be readily replaced without a great deal of care in bringing back alignment, as the nature of the construction is such that the dimensions may be maintained sufficiently accurate to automatically obtain the correct alignment merely by clamping new doffing elements in position.

It is to be understood that applicant has shown only one form of his improved resilient doffing means for cotton pickers and that he claims as his invention all modifications falling within the scope of the appended claims.

What is claimed is:

1. A doffing unit for a cotton picker of the rotating spindle type, comprising a disk-like support having a plurality of circumferentially spaced, axially projecting lugs, a doffer element of resilient material mounted on said support, said element having doffing portions fitted over said lugs and web-connecting portions joining said doffing portions, and a securing element for said doffing element consisting of an annular plate having projections extending between the doffing portions of the doffing element and fitting against the web-connecting portions.

2. A doffing unit for a cotton picker of the rotating spindle type, comprising a disk-like supporting structure having a plurality of circumferentially spaced, axially extending bosses, a one-piece rubber doffing element having doffing ribs formed thereon at circumferentially spaced positions, said ribs having cavities therein adapted to fit over the bosses on the supporting member, and a second annular member having radially extending projections positioned to engage the doffing element between the ribs thereon for clamping the element in position.

3. A doffing unit for a cotton picker of the rotating spindle type, comprising a supporting part, and a doffer part thereon and including spaced resilient ribs, said supporting part also carrying rigid reinforcing ribs extending into the resilient ribs.

4. A doffing unit for a cotton picker of the rotating spindle type, comprising a disk-like supporting part, a doffer element of resilient material mounted on said part, said element having axially projecting doffing portions and connecting portions joining said doffing portions, and a securing element for said doffing element consisting of a plate having projections extending between the doffing portions of the doffing element and fitting against the connecting web portions.

5. A doffing unit for a cotton picker of the rotating spindle type, comprising a disk-like support, a doffer element of resilient material mounted on said support, said element having axially projecting doffing portions and connecting portions joining said doffing portions, and a securing element for said doffing element.

6. A doffing unit for a cotton picker of the rotating spindle type, comprising a supporting element and doffer element carried thereby, said

doffer element consisting of an annular one-piece rubber structure having a plurality of spaced doffing ribs and webs connecting said ribs, said webs providing for means for attaching the element to the supporting element.

7. A doffing unit for a cotton picker of the rotating spindle type, comprising a supporting

member having a plurality of circumferentially spaced, axially projecting lugs, a doffer element of resilient material mounted on said member, said element having doffing portions fitted over said lugs, and a securing element for said doffing element.

CLARENCE R. HAGEN.