March 1, 1938. J. D. RUST 2,109,506

COTTON PICKING SPINDLE

Original Filed July 3, 1934

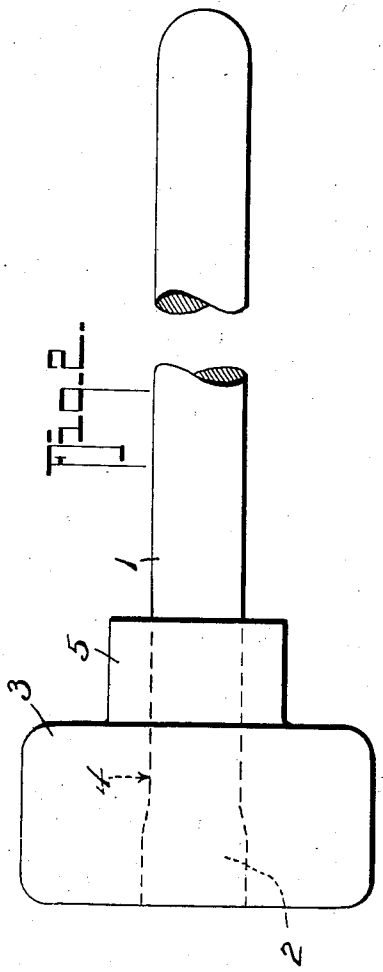


Fig. 2.

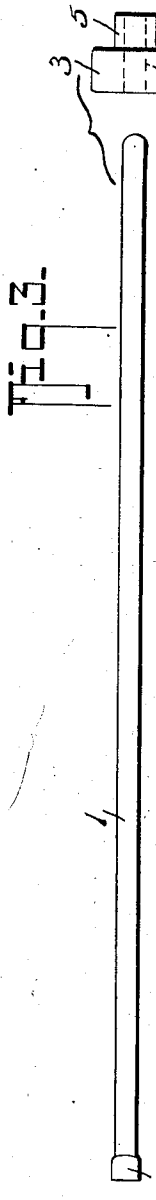


Fig. 3.

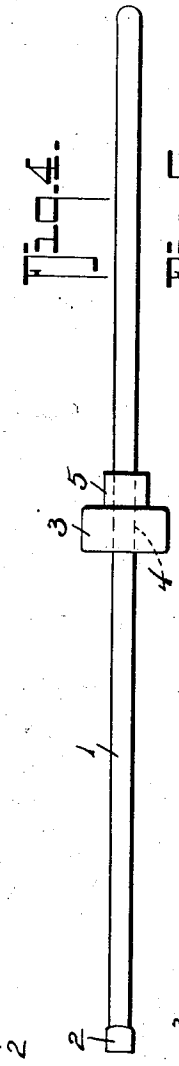


Fig. 4.

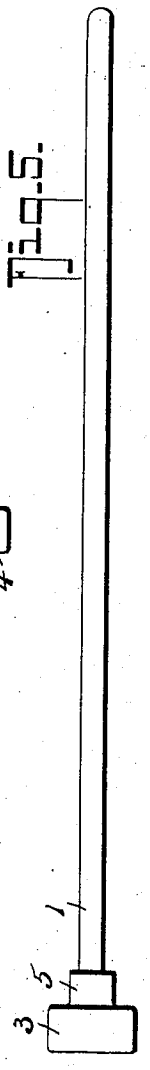


Fig. 5.

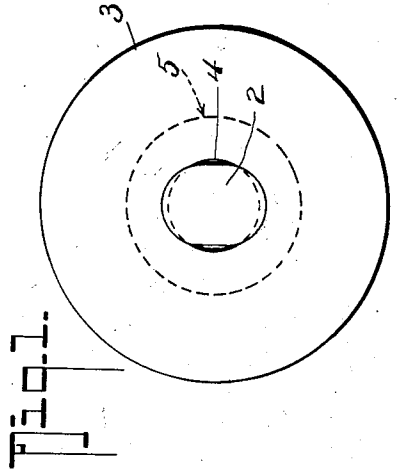


Fig. 1.

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Patented Mar. 1, 1938 2,109,506

UNITED STATES PATENT OFFICE

2,109,506

COTTON PICKING SPINDLE

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Refiled for abandoned application Serial No. 733,688, July 3, 1934. This application March 22, 1937, Serial No. 132,448.

5 Claims. (Cl. 56—50)

My invention relates to cotton pickers of the type disclosed in Letters Patent No. 1,910,307 issued May 23, 1933. In such machines a large number of relatively very thin spindles are rotated in bearings in the slats of an endless conveyor by means of relatively fixedly located tracks which are engaged by rollers on the butt ends of the spindles.

There are two generic ways in which the spindles may be made. One is to form the spindles and rollers integrally out of a single piece of metal, and the other is to make the spindles and rollers separately and then fasten the rollers in place on the spindles. The former method is too expensive for practical use. The latter method is the one to which my present invention relates.

Prior to my present invention it was the practice to make the spindles cylindrical from point to butt, of uniform distance, and to bore the rollers for a tight driving fit thereon. The rollers were then driven onto the spindles and the tightness of the fit was relied upon to prevent the rollers and spindles from turning with respect to one another. Extensive field tests of the machines demonstrated that this method of making the spindles was not always reliable. Frequently the rollers would become loose on the spindles so that the spindles would not be turned or rotated properly in the cotton or, what is more serious, the spindles would be pulled out of the rollers and the spindle bearings during the stripping operation and cause grave damage to the machine. When such pulled-out spindles arrived at the gins with the cotton their engagement by the saws would set up sparks and set fire to the cotton. It is to overcome these objectionable features in the prior art spindles that my present invention has been designed.

In carrying out my present invention I form the spindles and roller separately as before and bore the roller for a close fit on the spindle. I then slightly flatten the extreme butt end of the spindle. This may be done by a hammer stroke. The roller with its cylindrical bore is then passed onto the spindle from the point end (the point end being rounded or somewhat pointed) and the spindle is driven through the roller until the flattened end has been forced tightly into the roller and the end face of the butt of the spindle lies flush with the adjacent face of the roller.

In the drawing, Figure 1 is a magnified end view of a completed spindle embodying the invention.

Figure 2 is a side elevation thereof, a part being broken away.

Figures 3, 4, and 5 are side elevations of the spindle proper and its roller, and illustrates the method of assembling the same.

In the drawing, in which like numerals of reference indicate like parts in all the figures, 1 represents the spindle proper whose butt end is flattened as at 2. The spindle is of circular cross section from the flattened portion forwardly. The flattening may be accomplished by hammering so as slightly to expand the metal laterally beyond the thickness of the remainder of the spindle while thinning it correspondingly in the direction of the hammer blow.

The roller 3 has a hub 5 and it is bored as at 4 to fit the cylindrical portion of the spindle 1 snugly, i. e. with a sliding fit.

As shown in Figure 3, the spindle and roller are assembled at the point end of the spindle, and the spindle is forced through the bore 4 of the roller (see Figure 4) and the roller is finally driven (relatively) tight onto the butt end of the spindle. Both the spindle and the roller are made of steel. The driving of the two together at the butt end of the spindle results, as it were, in a slight distortion of the rear end of the hole 4 from a true circle (see Figure 1) and thus the parts are so tightly wedged together that all danger of the roller becoming loose on the spindle is eliminated, as has been fully demonstrated over a considerable period of testing under actual working conditions of the machine in the field.

As will be observed, the flattened portion 2 does not extend the full depth of the roller 3 and its hub 5. Hence a shoulder is provided which will make it impossible to pull the spindle out of the roller while the cotton is being stripped from the spindle. If a spindle is pulled loose from its roller, as sometimes occurs with spindles constructed without my present invention, the spindle with the cotton on it will go forward with the cotton and damage either the blowers or other parts of the machine, and if not culled out before the cotton goes to the gin it may cause fire in the gin or other damage thereto.

This case is a substitute for my application filed July 3, 1934, Serial No. 733,688, allowed July 10, 1935.

From the foregoing description, taken in connection with the accompanying drawing, it is thought that the complete construction, operation and advantages of the invention will be clear to those skilled in the art.

What I claim is:

1. In a cotton picking spindle, a cylindrical

spindle having a butt end provided with a flattened portion with a greater diameter in one transverse direction than the diameter of the spindle proper, and a roller having a cylindrical bore to receive the spindle snugly, the roller and spindle being held together at the butt end of the spindle with a tight driving fit.

2. In a cotton picking spindle, a cylindrical spindle having a butt end provided with a flattened portion with a greater diameter in one transverse direction than the diameter of the spindle proper, and a roller having a cylindrical bore to receive the spindle snugly, the roller and spindle being held together at the butt end of the spindle with a tight driving fit, the retaining force of which is exerted more in one transverse direction than in a transverse direction at right angles thereto.

3. In a cotton picking spindle, a cylindrical spindle having a butt end provided with a flattened portion with a greater diameter in one transverse direction than the diameter of the spindle proper, and a roller having a cylindrical bore to receive the spindle snugly, the roller and spindle being held together at the butt end of the spindle with a tight wedging fit.

4. In a cotton picking spindle, a cylindrical spindle having a butt end provided with a flattened portion with a greater diameter in one transverse direction than the diameter of the spindle proper, and a roller having a cylindrical bore to receive the spindle snugly, the roller and spindle being held together at the butt end of the spindle with a tight driving fit, the retaining force of which is exerted more in one transverse direction than in a transverse direction at right angles thereto, that portion of the bore of the roller which receives the flattened butt end of the spindle being somewhat elliptical in cross section.

5. A cotton picking spindle comprising a cylindrical spindle having a butt end widened in at least one direction and a roller having a suitable bore to receive the spindle, the butt end of the spindle being forced into the roller with a tight driving fit to interlock the spindle and the roller against independent rotation and to prevent the spindle being pulled out of the roller, the widest portion of the butt end of the spindle extending only a part of the way through the roller.

JOHN D. RUST.