

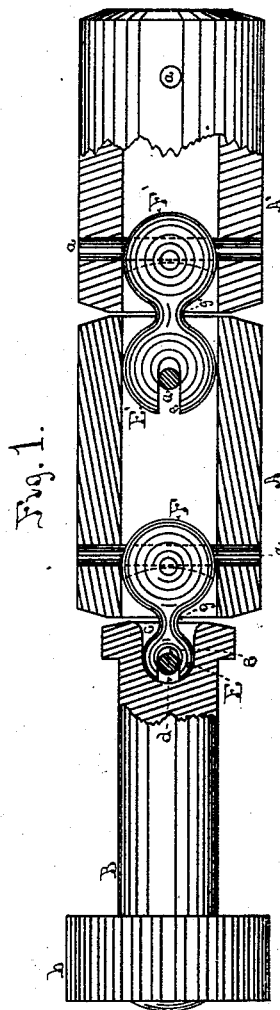
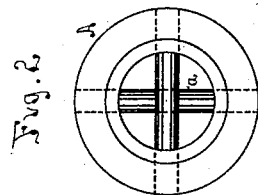
(No Model.)

H. C. GILMAN.

SECTIONAL ROLL FOR COTTON OPENERS.

No. 266,986.

Patented Nov. 7, 1882.



Witnesses

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# UNITED STATES PATENT OFFICE.

HIRAM C. GILMAN, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO ALFRED CLARKE AND HAVEN C. PERHAM, OF SAME PLACE.

## SECTIONAL ROLL FOR COTTON-OPENERS.

SPECIFICATION forming part of Letters Patent No. 266,986, dated November 7, 1882.

Application filed May 23, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, HIRAM C. GILMAN, of Lowell, in the county of Middlesex and State of Massachusetts, have invented a new and useful Sectional Roll for Cotton-Openers, of which the following is a specification.

My invention relates to sectional rolls such as those described in Patent No. 245,609, issued to Alfred Clarke and H. C. Perham on the 16th day of August, 1881; and its objects are to prevent any of the sections from slipping when a bunch or hard lump is approaching the nip of the rolls, and to drive the separate sections positively with a surface speed exactly equal to that of the lower feed roll or rolls when in use, as described in said patent. I accomplish these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a sectional roll, partly in section, provided with my improvements. Fig. 2 is an end elevation of one of the sections.

A A' are the sections of the roll.

B is a short shaft placed in a bearing in the frame of the machine (described in said patent) axial with the sectional roll. This shaft is provided with a gear, *b*, which, when the shaft is placed in the machine, engages with the gear of the lower feed roll or rolls, so that it moves with them. This shaft extends only through the frame and abuts against the sectional roll, and is provided upon its inner end with a hemispherical socket, *c*, having a pin, *d*, passing through it centrally. Into this socket the ball E is inserted. This ball is provided with an opening, *e*, into which the pin *d* fits, and prevents the ball from rotating in the socket, while permitting other movements.

Attached to the ball E by a neck, *g*, is the ball F, which fits into the base of the section A, and is prevented from rotating therein by the pin *a*, which passes through an opening, *e*, as already described, in ball E. The openings *e* in balls E and F, through which the pins *d* in the shaft and *a* in the roll pass, are at right angles to each other, so that a universal joint is formed, which permits the section A to rise and fall while the shaft B remains in position. The section A' is connected to and

driven by the section A by the balls E' and F', connected by the neck *g'*, made like the balls E and F, already described, the openings *e*, through which the pins *a* pass, being in all cases placed at right angles to each other in the connected balls. The openings in the balls are given a curved bottom, as shown in the drawings by dotted lines, so as to prevent binding against the bore and pin as one section rises or falls independently of the other. Each of the other sections of the roll are connected together and driven as are those described. In Fig. 2 the pins *a a* are shown as they would appear looking into the end of one of the sections.

It is obvious that the connecting parts need not be made exactly in the form shown—ball and socket—but can be made as connected yokes or T's placed at right angles in the well-known universal-joint manner.

It is also obvious that it may not in all cases be found necessary to provide the shaft B with ball-and-socket joint, because if the sectional roll be composed of many sections it is unlikely that all the sections will be brought into contact with lumps which will cause them to slip at the same time. Hence if the sections are connected as I have described those moving over the smoother parts of the sheet of fiber passing to the beater will have sufficient traction to drive those against which lumps may have come into contact and which might tend to slip or stand still. This invention is intended to be applied to breaker-openers, or those used to open the cotton when first taken from the bale, in which lumps of different degrees of hardness are to be found, and in which there are sometimes small nubs very hardly compacted together. When the divided upper roll is driven only by the friction of the lower one, exerted through the intervening sheet of fiber, such lumps or nubs sometimes stop the rotation of the section of the roll they come against, thus preventing the passage of cotton to the beater, and causing the upper sectional roll to move irregularly. By giving the lower feed-roll and the upper sectional roll a positive motion the lumps will be immediately drawn in and pass with the sheet, in-

stead of breaking or tearing it and stopping the feed to the beater at that point. In the construction I have shown it is evident that the sections of the divided roll nearest the shaft B serve themselves to couple the more remote sections to the driving-shaft, and while acting as sections they also form the connecting driving-links of the remoter sections.

What I claim as new and of my invention is—

1. A sectional roll for a cotton-opener, having its sections connected together by universal joints, substantially as described.

2. A sectional roll for a cotton-opener, pro-

vided with universal joints connecting its several sections, and with a universal joint connecting it with a driven shaft, whereby the roll is driven positively by the shaft, substantially as described.

3. A sectional roll for cotton-openers, provided with a driving-shaft, and having each of its sections connected thereto by one or more couplings, substantially as described.

HIRAM C. GILMAN.

Witnesses:

LEPINE C. RICE,

HAVEN C. PERHAM.