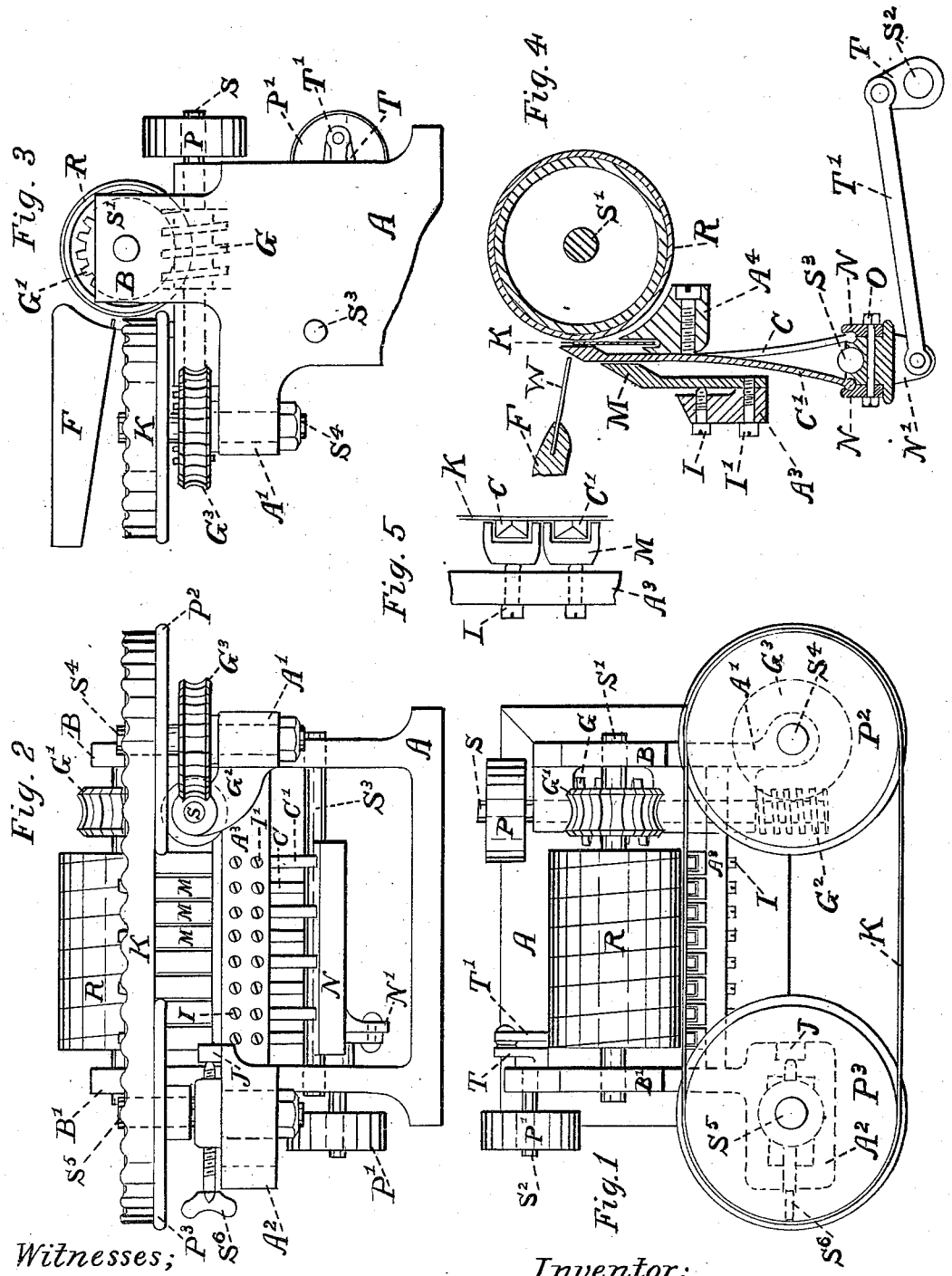
(No Model.)

F. H. RICHARDS.

COTTON GIN.

No. 306,108. Patented Oct. 7, 1884.



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FRANCIS H. RICHARDS, OF SPRINGFIELD, MASSACHUSETTS.

COTTON-GIN.

SPECIFICATION forming part of Letters Patent No. 306,108, dated October 7, 1884.

Application filed January 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Cotton-Gins, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to that class of cotton-gins known as "roller-gins;" and it consists in certain combinations of mechanisms hereinafter described and claimed.

Referring to the drawings, Figure 1 is a plan view of a machine embodying my invention. Fig. 2 is a front elevation of the same. Fig. 3 is an elevation of that end thereof at the right-hand end in Figs. 1 and 2. Fig. 4 is a partial vertical cross-section of the machine through the roll R. Fig. 5 is an enlarged view of a part of Fig. 1.

Similar letters refer to similar parts throughout the several views.

The frame of the machine, A, I prefer to make integral, as shown, and with projections A′ and A^2, and bars A^3 and A^4, for securing in position the several details. Bearings B B′ are formed in the frame or secured thereto for a shaft, S′, which carries a friction-roller, R, of the usual description.

Crosswise to shaft S′, and preferably underneath the same, is located the driving-shaft S, supported in suitable bearings formed on or secured to frame A. The driving-shaft has a pulley, P, by means of which it is rotated, a worm, G, for driving the worm-wheel G′, which is fixed upon the roll-shaft S′, and another worm, G^2, for driving the endless doctor-knife. Upon one end of the frame a lug, A′, carries a stud, S^4, upon which the band-wheel P^2 is rotated by means of the worm-wheel G^3, secured thereto and meshing with worm G^2. At the opposite end of the frame a lug, A^2, has a slot, in which is adjustably secured the stud S^5, upon which the band-wheel P^3 rotates freely. Adjustment of the stud to tighten the endless doctor-knife K upon the wheels is effected by means of a screw, S^6, and lug J. A portion of the frame A^4, forming a bar between the sides thereof, is suitably formed to support the endless doctor-knife, as shown best in Fig. 4. Below the bar A^4 a rock-shaft, S^3, is located, and so constructed and operated as to impart a vertical reciprocating motion to two sets of clearer-points, C and C′, of which the former is made to go downward when the latter is made to go upward, and vice versa. The clearer-points in one set are at their upper ends brought between those of the other set, so that in operation the set lettered C′ go downward, while the set lettered C go upward. At their lower ends the clearer-points are formed cylindrical, to fit into and to be partially inclosed within grooves formed between rock-shaft S^3 and plates N, partly in each, (shown best in Fig. 4,) making a well-known and positive "toggle-joint" connection, whereby motion is communicated from said shaft to said clearer-points in both directions. For oscillating this shaft I have shown an ordinary crank-motion arranged therefor, consisting of a shaft, S^2, driven by pulley P′, and having a crank, T, from which a connecting-rod, T′, communicates the required rapidly-reciprocating motion.

In front of the clearer-points, and secured to a portion of the frame A^3 by means of screws I′, are a series of springs, M, formed bifurcated at their upper ends, to reach between and guide the clearer-points and press upon the doctor-knife, as shown best in Figs. 1 and 5. A proper pressure of the doctor-knife K against the roller R is then secured by means of set-screws I, or their equivalent. In front of the clearer-points is the usual grating, W, of the feed-board F, through which the denuded seeds may fall.

The operation of feeding cotton to my improved cotton-gin may be performed by hand in the usual way, or by any suitable feeding device.

The operation of the machine in ginning the cotton is the same as usual in this class of cotton-gins, excepting that the motion of the doctor-knife acts to roll the cotton fiber between it and the friction-roller, whereby the seeds are made to continually change position, so that the clearer-points can operate more effectually in removing them. In order to increase the efficiency of the doctor-knife for that purpose, I make the upper edge of a serrated or undulating form, substantially as shown in Fig. 2.

I do not claim herein an endless doctor-

knife, except in combination with other elements, having claimed it in a separate application, filed January 14, 1884, Serial No. 117,573, and shown and described the same in my applications numbered 117,574 and 117,575, of even date herewith, to which reference may be had.

Having thus described my invention, I claim—

1. In a cotton-gin, a friction-roll, an endless doctor-knife, means for pressing said knife against said roll, means for driving said roll and said knife, and a suitable seed-clearer, all combined and operating substantially as described.

2. In a cotton-gin, a friction-roll, a flexible doctor-knife, means to support and to drive said knife, and springs M, all combined and operating substantially as described.

3. In a cotton-gin, a friction-roll, a flexible doctor-knife, means for supporting said knife, pressers M, having their upper ends bifurcated, and seed-clearer guided by said pressers, substantially as described.

FRANCIS H. RICHARDS.

Witnesses:
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