2 Sheets—Sheet 1.

H. A. STEARNS.

COTTON-GIN.

No. 181,017. Patented Aug. 15, 1876.

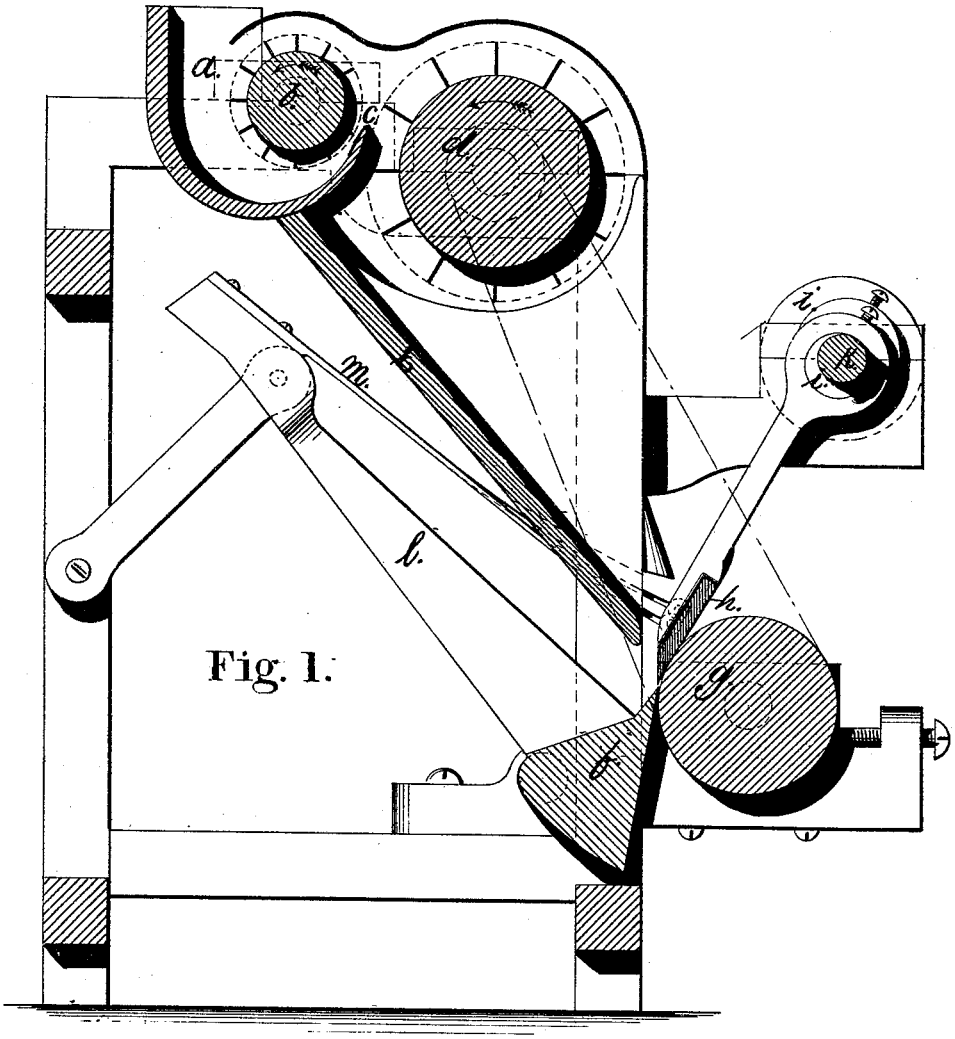

Fig. 1.

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2 Sheets—Sheet 2.

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COTTON-GIN.

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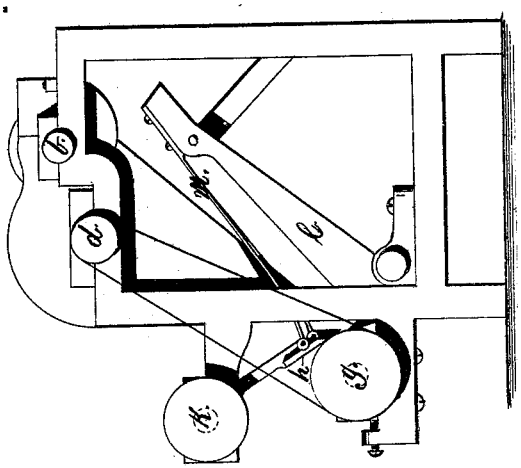

Fig. 4.

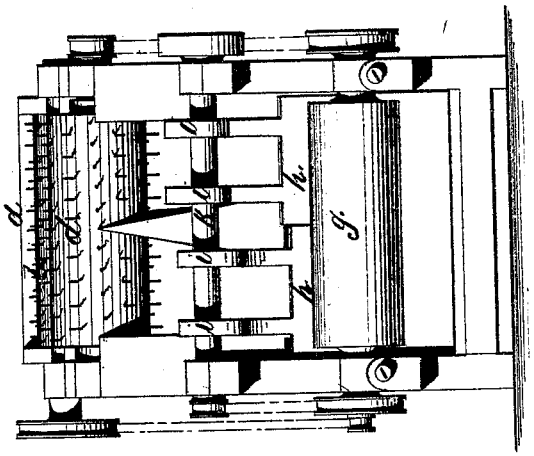

Fig. 2.

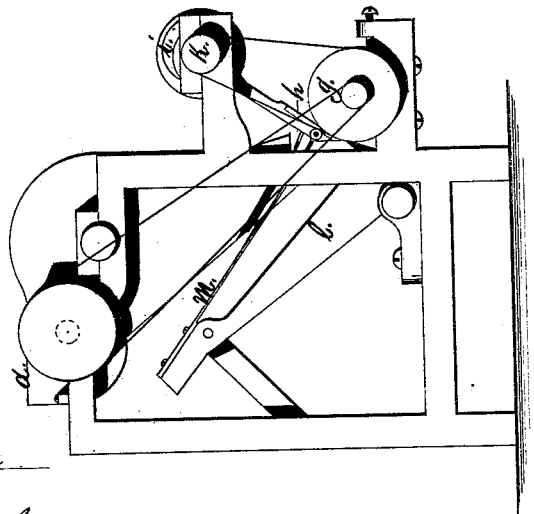

Fig. 3.

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UNITED STATES PATENT OFFICE.

HENRY A. STEARNS, OF PAWTUCKET, RHODE ISLAND.

IMPROVEMENT IN COTTON-GINS.

Specification forming part of Letters Patent No. **181,017**, dated August 15, 1876; application filed January 10, 1876.

To all whom it may concern:

Be it known that I, HENRY A. STEARNS, of Pawtucket, in the county of Providence, State of Rhode Island, have invented new and useful Improvements in Cotton-Gins; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 is a vertical section, showing my improvements on what is known as a "single-roll cotton-gin." Figure 2 is a front view, showing the cover removed. Figs. 3 and 4 are side views of the machine.

Similar letters of reference indicate corresponding parts.

This invention has reference to that class of cotton-gins in which the cotton is separated from the seed by being drawn in between an elastic roller and a knife, and known as "roller cotton-gins;" and consists in the novel arrangement by which the beater-knives are reciprocated alternately, and also in the novel manner in which the seed-cotton opener is combined with the beater-knives, as will be more fully set forth hereinafter.

In the drawings, *a* is a concave receptacle for the seed-cotton. *b* is a porcupine-roll, by which the seed-cotton is delivered to the knife-edge *c*, forming the edge of the concave receptacle *a*. *d* is the beater-drum, provided with projecting pins, and driven at a high speed, so as to open the seed-cotton delivered by the roll *b* at the edge *c*, and deliver the opened seed-cotton to the roller *g*. *e* is the incline plane, down which the cotton is passed to the roll. *g* is the elastic ginning-roll, and *f* the knife. *h h* are the reciprocating beaters, having a peculiar nipping motion, by which the seed is freed from the cotton. *i i* are the eccentric straps, by which the beater-knives are secured to the eccentrics secured to the shaft *k*.

The superiority of cotton ginned on a roller-gin, in the preservation of the fiber, is fully recognized; but the small quantity of cotton that can be so cleaned in one gin has prevented their general introduction. By properly opening the seed-cotton, I find that the quantity of work done by a gin can be greatly increased.

In my improved gin the seed-cotton is placed into the concave shell *a*. This shell ends in a thin edge at *c*. The porcupine-roll *b*, revolving slow, delivers the seed-cotton to the edge *c*, where the beater-drum *d*, provided with projecting pins and revolving fast, opens and combs it out, dividing it into the separate seeds, when the cotton adhering to the same is easily separated by the roll *g* and knives *b* and *c*, allowing a larger quantity to be ginned with less power, and with less destruction of fiber by tearing the same, when in a matted condition, from the seed.

By beating the seed-cotton over the edge of the concave shell at *c* with the rapidly-revolving toothed drum *d*, the fiber is opened and combed out more effectually than when the seed-cotton is held between rolls, and much more of the impurities are removed from the same.

To perform a large amount of work in a roller cotton-gin the same must be run at a high speed; but when so run the reciprocation of the beater-knife produces considerable shaking, both in the machine and building, requiring more power, as all the force is exerted at one time against the whole length of the beater-knife, and rapidly destroying the machine.

To obviate this difficulty I employ two beater-knives, and secure the same to eccentrics set at different angles on the same driving-shaft. The beaters will thus operate successively, and the sudden shock is thus avoided. The gin will run without vibration, and, consequently, with less power.

In place of the eccentrics *i i*, cranks set at different angles may be used, and the beater-knives secured to, and operated by, the same.

The proportional speed at which the different parts of the machine ought to be run is indicated in Figs. 3 and 4 by the different diameters of the pulleys.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the double beater-

knives *h h*, of the eccentrics secured to the shaft at different angles, and arranged to reciprocate the beater-knives alternately, substantially as described.

2. The combination of the cotton-opener, consisting of the concave shell *a*, the knife-edge *c*, porcupine-roll *b*, and beater-drum *d* with a roller cotton-gin, substantially as described.

HENRY A. STEARNS.

Witnesses:
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HORACE F. HORTON.