

(No Model.)

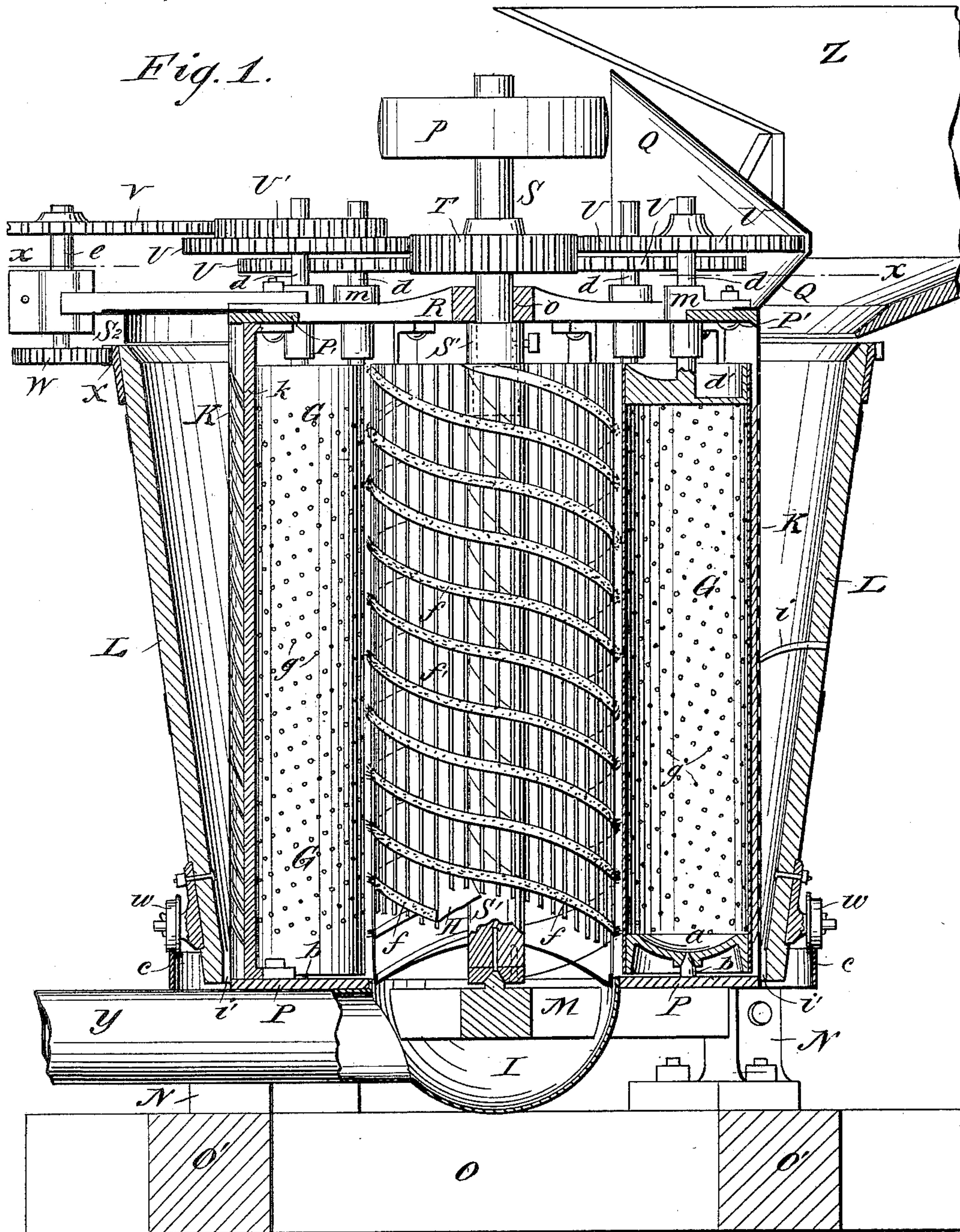
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S. D. FREEMAN.

COTTON GIN.

No. 339,091.

Patented Mar. 30, 1886.



WITNESSES:

Dom Twitchell.
C. Sedgwick

INVENTOR:

S. D. Freeman

BY

Munn & Co.

ATTORNEYS.

(No Model.)

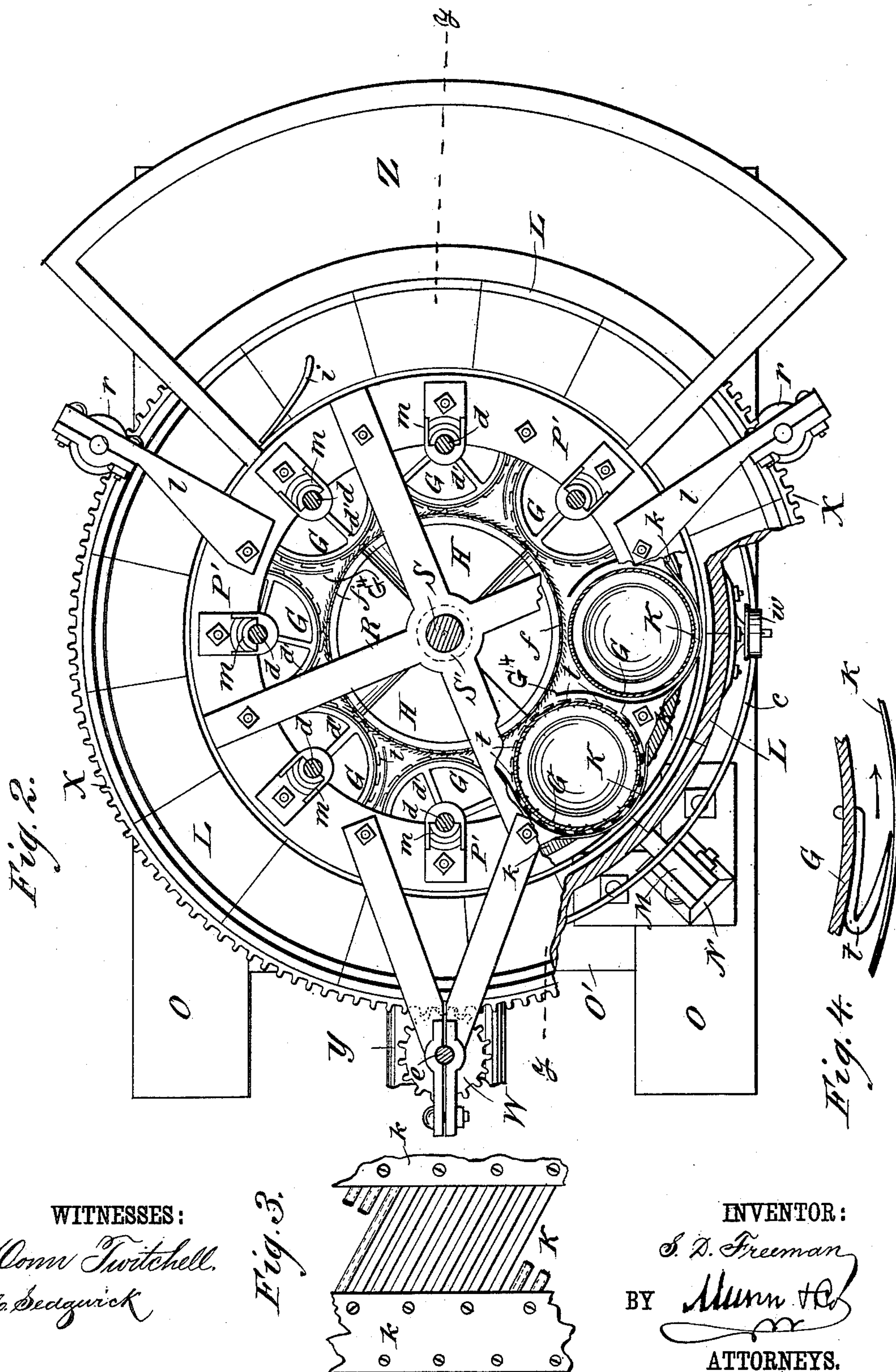
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Fig. 3.

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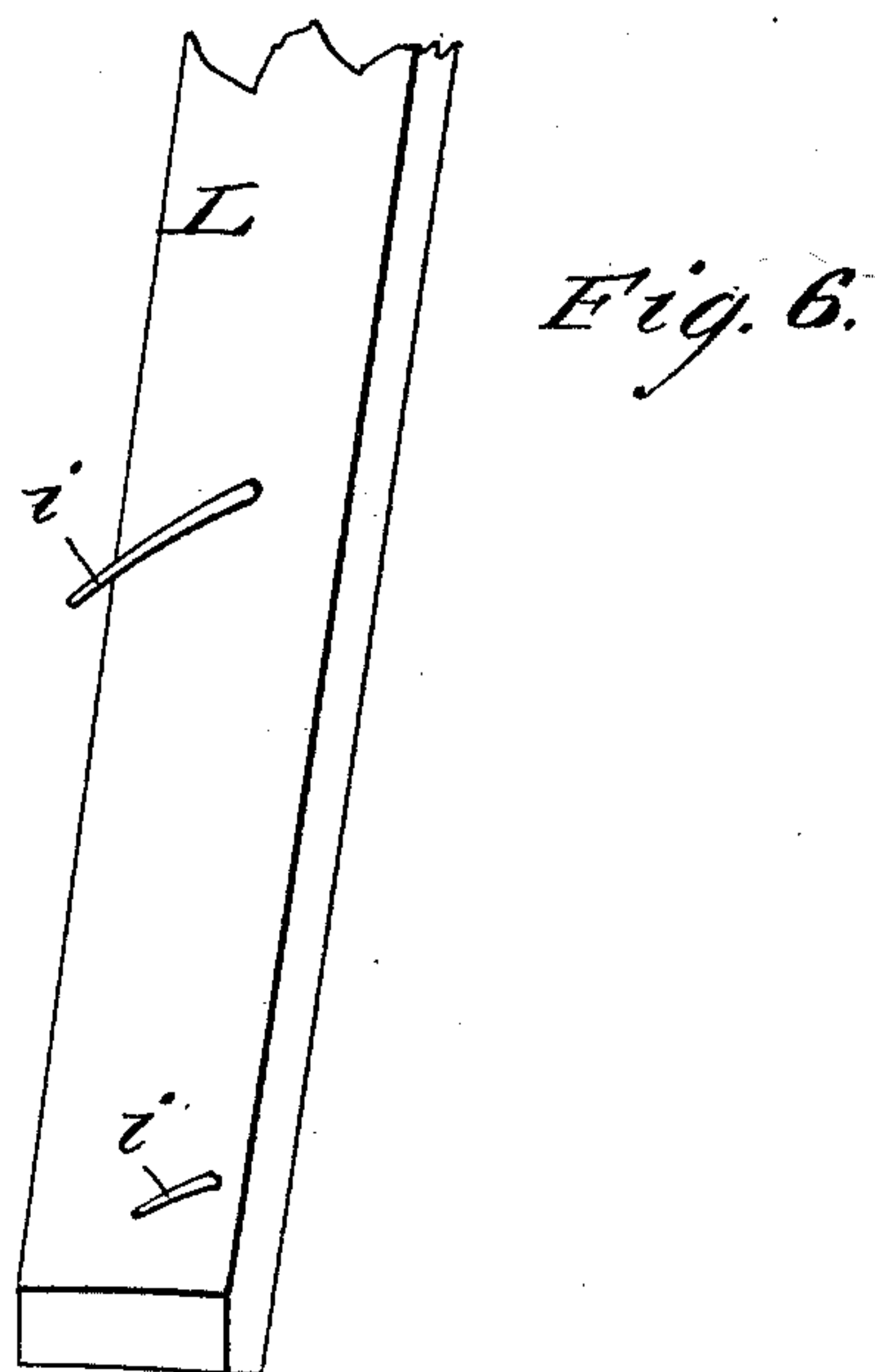
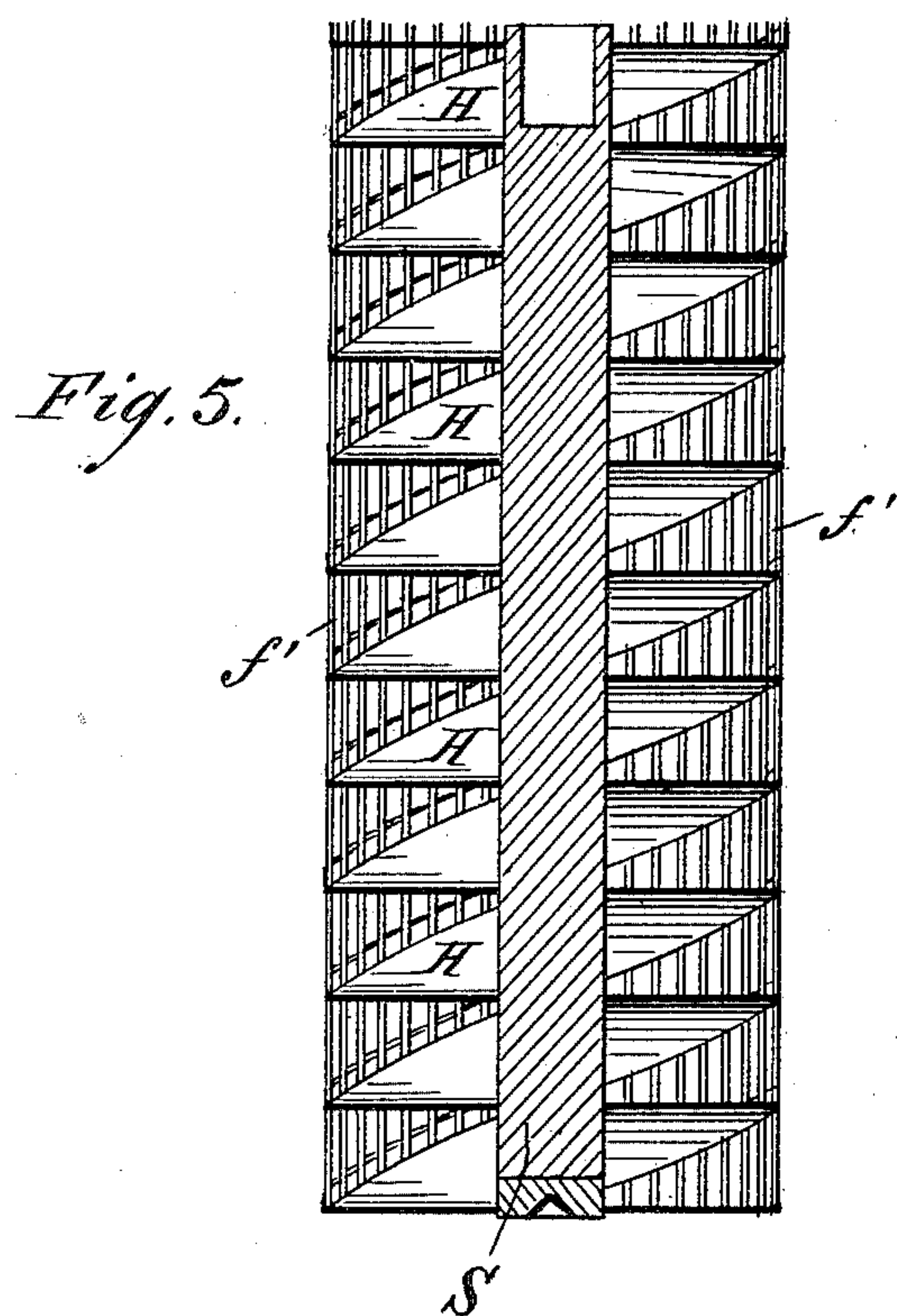
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UNITED STATES PATENT OFFICE.

SAMUEL D. FREEMAN, OF FORT THOMAS, ARIZONA TERRITORY.

COTTON-GIN.

SPECIFICATION forming part of Letters Patent No. 339,091, dated March 30, 1886.

Application filed June 17, 1885. Serial No. 168,961. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL D. FREEMAN, of Fort Thomas, in the county of Graham and Territory of Arizona, have invented certain
5 new and useful Improvements in Cotton-Gins, of which the following is a full, clear, and exact description.

My invention relates to a new and improved cotton-gin; and the object of my invention is
10 to remove cotton fiber from the seed without breaking it or bending it sufficiently to injure it, leaving the fibers straight and parallel, and of nearly or quite full length, as grown on the seed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate
15 corresponding parts in all the figures.

Figure 1 is a vertical sectional elevation of
20 my new cotton-gin on line *y y* of Fig. 2. Fig. 2 is a broken sectional plan view of the same, taken on line *x x* of Fig. 1. Fig. 3 is a detail view of the grating. Fig. 4 shows in detail a part of a cylinder with one of the teeth and a
25 part of the grating. Fig. 5 is a sectional elevation of the central fan with its shaft and peripheral rods without brush *f*; and Fig. 6 is a detailed perspective view of a portion of the barrel *L*, showing the fingers *i*.

30 The frame *O O'* and the legs *N* support the machine. The legs *N* support a frame, *M*, which supports an annular plate, *P*, the vertical shaft *S'*, and the circular track *c*. These support the other parts of the machine.

35 The plate *P* supports the upright staves *k*, to which the gratings *K* are attached, and upon which the upper circular annular plate, *P'*, rests. The plate *P* also supports a number of cylinders, *G*, turning on pivots *b*. The cylinders *G* terminate at their tops in shafts *d*, working in the bearings *m*, secured to the plate *P'*, and these shafts carry cog-wheels *U*, that mesh
40 into a wheel, *T*, on the central upper short shaft, *S*, forming a continuation of shaft *S'*.
45 These wheels may be replaced by pulleys. The shaft *S'* bears one or more helical flanges, *H*, (the latter, in the present instance, being of a single curvature,) which acts as a fan, and which also carries at the outer edge the
50 brushes *f*.

The upper short shaft, *S*, fits into a socket

at the top of shaft *S'*, works in the bearing *o* in the spider-frame *R*, and carries the said wheel *T*, and also the pulley *p*, which receives the power.

55 The annular track *c* bears the conical barrel or hopper *L*. This barrel revolves about the central shaft, *S'*, upon the wheels *w*, that run on the track *c*, the barrel being actuated by a cog-wheel, *W*, geared into the toothed rim *X*,
60 the wheel *W* being revolved by the wheel *U'*, (on one of the gear-wheels *U*,) through the wheel *V* on same shaft *c* as wheel *W*.

The cylinders *G* may be of thin sheet-iron riveted to the heads *a* and *d'*. These cylinders are perforated at intervals with the holes
65 *g*. Into these holes are set the teeth *t*. The points of these teeth work very close to the grating *K* on one side and the helical fan *H* and brush *f* on the other.
70

The grating *K* is of thin steel plates, and concaved in shape between the staves *k* and concentric with the cylinders *G*. The size of the bars of the grating *K* and the width of the slits, their distance apart, and their slope may
75 vary.

The teeth *t* are of polished steel and finely-pointed and the points tapered, and the points revolve close to the grating *K*, within one-twentieth or one-thirtieth of an inch. Their
80 size may vary from that in Fig. 4; but the shape shown in Fig. 4 I consider the best.

The fan *H* may be simply of sheet-tin secured to the shaft *S'*. It revolves with the shaft *S'*, and acts as a brush and fan for re-
85 moving the lint from the hooks *t*. The circumference of fan *H* moves very near the hooks or teeth *t* on the cylinders *G*, and the brush *f* revolves with the fan. The brush *f* is attached to the edge of the fan *H*, and may be
90 of the ordinary kind, with the bristles sloping back from the direction of the motion, or it may be, as indicated in the drawings, of fine wire sloping back and set in a light band of rubber secured to the fan *H*. The small rods
95 *f'*, set in the edge of the fan *H*, answer the same purpose as the brush *f*, and may be used in connection with it or without it.

The helical fan creates a draft downward and inward to the shaft *S'* at the same time,
100 and draws the lint away from the teeth *t* and the brush *f*. The fan delivers the lint into a

hemispherical basin, I, from which it is taken by the blast through a tube, Y, and delivered into the lint-room or condenser.

The seed-cotton enters the barrel L from the 5 hopper or feeder Z, and is carried around outside the gratings K by the revolution of the barrel L, and it is kept pressed against the gratings K by its weight and the conical shape of the barrel. Inside of the barrel L are secured 10 numerous metal rods *i*, which vary in form and length according to their distance from the bottom of the barrel, those near the top being long and flexible and of such shape as to force the cotton down and against the grat- 15 ing at the same time. All these rods stir and turn the cotton. The cleaned seed drop out of a narrow annular space, *i'*, at the bottom of the barrel. The fibers being pressed into the slits of the grating K are caught by the 20 teeth *t* and taken off from the seed.

The machine may be run at a much lower rate of speed than the saw-gin, and this fact, together with the shape of the teeth, obviates the tearing and wedging of the fiber.

25 The slits in the grating are too narrow to allow the seed to pass.

The barrel is kept in place by the two rollers *r*, placed at about one hundred and twenty degrees from the wheel W on radial arms *l*.

30 The wheels adjoining the feed-box are protected from the cotton by a light shield, Q.

The top of the barrel, except in front of the feed-box, is protected by a light metal shield, S², resting on the plate P', and the toothed 35 cylinders G are protected or separated from

each other by the curved division pieces or fenders G⁴, arranged vertically between the said cylinders, as shown clearly in Fig. 2.

Having thus described my invention, what I claim as new, and desire to secure by Letters 40 Patent, is—

1. In a cotton-gin, a circumferential feeding barrel or casing combined with several gratings, and several toothed cylinders arranged to run adjacent to the gratings, and a 45 central fan for removing the lint from the teeth of the cylinders, substantially as described.

2. The revolving conical barrel L, to which the cotton to be ginned is fed, in combination with the gratings K, cylinders G, fan H, and 50 brush *f*, the cylinders being provided with teeth *t*, substantially as and for the purposes set forth.

3. The barrel L, to which the cotton to be ginned is fed, made conical and provided upon 55 its inner surfaces with agitating-arms, in combination with the curved gratings K, toothed cylinders G, and central fan, H, substantially as and for the purposes set forth.

4. The conical feed-barrel L, a circular 60 track, *c*, the vertical curved gratings K, vertical toothed cylinders G, and vertical central fan, H, all arranged as described, in combination with means, substantially as described, for revolving the feed-barrel, toothed cylin- 65 ders, and fan, as and for the purposes set forth.

S. D. FREEMAN.

Witnesses:

W. B. KENNEDY,
B. HEYWORTH.