

(No Model.)

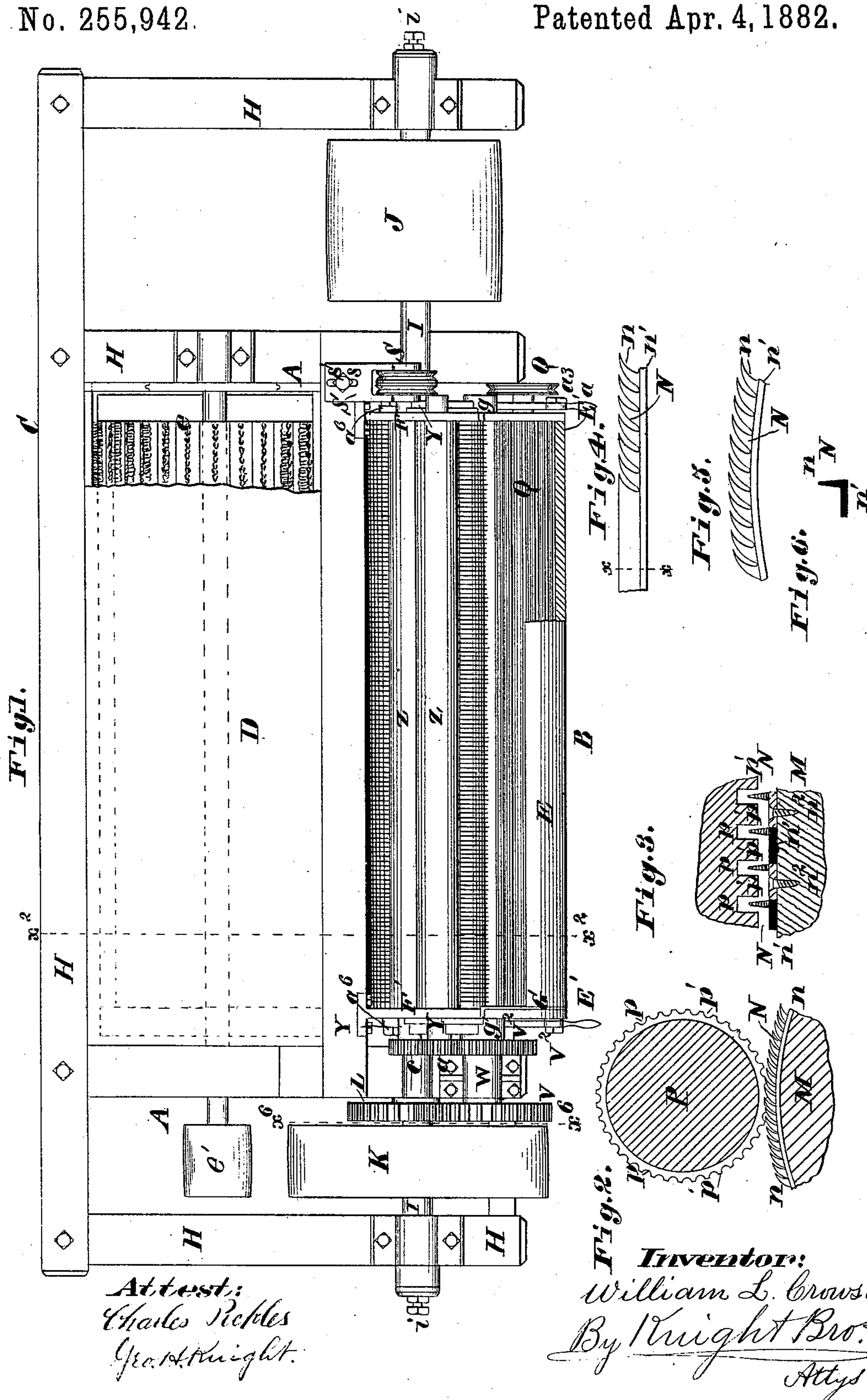
3 Sheets—Sheet 1.

W. L. CROWSON.

MACHINE FOR HULLING AND GINNING COTTON, &c.

No. 255,942.

Patented Apr. 4, 1882.



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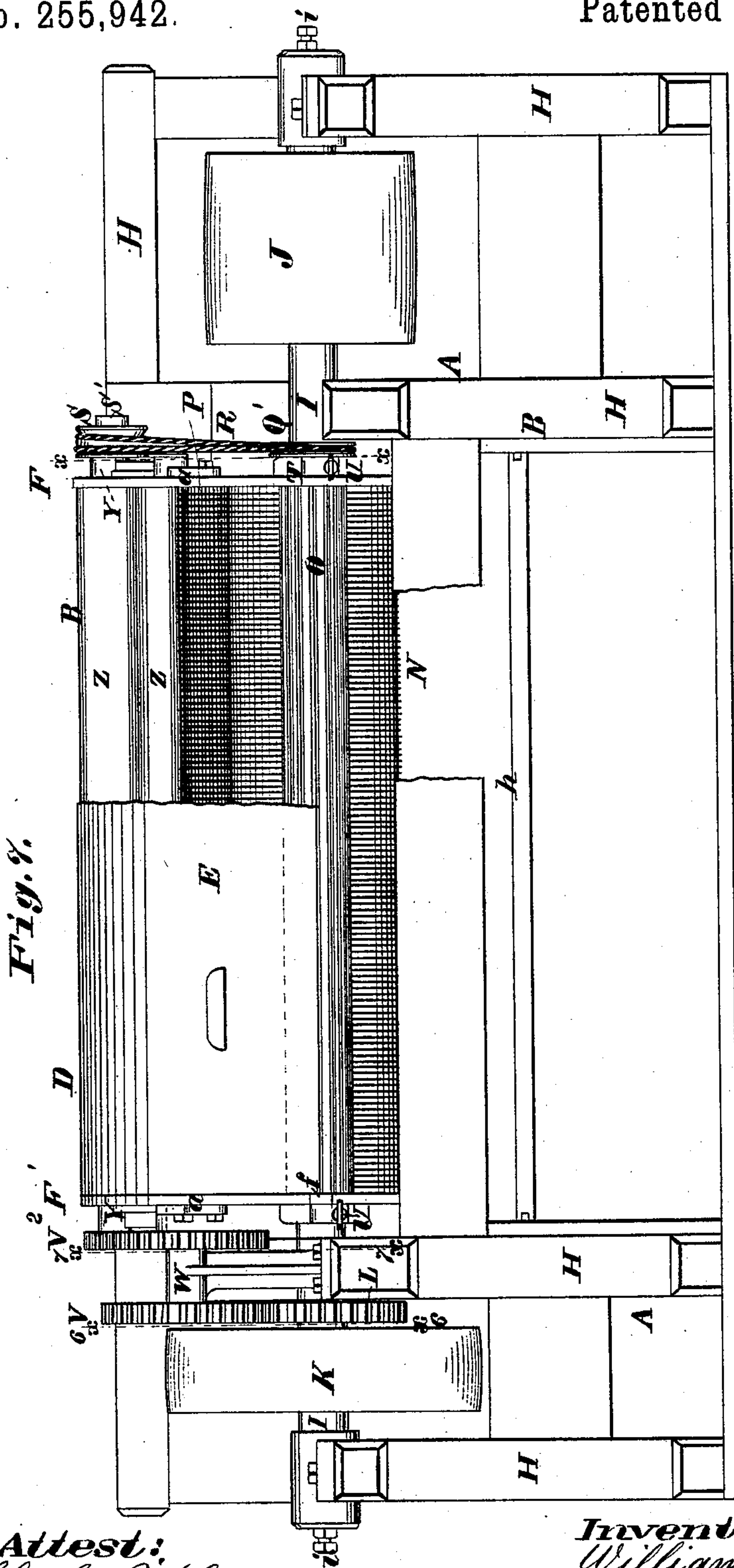


Fig. 8.



Fig. 9.

Attest:
Charles Pickles
Geo. H. Knight

Inventor:
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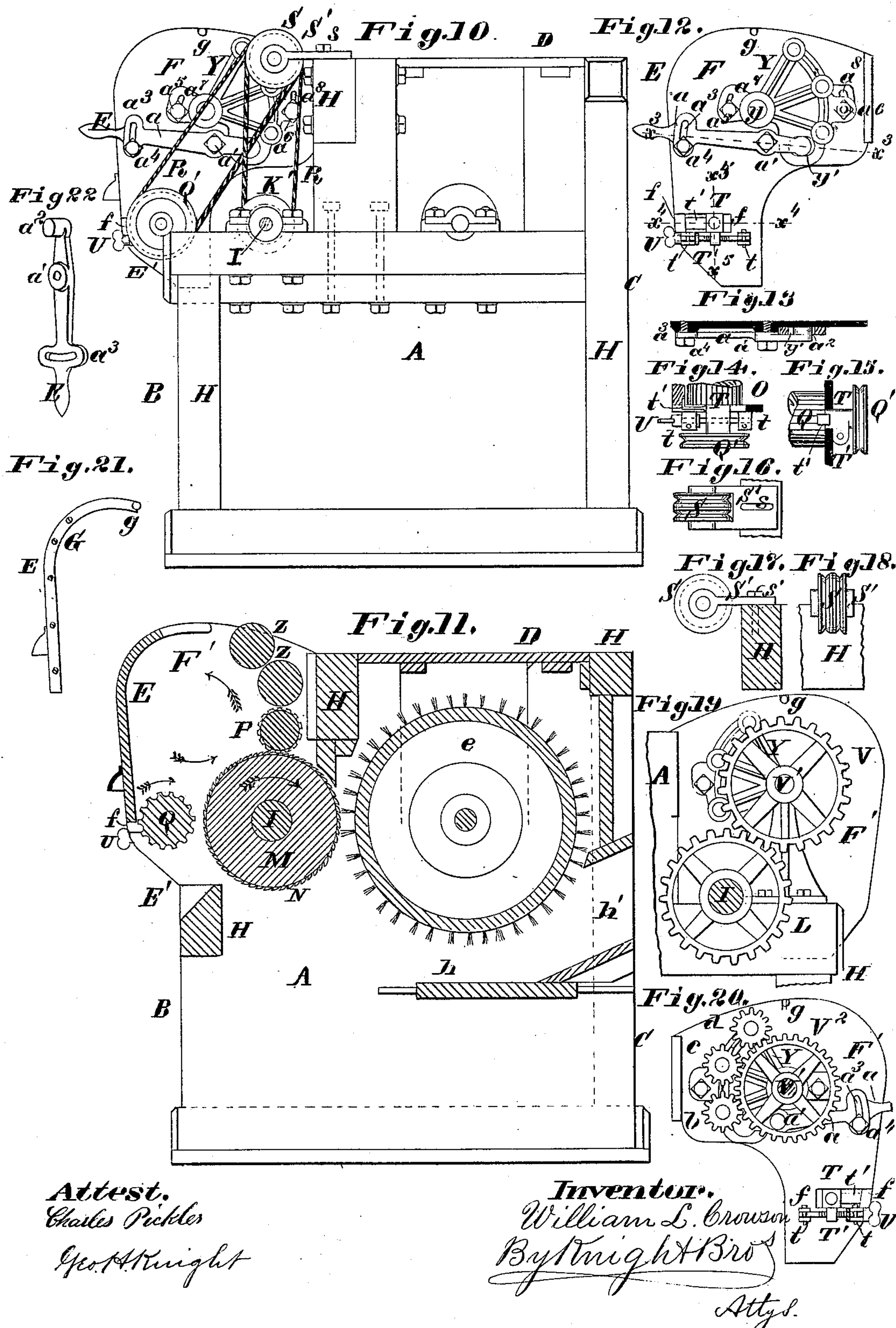
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UNITED STATES PATENT OFFICE.

WILLIAM L. CROWSON, OF ST. LOUIS, MISSOURI.

MACHINE FOR HULLING AND GINNING COTTON, &c.

SPECIFICATION forming part of Letters Patent No. 255,942, dated April 4, 1882.

Application filed May 7, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. CROWSON, of the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Machines for Hulling and Ginning Cotton and Linting Cotton-Seed, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

In the drawings, Figure 1 is a top view with part of the breast and brush-chamber broken away. Fig. 2 is an enlarged transverse section of the circumferentially-grooved roller and part of the saw-cylinder. Fig. 3 is a detail longitudinal section of part of the grooved roller and saw-cylinder enlarged. Fig. 4 is a detail of saw-strip in course of construction, and Fig. 5 is a view of same toothed and curved to fit the saw drum or cylinder. Fig. 6 is a transverse section of the saw-strip at $x x$, Fig. 4. Fig. 7 is a front elevation of the machine with part of the breast broken away. Fig. 8 is a side view of the fluted roller that turns in the bottom of the cotton-box. Fig. 9 is a section of same at $x' x'$, a portion of the frame and shaft and the pulley being removed. Fig. 10 is an end elevation of the machine. Fig. 11 is a vertical transverse section of the machine at $x^2 x^2$, Fig. 1. Fig. 12 is an elevation of the right breast-head, showing the adjustable bearings of the rollers. Fig. 13 is a section at $x^3 x^3$, Fig. 12. Fig. 14 is an enlarged horizontal section at $x^4 x^4$, Fig. 12. Fig. 15 is an enlarged vertical section at $x^5 x^5$, Fig. 12. Fig. 16 is a top view of the double-grooved idler-pulley and its supporting-bracket, and Figs. 17 and 18 are respectively side and end views of same. Fig. 19 is a vertical section at $x^6 x^6$, Figs. 1 and 7. Fig. 20 shows the mechanism for driving the grooved roll and the rolls above it, the view being a section on line $x^7 x^7$, Fig. 7. Fig. 21 is an end view of the breast. Fig. 22 is a perspective view of the lever for the adjustment of the grooved roller and the roller or rollers above it.

The case has ends A, front B, back C, and top D.

E is the breast, which is hung to the heads F F' by means of studs g projecting outwardly from the upper part of the metal straps G, that form the ends of the breast. The breast is held in position by gravity. It may be turned upward or lifted from the machine.

The frame-work of the machine is shown at H. I claim no novelty in this frame-work.

I is the saw-shaft, carrying a driving-belt pulley, J, as usual, a brush-belt pulley, K, and spur-wheel L.

i are end screws for the lateral adjustment of the saw-shaft.

I will now describe the novel construction of my saw-cylinder. It has a cylinder, M, of wood or other suitable material, to whose circumference the saw-strips N are attached by screws. Each saw-strip extends around or a portion of the circumference of the drum M, and such strip consists of a piece of angle-steel. One of the flanges n is thinner at the edge, and this flange is formed into teeth. (See Fig. 4.) Then the other flange or base, n' , is curved to fit the circumference of the cylinder or drum M. (See Fig. 5.) The flange n' has screw-holes to receive screws n^2 , by which the strip is attached to the cylinder. By this construction of saw-strips and means of attachment I am enabled to fix the saws securely upon the cylinder at very much less distance apart than is feasible with the ordinary construction, such nearness being admissible and proper to my system of ginning cotton, in which a circumferentially-grooved roller, P, is substituted for the fixed ribs in common use. The whole length of the saw-teeth does not enter the grooves p ; but the interdental gaps extend beyond the peripheries of the circumferential ribs p' , so that a single bunch of cotton fiber may extend along the cylinder and roller past several saw-teeth and ribs without breakage or being drawn out of the teeth.

In this system of ginning the saws may be placed so near together that the cotton-seeds will not enter between them; but in practice I have not placed them as close together as this, but about five-sixteenths of an inch from center to center. I do not confine myself to this or any special distance.

It will be readily perceived that this system of ginning differs essentially from that in ordinary practice, in which the cotton fiber is drawn through narrow slits between fixed ribs, which necessitates that the saws should be so far asunder that the teeth of two different saws will not take a fast hold of the same bunch of fibers, because this would lap the bunch over a rib and cause the breakage of the fibers and consequent deterioration of the cotton. Where fixed ribs are used the saws are generally set

three-fourths of an inch (or rather more) asunder for cotton of ordinary staple.

It will be understood that the roller P has a separate groove, *p*, for each saw. The grooves *p* may be about three thirty-seconds of an inch in width, so that no cotton-seeds will pass through them, and the ribs *p'* approach so near the saw-cylinder that there is not space for the passage of cotton-seeds at this point when the parts are in position for ginning or linting.

I prefer to make the edges of the ribs *p'* with notches or serrations to enable them to take a better hold upon the cotton-seed. The seed, when denuded of cotton fiber, drops from the cotton-roll and escapes between the saw-cylinder and the fluted roller Q and out through the seed mouth or chute E' beneath the breast of the machine. The fluted roller Q assists the escape of seeds by carrying them toward the mouth E', and also assists the revolution of the cotton-roll. In addition to the above, the fluted roller throws the cotton upon the face of the saw-cylinder, where the saw-teeth engage the fiber where there is any upon the seed; but where the seed is devoid of fiber it drops from the saw-cylinder and escapes between the cylinder and the fluted roller. I prefer to make the flutes or grooves *q* in this roller large enough to receive a cotton-seed when devoid of fiber, so that it may carry the clear seed out when the machine is used for a linter.

K' is a grooved pulley on the saw-shaft I, connected by a belt, R, with the pulley Q' upon the gudgeon or shaft of the fluted roller Q. (See Fig. 10.) The belt R passes over an idler or tightening pulley, S, which has bearing on a bracket, S', that is slotted at *s* for the passage of a bolt or bolts, *s'*, by which it is secured to the frame H. By moving the bracket backward the belt R is tightened, and vice versa. The shaft of roller Q has bearing in boxes T, that have forward and backward adjustment in slots *f* of the heads F and F'. The boxes T are held and adjusted by screws U, which screw in lugs T' beneath the boxes. The screws turn in bearings *t*, which prevent its endwise movement, but allow it to turn freely. Upon the outer side of each box T is a projection, *t'*, against which the lower edge of the breast rests, and which holds the breast the required distance from the roller Q, the lower end of the breast being held in by its weight.

The spur-wheel L upon the saw-shaft I engages with a spur-wheel, V, upon a short shaft, V', that turns in bearing W and a recess, *y*, of a spider, Y, that is adjustable on the shaft as a pivot. The shaft V' carries a spur-wheel, V². At each end of the cotton-box is a spider, Y, giving journal-bearing to the grooved roller P, and also to one or more rollers, Z, above the same. The roller Z rotates in the same direction as that of P, and serves to assist the roll of cotton in its rotation and to prevent the roller P from carrying the cotton over its top.

The gudgeons or shafts of the rollers P Z Z

extend through slots in the heads F F', so as to allow them to be raised or lowered as occasion may require. This adjustment is made by turning the spider on its pivot at *y*. The spider may be moved by any suitable means. I have shown for this purpose a lever, *a*, turning on a fulcrum, *a'*, and having at the inner end a stud, *a*², which engages in a slot, *y'*, of the spider. *a*³ is a slot concentric with the fulcrum *a'*. Through this slot passes a bolt, *a*⁴, that screws into the head to hold the lever to its adjustment. The spider is also preferably held in place by screw-bolts *a*⁵ and *a*⁶, which pass through slots *a*⁷ and *a*⁸ in the spider and head, respectively.

e is the brush cylinder or drum. *h* is the mote-board. *h'* is the cotton-discharge orifice from the machine. The brush-cylinder is driven by a belt on pulleys K and *e'*.

Operation: When the machine is used to gin cotton the grooved roller P is in about the position shown relatively to the saw-cylinder. The fluted roller Q is also in about the position shown, so as to give space for the escape of cotton-seed between the saw-cylinder and the fluted roller.

When using the machine as a linter the grooved roller P may be in the position shown in the drawings, or even nearer to the saw-cylinder, and the fluted roller may be placed so near to the saw-cylinder as to prevent the escape of cotton-seed between them until the lint has been removed from it. The cleaned seeds are carried around in the flutes *q* and dropped out of the machine at E'.

When the machine is used for a huller the roller P, with the roller or rollers Z, is raised, so as to allow a space between the roller P and the saw-cylinder for the passage of seed-cotton, but not sufficiently large to allow the free passage of the hulls, and the fluted roller Q is set a greater distance from the saw-cylinder to allow the escape of the hulls. The flutes or grooves *q* are of any proper form.

I claim herein as my invention—

1. The combination of a circumferentially-grooved roller, P, mounted in adjustable bearings, and a saw-cylinder having claw-teeth, the said roller being adapted to receive the teeth of the saw within its grooves and to be adjusted with reference to the saws to adapt the device for ginning, linting, or hulling, as set forth.

2. The combination, with a saw-cylinder, of the rollers P and Z, made adjustable in distance from the saw-cylinder, for the purpose set forth.

3. The adjustable rotating fluted roller Q, in combination with a saw-cylinder, N, and cotton-box of a cotton-gin, substantially as and for the purpose set forth.

WILLIAM L. CROWSON.

In presence of—

SAML. KNIGHT,
GEO. H. KNIGHT.