

(No Model.)

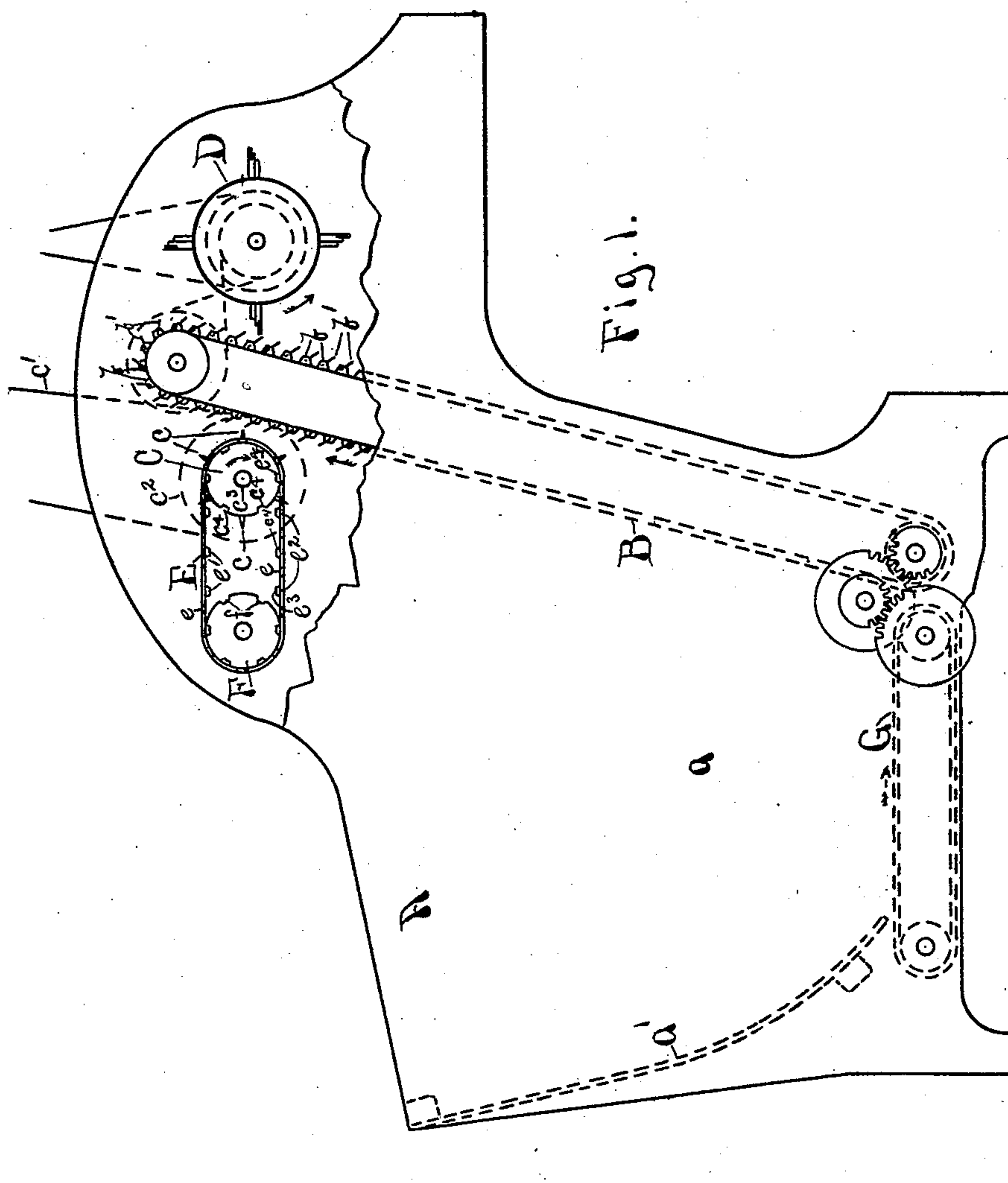
3 Sheets—Sheet 1.

A. H. MORTON.

CLEARER FOR SPIKE CYLINDERS AND SPIKE APRONS.

No. 475,246.

Patented May 17, 1892.



WITNESSES:

John K. Whittier
Myrtle K. Beale

INVENTOR.

Albert H. Morton
BY
Albert M. Moore,
ATTORNEY.

(No Model.)

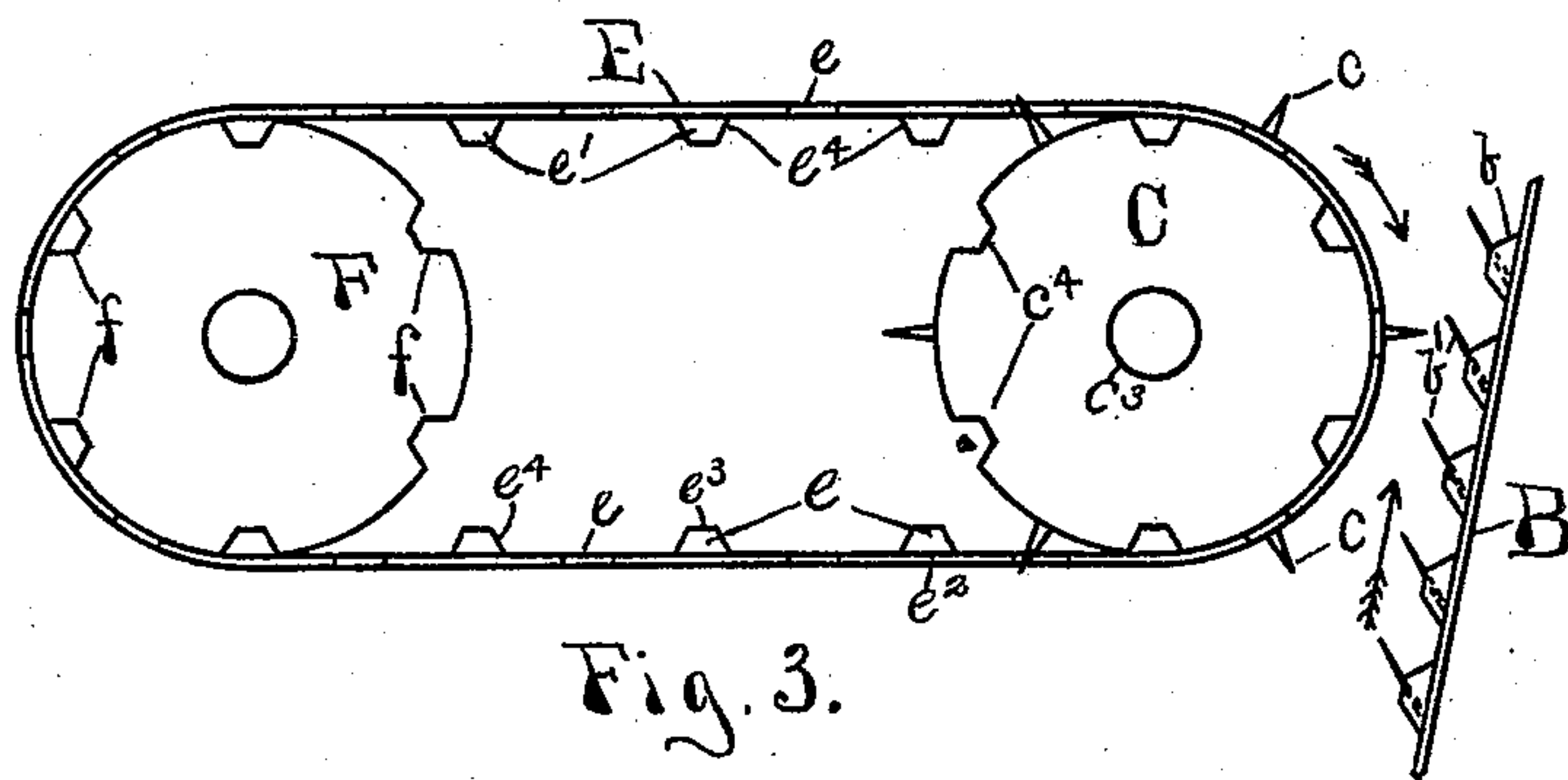
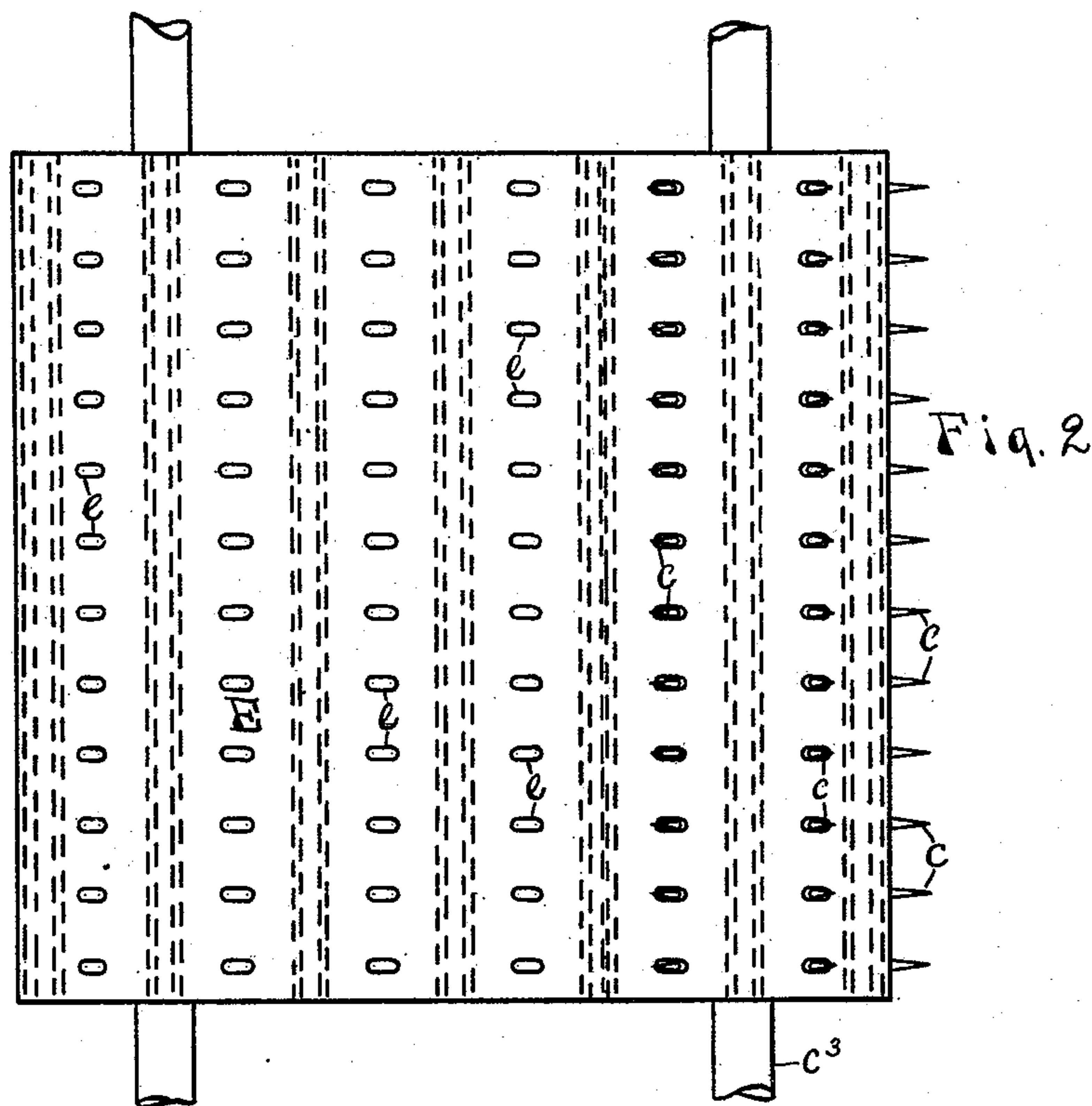
3 Sheets—Sheet 2.

A. H. MORTON.

CLEARER FOR SPIKE CYLINDERS AND SPIKE APRONS.

No. 475,246.

Patented May 17, 1892.



WITNESSES:

John H. Whittier
Myrtie C. Beale

INVENTOR

Albert H. Morton
BY
Albert M. Moore
ATTORNEY.

(No Model.)

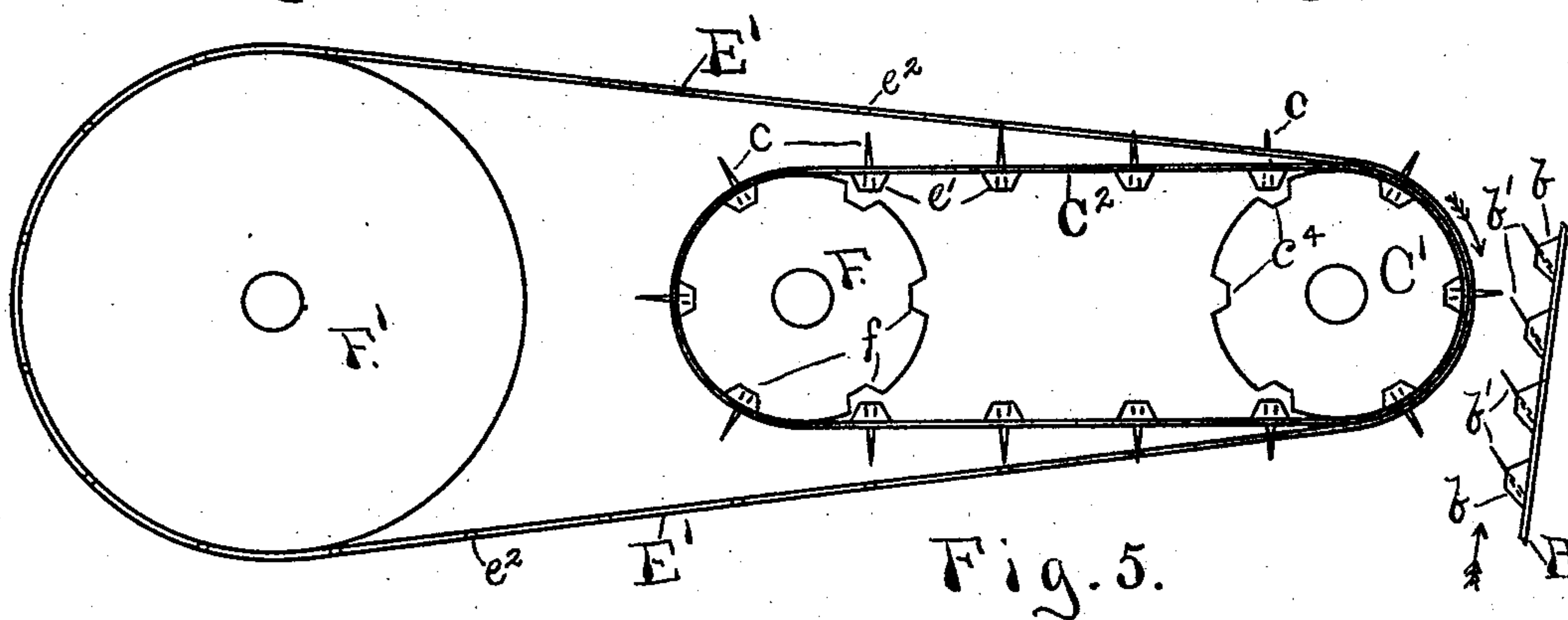
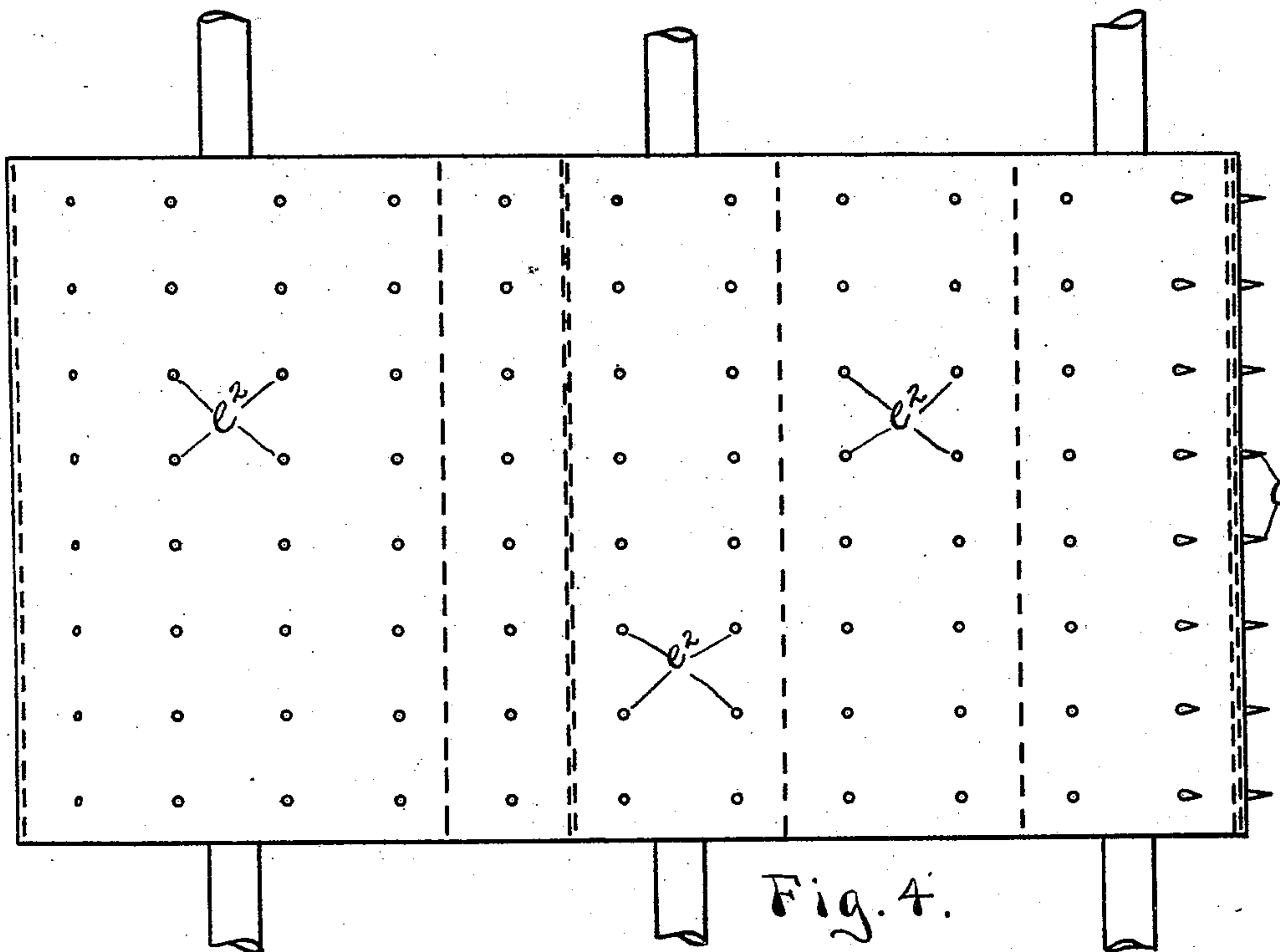
3 Sheets—Sheet 3.

A. H. MORTON.

CLEARER FOR SPIKE CYLINDERS AND SPIKE APRONS.

No. 475,246.

Patented May 17, 1892.



WITNESSES:

John H. Whittier
Myrtie C. Beale

INVENTOR

Albert H. Morton
BY
Albert M. Moore
ATTORNEY.

UNITED STATES PATENT OFFICE.

ALBERT H. MORTON, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO THE
KITSON MACHINE COMPANY, OF SAME PLACE.

CLEARER FOR SPIKE-CYLINDERS AND SPIKE-APRONS.

SPECIFICATION forming part of Letters Patent No. 475,246, dated May 17, 1892.

Application filed November 27, 1891. Serial No. 413,267. (No model.)

To all whom it may concern:

Be it known that I, ALBERT H. MORTON, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Clearers for Spike-Cylinders and Spike-Aprons, of which the following is a specification.

My invention relates to clearers for spike-cylinders and spike-aprons, and comprises a flexible belt perforated to admit the spikes of such a cylinder or apron and arranged to move during a portion of its travel in the path of the spike-carrying surface of such cylinder or apron and during another portion of its travel to run at an angle with said path to clear said spikes; and it consists in the devices and combinations hereinafter described and claimed.

In the accompanying drawings, on three sheets, Figure 1 is a side elevation of a feeding mechanism adapted to be used in connection with carding-engines, openers, pickers, and similar machinery, the upper part of the frame being broken away to show the lifting-apron and doffer and my improvement applied to clear the spikes of a rotary comb or knock-off roll; Fig. 2, an enlarged plan of the clearing-belt, a spike-roll to which it is applied, and the shaft of an idle-roll which supports said belt; Fig. 3, a side elevation of said belt, knock-off roll, idle-roll, and a part of the lifting-apron shown in Fig. 1, enlarged. Figs. 4 and 5 are views like Figs. 2 and 3, respectively, except that a spike-apron and its rolls are substituted for the spike-roll shown in Figs. 2 and 3, the idle-roll which supports the clearing-belt being larger than the spike-apron rolls to hold the members of said belt at angles with the adjacent members of said spike apron.

In Fig. 1, A represents a frame, the space *a* between the sides of the machine, the curved end piece *a'* and the lifting-apron B forming a hopper into which the stock is placed. G denotes a feed-apron, which runs in the bottom of the hopper *a* in a direction to carry the stock toward the lifting-apron B, which raises the stock, and D is the doffer, which removes the stock from the descending member of said lifting-apron, these parts being of

ordinary construction and operation and being driven in the usual manner, the lifting-apron having transverse slats *b*, provided with pins *b'*, which are inclined in the direction in which said lifting-apron travels.

Much of the stock raised by the lifting-apron is in the form of large bunches or locks, and it is customary to use a reciprocating or rotary comb to knock off the surplus stock to make the delivery of the stock to the carding or other following machine more uniform. I have shown in Figs. 1 and 3 a spike-cylinder or knock-off roll C, provided with radial spikes *c*, and so rotated in proximity to the lifting-apron that the adjacent surfaces of said roll C and lifting-apron B move in opposite directions, said roll C knocking off or combing off the surplus stock from the lifting-apron and opening the bunches of fibers in substantially the usual manner. The fibers thus removed from the lifting-apron are apt to remain on the spikes *c* and to be carried around with the roll C and to accumulate until it is necessary to remove such accumulations by hand. Aside from the labor of clearing the roll C by hand, it is evident that the efficiency of said roll must continually vary with the variations of the quantity of fibers adhering to it.

To clear the spikes *c* of the spike-roll C and to keep said roll in a uniform condition of the highest efficiency, I use an endless clearing belt or apron E, Figs. 1 and 3, provided with longitudinally-oblong perforations *e* of a suitable size and arranged at suitable intervals to admit the spikes *c*, the said belt E running on the roll C and on an idle-roll F, the roll C being driven by any convenient or usual means, as by a belt *c'* on a pulley *c''*, fast on the shaft *c'''* of said roll C in the usual manner. The perforations *e* are of sufficient length to allow the spikes *c* to enter and leave them freely at the angles between said clearing-belt and roll C, said spikes of course not entering and leaving said clearing-belt perpendicularly to said belt, but rolling into said perforations, requiring said perforations to be at least as long as the distance between two lines drawn perpendicularly to said belt through the point and roof of an entering or withdrawing spike. The width of the perforations *e* is just suffi-

cient to admit the spikes c , so that as said spikes draw out of the lower member or slack side of the clearing-belt any fibers adhering to said spikes are wiped off by the sides of said perforations and fall back into the hopper a or onto the lifting-apron B . It is evident that the point of each spike c enters one end and leaves the other end of the perforation e , which receives such spike, and that therefore the spikes should be midway between the ends of the receiving-perforations when such spikes project to their greatest extent beyond the outer surface of said apron.

To maintain the relative positions of the spikes c and perforations e in spite of any tendency of the clearing-belt E to slip on the roll C , I secure to the inner surface of said belt, at equal intervals from each other and preferably at equal intervals from the adjacent rows of perforations e , a series of transverse slats or bars e' , adapted to enter and fit corresponding longitudinal grooves $c^4 f$, arranged at similar intervals from each other (and midway between the rows of spikes c) in the curved surfaces of the rolls $C F$, said bars e' having parallel outer faces e^2 and inner faces e^3 and inwardly-converging sides e^4 to enable said bar e' freely to enter and leave said grooves $c^4 f$ as said rolls are rotated and to cause said spikes and perforations to register with each other.

In Figs. 4 and 5 the rolls F and C' are precisely alike and are driven in the same manner as the rolls $F C$, above described, except that the roll C' has no spikes, and the spike-apron C^2 is like the clearing-belt E , above described, except that instead of having oblong perforations to receive the spikes c said spikes are carried by said apron C^2 , being driven through said apron C^2 into the transverse bars e' , and are presented to the lifting-apron B in the usual manner, and the clearing-belt E' differs from the clearing-belt E in having no transverse bars e' , in having round perforations e^2 instead of oblong perforations e , and in being supported at the end farthest from the lifting-apron B by an ungrooved cylindrical idle-roll F' of greater diameter than the roll C' , so that said clearing-belt E' approaches and leaves the roll C' (which supports the other end of said belt outside of the spike-apron C^2) at a slight angle with the spike-apron C^2 , enabling the spikes c to enter and leave said perforations e^2 nearly perpendicularly to said clearing-belt. The transverse bars e' in Figs. 4 and 5 have no effect on the accurate registration of the spikes c and the perforations e^2 of the clearing-belt, but serve

merely to furnish a better support for said spikes, the use of said bars e' of course necessitating the grooves in the spike-apron rolls $F C'$.

I claim as my invention—

1. A clearer for spike-cylinders and spike-aprons, consisting of a flexible belt perforated to admit the spikes of such cylinder or apron and arranged to move during a portion of its travel in the path of the spike-carrying surface of such cylinder or apron and during another portion of its travel to run at an angle with said path to clear said spikes, as and for the purpose specified.

2. The combination of a traveling surface provided with spikes and a flexible belt driven by said traveling surface and provided with perforations to admit said spikes, said belt being arranged to move during a portion of its travel in the path of said spike-carrying surface and during another portion of its travel to run at an angle with said path to clear said spikes, as and for the purpose specified.

3. The combination of a spike-apron and its rolls, one of said rolls having a positive motion, a flexible belt perforated to receive the spikes of said spike-apron and running on said positively-driven roll outside of said apron and on an idle-roll larger than the idle-roll of said spike-apron, and said idle-roll of said belt to move said belt during a portion of its travel in the path of said spike-apron and during another portion of its travel at an angle with said path to clear said spikes, as and for the purpose specified.

4. A clearer for spike-cylinders and spike-aprons, consisting of a flexible endless belt provided with perforations to admit the spikes of such cylinder or apron and arranged to move during a portion of its travel in the path of the spike-carrying surface of such cylinder or apron and during another portion of its travel to run at an angle with said path, said perforations being of a suitable width to receive and fit said spikes and of sufficient length to allow said spikes to enter and leave said perforations at the angles between said cylinder or apron and said belt, as and for the purpose specified.

In witness whereof I have signed this specification, in the presence of two attesting witnesses, this 19th day of November, A. D. 1891.

ALBERT H. MORTON.

Witnesses:

ALBERT M. MOORE,
HAVEN C. PERHAM.