

(No Model.)

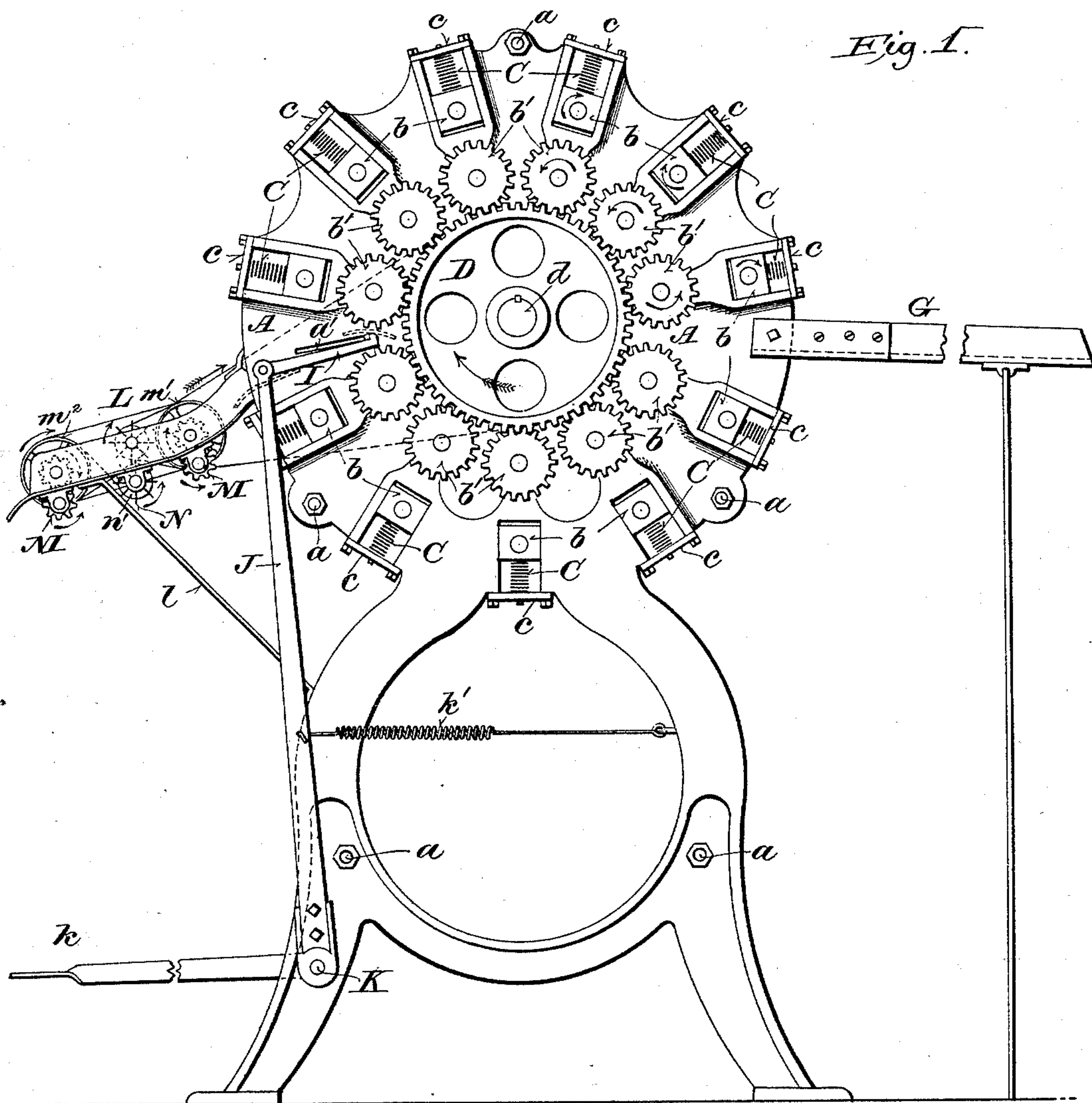
4 Sheets—Sheet 1.

E. BOSSE.

MACHINE FOR TREATING FLAX OR OTHER FIBER YIELDING PLANTS.

No. 485,734.

Patented Nov. 8, 1892.



Witnesses:

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Chas. L. Goss

Inventor:

Eugene Bosse

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(No Model.)

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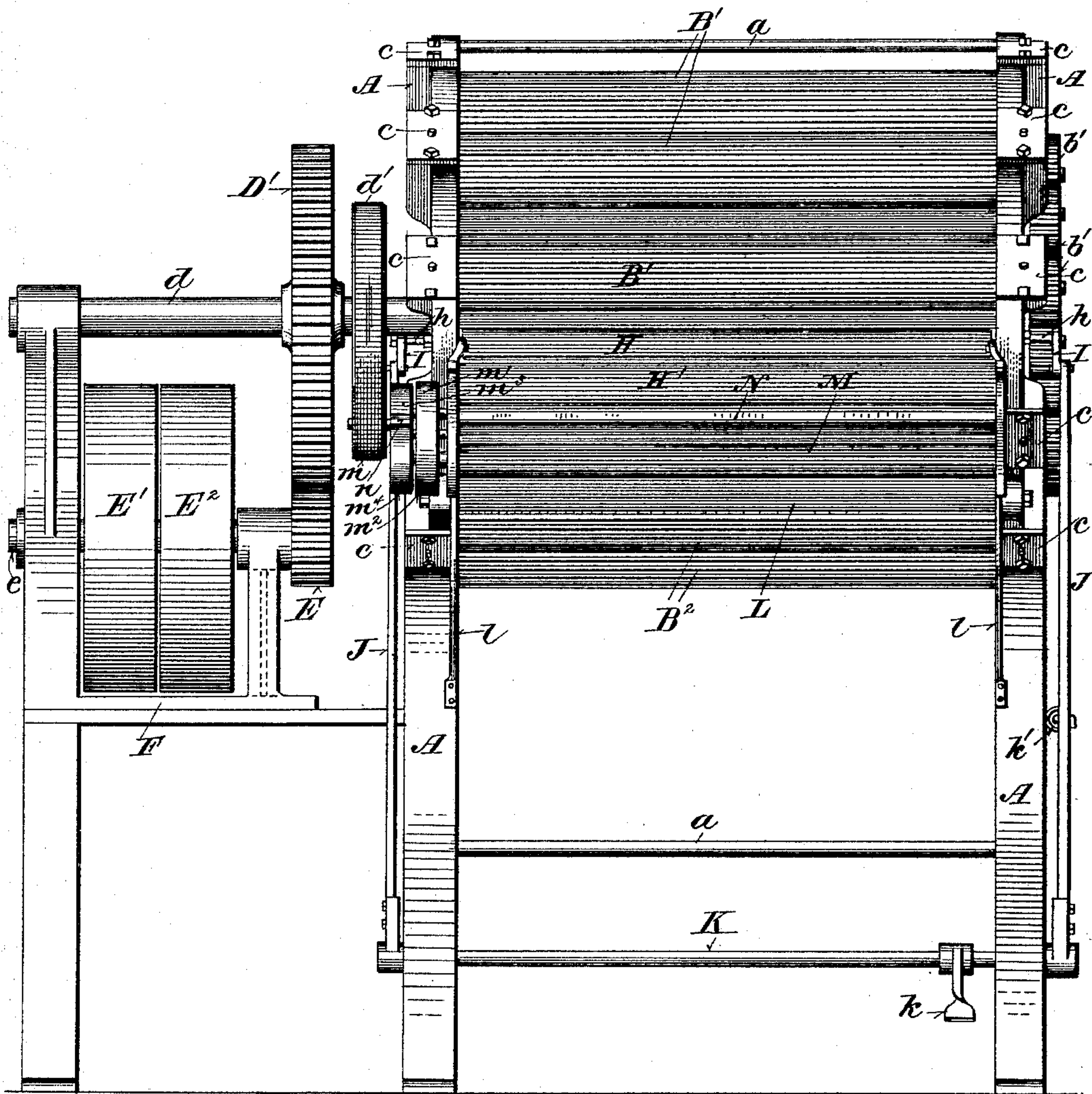
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Fig. 2.



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(No Model.)

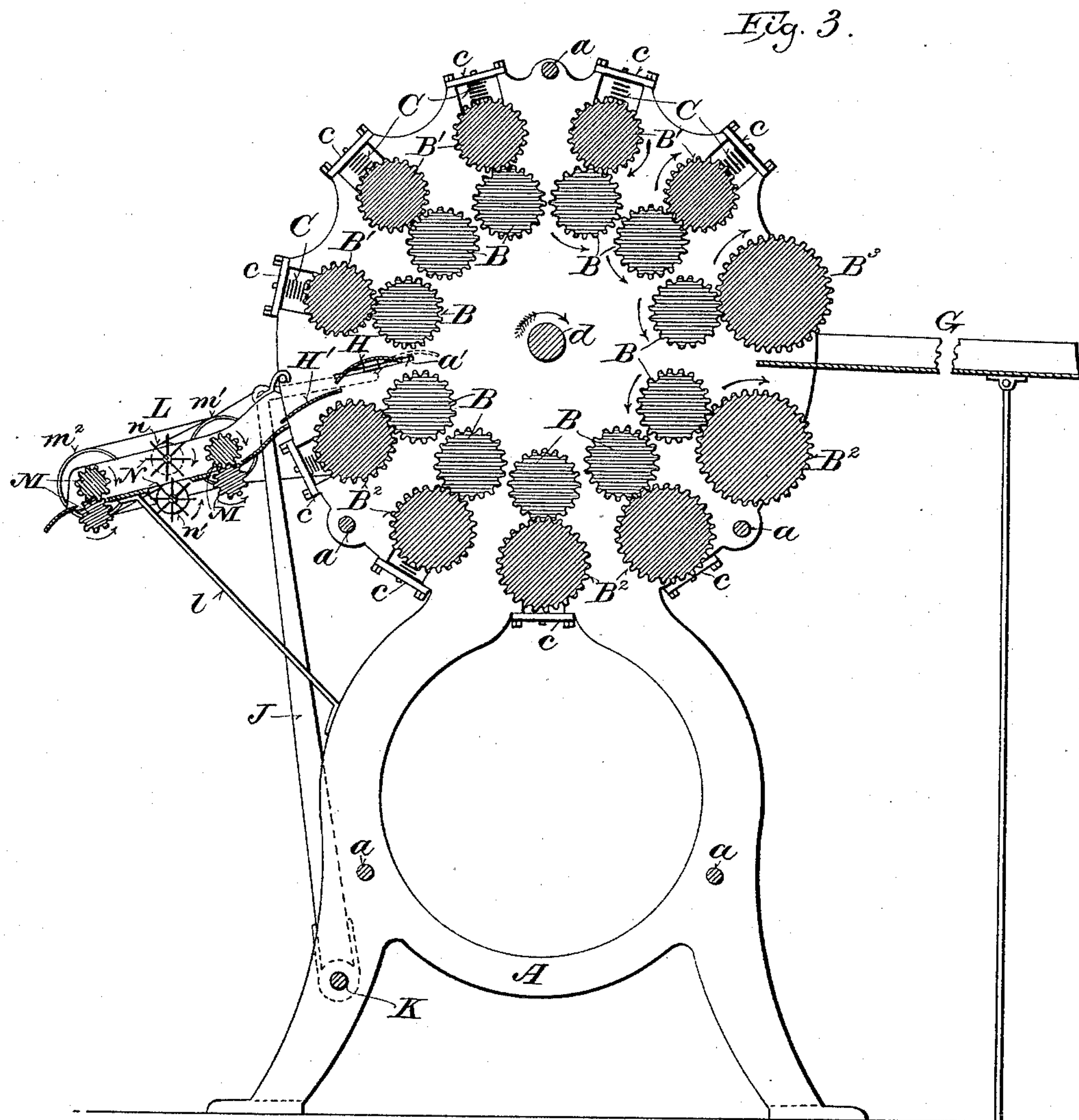
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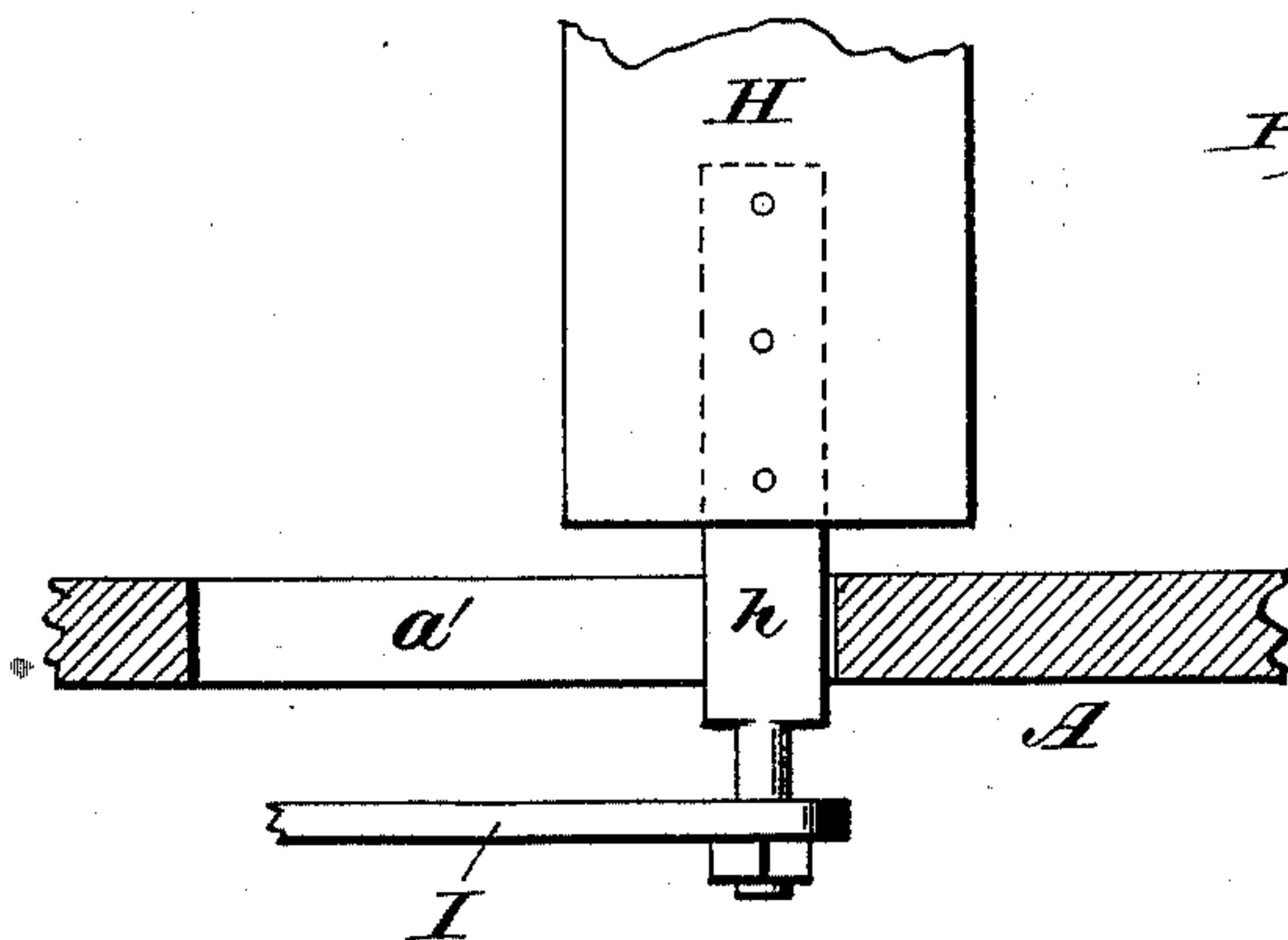
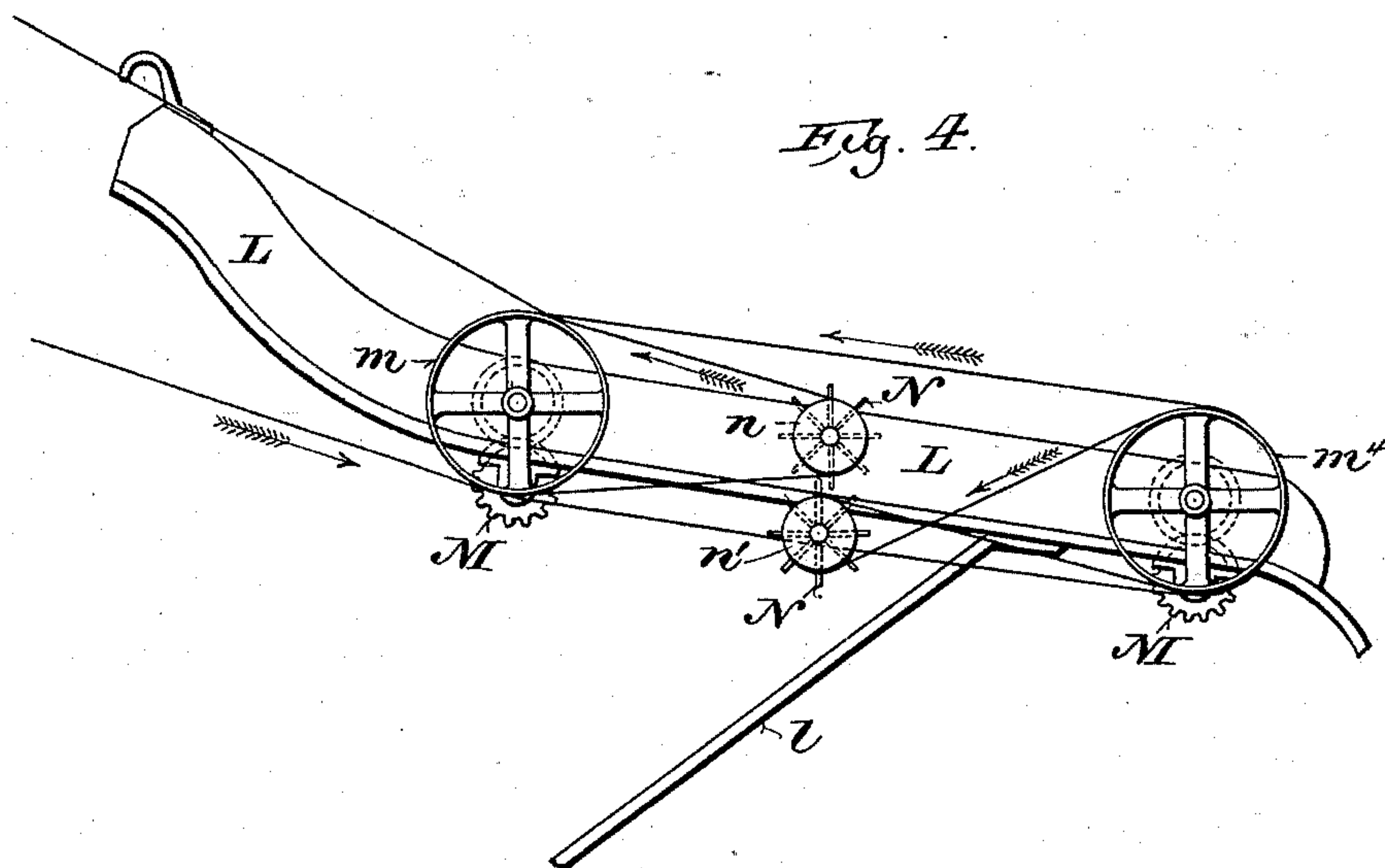
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UNITED STATES PATENT OFFICE.

EUGENE BOSSE, OF ST. PAUL PARK, ASSIGNOR OF ONE-HALF TO CHARLES N. BELL, OF ST. PAUL, MINNESOTA.

MACHINE FOR TREATING FLAX OR OTHER FIBER-YIELDING PLANTS.

SPECIFICATION forming part of Letters Patent No. 485,734, dated November 8, 1892.

Application filed December 27, 1890. Serial No. 375,932. (No model.)

To all whom it may concern:

Be it known that I, EUGENE BOSSE, of St. Paul Park, in the county of Washington and State of Minnesota, have invented certain new and useful Improvements in Machines for Treating Flax and other Fiber-Yielding Plants; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The main object of my invention is to break, loosen, and separate the boon or woody portion from the line or fiber of flax and other fiber-yielding plants.

It consists, essentially, of breaking and cleaning rollers arranged in an endless series of pairs, together with a discharging device and means of feeding the material to the machine, and, further, of a detachable cleaning device comprising holding and cleaning rollers, the latter driven at a higher speed than the former, and of certain other peculiarities of construction and arrangement of parts hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is a side elevation of the machine, showing the gearing for connecting and driving the inner circle of rollers. Fig. 2 is an elevation of the discharging end of the machine. Fig. 3 is a vertical section cutting the rollers transversely. Fig. 4 is a side elevation, on an enlarged scale, of the cleaning attachment detached from the machine; and Fig. 5 is a detail view of a portion of the discharging device.

A represents the frame of the machine, of any suitable shape and construction. It may be conveniently composed of two side plates or castings formed or provided with bearings for the roller shafts or journals and rigidly connected by cross-rods *a a*.

B, B', B², and B³ represent longitudinally corrugated or fluted rollers arranged in circular series and radially in pairs, the corrugations or fluting of each pair intermeshing.

These rollers may be made of any suitable material, such as iron or wood, and the corrugations or fluting may be of the usual or any suitable form for the purpose, such as will most effectually break, loosen, and remove the boon or woody portion of the material without breaking or injuring the line or fiber.

The journals of the inner circle of rollers B B are preferably supported in fixed bearings, while the journals of the outer rollers are supported in radially-movable boxes *b b*, as shown in Fig. 1, so as to permit said rollers B' B² B³ to yield outwardly to obstructions or varying mass of material passing between them and the inner rollers B B.

The outer rollers B' B² B³ are held with a yielding pressure in engagement with the inner rollers B B, adjacent thereto, by springs C C, interposed between the movable boxes *b b* and cap-plates *c c*, attached to frame A across the outer ends of the ways in which said boxes are held.

The inner rollers B B are driven by a gear D, meshing with pinions *b' b'*, mounted upon the projecting ends of the journals of said rollers at one side of the machine, and the outer rollers B' B² B³ are driven from the inner rollers B B by the engagement of the corrugations or fluting thereon. The gear D is fixed upon one end of a central transverse shaft *d*, which is provided at the opposite side of the machine, as shown in Fig. 2, with a gear D', meshing with a pinion E on a parallel counter-shaft *e*.

The counter-shaft *e* may be conveniently provided with bearings in an auxiliary frame F at one side of the machine and is provided with tight and loose pulleys E' E², by which the mechanism may be connected through a belt with any convenient driving-pulley and set in motion or stopped by shifting the belt upon the tight or loose pulley, as desired.

It is obvious that any other suitable and convenient driving connections may be employed in place of those shown and described.

The rollers B B of the inner circle or series are preferably all made of the same size or diameter, and the pinions *b' b'*, all being of the same size and meshing with the central driving-gear D, give to said rollers, as well as those

of the outer circle or series in engagement therewith, the same rate of peripheral speed, whereby injurious drawing or pulling and severance of the fiber are avoided.

5 The circle of the outer series of rollers B' B^2 B^3 being larger than that of the inner series there is consequently a greater space between rollers in the outer circle than between those of the same size or diameter in the inner circle. For this reason and to prevent
10 the material from falling through the spaces between the outer rollers I prefer to make the lower rollers B^2 B^2 of the outer circle or series of larger diameter, thereby reducing such
15 spaces in size, so as to retain the material in its course between the outer and inner series of rollers until it is desired to discharge the same from the machine.

The rollers B^2 B^2 may all be made of the
20 same size or diameter, and the outer receiving-roller B^3 need not necessarily be made of much, if any, greater diameter than the inner roller B , with which it engages. It is desirable, however, to reduce the space between
25 said roller B^3 and the roller B^2 next below it as much as the feeding of the material into the machine will conveniently permit.

The machine is provided at one end with a
30 feeding table or leaf G , upon which the material is spread or placed to be fed between the adjacent rollers into the machine. This table or leaf is preferably made detachable for the purpose of removing and getting it out of the way when the machine is not in
35 use or is to be transported, and of affording more easy access to the adjacent rollers and the interior parts of the machine. To this end any convenient form of detachable fastenings may be employed. The table is preferably set at an upward inclination toward
40 its inner end, so as to more effectually direct the material between the roller B^3 and the adjacent roller B , and thereby facilitate feeding the machine. At the opposite end of the
45 machine a laterally-movable discharge-plate H , convex on its upper side, is supported at its ends parallel with the adjacent rollers by flattened extensions h h , projecting through slots a' a' in the sides of frame A , whereby
50 said discharge-plate is held and guided in proper position and the necessary movement thereof is permitted to carry it into and out of the path of the material passing between the circular series of rollers B B' B^2 B^3 . The
55 outwardly-projecting ends of the extensions h h are connected by links I I with the upper ends of vibratory arms J J , which are fixed at their lower ends to a horizontal rock-shaft K , having bearings in frame A near the base of
60 the machine and provided with an outwardly-projecting foot-lever k , whereby the discharge-plate H may be moved outwardly into the path of the material passing between the circular series of rollers, so as to deflect the
65 same outwardly and discharge it from the machine. A spring k' serves to return and hold the discharge-plate H in its normal po-

sition inside and clear of the material passing between the rollers in a circular path, as indicated by dotted lines, Fig. 1.

70 H' is a plate fixed at the ends to the sides of frame A and overhanging the outer portion of the outer roller B^2 next below the discharge-plate H , the outer edge of which when moved into its outer discharging position
75 projects over the inner edge of said plate H' , so as to conduct the fiber discharged out of contact with the rollers next below said plates.

A slight downward inclination is given to the plates H and H' toward their outer edges,
80 so as to facilitate the discharge of the fiber.

The circular series of rollers hereinbefore described are sufficient for the treatment of material of the usual nature under ordinary conditions; but it sometimes occurs—as, for
85 instance, when flax is green or imperfectly retted—that the boon or shives will not be perfectly and entirely separated from the fiber by the operation of said rollers; and for the purpose of further treating such material
90 I provide a cleaning attachment consisting of a detachable chute L , constituting when in position an extension of the plate H , as clearly shown in Fig. 3, and provided with one or
95 more pairs of cleaning-rollers N N , arranged to operate upon the material passing between and held by the rollers M M . I have shown as a convenient arrangement for the purpose two pairs of holding-rollers and a single pair of cleaning-rollers located between
100 them.

The holding-rollers M M are preferably corrugated or fluted like those hereinbefore described and are given by suitable gearing or driving connections about the same rate of
105 peripheral speed as is given to the rollers of the endless or circular series. The cleaning-rollers N N , provided with longitudinal blades, wings, or beaters—those of one roller alternating with those of the other—are
110 driven at a higher rate of speed than the holding-rollers M M , so as to produce a slight rubbing action on the fiber held between the rollers M M . The lower of each pair of holding-rollers is driven from the upper roller by
115 the engagement of the corrugations or fluting thereon. The upper roller M of the pair nearest the main machine has mounted upon its projecting shaft or journal at one end three pulleys m , m' , and m^3 and is driven
120 from a pulley d' on the shaft d by a belt connecting it with the pulley m , as shown in Figs. 2 and 4. Upon the corresponding end of the shaft or journal of the upper roller M of the outer pair are mounted two similar
125 pulleys m^2 and m^4 , and upon corresponding journals or ends of the shafts of the cleaning-rollers N N are mounted smaller pulleys n n , one on the journal or shaft of the upper roller in line with the pulley m^3 , with which it is
130 connected by a straight belt, and the other on the journal or shaft of the lower roller in line with the pulley m^4 , with which it is connected by a crossed belt. A belt connects

the pulleys m' and m^2 and drives the rollers M of the outer pair at the same rate of speed and in the same directions as the rollers of the inner pair are driven.

5 The chute L may be firmly supported at its outer end by braces ll , extending therefrom downwardly to the sides of frame A. This attachment when not needed can be readily detached from the machine and laid
10 aside by simply disconnecting its fastenings and throwing the belt off from the pulley m .

Any other suitable form of driving mechanism may be employed to impart the desired movement to the holding and cleaning rollers
15 of the detachable cleaning device, as well as to the rollers of the circular or endless series hereinbefore described. In short, various changes in the details of construction and arrangement of the parts composing the machine may be made without change in the
20 mode of operation of the machine or departure from the spirit of my invention.

My improved machine operates as follows: The flax or other stuff to be treated is spread
25 upon the table G and fed by the operator underneath the roller B^3 , which carries it between itself and the adjacent roller B, passing thence upward between the next pair of rollers, and so on in succession between the several pairs of rollers. The woody portion of the
30 stalks is broken, loosened, and separated from the fiber by the combined bending, crushing, and rubbing action of the corrugations or fluting of the rollers. It is permitted to make
35 the circuit of the endless series of rollers a greater or less number of times, according to the nature and condition of the material, until the desired result is attained, when the operator at the discharging end of the machine throws the plate H outwardly into the
40 path traversed by the material, which is thereby deflected from its course and directed over the plate H out of the machine, or, when the auxiliary attachment shown in Fig. 4 is used,
45 into the chute L and between the first pair of holding-rollers M M and thence between the cleaning-rollers N N and the last or outer pair of holding-rollers M M. The continuous action of the rollers $B B' B^2 B^3$ is limited only at the
50 will of the attendant who operates the discharging mechanism. The rollers M M hold the fiber in place while the cleaning-rollers remove any remaining shives or refuse from the fiber left clinging thereto by the rollers
55 $B B' B^2 B^3$. Ordinarily the first or circular series of rollers will thoroughly break, loosen, and remove the boon or shives from the fiber, performing in a single operation what has heretofore been performed in separate operations, breaking and scutching either manu-
60 ally or by machinery; but to provide for the removal of any refuse which may be left adhering to the fiber under certain conditions of the material the auxiliary cleaning attachment, hereinbefore described, may be em-
65 ployed, as occasion may require.

In practice two attendants are employed

with the machine, one for feeding the material thereto and the other for operating the discharging device and receiving the mate- 70
rial or fiber as it is discharged.

It will be obvious to one familiar with this class of machines that the construction herein described and shown possesses, among
75 other advantages, great economy of space, cost of construction, and power, the machine being compact, simple, and of comparatively-light weight, bringing it within the reach of many persons and rendering its use possible
80 in many places where other more costly and cumbersome machines cannot be used to advantage.

I claim—

1. In a machine for treating flax and other fiber-yielding plants, the combination, with a
85 suitable frame, of an endless series of pairs of corrugated or fluted rollers, the several pairs being placed in sufficiently-close proximity to direct the material from one pair between the next in a continuous course through
90 the machine, the peripheries of each pair of rollers working with each other, driving mechanism by which said rollers are rotated, and feeding and discharging devices by which the material to be operated upon is directed into
95 and discharged from the machine while it is in operation, substantially as and for the purposes set forth.

2. In a machine for treating flax and other fiber-yielding plants, the combination of an
100 endless series of rollers arranged in pairs, between which the material is arranged to pass a number of times in succession, and a deflector movable into the path of the material, so as to discharge the same from the machine,
105 substantially as and for the purposes set forth.

3. In a machine for treating flax and other fiber-yielding plants, the combination of circular series of rollers arranged radially in
110 pairs, a feeding-table, and a deflector movable into the path of the material, so as to discharge the same when desired, substantially as and for the purposes set forth.

4. In a machine for treating flax and other fiber-yielding plants, a number of pairs of
115 rollers arranged in a circular series, the rollers of the outer circle on the under side of the machine being of greater diameter, so as to bring them closer together and prevent the material from escaping between them, sub-
120 stantially as and for the purposes set forth.

5. In a machine for treating flax and other fiber-yielding plants, the combination of an
125 endless series of pairs of breaking-rollers, a shifting discharge-plate, and a detachable auxiliary cleaning device comprising one or more pairs of holding-rollers, and a pair of cleaning-rollers having a more rapid rate of peripheral rotation, substantially as and for
130 the purposes set forth.

6. In a machine for treating flax and other fiber-yielding plants, the combination, with a
suitable frame, of corrugated or fluted rollers arranged in an endless series of pairs in suf-

15 sufficiently-close proximity with each other to direct the material from one pair between the next in a continuous course through the machine, driving mechanism for rotating said rollers, and a suitable discharging device by which the material is ejected from the machine while it is in operation, substantially as and for the purposes set forth.

10 7. In a machine for treating flax and other fiber-yielding plants, the combination of an endless series of pairs of rollers between which the material to be treated may be made to pass a number of times in succession, and a discharging device consisting of a laterally-movable plate and vibratory arms connected with the ends of said plate and arranged to move the same into and out of the path of the material passing between said rollers, substantially as and for the purposes set forth.

20 8. In a machine for treating flax and other fiber-yielding plants, the combination, with a suitable frame, of corrugated or fluted breaking and cleaning rollers arranged in substantially-concentric circles and radially in pairs in sufficiently-close proximity to direct the material from one pair between the next in a continuous course through the machine, the rollers of the inner circle engaging with and driving the rollers of the outer circle, which are supported in outwardly-yielding bearings, a driving-gear engaging with pinions on the inner circle of roller-shafts, and feeding and discharging devices arranged to feed the material into and discharge it from the machine while it is in operation, substantially as and for the purposes set forth.

35 9. In a machine for treating flax and other

fiber-yielding plants, the combination of an endless series of breaking-rollers, a laterally-movable discharging-plate with mechanism for projecting the same into the path of the material passing between said rollers, and a transverse guard-plate overhanging the outer roller of the pair next below said movable discharge-plate, substantially as and for the purposes set forth.

10. In a machine for treating flax and other fiber-yielding plants, the combination of a number of pairs of corrugated or fluted rollers arranged in an endless circle or series, with the peripheries of each pair working together, the outer roller of each pair being mounted in yielding bearings, so as to permit it to recede from the adjacent inner roller, the inner circle or series of rollers being all of the same diameter and provided with pinions of uniform size, a central gear meshing with said several pinions, whereby the inner rollers are all driven at a uniform rate of speed, the several pairs of rollers being placed in sufficiently-close proximity with each other to direct the material from one pair between another in a continuous course through the machine, and a discharging device under the control of the operator by which the material is ejected while the machine is in operation, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

EUGENE BOSSE.

Witnesses:

EDWARD C. MILLER,
CHAS. N. BELL.