

No. 666,645.

Patented Jan. 29, 1901.

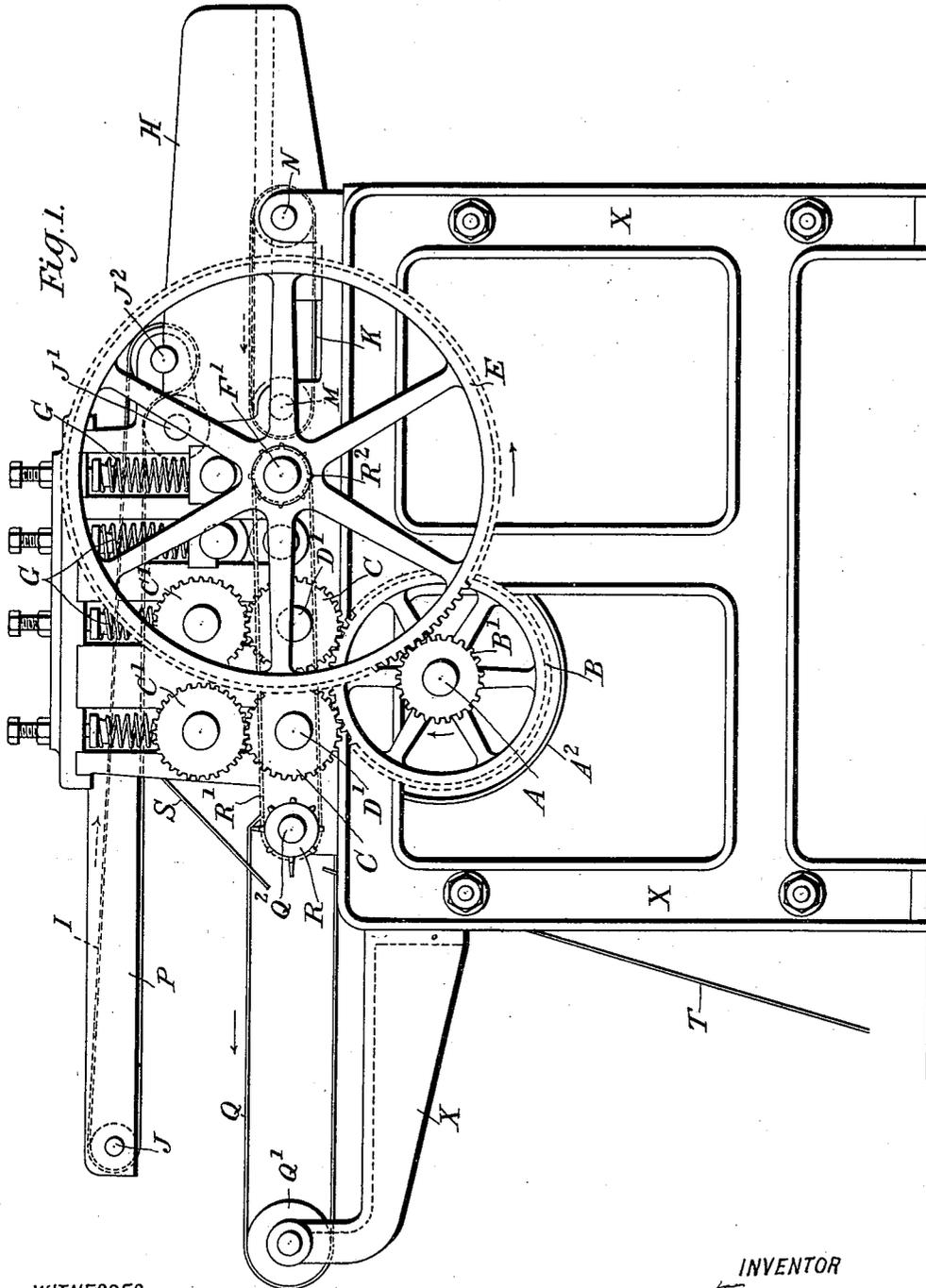
T. BURROWS.

MACHINE FOR DECORTICATING FIBROUS PLANTS.

(Application filed June 22, 1900.)

(No Model.)

3 Sheets—Sheet 1.



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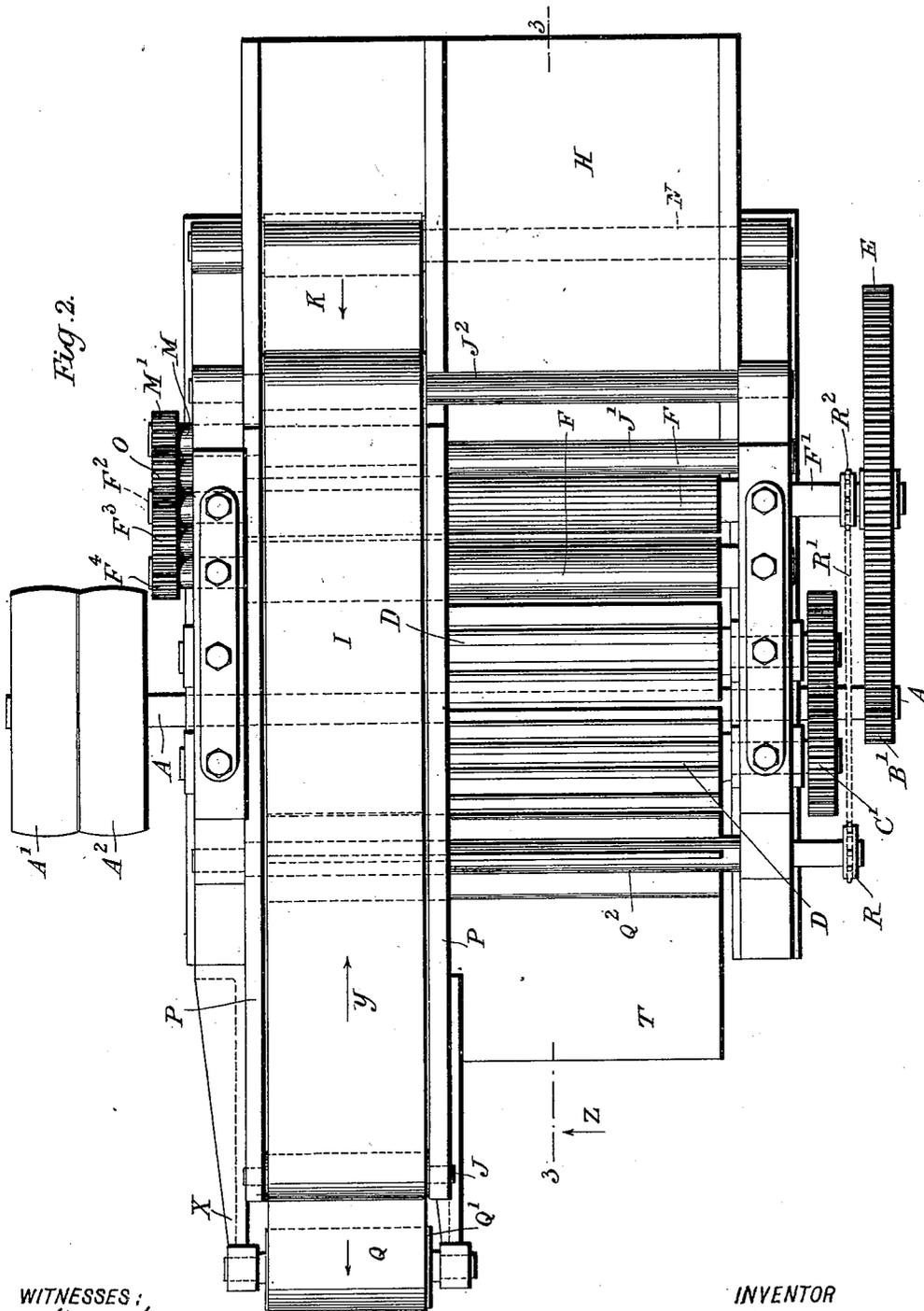


Fig. 2.

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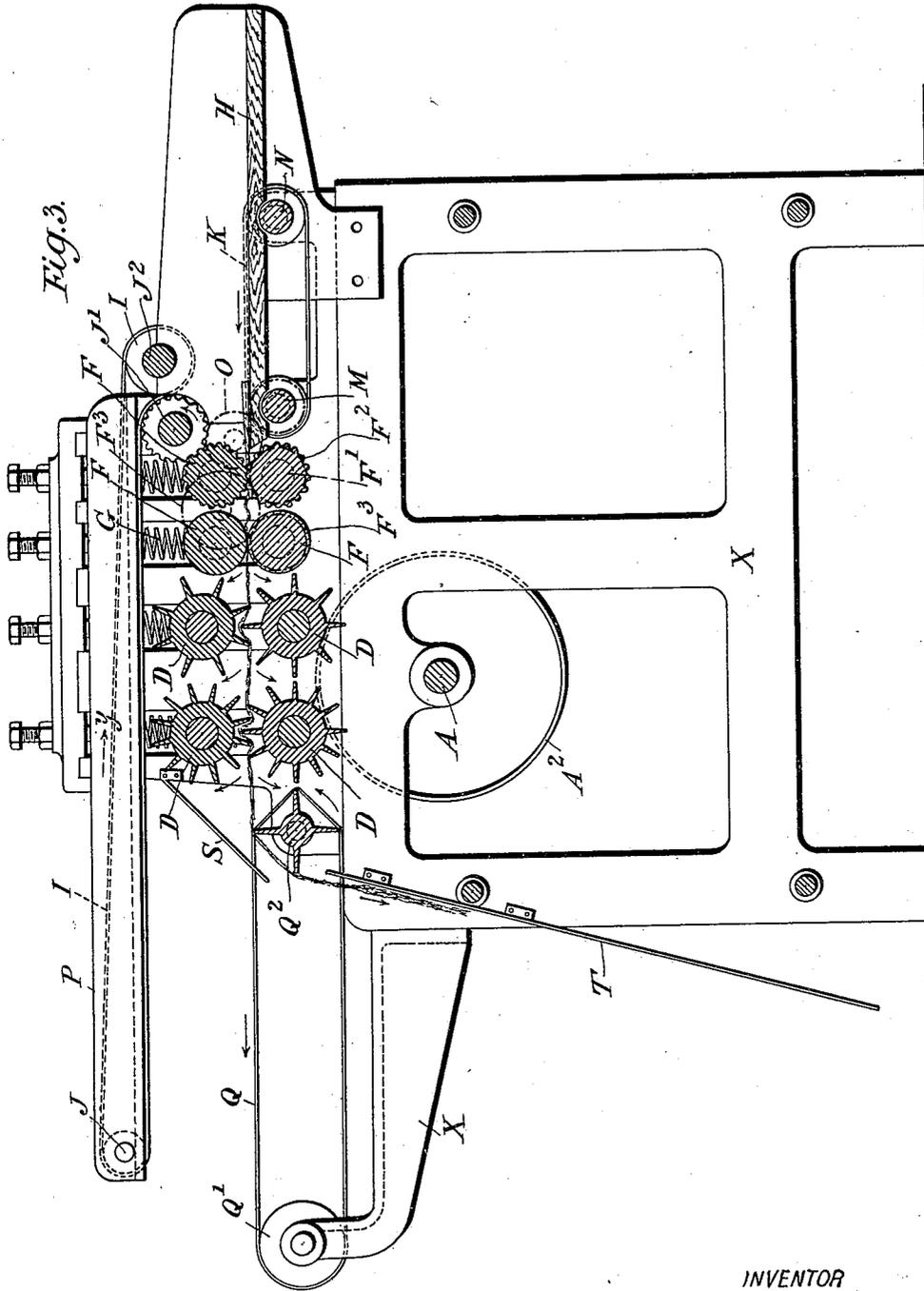
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3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

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## MACHINE FOR DECORTICATING FIBROUS PLANTS.

SPECIFICATION forming part of Letters Patent No. 666,645, dated January 29, 1901.

Application filed June 22, 1900. Serial No. 21,155. (No model.)

*To all whom it may concern:*

Be it known that I, TAYLOR BURROWS, engineer, a subject of the Queen of Great Britain, residing at Hope Villa, Clarence street, Staines, in the county of Middlesex, England, have invented certain new and useful improvements in machines for breaking or decortivating and scutching fibrous plants, stems, or straws—such as ramie, hemp, and the like—throughout the length thereof, of which the following is a specification.

This invention relates to a machine or apparatus for both breaking or decortivating and scutching fibrous plants, stems, or straws—such as ramie, (known also as rhea or china grass,) hemp, jute, &c.—throughout the entire length thereof, the present invention being especially designed and adapted for separating the fiber or fibrous parts from the boon or woody part and pellicle (or the greater part thereof) of ramie or the like plants, stems, or straws, especially while in the green state, so as to get such fiber into the condition known in England as “china grass” or “rhea” ribbons, although of course this machine may be employed for treating any other fibrous plants, stems, or straws for which same may be applicable.

The invention consists of a machine or apparatus comprising one or more pairs of feed crushing-rolls extending the whole width of the machine, with a feed table or apron adapted to first feed the fibrous material at one point to said rolls, scutching-rollers or scutching devices also extending the full width of the machine and arranged behind said feed crushing-rolls and revolving at a much greater peripheral speed than the latter, an overhead traveling endless belt mounted at right angles to and above said feed crushing-rolls and scutching devices, but to one side thereof only—*i. e.*, not over the point where the fibrous material is first fed into the machine, as aforesaid—and adapted to carry the fibrous material back to the feed end of the machine, a feed-apron mounted alongside the first-named feed-table at the feed end of the machine, just below said overhead belt, and adapted to automatically feed into the feed crushing-rolls, but at a different point therein to the first-named point, the fibrous ma-

terial returned by the overhead belt as it drops off the latter, and another apron at the back end of the machine, but to one side thereof only—*viz.*, opposite to and under the said overhead belt—whereby the fibrous material (which is now fully decorticated and scutched throughout the whole length thereof) is delivered clear of the machine, all as herein-after fully set forth and finally pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a view in side elevation of the machine. Fig. 2 is a plan of the machine; and Fig. 3 is a vertical sectional view on line 3 3, Fig. 2, looking in the direction of the arrow *z*, Fig. 2.

Similar letters of reference indicate corresponding parts throughout.

X is the usual or any suitable standard or frame of the machine. A is the main driving-shaft, journaled in said frame and driven by a belt on the fast and loose pulleys A' A<sup>2</sup> from any suitable source of power or driven in any other suitable manner. B B' are toothed wheels on the opposite end of shaft A, the larger one, B, meshing with the pinions C C on the shafts D' of the scutching devices D and revolving the latter at a high rate of speed, said pinions C C gearing with pinions C' C, whereby the top rollers or scutching devices are correspondingly revolved, while the smaller one, B', gears with the large toothed wheel E on the shaft F' of the lower roll of the front pair of fluted feed crushing-rolls F F, and this shaft F' has gear-wheel F<sup>2</sup> on the opposite end thereof, which through the intermediate toothed wheel F<sup>3</sup> drives the toothed wheel F<sup>4</sup> on the lower roll of the second pair of feed crushing-rolls F F. The upper roll of each of these pairs of fluted rolls F is revolved by frictional contact with its lower roll.

G G are ordinary springs for holding down the bearings or journals of the shafts or necks of the scutching devices D D and rolls F F, all the parts marked A to G, respectively, being old and well known separately.

The novel features in this machine are more especially as follows:

H is a narrow feed-table—*i. e.*, about half the width of the machine—located to one side

of the machine and which feeds to only one part of the rolls F and not to the whole width thereof. I is an overhead belt arranged to the opposite side of the machine.

5 J J' J<sup>2</sup> are rollers around which passes the belt I, motion being imparted to the roller J' (which is fluted) by frictional contact with the top roll F' of the front pair of fluted rolls F, or motion may be imparted to the roller  
10 J' from the gear-wheel F<sup>2</sup> by means of an intermediate gear-wheel (not shown) and a toothed wheel (not shown) on the shaft of the roller J', and also the roller J<sup>2</sup> may be driven, if desired, whereby the belt I is (when the  
15 machine is running) caused to travel around continuously in the direction of the arrow  $\gamma$ .

K is a feed-apron arranged alongside the feed-table H and disposed below the belt I, said feed-apron K passing around two rollers  
20 M N, one of which, M, is driven by an intermediate gear-wheel O, meshing with the gear-wheel F<sup>2</sup>.

P is a trough or frame in which is journaled the rollers J' J<sup>2</sup>, around which the belt I  
25 passes, said trough or frame P being fixed to and carried on the main frame X in any suitable manner.

Q is the delivery-belt, which passes around the rollers Q' Q<sup>2</sup>, the shaft of the latter having  
30 sprocket-wheel R fixed thereon and a chain R' running around same, and the sprocket-wheel R<sup>2</sup>, fixed on the shaft F', (see Fig. 2,) by which means motion is imparted to the delivery-belt Q.

35 S is a shield or guide to one side of the delivery end of the machine—that is to say, this guide-plate S is located to that side of the machine opposite the feed-table H and clear of that side of the machine where the feeding-apron K and delivery-belt Q are disposed.  
40 Below said guide-plate S is mounted the sloping plate T, to one side of and clear of the delivery-belt Q, against which plate T the ends of the fibrous material fall as same come  
45 through the machine for the first time.

The operation is as follows: The fibrous material—plants, stems, straws, &c.—is laid on the feed-table H and fed for the first time  
50 in between the feed crushing-rolls F and are then acted upon by the more quickly revolving scutching devices D, and as the ends emerge from the latter they are turned downward by contact with the under side of the guide-plate S and hang down against the  
55 sloping plate T. (See Fig. 3.) The attendant at the delivery end of the machine takes hold of the bunch of fibrous material as it thus comes through the machine for the first time, and as soon as it is clear of the scutching device the attendant raises said bunch  
60 bodily and lays it on the overhead belt I, with the now unscutched ends in the position of the arrow  $\gamma$ , and in this position the bunch of fibrous material is carried by the belt I toward the front end of machine again, and  
65 the now unscutched ends drop off the belt I and come in contact with the feed-apron K,

just below said belt I. Thereby said unscutched ends of the fibrous material are now  
70 fed foremost in between the feed crushing-rolls F F' opposite the said feed-apron K and are then acted upon by the scutching devices D D, and the bunch of fibrous material then passes out of the machine onto the delivery-  
75 belt Q, now thoroughly scutched from end to end, and is delivered by said belt Q clear of the machine. Meantime subsequent bunches of fibrous material can have been passed into the machine, so that several successive bunches  
80 of material can be in process of treatment at the same time in said machine.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A machine for decorticating and scutching  
85 fibrous plants stems or straws of the character described throughout the length thereof; consisting of the combination with feed crushing-rolls and scutching devices each pair  
90 of which extend the full width of the machine, of a feed-trough located to one side of the machine, an overhead endless traveling belt mounted to the opposite side of said machine and adapted to return the fibrous material  
95 when laid thereon to the feed end of the machine, and a feeding-apron arranged below said overhead belt and adapted to feed said fibrous material for the second time into the machine but at another point in the feed  
100 crushing-rolls to where same is fed in for the first time, substantially as set forth.

2. A machine for decorticating and scutching  
105 fibrous plants stems or straws of the character described throughout the length thereof; consisting of the combination with feed crushing-rolls and scutching devices each pair  
110 of which extend the full width of the machine, of a feed-trough located to one side only of the machine, an overhead endless traveling belt mounted and located to the opposite side of  
115 said machine and adapted to return the fibrous material when laid thereon to the feed end of the machine, and a feeding-apron arranged below said overhead belt and adapted to feed said fibrous material for the second  
120 time into the machine but at another point in the feed crushing-rolls to where same is fed in for the first time, and a delivery-apron adapted to receive the fibrous material as the latter comes through the machine the second  
125 time, and deliver same clear of the machine, substantially as and for the purpose set forth.

3. A machine for decorticating and scutching  
130 fibrous plants stems or straws of the character described throughout the length thereof; consisting of the combination with a frame X of feed crushing-rolls F, intersecting scutching-rollers D arranged in pairs, a feed-trough H located to one side of said machine and adapted to feed the fibrous material to one  
135 point in between said crushing-rolls and scutching devices, a guide-plate S diagonally disposed at the delivery end of the machine and located to one side thereof opposite said

feed-trough H, an overhead endless traveling  
belt I adapted to return to the front end of the  
machine the fibrous material laid on said belt  
after the first passage of said fibrous material  
5 through the machine, a feed-apron K mounted  
at the front end of the machine, and located  
to one side thereof and adapted to feed the  
fibrous material for the second time into said  
machine at a different point to where same is  
10 fed in by the aforesaid trough H said apron  
K being mounted just below the front end of

the aforesaid endless belt I, and a delivery-  
belt Q at the rear end of the machine but lo-  
cated to one side thereof only opposite the  
aforesaid feed-apron K, substantially as and 15  
for the purposes hereinbefore set forth.

In witness whereof I have hereunto set my  
hand in presence of two witnesses.

TAYLOR BURROWS.

Witnesses:

F. W. FRIGOUT,

H. D. JAMESON.