

(No Model.)

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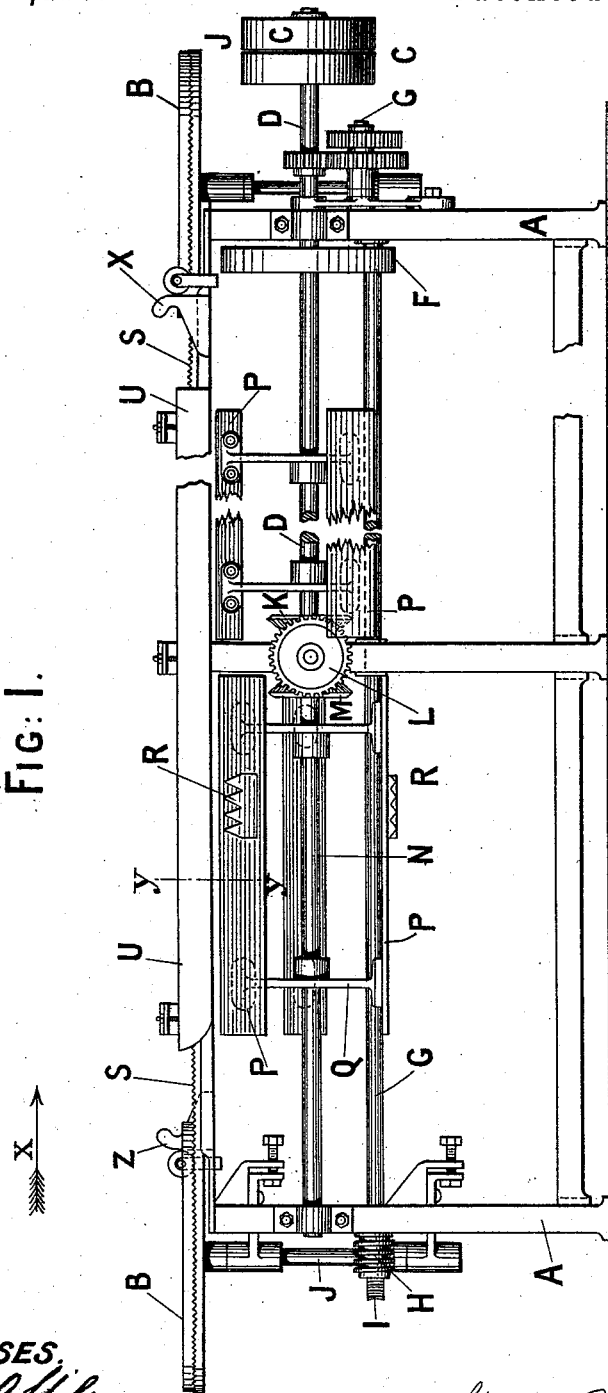
G. E. DONISTHORPE & T. BURROWS.

MACHINE FOR SCUTCHING FLAX, HEMP, &c.

No. 522,516.

Patented July 3, 1894.

FIG. 1.



WITNESSES

*John A. Wilson*

*Bray C. Bowen*

INVENTORS.

*George E. Donisthorpe &  
Taylor Burrows*

*by Whitman & Wilkinson  
Attys.*

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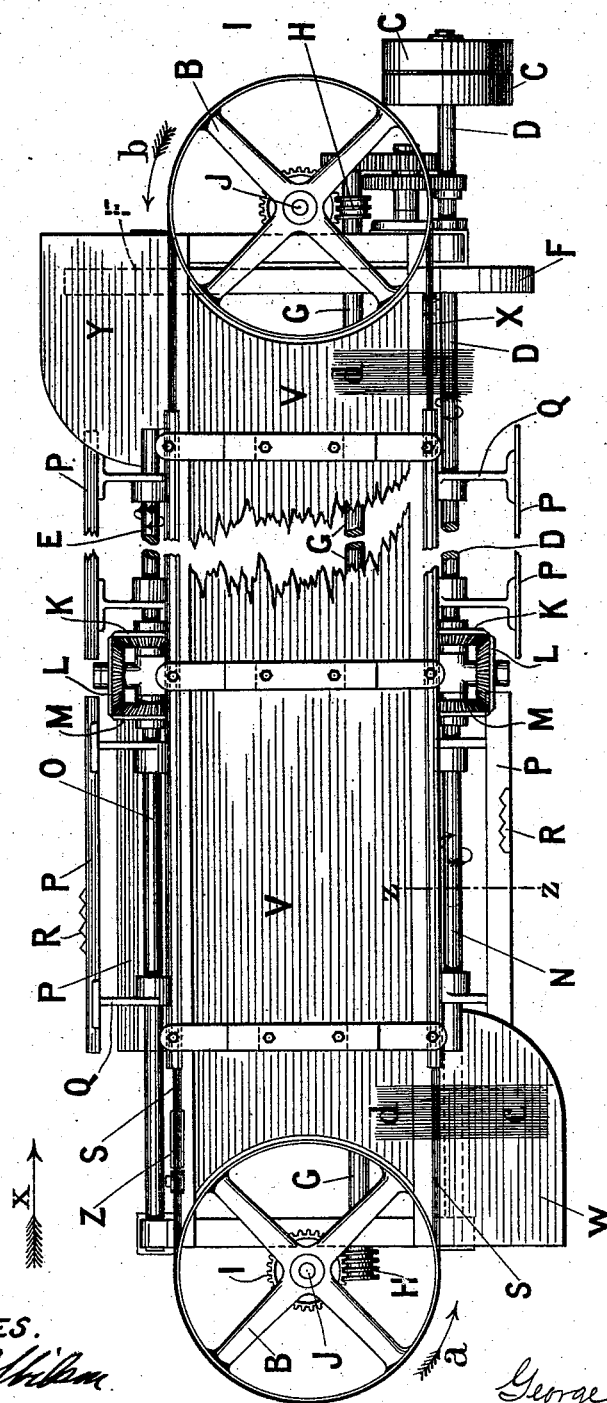
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FIG. 2.



WITNESSES.

*John C. Wilson*

*Reverend Bowen*

INVENTORS.

*George E. Donisthorpe &  
Taylor Burrows*

*by Whitman & Wilkinson,  
Attys.*

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FIG. 3.

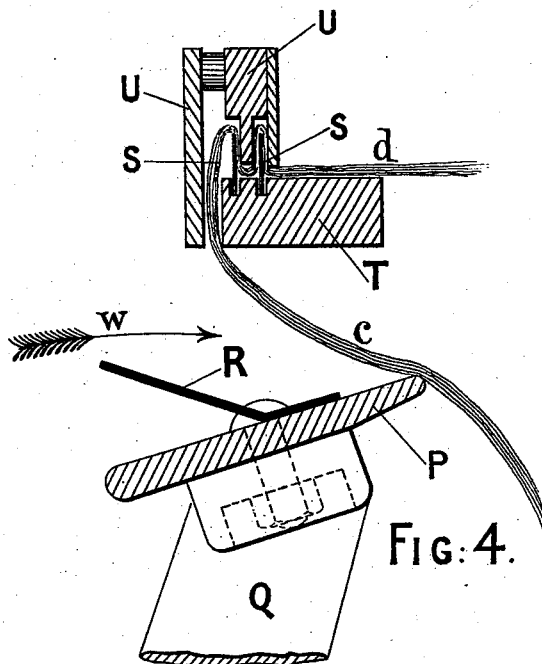
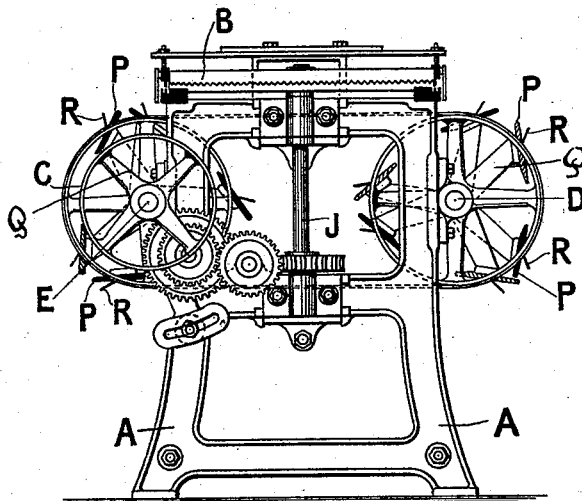


FIG. 4.

WITNESSES.

*John C. Wilson*

*Rey C. Brown*

INVENTORS.

*George E. Donisthorpe*  
*Taylor Burrows*

*by Whitman + Wilkinson*  
*Attys.*

# UNITED STATES PATENT OFFICE.

GEORGE EDMUND DONISTHORPE AND TAYLOR BURROWS, OF LONDON,  
ENGLAND.

## MACHINE FOR SCUTCHING FLAX, HEMP, &c.

SPECIFICATION forming part of Letters Patent No. 522,516, dated July 3, 1894.

Application filed March 31, 1893. Serial No. 468,545. (No model.) Patented in England October 25, 1892, No. 19,168; in France March 3, 1893, No. 228,359; in Belgium March 4, 1893, No. 103,670; in India May 19, 1893, No. 148, and in Canada August 9, 1893, No. 43,879.

*To all whom it may concern:*

Be it known that we, GEORGE EDMUND DONISTHORPE, merchant, of 46 Queen Victoria Street, and TAYLOR BURROWS, engineer, of 88 Upper Kennington Lane, London, England, both subjects of the Queen of Great Britain, have invented an Improved Machine for Scutching Flax, Hemp, Rhea, Jute, or other Like Fibrous Stems or Plants, (for which we have obtained patents in Great Britain, dated October 25, 1892, No. 19,168; in France, dated March 3, 1893, No. 228,359; in Belgium, dated March 4, 1893, No. 103,670; in Canada, dated August 9, 1893, No. 43,879, and in India, dated May 19, 1893, No. 148,) of which the following is a specification.

This invention relates to an improved machine or apparatus for scutching flax, hemp, rhea, jute or other like fibrous stems or plants and is designed to produce a machine for beating, cleaning and softening such fibrous straws, stems or plants (after same has been crushed previously by passing through any suitable breaking and crushing machine) the object of the present invention being to produce a complete finishing-scutching action on such fiber or fibrous material.

Our machine consists essentially of an endless horizontally revolving carrying band (or bands) or carrying device of metal which has upwardly projecting teeth or serrations on the upper edge (or edges) thereof in which the fibrous stems, &c., are held and carried along to present the same to the beating and scutching devices, which latter consist of oppositely revolving beaters or scutching devices which are so arranged and mounted and operated in such a manner as to very thoroughly and effectively scutch the fibrous stems as the same are thus mechanically held and presented thereto.

We will now proceed to fully describe and set forth our said present invention with reference to the drawings hereunto annexed.

Figure 1 is a side elevation of the complete scutching machine. Fig. 2 is a plan of the machine shown in Fig. 1. Fig. 3 is an end view of the machine looking in the opposite

direction to the arrow  $x$  of Figs. 1 and 2. Fig. 4 is a view in cross section on line  $y-y$  of Fig. 1 and  $z-z$  Fig. 2 on an enlarged scale.

Similar letters of reference indicate corresponding parts throughout the views.

A is the support or frame.

B B are horizontally disposed pulleys arranged and mounted as shown at each end of the frame A.

C C are fast and loose pulleys by which the whole machine is driven by means of an ordinary driving belt (not shown).

D is the main driving shaft actuated by the pulley C or this main driving axle D may be driven in any other suitable manner.

E is a second shaft on the opposite side of the machine to the shaft D and each shaft D and E has respectively thereon a pulley and a driving belt F running round said pulleys by which means the shaft E is rotated or said shaft E may be revolved in any other convenient manner.

G is a worm shaft driven by a suitable train of wheels from the driving shaft D.

H H are worms on worm shaft G.

I I are worm wheels on the vertical axles J of horizontal pulleys B.

K is a bevel toothed wheel (cone wheel) on end of shaft D.

L is an intermediate bevel or cone toothed wheel gearing with the wheel K.

M is a bevel cog wheel fixed on a shaft N and gearing with the wheel L so that said shaft N is then revolved in the opposite direction to the shaft D. A similar arrangement of three bevel toothed wheels K L M on the other side of the machine causes the shaft O to revolve in the opposite direction to the shaft E. It will thus be seen that the shafts D and N revolve in opposite directions as also the shafts E and O, and thus the fiber may be treated from opposite sides as will be herein after explained.

P are the scutching blades or beaters three of which as shown in the drawings (see Fig. 3) are mounted on the radial arms Q to form these separate beating devices mounted respectively on the separate and oppositely revolving

ing shafts D and N on one side of the machine and similarly on the other side of the machine on the oppositely revolving shafts E and O.

- 5 If desired the beating device may consist of any number of blades P other than three as above described.

Q Q are radial arms fixed respectively to the separate shafts D, E, N and O.

- 10 R is a metallic toothed blade or coarse comb which is mounted on each blade P on the opposite side thereof to that which strikes the fiber, as shown in Fig. 4—the blade P revolving in the direction of the arrow *w*—this  
15 pronged blade or coarse comb having a beneficial action on the fibrous material. This combing blade extends only a small part of the length of the blade P, and may be omitted if desired.

- 20 S is the endless metallic band toothed or serrated on its upper edges and two of such endless metal ribbons or bands S are shown in the drawings (see Fig. 4) to form the carrier these bands being arranged and mounted  
25 so as to be carried around by the horizontally disposed pulleys B so that such endless carrier S is caused to travel around in a horizontal plane.

- If desired any other suitable number of the  
30 bands S (other than two) may be used.

T is a grooved plate forming an undersupport for said carrier S.

- U is a depressing and locking plate or plates which intersect between these bands S and  
35 thereby lock and firmly hold the fibrous stems &c., above the scutchers while being scutched (see Fig. 4) to prevent the same being dragged out of the carrier S. These locking plates hold the fiber firmly in the carrier comb while  
40 said fiber is being scutched.

- V is a table or platform in the central part of the machine within the line of travel of the carrier S. This table V serves as a support for the inner ends of the fiber, which  
45 ends are not being scutched, and the fiber traveling along the top of this table may be readily grasped by an operator after it has been carried from the feed table W to the feed table Y.

- 50 W is the first feed table.

- X is an incline or "plow" to lift the fibrous stems, &c., out of the teeth of the carrier S and acts also as a stop to prevent any of the said stems from being carried around the  
55 pulley B.

Y is the second feed table.

Z is the second incline same as X and for the same purpose at the other end of the machine.

- 60 The operation is as follows:—The crushed fibrous stems, straws or stocks are fed on to the machine in any suitable manner but for the sake of example we will describe the operation of the machine with three attendants  
65 thereto and such attendants may be either boys or girls as no skilled labor is required in working this machine. The main driving

shaft D is set going so that the endless carrier S is steadily caused to travel around in the direction of the arrows *a b* Fig. 2. The first  
70 operator stands at or near the table W (Fig. 2) and lays the fibrous stems, &c., *c d* across the carrier S (as shown in dotted lines in Fig. 2) and the latter carries such stems under the depressing plate U so that the said stems are  
75 caused to assume a zig-zag or undulating form and are thus locked and held securely between the teeth of the carrier S and the locking plate U, while being carried along by the carrier S. The outermost ends *c* now reach  
80 the first beating device viz: on the shaft N and thereby the said ends *c* are well beaten and scutched (as they are carried along by the carrier S) until the metallic pronged plate or coarse comb R is reached and thereupon the  
85 latter acts to straighten out the fibers somewhat so as to smooth and parallelize same. The carrier S (continuing to travel) now carries the ends *c* clear of the beating device on shaft N and immediately afterward these  
90 ends *c* reach the beating device on shaft D (which revolves in the opposite direction to N) and consequently the depending ends *c* are now thoroughly beaten from the opposite direction and then are subjected to the action  
95 of the device R so that when the ends *c* move clear of the blades P on the shaft D they are most thoroughly scutched and finished. The stems now come from under the locking plate U and are then automatically raised clear of  
100 the carrier S by the incline X, the unscutched ends *d* resting on the table V and the now scutched ends *c* hanging down over the shaft D. The second operator placed at or near the second table Y now reaches over and  
105 grasps the ends *d* and draws the same toward Y until the fully scutched part *c* lies over the carrier S at the table Y and the unscutched ends *d* rest on the table Y and thus laid onto the carrier S which then carries same on under the locking plate U on that side of the machine and the stems, &c., are thus held  
110 and the ends *d* are now presented to the beating blades P (and devices R) on shaft E and then to the blades on shaft O revolving in the opposite direction to E and thus the ends *d* are as thoroughly scutched, softened and finished as the ends *c* and the fibrous material is now completely scutched and finished from end to end and then comes from under  
120 the locking device U near the second plow or incline Z which latter acts same as X to lift the fiber clear of the carrier S and the finished scutched fiber is then lifted off the machine by a third operator placed close to Z.  
125 It will be obvious that various modifications of the herein-described devices might be made which could be used without departing from the spirit of our invention.

Having thus described our invention, what  
130 we claim, and desire to secure by Letters Patent of the United States, is—

1. In a machine of the character described, the combination with an endless carrier con-

sisting of a plurality of toothed combs moving in an approximately horizontal direction, a rigid support for said combs, and a locking plate adapted to press the fibrous material between the teeth of and hold it firmly down on said combs, of a plurality of scutchers arranged to act on the fibrous material alternately from opposite sides, substantially as and for the purposes described.

2. In a machine of the character described, the combination with an endless carrier consisting of a plurality of toothed combs moving in an approximately horizontal direction, a rigid support for said combs, and a locking plate adapted to press the fibrous material between the teeth of and hold it firmly down on said combs, of a plurality of combs and scutching devices and means for operating the same from opposite directions with regard to said fibrous material, substantially as and for the purposes described.

3. In a machine of the character described, the combination with two pulleys, of an endless carrier mounted thereon consisting of a plurality of toothed combs moving in an approximately horizontal direction, a rigid support for said combs, a table arranged between opposite sides of the said carrier, and a locking plate adapted to hold the fibrous material down on said carrier combs; of a plurality of combing and scutching devices arranged at either side of said carrier whereby one end of the fibrous material may be scutched and subsequently the other end may be scutched, substantially as and for the purposes described.

4. In a machine of the character described, the combination with two pulleys, of an endless carrier mounted thereon consisting of a plurality of toothed combs moving in an approximately horizontal direction, a rigid support for said combs, a table arranged between opposite sides of the said carrier, and a locking plate adapted to hold the fibrous material down on said carrier combs; of a plurality of combing and scutching devices arranged at either side of said carrier and operating in

pairs in opposite directions, whereby one end of the fibrous material may be scutched and subsequently the other end may be scutched, substantially as and for the purposes described.

5. In a machine of the character described, the combination with two pulleys, of an endless carrier mounted thereon consisting of a plurality of toothed combs moving in an approximately horizontal direction, a rigid support for said combs a table arranged between opposite sides of the said carrier, and a locking plate adapted to hold the fibrous material down on said carrier combs; of a plurality of combing and scutching devices arranged at either side of said carrier whereby one end of the fibrous material may be scutched and subsequently the other end may be scutched, and plows for lifting said fibrous material from said carrier teeth at the end of each scutching, substantially as and for the purposes described.

6. In a machine of the character described, the combination with two pulleys, of an endless carrier mounted thereon consisting of a plurality of toothed combs moving in an approximately horizontal direction, a rigid support for said combs, a table arranged between opposite sides of the said carrier, and a locking plate adapted to hold the fibrous material down on said carrier combs; of a plurality of combing and scutching devices arranged at either side of said carrier and operating in pairs in opposite directions, whereby one end of the fibrous material may be scutched and subsequently the other end may be scutched, and plows for lifting said fibrous material from said carrier teeth at the end of each scutching, substantially as and for the purposes described.

GEORGE EDMUND DONISTHORPE.  
TAYLOR BURROWS.

Witnesses:

THOMAS LAKE,  
17 Gracechurch Street, London.  
J. CHALMERS WILSON.