

June 6, 1939.

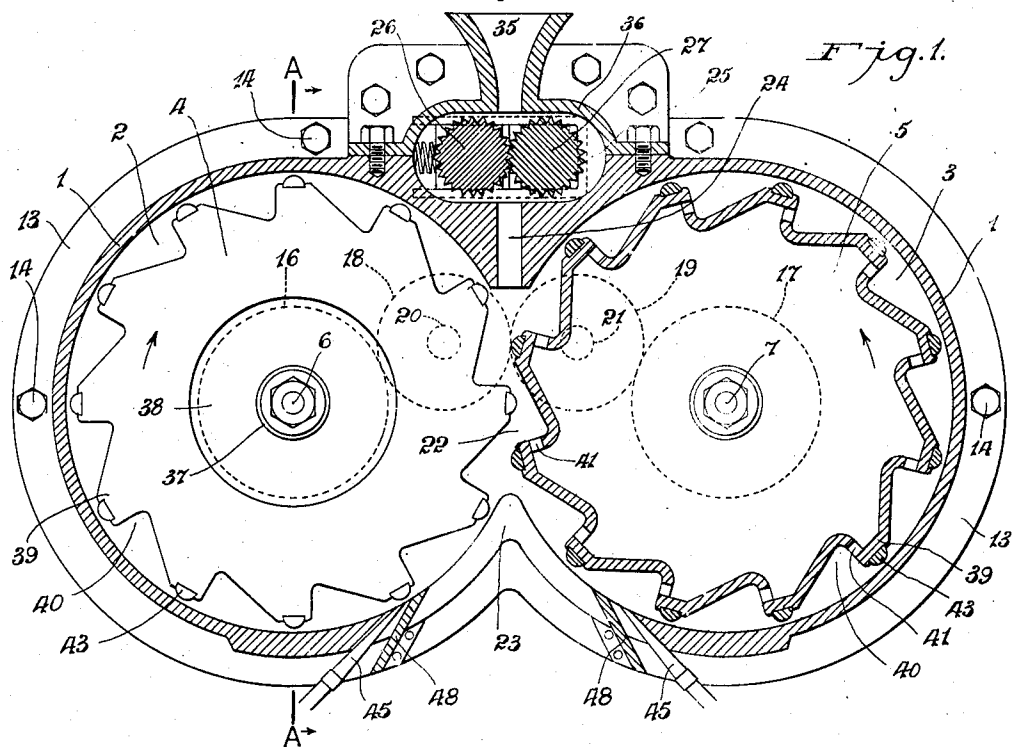
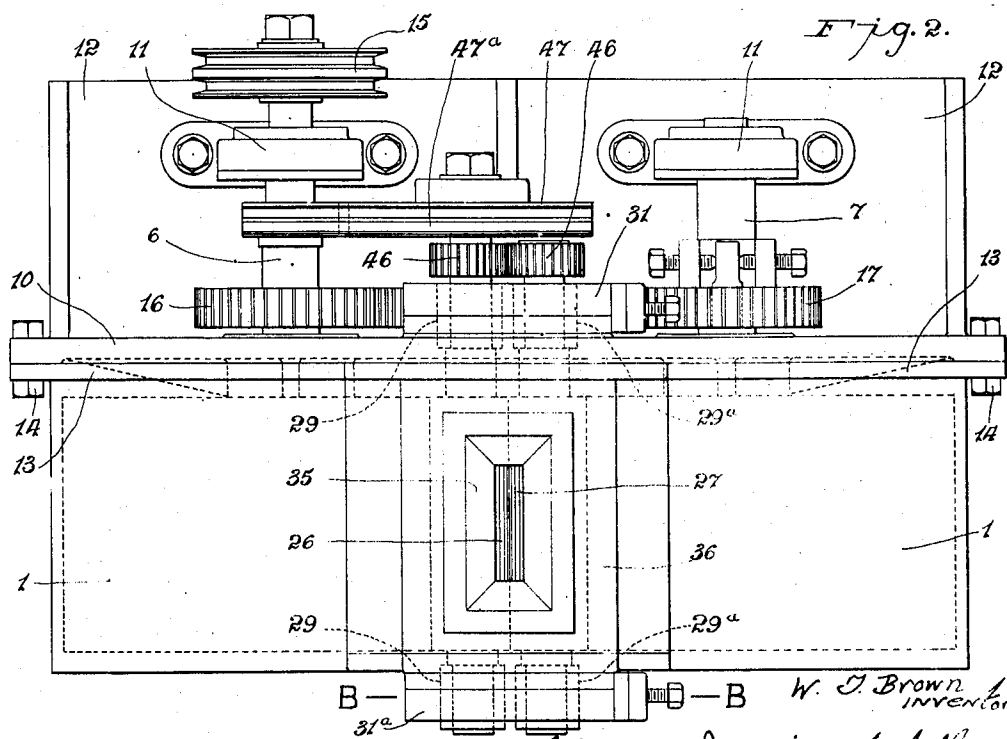
W. T. BROWN

2,161,502

FIBER FINISHING MACHINE

Filed April 14, 1937

2 Sheets-Sheet 1



W. T. Brown
INVENTOR
By: Glascock, Downing & Seebold, Attys

June 6, 1939.

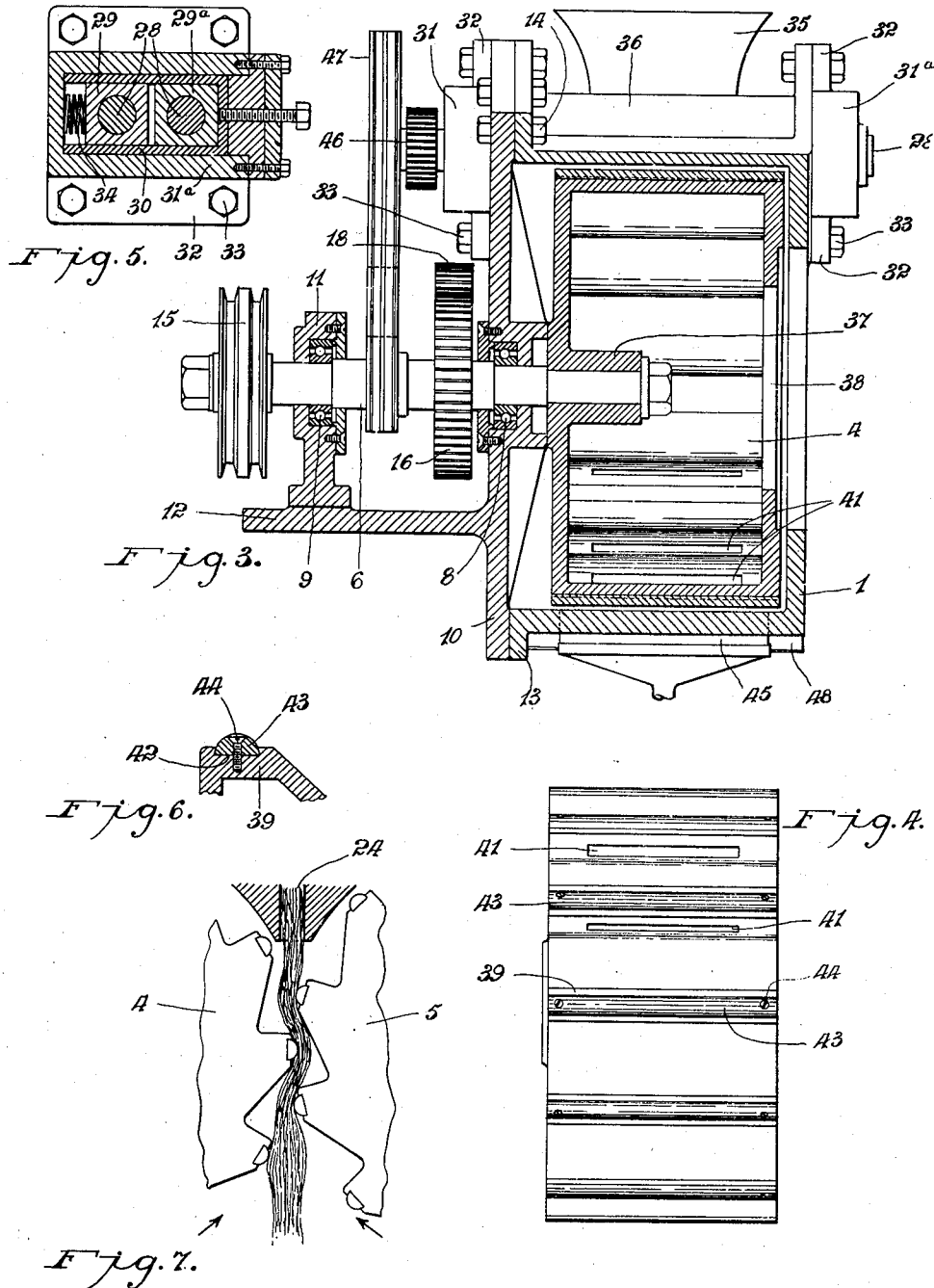
W. T. BROWN

2,161,502

FIBER FINISHING MACHINE

Filed April 14, 1937

2 Sheets-Sheet 2



W. T. Brown
INVENTOR

By: *Glascok Downing & Helbold*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,161,502

FIBER FINISHING MACHINE

William Thomas Brown, Northland, Wellington,
New Zealand, assignor to Fibre Processing
Limited, Wellington, New Zealand, a corpora-
tion of New Zealand

Application April 14, 1937, Serial No. 136,941
In New Zealand May 18, 1936

1 Claim. (Cl. 19—33)

This invention relates to a machine for finishing fibre which has been stripped from fibre-bearing plants. After the leaves of flax, such as that of New Zealand flax, have been passed through a stripping machine, a considerable amount of chlorophyll, gummy matter, and other waste non-fibrous substances still adhere to and cling to the fibres, thus causing them to be in a more or less stiff condition.

It is an object of this invention to provide means which will remove this matter and make the fibre more pliable.

With this end in view a machine is provided which will bend the fibres in one direction and then in the other direction during their passage through the machine, the matter removed being blown away by air pressure.

According to the present invention, the fibre is fed between two drums mounted in a casing and adapted to be driven at a high speed. On the drums are fitted beaters which fit freely the bore of the casing when the drum is rotating. The top of the casing is provided with a chute by which the fibre is fed to the feed rollers, the speed of which is controlled by gears driven from one of the drum shafts. The fibre is thus fed to the space between the drums, the beaters of which are timed to pass either midway or at any suitable position between two beaters on the opposing drum, whereby the fibre between the drum is beaten in opposite directions. The casing is provided with a discharge opening beneath the drums. A blowing action on the fibre as it leaves the beater drums is set up by air blown against each side of the fibre as it passes from the beaters. By such blowing action, the chlorophyll, gummy matter, and other waste matter which is loosened by the beaters is blown off the fibre as it passes through the discharge opening from which the finished fibre is also released.

The invention will be described with the aid of the accompanying drawings, wherein:—

Figure 1 is a cross sectional elevation through the machine with one of the drums in section and the other in elevation.

Figure 2 is a plan of the machine.

Figure 3 is a longitudinal section taken along line A—A Figure 1, looking in the direction of the arrows.

Figure 4 is a side elevation of a drum.

Figure 5 is a section taken along line B—B Figure 2.

Figure 6 is a cross section of a beater but drawn to a larger scale than the preceding views.

Figure 7 is a diagram showing the process of

treatment during the passage of the fibre between the drums.

Referring to the drawings, a casing 1 is formed with two cylindrical bores 2 and 3, in which are mounted drums 4 and 5 respectively mounted on spindles 6 and 7, each mounted in bearings 8 and 9. It will be noticed that the bearings 8 are arranged in the end wall 10 of the casing, while the bearings 9 are placed in brackets 11 attached to a flange 12 projecting from the end wall 10 of the casing. The circular part of the casing 1 containing the bores 2 and 3 is shown in one piece and attached to the end wall by a flange 13 and bolts 14. The shaft 6 carries a driving pulley 15. The two shafts 6 and 7 each have a gear wheel 16 and 17 (see dotted lines in Figure 1), which mesh with gear wheels 18 and 19 respectively mounted on stub axles 20 and 21. The direction of the shafts and drums is in the direction of the arrows in Figure 1.

It will be noticed that the internal circumference of the bores of the casing cut one another, the junction being cut away sufficiently so that the interior of each casing communicates one with the other through a considerable space 22. A discharge opening 23 is provided on the lower wall of the casing 1 between the two bores 2 and 3 and communicating with the space 22. Immediately above the opening 22 is a feed opening 24. This opening is narrower than the width of the drums, while above the opening is a recess 25 to receive a pair of feed rollers 26 and 27. The rollers 26 and 27 have their spindles 28 journaled in blocks 29 and 29a respectively, which blocks are held in a sleeve 30 in casings 31 and 31a attached to the drum casing 1 by flanges 32 and bolts 33. The blocks 29 carrying the roller 26 are so mounted in the sleeves 30 that they can move out against the pressure of a coil spring 34 to accommodate the varying thicknesses of the fibre fed through the rollers 26 and 27. The spindles 28 extend through the casing 31 and are fitted with gear wheels 46 meshing with each other, the spindle from the roller 26 extending still further and having a driving pulley 47 attached thereto and adapted to be driven from the drum spindle 6 by a belt 47a.

Above the feed rollers is a feeding chute 35, this being formed in the cover 36 attached to the casing 1 by bolts. The drums are hollow, one end wall of each drum having an integral sleeve 37 for attachment to its shaft, while the other end wall has an opening 38 for the entrance of air. The circumferential periphery of the drums have beaters 39 formed thereon, with recesses or

pockets 40 between them, and are shaped as shown in Figure 1, so that the side of the beater slopes at an angle in the direction which the beating takes place. Openings 41 in the wall of the beaters prevent a vacuum being formed in the pockets 40 during rotation. Each beater is provided with a dove-tail slot of channel 42 to receive the beater bar 43. These bars may be made of wood, metal, or rubber, and are secured in the dove-tail slots 42 by screws 44 passing through the bar into the wall of the beater.

A balanced flow of compressed air is used from either side of the discharge opening 23 to facilitate the movement of the fibre through the discharge opening. For this purpose, fish-tailed nozzles 45 are situated at either side of the discharge opening and are arranged between each edge of such opening and a direction plate 48. These nozzles would be connected to a suitable air compressor for providing the flow of air.

In operation, the fibre is fed through the feed rollers 26 and 27, which carry it down through the opening 24 where it will be subjected to the beating action of the beater bars in the manner shown in the diagram in Figure 7. The drums travel at a greater peripheral speed than that of the feed rollers in order to provide the necessary beating action to the fibre. This beating action will loosen and remove the non-fibrous matter, such as the chlorophyll, gummy matter, and non-fibrous waste matter which remain in the fibre after stripping.

The openings 41 between the beaters avoid any liability to a vacuum forming the pockets during the rotation of the drums, and thus avoid the tendency of the fibre being sucked into such

pockets and clinging to the beaters and being carried around therewith.

The compressed air from the nozzles 45 travelling in the direction of the arrows in Figure 7, prevents the fibre clinging to the beater bars and being carried around with them, and enables the waste matter that is loosened by the beaters to be blown off the fibre.

What I claim is:

A machine for finishing fiber after it has been stripped from fiber bearing plants comprising a casing, feed rollers in the top of the casing, a guide below the feed rollers containing a feed opening, a pair of drums horizontally mounted in the casing to rotate in different directions and at greater peripheral speed than the feed rollers, said drums being hollow and open at one end the circumferential periphery of each drum provided with a plurality of longitudinal grooves parallel with the axes thereof, a plurality of beater bars detachably mounted in the grooves and each having rounded beater surfaces, the spaces on the drums between the grooves being intended to form pockets, the pockets being triangular in shape each including a sloping side extending in the direction of rotation and the radial side having an opening for receiving air into the pockets to avoid the formation of a vacuum therein and the beater bars on the one drum projecting into the pockets on the opposing drum such that as they sweep past the fiber on each side thereof they force it into the pockets between the beater bars on opposite drums so as to cause a number of bends in every length of fiber passing between the drums.

WILLIAM THOMAS BROWN.