

(No Model.)

**2 Sheets—Sheet 1.**

(Application filed Sept. 8, 1902.)



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G. W. Wright

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No. 717,380.

Patented Dec. 30, 1902.

J., P. & N. FRASER.  
HACKLING MACHINE.

(Application filed Sept. 8, 1902.)

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2 Sheets—Sheet 2.

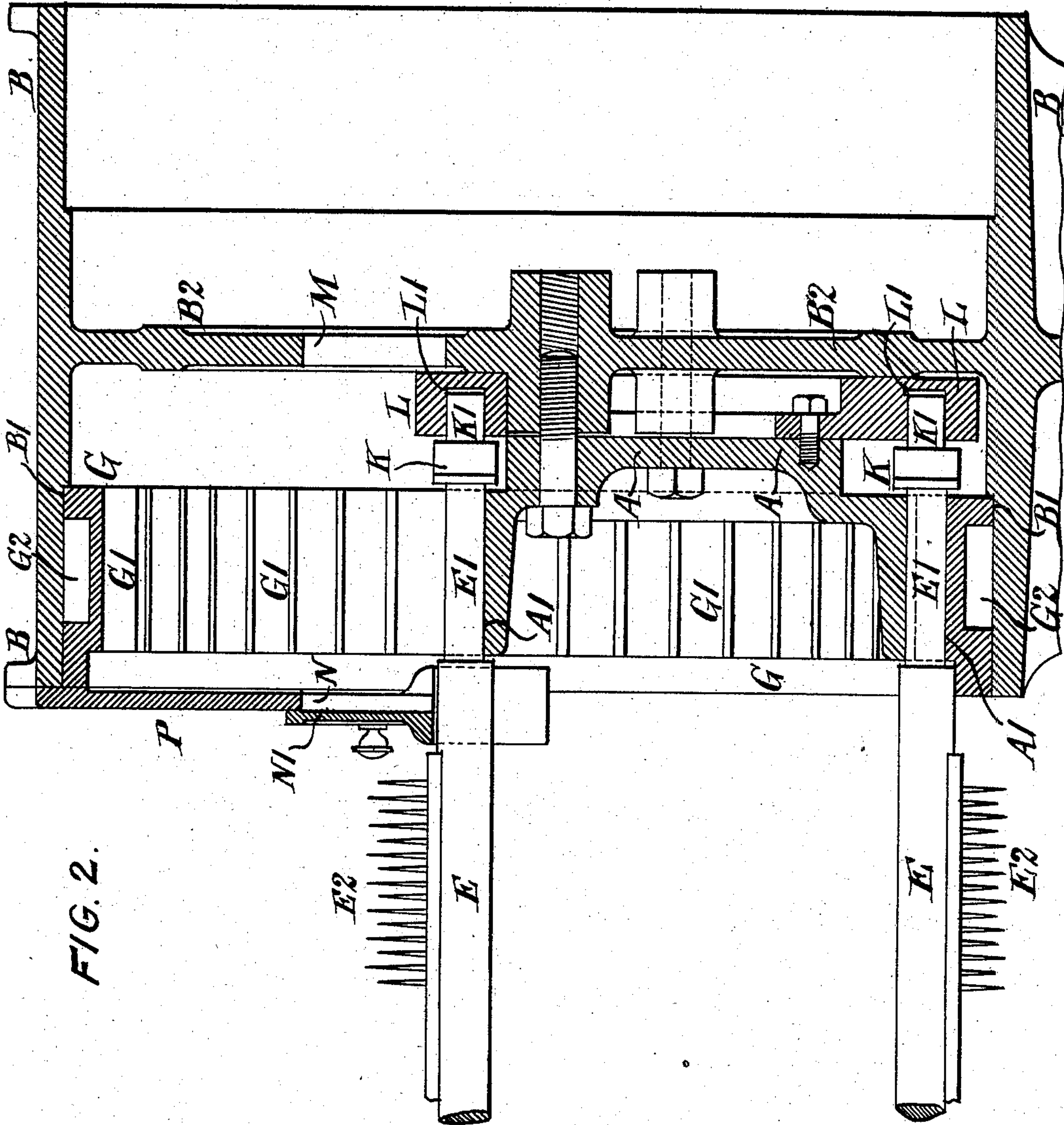


FIG. 2.

WITNESSES

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# UNITED STATES PATENT OFFICE.

JOHN FRASER, PATRICK FRASER, AND NORMAN FRASER, OF ARBROATH,  
SCOTLAND.

## HACKLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 717,380, dated December 30, 1902.

Application filed September 8, 1902. Serial No. 122,562. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN FRASER, PATRICK FRASER, and NORMAN FRASER, subjects of the King of Great Britain and Ireland, and residents of Arbroath, in the county of Forfar, Scotland, (whose postal address is Westburn Foundry, Arbroath, Scotland,) have invented certain new Improvements in Hackling-Machines or Similar Machines for Preparing Flax, Jute, and other Fibers for Spinning, (for which we have applied for a British Patent, No. 22,370, dated November 6, 1901,) of which the following is a specification.

Our said invention has for its object to provide improved and simple means for carrying and actuating the gill-bars used in drawing and roving frames or similar machines for preparing flax, jute, and other fibers for spinning.

The invention is represented in the accompanying drawings, in which the same reference-letters are used to mark the same or like parts wherever they are repeated.

Figure 1 on Sheet 1 of the drawings is a transverse section of a drawing-frame provided with our improvements. Fig. 2 on Sheet 2 is a longitudinal section of the improvements as applied at one end of the frame or gill-bars.

In carrying out our invention a race or path  $A'$  is formed on a plate  $A$ , fixed within a head part  $B$  of the frame at each end of the machine in which the ends of the gill-bars work, so that these bars when actuated, as hereinafter described, can travel continuously, as usual, between the back or feeding rollers  $C$  and the front or drawing rollers  $D$ , the race being flat or horizontal on the top and curved or semicircular around the bottom and sides.

The following improved means are provided for actuating the gill-bars  $E$ . A wheel or carrier in the form of a ring  $G$  is arranged at each end of the machine within the head part  $B$ , so as to encircle the end parts  $E'$  of the gill-bars  $E$ , which bear on the race  $A'$ , the inner periphery of the ring being formed with teeth  $G'$ , which engage or gear with the gill-bars. The outer periphery of the ring  $G$  is also provided with teeth  $G^2$ , which are sunk into the ring, so that their outer surfaces are

practically flush with the outer periphery. The wheel or carrier  $G$  is fitted to turn in a way or groove  $B'$ , provided for it in the framing-head  $B$ , and the external teeth  $G^2$  of the wheel  $G$  gear with a pinion  $H$ , fixed to a sleeve  $H'$ , loose on a driving-shaft  $J$ , a pin (not shown) being fixed to the sleeve, so as to engage with a driving connection on the shaft. Cranks  $K$ , fitted with crank-pins  $K'$ , are fixed, preferably, to the opposite ends of each alternate gill-bar  $E$ , the pins sliding in a cam-groove  $L'$ , formed in a plate  $L$ , fixed to the race-plate  $A$ . Openings  $M$   $N$  are provided in the back partition  $B^2$  of the framing-head  $B$  and the cover-plate  $P$  in front of the wheel  $G$ , so as to enable the gill-bars  $E$  to be easily got at for removal when required, the opening in the cover-plate being provided with a door  $N'$ , turning upward on a hinge  $N^2$  and closed or secured by an eccentric-lock  $N^3$ , or it might be a spring-latch.

On the machine being started the driving-shaft  $J$  through its driving connection acts on the pin in the sleeve  $H'$ , so as to drive the sleeve and pinions  $H$ , and thereby rotate the toothed rings or carriers  $G$ , which then carry the gill-bars  $E$  around the race or path  $A'$  as required. The gill-bars  $E$  are turned on their axes in the course of their travel, so as to make the gill-pins  $E^2$  enter and leave the fiber at the proper angle, this turning movement being effected by the action of the suitably-shaped cam-groove  $L'$  on the pins  $K'$  in the cranks  $K$  on the ends of the gill-bars. A revolving brush  $R$  is provided, as usual, for cleaning the gill-pins  $E^2$ , and the driving-pin in the sleeve  $H'$  is made so that it will break in the event of the gill-bars  $E$  jamming, and damage to the machine is thus prevented.

Our improvements, as hereinbefore described, present many advantageous features, among which the following, which are of importance, may be named: The gill-bars  $E$ , for example, are effectively supported by the improved carriers  $G$  during the course of their travel, so that friction is thus considerably lessened, and as the race  $A'$  is of lesser perimenter than the carriers  $G$  a smaller number of gill-bars  $E$  is also required and they can be driven at a higher velocity with less risk of jamming or damage. The arrangement of



a separate driving-shaft J outside of the carriers G and gill-bars E is likewise extremely advantageous, as it makes each carrier independent of its neighbor, so that it is more easily driven, gives a steadier and smoother motion, and allows of greater ease in repairs and replacing the driving-pin in the pinion-sleeve H' in the event of that pin breaking.

What we claim as our invention is—

10 1. In hackling-machines in which gill-bars are used, a revolving annular wheel or ring at each end of the machine, internal teeth in such wheels, which teeth engage with, support and carry the gill-bars, and a race or path  
15 for such gill-bars of lesser perimeter than the wheels or rings, substantially as herein set forth.

20 2. In hackling-machines, the combination of gill-bar-carrying rings or wheels and mechanism for driving same arranged outside of the said wheels and gill-bars, substantially as and for the purposes herein set forth.

3. In hackling-machines, in which gill-bars

are used, annular wheels or rings, ways or grooves provided in the framing at each end 25 of the machine for said wheels, internal teeth in such wheels to engage with, support, and carry the gill-bars, a race or path for said gill-bars of lesser perimeter than the wheels or rings, external teeth on the wheels, pinions 30 to gear with such external teeth, means for working said pinions from a driving-shaft outside the wheels and gill-bars, and doorways or openings in the parts of the framing into which the end portions of the gill-bars 35 extend, substantially as and for the purposes herein set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN FRASER.  
PATRICK FRASER.  
NORMAN FRASER.

Witnesses:

WM. STURROCK,  
WILLIAM DICK.