

2 Sheets—Sheet 1.

GILL HACKLE FOR DRAWING AND ROVING.

No. 460,649.

Patented Oct. 6, 1891.

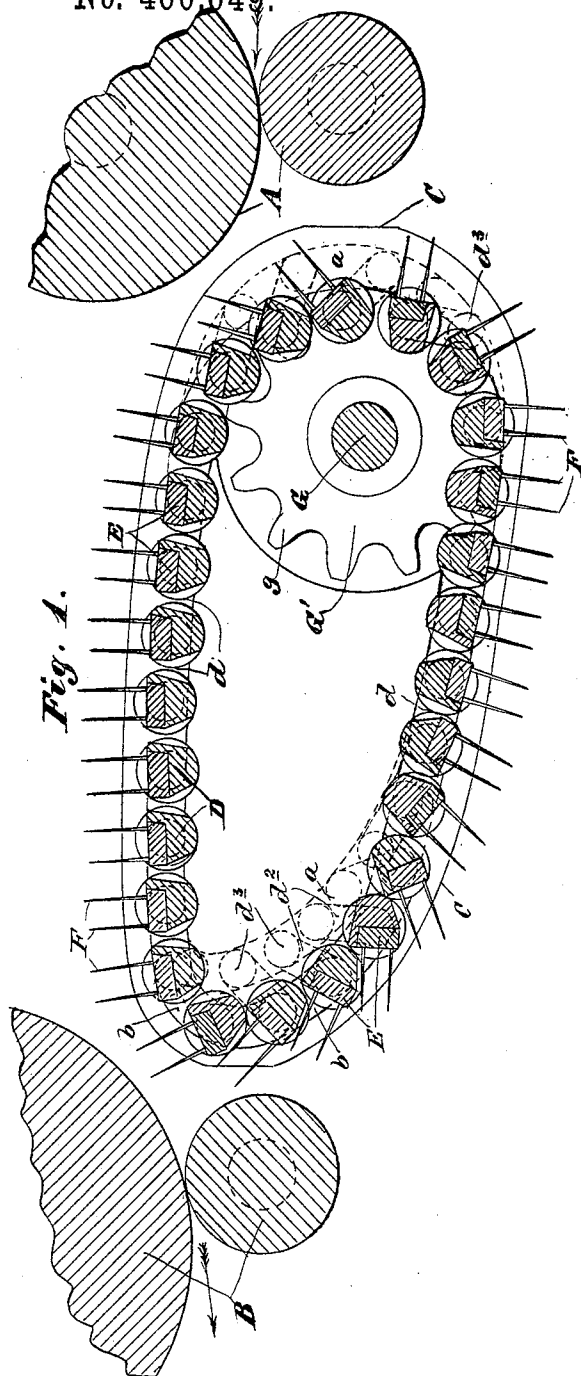


Fig. 1.

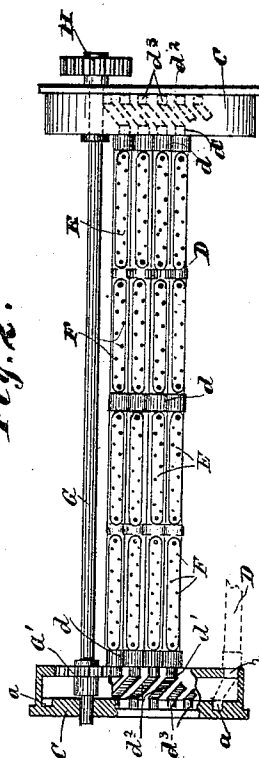


Fig. 2.

Witnesses
A. W. Sprahl.
E. F. Elmore

Inventors.
John M. Smith
By their Attorney.
Jas. F. Williamson

(No Model.)

2 Sheets—Sheet 2.

J. McGRATH.

GILL HACKLE FOR DRAWING AND ROVING.

No. 460,649

Patented Oct. 6, 1891.

Fig. 3

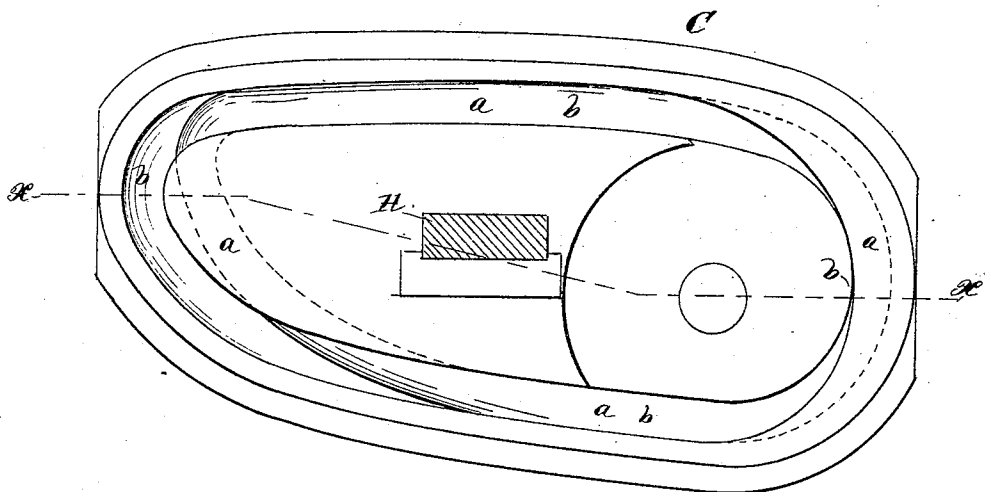


Fig. 4.

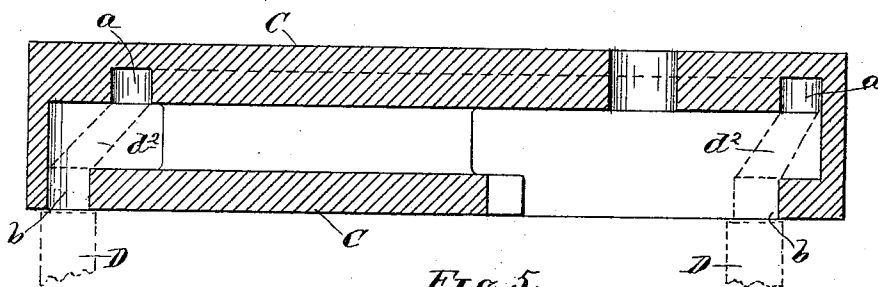
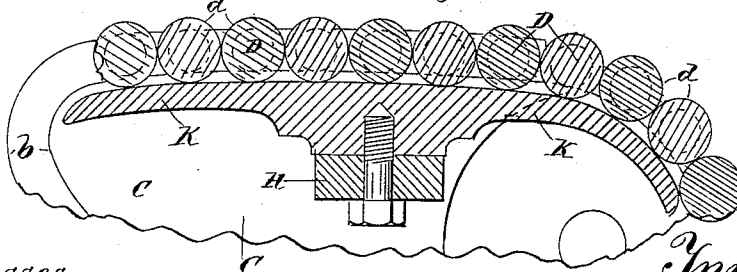


Fig. 5.



Witnesses.

A. H. Opsahl.
Thimble Snow.

Inventor.

John M. McGrath.
By his Attorney.
Jas. F. Williamson.

UNITED STATES PATENT OFFICE.

JOHN McGRATH, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO GEORGE N. LYMAN, SR., OF SAME PLACE.

GILL-HACKLE FOR DRAWING AND ROVING.

SPECIFICATION forming part of Letters Patent No. 460,649, dated October 6, 1891.

Application filed June 1, 1891. Serial No. 394,708. (No model.)

To all whom it may concern:

Be it known that I, JOHN McGRATH, a citizen of Great Britain, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Gill-Hackles for Drawing and Roving; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to spinning-machinery, and has for its object to provide an improved construction of the gill-hackles used in drawing and roving. To this end the hackle-bars constituting the sheet of hackles are each separate and distinct from the other, being supported in the proper relative positions to each other solely by the camways, in which they travel without connections of any kind. The hackle-bars have circular contact-surfaces, by which one is made to push the other. At other points the bars are reduced, so as to afford the necessary clearance. At their extremities and, if desired, at other intermediate points the bars have circular reduced portions with which the driving-teeth of the driving-gear engage, the contact-surfaces before mentioned serving to hold the bars far enough apart to permit the entrance of the teeth of the driving-gear. The bars on the portions of the same supporting the hackle-stocks are cut away at the front and on the back. This permits the pins to rise approximately at right angles to the sliver to engage the same as it comes from the retaining-rollers, and to lower at approximately right angles to the sliver for disengagement therefrom at its delivery to the drawing-rollers. The relative arrangement of the cam-grooves in the side frames to the crank-arms on the hackles compels the hackles, under the action of the driving-wheel, to operate in this manner. The cam-grooves and crank-arms, under the action of the driving-wheels, compel the hackles to rise and turn forward at the receiving end and to lower and turn backward at the delivery end, and the fact that the independent hackles are beveled or cut away at the back and front affords the nec-

essary clearance, so that the hackles may each turn and rise or turn and lower at the said points without interference from the immediately adjacent hackle. This enables the sheet of hackles to be carried forward and turned at a sharp angle at its delivery end. The pins are therefore brought very close to the drawing-roller, thus reducing the length of the nip, which gives much better results on the yarn. Other details will appear in the further description and claims.

The device is illustrated in the accompanying drawings therein, like letters referring to like parts throughout.

Figure 1 is a longitudinal vertical section of the device in working position. Fig. 2 is a front end view of the sheet of hackles and their supporting-cams detached, some parts being broken away and others removed. Fig. 3 is an inside elevation of one of the frames detached. Fig. 4 is a section of the same on the line X X', and Fig. 5 is a vertical central section of Fig. 2.

A represents a set of retaining-rollers at the head of the hackles, and B a set of drawing-rollers at the foot or delivery end of the same, all of the ordinary construction.

C C represents the frame-work, in which is mounted the sheet of hackles. Each of the side frames C C is composed of an inner and outer plate spaced apart from each other and cut away to form the camways *a* and *b*.

D represents the body of one of the hackle-bars; *d*, the contact-surfaces on the same; *d'*, the reduced circular part with which the driving-teeth engage; *d²*, the crank ends of the same, and *d³* the reduced or cut-away faces at the front and back of the bar. The extremities of the crank-arms travel in the camway *a*, while the ends of the hackle-bar proper travel in the camway *b*. These camways are related to each other, as shown in Figs. 1 and 2, being so arranged as to give the engaging and delivery movement to the bars.

E represents the hackle-stock, rigidly secured to the hackle-bars, and F the pins of the ordinary construction. The crank ends *d²* of the hackle-bars *d* are formed integral therewith.

G is the driving-shaft, and G' one of the driv-

ing-wheels, with the teeth g in engagement with the reduced circular part d' of the hackle-bars, as shown in Fig. 1.

H is a driving-gear on the end of the shaft
5 G for the application of power.

H is a cross-bar centrally located and extending from one side frame to the other.

K is one of two or more lifting-cams, which project into the path of the hackle-bars directly over the driving-shaft G for lifting the
10 hackle-bars out of engagement with the teeth of the driving-wheel G. The camways K also project forward near to but terminate short of the delivery end of the frames.

15 The advantage of this construction of the gill-hackles on the product has already been stated. Another material gain in economy lies in the fact that this construction is much more durable than the form of devices hitherto employed. There is no disarrangement
20 from the loosening up or separation of flexible connections. There is no twisting strain, and the bars will last for an indefinite time without any repairs. If it should become
25 necessary to substitute a new bar, the fact that the series are independent enables the insertion of the new bar with a minimum loss of time.

It has been stated that the two camways in
30 which the hackle-bars are mounted are so related as to give the requisite movement to the bars to effect the engagement and delivery from the sliver. This is accomplished by arranging the camways so that they are
35 reversely eccentric to each other at their opposite ends. Hence under the action of the driving-wheels and the crank-arms the necessary movement is effected.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. A sheet of gill-hackles consisting of a series of independent and disconnected hackle-bars.

45 2. The combination, with suitable frame-plates having camways, of a sheet of hackles consisting of a series of independent and disconnected hackle-bars supported in their proper relative position by said camways.

50 3. The sheet of gill-hackles consisting of a series of independent and disconnected hackle-bars, each having circular contact-surfaces of larger diameter than the body of the bar, substantially as and for the purpose set
55 forth.

4. The sheet of gill-hackles consisting of a series of independent and disconnected

hackle-bars, each having circular contact-surfaces of larger diameter than the body of the bar and each having the front and rear faces
60 of its body beveled, substantially as described.

5. The combination, with the supporting frame-plates having camways, of the toothed driving-wheels and the series of independent
65 hackle-bars supported in said camways, each having relatively-enlarged circular contact-surfaces and relatively-reduced surfaces for engagement by the teeth of the driving-wheels, substantially as described.

6. The combination, with the frame-plates
70 having the pair of camways reversely eccentric to each other at their opposite ends and turning at a sharp angle at the delivery end, of the series of hackle-bars provided with crank-arms working in said camways and
75 having beveled front and rear faces for effecting a right-angled withdrawal from the sliver and shortening the nip.

7. The combination, with frame-plates
80 having a pair of camways reversely eccentric to each other at their opposite ends, of the series of independent and disconnected hackle-bars having rigid crank-arms mounted with the ends of the body of the bar in one
85 of said camways and the extremities of the cranks in the other, substantially as described.

8. The combination, with the frame-plate
90 having the pair of camways reversely eccentric to each other at their opposite ends, of the toothed driving-wheels and the series of independent hackle-bars having rigid crank-arms mounted with the ends of their bodies
95 in one of said camways and the ends of the cranks in the other and provided each with enlarged contact-surfaces and reduced portions engaged by the teeth of the driving-wheels, substantially as described.

9. The combination, with the frame-plates C, having the camways a and b , as shown and described, of the independent hackle-bars D,
100 with rigid crank-arms d^2 , mounted in said camways, provided with the enlarged circular contact-surfaces d , the reduced parts d' , and the beveled faces d^3 , and the driving-wheels G, with teeth g , engaging the reduced
105 parts d of the said bars, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN McGRATH.

Witnesses:

GEORGE Y. SMITH,
JAS. F. WILLIAMSON.