

(No Model.)

J. GOOD.

MACHINERY FOR SPREADING AND DRAWING FIBROUS MATERIALS.

No. 497,237.

Patented May 9, 1893.

*Fig. 1.*

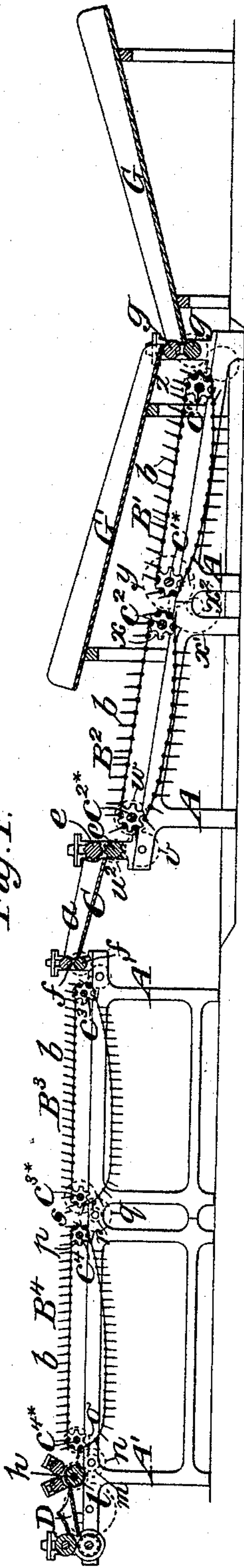
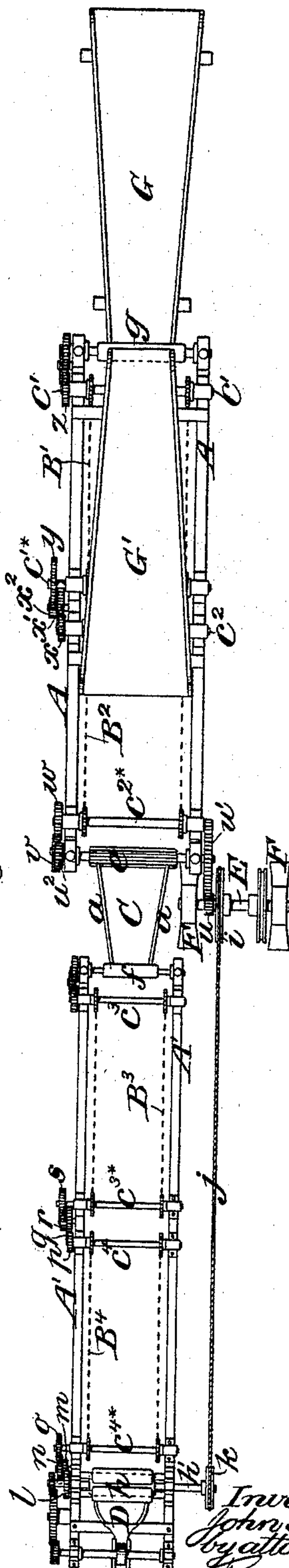


Fig. 2.



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## MACHINERY FOR SPREADING AND DRAWING FIBROUS MATERIALS.

SPECIFICATION forming part of Letters Patent No. 497,237, dated May 9, 1893.

Application filed September 28, 1892. Serial No. 447,137. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN GOOD, a resident of Far Rockaway, in the county of Queens and State of New York, have invented a new and  
5 useful Improvement in Machinery for Spreading and Drawing Fibrous Materials, of which the following is a specification.

The object of this invention is to obtain in one machine by a continuous operation, a  
10 sliver of such quality as by the machinery heretofore used has required several machines and several separately performed operations to produce it.

I will first describe in detail a machine embodying my invention and afterward point  
15 out its novelty in claims.

Figure 1 represents a central vertical section of the machine and Fig. 2 a plan of the same.

20 Similar letters of reference designate corresponding parts in both figures.

A A' designate the framing of the machine.

B' B<sup>2</sup> B<sup>3</sup> B<sup>4</sup> are four trains of gill-pin bars armed with gill-pins *b b b b* and carried by  
25 sprocket wheels on shafts *c' c'\* c<sup>2</sup> c<sup>2\*</sup> c<sup>3</sup> c<sup>3\*</sup> c<sup>4</sup> c<sup>4\*</sup>* which work in bearings on the framing A A'. These trains are arranged one before another. The two trains B' B<sup>2</sup> are of the same character commonly employed in spread-  
30 ers as for example, in the spreader which is the subject of my Letters Patent No. 95,462, dated October 5, 1869, the second train B<sup>2</sup> running much faster than the first train B'. The two trains B<sup>3</sup> and B<sup>4</sup> are of similar character, the fourth train B<sup>4</sup> running much faster  
35 than the third one B<sup>3</sup>, but they have their pins finer and closer together, and they may be as represented in Fig. 2, narrower than the first and second trains B' B<sup>2</sup>. The third train  
40 B<sup>3</sup> may run somewhat faster than the second B<sup>2</sup>, but must not run slower. The third train B<sup>3</sup> is set sufficiently in advance of the second B<sup>2</sup> to make room between them for a conductor C which consists simply of a flat board  
45 having upwardly projecting sides *a a* which converge laterally toward the end of the board nearest the third train B<sup>3</sup>. Between this conductor and the second train B<sup>2</sup> there is represented a pair of delivery rollers *e e* to take  
50 the fiber from the second train of pins and

deliver it to the conductor, and between the conductor and the third train there is represented a pair of feed rollers *ff* to take the fiber from the conductor and give it to the third train of pins. The delivery rollers *e* should run at a  
55 speed about the same as but not slower than the second train B<sup>2</sup>, and the feed rollers *f* at a speed about the same but not slower than the delivery rollers *e*, and not faster than the third train B<sup>3</sup>. In rear of the first train of  
60 pins there is a pair of feed rollers *g* and in front of the fourth train there is a set of delivery rollers *h*. There is also represented in front of the delivery rollers a condenser D.

The machine is represented as driven by a  
65 driving shaft E (Fig. 2) which works in bearings in stands F. On this shaft is a pulley *i* from which runs a belt *j* to a pulley *k* on the shaft *h'* of one of the delivery rollers *h*. The shaft *h'* carries also a spur gear *l* which gears  
70 with and drives one of two spur gears *m n* which are fast together and turn on a stud on the framing, the other of said two gears gearing with a spur gear *o* on the shaft *c<sup>4\*</sup>* of the fourth train of gill-pins B<sup>4</sup> and so driving the  
75 said train. The shaft *c<sup>4</sup>* of this train B<sup>4</sup> carries a spur gear *p* which gears with one of two spur gears *q r* which are fast together and turn on a stud on the framing, the other  
80 of said two gears gearing with a spur gear *s* on the shaft *c<sup>3\*</sup>* of the third train B<sup>3</sup>, and so driving that train, the shaft *c<sup>3</sup>* of which is geared in a suitable manner with the feed rollers *f* to drive the latter. The driving  
85 shaft E carries also a spur pinion *u* which gears with a spur gear *u'* on the shaft of one of the delivery rollers *e*, and so drives the said roller which also carries a spur gear *u<sup>2</sup>* which gears with and drives a spur gear *v*  
90 turning freely on a stud on the framing and gearing with a spur gear *w* on the shaft *c<sup>2\*</sup>* of the second train B<sup>2</sup> of gill pins and so driving the said train. The shaft *c<sup>2</sup>* of this train carries a gear *x* which gears with and drives  
95 one of two spur gears *x' x<sup>2</sup>* fast together and turning on a stud on the framing, the other of said two gears gearing with a gear *y* on the shaft *c'\** of the first train B' of gill-pins and so driving the said train the other shaft  
100 *c'* of which carries a gear *z* which is geared



in a suitable manner with and drives the feed rollers *g*.

The several gears and pulleys hereinbefore described are relatively so proportioned that the trains are respectively driven at the speeds hereinbefore mentioned.

*G G'* are two feed-boards upon which are to be placed two separate layers of fiber to be collectively supplied to the feed rollers *g* to be fed to the first train of gill-pins. The board *G* is arranged in the way common to that of the single feed-board commonly employed in machines for spreading and drawing hemp and other fibrous materials, that is to say, it is behind and has a downward inclination toward the feed rollers *g*, its lower end being opposite the opening between the said rollers so that the fiber deposited upon it may pass from it directly between said rollers. The board *G'* faces the board *G*, being arranged over the first train of gill-pins *B'* with a downward inclination in the opposite direction to that of *G*, and its lower end terminates close above the feed rollers *g*. The layer of fiber deposited on this board *G* has to pass over the top of and round the back of the upper feed roller to enter between the feed rollers, its entrance being above that of the layer from *G*, as the two layers enter collectively between the rollers.

The operation of the machine is as follows: The two layers of fiber deposited upon the two feed-boards and carried between the feed rollers are deposited collectively one superposed above the other upon the first train of gill-pins *B'*, by which they are carried forward to the second train *B<sup>2</sup>*, a spreading operation taking place in a well known manner upon and between these trains, the single lap of fibers thus produced being delivered by the rollers *e* upon the conductor *C* above which it passes to the feed rollers *f*. In passing along the feed board the lap is contracted laterally by the tapering sides of the said board and is thereby thickened before being received between the feed rollers *f* which give it to the third train *B<sup>3</sup>* by which it is carried

forward to the fourth train *B<sup>4</sup>*. A second spreading operation takes place upon and between the third and fourth trains of pins and the lap taken from the fourth train by the delivery rollers *h* passes on to the condenser *D* in which it is converted into a sliver.

In the above operation the two layers of fiber superposed upon the first train of pins are more uniformly distributed than would be possible with a single layer of the same volume and hence a more uniformly spread thin lap is obtained from the second train, and this lap being contracted in width in passing through the conductor *C* is delivered to the third train with sufficient body or thickness to be properly subjected to the operation of the pins of this and the fourth train by which it is again spread so that the resulting sliver delivered from the condenser *D* is very even and of very uniform thickness and quality.

What I claim as my invention is—

1. The combination of four endless trains of gill-pin bars and gill-pins thereon arranged one train before another the third and fourth trains having their pins set closer together than the pins of the first and second, mechanism for driving said trains all in the same direction the second train faster than the first the fourth faster than the third and the third not slower than the second, a feeding device for feeding fiber to the first train, a conductor with laterally converging sides between the second and third trains and a delivery apparatus for taking the fibers from the fourth train, substantially as herein set forth.

2. The combination with an endless train of gill-pin bars and gill-pins thereon and a pair of feed rollers for feeding fiber to said gill-pins, of two feed-boards arranged facing each other for a double supply of fiber to said pair of feed rollers, substantially as herein set forth.

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Witnesses:

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