

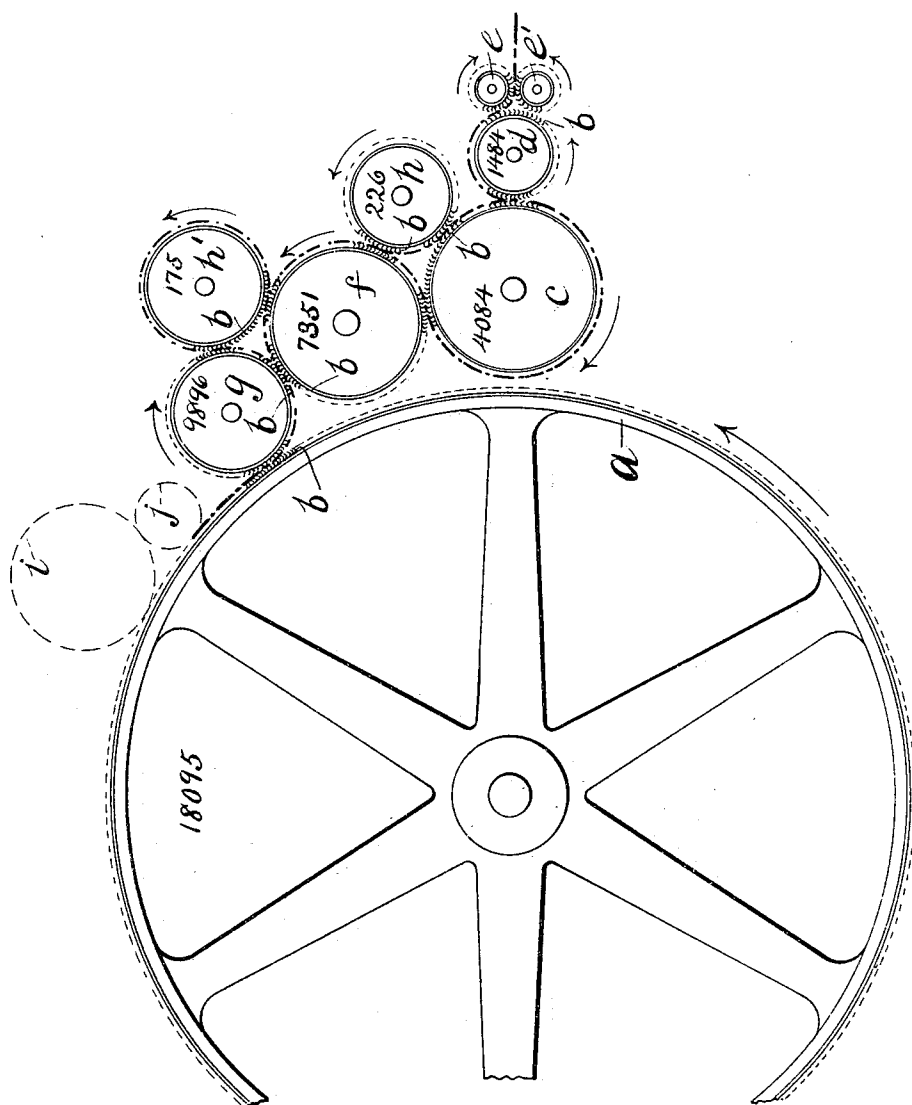
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C. M. BARBER.
FEED FOR CARDING ENGINES.

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NO MODEL.



Witnesses
Stephen D. Taft, Jr.
H. A. Lutter.

Inventor
Colonel Moses Barber,
By Webster, Taft & Tilly.
Attorneys

UNITED STATES PATENT OFFICE.

COLONEL MOSES BARBER, OF MONSON, MASSACHUSETTS.

FEED FOR CARDING-ENGINES.

SPECIFICATION forming part of Letters Patent No. 766,486, dated August 2, 1904.

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To all whom it may concern:

Be it known that I, COLONEL MOSES BARBER, a citizen of the United States of America, residing at Monson, in the county of Hampden and Commonwealth of Massachusetts, have invented a new and useful Feed for Carding-Engines, of which the following is a specification.

My invention relates to improvements in feed mechanism for first and second breakers and finisher-cards in which the tumbler is located adjacent to but out of direct working relation or operative conjunction with the main cylinder and a small cylinder and a doffer or feeder are introduced between said tumbler and main cylinder, the web being fed to the latter for the first time by such doffer or feeder, an arrangement which under ordinary conditions necessitates the placing of the small cylinder and doffer or feeder above the tumbler and generally the axis of one or both in advance of the axis of the tumbler. The exact relative positions of these axes need not be maintained, however, when it is desirable or expedient to change the same, provided the general arrangement of parts is not radically departed from, and it is possible to conceive of a structure wherein the small cylinder and doffer or feeder might be located below the tumbler; but it is believed that no such structure would be practical. In addition to the foregoing I may use one or more workers, two generally being sufficient for the best results. When two workers are employed, one operates in connection with the tumbler and small cylinder and the other with the small cylinder and doffer or feeder.

The object of my improvement is to provide a feed of the class specified which increases the amount of material that can be successfully handled by a given machine in a given time and improves the quality of the drawing or roving, as the case may be. The increase in quantity and improvement in quality may each ordinarily be reckoned as high as twenty-five per cent. and in some cases even thirty-three and one-third per cent. or more. The increased production results from the acceler-

ated speed which it is possible to give a machine equipped with my feed mechanism, and the improved quality is brought about by working the lumps out of the web and getting the same into good condition—that is, making an even web of it—before delivery to the main cylinder. A machine provided with this feed mechanism can be run at least twenty-five per cent. faster than one without it and will successfully handle a lower grade of stock for a given size of yarn, thereby lowering the price of production still more.

A further object of my invention is to provide practicable and efficient feed mechanism with which to accomplish the above-mentioned object which is simple and comparatively inexpensive and may be applied to an old as well as a new machine, such mechanism being of such nature as to only slightly increase the length of the machine to which it is applied—a very valuable consideration when it is necessary to economize floor-space, as frequently occurs.

Heretofore it has been necessary to run the breakers and the finisher-card at a comparatively low rate of speed, and the web could not be worked down in either or all of the machines to the degree of evenness needed to produce the best results, but would be more or less lumpy and rough after passing through the machine or machines, at least very much more uneven than when my feed is used, which successfully overcomes these disadvantages.

I attain these objects by the mechanism illustrated in the accompanying drawing, which shows a side view of the feed as applied to the main cylinder of a breaker or finisher-card.

It will be understood that the several rotary members, including the main cylinder, are suitably supported or journaled and driven by belts, gears, &c., in any convenient manner, such supporting and driving means differing more or less in different machines.

Like letters of reference designate like parts.

A portion of the main cylinder of a machine is represented at *a*, and its periphery is covered with wire teeth or card-clothing *b*, as are the peripheries of the other rotary members

described below. The arrangement of the teeth *b* varies, as will be seen by referring to the drawing. When the arrangement is such that the points of two adjacent teeth upon associated members have the same direction, the teeth are said to be point to point, and when the arrangement causes the points of such teeth to assume different directions the teeth are said to be point to back, the object of this being to so arrange the teeth as to handle the stock to the best advantage. The arrows associated with the cylinder *a* and other rotary members in the drawing indicate the directions in which said cylinder and members are adapted to revolve. With this cylinder a tumbler *c*, leader *d*, and feed-rolls *e* and *e'* are employed, as usual, only the members are so arranged as to leave an inch of space, perhaps, between the tumbler and cylinder, since the former does not now directly deliver the stock to the latter.

In addition to the old members just described a cylinder *f*, herein termed "small" or "auxiliary" cylinder to distinguish it from the main cylinder *a*, is provided, also a doffer *g*, which is also a feeder. The cylinder *f* operates in conjunction with the tumbler *c* and the doffer and feeder *g* in conjunction with both cylinders *f* and *a*. The teeth *b* on the tumbler *c* and the cylinder *f* are arranged point to back, and the same is true of the teeth on said cylinder and the doffer and feeder *g*.

It is generally preferred to employ two workers *h* and *h'* with the small cylinder, although one or both may sometimes be omitted without disadvantageously affecting the desired results to too great an extent, and, on the other hand, more than two may be introduced into the mechanism if it is found to be advantageous to do so; but I have found by experience that two workers arranged as shown—that is, in operative conjunction with the tumbler and doffer and feeder, as well as with the small cylinder—give entire satisfaction. The teeth *b* on the cylinder *f* and each of the workers *h* and *h'* are arranged point to point, while the teeth on the worker *h* and the tumbler *c* are point to back, as are those on the worker *h'* and the doffer and feeder *g*.

The dotted lines *i* and *j* indicate the positions of the first worker and its stripper, respectively, of the machine, which worker and stripper form no part of this invention and are referred to merely for the purpose of showing that the new mechanism can be applied without disturbing such members when they are located as usual. In short, the only alteration required to attach my mechanism to an old machine other than providing suitable bearings for the new parts is to move back the tumbler, leader, and feed-rolls about an inch or replace the old tumbler with one which is an inch or so smaller.

Some idea of the relative speeds of the dif-

ferent rotary members may be gathered from the following; but it is to be distinctly understood that such speeds must vary considerably in different machines and for different grades of stock.

Assuming that the main cylinder *a* makes one hundred and twenty revolutions per minute, the auxiliary cylinder *f* should make about two hundred and sixty, the tumbler *c* about one hundred and thirty, and the doffer and feeder *g* about four hundred and fifty. The worker *h* may make some twelve revolutions per minute and the worker *h'* perhaps not more than eight. The feed-rolls *e* and *e'* revolve very slowly, the speed varying according to the weight of stock per yard which is to be run between them. The leader *d* runs faster than the feed-rolls, but not so fast as the tumbler—about one hundred and fifty revolutions.

The numbers on the drawing designate the approximate surface speeds of the several members upon which such numbers appear, the calculations being based upon the figures given in the preceding paragraph and the sizes of the members, which latter can be readily ascertained when it is known that the drawing is about one-eighth full size. Although relatively correct, at least approximately, these speeds will of course greatly vary, and I do not desire or intend to be unduly restricted to or by them.

The general operation of my feed mechanism will be understood from the foregoing, especially if reference be had to the heavy broken line in the drawing, which marks the course of the web; but a brief detailed description will be here given, first without considering the workers *h* and *h'*, which, as has already been remarked, may be omitted under some conditions. The stock is drawn between the feed-rolls *e* and *e'* and delivered to the tumbler *c* by the leader *d* in the same manner as heretofore; but instead of delivering the web of stock, which is now lumpy, coarse, and uneven, directly to the main cylinder *a* the tumbler *c* delivers it to the small or auxiliary cylinder *f*, which has a much more rapid surface speed than said tumbler. The small cylinder *f* in turn delivers the web to the faster-running doffer and feeder *g*, and the rapidly-revolving main cylinder *a* receives said web from said doffer and feeder. From this point on the web takes the usual course and receives the usual treatment. By the time the web reaches the main cylinder the lumps have been pretty thoroughly worked out and it is finer and more even, thereby producing a better grade of yarn than formerly, owing to the treatment which my invention provides. Furthermore, the time required to produce this improved yarn is greatly reduced by the new feed.

The reduction of the stock to proper condition must be done before it is delivered to the

main cylinder, because after such delivery there is no opportunity or provision for thoroughly and speedily doing this work. Consequently it is generally found to be expedient to employ the two workers *h* and *h'*, which split the web twice between the tumbler *c* and the doffer and feeder *g*. The worker *h* takes the web, or a portion of it, from the auxiliary cylinder *f* and returns it to the tumbler *c*, which delivers it again to said cylinder, and the worker *h'* takes from the cylinder and delivers to the doffer and feeder *g*, which delivers the now united splits to the main cylinder *a*. The slow-running workers operating with the comparatively fast-running members *c*, *f*, and *g* augment the effectiveness of the latter and enhance the efficiency of the feed.

Although I have shown and described a preferred form and arrangement of my feed, it is obvious that more or less change therein may be made without departing from the nature of my invention, and I desire to include in and cover broadly by my claims any and all departures from such form or arrangement, variations in size or speed of members, and other changes which fairly fall within the scope of said invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in feed mechanism of the class specified, with the main cylinder and the leader, of a tumbler in operative relation with said leader and adjacent to but out of direct operative relation with said cylinder, and means grouped about the adjacent periphery of the cylinder, out of a horizontal or approximately horizontal line, adapted to indirectly deliver stock from said tumbler to the cylinder.

2. The combination, in feed mechanism of the class specified, with the main cylinder and a tumbler out of direct operative relation therewith, of a series of rotary members having a faster surface speed than said tumbler and a slower surface speed than said cylinder, such members being grouped about the adjacent periphery of the main cylinder, out of a horizontal or approximately horizontal line, and forming an indirect means of delivery between the tumbler and main cylinder.

3. The combination, in feed mechanism of the class specified, of a tumbler, an auxiliary cylinder, a doffer and feeder, and a main cylinder, each in the order named after the tumbler having a surface speed in excess of the preceding member, the tumbler and auxiliary cylinder being adjacent to but out of direct operative relation with the main cylinder, and the doffer and feeder being in direct operative relation with the latter.

4. The combination, in feed mechanism of the class specified, with the main cylinder and the leader, of a tumbler in operative relation with said leader and adjacent to but out of direct operative relation with said cylinder, an

auxiliary cylinder, also adjacent to but out of direct operative relation with the main cylinder, in operative relation with the tumbler, and a doffer and feeder in operative relation with both cylinders.

5. The combination, in feed mechanism of the class specified, of a tumbler, an auxiliary cylinder, a doffer and feeder, and a main cylinder, each in the order named after the tumbler having a surface speed in excess of the preceding member and the card-clothing teeth on associated members being arranged point to back.

6. The combination, in feed mechanism of the class specified, with the main cylinder and the leader, of a tumbler in operative relation with said leader and adjacent to but out of direct operative relation with said cylinder, an auxiliary cylinder in operative relation with the tumbler, a doffer and feeder in operative relation with both cylinders, and one or more workers in operative relation with said auxiliary cylinder.

7. The combination, in feed mechanism of the class specified, of a rapidly-revolving main cylinder, a doffer and feeder in operative relation with said cylinder, an auxiliary cylinder in operative relation with said doffer and feeder, a tumbler adjacent to but out of direct contact with the main cylinder and in operative relation with said auxiliary cylinder, and a worker in operative relation with the auxiliary cylinder, each of the members in the order named after the main cylinder having a surface speed which is less than the preceding member.

8. The combination, in feed mechanism of the class specified, with the main cylinder, of a tumbler out of direct operative relation with said cylinder, a coacting auxiliary cylinder, a doffer and feeder in operative relation with both cylinders, and a worker in operative relation with the auxiliary cylinder and the tumbler, the card-clothing teeth on the auxiliary cylinder and worker being arranged point to point and on the other associated members point to back.

9. The combination, in feed mechanism of the class specified, with the main cylinder, of a tumbler out of direct operative relation with said cylinder, a coacting auxiliary cylinder, a doffer and feeder in operative relation with both cylinders, and a worker in operative relation with the auxiliary cylinder and the doffer and feeder, the card-clothing teeth on the auxiliary cylinder and worker being arranged point to point and on the other associated members point to back.

10. The combination, in feed mechanism of the class specified, with the main cylinder, of a tumbler out of direct operative relation with said cylinder, a coacting auxiliary cylinder, a doffer and feeder in operative relation with both cylinders, a worker in operative relation

with the auxiliary cylinder and the tumbler, and a second worker in operative relation with the auxiliary cylinder and the doffer and feeder, the card-clothing teeth on the auxiliary cylinder and workers being arranged
5 point to point and on the other associated members point to back.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

COLONEL MOSES BARBER.

Witnesses:

F. A. CUTTER,

A. L. STEVENS.