

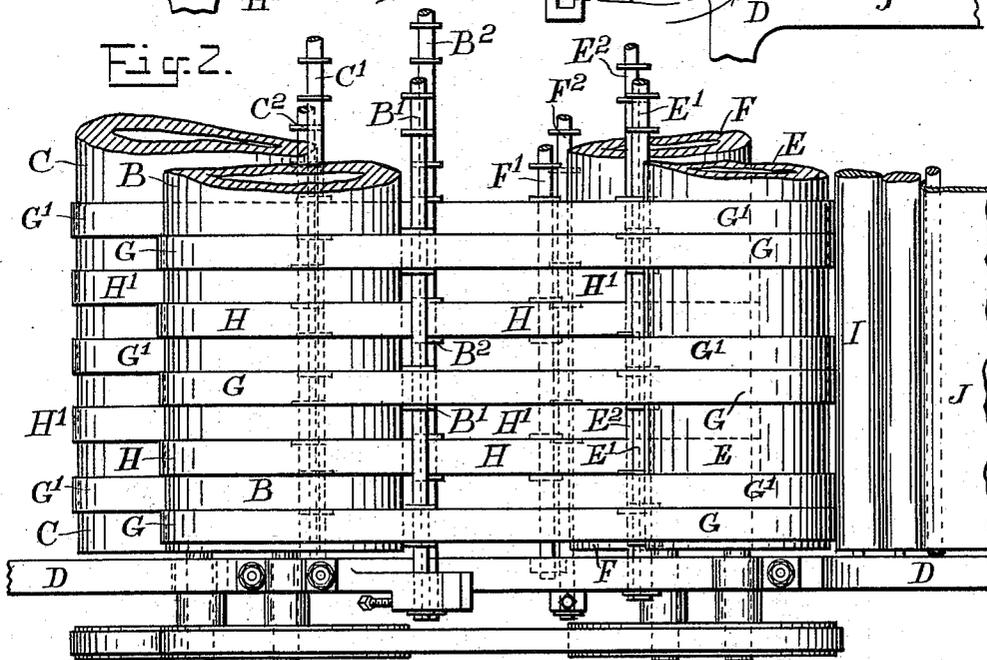
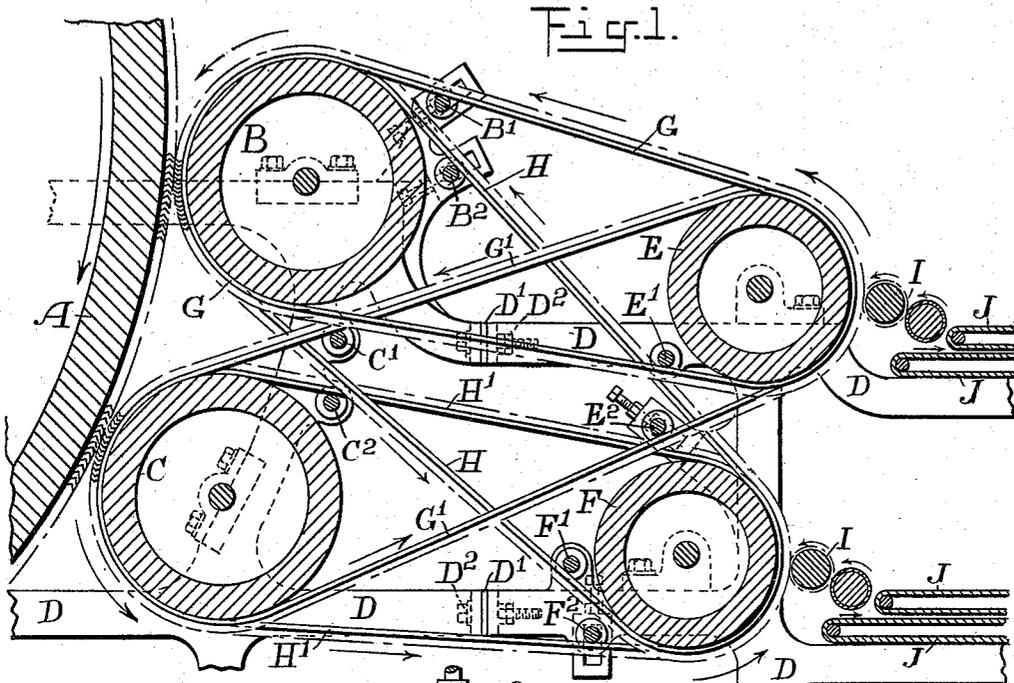
(No Model.)

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T. G. BEAUMONT.
RUBBER CONDENSER FOR CARDING ENGINES.

No. 568,014.

Patented Sept. 22, 1896.



WITNESSES:
J. Sprigg Pools
B. C. Fole

INVENTOR:
Thomas G. Beaumont
 by *Herbert W. Jenner*
 Attorney

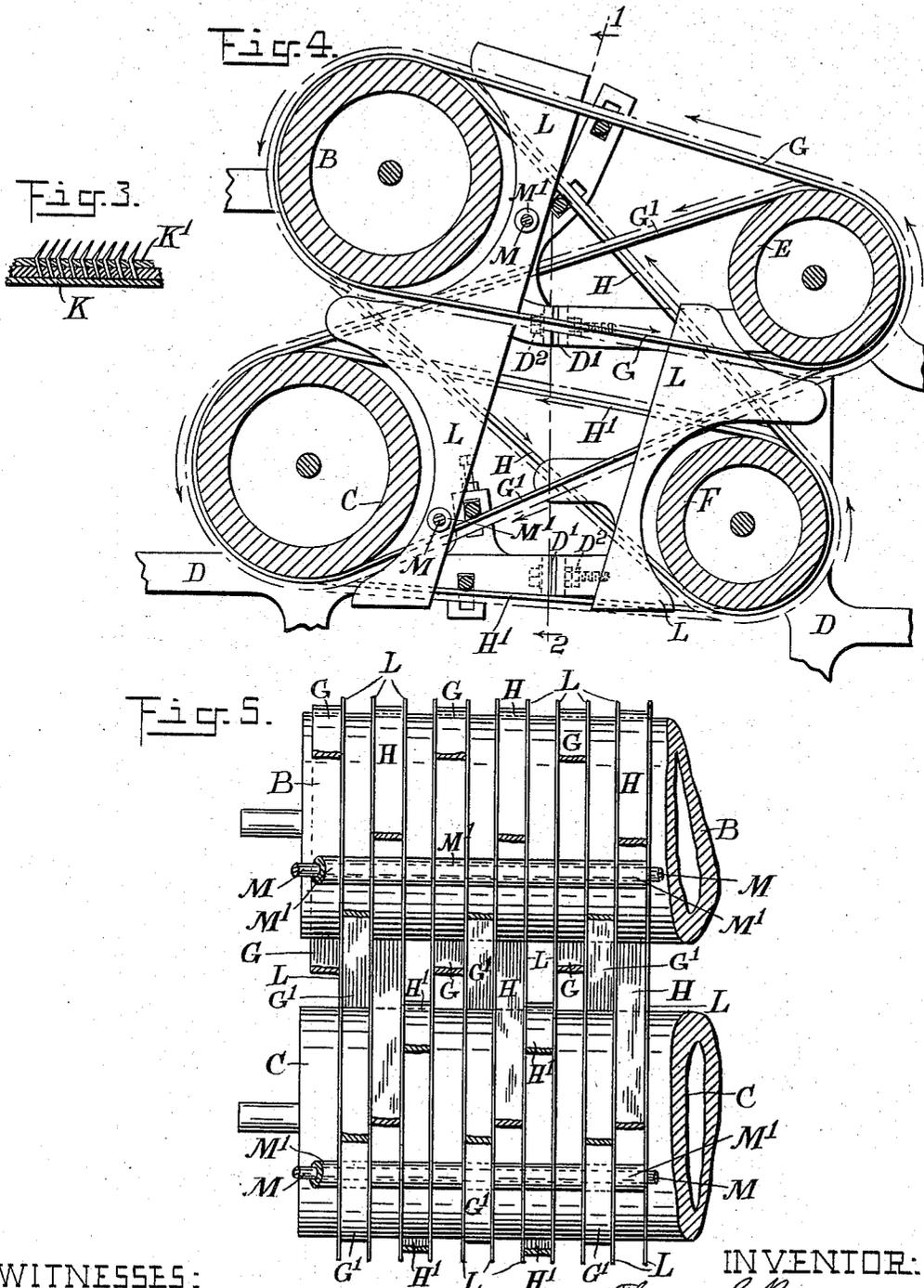
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UNITED STATES PATENT OFFICE.

THOMAS GREEN BEAUMONT, OF RASHICK, ENGLAND.

RUBBER CONDENSER FOR CARDING-ENGINES.

SPECIFICATION forming part of Letters Patent No. 568,014, dated September 22, 1896.

Application filed May 8, 1896. Serial No. 590,725. (No model.)

To all whom it may concern:

Be it known that I, THOMAS GREEN BEAUMONT, a citizen of Great Britain, residing at Rashick, in the county of York, England, have invented certain new and useful Improvements in Rubber Condensers for Carding-Engines; 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.

This invention has reference to double-doffer condensers which primarily consist of an upper and lower doffer, both of which are clothed with rings of cards with spaces between them, the two doffers being so fixed or arranged that the rings of one doffer are opposite the spaces between the rings of the other doffer, so as to insure that the fiber on the whole surface of the swift is stripped. The swift revolves downward toward the doffers and the doffers run downward toward the swift, but the rings on the top doffer are first fed with sliver off the swift, and the rings of the lower doffer act secondly, and thus remove the remaining sliver from the swift which the top doffer had left upon it, but it will be apparent that the top doffer having first contact with the swift takes the sliver which lies in its path, and not only does it do that, but if any long fibers lie across the space covered by the rings of the said top doffer it also takes them off the swift. Consequently the upper doffer robs the lower doffer of the long fiber and produces yarn longer in staple than that from the lower doffer, whereby the yarns are unequal. To avoid defects arising from this, some manufacturers keep the carding of the top doffer separate from that produced by the lower doffer, the two yarns being spun separately and woven by themselves, but if the yarns from the two doffers are mixed together "cockled" or imperfect pieces are woven.

My invention is intended to remedy the irregularity in yarn or carding from the condensers and to make yarns from both top and bottom doffers the same in mixing and in staple.

In carrying out my invention I use four doffers or two doffers and two carrying-roll-

ers. The first two doffers come into contact with the swift of the carder and are placed in about the same position as the doffers of an ordinary double-doffer condenser, and the other two doffers or carrying-rollers are placed at some distance from the two doffers. I employ endless bands of card fillets, which pass around the doffers and around the carrying-rollers, arranged in the following manner:

For the same number of threads as would be produced by a double-doffer condenser of forty-two threads (twenty-one top and twenty-one low doffer) I should use eighty-four endless card fillets, as each thread or carding is composed of the sliver from two of these card fillets. Each endless band of the top doffer passes alternately around the top and bottom rollers, and each endless band from the lower doffer passes alternately around the bottom and top carrying-rollers. Thus the first band from the top doffer and the first band from the lower doffer pass around the top carrying-roller and are close to each other on the carrying-roller. The fiber is stripped from the two endless bands by stripper-rollers, such said fiber subsequently passing between the rubbing-leathers and being formed into one thread or carding.

The second endless band from the top doffer and second endless band from the lower doffer pass around the bottom carrying-roller, and so on, every alternate endless band of top doffer passing around the top and bottom carrying-rollers and every alternate band of the lower doffer passing around the bottom and top carrying-rollers. Consequently eighty-four endless bands will produce twenty-one threads on the top carrying-roller and twenty-one threads on the bottom carrying-roller, and these will be stripped off and rubbed into cardings exactly as is done now by the ordinary double-doffer condensers, but according to my method there is more perfect mixing of the fiber and more even yarn produced, as each thread or carding is composed of sliver taken from two different parts of the swift, and therefore more equally divided. In order to prevent the fillets having lateral movement or in order to keep them in one uniform position on the doffers, I employ shafts with flanges or guiding-strips suitably

placed so that each fillet passes between the flanges or strips or between grooved rollers, and is thereby kept in position laterally.

With regard to single-doffer condensers it is admitted that fairly even yarn can be produced, but there are disadvantages in the use of single-doffer condensers because they cannot be used for long fiber in consequence of the rings on the doffer being too close together.

For the purpose of fully describing my said invention, reference is hereinafter had to the annexed drawings, in which—

Figure 1 is a sectional side elevation of a portion of a double-doffer condenser constructed and arranged according to my invention, and Fig. 2 is a plan of one side of same. Fig. 3 is a detail of card filleting which I prefer to employ. Fig. 4 is a similar elevation to Fig. 1, showing a modification of the means for guiding and preventing lateral movement of the endless traveling card fillets. Fig. 5 is a transverse section taken on line 1 2 of Fig. 4.

Referring to the drawings, A represents the ordinary swift or cylinder of a carding-engine, and B and C are two doffers or doffing-rollers journaled in suitable bearings in or on the framework D. The said doffers or doffing-rollers B and C are not, however, according to my invention, covered with rings of card-clothing, as ordinarily, but have endless bands of card filleting passed around them, these said bands being distended and passed around auxiliary doffing or carrying rollers E and F, situated at some distance from the two first-named rollers. The endless card fillets and the spaces between each card fillet are respectively only about half the width of the rings on the ordinary ring-doffers and the spaces between said rings, so that the number of card fillets is double the number of rings on ordinary doffers, that is to say, for the same number of threads or ends of cardings as would be produced by a double-doffer condenser of forty-two threads (twenty-one top and twenty-one low doffer) I use eighty-four endless card fillets, forty-two of which pass around the top doffer or doffing-roller B and forty-two around the low doffing-roller C, those passing around one roller or doffer being opposite the blank spaces between those passing around the other roller or doffer, each endless card fillet from the two said rollers or doffers being brought together in alternate pairs of top and bottom fillets upon the two rollers E F, so that the sliver from each pair of card fillets forms one thread or roving and therefore gives the same number of ends as formerly—viz., forty-two. The arrangement of the endless card fillets around the several rollers to obtain the above results and to produce cardings or threads composed of fiber taken from two separate portions of the swift is as follows:

The endless bands or card fillets G on the top doffer B pass alternately around the top and bottom rollers E F, and the endless bands

or card fillets G' on the low doffer C also pass alternately around the top and bottom rollers E F. Thus the first and every alternate endless band or card fillet G on the top doffer B and the first and every alternate endless band or card fillet G' on the low doffer C pass close together or contiguously around the top carrying-roller E, and the second and every alternate endless band or card fillet H on top doffer B and the second and every alternate endless card fillet H' on the low doffer C pass close together or contiguously around the bottom carrying-roller F. Consequently the forty-two separate card-surfaces on each doffer B C give twenty-one separate card-surfaces on each of the carrying-rollers E F, from which can be produced in all forty-two ends or rovings.

The two doffers B and C are driven in an opposite direction to the swift A by gearing in the ordinary manner, and thus carry the endless card fillets G G' H H' in the directions indicated by arrows, these card fillets removing the fiber from two points of contact or separate parts of the swift A and carrying the said fiber forward in narrow films to the top and bottom carrying-rollers E F, where a sliver or film of fiber taken from one part of the swift is brought into contact or contiguous with a sliver or film of fiber taken from another part of the swift on each pair of endless card fillets, from which they are then both stripped by strippers I I and passed, as ordinarily, between the rubbing-leathers J J, which reduce the eighty-four films or slivers into forty-two threads or cardings, each composed of two slivers or films of fiber taken from different parts of the swift's surface. In producing threads or cardings from slivers of fiber taken from two different parts of the swift or cylinder, as above set forth, I obtain a more perfect mixing or equal blending of the fiber than can possibly be obtained by the ordinary double or single doffer condensers, and consequently the yarn produced therefrom is more even and regular and avoids the imperfections or cockled effects in the pieces woven from unequal yarns.

The carrying-rollers E F may be driven solely by the endless card fillets; but it may be advisable to drive them by gearing or by endless belt or belts in order to reduce undue strain or tension off the said card fillets.

In order to guide each endless card fillet onto the doffers B C and rollers E F and keep them in one uniform position laterally, I employ to each roller two shafts or rods B' B², C' C², E' E², and F' F², which are placed in suitable positions near the rollers and under or over which the card fillets pass. The said shafts are provided with flanges, guiding-strips, or bobbins, as shown, which are placed at equidistances apart to engage their respective endless card fillets between the flanges and prevent lateral movement thereof. For the purpose of tightening the endless card fillets when required, the carrying-

rollers E F may be moved outward, and this may be done by dividing the framework D at D' and adjusting the screws D², or the shafts B', B², E², and F², which are supported in 5 slotted bearings, may adjusted to the extent desired by screws or like means.

If bobbins are employed, they may be keyed onto the shafts, or they may be secured in their respective positions thereon by collars, 10 so that they may be free to rotate with the traverse of the card fillets, and thereby reduce friction on said card fillets. In the case of removable bobbins the tension of any individual card fillet could be easily adjusted 15 by introducing a bobbin of larger diameter. To afford a smooth traverse of the endless card fillets, I prefer to cover the backs thereof with a thin covering or layer of leather or suitable material, (shown at K in Fig. 3,) which 20 is secured by short studs, staples, or pins driven through the said backing into the card fillets or by other suitable means, and to support the teeth of the card I employ a layer of felt or cloth, as shown at K' in Fig. 3. In 25 lieu of shafts with guiding flanges or bobbins thereon I may employ division strips or plates L, placed between each endless card fillet, somewhat as shown in Figs. 4 and 5. These guide or division strips may be secured in position to framework near the top and bottom 30 thereof or by suitable grates or grids, or they may be secured together by rods M and held the proper distance apart by loose sleeves or collars M', passed over the rods and placed 35 between each division-strip, as shown in Figs. 4 and 5, or grooved rollers may be employed for the endless strips of fillets to pass in. It will, however, be understood that other means or methods can be adopted for guiding the 40 endless card fillets onto the rollers and preventing lateral movement of same. The width of the card fillets is a shade less than the spaces between them on the doffers B C, in order that they may not bind against each 45 other in passing.

With regard to single-doffer condensers it is admitted that fairly even yarn can be produced, but there are disadvantages in the use of single-doffer condensers, because they cannot be used for long fiber by reason of the 50 rings on the doffer being too close together.

I claim as my invention—

1. The combination, with the main cylinder of a carding-engine, of doffing-rollers B and C, a carrying-roller such as E, and endless card fillets some passing over the rollers B and E, and others over rollers C and E, and arranged adjacent to each other on the roller E, substantially as set forth. 55

2. The combination, with the main cylinder of a carding-engine, of doffing-rollers B and C, carrying-rollers E and F, endless card fillets passing over the rollers B and E, like fillets passing over the rollers C and E, said fillets on the roller E being adjacent to each 60 other, endless card fillets passing over the rollers B and F, and like fillets passing over the rollers C and F, said fillets on the roller F being adjacent to each other, and the said fillets passing over the roller E being arranged 70 between those passing over the roller F, substantially as set forth.

3. The combination, with the main cylinder of a carding-engine, of doffing-rollers B and C, a carrying-roller such as E, endless card fillets some passing over the rollers B and E, and others over rollers C and E, and arranged adjacent to each other on the roller E, and guides preventing the lateral displacement of the said card fillets, substantially as 80 set forth.

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

THOMAS GREEN BEAUMONT.

Witnesses:

ARTHUR B. CROSSLEY,
FRANK LEWIN.