(No Model.) 2 Sheets—Sheet 1.

S. D. KEENE.

ART OF PUTTING UP COTTON FOR MANUFACTURERS' USE.

No. 307,200. Patented Oct. 28, 1884.

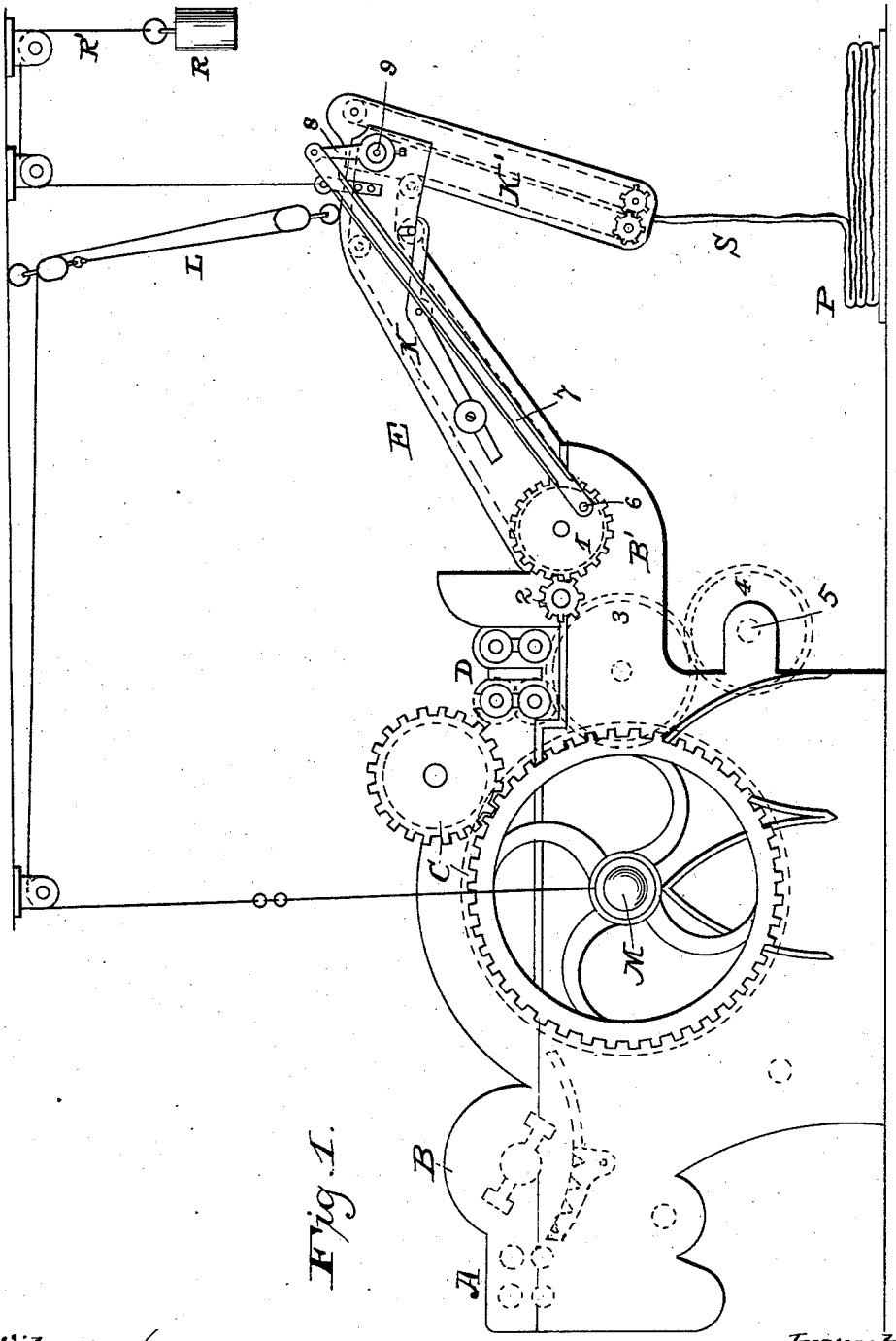

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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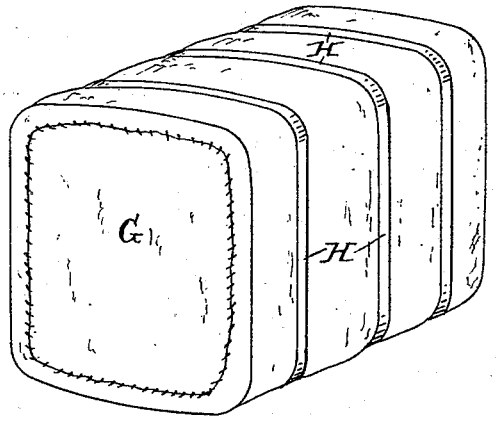

Fig. 2.

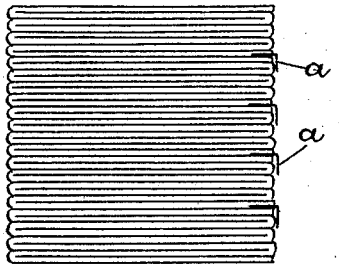

Fig. 3.

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UNITED STATES PATENT OFFICE.

SAMUEL D. KEENE, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO LEVI WILSON, OF SAME PLACE.

ART OF PUTTING UP COTTON FOR MANUFACTURERS' USE.

SPECIFICATION forming part of Letters Patent No. 307,200, dated October 28, 1884.

Application filed May 20, 1884. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL D. KEENE, of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in the Art of Putting Up Cotton for Manufacturers' Use; and I do hereby declare that the following is a full and exact description of the same.

This invention relates to the art of treating and putting up cotton for manufacturers' use, whereby to adapt it for direct treatment by the carding-machine as it comes from the bales in which it has been shipped; and to this end the said invention consists in a new and improved method or process of treating such material, as will hereinafter more fully appear. The present mode of treating cotton for manufacturers' use is substantially as follows: The cotton fiber is first picked, then ginned or freed from seed, pressed, and baled, and in this condition transported to the manufacturer, where the bale is opened and the cotton thrown up, assorted and mixed, and then, by suitable machinery, cleaned and flattened into sheets, which are wound upon rollers, and in this shape presented to the feed-rolls of the carding machine, the object of the several preparatory steps to which the cotton is subjected, as above set forth, being to clean it from all such extraneous substances as is possible, and to arrange or form the cotton into continuous sheets, or "laps," as they are called, to enable it to be fed to the carding-machine in proper form and condition. It will thus be seen that by this mode of procedure the cotton is subjected to little treatment before pressing and baling, and is consequently not in condition for use upon the carding-machine until it is removed from the bale, and has been subjected to various processes, as before explained. Bales have also been formed by folding the lap as it comes from the gin or picker back and forth upon itself, and at the same time with this folding applying a continuous pressure thereto in order to produce a bale of the proper thickness. In this case the pressure is applied from the first inception of the bale to its completion and upon each fold thereof, and to accomplish this the bed upon which the bale is built is made to move back and forth beneath a stationary platen against which the cotton is at all times pressing. Various objections have resulted from these several treatments of cotton, first, because of the separate processes necessary to the proper preparation of the same being performed in different localities, necessitating several transportations of the product, which increased the original cost of the article and resulted in injury to the same and loss because of frequent handling; second, the strain consequent upon winding the sheet of cotton upon the rollers, as now practiced at the manufactory, tended to stretch or draw it apart, thus weakening the sheet and making it of uneven thickness, causing trouble and breakage in the carding-machine; and, third, when baling under pressure, as before stated, has been attempted, the surface of the layers or folds, owing to their being forcibly carried back and forth beneath a platen in close frictional contact therewith, are more or less torn and disintegrated, causing the fibers of the layers to commingle to such an extent as that the individuality of the lap is more or less destroyed, so that it has been found impracticable in practice to remove said layers from the bale in a continuous sheet or lap of the character delivered thereto.

The object of this invention is to overcome these objections, and to so prepare the cotton, either at the place where grown or elsewhere, that it will, without any further treatment or manipulation, be ready for the action of the carding-machine direct from the bale in which it has been shipped.

In carrying out my proposed mode of treating cotton for manufacturers' use I proceed as follows: The cotton fiber, after having been picked and ginned in the usual way to remove the seed, is first cleaned of all such foreign matter as is possible to be removed therefrom. Then it is formed into a lap or continuous sheet of uniform width and thickness, then lightly folded back and forth in uniform folds or layers, one upon the other, until the lap is folded to the proper height to form a bale of the desired thickness. Then this pile is compressed into a small compass and inclosed within the ordinary cotton or similar covering, which is

sewed in place to protect the cotton from dirt and injury, and then securely retained in its compressed condition by the usual bands or ties passed around the outside of the whole. This, briefly, constitutes the several steps of the proposed mode of treating cotton, and the result is that the bales have a greater proportion of fiber, owing to the removal of extraneous substances therefrom, and the cotton is in the desired form and condition for use by the carding-machine direct from the bale without further treatment.

To carry my invention into effect I make use of an ordinary cotton-opener, having applied thereto the necessary means for folding the lap into a pile of such size as, when pressed, to form a bale of the desired thickness, and for the better understanding of my invention I have annexed two sheets of drawings, in which—

Figure 1 illustrates a cotton-opener with a lap-folding attachment connected therewith. Fig. 2 is a perspective view of a compressed bale, showing the cloth covering secured in position thereon, and the whole retained by a series of bands, as is usual, ready for shipment; and Fig. 3 is an end elevation of the same with the cover and securing-bands removed the better to show the separate folds or layers of which the bale is composed.

Referring to Fig. 1, in which is shown the cotton-opener employed by me in carrying out my invention, having a lap-folding attachment applied thereto, A is the feed-rolls of said opener, where the material to be treated enters the machine; B, the beaters, which act to clean it of all extraneous substances; C, the condensing-cylinders, which form the lap or sheet S into uniform width and thickness, and D the delivery-rolls, which deliver said sheet from the machine.

E is the lap-folding attachment, which receives the lap from the delivery-rolls D, and by means of which said lap is folded back and forth in uniform folds or layers to form the pile P. This lap-folding attachment E, applied to the end of the opener-frame B′, has a vertical swinging movement thereon, and consists of an inclined shell or case, K, to the upper end of which is pivoted a pendent shell or case, K′, similar to the one K, and having its chamber directly communicating with the chamber of the case K. This pendent case K′ is caused to oscillate or vibrate back and forth by the following mechanism: A gear-wheel, 1, journaled in bearings in the front of the frame B′, and caused to rotate through the intervention of intermeshing gears 2, 3, and 4 from the cross-shaft 5, carries a wrist-pin, 6, to which is pivoted a pitman, 7, which in turn is pivoted to a crank-arm, 8, secured upon a shaft, 9, journaled in bearings in the top end of the case K, and upon which the extension K′ is rigidly secured, whereby as the wheel 1 rotates, the pitman 7 is caused to move back and forth, and with it the crank-arm 8, the shaft of which, being fixed within the top end of the pendent case K′, causes said case to vibrate back and forth within a given space. Within these cases K and K′ is arranged a series of rollers carrying and driving two endless belts, by which means the lap is conducted through and delivered in proper manner from said machine.

To insure that the delivery-mouth of the lap-folding attachment shall always remain at the same distance from the pile as it is formed, in order that the integrity of the lap may not be endangered by its own weight, a counterpoise-weight, R, attached at one end to a rope, R′, which rope is at its other end fastened to the top end of the case K, and a cord, L, also connected with the end of said case and acting in connection with automatically-operating devices applied to the end of the condenser-shaft M, is provided and so arranged that the delivery end of the case K′ will gradually recede from the pile of folded lap that is being delivered from said case, and when it has reached its extreme height it will automatically descend to its first position, to begin anew the building of the fresh pile.

It will be seen that by the use of this machine the material, after having been ginned and otherwise treated, if required, may be formed into a lap or sheet and folded into a pile of the desired size, the several layers laying loosely upon one another, and when of the required height it is severed and removed to a press of any ordinary and well-known construction, where it is compressed to the proper thickness, then covered and secured by the usual retaining-bands, and the bale, when thus formed, admits of the lap composing the same being removed therefrom in a continuous sheet of uniform thickness, which shall be of the same character as when folded therein. I have found that when these layers or folds of the lap have been made as herein described there is no tendency of the cotton fibers of the different layers to mat together, no matter how hard the lap may be pressed in forming the bale, and that the feed-rolls or ordinary carding-machines will draw off these layers, fold after fold, regularly and effectively and without disturbance of any other layer or fold, the various layers or folds showing no tendency whatever to mat or cling to one another.

If desired, and for convenience of further manipulation of the bale when being treated upon the carding-machine, it is proposed to insert slips of paper, as at *a*, between the folds of the lap, to indicate predetermined lengths of the same.

While I have shown in the drawings and described in the foregoing an apparatus suitable for forming the cotton into a lap and properly folding it into a pile suitable for compressing into a bale, it is to be understood that I do not limit myself to the use of such particular apparatus in the carrying out of my invention,

and, further, that I lay no claim thereto herein, as the same forms the subject of a separate application filed by me even date herewith.

Having thus fully described my invention and the manner in which it is or may be carried into effect, it is to be understood that I do not limit myself to its use upon cotton alone, as the same may be applied equally as well in the treatment of cotton waste.

I claim as my invention—

The method herein described for treating cotton or cotton waste, which consists, essentially, of the following steps, viz: first, cleaning the cotton of all extraneous matter possible; second, forming the same into a continuous sheet of uniform width and thickness; third, folding such sheet back and forth loosely and lightly in regular and even folds upon itself until the proper height is attained necessary to form a bale of the desired thickness; and, fourth, compressing this pile of loosely-arranged layers or laps into the desired thickness, then covering and securing the same, as and for the purposes set forth and shown.

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

SAMUEL D. KEENE.

Witnesses:

H. B. ZEVELY,

GEO. H. COOPER.