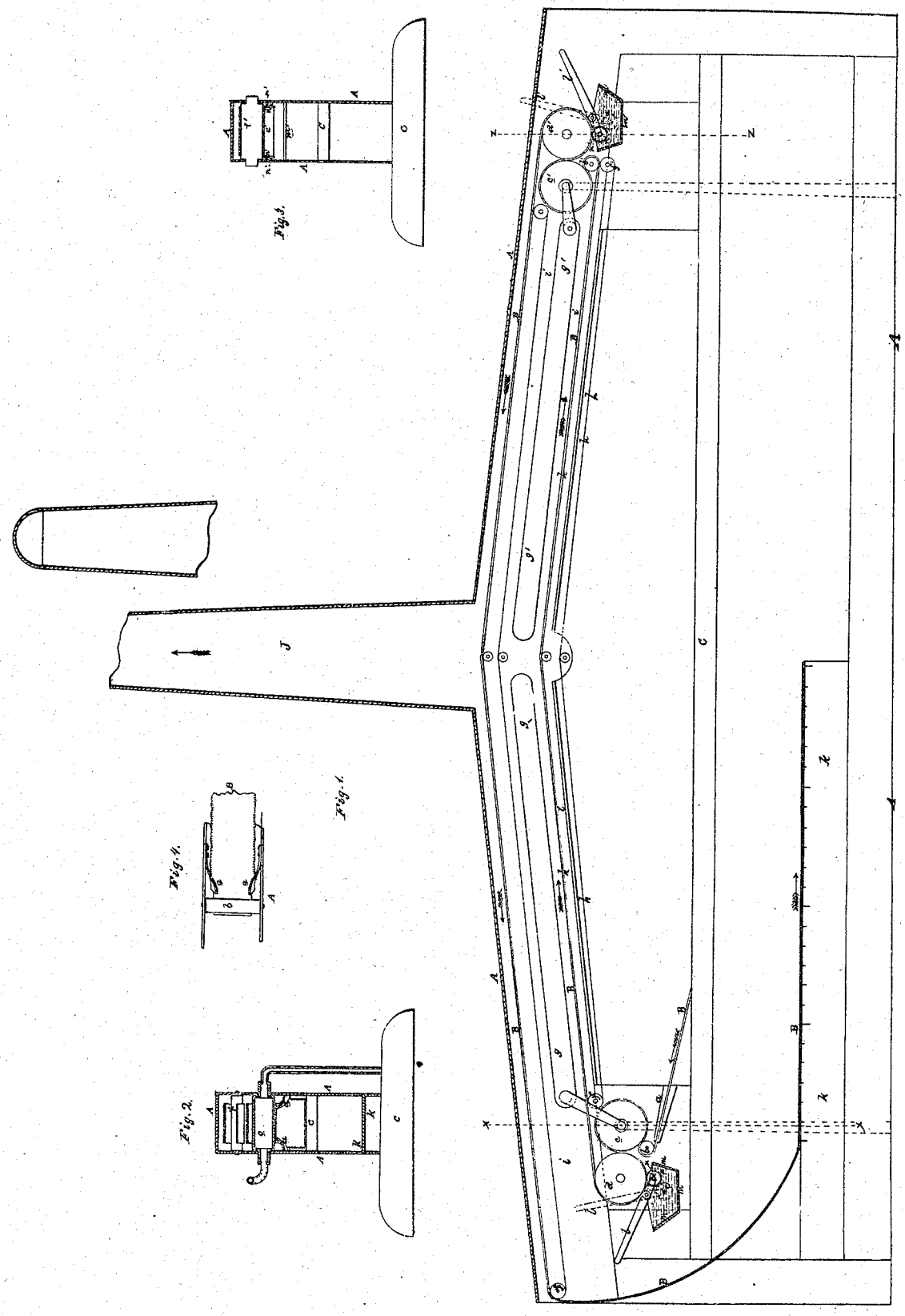
No. 7,533. PATENTED JULY 30, 1850.

E. P. RIDER.

APPARATUS FOR SIZING AND DRYING COTTON BATTING.



UNITED STATES PATENT OFFICE.

ELIAS P. RIDER, OF NEW YORK, N. Y.

APPARATUS FOR SIZING AND DRYING COTTON-BATTING.

Specification of Letters Patent No. 7,533, dated July 30, 1850.

To all whom it may concern:

Be it known that I, ELIAS P. RIDER, of the city, county, and State of New York, have invented a new and useful combination of machinery for selvaging, heating, ironing, glazing, drying, delivering, measuring, and cutting into lengths cotton wadding by a continuous process by steam or other power, called "Rider's Steam Wadding-Machine," which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1, is a vertical longitudinal section of the machinery. Fig. 2, is a vertical transverse section on the line *x*, *x*, of Fig. 1, showing the inclined plates for making the selvage and the hollow cylinder heated by steam pipes, &c. Fig. 3, is a vertical transverse section on the line *z*, *z*, showing the floating cylinder. Fig. 4, is a horizontal sectional view showing the curved or twisted guide plates for turning the ragged edges of the bat and the receiving cylinder against which they are ironed by the cylinder *c* shown in Fig. 1.

Similar letters in the several figures refer to like parts.

The lines A, indicate the stationary parts of the structure containing the machinery to effect the objects above stated, and which may be made in any convenient way.

The line B represents the continuous sheet of wadding undergoing the several operations of having the selvages formed, heating, ironing, and glazing on both sides and drying with steam.

The arrows show the direction the wadding takes during the performance of the operations.

The floors of the machine are shown at C, C.

a, *a*, are two curved plates for turning the edges of the bat of cotton to form the continuous sheet of wadding previous to its passing to the receiving cylinder; *b*, the receiving cylinder; *c*, the heated cylinder for heating and ironing the bat of cotton; *d*, the compressing cylinder working against the steam cylinder for ironing the cotton bat previous to glazing the same.

The object of heating and ironing the bat is to cause the sizing to adhere to an increased number of fibers. The bat of cotton has heretofore been glazed in a loose and cold state.

e is hollow floating cylinder revolving in the glazing material and raised toward the compressing cylinder *d* for imparting the glaze to the heated and ironed bat of cotton. This floating cylinder has circular lips or check rings *n*, *n*, formed around its periphery next its ends designed to turn against the periphery of the compressing cylinder for the purpose of preventing the surfaces of the floating and compressing cylinders coming together. The gudgeons of this floating cylinder turn in the ends of vibrating levers *l* whose fulcra are inserted into the ends of the sizing trough *m*; or in any convenient place. In Fig. 1 this roller is represented as imparting sizing to the cotton batting. The dotted lines in the same figure represent the lever turned to nearly an upright position and the floating cylinder immersed in the sizing for the purpose of preventing the glazing material drying or sticking to the cotton in case of stopping the machine.

The check rings may be held in contact with the compressing cylinder with any required degree of pressure by the application of screws, weights, or springs to the lever, or to the axle of the floating roller, or by other means equally effective.

The sizing or floating cylinder may be made to revolve with its surface at the required distance from the surface of the compressing cylinder for the purpose of delivering the sizing in a light, transparent, and even manner without crushing or pressing the particles of sizing into the cotton and thereby destroying its fine gloss.

h, is an endless apron passing around rollers (*f*) arranged in a heated chamber (*i*) inclining upward from the glazing apparatus toward the chimney (*j*) which is arranged in an upright position at the ends or center of the structure; said chamber being heated by steam passing through a pipe or pipes *g* placed in said chamber—the steam being received from the end of the heating cylinder *c*.

The sides, top and bottom, of the heated chamber *i* are composed of wood, or other suitable nonconducting material for confining the heat required to dry the sizing.

The chimney *j* is for the purpose of draw-

ing off the evaporation caused by the glazing process and to produce a strong current of dry air through the oven and should be composed of brick or wood, or other suitable material, and carried to the required height or distance to produce the necessary draft through the heating or drying chamber.

The two curved plates *a a* for turning down and under, the ragged edges of the bat of cotton to form the selvages and produce a uniform width of bat previously to passing between the receiving cylinder *b* and the heated or ironing cylinder *c*, are twisted somewhat after the form of a section of a screw and are placed directly in front of the receiving cylinder *b* and beneath the ironing cylinder C.

As the sheet of batting comes from the carding engine, its ragged edges strike against the aforesaid curved plates and are turned and folded against the even part of the bat, in which state the bat passes over the receiving cylinder and under the ironing cylinder when the edges are ironed down smooth and even as well as the whole surface of the bat, causing it to be of uniform width and unbroken edges.

At the opposite end of the frame or structure there is a similar arrangement of heating and ironing cylinder, compressing and floating cylinders, sizing trough, steam pipes and heating chamber, and other appendages for heating, ironing, and glazing the continuous bat of cotton on its opposite side. There are, however, no curved plates for turning the edges, as these are not required at this end of the machine.

Operation: The continuous sheet of batting passes from the carding engine (of the usual construction and arrangement) between the twisted or curved plates *a* where its ragged and thin edges are turned and selvages formed; and passes thence around the cylinders *b*, *c*, where it is heated and ironed; and thence around the cylinder *d* where it is sized by the floating cylinder *c*, which turns at a distance from *d*, nearly equal to the thickness of the bat; and thence through the lower portion of the heating chamber *i* to the heating, ironing and glazing cylinders at the opposite end of the structure where it is glazed in a similar manner, without pressure, on its opposite side, and, returning thence through the upper part of the drying chamber back and beyond the first named glazing apparatus descends and passes under the same to a graduated measuring table *k* upon which it is measured and cut into any required number of lengths by a rotary, vibrating, or other knife, operated by any suitable mechanism, as fast as delivered from the glazing machine; from which table the pieces are removed to the proper receivers as fast as the pieces are cut from the continuous strip of wadding, thus avoiding the necessity of winding it into a roll and then unwinding it in order to measure and cut it into lengths.

The object of using the trough and glazing cylinder in the position set forth below the compressing cylinder is to apply the glazing material above the center of the floating or glazing cylinder *c*, thus preventing the action of the air upon a large proportion of the surface of the cylinder *e* and preventing the glaze sticking to the cylinder *d*. This arrangement also facilitates the loading of the cylinder *e* with glazing material and the imparting to the bat of cotton a heavy coat of glazing during the operation, of a light transparent character—the glazing matter being raised fresh from the vat as the floating cylinder revolves with at least two thirds of its circumference constantly immersed during the operation of coating and only one third exposed to the air the whole circumference being immersed during a cessation of the operation of glazing which thus prevents the glaze from drying upon the floating cylinder.

I am aware that various combinations of mechanism for glazing cotton wadding have been patented and that one or two of the combinations has proved in part successful, I therefore do not mean to claim any part of said combinations.

What I claim as my invention and improvement on all other modes of glazing cotton wadding and desire to secure by Letters Patent is—

1. Doubling or turning the ragged and uneven edges of the bat of cotton as it comes from the carding engine and pressing them down to form a smooth selvage as set forth by means of the curved plates *a* in combination with the cylinders *b c*, as described; or other equivalent means.

2. I claim heating and ironing the surface of the bat of cotton previous to being glazed for the purpose herein set forth, whether performed by the means herein described, or other equivalent means.

3. I likewise claim making the floating cylinder with check rings, or their equivalents, in the manner and for the purpose described.

4. I claim passing the bat through a space between the floating cylinder and compressive cylinder and imparting the sizing to the bat of cotton without pressure as described.

5. I claim making the drying chamber a double inclined plane in combination with the chimney constructed as aforesaid for the purpose of increasing the circulation.

6. I also claim the peculiar combination of the heating, selvaging, ironing, and glazing and drying apparatus; by which the bat of cotton, as it comes from the carding engine, is selvaged, ironed, glazed and steam

dried by a continuous process, as herein fully set forth, the sizing vat being placed directly beneath the compressive cylinder so that the sizing can be introduced fresh from the vat to the bat as it comes from the ironing cylinder, as described.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

E. P. RIDER.

Witnesses:
WM. P. ELLIOTT,
LUND WASHINGTON.