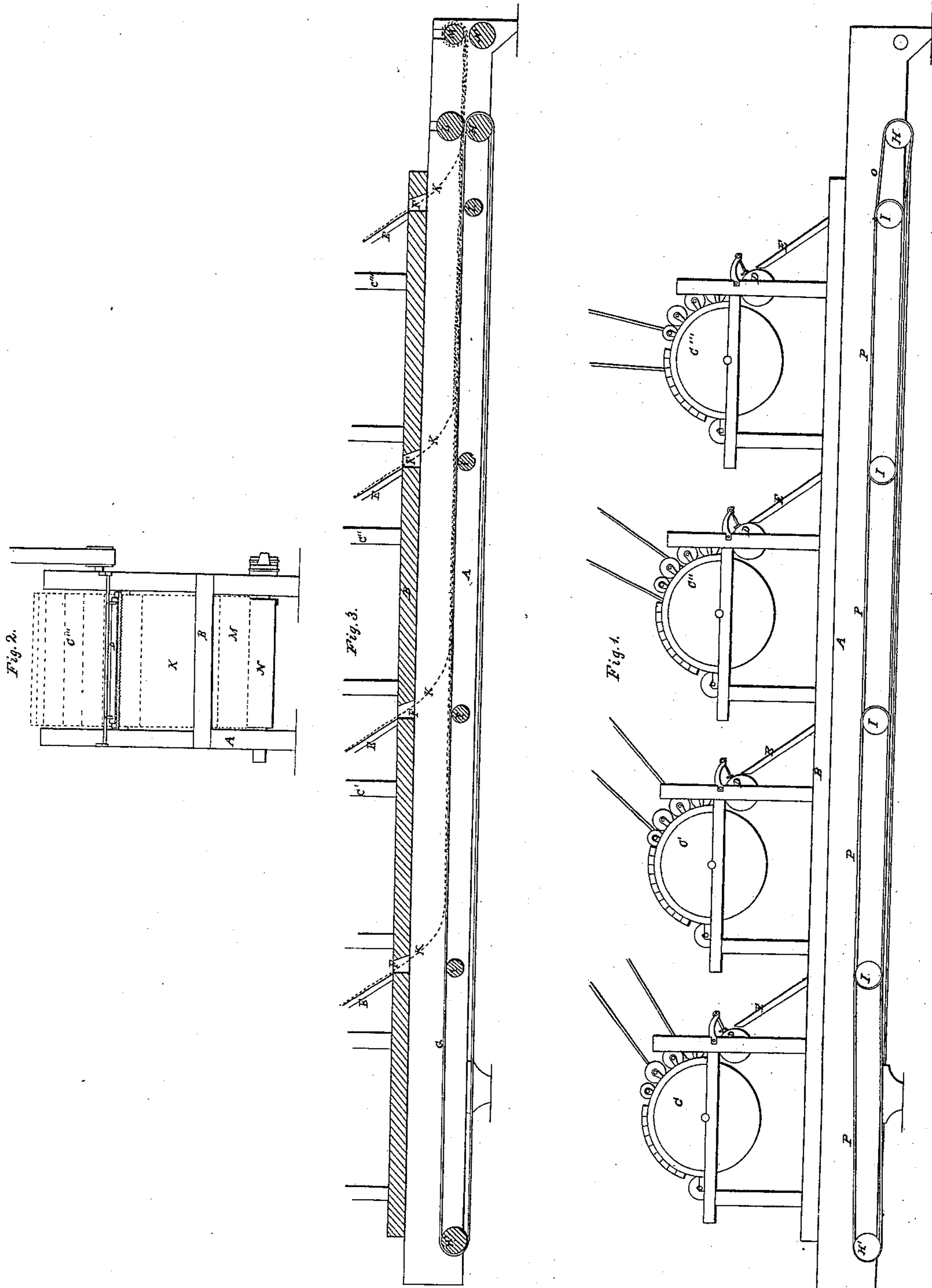


J. Essex.
Cotton Batting Mach.

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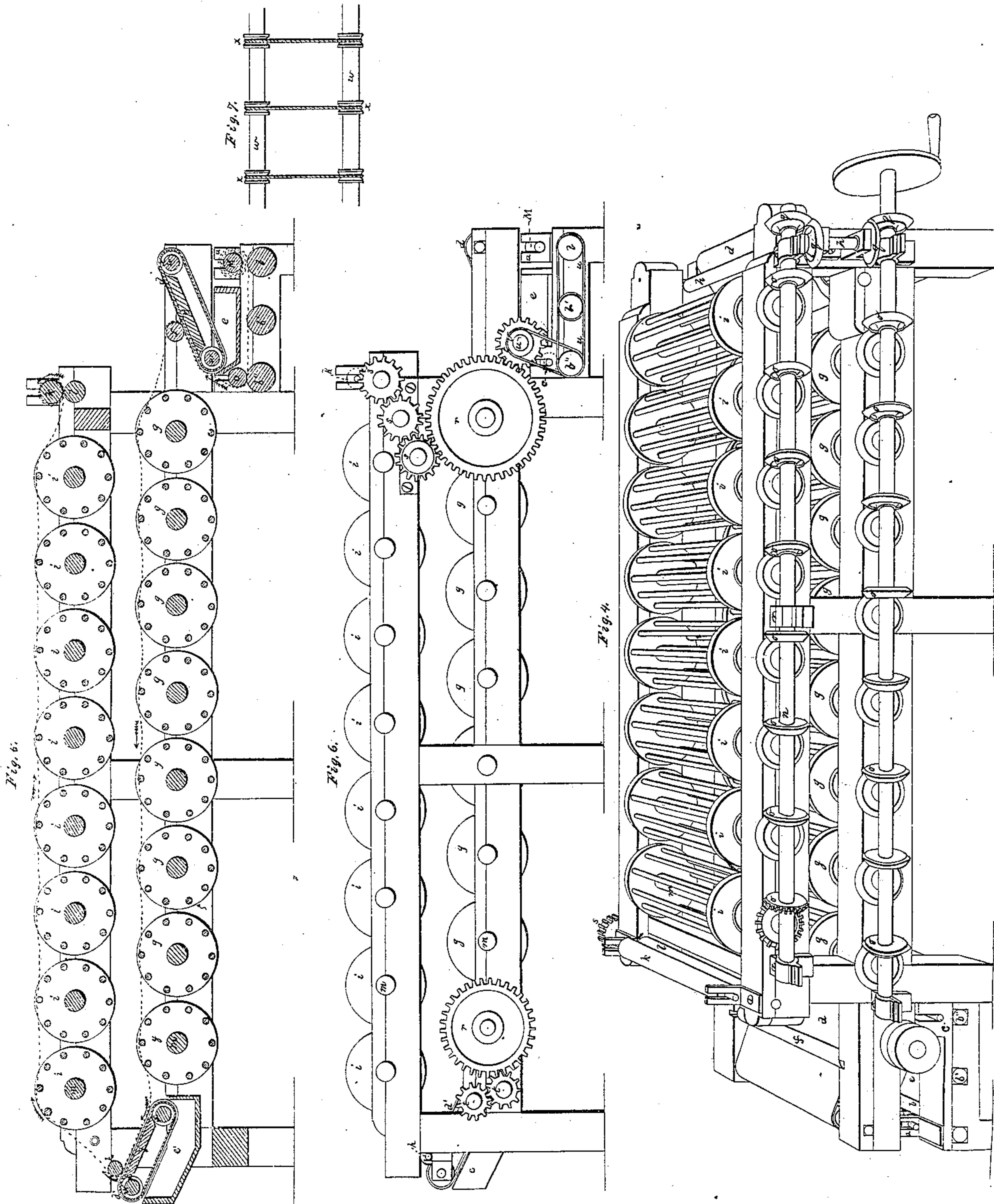
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UNITED STATES PATENT OFFICE.

JEREMIAH ESSEX, OF BENNINGTON, VERMONT.

MANUFACTURE OF COTTON-BATTING.

Specification of Letters Patent No. 4,372, dated February 10, 1846.

To all whom it may concern:

Be it known that I, JEREMIAH ESSEX, of Bennington, in the county of Bennington and State of Vermont, have invented new and useful Improvements in the Method of Making Glazed Cotton Wadding, sometimes called "Pelisse Wadding," some of which improvements are applicable to other purposes, and that the following is a full, clear, and exact description of the principle or character thereof, which distinguishes my invention from all other things before known and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a longitudinal elevation of the machine for making the bat or sheet of wadding; Fig. 2, a front elevation of the same; Fig. 3, a longitudinal section of a part thereof (to exhibit the manner in which the different slivers or sheets are laid one upon another to make the required thickness); Fig. 4, is a perspective representation of the machine for glazing the bat or wadding; Fig. 5, a longitudinal vertical section, and Fig. 6, an elevation of the side of the machine opposite to that from which the perspective view is taken, to represent the manner of communicating motion to the rollers and glazing belts.

The same letters indicate like parts in all the figures.

The methods heretofore practised of making the bat of the desired thickness for wadding are to deliver the broad sliver or sheet of cotton from one carding engine onto an apron which moves back and forth under the doffer until a sufficient number of layers have been obtained; or, so to construct the engine as to deliver a single sliver or sheet of the required thickness; or, to carry up the slivers from the carding engines vertically to aprons so arranged as to unite them all into one bat. The defects of these methods are obvious, for with the first the sheet of bat or wadding must either be made very short, or be spliced end to end (a very imperfect operation); with the second, the reciprocating apron on which it is delivered must be of an enormous length, occupying an amount of room too great for the convenience of an establishment; and with the third, the slivers which are drawn up over head frequently break, the arrangement of belts must be necessarily very complete, and

from their situation the slivers are much exposed to fire, and indeed from the number of accidents which have occurred none of the establishments which manufacture cotton wadding can be insured.

The object of the first part of my invention is to avoid these objections and inconveniences, and it consists in ranging a series of carding engines, one behind another over an apron which has a continuous movement, so that the sliver or sheet of cotton from the second card is delivered on top of that from the first, the one from the third, onto that of the second, and so on to the end of the series, the number of carding engines being in proportion to the quality and thickness of the bat or wadding desired; it being a fact well known to those versed in the art of working fibrous materials, that the thinner each sliver, the more perfect will be the bat, and it will be evident that with my method this can be refined to any desired extent.

As to the glazing operation, but one method has been practised (although several have been proposed and patented) which consists in conducting the bat on an endless apron to a vat where it is glazed on one side and then conducted to a second vat to be glazed on the other side, and from this delivered on to another endless apron which passes through a kiln or hot air chamber to be dried. This method is not only very imperfect, but attended with great expense and danger, for that face of the bat which rests on the apron is not exposed to the direct action of the heated air, and therefore dries slowly, which fact renders it necessary to raise the temperature of the kiln and hot air chamber which very soon destroys the apron, and often subjects the whole establishment to loss by fire.

The second part of my invention, it is believed, obviates all these objections, and consists in passing the glazed bat or wadding from the glazing apparatus through the kiln or hot air chamber over a series of open reels arranged side by side, on one plane, and extending from end to end of the kiln, one reel delivering the bat on to another, and so on to the last in the series where it is delivered out. If the bat is glazed on both sides before it is introduced into the kiln, but one set of reels is used; but I prefer to glaze it first on one side, dry this by passing it through the kiln on one set of reels, and deliver it at the other end to the second

glazing apparatus to be glazed on the other side, and then passed through the kiln on another set of reels above the first. In this way I avoid the inconvenience of accumulating the glazing or sizing on the rods of the reel, for in passing through the first time the unglazed surface rests on the bars of the reel, and the second time, the side first glazed; in this way I avoid what otherwise would be a serious inconvenience.

In the accompanying drawings of the machine for making the bat, represented in Figs. 1, 2, and 3, (A) is a base frame on the top (B) of which the series of carding engines (C, C', C'', C'''), four in number (which may be increased or decreased at pleasure) with their doffers (D) ranged across the frame, parallel with, and back of each other. From each of the doffers an inclined board or sheet of metal (E) extends to an aperture (F), in the top (B) for the purpose of conducting the sliver or sheet of cotton from the doffer on to an endless apron (G) that passes around and is carried by rollers (H, H') at each end, there being intermediate supporting rollers (I), which, if desired, may be driven by belts to assist the end rollers in carrying the apron. In this way as the endless apron (G) travels with a velocity equal to the delivery of the doffers, the sliver or sheet of cotton (K) from the doffer of the first card (C) is delivered on the apron, the sliver from the card (C') is delivered on to the sliver from the first, and so on through the series. And after the last has been delivered the bat passes under a pressure roller (L) placed above the roller (H) at the delivery end of the machine, and from this it passes and is wound on to a roller (M) that moves up and down freely in its bearings, and is carried by a roller (N) placed below it, and driven by a belt (O) from a pulley on the shaft of the roller (H). The carding engines are to be driven with equal velocities by belts from some first mover in the usual manner, and from the same first mover, or from one of the carding engines motion is communicated to the roller (H') and from this, by a series of belts (P) to all the intermediate rollers (I), and the other end roller (H).

From the above description it will be evident that the machine may be constructed with any desired number of carding engines, and that the operation of any of them in the series may be suspended at pleasure; and also, that the intermediate rollers (I) may be dispensed with, and a permanent floor for the apron to run on substituted. After the bat has been formed and rolled up on the roller (M), it is taken to the glazing machine, and placed in appropriate bearings (a) at one end of the machine, and resting on a roller (b) which by its motion unwinds

the bat and passes it over two other rollers $b' b''$ on the same plane, from the last of which it passes around another roller (c), on to an apron (d) that runs at the lower part of its circuit in a vat (e) that contains the glazing material, and by which it is imparted to that surface of the bat which is in contact with the apron while it passes from the roller (c) to another (f) around and over which it passes to the top of the first of the series of reels (g) which passes it to the second, and so on to the end of the series, where it is delivered on to another glazing apron (d') similar to the one described, and running in a vat (e') of glazing material. This glazing apron (d') is placed higher than the first, and receives the bat from the last reel with the unglazed surface downward to which the glazing material is imparted, and then the bat passes under and over a roller h to the first of the second series of reels (i) ranged directly over the first series, and from the last of this series the bat is rolled up on a roller (k) which receives its motion from a driving roller (l) below it, and on which it rests.

All the reels (g) and (i) are constructed alike and of the same diameter and length, and consist of a shaft (m) with two heads or sets of arms connected together with metallic rods ranged around and near to their peripheries, and at such distance apart as to support the bat in their rotation, and leave a free passage for the action of the hot air, the reels to be in length a little more than the width of the bat. One end of the shaft of each of these reels is provided with a miter cog-wheel, and the two series are driven by two horizontal shafts (n) that have each a series of miter cog-wheels (o), corresponding with those on the shafts of the reels and by which all the reels are driven with equal velocities: the two shafts (n n) being made to rotate with equal velocities by means of the vertical shaft (p), and miter wheels (q), or in any other known manner. The shafts of the two end reels of the lower series are provided with a cog-wheel (r r) to communicate motion by the wheels (t t t) to the rollers that carry the two glazing belts (d, d') and one of them by means of wheels (s, s, s) to the roller (l), that drives the roller (k) on which the bat is wound. And the rollers (b, b', b''), that introduce the bat to this machine, receive motion by belts (u) first from a pulley (v) on the axis of the roller (w) that carries the glazing apron (d) and then from one to another of the series. The two glazing aprons (d, d') each pass over two rollers (w, w), but these instead of being cylindrical are formed with three pulleys (x) (as shown separately at Fig. 7) one at each end and the other in the middle, and cords pass from the pulleys on one to

those on the other, and between the rollers the aprons run on permanent beds (y, y) to prevent them from yielding to the pressure of the rollers (f) and (h) which press the
5 bat on to the aprons, to receive the glazing material, by springs or other analogous device.

This machine should be placed in a kiln or chamber heated by means of flues or currents of hot air from a furnace or stoves;
10 or the shafts of the reels may be made hollow for the introduction of steam, or hot air, and in the latter case the tubular shafts may be pierced with small holes to permit
15 the heated air to escape and act on the bat.

Instead of the two series of reels, one only may be used by so arranging the glazing or sizing apparatus as to put the glazing material on both sides of the bat before it is
20 passed on to the reels; but I prefer the arrangement above described with two sets of reels.

It will be obvious that the first part of my invention is applicable to various operations
25 in the manufacture of fibrous and textile substances such as making bats of wool and other animal fibers for felting, and all other operations in which it is necessary, to form

a bat of several thicknesses of sliver of the width of the doffer of a carding engine. 20 And it will be equally obvious that the second part of my invention is also applicable to all operations in manufactures which require fragile webs or tissues to be conducted from sizing or glazing apparatus 35 to be exposed to the action of heat or currents of air.

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

1. Arranging a series of carding engines 40 one behind another and over a single apron to form a bat of several thicknesses of slivers, as herein described.

2. And I also claim as my invention the arrangement of one or more series of reels 45 that rotate by means of cog wheels or other equivalent to convey the bat, in combination with the glazing or sizing apparatus for glazing or sizing and drying cotton or other bat or wadding, substantially as herein de- 50 scribed.

JEREMIAH ESSEX.

Witnesses:

CHS. M. KELLER,
A. P. BROWNE.