

No. 681,645.

Patented Aug. 27, 1901.

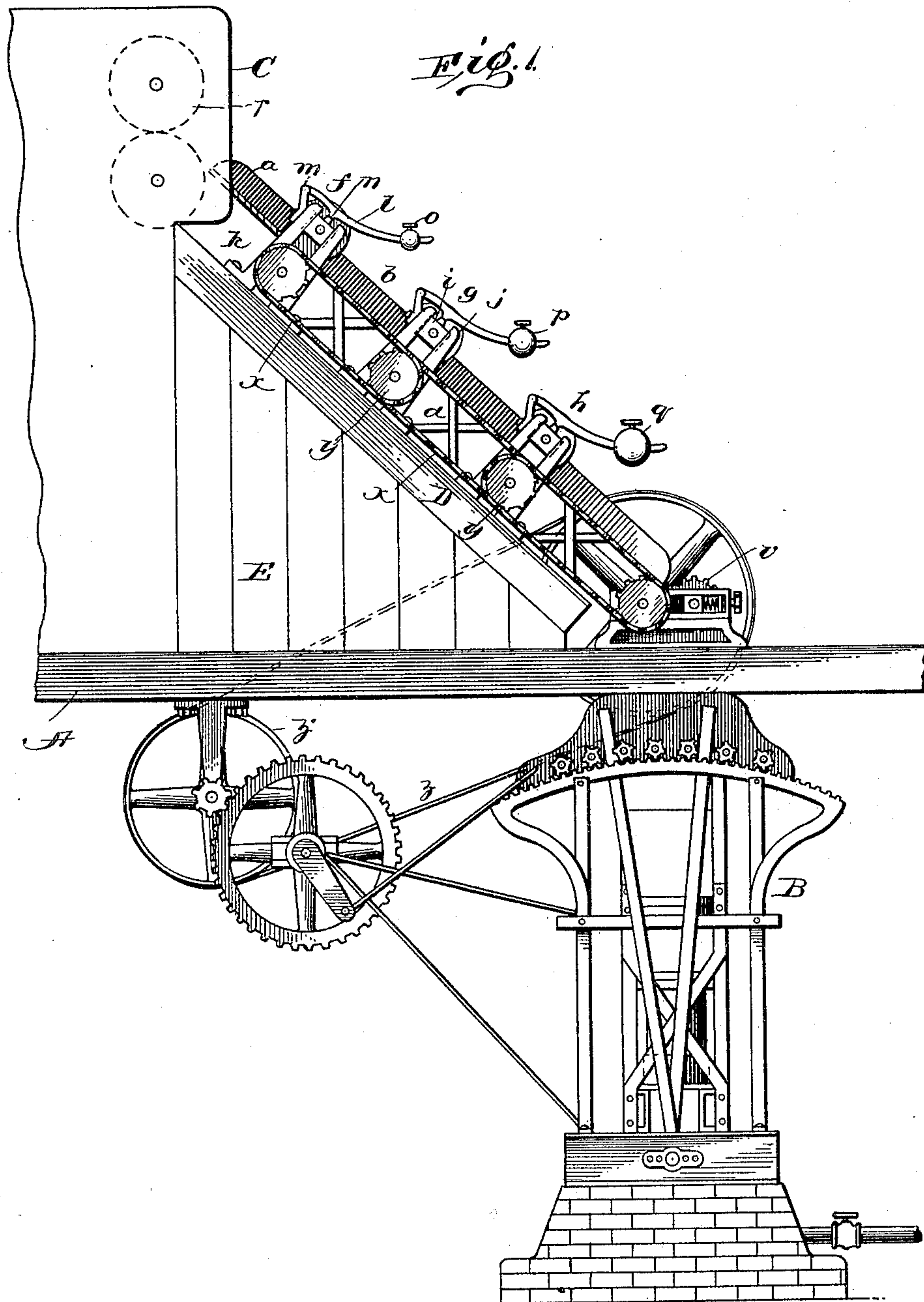
F. B. POPE & G. D. MIMS.

BAT FORMING MECHANISM.

(Application filed Mar. 1, 1900.)

(No Model.)

3 Sheets—Sheet 1.



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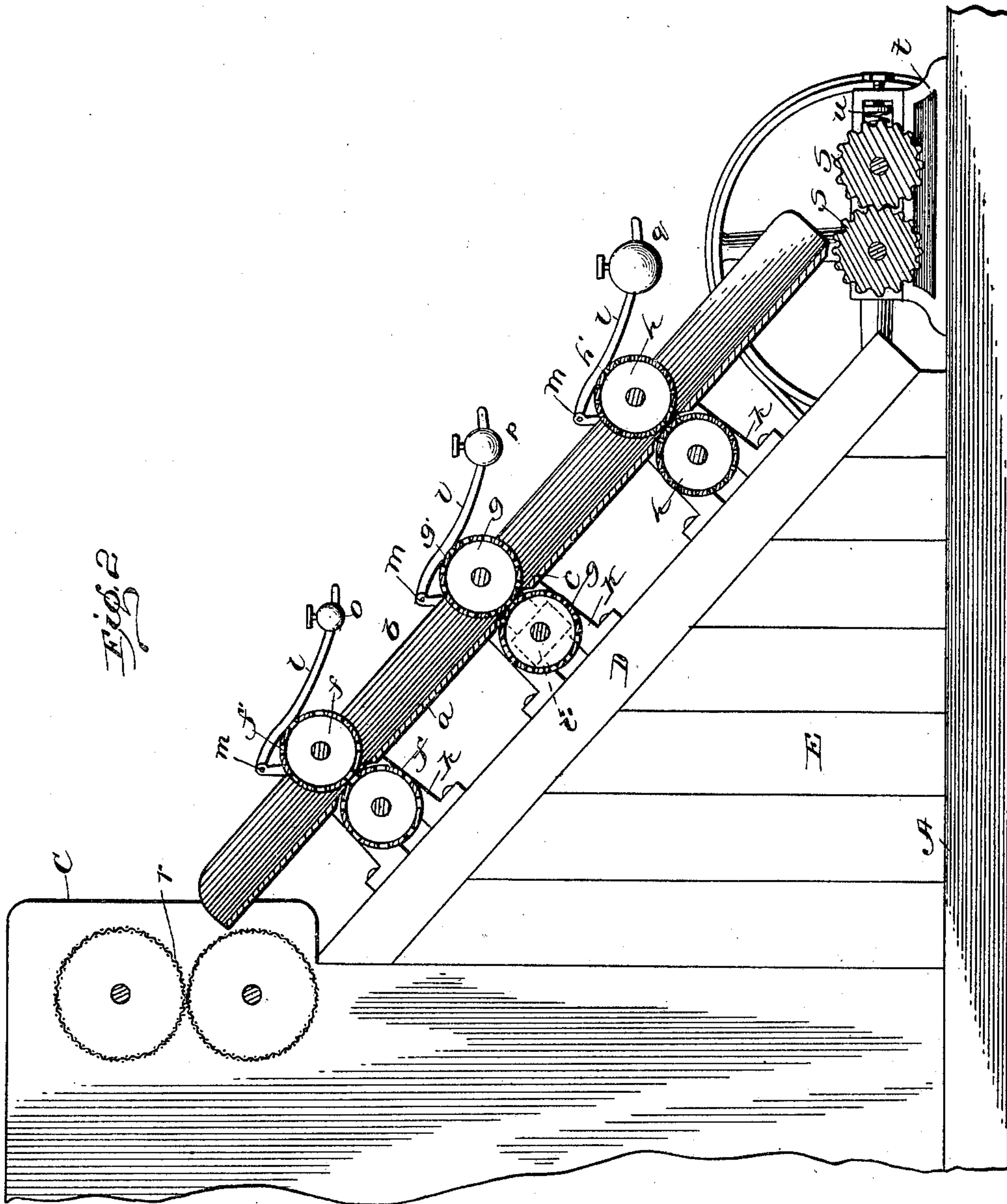
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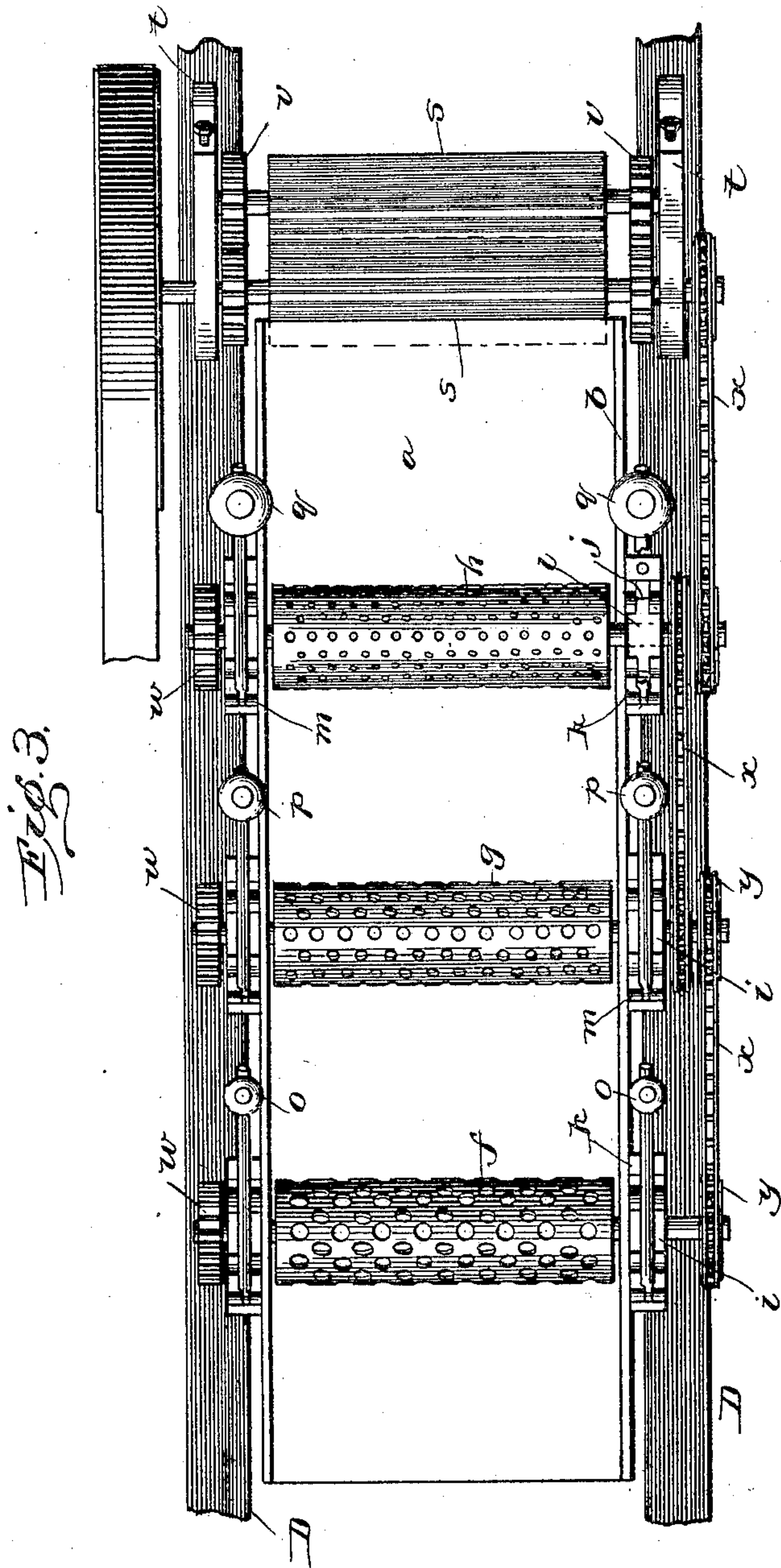
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UNITED STATES PATENT OFFICE.

FREDERICK B. POPE, OF AUGUSTA, GEORGIA, AND GILES D. MIMS, OF PARKSVILLE, SOUTH CAROLINA.

BAT-FORMING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 681,645, dated August 27, 1901.

Application filed March 1, 1900. Serial No. 6,941. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK B. POPE, residing at Augusta, in the county of Richmond and State of Georgia, and GILES D. MIMS, residing at Parksville, in the county of Edgefield and State of South Carolina, citizens of the United States, have invented a certain new and useful Improvement in Bat-Forming Mechanism; and we do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to means for forming a bat or blanket of elastic and yieldable material, the physical characteristics of which are lightness and fluffiness, such as cotton or wool. The means is preferably used in connection with other means, whereby a compressed bale may be formed of such bat or blanket. Such a bale is formed of a continuous blanket, which may be either wound and compressed cylindrically about a central core or lapped back and forth in a rectangular frame under great pressure.

The novel mechanism is preferably located in juxtaposition to the compressing machinery and is to be placed intermediate this machinery and the condenser.

The improved means is designed to transform the material from an inchoate amorphous fluffy mass, as ejected from between the condenser-rolls, into a close homogeneous tightly-compressed blanket, with the air wholly or largely excluded therefrom and in a proper condition to be introduced into the compress.

The means employed preferably consists of a series of pairs of engaging perforated rolls which successively engage with and compress the bat. The rolls in the several sets press together with a degree of force disproportionate to the thickness of that portion of the bat they embrace. The perforations of the rolls are of large size in the pair of rolls which first compress the bat and of greatly-reduced size in those rolls which successively cause the bat to approach the final stage.

Broadly the invention consists, in addition to the rolls, of a fixed apron or inclined way connecting the ejecting-rolls of the condenser

with the injecting-rolls of the press. This apron or inclined way is the same width as the finished blanket, but slightly narrower than the length of the condenser-rolls. It is arranged at a sufficient angle of inclination to allow the bat to travel by gravity without having to be pushed forward, and yet is not so much inclined as to cause the bat to break by its own weight or stretch and crowd up to the successive pairs of engaging rolls.

The perforated rolls are horizontally arranged upon this apron, with their lines of contact preferably upon the same plane as the bottom thereof. Means are provided for causing the rolls to press together, the lower pairs of rolls, or those which engage with the bat in its highly-compressed or ultimate condition, receiving greater engaging pressure than the upper sets of rolls or those which engage with the bat as it is ejected from the condenser in its proximate state. Means are provided to allow the rolls to become separated some distance in the event of a hard foreign substance being accidentally ejected from the condenser with the bat. These engaging rolls are perforated, the rolls which engage with but a slight pressure being provided with large perforations and those which engage with greater pressure with smaller and more closely-arranged perforations. This is for the following reason: In the art of cotton compressing the bat as it leaves the condenser is from four to six inches thick. After passing between the first two rolls it is reduced by one operation to about an inch in thickness, or to as little as a sixth of its former bulk. After passing between the other rolls the reduction is proportionately less. The amount of air ejected from the bat at the first reduction is therefore greater than at those succeeding. The perforations are accordingly larger. In the succeeding rolls, however, while the bulk reduced by them is smaller, yet the pressure is necessarily greater, and the perforations accordingly have to be made smaller to prevent the cotton from crowding up into them.

The invention relates, further, to various details of construction whereby the above- enumerated objects are practically accomplished.

In order to better understand the nature of the invention, attention is directed to the accompanying drawings, forming a part of this specification, and in which—

5 Figure 1 is a side view of the platform and mechanism in connection with the condenser and lapping-press. Fig. 2 is an enlarged sectional view of the platform and mechanism, and Fig. 3 is a top view thereof.

10 In all the several views like parts are indicated by the same letters of reference.

Referring to Fig. 1, it will be seen that the apron is supported upon the floor A of the gin-house over and to one side of the press B and adjacent to the exit C of the condenser. 15 The apron or inclined way is supported upon a heavy joist D, which is supported in turn by scaffolding upon the supports E. The apron consists of a trough-shaped body 20 formed of a bottom *a*, with side pieces *b*, both of which may be of wood, of metal, or of wood lined with metal. The continuity of the bottom is broken at intervals, forming slots *c* for the entrance and engagement of the pressing-rolls. A suitable lattice-work *d* serves to 25 rigidly support the apron in the proper position upon the joist D.

The forming-rolls *f*, *g*, and *h* are of metal, hollow and perforated, as shown. The rolls 30 *f* are provided with large perforations *f'* closely arranged, the rolls *h* with very small closely-arranged perforations *h'*, and the intermediate rolls *g* with perforations *g'* of intermediate size. Each pair of rolls is mounted 35 in suitable boxes *i i'*, the lower rolls being in the latter of these boxes. The boxes are rectangular in shape and are provided with the flanges *j*, which can be readily inserted between the supporting-standards *k*, which 40 are of the shape shown. The standards are bolted or otherwise fastened to the heavy beam D. The boxes of the lower rolls in each set are so proportioned as to bring the upper face of each roll about on the plane 45 with the bottom of the apron *a*. The upper roll of each set upon being placed in position will support its box with the upper face thereof upon a plane slightly below the upper extremity of the supporting-standards *k*. A 50 lever *l*, pivoted to a pair of ears *m*, engages with the projection or protuberance *n* on the upper part of each of the upper boxes *i*. Means are provided for depressing these levers with a degree of force disproportionate 55 to the size of the openings in their respective rolls—that is, to depress the roll *h* with a greater degree of force than the roll *g* and the roll *g* with a greater degree of force than the roll *f*. This means may consist of a spring, 60 a weight, or the combination of both. A series of weights is shown in the drawings. These weights are lettered *o*, *p*, and *q*, the weights being of the relative size shown. The same end may be accomplished by hav- 65 ing weights of the same size in combination with levers of varying lengths. If desired, the weights may be of equal size supported

upon levers of equal length, the inequality of pressure being obtained by the different weights of the said rolls. If the rolls be all 70 made of the same thickness of metal, the roll *h*, having a much larger area of perforations, will be lighter than the roll *g*. The roll *g*, having larger openings than the roll *h*, will be lighter. As shown in the drawings, the 75 upper boxes *i* when the rolls are in engagement are some little distance below the upper part of the supporting-standards. This is for the purpose of allowing the boxes to remain in engagement with the standards in 80 the event of the rolls becoming separated some distance, which will occur upon the passage of a hard foreign substance accidentally ejected by the condenser. The condenser-rolls are shown at *r*. Immediately be- 85 low the exit end of the apron and adjacent thereto are the corrugated rolls *s s*. These latter are mounted in suitable boxes carried by the casting *t*. A spring *u* is provided for keeping them in engagement. They are 90 caused to rotate simultaneously by being provided with the engaging gears *v*. Each pair of rolls *f*, *g*, and *h* is provided with an engaging gear *w*, which causes the two to rotate to- 95 gether, while the whole system of rolls is rotated synchronously by means of the chains *x* and the sprocket-wheels *y*. Motion is initially imparted to the system by means of a belt *z* engaging with the pulley *z'* of the driving mechanism of the press. 100

The operation of the device is as follows: The mechanism being put in motion the cotton will be ejected from the condenser C through the condenser-rolls *r* in the form of a light fluffy mass six inches or more in thick- 105 ness and the width of the apron. This mass will be propelled down the incline or apron and into engagement with the rolls *f*, which, rotating at a peripheral speed equal to the rate of travel of the bat, will draw in the mass 110 of cotton and compress it to the thickness of an inch or less, the large amount of air ejected in the operation readily passing away through the large openings *f'*. The bat in its reduced condition will be propelled into the 115 grasp of the rolls *g*, by means of which it will be further compressed and reduced to about half of its former thickness, the air escaping therefrom through the openings *g'*. A further reduction will be given by the rolls *h*. 120 The bat is finally ejected into the rolls *s s*, by means of which it is tightly compressed and given sufficient cohesion to enter the compress B and be lapped back and forth in the hopper of the press. 125

In the event of a hard foreign substance, such as a stone, being ejected from the condenser to the bat no damage can occur to the rolls by its passage, as the pressing-weights will readily rise and allow the passage of the 130 stone between the two rolls. The attention of the press attendant will be directed to this part of the bat by the abnormal movement of the weights and levers, and the stone can

then be removed by hand before it gets to the press.

Having now particularly described and ascertained the nature of the said invention, what we claim as new therein, and desire to secure by Letters Patent, is—

1. A bat-forming mechanism, which consists of a series of pairs of perforated rolls, the perforations being of different sizes in the different pairs of rolls, means for causing the rolls to engage, and means for rotating said pairs of rolls, substantially as described.

2. A bat-forming mechanism, which consists of a series of pairs of perforated rolls, the pair which engages with the material in its proximate condition having larger perforations than the pair which engages with the material in its ultimate condition, means for causing the rolls to engage, and means for rotating said pairs of rolls, substantially as set forth.

3. A bat-forming mechanism, which consists of a series of pairs of perforated rolls, the pair which engages with the material in its proximate condition having larger perforations than the pair which engages with the material in its ultimate condition, means for causing the rolls to engage with a degree of pressure in inverse proportion to the size of the perforations therein, and means for rotating each pair of rolls, substantially as described.

4. In a bat-forming mechanism, a condenser and a press, an intermediate pair of perforated rolls, means for feeding the mass of cotton to the bite of the rolls, means for causing the rolls to engage with sufficient pressure to force out the air from both sides of the mass and form a cohesive blanket, and means for passing the blanket to the press, substantially as described.

5. In a bat-forming mechanism, a condenser and a press, intermediate pairs of perforated rolls, means for feeding the mass of cotton to the bite of the rolls, means for causing the rolls to engage with sufficient pressure to force out the air from both sides of the mass, and form a cohesive blanket, and means for passing the blanket to the press, substantially as described.

6. A bat-forming mechanism, which consists of a fixed inclined apron, connecting the con-

denser with the press, a series of pairs of perforated rolls thereon, the pair which engages with the material in its proximate condition having larger perforations than the pair which engages with the material in its ultimate condition, means for causing the rolls to engage, and means for rotating each pair of rolls, substantially as described.

7. A bat-forming mechanism, which consists of a fixed inclined apron connecting the condenser with the press, a series of pairs of perforated rolls thereon, the pair which engages with the material in its proximate condition having larger perforations than the pair which engages with the material in its ultimate condition, means for causing the rolls to engage with a degree of pressure in inverse proportion to the size of the perforations therein, and means for rotating each pair of rolls, substantially as described.

8. A bat-forming mechanism, which consists of a series of pairs of perforated rolls for proximately pressing the material, the pair which engages with the material in its proximate condition having larger perforations than those which subsequently engage with the material, a pair of corrugated rolls for ultimately pressing the material, means for causing the rolls to engage with a degree of pressure in inverse proportion to the size of the perforations therein, and means for rotating said rolls, substantially as described.

9. A bat-forming mechanism, which consists of a fixed inclined apron connecting the condenser with the press, a series of pairs of perforated rolls therein for proximately pressing the material, the pair which engages with the material in its proximate condition having larger perforations than those which subsequently engage with the material, a pair of corrugated rolls for ultimately pressing the material, means for causing the rolls to engage, and means for rotating said rolls, substantially as described.

This specification signed and witnessed this 23d day of February, 1900.

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