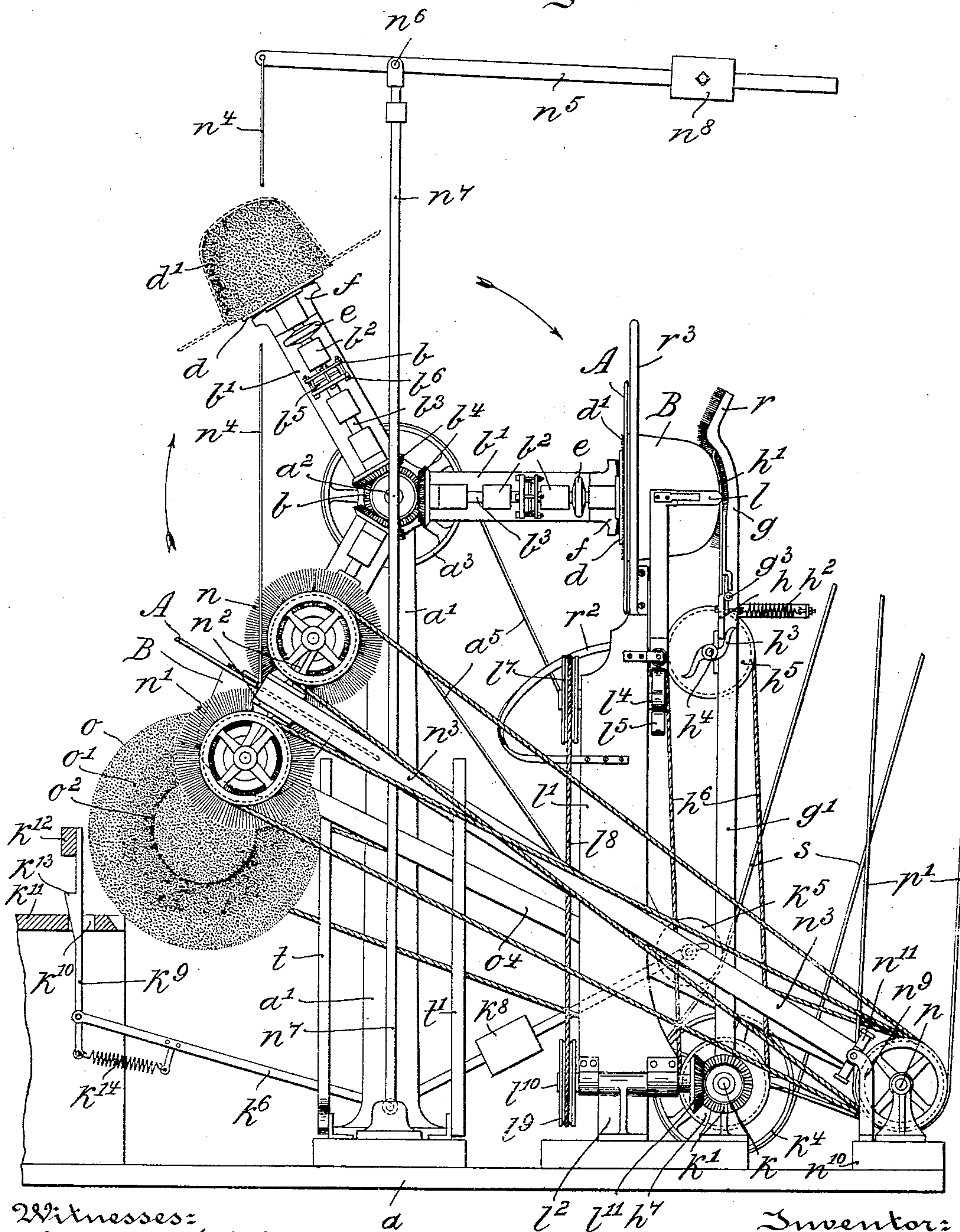


C. E. WINTERROS.
HAT BEATING AND CLEANSING MACHINE.

No. 562,057.

Patented June 16, 1896.

Fig. 1.

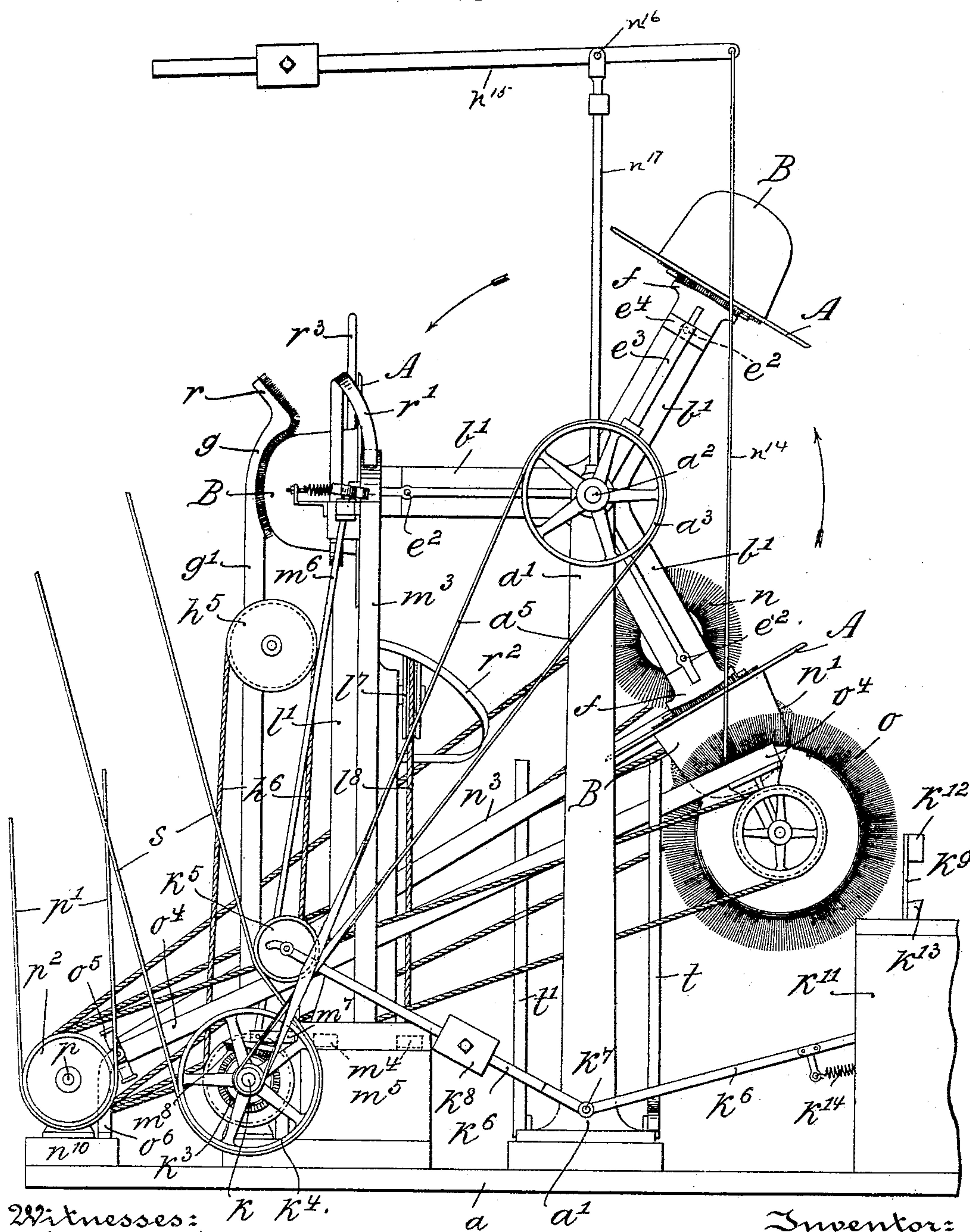


6 Sheets—Sheet 2.

No. 562,057.

Patented June 16, 1896.

Fig: 2.



Witnesses: K K⁴.
Thomas M. Smith.
Richard C. Maxwell

Inventor:
Elias Eric Hultberg,
By J. Walter Douglas
Attorney.

(No Model.)

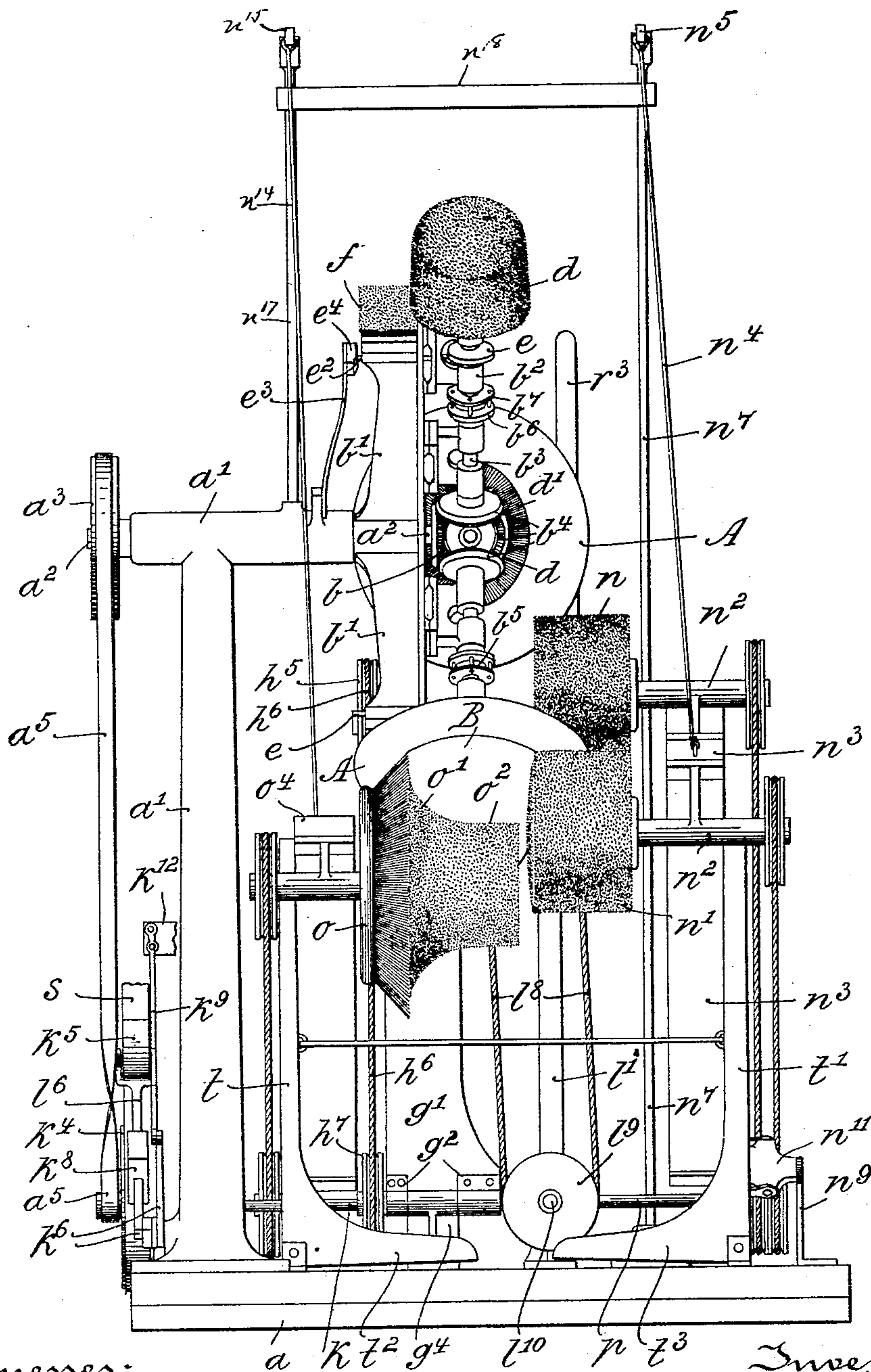
6 Sheets—Sheet 3.

C. E. WINTERROS.
HAT BEATING AND CLEANSING MACHINE.

No. 562,057.

Patented June 16, 1896.

Fig. 3.



Witnesses:
Thomas M. Smith.
Richard C. Maxwell

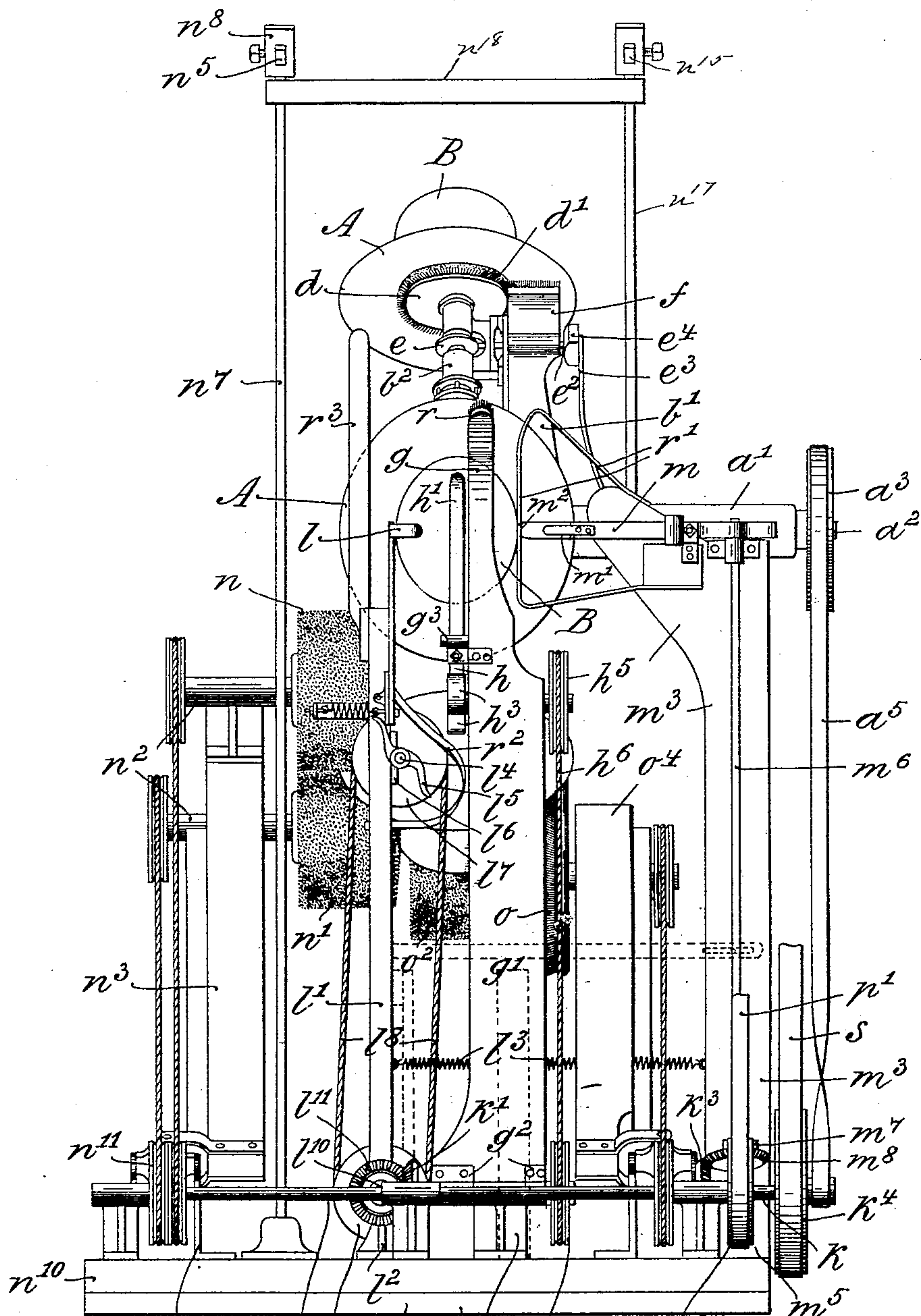
Inventor:
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C. E. WINTERROS.
HAT BEATING AND CLEANSING MACHINE.

No. 562,057.

Patented June 16, 1896.

Fig. 4.



Witnesses: Thomas M. Smith.
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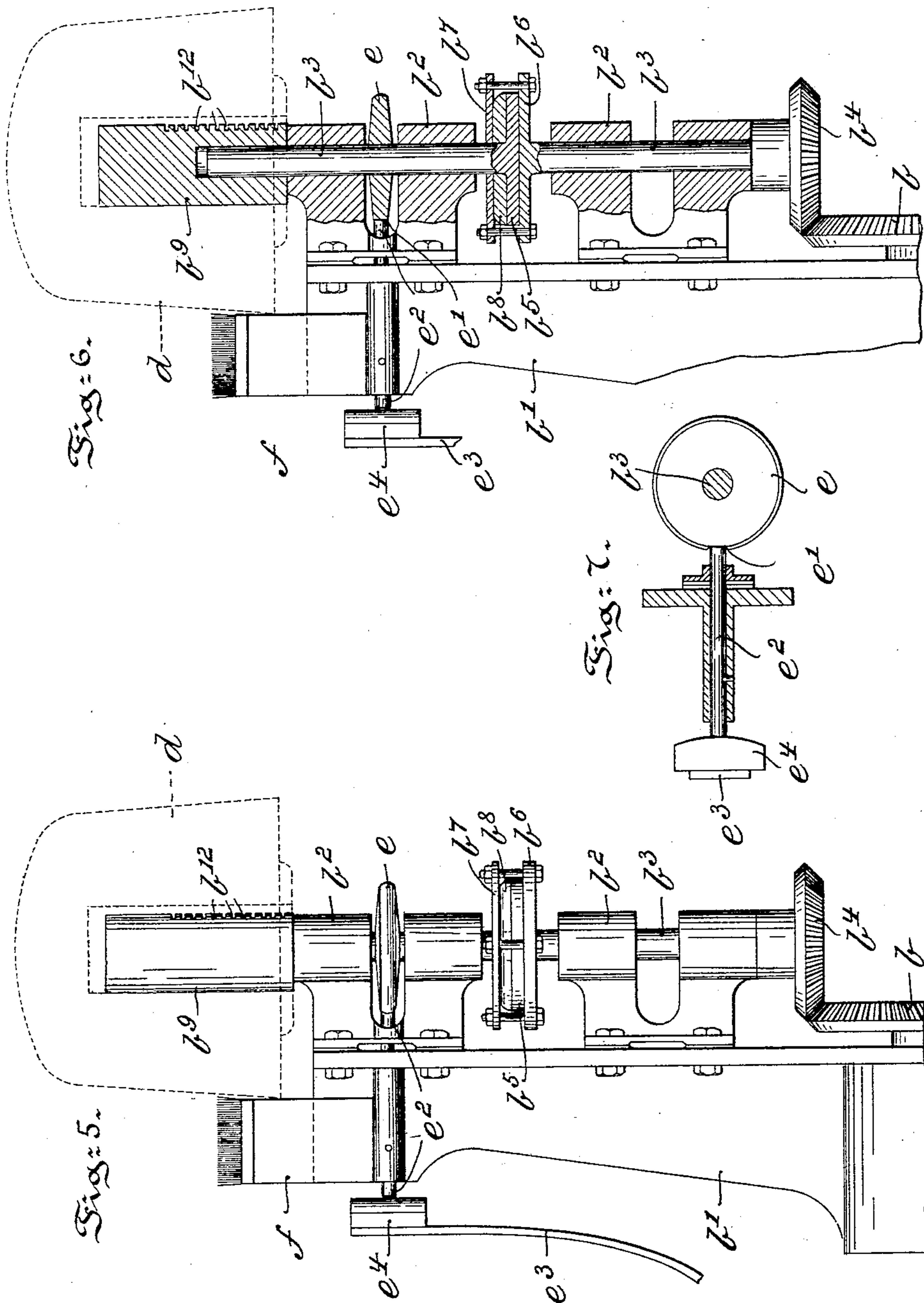
(No Model.)

6 Sheets—Sheet 5.

C. E. WINTERROS.
HAT BEATING AND CLEANSING MACHINE.

No. 562,057.

Patented June 16, 1896.



Witnesses:
Thomas M. Smith.
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C. E. WINTERROS.

HAT BEATING AND CLEANSING MACHINE.

No. 562,057.

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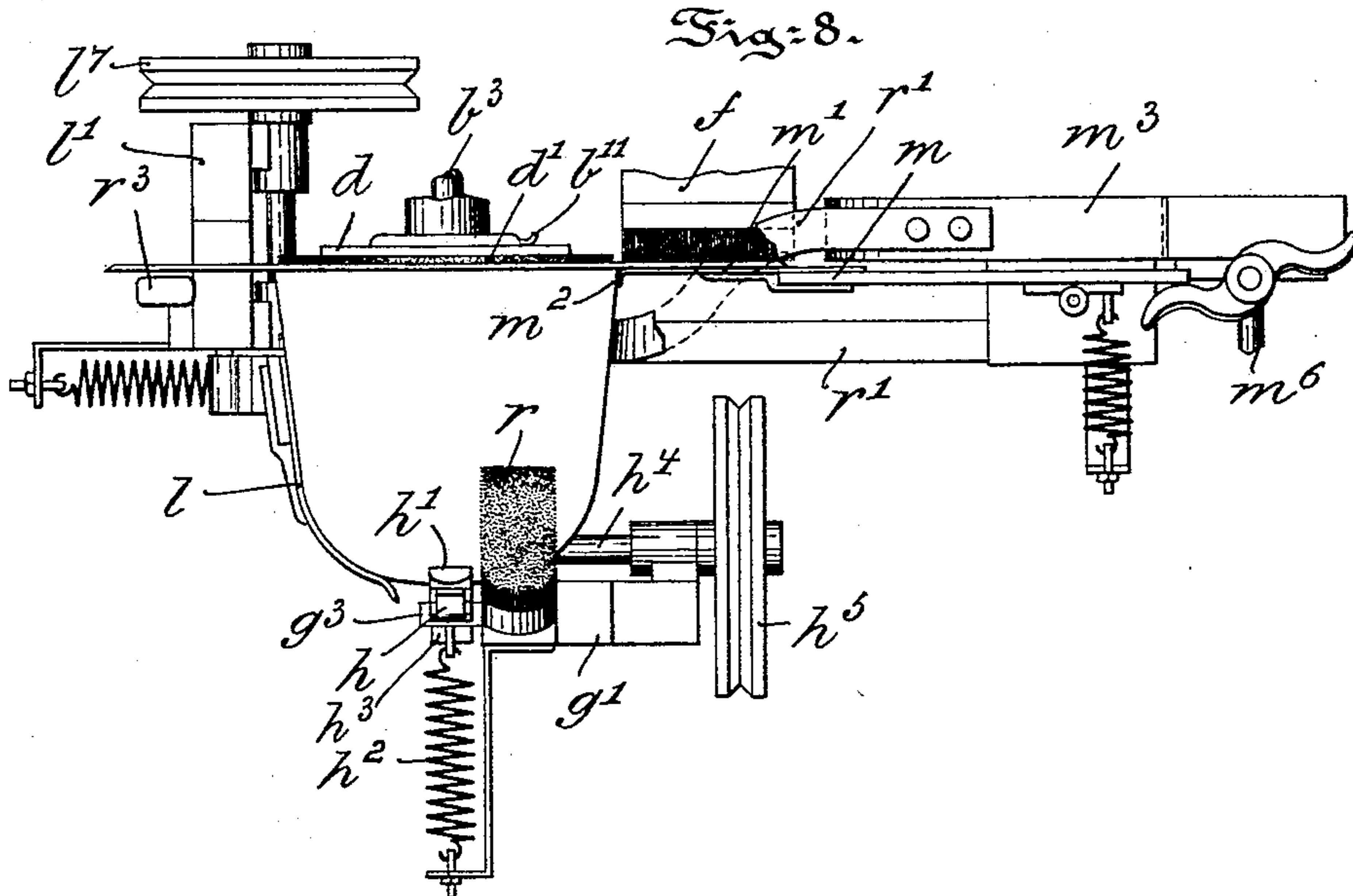


Fig: 9.

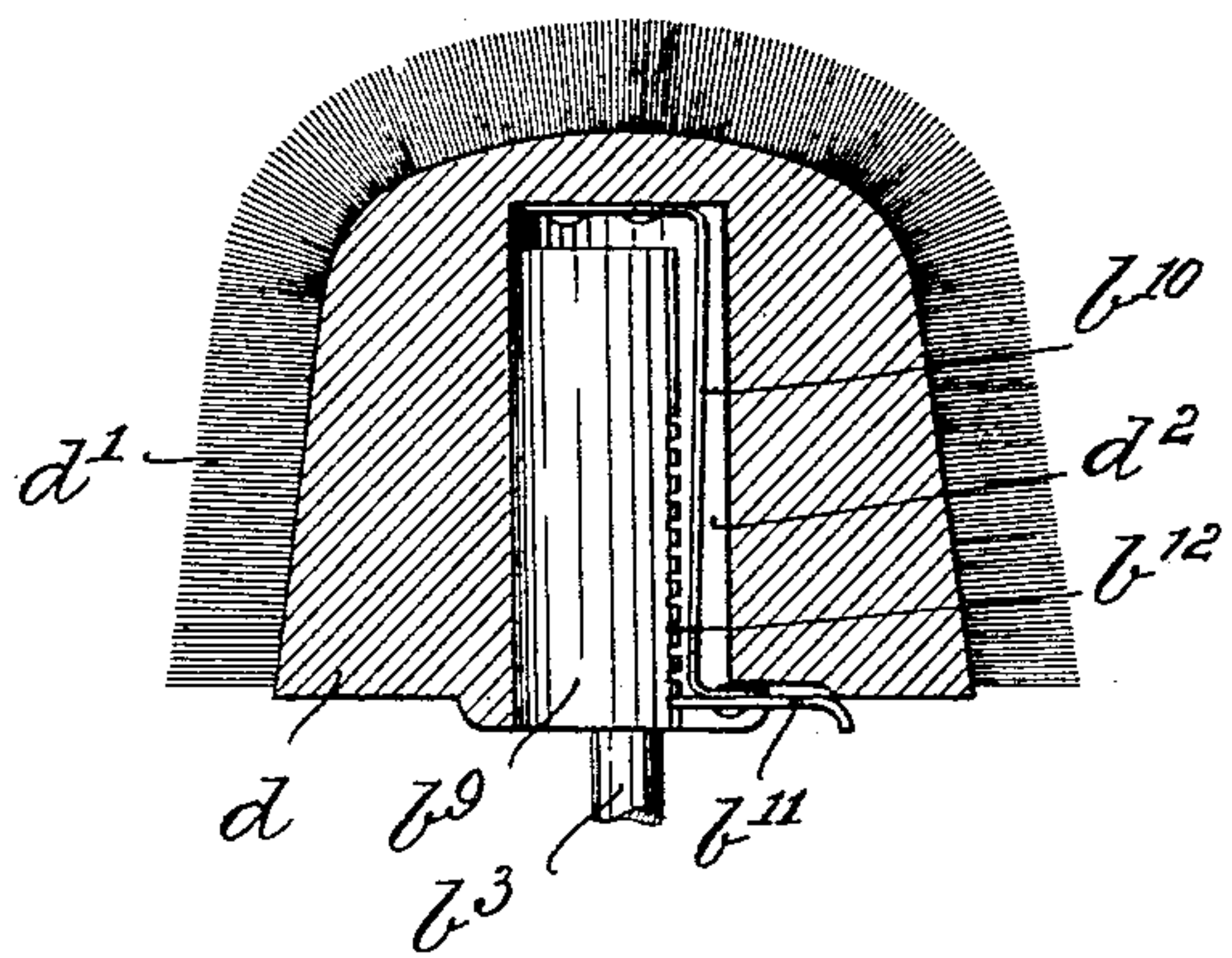
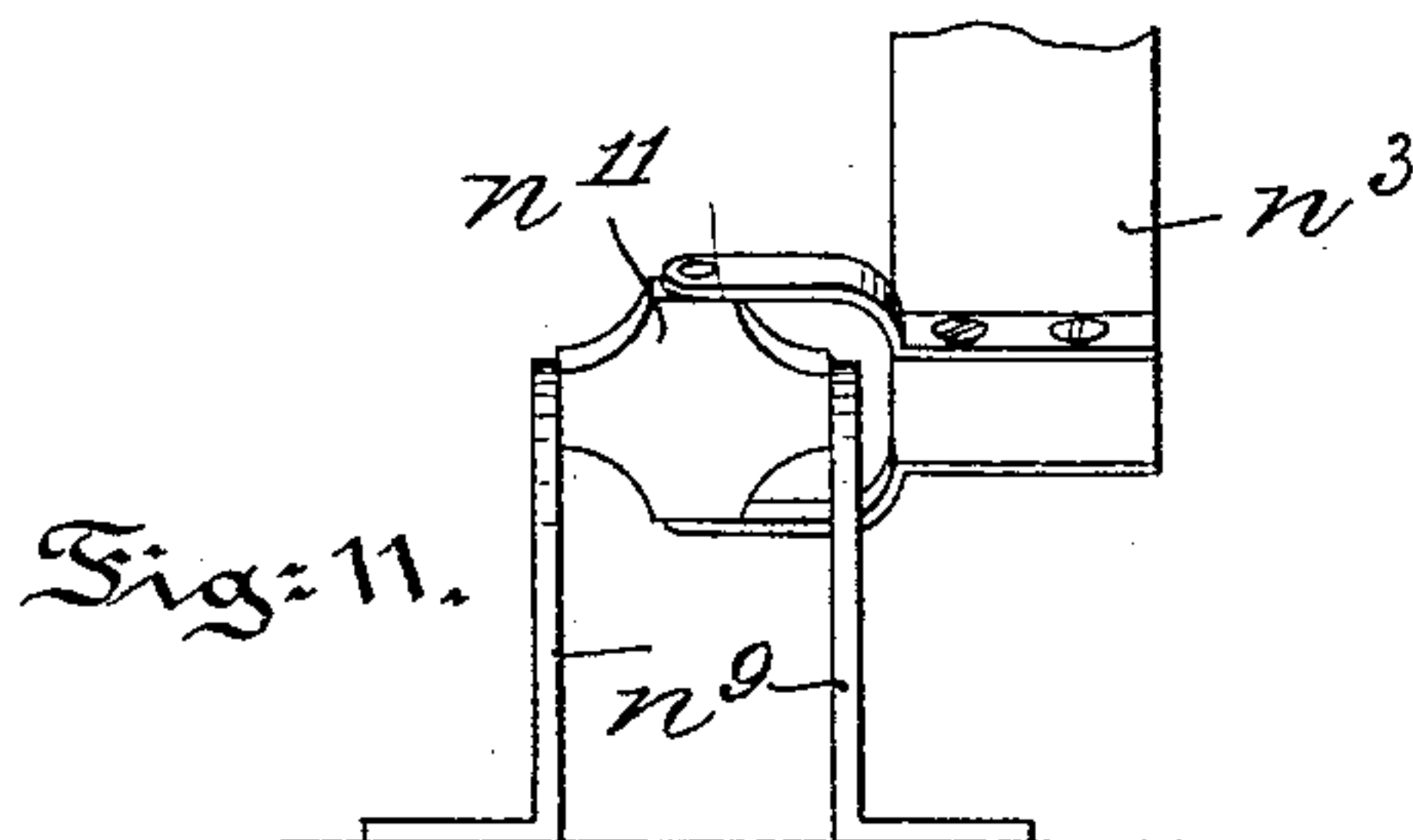
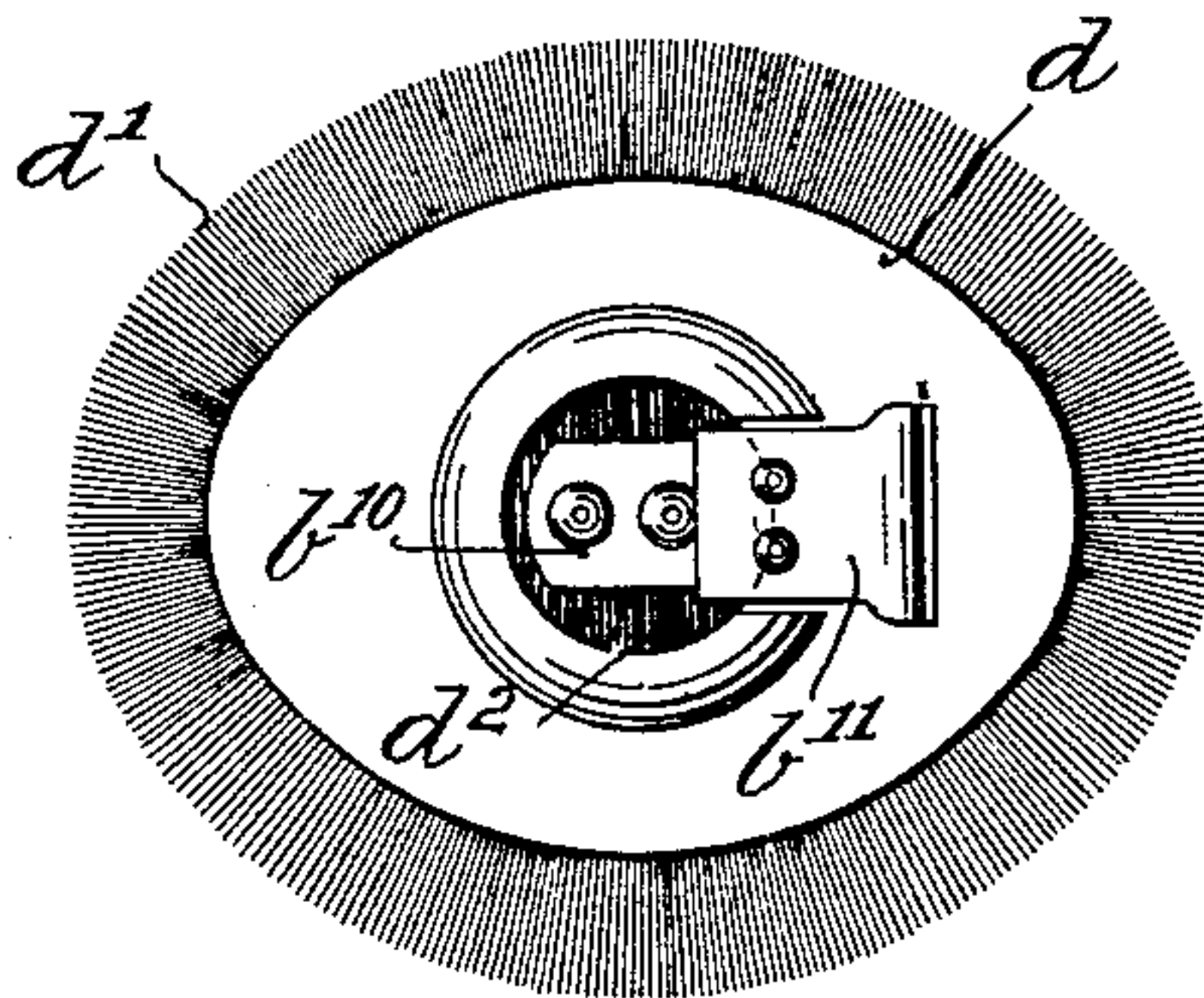


Fig: 10.



Witnesses:

Thomas M. Smith.

Richard C. Maxwell.

Inventor:
Elias Eric Winterros,
By J. Walter Douglas
Attorneys.

UNITED STATES PATENT OFFICE.

CLAES ERIC WINTERROS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
TO THE JOHN B. STETSON COMPANY, OF SAME PLACE.

HAT BEATING AND CLEANSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 562,057, dated June 16, 1896.

Application filed February 24, 1896. Serial No. 580,325. (No model.)

To all whom it may concern:

Be it known that I, CLAES ERIC WINTERROS, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Hat Beating and Cleansing Machines, of which the following is a specification.

My invention has relation to a machine adapted to beat and thoroughly cleanse felt hats, and in such connection it relates particularly to the general construction and arrangement of such a machine.

The principal objects of my invention are, first, to provide a machine of simple construction, adapted to more quickly and thoroughly beat and cleanse felt hats than has heretofore been possible manually; second, to provide in such a machine a block having a pilose outer surface consisting, preferably, of bristles or analogous brush-like material, upon which the hat is mounted preparatory to the beating and cleansing operations; third, to provide in such a machine reciprocatory beaters adapted to beat against the brim and crown of the hat while the same is upon the block; fourth, to provide in such a machine rotary brushes adapted to brush the brim and crown of the hat when upon the block; fifth, to provide in such a machine means for rotating the block and the hat mounted thereon; sixth, to provide in such a machine a block adapted to be removably secured to a rotating shaft and means for intermittently revolving said shaft and block when the same are rotating, and, seventh, to provide in such a machine means for stopping the rotation of the block and shaft when the same reach a predetermined position in their revolution to permit of the removal and replacement of the hat upon the block.

My invention, stated in general terms, consists of a machine for beating and cleansing hats, when constructed and arranged for operation in substantially the manner hereinafter described and claimed.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is an elevational view of the right-hand side of the machine embodying features of my invention. Fig. 2 is a similar view of the left-hand side of the machine. Fig. 3 is a front end elevation of the machine. Fig. 4 is a rear end elevation of the same. Fig. 5 is a front elevational view, enlarged, of one of the revoluble and rotating shafts carrying the block for the hat. Fig. 6 is a similar view, partly sectioned, to more clearly illustrate the construction and arrangement of the same. Fig. 7 is a sectional view, enlarged, of the mechanism for braking the upper end of said shaft to stop the rotation of the block at a determined position in the revolution of the same. Fig. 8 is a top or plan view, enlarged, illustrating in detail the mechanism for beating the hat and the auxiliary brush supporting the brim of the hat during the beating operation. Fig. 9 is a longitudinal sectional view, enlarged, of the block, illustrating the means for securing the same to the upper end of the revoluble shaft. Fig. 10 is an underneath plan view, enlarged, of said block removed from the shaft; and Fig. 11 is a side elevational view, enlarged, illustrating in detail the universal joint for one of the supports or arms in which rotate the brushes for cleansing the brim and the crown.

Referring to the drawings, *a* represents the base of the machine upon which is supported the upright or standard *a'*, forming a bearing at its upper end for a shaft *a²*. The shaft *a²* is provided at one end with a driving-pulley *a³* and at its other end with a miter-gear *b*. Upon the shaft *a²* is loosely mounted a frame *b'*, consisting, as shown, of three radially-disposed brackets, although the frame may consist of more or less brackets without departing from the spirit of my invention. Each bracket is provided with bearings *b²*, in which rotates a radially-disposed shaft *b³*, the lower end of which is provided with a miter-gear *b⁴*, meshing with a miter-gear *b* of the shaft *a²*, the arrangement being such that while the shaft *a²* is rotating the frame *b'* may be revolved by hand, and the shaft *b³* may, while rotating in the bearings *b²* of said frame, be revolved with said frame. Each shaft *b³* consists of two members or sections, each terminating in disks *b⁵* and *b⁶*, respectively, the disks

being frictionally clamped together by means of a plate b^7 and washer b^8 , as more particularly illustrated in Fig. 6. The upper member or section of each shaft b^3 is provided with
 5 a head b^9 , upon which is adapted to be secured a block d , on which the hat is to be mounted. This block d consists of a frame of suitable inflexible material, preferably wood, having a pilose outer face or surface of bristles d' , or
 10 similar brush-like material, shaped to conform to the interior of the crown of the hat mounted upon the block. The block d is secured to the head b^9 of the shaft b^3 , preferably in the following manner: The block d is recessed, as at d^2 , and in the top of this recess
 15 is provided a spring b^{10} , projecting to the lower end or base of the block. This spring b^{10} carries a catch or latch b^{11} , the end of which is adapted to enter one of a series of notches b^{12} ,
 20 formed in the sides of the head b^9 , as clearly illustrated in Figs. 9 and 10 of the drawings. By withdrawing the catch or latch b^{11} from the notches b^{12} the block d may be lifted from
 25 off the head b^9 . This spring-catch b^{11} and notched head b^9 also constitute a means of adjustment up and down of the block d upon said head to compensate for varying heights of the crown of the hat to be supported on the block. At a certain position during the intermittent
 30 revolution of the shafts b^3 it is necessary to prevent the upper member of the shaft b^3 and its block d from rotating to permit of the removal and replacement of a hat upon the block. To accomplish this, use is made of
 35 the following preferred mechanism, with reference particularly to Figs. 5, 6, and 7 of the drawings. As above explained, the two members of each shaft b^3 are united by friction-disks, which ordinarily will clamp the two
 40 members sufficiently together to permit of the rotation of the shaft b^3 in its entirety. To prevent the rotation of the upper member, there is secured a collar e , having an indentation or recess e' in its periphery. Opposite
 45 this collar and adapted to bear upon the periphery is provided a pin e^2 , having a sliding movement in the frame b' and projecting entirely through and on either side thereof. Upon the bearing for the shaft a^2 is secured
 50 an upwardly-projecting spring-arm e^3 , carrying a cam projection e^4 , arranged in the path of the pin e^2 and adapted, when said pin strikes against said projection, to force the pin inward against the periphery of the collar e and
 55 into the recess e' thereof. The pin will thus act as a brake upon the upper member of the shaft b^3 , the lower member and washer b^8 continuing to rotate upon the disk b^5 at the lower end of the said upper member.
 60 To the upper end of each bracket of the frame b' is secured an upwardly-projecting brush f , adapted, when a hat is mounted on the block d , to rest against and form a support for the under surface of the brim A of
 65 the said hat, while the same is rotating with the block d . As indicated in the drawings, the shafts b^3 are adapted to be revolved with

the frame b' , so as to occupy three positions. The first is that in which the upper member of the shaft b^3 is at rest, as above described, 70 in which position the hat may be mounted upon or removed from the block. The second position of the shaft, its block, and the hat carried thereby is that in which the beating of the hat is accomplished and is indicated in the drawings by that position in 75 which the shaft b^3 is substantially horizontal. In this position the top of the crown B of the hat rests against a concave brush g or other guiding-piece secured to the upper end of a 80 vertically-disposed arm g' , hinged at its lower end, as at g^2 , upon a shaft k , supported above the base of the machine, the hinged connection being such that the upper end of the arm g' is adapted to move toward or away 85 from the crown B of the hat in an arc described from the shaft k as a center. The arm g' is supported in its normal position with the brush g resting with required pressure upon the crown by means of springs or their 90 equivalents. (Not shown.) Arranged on one side of the brush g is a beater which is pivoted, as at g^3 , to the arm g' , so as to have a reciprocatory movement toward or away from the crown B. This beater consists of a rigid arm h , of 95 wood or other suitable material, to the upper end of which is secured a thin flexible strip h' , preferably of steel, concavely curved to approximate the convex shape of the top of the crown B. This strip h' is normally pressed 100 against the hat-crown by means of a spring h^2 , one end of which is secured to the rigid handle h below the pivot g^3 , while the other end is secured to the arm g' , all as clearly illustrated in Figs. 1 and 8 of the drawings. 105 The handle h is adapted to be struck by one or more fingers or triggers h^3 , revolving with a shaft h^4 , rotating in a suitable bearing in the arm g' , which shaft h^4 is rotated by means of a grooved pulley h^5 , secured to one end of 110 the said shaft and connected by means of a belt h^6 and pulley h^7 with a driving-shaft k , rotating in suitable bearings g^4 of the machine. The handle h , thus reciprocated by the fingers or triggers h^3 , causes the flexible 115 strip h' to beat upon the top of the hat-crown to thereby free the same from dust, sand, loose fur, and other extraneous matter.

For the side and a portion of the crown of the hat is arranged a similar beater l , actuated 120 in the same manner as the beater above described and similarly arranged upon an arm l' , which is pivoted at its lower end in a bearing l^2 , substantially at right angles to the shaft k , in such a manner that said beater l , carried 125 by said arm, is permitted to move toward or away from the hat. The arm l' is normally held under the tension of a spring l^3 , as illustrated in Fig. 4. The driving-shaft l^4 , carrying the triggers l^5 , adapted to operate the 130 beater l , is mounted in suitable bearings l^6 in said arm l' and is driven by pulley l^7 , belt l^8 , and pulley l^9 . This latter pulley l^9 is driven by a shaft l^{10} , rotating in the pivotal

bearing l^2 of the arm, and motion is conveyed to said shaft l^{10} by a miter-gear l^{11} , meshing with a miter-gear k' of the shaft k .

To beat the brim of the hat is arranged a third beater m , the flexible portion m' of which is provided with an upwardly-extending end m^2 , resting in the corner formed between the crown and brim of the hat. This beater m is operated by mechanism similar to that used to actuate the other beaters, and it is mounted upon an arm m^3 , hinged, as at m^4 , to a support m^5 , projecting from the base a in such a manner that the arm and beater may move automatically toward and away from the elliptical side crown. The arm m^3 is held toward the hat-crown by means of a spring or its equivalent. (Not shown.)

The mechanism for reciprocating the beater m is operated by means of a shaft m^6 , supported at its lower end in an extension m^7 of the arm m^3 and provided with a miter-gear m^8 , meshing with a miter-gear k^3 , secured to the shaft k . The beater m is adapted to beat upon the upper surface of the hat-brim directly over the brush f on the frame b' , which is located under the brim, all as illustrated in Fig. 8 of the drawings. This brush f is therefore adapted not only to support the brim of the hat, but to receive the dust from the same while it is being beaten by the beater m .

During the operation of the machine—as, for instance, while the blocks d are being brushed or cleansed by the brushing mechanism, hereinafter explained, and no hats are mounted upon said blocks—it is necessary that this beating mechanism shall be stopped, and for this reason the shaft k , which operates all of the beaters, is thrown into and out of connection with the main driving-shaft (not shown) by means of the following preferred mechanism: On the shaft k is secured a driving-pulley k^4 , connected with a pulley upon the main driving-shaft by means of a loose belt s . Upon this belt is adapted to rest a tension roll or wheel k^5 , carried at the free end of an angle-lever k^6 , pivoted, as at k^7 , to the support a' of the machine. The free end of the angle-lever is counterweighted, as at k^8 , to normally depress the tension-roll k^5 upon the belt s . The other end of the angle-lever k^6 is pivotally secured to a vertically-disposed arm k^9 , passing through a recess k^{10} in the top of a box k^{11} , and adapted to be depressed to raise the roll k^5 by lowering with the feet or otherwise a cross-bar k^{12} , to which the vertical arm k^9 is secured. The arm k^9 is provided with a catch or projection k^{13} , fitting under the top of the box k^{11} , and adapted to thereby maintain the arm k^9 in a depressed position. This catch is shifted under the top of the box to catch thereunder by means of the spring k^{14} , as shown in Fig. 1. To release the arm k^9 , the cross-bar k^{12} is pushed toward the machine to release the catch k^{13} from the box, when the counterweight k^8 will depress the tension-roll k^5 upon the belt s and raise the said vertical arm and cross-bar. When the

roll k^5 rests upon the belt s , it tightens the belt sufficiently to transmit motion from the main driving-shaft to the shaft k , and when the roll k^5 is elevated from the belt no motion is conveyed to the said shaft k .

The third and last position of the shaft b^3 and its block d is that in which the arm rests in its lowermost position to bring the hat in contact with a series of rotary brushes. These brushes are three in number, two of which, n and n' , are designed, respectively, to brush the under side of the brim A and to brush the upper side of the brim and a portion of the crown of the hat. The brushes n and n' rotate in suitable bearings n^2 , carried at the end of an arm n^3 , which is supported by a chain or cord n^4 from one end of a lever-arm n^5 , pivoted, as at n^6 , in an extension n^7 of the support a' , the other end of the lever n^5 being counterweighted, as at n^8 , sufficiently to maintain the brush-arm n^3 and lever-arm n^5 in a state of equilibrium, as illustrated in Fig. 1. The other end of the brush-arm n^3 is connected to a support n^9 on the base n^{10} by means of a universal joint n^{11} , the construction of which by preference is that illustrated in Fig. 11. By means of this joint n^{11} and of the counterbalancing-lever n^5 the two brushes n and n' are permitted to move toward or away from the brim and toward or away from the crown in order that varying sizes and shapes of hats placed upon the block d may all be thoroughly brushed. The third brush o is adapted to brush the entire top of the crown B and that portion of the side of the crown not brushed by the brush n' . For this reason the brush o is shaped, preferably, as illustrated in Figs. 1 and 3—that is to say, it consists of a portion o' , partially conical in shape, terminating or merging in a substantially cylindrical portion o^2 . This brush o rotates in a suitable bearing at the end of an arm o^4 , counterbalanced in the same manner as the brush-arm n^3 —that is to say, the arm o^4 is supported by a chain or cord n^{14} from one end of a counterweighted lever-arm n^{15} , pivoted, as at n^{16} , to an extension or standard n^{17} , supported upon the support a' . The extension n^{17} is connected to the extension n^7 by means of a connecting-rod n^{18} . The lower end of the arm o^4 is universally jointed, as at o^5 , to a support o^6 of the base n^{10} in the same manner as said arm n^3 , and substantially as illustrated in Fig. 11.

The three brushes n , n' , and o are all driven from a common shaft p , to which the same are connected by belts and pulleys, and this shaft p is driven by the main driving-shaft (not shown) by means of the belt p' and pulley p^2 . The supports or arms n^3 and o^4 of the brushes are pressed inward to bring the brushes against the hat by means of the angle-levers t and t' , pivoted in the base of the machine, the free arms t^2 and t^3 of which are weighted.

The operation of the machine is as follows: The blocks d are first placed upon the heads

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b^9 of the shafts b^3 and a hat placed upon the block, which is in the uppermost position. The frame b' is then revolved by hand until the hat and block are brought into position for the beaters to operate upon the hat, being as before described—that position in which the shaft b^3 is substantially horizontal. The hat is guided to this position by the following preferred mechanism: The concave brush or guiding-piece g is continued upward into an oblique arm r , against which the crown B of the hat strikes and thereby moves the arm g' and beater carried thereby sufficiently to permit the crown entering the concave brush and the concave beater-strip h' . The crown B also strikes at its side upon a flexible guiding-strip r' , secured to the arm m^3 , carrying the beater m for the brim of the hat, thus moving said arm sufficiently to permit the brim and crown of the hat to rest in proper position with respect to the beater m . After the hat has reached this position the beaters are set into operation by allowing the tension-roll h^5 to rest upon the loose belt s , which drives the beater mechanism. The shaft b^3 and block d are also set in rotation, since the shaft a^2 , which rotates the arm and block, is preferably driven by the shaft k , which operates the beaters, said shaft a^2 being connected to the shaft k by a belt a^5 , substantially as shown. The next succeeding arm and block now reaches a position in which, as heretofore explained, the upper member of the arm and block are braked to prevent rotation. In this position another hat is placed upon the second block. After the first hat has been sufficiently beaten the frame b' is again turned and the crown B of the hat strikes against a flexible guide r^2 on the arm l' to throw said arm and particularly its beater mechanism out of the path of the hat. The guide r^2 serves also to guide the hat to the brushes n , n' , and o . The brim of the hat enters between the brushes n and n' and the crown rests against the conical and cylindrical portions of the brush o . The first hat is thereby thoroughly brushed and cleansed. During the brushing operation the second hat is being beaten and the third arm has reached the position in which a hat may be mounted upon the block. By now again turning the frame b' the first block with the hat thoroughly beaten and cleansed is brought to a position where it can be removed and replaced by another hat, the second hat undergoing at the same time a brushing operation and the third hat the beating operation. These operations are continued until all the hats have been operated upon. By stopping the beating mechanism and sending the blocks through the brushing mechanism all dust, dirt, or other extraneous matter settling in the brush-like surface of the block (being forced therein by the action of the beaters) may be thoroughly and quickly removed therefrom. During the rotation of the hat in the beating operation it is preferable that the

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brim be held flat, and to assist the brush f on the frame b' in supporting the brim is placed upon the upper end of the arm l' a flat projecting strip r^3 , preferably of wood.

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It will be manifestly obvious that as to some of the details of arrangement of parts of the machine modifications may be made without departing from the spirit or scope of my invention, and hence I do not wish to be understood as limiting myself to the precise construction and arrangement of all the parts as illustrated and hereinbefore explained; but,

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Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the character described, a solid block having an outer surface composed of bristles upon which the hat is mounted preparatory to the beating and cleansing operations and means for beating the hat while upon the block, substantially as and for the purposes described.

2. In a machine of the character described, a solid block having an outer surface composed of bristles upon which the hat is mounted preparatory to the beating and cleansing operations, means for beating the hat while upon the block, and means for rotating the block, substantially as and for the purposes described.

3. In a machine of the character described, a solid block having an outer surface composed of bristles upon which the hat is mounted preparatory to the beating and cleansing operations, means for beating the hat while upon the block, means for rotating said block and means for revolving the block while rotating, substantially as and for the purposes described.

4. In a machine of the character described, a block, a shaft carrying said block and consisting of two members having frictional contact, upon the upper member of which said block is mounted, means for rotating said shaft, means for revolving said shaft while rotating, and means for braking the rotation of the upper member of the shaft to stop the rotation of the block, during a certain portion of the revolution of said shaft and block, substantially as and for the purpose described.

5. In a machine of the character described, a block having a flexible pilose outer surface upon which the hat is mounted, reciprocatory beaters adapted to beat against the brim and crown of the hat, while the same is upon the block, and means for operating said reciprocatory beaters, substantially as and for the purposes described.

6. In a machine of the character described, a block having an outer surface of bristles upon which the hat is mounted, a series of reciprocatory beaters adapted to beat against the brim and crown of the hat, while the same is upon the block, and means for operating said beaters, substantially as and for the purposes described.

7. In a machine of the character described,

a block having an outer surface of bristles upon which the hat is mounted, a series of reciprocatory beaters adapted to beat against the brim and crown of the hat, while the same is upon the block, means for operating said beaters, and means for rotating said block and hat, during the operation of the beaters, substantially as and for the purposes described.

8. In a machine of the character described, a block having a flexible pilose outer surface upon which the hat is mounted, rotary brushes adapted to brush the brim and crown of the hat, while the same is upon the block, and means for operating said rotary brushes substantially as and for the purposes described.

9. In a machine of the character described, a block having an outer surface of bristles upon which the hat is mounted, a series of rotary brushes adapted to brush the brim and crown of the hat, while the same is upon the block, and means for operating said rotary brushes, substantially as and for the purposes described.

10. In a machine of the character described, a block having a flexible pilose outer surface upon which the hat is mounted, a series of rotary brushes adapted to brush the brim and crown of the hat, while the same is on the block, means for operating the rotary brushes, and means for rotating said block and hat, during the rotation of said brushes, substantially as and for the purposes described.

11. In a machine of the character described, a block upon which the hat is mounted, two rotary brushes adapted to brush the upper and lower faces of the hat-brim while the same is upon the block, a rotary brush consisting of a conical portion merging into a cylindrical portion adapted to brush the crown of the hat, means for rotating said brushes, and means for rotating the block and hat, during the rotation of the brushes, substantially as and for the purposes described.

12. In a machine of the character described, a series of reciprocating beaters, a frame consisting of a series of radially-disposed brackets, radially-disposed shafts each rotating in one of said brackets, a block having a flexible pilose outer surface upon which the hat is mounted adapted to be secured to each shaft,

means for rotating said shafts and blocks, and means for revolving said frame, during the rotation of said shafts to bring successive blocks and hats into and out of engagement with said beaters, substantially as and for the purposes described.

13. In a machine of the character described, a block having an outer surface, consisting of bristles or similar brush-like material upon which the crown of the hat is supported, reciprocatory beaters adapted to beat upon the crown of said hat, an auxiliary brush adapted to rest under the brim of the hat and a reciprocatory beater adapted to beat upon the upper surface of the hat-brim directly over said auxiliary brush, substantially as and for the purposes described.

14. In a machine of the character described, a block having an outer surface, consisting of bristles or analogous brush-like material upon which the crown of the hat is supported, reciprocatory beaters adapted to beat upon the crown of said hat, an auxiliary brush adapted to rest under the brim of the hat, a reciprocatory beater adapted to beat upon the upper surface of the hat-brim directly above the auxiliary brush, means for rotating said block and hat, and means for operating the reciprocatory beaters during the rotation of the block and hat, substantially as and for the purposes described.

15. In a machine of the character described, a block having an outer surface of bristles upon which the hat is mounted, a series of rotary brushes adapted to brush the hat while the same is upon the block, means for operating said brushes, means for rotating said block and hat, and means for constantly supporting the rotating brushes against the brim and crown of the hat during the rotation of said hat, substantially as and for the purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

CLAES ERIC WINTERROS.

Witnesses:

THOMAS M. SMITH,
RICHARD C. MAXWELL.