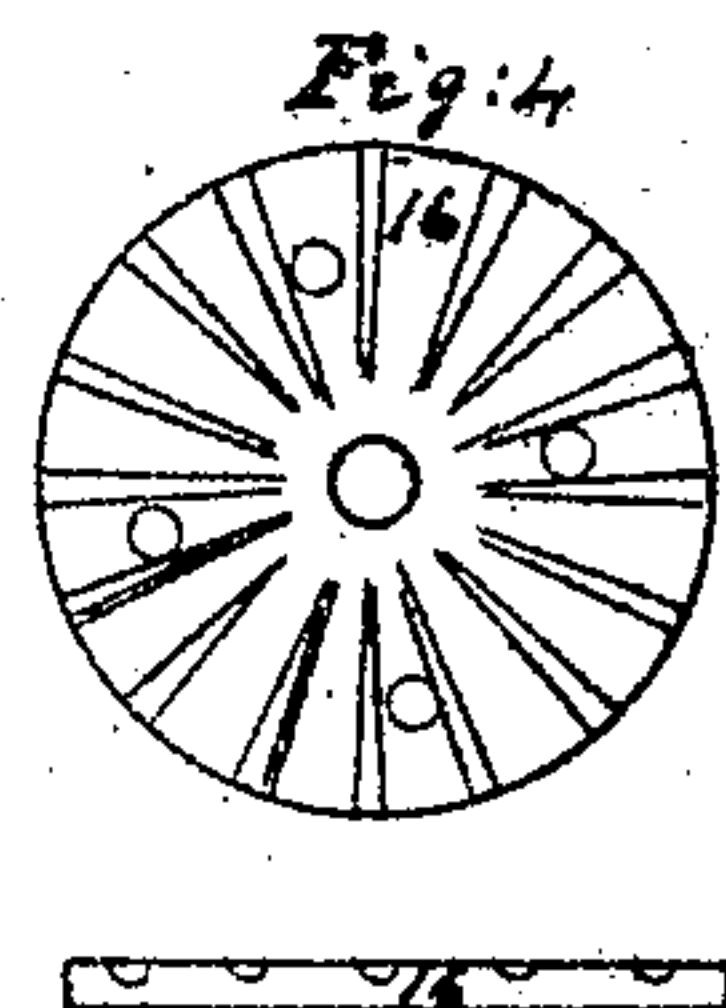
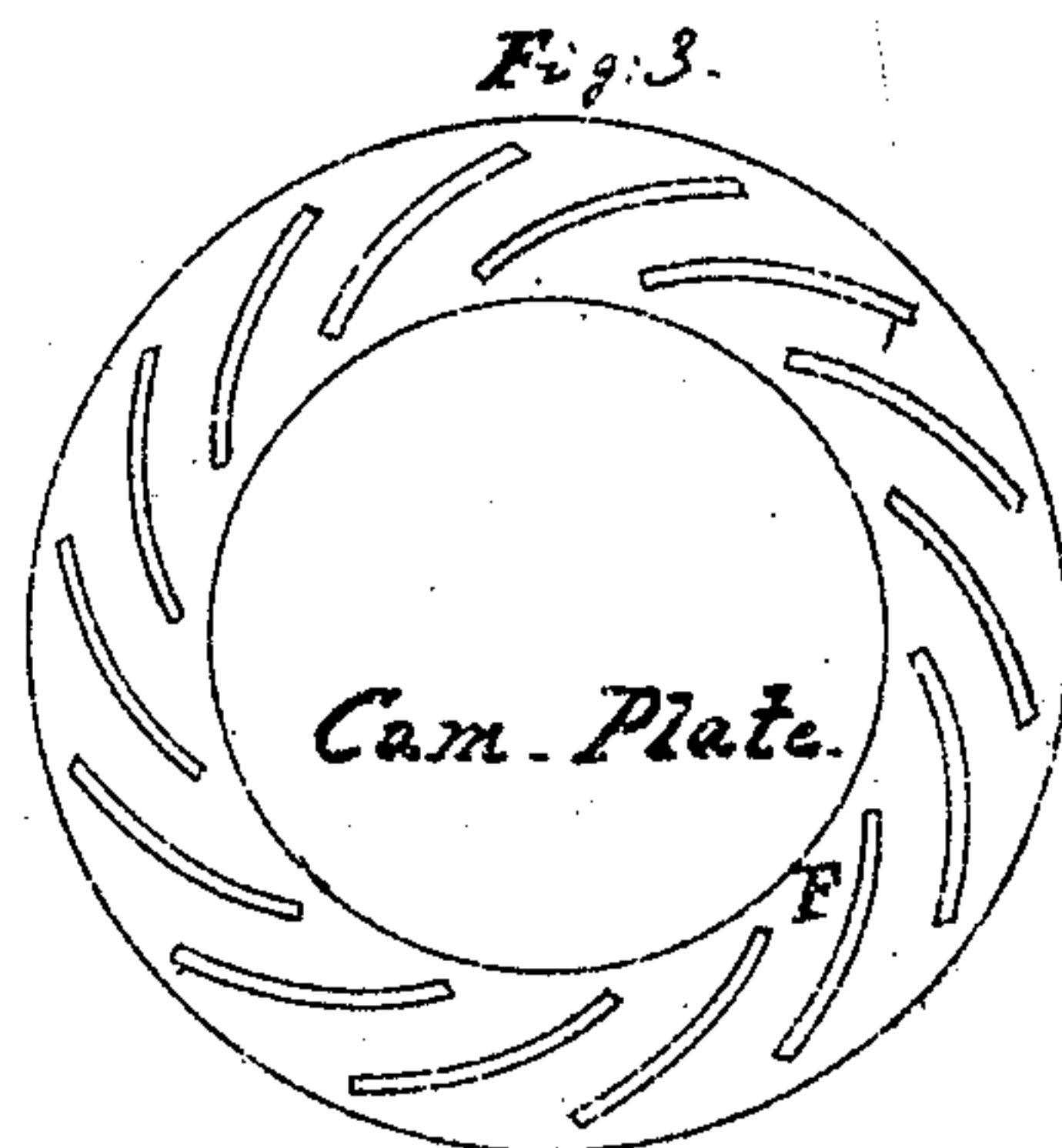
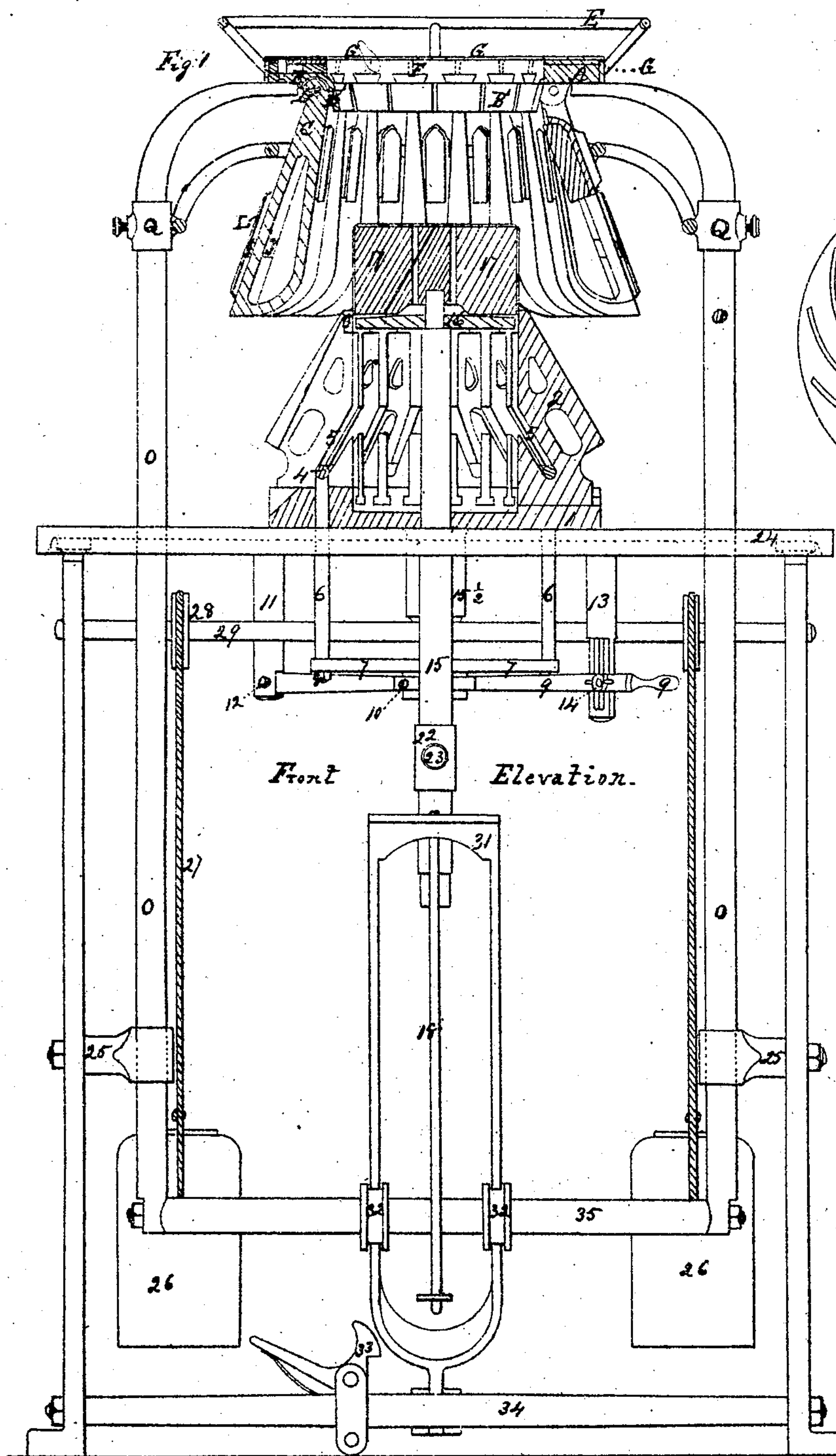


No. 73,541.

PATENTED JAN. 21, 1868.

G. A. MANDEVILLE & W. E. PINE.
MACHINE FOR BLOCKING AND STRETCHING HATS.

2 SHEETS—SHEET 1.



Inventors.

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Witneses.

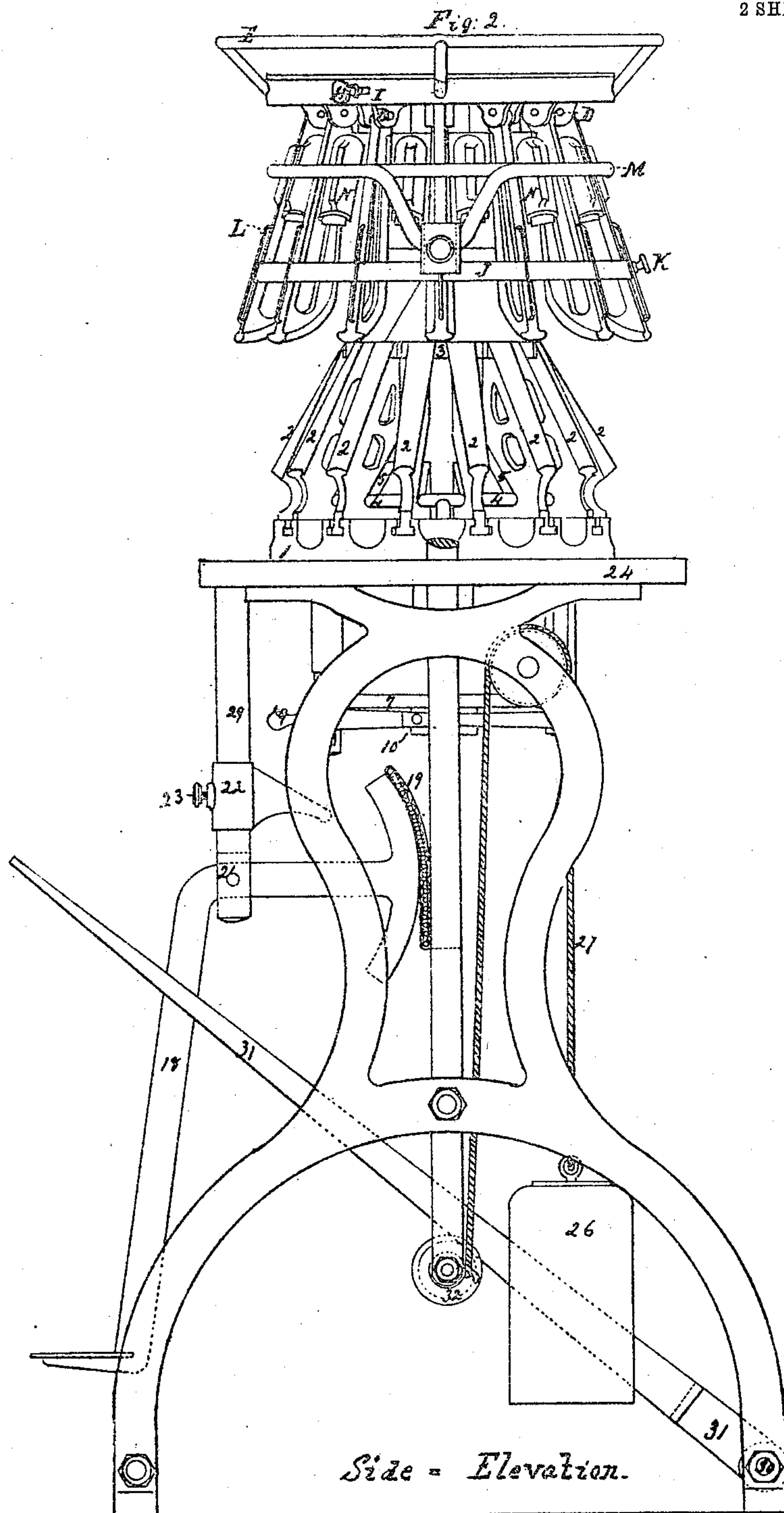
J. S. Patten
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United States Patent Office.

GEORGE A. MANDEVILLE AND WILLIAM E. PINE, OF NEWARK, NEW JERSEY.

Letters Patent No. 73,541, dated January 21, 1868.

IMPROVEMENT IN MACHINES FOR BLOCKING AND STRETCHING HATS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, GEORGE A. MANDEVILLE and WILLIAM E. PINE, both of the city of Newark, county of Essex, and State of New Jersey, have invented certain Improvements in Hat-Blocking Machines; and we do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of their invention sufficient to enable those skilled in the art to practise it.

In the felting of hat-bodies, they are almost universally made in a conical form, and generally thicker in some parts than in others, to admit of their being afterwards stretched in certain parts more than in others, and they are then subsequently blocked, or formed into the required shapes for the prevailing mode or fashion.

The object of our invention is to form or block the hat-body direct from the cone into any proper shape required, and discharge it from the machine on which it is formed or blocked ready for receiving its final finish, the necessary stretching, as well as blocking, being done in our machine, and by a rapid and continuous process, whilst the liability of injury to the body when being blocked, or whilst removing it from the block, incident to all machinery known to us which is now used for such purposes, is entirely avoided. When, as in some cases, a hat-body is too thick, or not sufficiently rounded at the tip, it may require the use of an independent stretching, to lay flat that portion of the cone.

Our invention consists in the novel construction, mode of operation, devices, and combinations of devices, hereinafter particularly described, the leading features of which may be said to be a system of rising and falling outer stretching-arms, radially set, whose inner heads form a sectional rim or band-plate; a system of radially-set brim-supporting arms, whose inner heads form also a sectional rim or band-plate; means for contracting and expanding the circles described by these sectional heads; means for graduating the amount of pressure at that point or line in the periphery of the felted cone where it is most required; means for firmly, but gently, clamping the body or cone, when in proper position for the forming process; and it also consists in numerous details, serving the more efficiently to attain these ends in a simple and economical manner, and with a great saving of time and labor. A mechanism embodying our invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation, the portion above the table being shown in vertical section through its centre.

Figure 2 is a side elevation, not in section.

Figure 3, a plan view of the cam-plate F, hereinafter described, and

Figure 4 a plan and edge view of the disk which supports the hat-block.

Like letters and ordinals refer to the same parts in the different figures.

The framework for supporting the machinery may be of any desirable form suitable for the purpose. That which we have shown is, in its general features, very similar to the table of a sewing-machine. About centrally upon this table is rigidly secured a radially-grooved or mortised plate, 1, the grooves being T-shaped, or otherwise formed, to receive the correspondingly-shaped tenons of each of the sliding arms 2. These arms are arranged about a central space, the whole series of them forming a circle. Each arm, at its top and on its inner side, is broader than at other parts, as shown at 3, in order to fill up the spaces between the arms at their tops, and thus, when brought together, form such top into a continuous rim. Each arm has also, on its inner side, an inclined slot, 5. 4 is a ring, lying freely in these slots, and it is shown connected by rods, 6, which pass through holes in the table to an armed sleeve, 7, which is secured to the rods by nuts 8. This sleeve is shown as surrounding the rising and falling shaft 15. 9 is a hand-lever, pivoted, at 12, to a stud or hanger, 11, and through a sleeve or band on this lever, surrounding the sleeve 7, a pointed screw, 10, passes, to hold the same to sleeve 7. By lengthening sleeve 7, and putting a screw-thread thereon, and then passing this sleeve through a bracket depending from the under side of the table, a threaded wheel or button in a slot of said bracket, and surrounding said sleeve, may serve, instead of the lever, to lift or lower the shaft 15; but, from its quicker action and facility of adjustment, we prefer to use the lever. 13 is a slotted stud or hanger, and 14 a thumb-nut, turning upon a screw, projecting from the side of the lever through the slot, to admit of adjusting and securing in the desired position the ring 4, the raising or lowering of the ring, by reason of its action on the inclined slots 5, serving to force simultaneously all the arms, 2, either to or from the centre. 15 is a central vertically-sliding pressing-shaft, passing through a sleeve or way, 15¹, projecting beneath the table. 16 is

a radially-grooved and perforated disk or plate, supported near the top of this shaft, and forming a support or rest for the hat-block or former 17, which lies loosely upon it. Instead of this plate 16, we propose to use, if desired, a plate, perforated but not grooved, or grooved but not perforated, or a skeleton plate, or simply two or more cross-bars, or a central disk or button, with arms, or any equivalent rest for the hat-block, which will at the same time allow the free escape of the air and water. This block is covered with brass or other smooth-surfaced metal, to prevent the adhesion of the hat-body to the block, such adhesion always attending the use of blocks made of wood only, and causing much injury to the body when in the act of blocking, as well as when removing it from the block. Holes are formed through this block from top to bottom, for the passage of air, as hereinafter stated; they also incidentally allow any water expressed from the tip of the hat-body, and not otherwise disposed of, to drip through. This metal covering I may dispense with at the centre portion of the tip of the block, where the adhesion of the hat-body is the least. The block is diagonally cut, as shown, as is customary. 18 is a bent lever, connected to shaft 15 by a chain, 19. This lever is pivoted, at 21, to a stud or hanger, 20, and the part of it to which the chain is attached is formed in the arc of a circle, of which this pivot is the centre. This arc is in close proximity to the shaft 15, and has a groove in its periphery to receive the chain. This arc, during the motions of the lever, always secures a uniform expenditure of power at every stage of elevation of the shaft, for the reason that the pull of the chain upon the shaft is always necessarily in precisely the same vertical line, and never deflected or slanted out of that line. 22 is a sleeve on hanger 20, and adjustable by a set-screw, 23. Its inner projection serves to arrest the upward lift of the arc, and limits, as desired, the distance to which the shaft 15 shall be raised. To the legs of the table are secured guides, 25, through which, as well as through guide-holes in the table, slide the vertical shafts or rods O of the rising and falling frame, which carries and supports the upper and outer set of pressers, and adjacent parts. This whole frame we will hereinafter designate as frame O. It is balanced by weights 26, suspended to each of the chains or cords 27, which pass over rollers 28, which play freely on shaft 29, the other ends of said chains being secured to the frame, as shown. 30 represents a brace or cross-bar, to which is centred a lever, 31, for operating the frame, said lever working over loose rollers 32, on the brace or cross-bar 35 of the frame, and being secured, when pressed down to its lowest limit, by a spring-catch, 33, attached to the cross-bar or brace 34 of the table.

We will now proceed to describe the parts supported on and carried by the upper part of the rising and falling frame O.

A is a radially-grooved or mortised plate, in which are securely held the circular series of sliding plates, B, mortised or dove-tailed to slide therein. These plates have inner and downwardly-inclined plates or faces, B', enough broader than the slides to admit of their edges coming into contact, thus forming, when so in contact, a flat slightly-flaring band-plate. Each of these plates has a short pin projecting above its upper surface, which takes into one of the curved grooves or cams in the cam-plate F, fig. 3. This plate is secured above them by a cap-plate, G, which surmounts it. Thumb-screws H H, working through slots or openings cut away in the cap, and secured to the plate A, serve to secure the cam-plate in any desired position, for the regulation of the distance that these slides shall be secured from the centre of the machine, whilst the turning of the cam-plate by means of the handle E, through the action of its curved grooves upon the pins, compels the slides to approach or recede from the centre. To each of these slides is hinged or pivoted, by a pin, D, a pressing-arm, C, of peculiar form, the whole series of these arms forming a circle, whose diameter, at their lower ends, may be increased or diminished by the adjustment up or down of ring J.

Arms C are to be formed substantially as shown, and have these distinguishing characteristics, viz, their inner faces are rounded off, so as not to present any angular or sharp surface or edge, to cut, scrape, or damage the felt; and they have less inclination on their inner faces than have the sliding arms 2, in order that the pressure on the hat-body shall be given just where the greatest strain or stretching is required; and but little, if any, elsewhere.

The ring J may be described as the zone of a cone, its sides tapering, to coincide with the conical form of the system of pressing-arms which it surrounds, and it is prevented from accidentally escaping from them by passing through loops or guards L, on or in the arms. Vertical slots on this ring allow of its vertical adjustment to any desired position, by means of set-screws K, such adjustment up or down causing the expansion or contraction to or from the centre of the circle formed by the series of pressing-arms C.

M represents a ring, to the inner side of which is attached a series of boxes, N, open on their faces, and closed on the top, corresponding in number to the lower sliding arms 2. These boxes are filled on their inner sides with rubber, but they may be filled with cloth, felt, or suitable yielding material, for the purpose of clamping, at the proper period, the hat-body, between themselves and the sliding arms 2. This rubber or other material should project beyond the surface of the box, and may be dove-tailed or otherwise held in position therein. This ring may be permanently fixed upon the sliding frame O, but we prefer to make it adjustable in position on the frame, and for this purpose we have shown it as fitted to be slid up or down thereon, and capable of adjustment at will, by means of sleeves Q and set-screws P.

The lower and inner arms 2, on their outer edges, taper downwards, being broadest at the top, for the purpose of preventing the hat-body from slipping upwards when the curved or projecting portion c of the arms C presses the body into the spaces between the lower arms. The upper arms, conversely, taper upwards, being narrowest at the top, thus preserving nearly equal breadths of space between the sides of both sets of arms when in action, throughout their whole lengths, to insure good work.

The perforations and grooves in the plate or disk 16 are intended to allow the free escape of air and water expressed from the tip or crown of the hat whilst in the act of blocking.

When, as in some cases, a hat-body is too thick, or not sufficiently rounded at the tip, it may require, before being blocked, to be stretched somewhat, in order to lay flat that portion of the cone.

The operation of our machine is as follows: We first loosen the thumb-screw 14, and throw the lever 9 upwards to its full extent, in order to expand the inner series of arms, 2. The hat-block 17 is then placed on the plate 16. The lever 9 is then pressed down, until the arms 2 are brought sufficiently close together to allow block 17 to pass freely between them. Thumb-screw 14 is then tightened, to hold the arms 2 firmly in their proper position. The frame O is next pressed down, bringing the upper band-plates B' near to the lower band-plates 3. Thumb-screws H H are then loosened, and, by a circular movement of ring or handle E, a corresponding size, adapted to that of the lower band-plate, is obtained. The thumb-screws II II are then secured. The frame O is then thrown up, and the hat-body placed over the block, and the lower arms 2. The frame or gate O is now brought down by lever 31, this lever being then secured by spring-catch 33. Lever 18 is next forced down, by the foot of the operator or otherwise, thus causing the chain 19 to drive the hat-block up into the crown of the hat. The work is then complete. The frame O is now lifted, and the hat and block taken off. The block is removed from the hat, and the operation is repeated for each hat to be blocked.

It is evident that blocks of any size, or of any form upon their tops, whether flat, convex, oval, or otherwise, may be used with equal success upon our machine, and as fashion or taste may demand, and without any change in the principle or structure of the machine.

We are aware that two sets of ribs or arms, between which the hat-brim or crown is stretched and corrugated, have heretofore been used, and also that the same have been used in connection with a ring or band, over which the brim is broken. Such devices, therefore, we do not claim; but

What we do claim, and desire to secure by Letters Patent, is—

1. A forming-block, combined with a system of radially-adjustable brim-supporting arms, constructed and operating substantially as described.
2. A circular series of radially-sliding brim-supporting arms, to enter the body of the hat, and adjustable in fixed positions to and from a centre, substantially as shown and described.
3. The adjustable ring 4, sliding in the inclined slots, to vary the positions of and hold securely the radial brim-supporting arms in the desired fixed position, either to or from a centre.
4. The combination, with a radially-mortised plate, of a circular system of radial brim-supporting arms, arranged to receive the hat-block within the circle they describe.
5. The radial arms of the system of brim-supporting arms, constructed with their outer surfaces tapering gradually downward from the top of the sectional band-plate, as and for the purpose described.
6. The combination of the ring 4, its supporting-frame, and an adjustable lever, for operating it and holding the brim-supporting arms positively and firmly in the position to which they may be adjusted.
7. The combination of a perforated hat-forming block with a grooved, perforated, or skeleton supporting-plate, for the purpose set forth.
8. The arrangement of the series of clamping-fingers with the series of stretching-arms, and with their supporting-frame, whereby is provided the means for adjustment of the clamping-fingers, independent of the means for the adjustment of the stretching-arms, substantially as described.
9. The combination of grooved cam-plate F, whether with or without its rim or handle, with the system of radial stretching-arms, substantially as and for the purpose set forth.
10. The arrangement, in a hat-blocking machine, of lever 18 with the adjustable stop 22, to limit the upward movement of the hat-block, for the purpose set forth.
11. The combination of a set of radial stretching-arms with a set of slides, the inner surfaces of such slides forming the banding-rim, substantially as described.
12. The combination of the loose adjustable ring J with the outer system of stretching-arms, for the purpose of graduating the amount of stretch to be given to the brim of the hat-body, substantially as described.
13. The loops or guards upon the radial stretching-arms, to sustain the ring J, and serving therewith to form slots or guides, to insure the positive expansion of the system of stretching-arms by the action of the ring, when raised.
14. The combination, with the stretcher-carrying sliding frame, of the counterbalancing weights, substantially as shown and described.
15. The combination of an outer system of rising and falling stretching-arms with an inner system of radially-sliding brim-supporting arms, which have no rising and falling motion.
16. The combination in the same machine, and for joint action, of a system of radially-adjustable brim-supporting arms, a system of stretching-arms, and a rising hat-forming block, the same operating substantially as described.

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WM. E. PINE.

Witnesses:

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