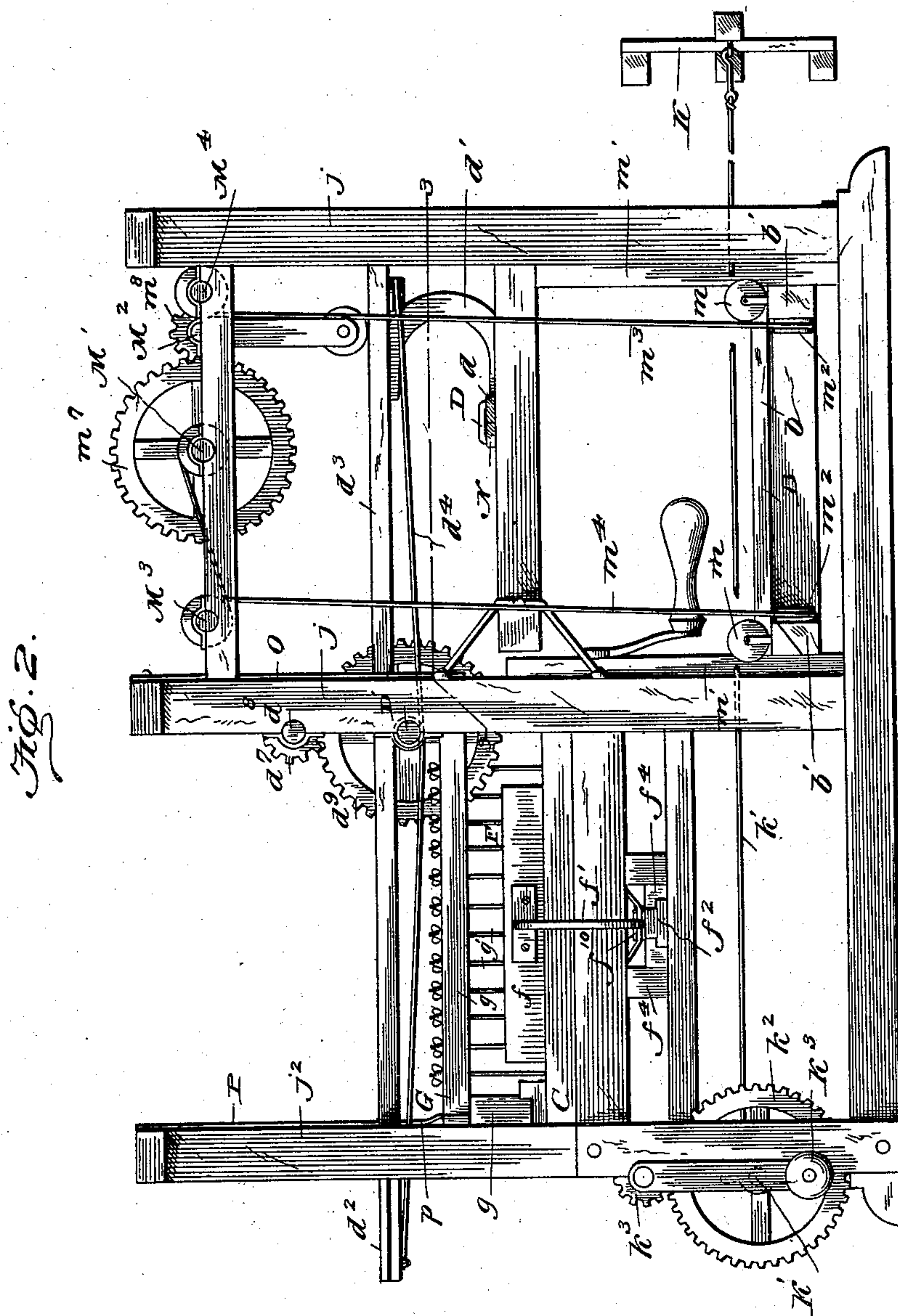


6 Sheets—Sheet 2.

No. 567,438.

Patented Sept. 8, 1896.



Witnesses:
Wm. O. Ashlee
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By Edoon Bros.
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(No Model.)

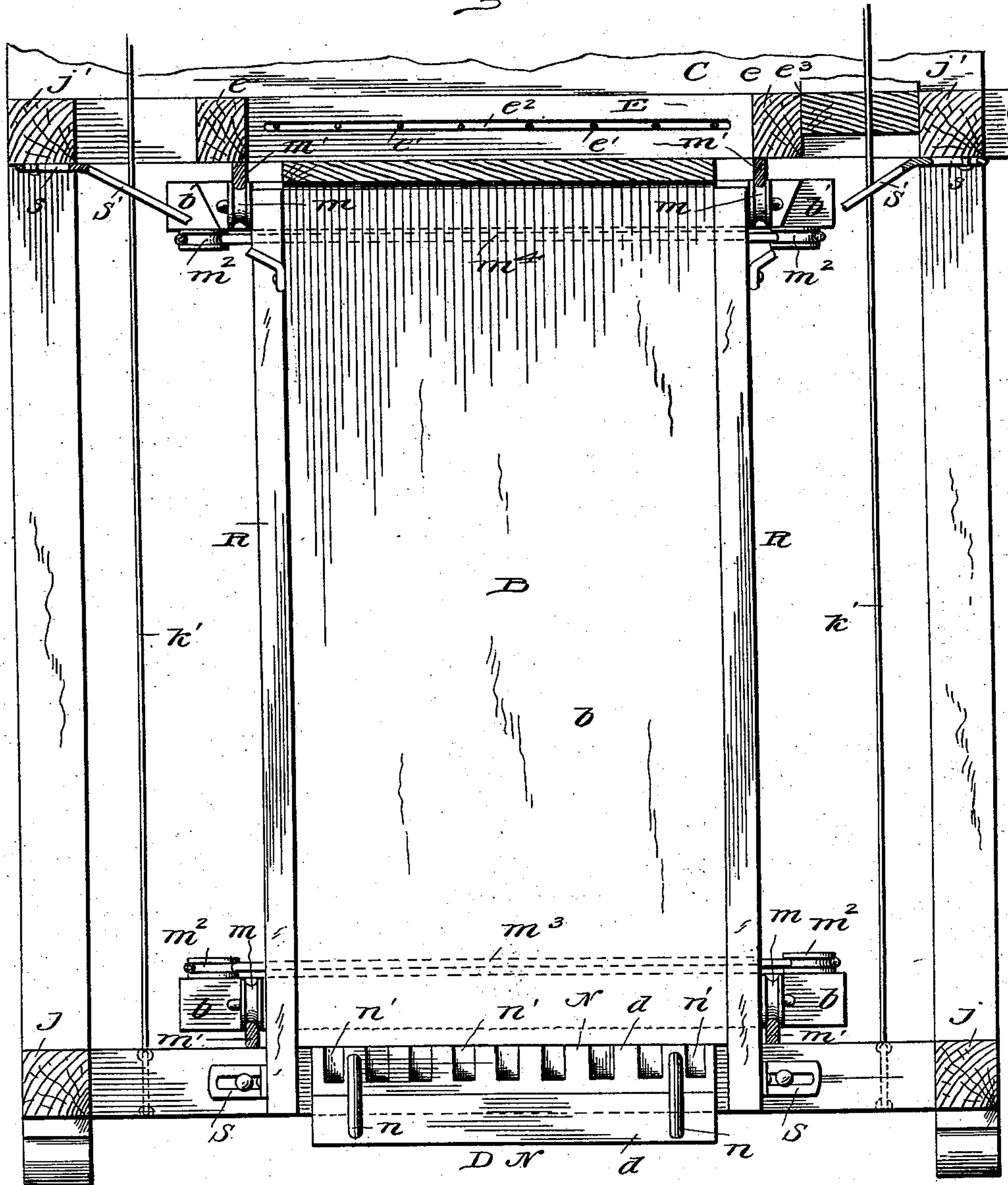
6 Sheets—Sheet 3.

T. W. ALEXANDER.
SOAP SLABBING AND CUTTING MACHINE.

No. 567,438.

Patented Sept. 8, 1896.

Fig. 3.



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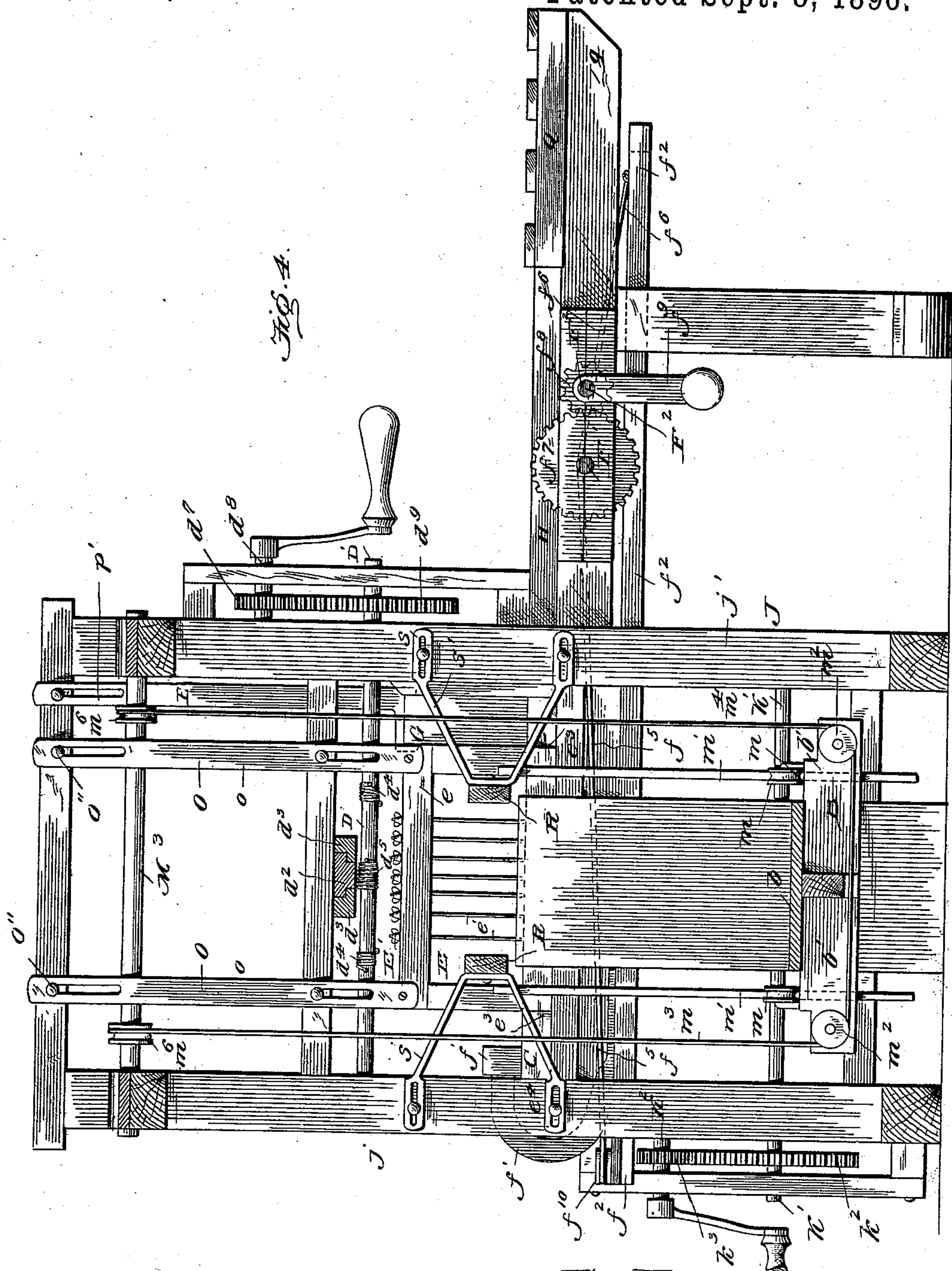
(No Model.)

6 Sheets—Sheet 4.

T. W. ALEXANDER.
SOAP SLABBING AND CUTTING MACHINE.

No. 567,438.

Patented Sept. 8, 1896.



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(No Model.)

6 Sheets—Sheet 5.

T. W. ALEXANDER.
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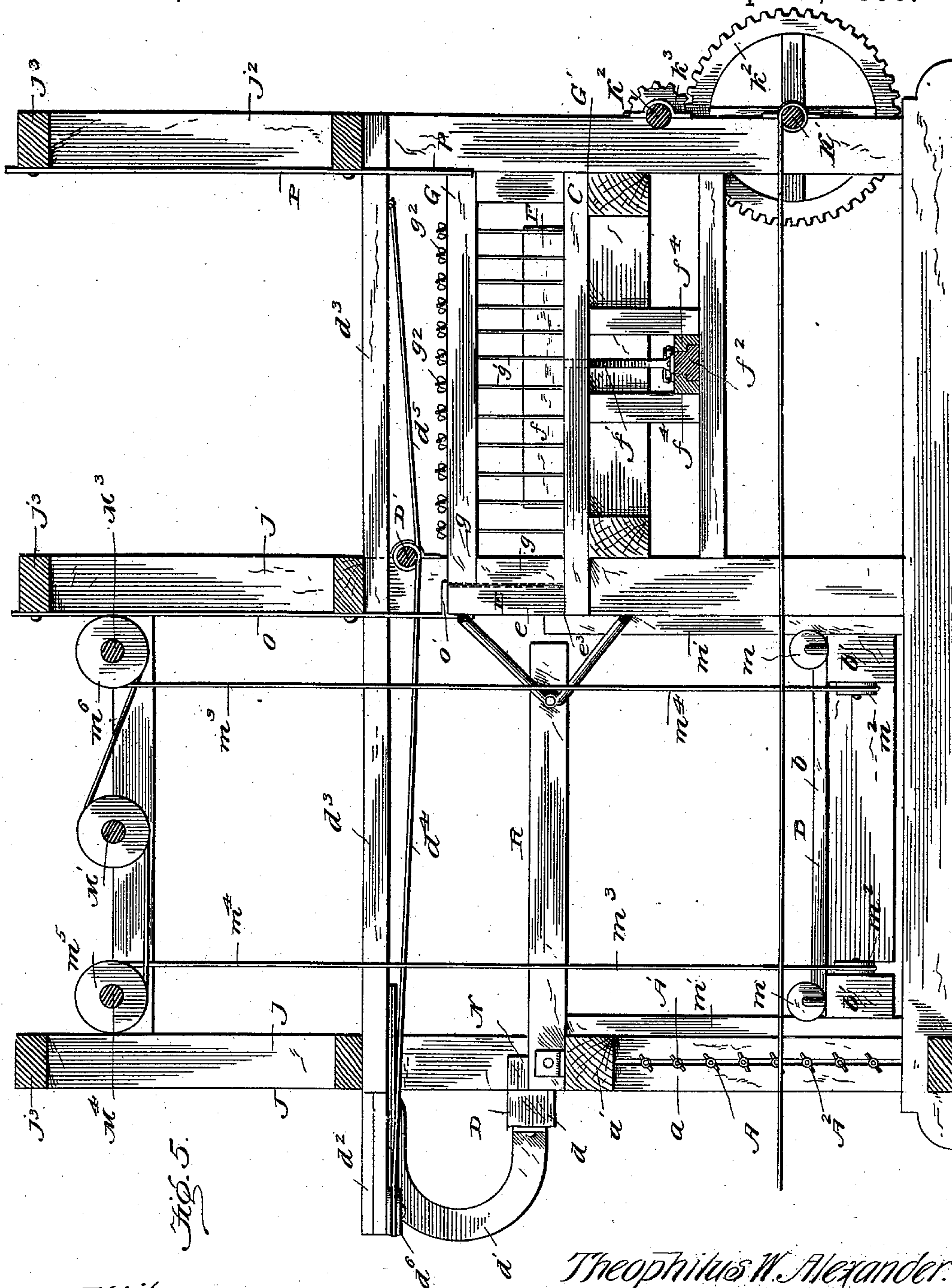


Fig. 5.

Witnesses:

Wm. O. Ashiee
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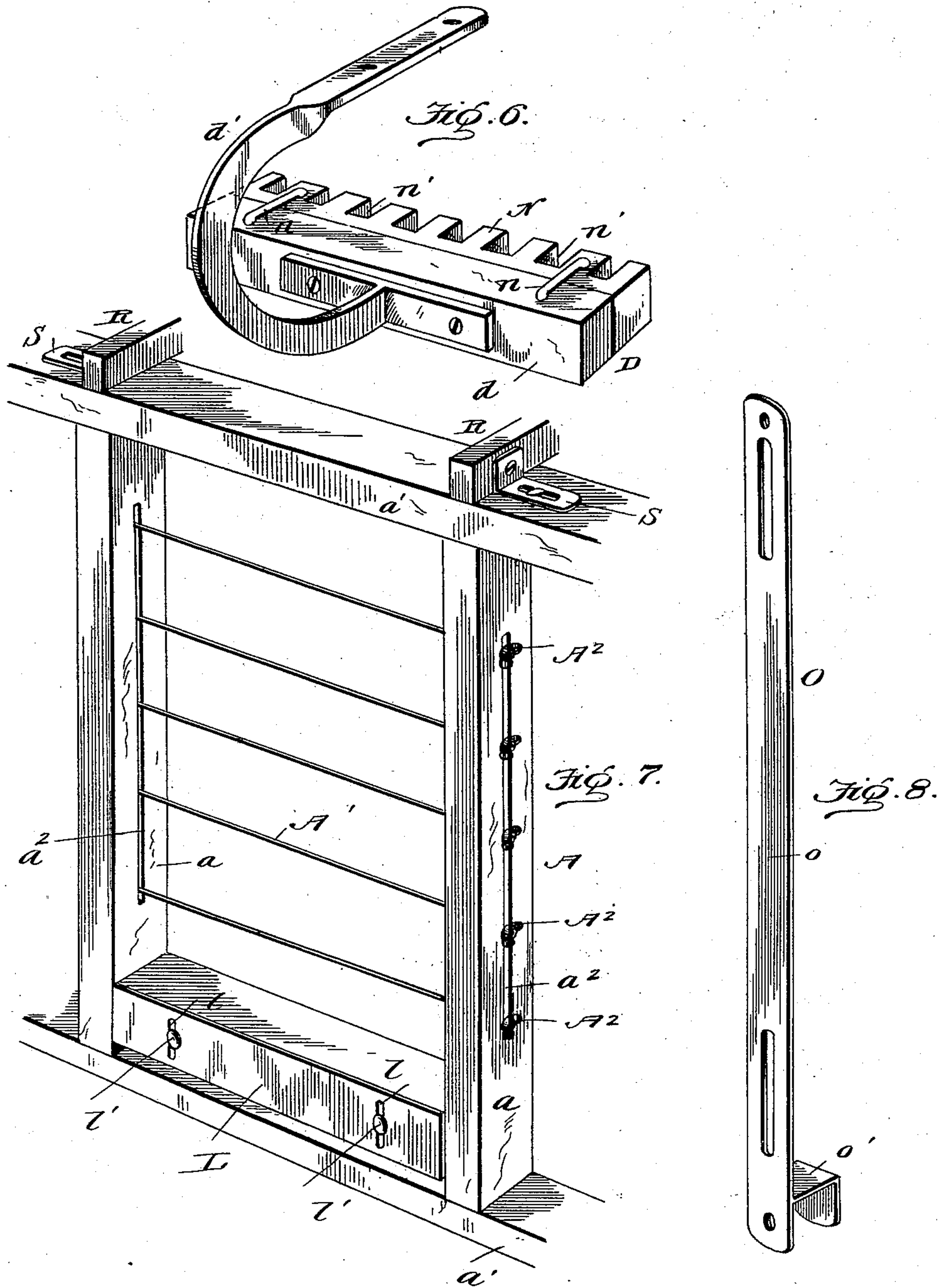
(No Model.)

6 Sheets—Sheet 6.

T. W. ALEXANDER.
SOAP SLABBING AND CUTTING MACHINE.

No. 567,438.

Patented Sept. 8, 1896.



Witnesses:

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UNITED STATES PATENT OFFICE.

THEOPHILUS W. ALEXANDER, OF BURLINGTON, IOWA.

SOAP SLABBING AND CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 567,438, dated September 8, 1896.

Application filed April 13, 1896. Serial No. 587,385. (No model.)

To all whom it may concern:

Be it known that I, THEOPHILUS W. ALEXANDER, a citizen of the United States, residing at Burlington, in the county of Des Moines and State of Iowa, have invented certain new and useful Improvements in Soap Slabbing and Cutting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in soap slabbing and cutting machines designed to cut the block of soap into slabs, then into bars, then into cakes, and finally move the cakes onto a drying-rack, which can easily be removed with the cakes and deposited into a drying-room.

The object that I have in view is to provide simple devices under the direct control of the attendant (one or more) by which the several operations of slabbing, cutting, and moving the soap through the machine and to the detachable rack can be accomplished without undue effort on the part of the attendant.

A further object of the invention is to provide means whereby the size of the slabs, bars, and cakes of soap may be varied as desired; also to provide means for removing dirt and refuse which may adhere to the block of soap; also to provide adjustable guides, which properly direct the slabs and cakes of soap through the machine; also to provide means for steadily and securely holding the cutter-wire frames in position, while at the same time said holding means may be adjusted easily to permit the removal of the said frames for the purpose of adjusting the cutter-wires therein, so as to vary the size of the slabs, bars, and cakes.

To the accomplishment of these ends my invention consists in the novel combination of devices and in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to understand my invention, I have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a plan view of a soap slabbing and cutting machine embodying my invention. Fig. 2 is an elevation looking at one end of the machine in the direction indicated by the arrow X in Fig. 1. Fig. 3 is a horizontal sectional view on the plane indicated by the dotted line 3 3 of Fig. 2. Fig. 4 is a vertical sectional elevation on the plane indicated by the dotted line 4 4 of Fig. 1. Fig. 5 is a vertical sectional elevation at right angles to Fig. 4 and on the plane indicated by the dotted line 5 5 of Fig. 1. Fig. 6 is a detail view of the transversely-movable pusher-head that operates to move the slab on the first table. Fig. 7 is a detail view of the slab-cutting gate and the dirt-scraper. Fig. 8 is a detail view of one of the retainers for holding a cutter-gate in the main frame.

Like letters of reference denote corresponding parts in all the figures of the drawings.

In my improved machine a block of soap is run or carried up on a suitable portable platform to the first cutter-gate A, and by suitable appliances this block is drawn or forced through this gate A and thereby cut into slabs of appropriate thickness. The slabbed block, as it passes through and is cut by the gate A, is deposited on an intermittently-operated elevator B, having suitable appliances whereby it may be raised at will to present the slabs of soap to the level of the first table C. Each slab from the block of soap is forced from the elevator B by means of a transversely-movable pusher D, and as the slab is pushed off the elevator it passes through the second cutter-gate E, situated between the elevator B and the first table C; whereby the vertical wires in the gate operate to sever the slab into bars of appropriate width. After the soap is deposited in bar form on the first table C the longitudinally-movable pusher-head F is brought into play, said pusher-head F being guided and operated to move in a path at right angles to the path traversed by the first pusher D, and this second pusher F forces the soap from the first table C through the third cutter-gate G and onto the second table H, the wires in said third gate operating to cut the bars of soap into cakes of appropriate length. At the end of the second receiving-table H is arranged a removable rack upon which the cakes of soap

attached to the opposite end of the slide-bar d^2 , and is coiled around the shaft D' in the opposite direction to the ends of the cable d^4 . The operating-shaft D' for the pusher D is journaled in suitable bearings on the upright part of the frame J , and it extends above the second gate E , one end of said shaft D' having a gear d^6 , which meshes with a pinion d^7 on the hand-shaft d^8 , journaled in a suitable bracket and provided with a crank for its operation by hand. It will be seen that when the shaft D' is turned in one direction the cable d^4 will be coiled thereon to draw the slide-bar d^2 and the pusher D toward the gate E and the table C , the cable d being uncoiled from the shaft during this operation; but when the shaft D' is turned in the reverse direction the cable d^4 will be uncoiled from the shaft and the cable d^5 will be coiled thereon, so as to move the slide-bar d^2 in a direction to carry the pusher D away from the gate E . The head d of this transversely-movable pusher D is provided with a face-block N , which is removably attached to the head d by the clamps n , which engage with the face-block and with the head. The exposed face or side of this face-block is provided with a groove or recess n' , which, when the pusher is moved close up to the cutter-gate E , is adapted to receive the cutter-wire in said gate, whereby the pusher D may be adjusted to such an extent as to project the face-block N through the cutter-gate E and thus force the slab or bars of soap entirely through the gate E , so that the bars of soap, when operated on by the longitudinally-movable pusher G , may pass along the table C without interference from the cutter-gate E . As the number of wires in the cutter-gate may be varied, I contemplate providing face-blocks N with different numbers of grooves or recesses therein to correspond to the number of cutter-wires used in the gate E , and these face-blocks may be used interchangeably with the head d of the pusher D . The removal of one face-block and substitution of other face-blocks therefor is easily effected by employing suitable clamps for detachably fastening the desired face-block to the pusher-head. The pusher-head d and its face-block N are sustained by the arm or hanger d' to travel in a path parallel to the top surface of the table C , to adapt the pusher D to shove the topmost slab of soap on the elevator off the same, through the gate E , and onto the table C .

The cutter-gate E consists of a suitable frame e and the vertical cutter wire or wires e' . The top and bottom bars of this gate-frame are provided with longitudinal slots e^2 to receive the ends of the cutter-wires e' and the eyebolts E' , by which the cutter-wires are held in place. There may be any number of vertical cutter-wires e' used in the gate-frame e , and they are arranged parallel to each other and spaced at suitable distances apart to cut the soap slab into bars of appropriate

width as the soap is forced through the gate E by the action of the pusher D . Said cutter-gate E is fitted in a recess e^3 , cut or formed in the bar e^4 of the frame J , so that the bottom rail of said gate-frame is flush with the top of the table C , and this gate E is parallel with the first gate A , one gate, A , lying on one side of the elevator B and the other gate, E , lying on the opposite side of said elevator and above the horizontal level of the gate A . The second gate, E , is held in place by fitting in the seat e^3 and by the employment of the retainers O . The retainer O consists, preferably, of the long slotted shank o and the angular foot o' . The shanks of the retainers are applied against cross-bars of the frame J above the gate E , and they are held in place adjustably by means of the clamping-screws o'' , which pass through the slots o' and are embedded in cross-bars of the frame J . These retainers are arranged so that their angular feet embrace and engage with the upper rail of the vertically-wired gate E , and the gate is thus held in place at its lower side by the seat e^3 and at its upper side by the retainers O . The retainers may be lifted to free the feet o' from the frame of the gate, and said gate may then be lifted out of its seat e^3 in the machine for the purpose of having easy access to the gate-frame, so that the cutter-wires e' may be adjusted in the frame, as desired.

The tables C and H are arranged in line with each other through the length of the machine, and top surfaces of the two tables are flush or on a level, so that the soap may easily pass from the table C to the table H . Between the two tables C H is the third cutter-gate G , which is fitted or seated in a recess G' , formed transversely in the tables, and which recess divides the table C from the table H . This recess G' forms a seat for the lower rail of the cutter-gate G , and said rail of the gate lies substantially flush with top faces of the two tables C H . The cutter-gate G is arranged in a vertical position across the tables, and it occupies a position at right angles to the gates A E . The third or final cutter-gate G comprises a frame g and the vertical cutter-wires g' , said frame having its top and bottom bars slotted longitudinally, as at g^2 , to receive the ends of the cutter-wires g' and the eyebolts g^3 , by which the cutter-wires are adjustably and detachably fastened in the frame g for the purpose of cutting the bars of soap into cakes of appropriate length. The cutter-gate G is held in position by fitting the lower rail thereof in the seat G' and by engaging the angular feet p of the adjustable retainers P with the top rail of said gate-frame. The retainers P for the gate G are similar to the retainers O for the gate E in that said retainers P have slotted shanks p' , which are adjustably fastened to the upright part of the frame J by screws or fasteners, which permit the retainers P to be lifted out of engagement with the gate-frame, thus pro-

viding for the ready removal of the gate G from the machine for the purpose of adjusting the cutter-wires in the frame, as may be desired.

5 The pusher F is arranged to travel lengthwise of the table C toward and from the cutter-gate G. To bring the pusher F close down to the table and enable it to properly move the soap bars up to the gate G, the pusher-head f is fitted against the top of the table G and the operative devices for moving the pusher are arranged below the tables C II. The pusher-head f is carried by an arm f' , which is fastened to a slide-bar f^2 , arranged
10 below the tables C II and extending lengthwise of the same, and to enable the pusher-head and its carrying-arm f' to travel along the table C a longitudinal slot f^3 is cut or produced in the table C, which slot receives the
20 arm f' as the pusher-head is moved back and forth along the table. The slide-bar f^2 for the pusher is fitted and confined slidably between the fixed guides f^4 , and said slide-bar f^2 is operated by the cords f^5 f^6 , attached to
25 the shaft F'. This shaft F' is journaled in suitable bearings at or near the end of the table H, and on one end of the shaft is a gear f^7 , which meshes with a pinion f^8 of the shaft F², journaled in a bracket on the table H and
30 provided with a hand-crank f^9 for its operation by hand. The ends of the cord f^5 are attached to and coiled in one direction on the shaft F', and said cord f^5 passes around a guide-sheave f^{10} , journaled on the slide-bar f^2
35 at one end thereof, so that when the shaft F' is turned in one direction the cord f^5 will be wound thereon to move the bar f^2 and the pusher-head f toward the gate G. The other operating-cord, f^6 , is attached to and coiled
40 on the shaft F' in the reverse direction to the coils of the cord f^5 , and said cord f^6 is fastened to the opposite end of the slide f^2 from the sheave f^{10} , whereby the cord f^6 is made to draw the pusher-head f away from the gate
45 G when the shaft F' is turned in the reverse direction.

Projecting from the outer end of the table H are the side rails q q of the frame J, and to these rails are fastened the spaced bars q'
50 q' . On these rails q are placed the removable rack Q, the length of which exceeds the width of the table H and the bars of which are arranged to fit between the rails q' . This rack is adapted to rest on the rails q , with its longitudinal bars fitting between the bars q' and
55 with its end bars bearing against the rails q , and the rack can thus rest flush with the table H, so that the cakes of soap may be shoved or adjusted on the bars of the rack Q. When
60 the rack is filled with cakes of soap, it can be lifted off the machine and carried to the drying-room, after which another rack may be placed on the machine.

The slab of soap, as it is forced by the
65 pusher D from the elevator B through the gate E and onto the table C, is prevented from moving edgewise out of place and is properly

directed to and through the gate E by the employment of horizontal guide rails or bars R R, which are arranged on a level with or
70 somewhat above the top of the table C, and which bars or rails are spaced a suitable distance from each other to enable the top slab of soap to be raised by the elevator up to a
75 position between the rails, so that the soap slab is raised by the elevator in a position between the guide rails or bars and in line with the pusher-head D and the gate E, whereby the pusher can force the soap slab through
80 the gate E onto the table C.

The guide-rails are held in place by brackets S S', two of which are provided for each rail, and these brackets are constructed in a
suitable way to provide for the adjustment of the guide-rails toward or from each other for
85 the purpose of adapting the guide-rails to slabs of soap which may vary in width. The bracket S at one end of each guide-rail is preferably in the shape of an angular plate, one end of which is fastened to the guide-rail
90 and the other end of which is slotted and adjustably attached by a bolt or screw to one of the cross-rails of the frame J. The other bracket, S', is shown as of spider-like form, with a head at one end for the attachment of
95 the spider-shaped bracket to the guide-rail, and with slotted feet s , which are adjustably fastened to an upright j' of the frame J. It will be seen that the guide-rails can be brought
100 closer together or moved away from each other by proper adjustment of the brackets S S', so as to vary the relative position of the guide-rails according to the width of the soap slab.

It will be noted that the shafts M', D', and F' are all arranged within convenient reach
105 of the operator stationed at one side of the machine, in order that the operator may easily adjust the elevator or either of the pushers D or F without changing his position or going from one side to another of the machine after
110 the soap has been cut or divided horizontally into slabs by operating the shaft that forces the block of soap through the first or slab-cutting gate A.

This being the construction of my machine,
115 the operation may be described as follows: The soap block is placed in position opposite to the gate A on the outside of the machine and the slabbing-block is adjusted against the
120 outside of the block of soap. The winding-shaft is rotated to draw on the pull-cables and the slabbing-block to force the soap through the gate A, and during the passage of the soap block through the gate it is cut or divided
125 horizontally by the horizontal cutter-wires into slabs of appropriate thickness. The block of soap thus cut into slabs by the wires in the gate A is deposited on the elevator B, after which the slab-block is released and the machine is now ready for operation. The op-
130 erator raises the elevator B until the top slab of soap is between the guide-rails R R and in line with the gate E and the pusher D, and the shaft D' is now operated to move the

pusher D toward the gate E, thus forcing the top slab of soap through the gate E and onto the table C, the vertical wires in the gate E cutting the slab into bars of appropriate width, after which the shaft D' is reversed to draw the pusher D back to a position over the gate A. The operator now rotates the shaft F' to move the pusher F toward the gate G, and said pusher F forces the bars of soap over the table C and through the gate G, the vertical wires in which cut the bars of soap into cakes of appropriate length. The pusher F is now moved to its first position at one edge of the table by reversing the shaft F'. The cakes of soap now rest on the table H, and they are propelled or shoved along the table by the impact of subsequent cakes or bars moved by the pusher F through the gate G, and the cakes of soap may be moved onto the drying-rack or placed thereon by hand. The operator now raises the elevator until the second slab of soap is brought between the guide-rails R R and in line with the pusher D and gate E, when the operations are repeated, and so on, until all of the slabs of soap on the elevator are cut by the gates E G into cakes.

A suitable detent may be provided for holding the elevator and its load at the desired position, as, for instance, a pawl-and-ratchet device engaging with the shaft M'.

At the side or edge of the tables C H, opposite from the elevator B and gate E, I provide the adjustable gages T T', which have slotted flanges t, that are secured by bolts t' to the tables in order that the gages may be adjusted according to the length of the bars of soap, said gages also serving to prevent the soap from being shoved off the tables.

I am aware that changes and alterations in the form and proportion of parts and in the details of construction of the devices herein shown and described as the preferred embodiment of my invention may be made by a skilled mechanic without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such modifications as fairly fall within the scope of my invention.

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

1. In a soap slabbing and cutting machine, the combination of a slabbing-gate provided with transverse cutter-wires, a table, an elevator arranged between said slabbing-gate and the table, a second cutter-gate situated between the elevator and the table, a pusher operating over the elevator and toward or from the second gate, a third cutter-gate arranged at right angles to the second cutter-gate, and another pusher operating over the table toward or from the third cutter-gate, as and for the purposes described.

2. In a soap slabbing and cutting machine, the combination of a slabbing-gate provided with horizontal cutter-wires, an elevator in line with said slabbing-gate, means for forc-

ing a block of soap through the slabbing-gate and upon said elevator, a raised table, a second cutter-gate situated between the table and the elevator, on a plane above the slabbing-gate and in parallel relation therewith, and provided with vertical cutter-wires, a slidable pusher guided over the elevator and movable toward or from the second cutter-gate, a third cutter-gate having vertical wires and arranged at one side of the table and at right angles to the second cutter-gate, and a second slidable pusher guided to play across the table and toward or from the third cutter-gate, as and for the purposes described.

3. In a soap slabbing and cutting machine, the combination of the tables C, H, arranged in line with each other, a removable rack fitted flush with the table H, a transverse cutter-gate arranged between the tables C, H, and having vertical wires, a pusher movable across the table C toward or from said gate, a slabbing-gate, an elevator, another gate between the elevator and the table C, and another pusher movable over the elevator toward or from the last-named gate, for the purposes described, substantially as set forth.

4. In a soap slabbing and cutting machine, the combination of a slabbing-gate, an elevator, means for forcing soap through said slabbing-gate and upon the elevator, and a scraper arranged relatively to the slabbing-gate to remove refuse from the block of soap as it is passed through said gate, as and for the purposes described.

5. In a soap slabbing and cutting machine, the combination with a table a cutter-gate, and an elevator, of a slidable pusher suspended to travel over the elevator and comprising a fixed guideway which extends over the cutter-gate, a slide-bar carrying the hanger and pusher-head, an operating-shaft, and pull-cords connecting with the pusher-bar and said shaft, as and for the purposes described.

6. A soap slabbing and cutting machine comprising the tables C, H, an elevator operated from a suitable shaft, and cutter-gates E, G, the pusher D guided to move across the elevator, toward or from the gate E, and operated from a shaft D', the pusher F guided to move across the table C, and operated from a shaft F'; the devices for operating all of said shafts M', D' and F', being within convenient reach of an operator stationed at one side of the machine, as and for the purposes described.

7. In a soap cutting and slabbing machine, the combination with a table, of an upper cutter-gate E situated at one side, and substantially on the plane, of said table, a lower slab-cutting gate A arranged in a plane below, and to one side of, said cutter-gate E, an elevator arranged for operation between said upper and lower cutter-gates, an overhead pusher sustained above said elevator and movable toward or from the cutter-gate E, and guide-rails R attached to the machine-frame substantially on the plane of the table and

situated on opposite sides of the path of the elevator, substantially as and for the purposes described.

8. In a soap cutting and slabbing machine, the combination of the lower and upper cutter-gates, A, E, situated in different horizontal and vertical planes, an elevator arranged for operation between said cutter-gates, an overhead pusher supported above the elevator and guided to travel in a path toward or from the upper cutter-gate E, the laterally-adjustable guide-rails arranged on opposite sides of the path of the elevator and substantially in line with the upper cutter-gate E, and adjustable brackets attached to the guide-rails and the machine-frame to support the guide-rails in position to prevent edgewise deflection of the soap slab as it is forced, by the pusher, through the upper cutter-gate, as and for the purposes described.

9. In a soap cutting and slabbing machine, the combination with a suitable frame, and a table thereon, of the upper and lower cutter-gates A, E, situated in different vertical and horizontal planes and at one side of said table, the vertical track-rails adjacent to said cutter-gates, an elevator-platform arranged between said track-rails and provided with guide-rollers which are fitted against said rails, an overhead pusher supported above the elevator-platform and guided toward or from the upper cutter-gate, the overhead shafts M^3 , M^4 having the guide-rollers, an operating-shaft M' between said overhead shafts, the suspension-pulleys attached to the elevator-platform, and the suspending cords passing around the pulleys on the platform and the overhead shafts and attached to the operating-shaft, as and for the purposes described.

10. In a soap-machine, the table provided with a depressed seat lying below the surface thereof, combined with a cutter-frame removably fitted in said seat and having its bottom bar flush with the surface of the table, and the overhead retainer engaging with the upper part of the cutter-frame, for the purposes described, substantially as set forth.

11. In a soap-machine, the combination with a framing, and a table having a depressed seat, of a removable cutter-frame fitted in said seat to have its bottom bar flush with the surface of the table, and an overhead re-

tainer provided with a slotted shank and with a forked foot, said retainer-shank being slidably fastened to the framing in position for the forked foot to engage with the upper part of the cutter-frame, as and for the purposes described.

12. In a soap-machine, the combination with a table and a cutter-gate, of a pusher mechanism for moving soap toward said gate comprising a guideway, a slidable bar fitted in said guideway and provided with a guide near one end, a pusher-head carried by the slidable bar, near its other end, and arranged in the horizontal plane of the cutter-gate to travel toward or from the same, an operating-shaft, a pull-cord passing around the guide on the slidable bar and having its ends coiled on the operating-shaft, and another pull-cord attached to the slidable bar and coiled on the operating-shaft in the reverse direction to the coils of the first-named cord, as and for the purposes described.

13. In a soap-machine, the combination of a table having a pusher-receiving slot, and a cutter-gate fitted to said table, of the pusher-arm fitted in the slot of the table, a pusher-head attached to the upper end of the pusher-arm and lying in the horizontal plane of the cutter-gate, a guideway arranged below said table and gate, a slidable bar attached at one end to the pusher-arm and provided, at its other end, with a guide, an operating-shaft, and two pull-cords coiled in reverse directions on the operating-shaft, one cord attached to the slidable bar and the other cord passing around the guide on said bar, as and for the purposes described.

14. In a soap-machine, the combination with a cutter-gate, a slidable pusher guided to travel toward or from said cutter-gate, and means for operating the pusher, of a grooved face-block removably fitted to the slidable pusher-head, with its grooved side facing the wires in said cutter-gate, and clamps for rigidly and detachably holding the face-block on said slidable pusher, as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

THEOPHILUS W. ALEXANDER.

Witnesses:

HANS RAVENÉ,
L. T. JONES.

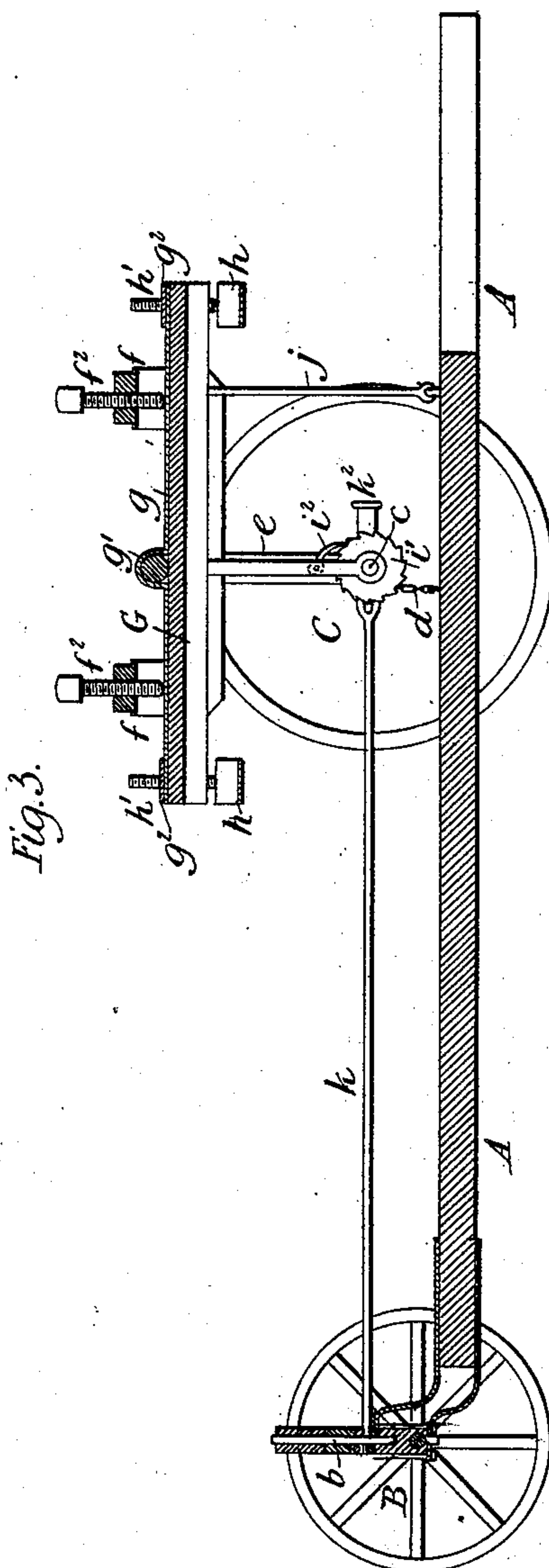
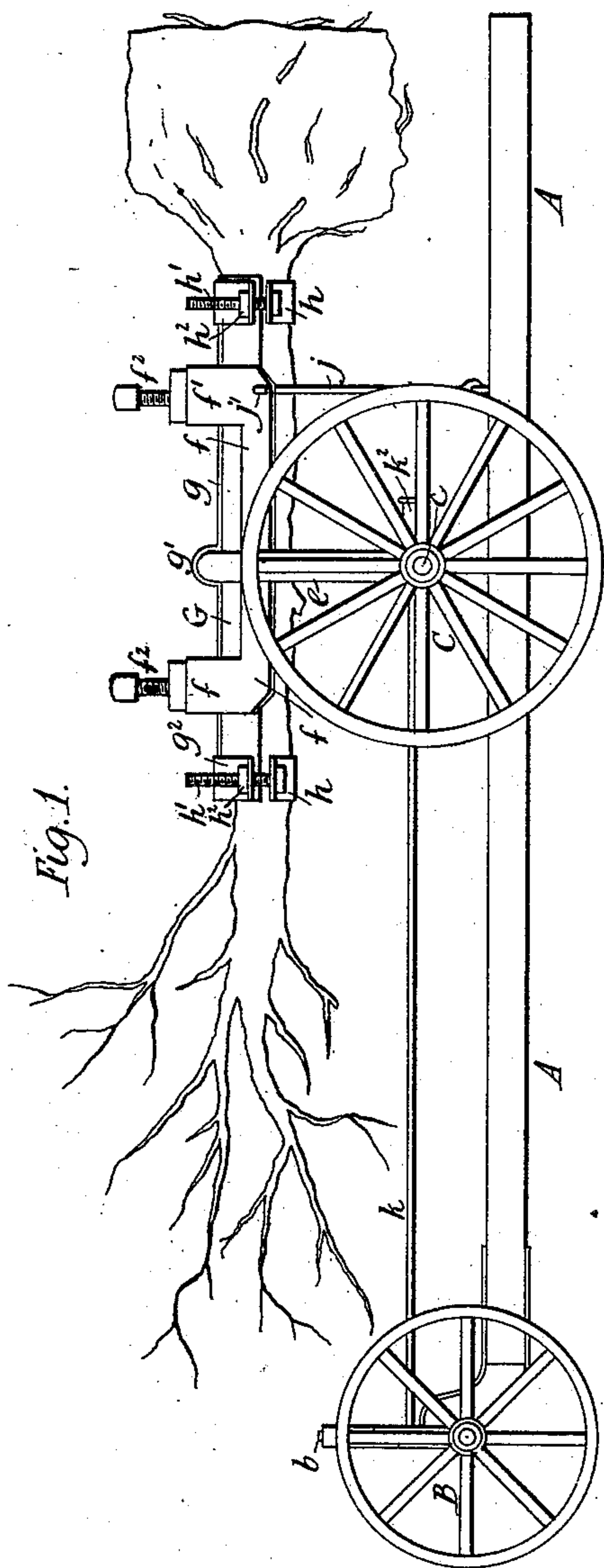
(No Model.)

2 Sheets—Sheet 1.

R. AMES.
TRANSPLANTING MACHINE.

No. 567,439.

Patented Sept. 8, 1896.



Witnesses

S. E. Zimmerman
W. I. Norton

Inventor

Rufus Ames

By *W. W. Buckley & Co*
his Attorneys

