

No. 705,067.

Patented July 22, 1902.

T. GAYNOR, JR.

SOAP CUTTING AND SPREADING MACHINE.

(Application filed Oct. 5, 1901.)

(No Model.)

Fig. 1.

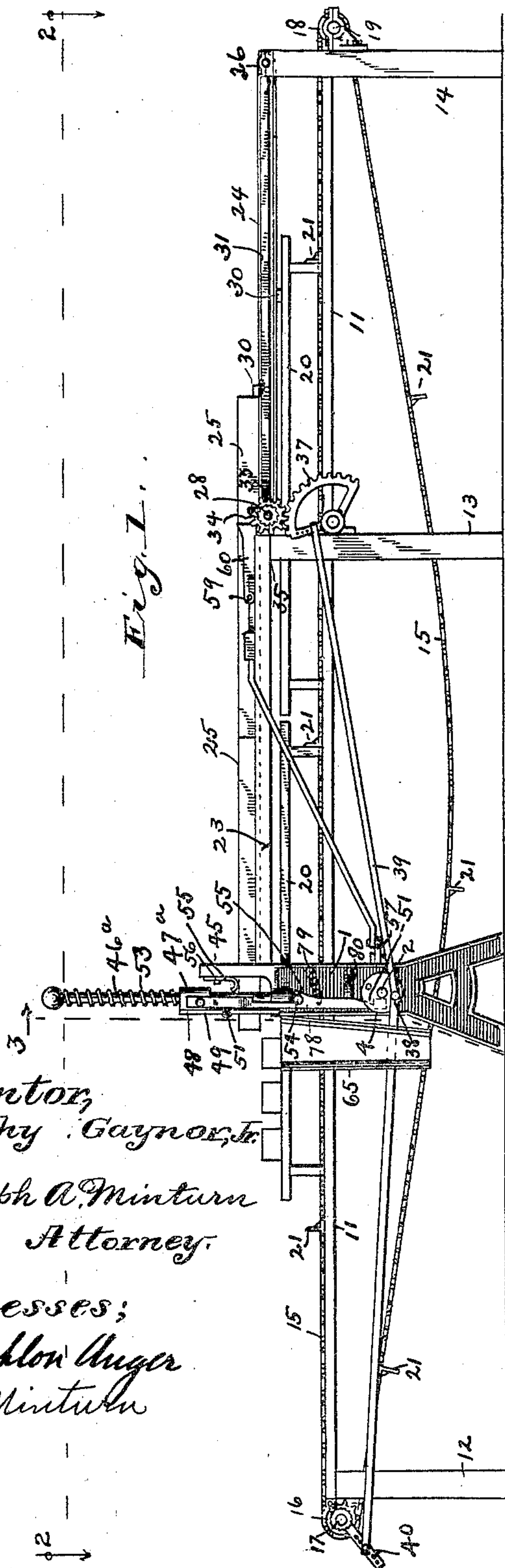
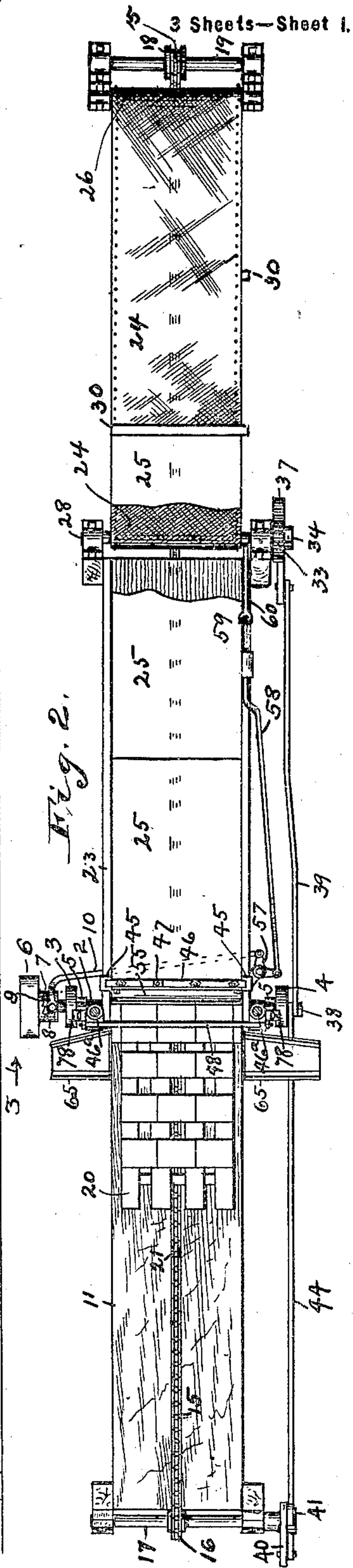


Fig. 2.



Inventor,
Timothy Gaynor, Jr.
By Joseph A. Minturn
Attorney.

Witnesses;
S. Mahlon Unger
L. A. Minturn

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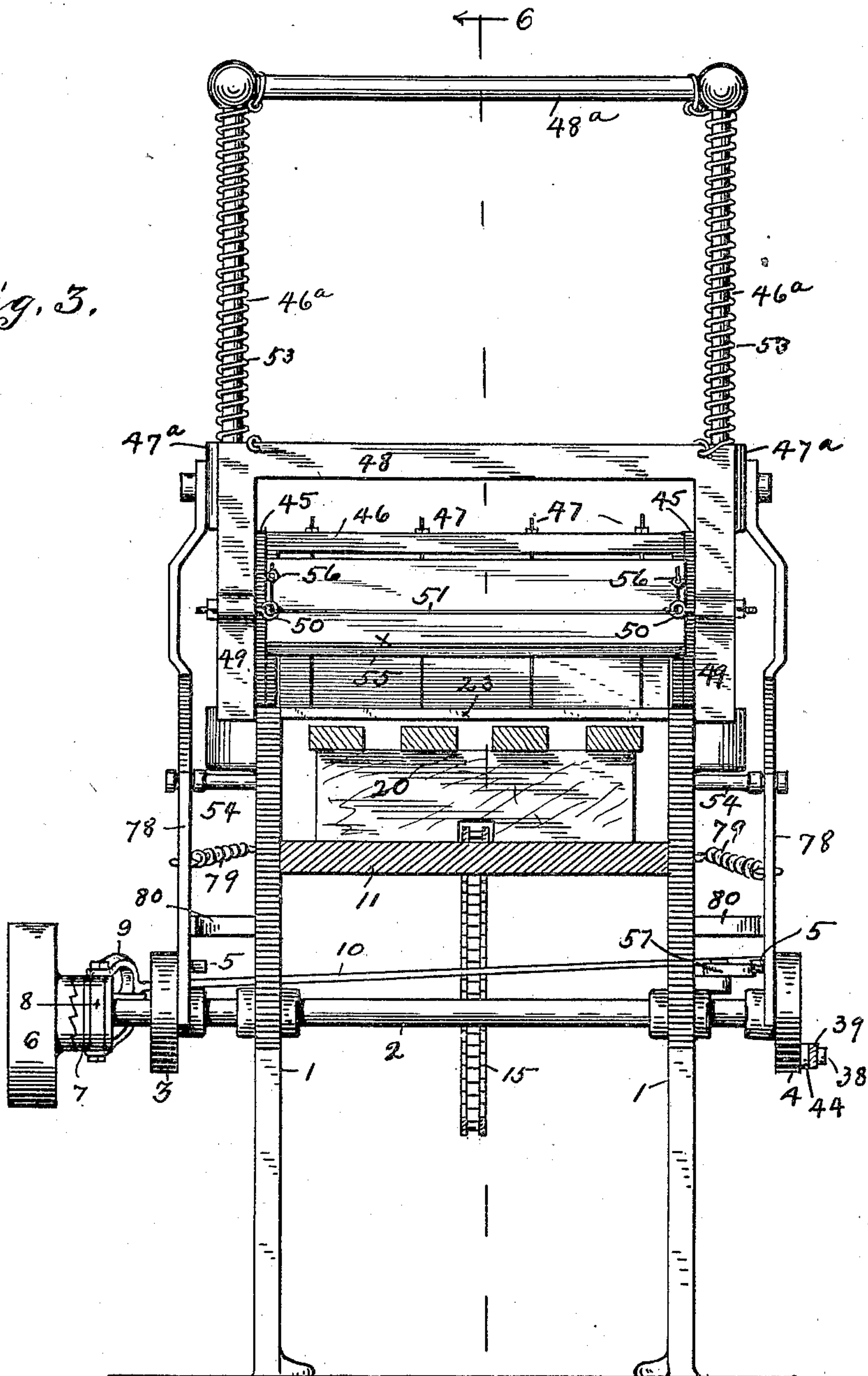
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Fig. 3.



Witnesses;
S. Mahlon Unger
L. A. Minturn

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Inventor,
Timothy Gaynor, Jr.
By Joseph A. Minturn,
Attorney,

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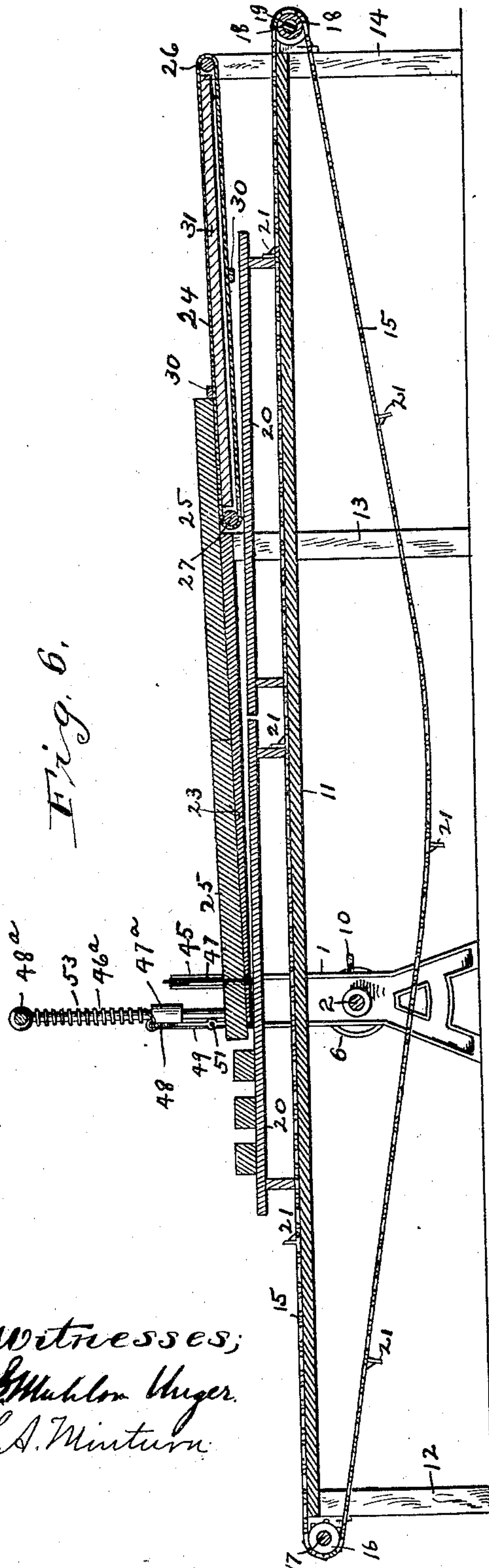
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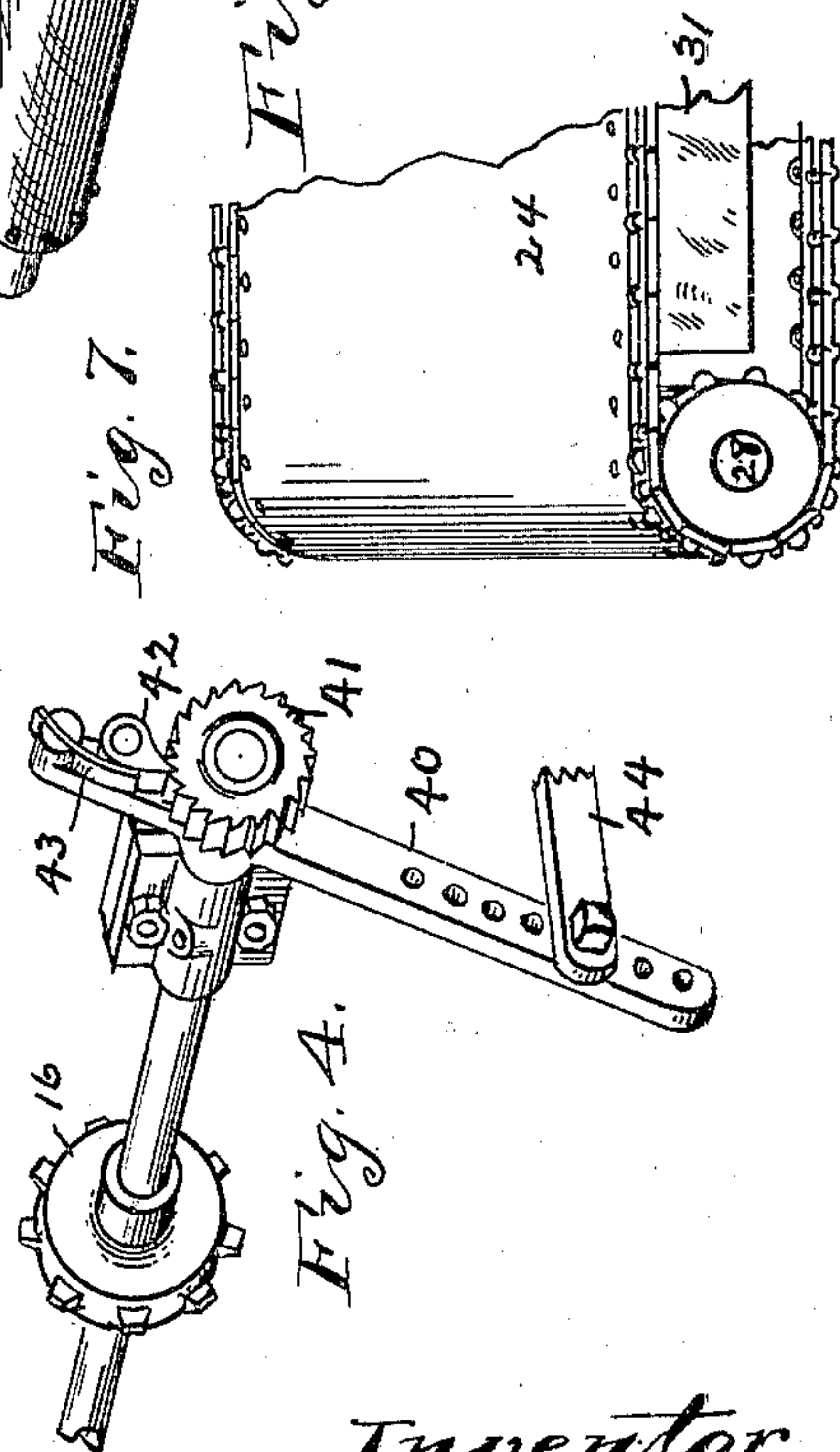
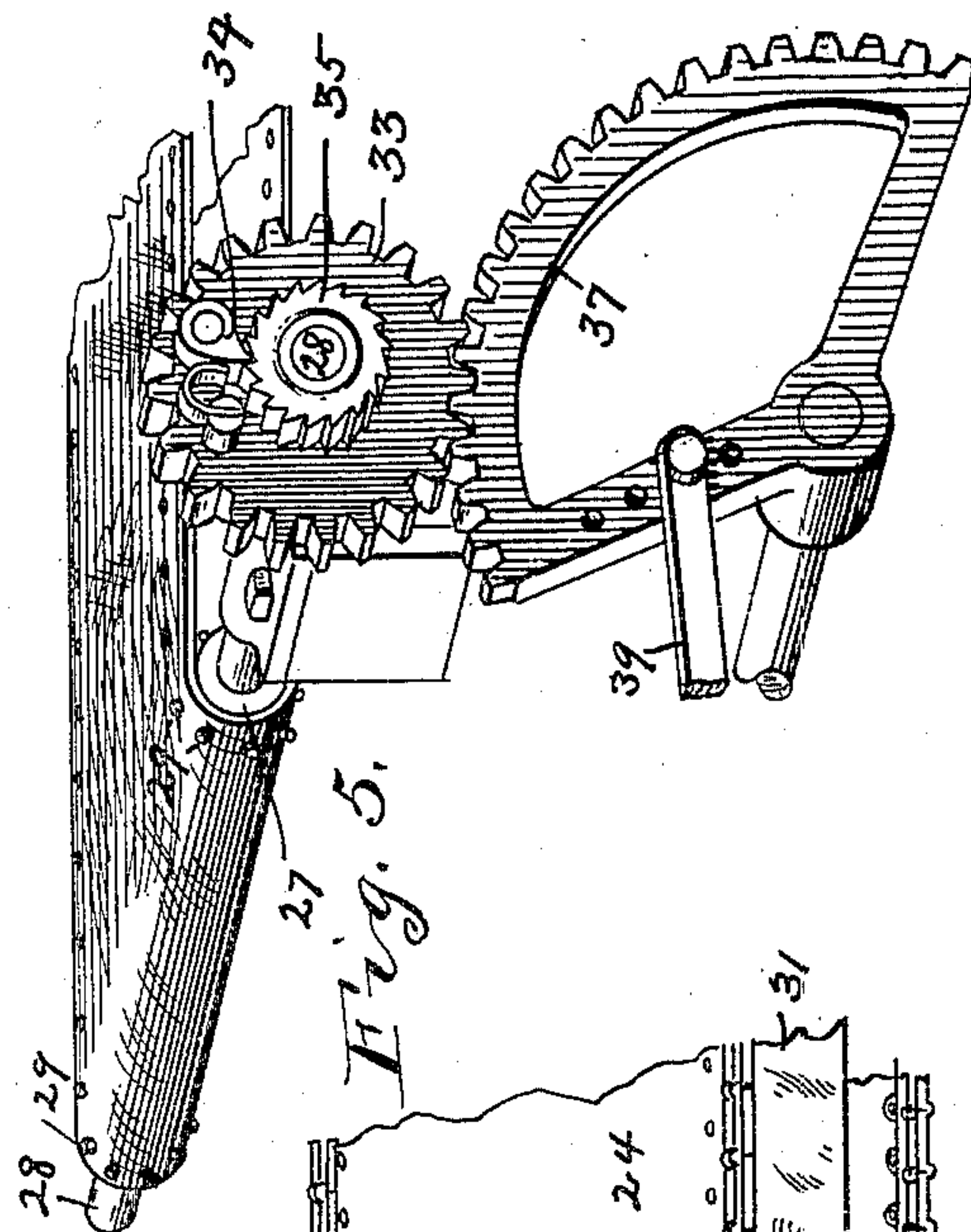
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3 Sheets—Sheet 3.



Witnesses;
L. A. Minton
L. A. Minton



Inventor,
Timothy Gaynor, Jr.
By Joseph A. Minton
Attorney.

UNITED STATES PATENT OFFICE.

TIMOTHY GAYNOR, JR., OF INDIANAPOLIS, INDIANA, ASSIGNOR OF FOUR-FIFTHS TO ROBERT G. HARSEIM AND SOLOMON M. GUSDORF, OF INDIANAPOLIS, INDIANA.

SOAP CUTTING AND SPREADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 705,067, dated July 22, 1902.

Application filed October 5, 1901. Serial No. 77,651. (No model.)

To all whom it may concern:

Be it known that I, TIMOTHY GAYNOR, Jr., a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Soap Cutting and Spreading Machines, of which the following is a specification.

This invention relates to improvements in machines for cutting slabs of soap into bars and cakes; and the object is to provide a simple and durable machine by means of which the slabs of soap may be made to travel in one direction through the machine continuously—that is, without requiring the machine to reverse its direction of movement to take on and cut each slab, as is required in soap-cutting machines having a reciprocating pusher-head.

The object also is to provide means for making the transverse cuts of the slab as well as the longitudinal ones without changing the direction of travel of the slab.

The object is to provide a simple machine which can be operated by a single unskilled person and to provide means whereby the machine will stop automatically in the absence of the attendant.

I accomplish the objects of the invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation of my complete invention; Fig. 2, a plan view of same; Fig. 3, a vertical section, on a larger scale, on the dotted line 3 3 of Fig. 1; Fig. 4, a detail in perspective of the ratchet mechanism for transmitting motion to the chain belt which moves the racks to receive the cut soap; Fig. 5, a detail in perspective of the mechanism for transmitting motion to the apron on which the soap slabs are first deposited; Fig. 6, a longitudinal central vertical section of the machine; and Fig. 7, a detail showing a modified means for compelling the apron to move with rollers over which it travels.

Like reference characters indicate like parts throughout the several views of the drawings.

1 represents the body of the machine, which will preferably be of iron and which supports

the shaft 2. Mounted on this shaft on opposite sides of the frame are the two wheels 3 and 4, each having a pin 5 on their inner sides. Loosely mounted on the outer end of shaft 2 is the belt-pulley 6, having a half-clutch hub which is adapted to be engaged by a half-clutch 7, which is feathered to shaft 2, so as to rotate with the shaft, but having a sliding movement longitudinally thereon. The half-clutch 7 is grooved to receive the ring 8, having outside dowels to which yoke 9 of lever 10 is secured. Extending laterally of the body on each side and passing through it is the table 11, supported by the legs 12, 13, and 14 and by said body. Resting upon said table and passing longitudinally over it and then returning under it and forming a continuous belt is the link belt 15. This belt 15 passes over the sprocket-wheel 16, mounted on shaft 17, mounted in suitable boxes, which are supported by the legs 12, and is drawn over the said table by the rotation of said shaft 17 and its sprocket-wheel 16. The turn of the chain at the other end of the table is made around the grooved drum 18, mounted on shaft 19, which is supported in journals secured to the legs 14. Racks 20, upon which the cut soap is deposited and spread, are placed upon the table 11 and are carried forward past the body of the machine by means of lugs 21, formed on certain of the links of chain belt 15.

Supported a suitable distance above the table 11 to permit the racks 20 to pass under without contact therewith is the platform 23, which extends from the body 1 to the legs 13. This has raised sides and forms a slide over which the slabs of soap are fed to the cutting mechanism located at the body over the table. Between the legs 13 and the legs 14 and forming a continuation of the platform 23 is the endless canvas belt or apron 24, upon which the slabs of soap 25 are placed by the operator. The outer end of this apron is supported by roller 26, resting on legs 14, and the inner turn is made around the roller 27, mounted on shaft 28. The roller has pins 29, which take into perforations in the apron to keep the latter from slipping. Strips 30, secured transversely of the apron, engage the soap

slabs and force them forward to and through the cutters. The apron between the rollers is supported by the platform or board 31.

Instead of the pins 29 on the rollers and 5 perforations of the aprons I may provide sprocket-wheels on the shaft 28 and attach chain belts to the margins of the aprons in the manner shown in Fig. 7.

The travel of the belt is compelled by the 10 following mechanism: Loosely mounted on shaft 28 is the spur gear-wheel 33, carrying a spring-pressed pawl 34, and mounted in a fixed manner on the shaft 28, outside of the spur gear-wheel, is the ratchet-wheel 35, the teeth 15 of which are engaged by the pawl 34. Suitably mounted below the shaft 28 is the toothed segment 37, the teeth of which engage the teeth of wheel 33. This segment 37 is rocked by connection of one of its arms with a wrist-pin 20 38 on the wheel 4 by means of the rod 39. The arm of the segment is provided with a series of holes, whereby the connecting-point of the rod 39 may be changed to vary the throw of the segment at each throw of the 25 connecting-rod. It will be seen that with the ratchet construction the apron will be moved toward the body 1, but with an intermittent movement. An intermittent movement is given as follows to the chain belt 15: The 30 shaft 17 has the lever 40 (see Fig. 4) pivotally mounted thereon, and outside and next to the lever the ratchet-wheel 41 is mounted in a fixed manner on the shaft. The lever 40 carries pawl 42, (see Fig. 4,) which is pressed 35 by spring 43 into engagement with wheel 41. The opposite and lower end of the lever 40 has a series of holes, through one of which said lever is pivotally secured to the connecting-rod 44, the opposite end of which rod 40 is connected to the wrist-pin 38 on wheel 4.

By the above arrangement the link belt 15 and through it racks 20 and also the endless apron 24 are moved intermittently, but at the same time and in the same direction. A 45 slab of soap or a series of them, enough to fill the machine, are fed successively through the cutters, which are located at the body 1 of the machine and will be hereinafter described, and as the cakes are cut off they drop 50 down from the end of the platform 23 upon a rack which is being moved out from under the said platform, and the rows of cakes are spread apart by causing the rack to move at a faster rate of speed than the slab of soap is 55 moving. This is readily done by adjusting the points of attachment of the connecting-rods with their respective segment arm and lever.

In order to cut the slabs of soap into longitudinal bars, I extend the sides of the frame 60 1 to form the parallel standards 45 and provide vertical inside grooves to receive and hold a rectangular frame 46, which has wires 47 stretched across it and which stand vertically 65 when the frame is in operative position. The lower bar of this frame drops below the top of the platform, so as not to obstruct the

free movement of the slab of soap thereover, and the several cutting-wires are provided with bolts and nuts by means of which they 70 can be drawn taut.

The mechanism for cutting the bars into cakes consists primarily of a horizontal taut wire which reciprocates vertically to cut the bars; but the mechanism to carry this out is 75 more complicated than for the first and longitudinal cutting to make the bars and will now be described.

Supported by body 1 are the two vertically-disposed rods 46^a, which act as guides for 80 blocks 47^a. The two blocks 47^a are connected by the transverse horizontal bar 48, which has the downwardly-depending ends 49, which are long enough to have a bearing against the sides of said body 1 in all positions of the bar. 85 The ends 49 are provided with the eyebolts 50, and connecting the bolts is wire 51, which does the cutting of the soap. Pivotaly secured to blocks 47^a are the bars 78, which extend down to and rest against the hubs of the 90 wheels 3 and 4. They are drawn toward their adjacent hubs by springs 79 and are pressed out against the wheels by springs 80. The bars have notches 51 on edges adjacent to the hubs to engage pins 5, projecting in- 95 wardly from the wheels 3 and 4, as the pins are brought around by the rotation of the wheels. By this engagement the bars are drawn downwardly, thereby lowering the blocks to which they are pivoted, which lowers 100 the frame carrying the cutting-wire. The continued revolution of the wheel withdraws the pin from the notch in the bars, thus releasing the latter, whereupon the blocks and frame are drawn quickly upward by the 105 springs 53. This upward movement is arrested by the engagement of pins 54, seated in the body 1, by the hooks 55, formed in the adjacent edges of said bars 48. The springs 53 connect the blocks with the knobs at the 110 tops of the guide-rods 46^a.

To keep the slab of soap from tilting while the last cut is being made, I provide a shoe 55, consisting of a metal plate, which is bolted 115 to the standards 45 by bolts 56, passing through vertical slots to allow adjustment of the shoe. The plate has its lower edge rounded or bent upwardly, so as not to interfere with the movement of the soap under it, and it is set so as to be just slightly above the soap slab. 120

In order to set the machine so it will stop automatically after it has filled a rack and which in the absence of the attendant to remove it at the proper time would be drawn 125 by the chain belt on over the end of the table onto the floor, I connect the bar or lever 10 to one arm of the bell-crank 57 and connect the other arm of the bell-crank with a push-bar 58, which extends up and terminates in the path of the projecting end of the cleat or 130 strip 30. The cleat 30, contacting with the push-bar 58, pushes the bar in a direction to throw the bell-crank and through the lever 10 disconnect the clutch-half from the driv-

ing-pulley. The separation of the clutch-coupling stops the machine. The push-bar is jointed at 59, so that the end 60 can be turned back out of the path of the cleat 30 when it is desired that the machine be operated without stopping.

It will be noted by reference to Fig. 2 that the racks 20 are narrower than the table 23 and that outside of the outermost cutting-wires 47 are narrow strips which the racks are not wide enough to support. These narrow strips are waste material and will be directed from the machine by the lateral slides 65. In making the transverse cut the wire 51 descends just outside of or beyond the end of the platform 23, so as to cause the unsupported cakes of soap to drop down upon the rack below as they are severed.

Having thus fully described my invention, what I claim as new, and wish to secure by Letters Patent of the United States, is—

1. In a soap cutter and spreader a stationary platform, means for moving slabs of soap in one direction over the platform with an intermittent movement, vertical wires in the path of the slabs for cutting the slabs longitudinally into bars and a horizontal wire reciprocating vertically at the end of the platform to cut the bars transversely into cakes, and a rack moving out from under the table at faster speed than the travel of the soap on the platform.

2. In a soap cutter and spreader a stationary platform over which slabs of soap are passed, means for cutting the slabs longitudinally into bars and transversely into cakes, an endless belt or apron upon which the slabs of soap are placed said aprons having means to engage the slabs to cause them to travel therewith said apron traveling toward and delivering upon the platform and a rack passing under the delivery end of the platform at a faster speed than the travel of the apron, to receive the soap as it is cut into cakes.

3. In a soap cutter and spreader, a platform having vertical wire cutters and a vertically-reciprocating horizontal cutter, an endless carrier delivering upon said platform and a rack moving from under the platform to receive the soap as it is cut.

4. In a soap cutter and spreader, a table having a link belt moving longitudinally thereof, racks placed on the table and moved thereon by projections from the link belt, a platform above the table and of less length than said table, cutters adjacent to one end of the platform adapted to cut slabs of soap into longitudinal and transverse pieces when the soap is moved thereto over the platform and an endless moving apron to receive the soap to be cut said apron delivering the soap upon the platform by the action of projections therefrom to engage the soap.

5. In a soap-cutter a platform to receive the soap to be cut, means to compel the soap

to travel in one direction over the platform and means while so traveling for cutting the soap parallel with the direction of travel and transversely thereto.

6. In a soap cutter and spreader, a platform, means for compelling slabs of soap to travel thereover, vertical wires in the path of the soap slabs to cut them into bars and a cutter reciprocating vertically and transversely of the platform adjacent to but beyond or outside of the end thereof and a rack moving from under the platform to receive the soap as it is cut.

7. A stationary platform, an endless belt or apron to receive slabs of soap and discharge them upon the platform, a rack adapted to move from under the platform at a faster rate of travel than that of the apron, vertical cutters to cut the soap into bars as it passes over the platform, a transverse horizontal cutter to cut the soap into cakes as it passes off of the platform said horizontal cutter being held normally above the platform, means for vertically reciprocating the horizontal cutter and means for moving the apron and rack intermittently said apron and rack movement alternating with the reciprocation of the horizontal cutter.

8. A stationary table having cutters, an endless belt to receive slabs of soap and deliver them to the table and force them through the cutters on the table, a shaft having a roller around which the belt travels, a cogged wheel loosely mounted on the shaft and having a pawl, a ratchet-wheel fixed on the shaft and engaged by the said pawl, a toothed segment engaging the cogged wheel, a transverse reciprocating cutter at the opposite end of the platform from the belt and means for rocking the toothed segment and reciprocating the transverse cutter at alternate periods.

9. A table, an endless link belt longitudinally thereof having means to engage a rack or racks placed on said table, a shaft having a sprocket-wheel around which the link belt passes, a lever loosely mounted on the shaft, said lever having a pawl, a ratchet-wheel mounted on the shaft and turning with it, said pawl engaging said ratchet-wheel, a revolvable shaft having a crank-wheel with a wrist-pin, a rod connecting the wrist-pin with the lever, racks moved along the table by the link belt, a platform over the table having soap-cutters and means for passing slabs of soap along the table through the cutters and depositing same upon said racks.

10. A platform having slabs of soap traveling in one direction thereon, and means for cutting the soap transversely of its direction of travel, consisting of vertical wires, heads sliding thereon, springs to elevate the heads, a frame secured to the heads and carrying a taut transverse cutting-wire, a revolvable shaft having wheels with side pins levers pivotally secured to each head depending therefrom and terminating opposite the hubs

of the wheels and having notches to engage the pins in the wheels, fixed stop-pins and notches in the levers to engage the stop-pins.

11. In a soap-cutting machine, a main driving-shaft having a sliding clutch-half feathered to said shaft, a revoluble pulley loosely mounted on said shaft, a bell-crank, a rod connecting the sliding clutch-half with one of the arms of the bell-crank, an endless
10 apron on which the soap is deposited and fed therefrom to the machine, projections from

said apron and a push-bar in the path of said projections adapted to contact therewith, said push-bar being connected with the bell-crank.

In witness whereof I have hereunto set my
hand and seal, at Indianapolis, Indiana, this
28th day of September, A. D. 1901. 15

TIMOTHY GAYNOR, JR. [L. S.]

Witnesses:

JOSEPH A. MINTURN,
S. MAHLON UNGER.