

No. 685,084.

Patented Oct. 22, 1901.

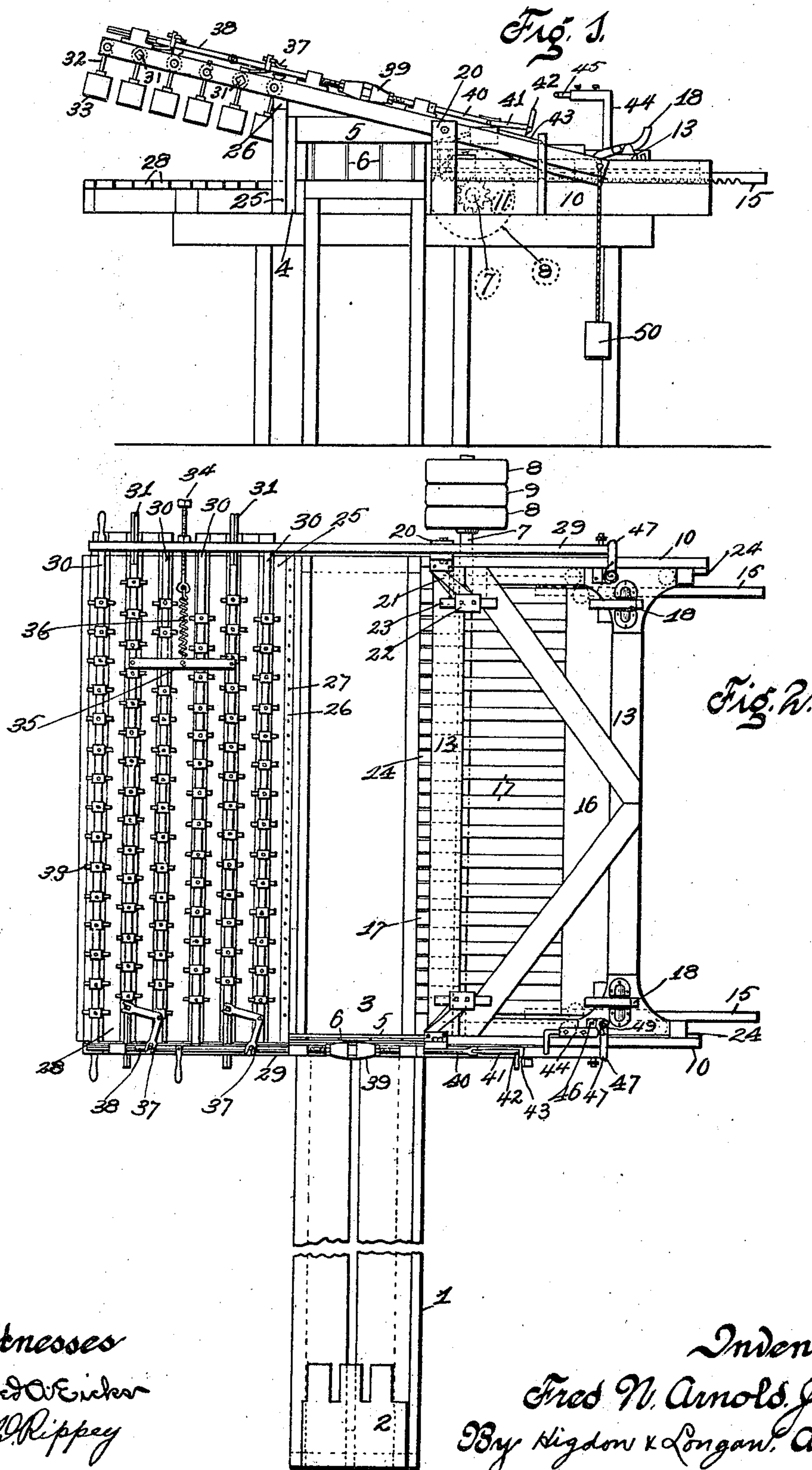
F. N. ARNOLD, JR.

SOAP CUTTING AND SPREADING MACHINE.

(Application filed Nov. 27, 1900.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses  
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By Higdon & Longan, Attys.

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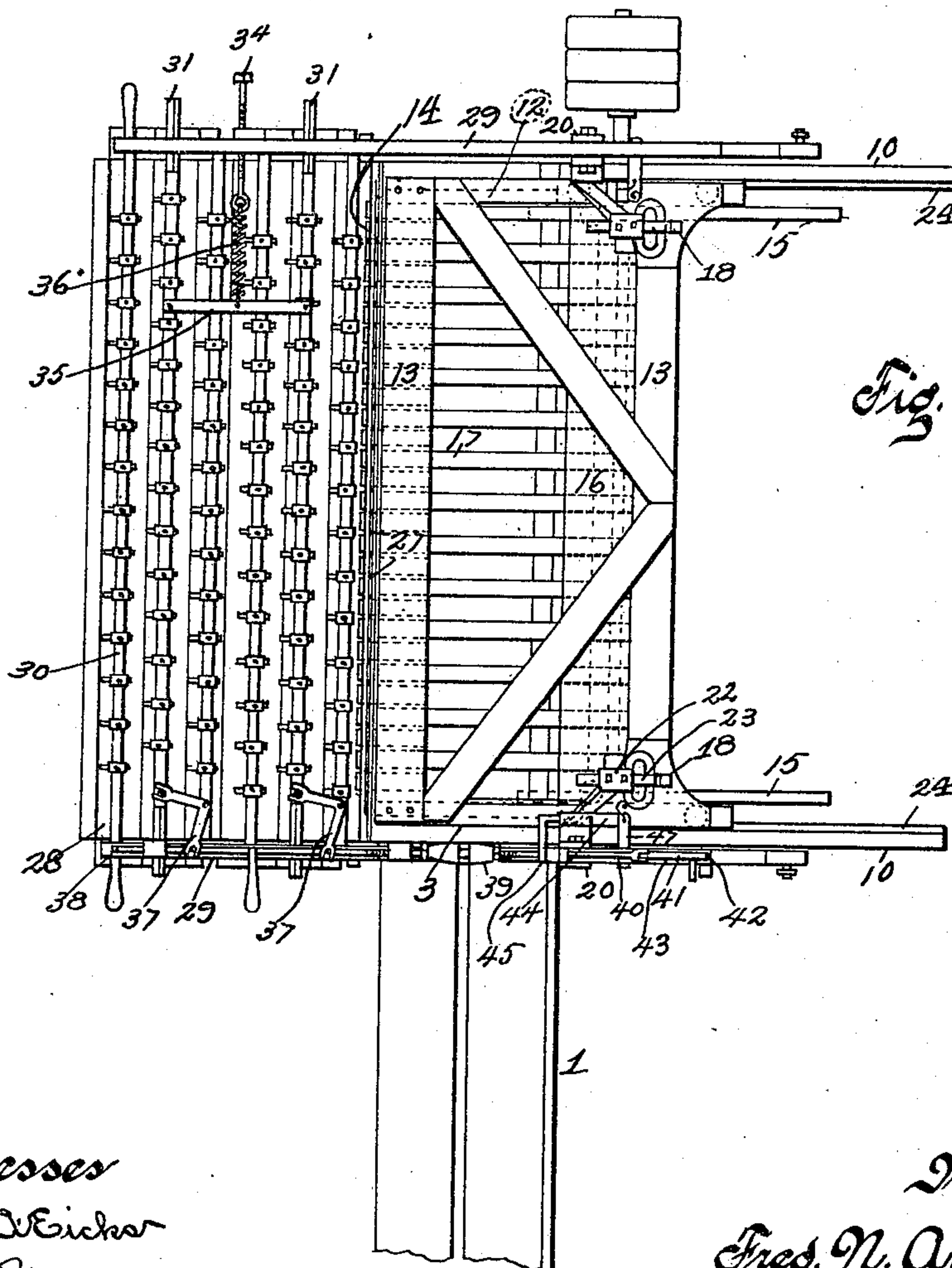
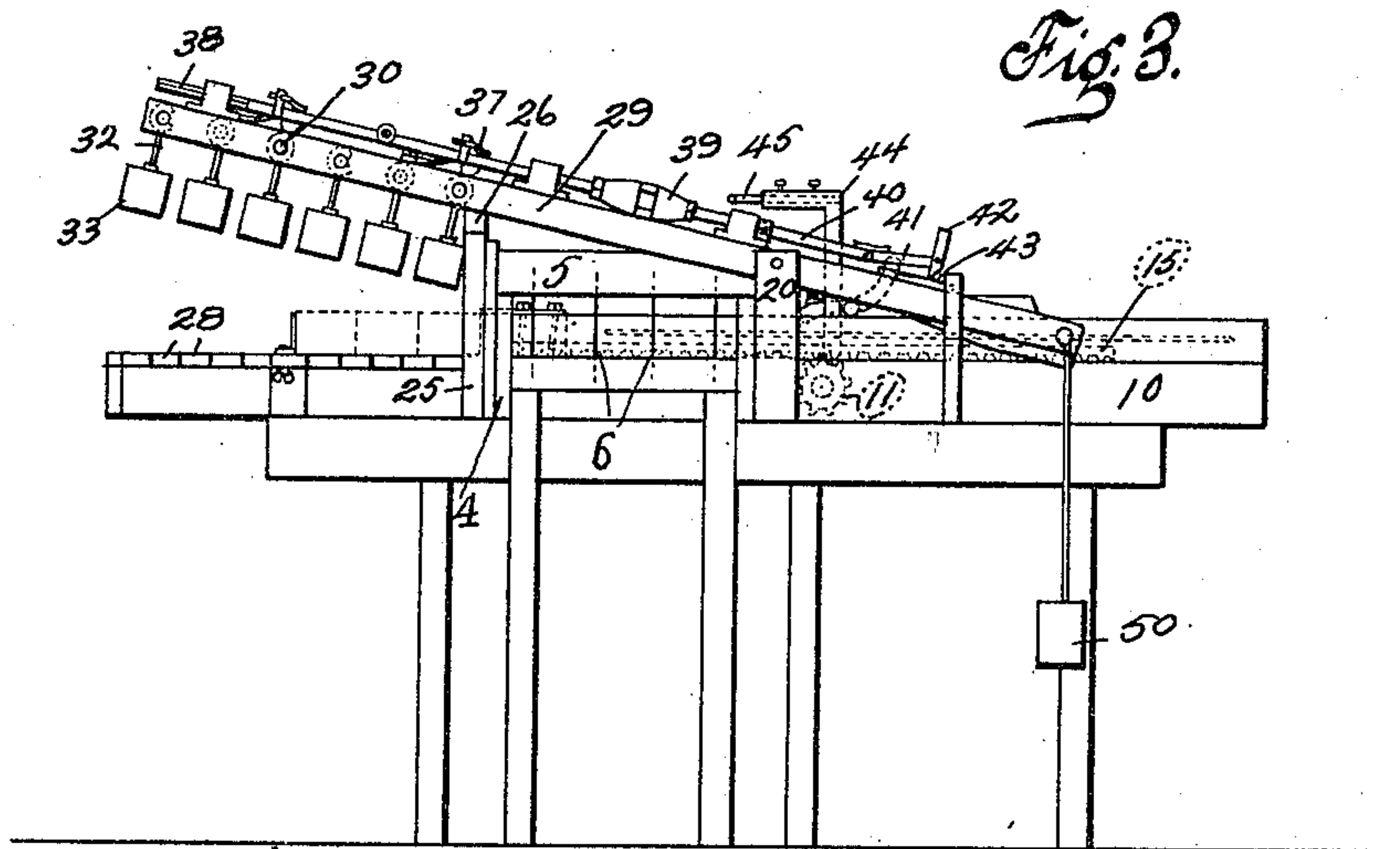
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# UNITED STATES PATENT OFFICE.

FREDRICK N. ARNOLD, JR., OF ST. LOUIS, MISSOURI.

## SOAP CUTTING AND SPREADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 685,084, dated October 22, 1901.

Application filed November 27, 1900. Serial No. 37,945. (No model.)

*To all whom it may concern:*

Be it known that I, FREDRICK N. ARNOLD, Jr., of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Soap Cutting and Spreading Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

10 This invention relates to soap cutting and spreading machines; and it consists of the novel construction, combination, and arrangement of parts hereinafter shown, described, and claimed.

15 Figure 1 is an end view showing the machine in its normal position. Fig. 2 is a plan view of the same. Fig. 3 is an end view showing the carrier partially advanced to place the cakes of soap upon the spreading-table. 20 Fig. 4 is a plan view showing the parts in the position stated. Fig. 5 is an enlarged end view showing the mechanism by which the cakes are placed upon the spreading-table in an advanced position. Fig. 6 is a partial plan view of the same. Fig. 7 is a sectional view of the machine. Figs. 8 and 9 are views showing an angled bar by which the spreaders are operated. Figs. 10 and 11 are views showing an escapement by which the spreading mechanism is placed in an operative position. 30 Figs. 12 and 13 are views showing one of the spreaders. Figs. 14 and 15 are views showing an adjustable tripping device made use of in carrying out the invention.

35 In the construction of the machine I provide a horizontal frame to be supported in any desired manner and having on one side a projection 1, which is adapted to receive the soap to be cut into cakes. A block 2 is 40 mounted upon the projection 1 and is operated thereon by any known means to press the soap from the projection 1 onto the frame, where it is cut into cakes in the manner as will hereinafter be pointed out.

45 3 indicates a continuation of the projection 1, which constitutes a part of the frame, and at the point where the projection 1 attaches to the member 3 are standards 4, one on each side of the said projection 1. A transverse strip 5 is carried by the upper ends of the standards 4, and vertical wires 6 are mounted at suitable intervals between the projection

1 and the member 5. The function of the said wires 6 is to cut the soap into longitudinal strips as it is pushed from the projection 1 55 onto the part 3 by means of the block 2. It is evident that any number of the wires 6 may be made use of, all that is necessary being that they be kept tight between the parts 1 and 5. The soap after being pressed from 60 the extension 1 to the part 3 of the frame is divided longitudinally into strips, as described, and is then ready to be cut into cakes of the desired size. The mechanism made use of to accomplish this function will now be described. 65

A shaft 7 is supported in bearings at one side of the frame 3 and has rigid with its projecting end two pulleys 8, between which is 70 loosely mounted an idle pulley 9. Two belts are preferably made use of to drive the shaft 7, one belt being upon the idler 9, while the other is on the pulleys 8. One belt is used to drive the shaft in one direction, and the other belt is used when it is desired to reverse the 75 movement of the shaft and the mechanism driven thereby. The change in the movement is brought about by shifting the belts alternately from the pulley 9 to the pulleys 8.

The shaft 7 has its bearings arranged in the 80 projecting members 10 of the frame, one of said members 10 being at each end of the frame. Gears 11 are rigid upon the shaft 7 between the members 10, and said gears are in mesh with racks which are attached to the 85 frame, by means of which the soap is pressed from the frame 3 and cut into cakes of the required size. There are two of these frames, which operate together a certain distance, after which the connection between them is au- 90 tomatically released, and one frame is advanced a greater distance in order to separate the adjacent cakes of soap from each other. This requires that there be two racks for each of the gears 11, the racks being carried by 95 the different frames. The rack 12 is attached to the frame 13, whose movement is shorter than the movement of the other frame, the construction of which will hereinafter be described. The frame 13 is provided on its side 100 which is adjacent to the frame 3 with a plurality of blocks or arms 14, the inner ends of which are in alinement with each other.

15 indicates the racks carried by the other



frame and by means of which the frame to which they are attached is advanced a greater distance than is the said frame carrying the racks 12. The said racks 15 are attached to  
 5 a frame 16, which carries on its inner side adjacent to the frame 3 a series of arms 17, alternating with the arms 14, between which they are located. (See Fig. 2.) The inner ends of the arms 17 when in normal position  
 10 are in alinement with the ends of the arms 14, and as the two frames are advanced the arms 14 and 17, passing over the frame 3, press the soap therefrom, and by so doing cut it into cakes of the required size in the manner as  
 15 will hereinafter be described.

As stated above, the frames 13 and 16 at certain times move independently of each other, and at other times their movement is in unison. Pawls 18 are pivotally carried by  
 20 the frame 13 and have their lower ends engaging in notches 19, formed in the frame 16. By this connection when the shaft 7 is rotated and the gears 11 are in mesh with the racks 12 and the frame 13 is advanced the  
 25 frame 16 will also be advanced, which will eventually bring the racks 15 into mesh with the gears 11. I desire to state that the gears 11 are of sufficient width to mesh when necessary with both racks 12 and 15, the adjacent ends of which lie alongside of each other.  
 30 As the several frames are advanced in the manner described, the racks 15 will eventually mesh with the gears 11, and a continued advancement of the two frames brings the  
 35 upper ends of the pawls 18 into contact with the tripping mechanism, made use of to disconnect the frames from each other.

Standards 20 are carried by the end members 10, and secured in any desirable manner  
 40 to the said standards are the arms 21, formed on the inner ends of which are bearings 22, within which are adjustably carried the rods 23, with the rear ends of which the pawls 18 contact to release the connection between the  
 45 frames 13 and 16. A continued advancement of the frames by the rotation of the shaft 7 presses the upper ends of the pawls 18 against the rear end of the rods 23, thereby raising the lower ends of the pawls out of the notches  
 50 19, which allows the frame 13 to stop, while the frame 16 is continually advanced by its rack 15 being in mesh with the gears 11. By this time the outer ends of the racks 12 have been reached, which allows the frame 13 to  
 55 stop, and a continued rotation of the shaft 7 carries the frame 16 forward, operating the arms 17 in advance of the arms 14, thereby pressing each alternate cake of soap away from the adjacent cake. The advanced position of the arms 17 is shown in Fig. 6. The  
 60 frames 13 and 16 operate on suitable tracks 24, carried by the end members 10.

Supported by the frame on the side of the frame 3 opposite from the shaft 7 are standards 25, connecting the upper ends of which  
 65 is a horizontal rod 26, between which and the frame 3 is a series of vertical wires 27, which

serve to cut the longitudinal strips of soap transversely into cakes as the said strips are pressed from the frame 1 onto the spreading-  
 70 table and carried beyond the wires 27. The said spreading-table consists of a series of strips 28, each alternate one of which is removable in order that the cakes of soap carried by  
 75 the said strips may be better separated from each other by moving the strip 28 on which they are carried.

Pivoted to each of the standards 20 is a beam 29, and carried between the ends of the said beams which project from the spreading-table  
 80 is a series of rods which carry the spreaders, by means of which the cakes of soap are separated from each other. In the drawings I have shown two series of bars. Each alternate one in each series is movable, thereby mov-  
 85 ing the spreaders which it carries, and as the spreaders are moved the cakes of soap likewise will be moved, arranging them in staggered form upon the spreading-table. In the  
 90 form shown there are three bars in each series, the bars 30 being stationary and the bars 31, located between the bars 30 of each series, being movable. The number of bars in each series correspond in number to the number  
 95 of the longitudinal strips upon the frame 3, formed by means of the wires 6. The spreaders which are carried by the bars 30 and 31 consist of the vertical arms 32, removably carried by the said bars 30 and 31, and carry  
 100 on their lower ends the blades 33, which pass between the cakes of soap and move them as the bars 31 are reciprocated in their bearings. An adjustable rod 34 is carried by one of the  
 105 beams 29, and a strip 35, of any suitable material, connects the movable bars 31, and a spring 36 connects the strip 35 with the rod 34, thereby holding the bars 31 in their normal position, as shown in the several views  
 110 of the drawings. The bell-cranks 37, pivoted to the bars 30, have one end connected to the bars 31 and their opposite ends connected to a reciprocating rod 38, carried above the  
 115 beam 29, opposite from the spring connection 36. The rod 38 is connected by a turnbuckle 39 to the operating-rod 40, whereby the rod 38 may be reciprocated to operate the bell-cranks 37 in order to move the bars 31 when  
 120 it is desired to separate the cakes of soap. The outer end of the rod 40 has pivotally secured thereto a short member 41, carrying on its free end a vertical projection 42, which  
 125 extends both above and below the said member 41. That portion of the projection 42 which is below the member 41 is adapted to engage behind a block 43 in order to hold the bars 31 in the position in which they have  
 130 been placed by the movement of the rod 38. A standard 44 is carried by the frame 16 and is provided on its upper end with an adjustable angled bar 45, the free end of which en-  
 135 gages against the upper end of the projection 42 during the backward movement of the frames 13 and 16. The continued backward movement of the said frames will draw the



rods 38 in the direction in which they are moved, operating the bell-cranks 37 and moving the bars 31 to separate the cakes of soap on the separating-table.

5 Pivoted to suitable blocks 46, which are secured to the upper side of the frame 13, are the levers 47, which rest when in normal position against the shoulders 48, forming a part of the blocks 46. The springs 49 connect the  
10 levers 47 to the blocks 46 and hold them in their normal position against the shoulders 48. As the frames 13 and 16 are advanced by the rotation of the shaft 7 the levers 47 engage against the projecting ends of the  
15 beams 29, overcoming the tension of the springs 49 and pressing the levers away from the shoulders 48, against which they normally bear. As the frames 13 and 16 are farther advanced the ends of the levers 47 pass be-  
20 neath the more elevated portions of the beams 29 and assume a position underneath the said beams. The backward movement of the frames 13 and 16 will elevate the rear ends of the beams 29 by means of the levers 47,  
25 which will lower the ends of the said beams which are above the spreading-table. This will depress the spreaders between the cakes of soap, and a continued backward movement of the frames draws the free end of the  
30 angled bar 45 against the projection 42, which operates, by the connections above described, the bars 31, thereby moving each alternate cake of soap away from its neighbor and ar-  
ranging them in staggered form upon the  
35 spreading-table. Weights 50 are made use of to depress the rear ends of the beams 29 and again raise the spreaders after the levers 47 have moved beyond the ends of the said beams 29.

40 The operation of the machine is as follows: The soap to be cut into cakes is placed upon the projection 1 and the block 2 is advanced by any known means to press the soap onto the frame 3, which operation, by means of  
45 the wires 6, divides the soap longitudinally into strips. After it has been pressed upon the frame 3 the shaft 7 is rotated in the direction which advances the frames 13 and 16. The frames 13 and 16 advancing over the  
50 frame 3, their arms 14 and 17 being in alignment, as described, will press the longitudinal strips of soap through the wires 27, which will divide the longitudinal strips trans-  
versely into cakes of the required size. When  
55 the arms 14 and 17 have been advanced a sufficient distance to press the cakes of soap onto the spreading-table, the gears 11 pass out of mesh with the racks 12 and into mesh with the racks 15. As above described, this stops  
60 the frame 13 and the arms 14 carried thereby, and the frame 16 is farther advanced, the connection between the said frames having previously been removed by the pawls 18 con-  
tacting with the rear end of the rods 23 in the  
65 manner above described. The farther advancement of the arms 17 will leave each al-

ternate row of cakes beneath the first series of spreaders and will advance every other row of cakes underneath the second series. After the frame 16 has been advanced a suf-  
70 ficient distance the belts are shifted to rotate the shaft 7 in an opposite direction, which draws the frames 13 and 16 back to normal position. The levers 47 having assumed a position underneath the rear ends of the  
75 beams 29 will elevate the rear ends and depress the forward ends as the frames 13 and 16 are moved backward. The forward ends are depressed a sufficient distance to place the spreaders alongside the cakes of soap and  
80 a continued movement of the frames draws the free end of the angled bar 45 against the upper projection 42, which will operate the bars 31 and move the spreaders carried thereby, which operation will carry each al-  
85 ternate cake of soap away from the adjacent ones. By the further movement of the frames 13 and 16 the levers 47 are carried beyond the ends of the beams 29 and the end of the bar 45 passes above the projection 42, allow-  
90 ing the bars 31, which have been operated, to be automatically redrawn into normal position by means of their springs 36. By adjusting the turnbuckle 39 the scope of move-  
95 ment of the bars 31 may be increased or diminished as required by the size of the cakes of soap.

I claim—

1. A machine for cutting and spreading soap, consisting of a number of movable  
100 frames, means for cutting the soap into cakes when said frames are moved, a table, means for placing the cakes on the table by the movement of the frames, and a spreader for separating the cakes on the table, substan-  
105 tially as specified.

2. A machine for cutting and spreading soap, consisting of a number of movable  
frames, means for cutting the soap into cakes when said frames are moved, a table, means  
110 for placing the cakes on the table by the movement of the frames, a spreader for separating the cakes on the table, and means for operating the spreader by the movement of the frames, substantially as specified.  
115

3. A machine for cutting and spreading soap, consisting of suitable mechanism for cutting the soap into cakes and for placing the cakes upon an adjacent platform, a spreader, means for operating said spreader  
120 by the movement of the cutting mechanism, and means for arranging the cakes in staggered form upon the platform when the said spreader is moved.

4. In a soap cutting and spreading machine,  
125 two frames normally locked together, means for moving them to cut the soap, means for separating them to spread the soap, a spreader, and means for operating it to spread the soap, opposite to the movement of the frames.  
130

5. A machine for cutting and spreading soap, consisting of two frames normally



locked together, means for moving the frames  
to cut the soap, means for unlocking the  
frames and for moving one in advance of the  
other to positively spread the soap, a spreader,  
5 and means for operating it to spread the soap  
opposite to the movement of the frames, sub-  
stantially as specified.

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

FREDRICK N. ARNOLD, JR.

Witnesses:

EDWARD E. LONGAN,  
JOHN C. HIGDON.