

No. 862,670.

PATENTED AUG. 6, 1907.

R. A. SIMPSON.
BUTTER CUTTING MACHINE.

APPLICATION FILED SEPT. 19, 1906.

3 SHEETS—SHEET 1.

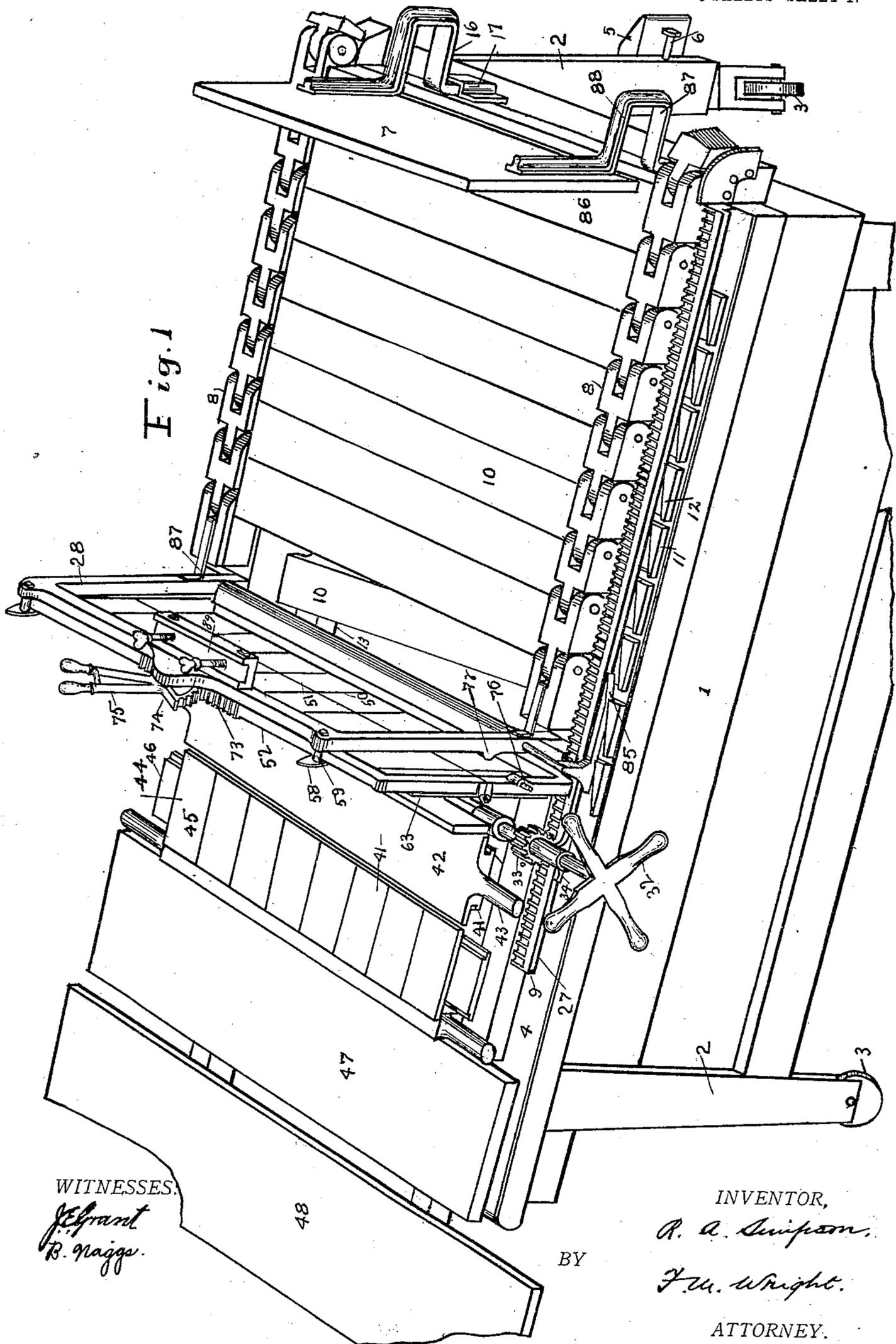


Fig. 1

WITNESSES.
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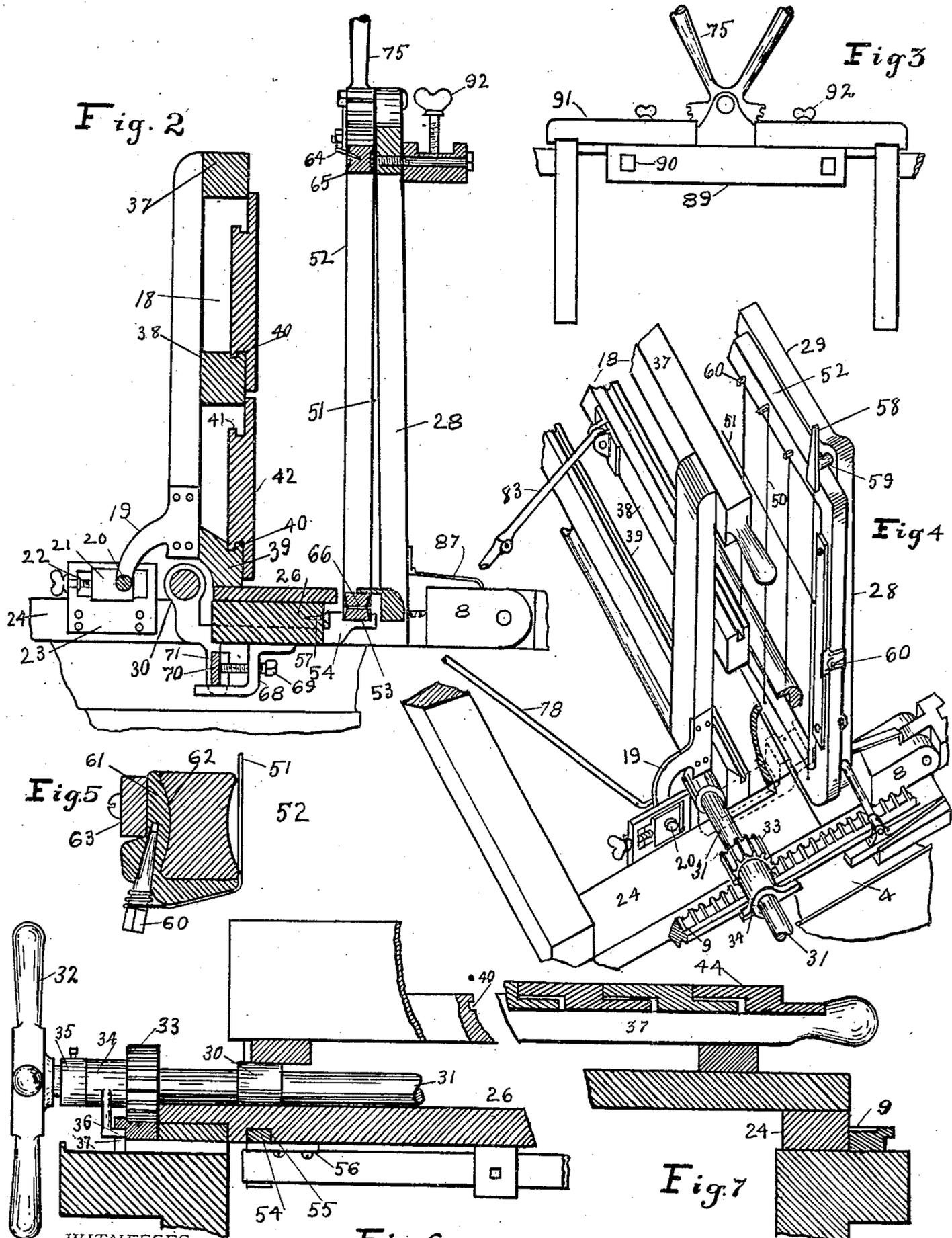
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3 SHEETS—SHEET 2.



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Fig 6

Fig 7

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3 SHEETS—SHEET 3.

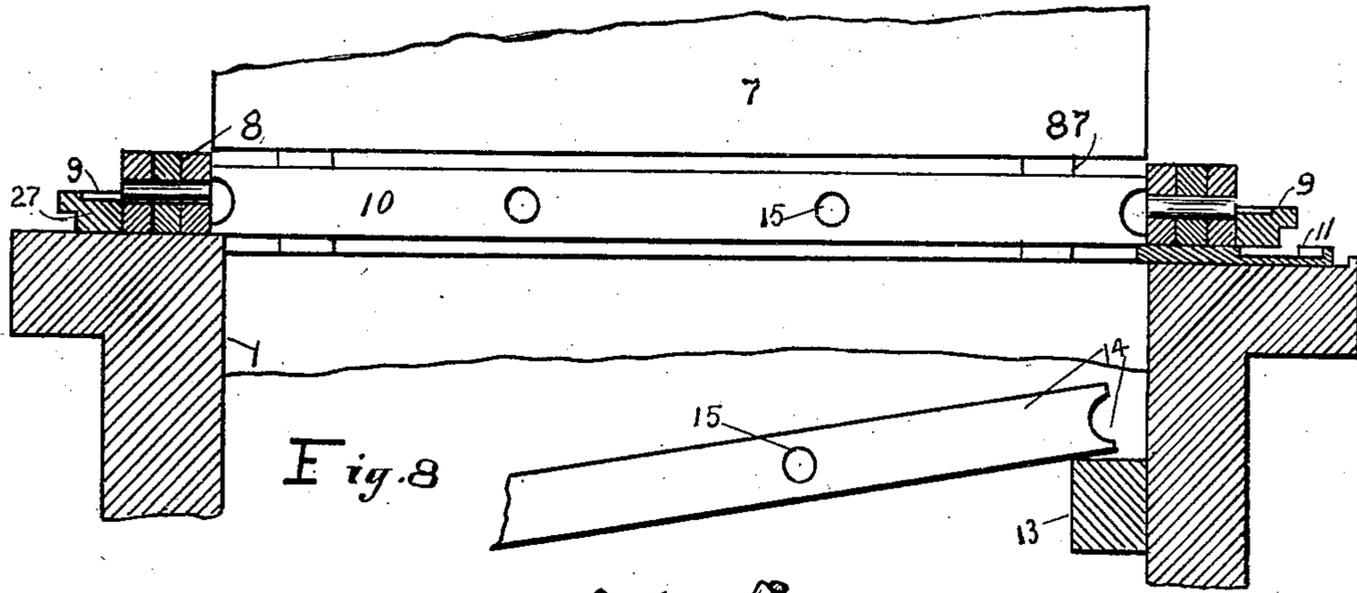


Fig. 8

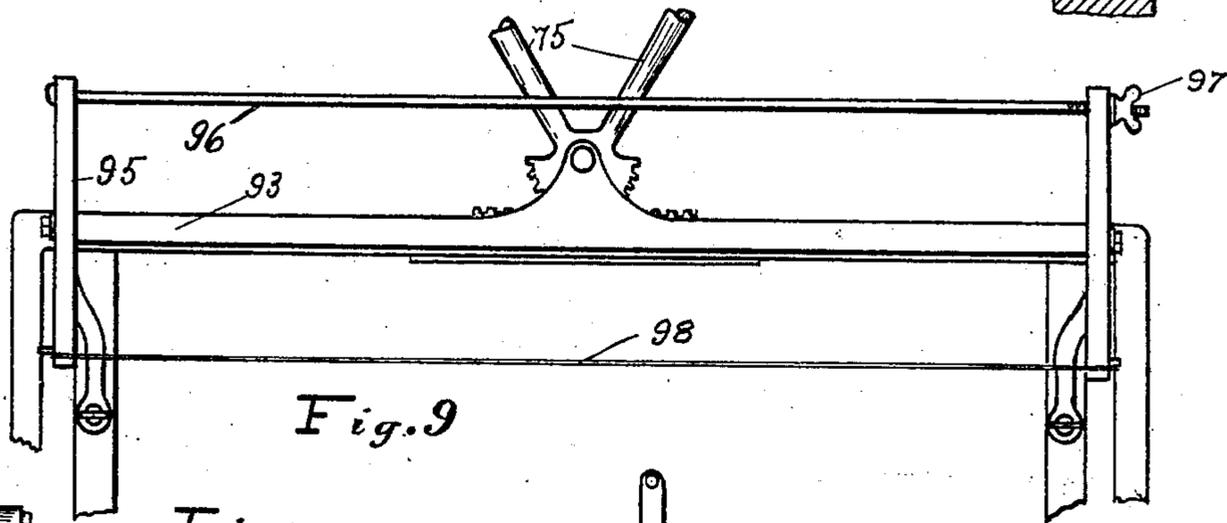


Fig. 9

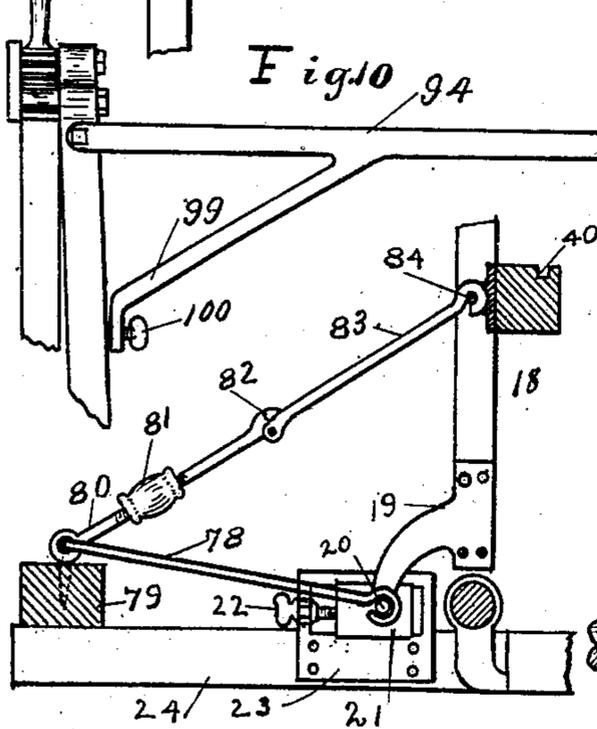


Fig. 10

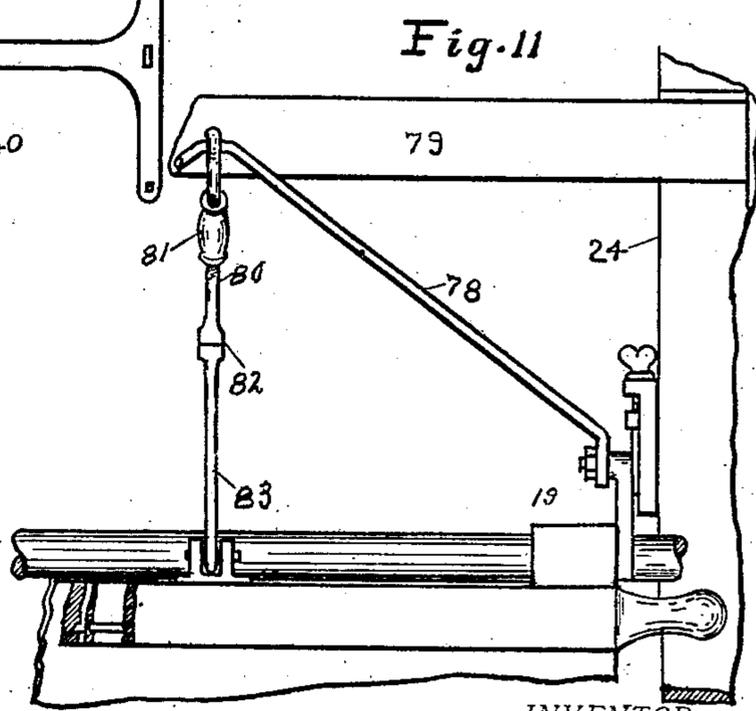


Fig. 11

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Fig. 12

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UNITED STATES PATENT OFFICE.

RUFUS A. SIMPSON, OF FERNDALE, CALIFORNIA.

BUTTER-CUTTING MACHINE.

No. 862,670.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed September 19, 1906. Serial No. 335,329.

To all whom it may concern:

Be it known that I, RUFUS A. SIMPSON, a citizen of the United States, residing at Ferndale, in the county of Humboldt and State of California, have invented new and useful Improvements in Butter-Cutting Machines, of which the following is a specification.

This invention relates to a machine for cutting butter into blocks of suitable size for marketing, the object of the invention being to provide an apparatus which can be used to cut up a large mass of butter into many such blocks easily and conveniently, and without deforming the blocks in the act of cutting.

In the accompanying drawings, Figure 1 is a broken perspective view of the machine; Fig. 2 is an enlarged detail vertical section through the gage and traveling frame; Fig. 3 is a broken front view of an attachment to said frame; Fig. 4 is a broken detail perspective view of the traveler and the parts carried thereby; Fig. 5 is an enlarged horizontal section of one of the sides of the cutting frame; Fig. 6 is a broken detail vertical section through the side of the machine; Fig. 7 is a similar view through the opposite side and through the gage when the latter is in its lower position; Fig. 8 is a horizontal section of the machine showing in detail the bottom boards; Fig. 9 is a front view of an attachment; Fig. 10 is a side view of said attachment; Fig. 11 is a broken plan view showing in detail the support for the gage; Fig. 12 is a vertical section showing said support.

Referring to the drawing, 1 indicates the frame of the machine, comprising legs 2, having rollers or casters 3. Upon said legs is supported the table 4, open in the middle across which extend the bottom or supporting boards 10. The mass of butter to be cut up into blocks may be packed on the machine itself, or it may be brought to one end of the machine, that on the right in Fig. 1, in a box on a suitable truck or carrier, not here shown, and for the purpose of guiding the carrier into alinement with the machine, there are provided at the sides of the latter guide bars 5 to coact with corresponding devices upon the carrier. Stops 6 are also provided to arrest the truck or carrier at the proper longitudinal position. The end board 7 of the machine having been removed, the box containing the butter is brought up to the machine, and, when in proper position, is tilted and deposited upside down upon the machine, the edges of the sides of the box then resting upon wooden end blocks 8, hinged together in the form of chains, one at each side of the machine. Said blocks are interposed between racks 9 and the bottom boards 10 for the purpose of preventing end movement of said bottom boards, which rest upon very narrow ledges or supports. The chains or blocks 8 rest at one side upon the table 4 and at the other upon the ends of slide plates 11, said table being recessed to receive said slide plates. The bottom boards also rest at one end

upon the table and at the other end upon the ends of the slide plates. Said slide plates have raised wedge-shaped portions 12 for the purpose of withdrawing them outwards, thus permitting the corresponding ends of the bottom boards to drop, said boards then dropping on to longitudinal bars 13, in the manner shown in my United States Patent No. 548821, dated October 29, 1895. The bottom boards are preferably made with grooved edges 14, and holes 15, in the same way as shown in my said patent, for the purpose of expediting the cooling of the butter. After the box containing the butter has been deposited on said chains, and the butter has been shaken therefrom, said box is removed.

The particular construction of the box enabling the butter to be readily detached forms part of the subject matter of an application for patent filed September 19, 1906, Serial No. 335,330, and is no part of my present invention. It suffices to say that the sides and bottom of the box are removed from the butter, leaving the mass of butter exposed on all sides and supported only on the bottom boards. The end board 7, supported by the bars 16, is now placed in position upon the end of the frame by inserting the lower end of said bars into sockets 17. The operation of cutting the butter may now be commenced. The first step is that of arranging in position a gage 18, which determines the length of the longitudinal cut, which gage also, as will be hereinafter shown, forms a receiver for the blocks of butter. This gage has, rearwardly projecting from the lower side thereof, arms 19 terminating in trunnions 20 pivoted in blocks 21 adjusted by means of screws 22 in carriers 23 secured to and forming part of a traveler or cutter holder 24 which moves longitudinally on the table of the machine. This traveler comprises two side bars, which move on the inner edges of the frame of the table, a cross bar 26 connecting said side bars, the two carriers 23 connected to said side bars 24, the traveling frame 28 comprising the side posts, and the top rail 29, also sleeves 30 for the purpose of advancing the traveler. The sleeves 30 are on a shaft 31 operated by handles 32 and having pinions 33, which engage the racks 9, so that by turning said shaft said traveler is advanced. Upon said shaft, outside said pinions, are sleeves 34 secured in place by collars 35 on the shaft, said sleeves having depending lips 36 which engage grooves 27 in the outer sides of the racks, and thus hold said pinions to the racks.

The gage 18 comprises a top bar 37, an intermediate bar 38, and a bottom bar 39, all extending transversely to the table, the top bar having extended ends shaped to form handles for raising and lowering the gage. The intermediate and bottom bars are formed with grooves adapted to receive tongues 41 in butter lifters or separators. These butter lifters may be of two styles, both shown in Figs. 1 and 2, which styles are inter-

changeable on the gage. The inner butter lifter 42 in those figures extends the whole width of the mass of butter, being provided with handles 43 for lifting it with the blocks of butter supported thereon. The outer 5 lifters 44, of the other style, comprise each an upper or front supporting portion 45, corresponding in size and shape with the side of the block of butter to be cut, and a rear portion 46, formed integral with the front portion and extending laterally therefrom, thus 10 providing a handle wherewith to hold the lifter with the butter thereon. This rear portion 46 does not extend the full width of the front supporting portion 45 but only partly under the same, and is itself of the same width as the front supporting portion, so that 15 when the lifters are put together with the edges of the parts 45 in contact, they overlap, and the rear handle parts have also their edges in contact. These sectional lifters 44 facilitate the removal of the blocks of butter, as each block rests upon its corresponding section, and 20 all that is necessary is to raise the first lifter by its extending handle, and remove it to the wrapping board 47, where it is wrapped in paper, when the handle of the next lifter in like manner extends from the supporting part, permitting its being readily held. This 25 form of butter lifter is very convenient for handling the blocks of butter in position for wrapping. After the blocks are wrapped in paper they are packed in a box, to support which there is provided a packing board 48. These sectional lifters 44, like the lifter 42, 30 are formed with tongues 41 between the handle and the supporting part, which tongues engage the grooves 40 upon the cross bar or lower bar and secure the lifters in position. However, said lifters can be readily removed by shifting them so as to disengage the tongue and groove and then raising them from the gage frame. 35 The gage has also a bottom shelf extending forwards or upwards at right angles to the main body of the gage, to support the bottom of the blocks of butter. It will be observed that the part of the lifter immediately between any two bars of the gage is considerably narrower than the space between said bars, so that the lifter can slide in the direction away from the bottom shelf, carrying with it the butter, thus permitting the butter to be readily handled. 40 The gage, having been lifted into proper position, is now moved forwards in the manner already indicated. Also the longitudinal cutting of the butter progresses. For this purpose there are provided vertical wires 50 and one or more horizontal wires 51 (one here shown) 50 supported in a cutter frame 52. This frame is rectangular in form and is supported at the bottom in grooves 53 in the front sides of yokes 54 extending forwardly in recesses 55 in the under side of the traveler pivoted on the main shaft 31, and held in position by 55 removable plate 56. The upper portion of said cutter frame 52 is guided between the traveling frame 28 and lugs or ears 58 extending downwards from pins 59 extending rearwardly from the upper corners of said traveling frame. The horizontal cutting wire 51 is secured to said cutter frame by being wound around 60 keys or pegs 60 seated in vertical slides 61 sliding in recesses 62 in the rear faces of said sides and held in place by clamping bars 63 suitably secured to said rear faces, the pressure of which prevents vertical movement of 65 said slide pieces. This construction obviates the ne-

cessity of a large number of perforations in the sides of the frame to receive the wires, while permitting ready and delicate adjustment of the wire to any desired height. The slides can easily be raised or lowered to the required height and will then remain in position. The vertical wires are wound at the top around 70 oblique keys or pegs 64 fitted or turned in the rear face of the upper side of the cutter frame. Each wire passes through a groove or notch 65 formed in the rear face of the upper side of said cutter frame, and then 75 extends down to the bottom thereof. It then passes through a horizontal aperture 66 in the lower side of said frame, then along the front face of said lower side to the next similar aperture, and then returns in the reverse path to the next similar peg or key. 80

The traveling frame is inclined slightly to the vertical, while the cutter frame, at the end of a cross cut, is vertical. Hence said frames are at a slight angle with each other. Therefore, when the operator turns the shaft, and so, by means of the rack and pinion, moves the yokes forwards, the effect is to advance 85 the bottom of the cutter frame into contact with the traveling frame. Therefore, in this position the vertical wires are inclined forwards and downwards. As the operator further revolves the shaft, said wires move 90 through the butter, cutting the same longitudinally into slabs. This action continues until the gage 18 moves up into contact with the end of the mass of butter, which determines the longitudinal thickness of the blocks. It is now necessary to make a cross cut with 95 the vertical wires to sever said blocks from the remainder of the mass. Before doing so it must be insured that the cutting wires are in a perfectly vertical transverse plane. When passing longitudinally 100 through the mass of butter, the middle of each wire is bowed backwards by the resistance of the butter, and without suitable provision to avoid such a result, the effect of making such a cross cut with the wires in this position would be that the butter would be cut off 105 with a concave front surface. To insure the straightening of the wires before making this cross cut the following means are provided. Upon the under side of the traveler 24 is secured a bracket 68 through which is screwed an adjusting screw 69 bearing against the center of a bow spring 70, the ends of which bear against 110 arms 71 extending downwards from the yokes 54. When the operator revolves the shaft, the bow spring is thereby compressed, there being a forward movement of the yokes before the traveler itself begins to move forwards, which it does by reason of the abutment of the lower side of the cutter frame against the 115 lower side of the traveling frame. Therefore, this spring being under tension while force is being applied to advance the cutters, as soon as the latter force is withdrawn, the spring acts to draw back the bottom 120 of the cutter frame, causing the cutting wires to assume a position in a vertical transverse plane, ready for the cross cut. This cross cut is effected as follows: Upon the upper face of the upper side of the cutter frame is formed a rack 73, and pivoted on a boss extending from the top of the traveling frame is a segment gear 74, having two handles 75, so that it can be conveniently operated from either side of the machine. By means of this segment gear and rack, said cutter frame is moved transversely through a proper distance, 130

and, in order to arrest said transverse movement, there is provided a screw 76 abutting against a lug 77 on the traveling frame.

In order to maintain the guide in an upright position as it is pushed up to the butter, I may provide, as a modification, the following mechanism: From the trunnions 20 extend arms 78 to a block 79 slidable on the traveler, having thereon a pivotal connection with arms 80 adjustable in length by means of turn-buckles 81, and jointed at 82 to arms 83 pivoted at 84 to the gage. These arms 80, 83, act in the same manner as those commonly used for carriage tops, and thus, when extended, they support the gage vertical, while they are readily collapsed to lower the gage. The gage is now withdrawn, and since, as will be presently explained, the bottom board or shelf of the gage has passed beneath the mass of butter, the blocks of butter severed therefrom drop slightly on to said shelf and fall back with the gage, resting on the lifters, which may be of either of the forms previously described. The butter having been removed from these lifters, the gage is again raised to a vertical position, and the operation is repeated.

To permit the lower sides of the cutter frame, the bottom board or shelf, and the traveler, to pass beneath the mass of butter, it is necessary that the bottom boards 10, which support said mass, should fall away in succession from the bottom of the mass. To accomplish this result there is provided a wedge-shaped finger 85 secured to the traveling frame, which finger passes in succession between the side of the rack and the wedge-shaped shoulders 12 on the slide plates 11 supporting the ends of the bottom boards, said finger in its forward movement moving said plates laterally and withdrawing them from the ends of the bottom boards, so that the latter can drop. Thus said bottom boards drop in succession, until the traveling frame arrives at the end bottom board. The wooden chains are attached to the traveling frame by means of hinged bars 87 having hooked ends which engage the first links thereof, and are thus moved backwards and forwards therewith.

The end bottom board 86, which supports the mass of butter after the other bottom boards have fallen away one after the other, being the only support for the remainder of said mass, cannot be permitted to drop therefrom, and therefore is caused to move longitudinally into U-shaped bends 87 in the supporting bars 88 for the end board 7, the ends of this end bottom board resting upon the sides of the table. It is pushed into said bends by the advancing lower portions of the traveler.

In this State butter frequently comes to the wholesale dealers in rectangular blocks of a uniform size, which are much smaller than the large mass of butter heretofore considered, but which yet require to be cut up into smaller rectangular blocks. While, a large mass of butter does not yield or move laterally when making the cross cut, a smaller mass will do so unless prevented. To obviate this and render the machine capable of cutting up such blocks, there is provided a supporting frame 89 secured to the traveling frame 28 by screws 90, upon which frame 89 slide the upper sides of angle pieces 91, said angle pieces being secured in any desired position by the clamping screws 92. These angle pieces can be moved outwards to any desired extent to form side supports, and when making the cross cut, these supports prevent lateral motion of the butter.

In Figs. 9 and 10 is illustrated a device for trimming off the top of the mass of butter, constructed somewhat like a common buck-saw, that is, it comprises a cross bar 93 supported on arms 94 having side levers 95 connected at the top by a tension rod 96, adjusted by the nut 97, and at the bottom by the cutting wire 98. The side arms 94 are pivoted to the sides of the traveling frame, and have the depending struts 99, through the ends of which pass the screws 100 abutting against said sides, so that by screwing the screws 100 in or out, the height of the wire 98 may be adjusted to trim off the top of the butter.

I claim:—

1. A butter cutting machine having movably supported thereon a butter receiver comprising a gage adapted, when in its vertical position, to abut against the end of the mass of butter to limit the longitudinal extent of the cut, and a shelf extending from the bottom of the gage substantially at right angles thereto to support the blocks of butter after they are cut off, substantially as described. 70
2. In a butter cutting machine, the combination of a suitable frame and wires thereon for making a longitudinal cut, and a gage adapted to be advanced toward the wires and adapted to strike the rear end of the block of butter to limit the longitudinal extent of the cut, substantially as described. 75
3. In a butter cutting machine, the combination of a suitable frame and wires thereon for making a longitudinal cut, and a gage adapted to be advanced toward the wires and adapted to strike the rear end of the block of butter to limit the longitudinal extent of the cut, said gage having a bottom shelf permitting it to be used as a receiver for the blocks when they are cut off, substantially as described. 80
4. In a butter cutting machine, the combination of a suitable frame and wires thereon for making a longitudinal cut, a gage adapted to be advanced toward the wires and adapted to strike the rear end of the block of butter to limit the longitudinal extent of the cut, said gage having a bottom shelf permitting it to be used as a receiver for the blocks when they are cut off, and lifters removably carried on the gage, substantially as described. 85
5. In a butter cutting machine, the combination of a suitable frame and wires thereon for making a longitudinal cut, a gage adapted to be advanced toward the wires and adapted to strike the rear end of the block of butter to limit the longitudinal extent of the cut, said gage having a bottom shelf permitting it to be used as a receiver for the blocks when they are cut off, and lifters removably carried on the gage, one for each block of butter, said lifters being provided with handles overlapping the lifting portions, substantially as described. 90
6. In a butter cutting machine, a gage or butter receiver provided with grooves and interchangeable lifters having tongues entering said grooves, substantially as described. 95
7. In a butter cutting machine, a gage or receiver having a bottom shelf to receive the butter, and a butter lifter carried on the receiver and movable away from the shelf to facilitate the handling of the butter, substantially as described. 100
8. In a butter cutting machine, a gage or receiver having a bottom shelf to receive the butter, and a butter separator carried on the receiver and movable away from the shelf to facilitate the handling of the butter, substantially as described. 105
9. A butter lifter consisting of a supporting part to lift the block of butter, and a handle part extending laterally from the rear of the supporting part, and substantially of the same lateral dimension as the supporting part, substantially as described. 110
10. In a butter cutting machine, a gage or receiver comprising separators movably carried by said receiver to separate the blocks of butter resting thereon and arranged when in a vertical position to abut against the mass of butter to be cut to limit the extent of the longitudinal cut, said receiver being movable from said vertical limiting position, substantially as described. 115

11. In a butter cutting machine, the combination of a cutter holder, cutting wires carried thereby, a gage pivoted to the machine, and a collapsible brace for the gage, substantially as described.
- 5 12. In a butter cutting machine, the combination of a cutter holder, cutting wires carried thereby, a gage pivoted to the machine, a collapsible brace for the gage, and adjusting screws for advancing said brace, substantially as described.
- 10 13. In a butter cutting machine, the combination of a cutter holder, cutting wires carried thereby, a gage pivoted to the machine, a collapsible brace for the gage, and means for adjusting the oblique portion of the brace, substantially as described.
- 15 14. In a butter cutting machine, the combination of a suitable frame, cutting wires arranged thereon to make a longitudinal cut, and means for retracting one end of each wire after making said cut so as to bring said wires substantially into a vertical transverse plane, substantially as described.
- 20 15. In a butter cutting machine, the combination of a suitable frame, cutting wires arranged thereon to make a longitudinal cut, and automatic means for retracting one end of each wire after making said cut so as to bring said wires substantially into a vertical transverse plane, substantially as described.
- 25 16. In a butter cutting machine, a gage or receiver, cutting wires, means for advancing first one end of each cutting wire, and then the whole of said wires and the gage or receiver simultaneously, and a spring for automatically retracting said ends of the cutting wires, substantially as described.
- 30 17. In a butter cutting machine, a cutter frame, means for advancing said cutter frame to cut the butter longitudinally, vertical wires carried thereby, means for advancing one end of the frame out of a vertical plane, a spring for retracting said end when the frame ceases to advance, and means for adjusting said spring, substantially as described.
- 35 18. In a butter cutting machine, the combination of a suitable table, bottom boards thereon, means for removably supporting one end of each board, cutting wires, means for advancing the same, and chains movable with the cutting wires for limiting the end movement of the bottom boards, substantially as described.
- 40 19. In a butter cutting machine, the combination of a suitable table, bottom boards thereon, means for movably supporting one end of each board, cutting wires, means for advancing the same, and means movable with the cutting wires for limiting the end movement of the bottom boards, and for furnishing supports for the side of a butter box inverted over said table, substantially as described.
- 45 20. The combination of a suitable table, bottom boards, movable supports for the ends of the bottom boards at one side of the table, means for removing said movable supports to permit said boards to drop, an end bottom board, fixed supports for both ends thereof, mechanism for cutting the butter, and means for advancing said mechanism, said mechanism having a part adapted to engage said end bottom board in its advance to move said board from underneath the butter, substantially as described.
- 50 21. The combination of a suitable table, bottom boards, movable supports for the ends of the bottom boards at one side of the table, means for removing said movable supports to permit said boards to drop, an end bottom board, fixed supports for both ends thereof, mechanism for cutting the butter, means for advancing said mechanism, said mechanism having a part adapted to engage said end bottom board in its advance to move said board from underneath the butter, an end board for the table and bars for supporting said end board, having bent portions to receive said bottom board, substantially as described.
- 55 22. In a butter cutting machine, a cutter frame, a horizontal wire carried thereby, one face of each vertical side of the frame having a recess, a slide in said recess, the horizontal wire being extended across the opposite face and connected to said slide, and means for maintaining said slide in position in said recess, while permitting adjustment vertically thereof, substantially as described.
- 60 23. In a butter cutting machine, in combination with a traveling frame, and cutters advanced thereby, an auxiliary frame secured to said traveling frame and having a horizontal wire for trimming off the top of the butter secured to said auxiliary frame, substantially as described.
- 65 24. In a butter cutting machine, in combination with a traveling frame, and cutters advanced thereby, an auxiliary frame secured to said traveling frame, having a horizontal wire for trimming off the top of the butter secured to said auxiliary frame, and means for adjusting the height of said wire, substantially as described.
- 70 25. In a butter cutting machine, in combination with a traveling frame and cutting wires advanced thereby, an auxiliary frame supported by said traveling frame and having vertical members adapted to support the sides of a comparatively small block of butter, when making a cross cut, substantially as described.
- 75 26. In a butter cutting machine, in combination with a traveling frame and cutting wires advanced thereby, an auxiliary frame supported by said traveling frame and having vertical members adapted to support the sides of a comparatively small block of butter, when making a cross cut, and means for adjusting said sides, substantially as described.
- 80 85 90 95 100

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

RUFUS A. SIMPSON.

Witnesses:

F. N. ROSMUSSIN,
H. C. BLUM.