J. MATTSON.

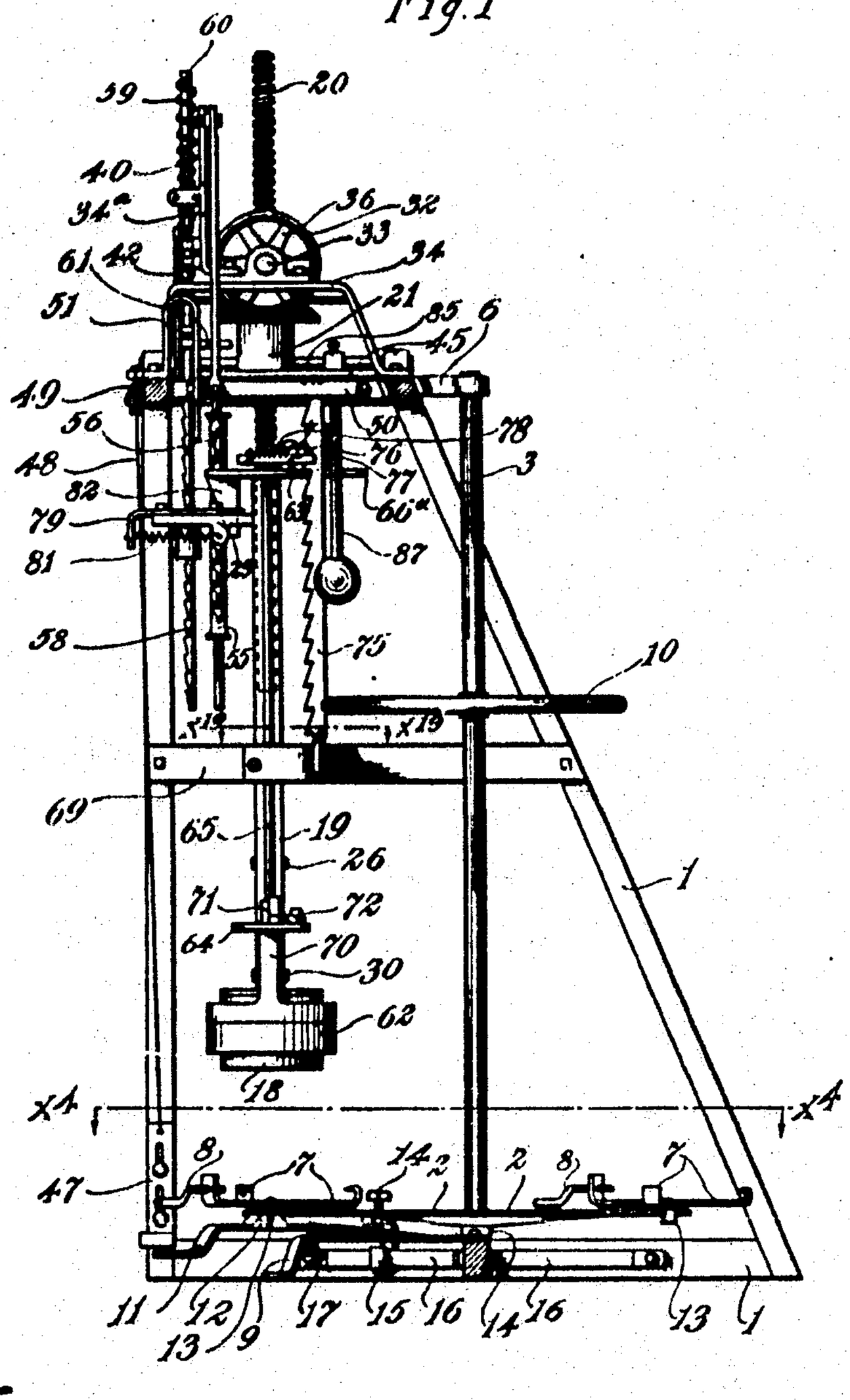
BUTTER PACKING MACHINE.

APPLICATION FILED APR. 20, 1907.

899,119. Patented Sept. 22, 1908.

6 SHEETS—SHEET 1.

Fig. 1



Witnesses.

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A. H. Graehl.

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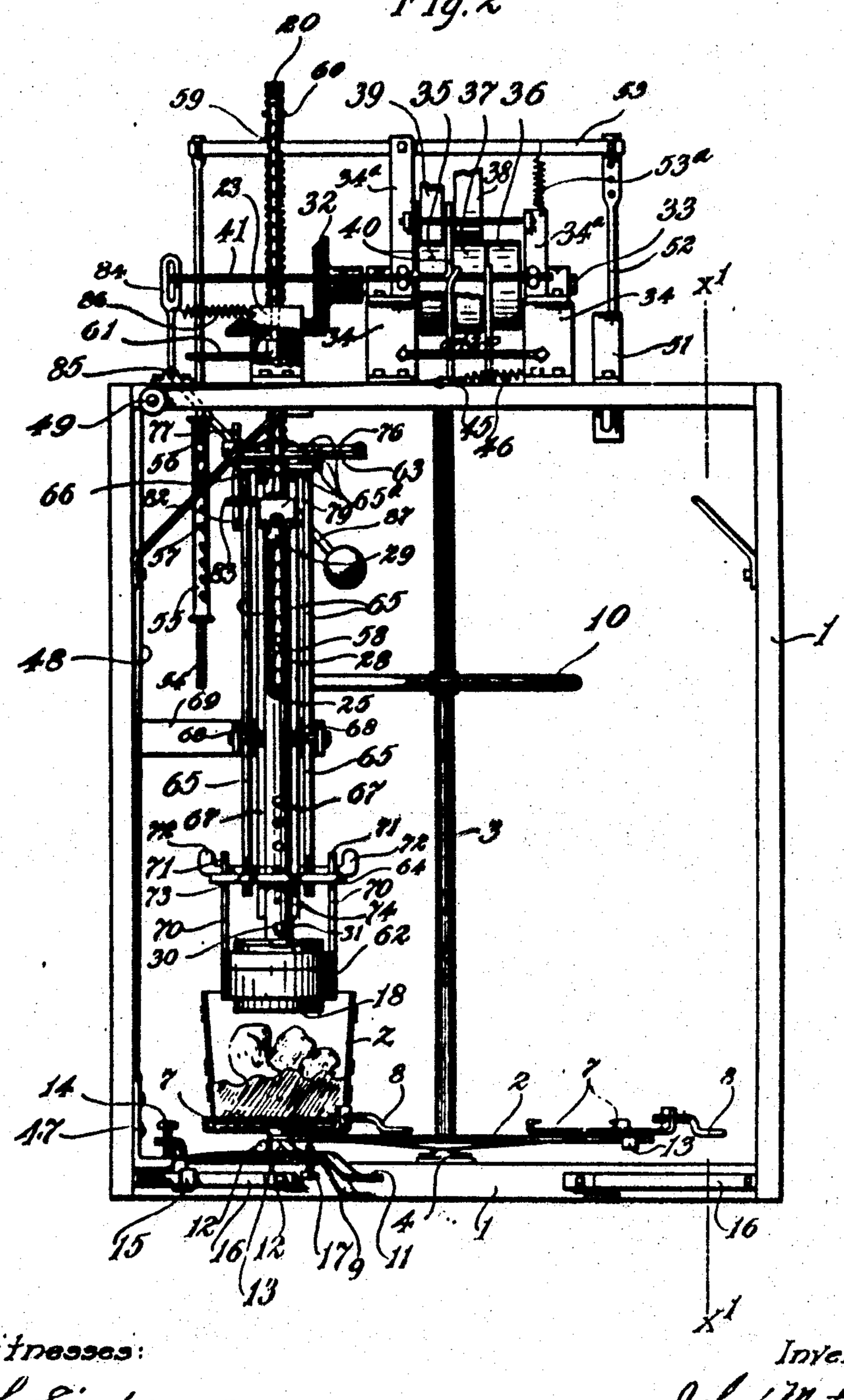
5 SHEETS—SHEET 2.

Fig. 2



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3 SHEETS—SHEET 3.

Fig. 3

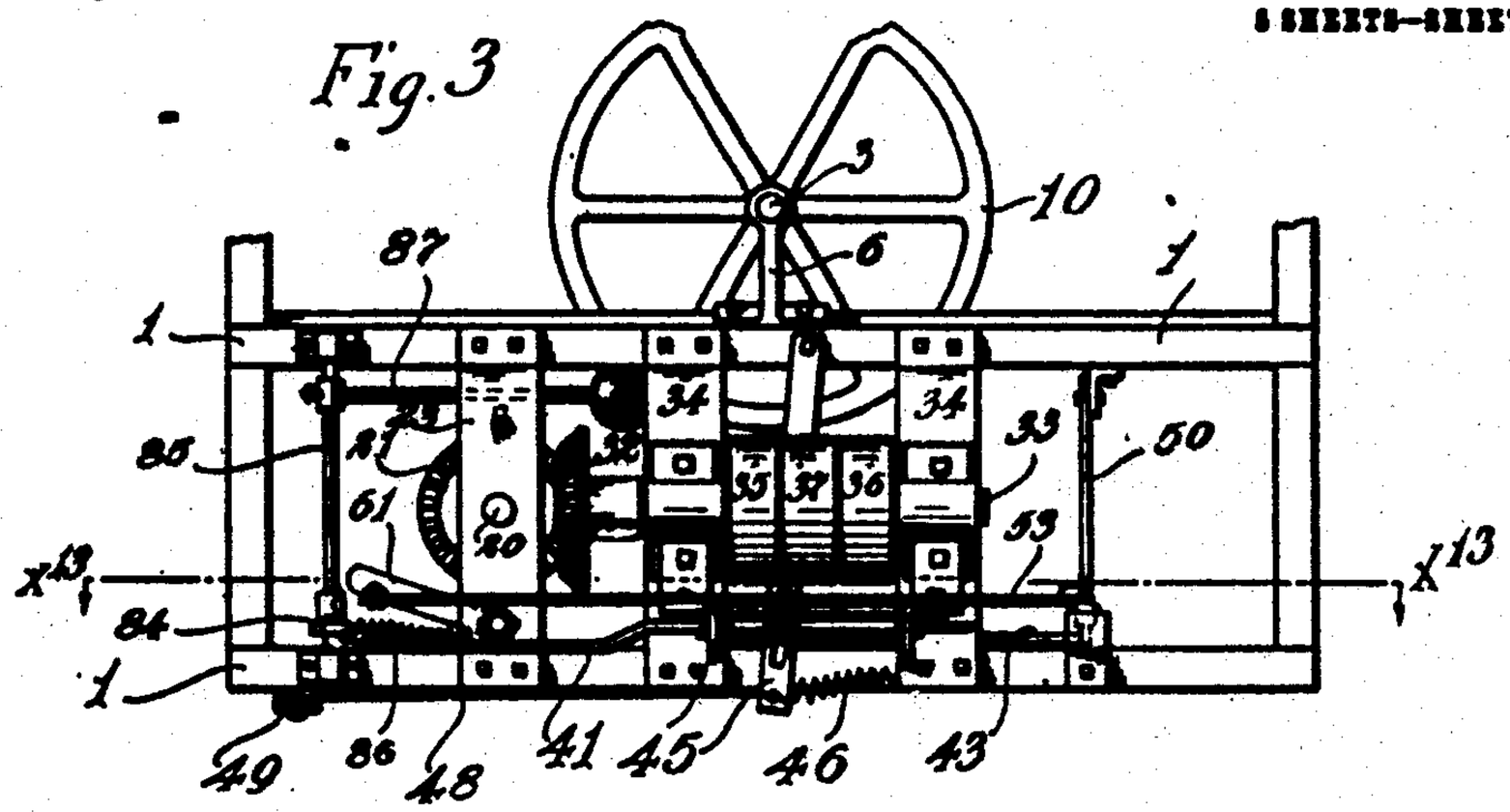
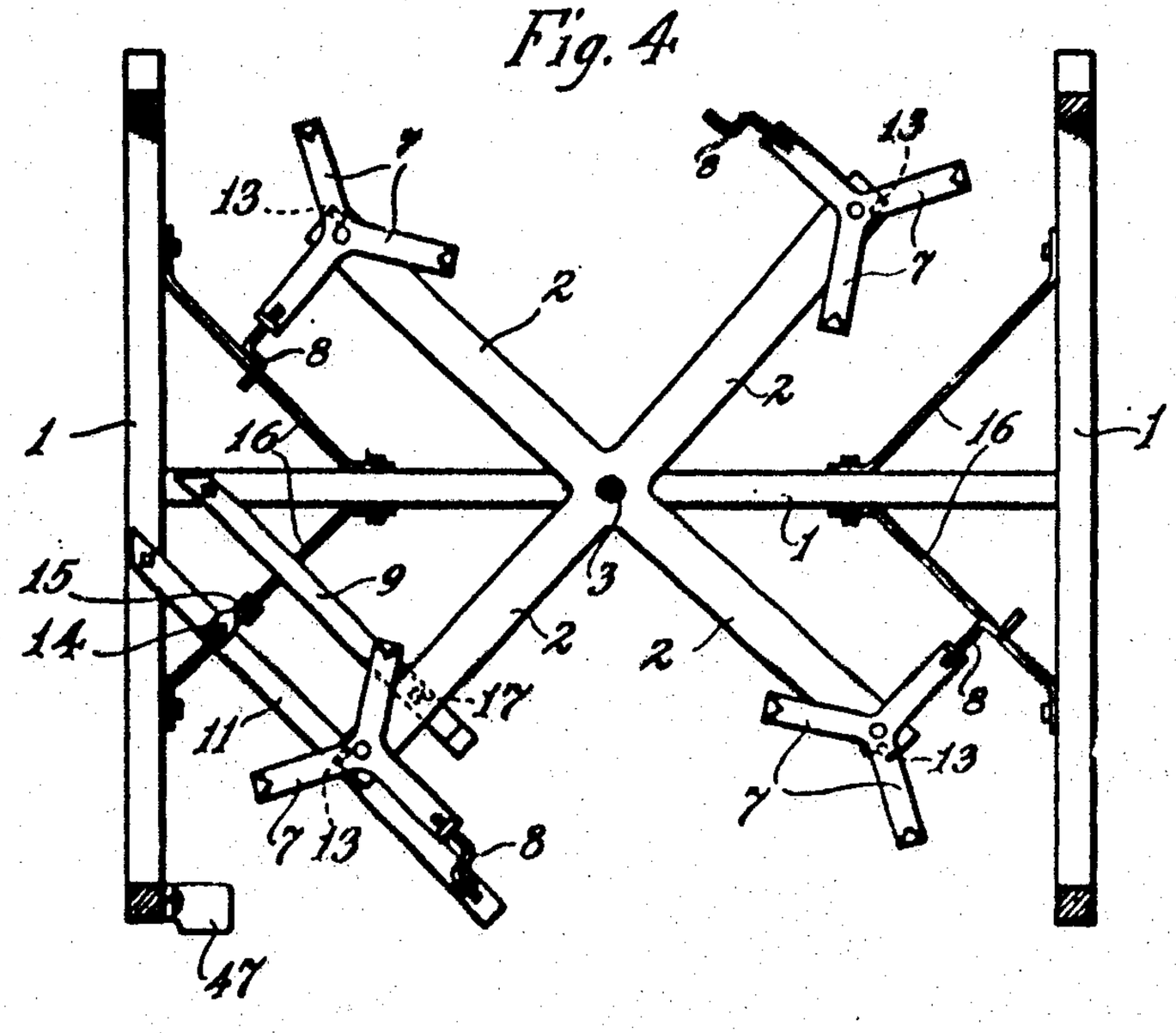


Fig. 4.



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5 SHEETS—SHEET 4.

Fig. 8

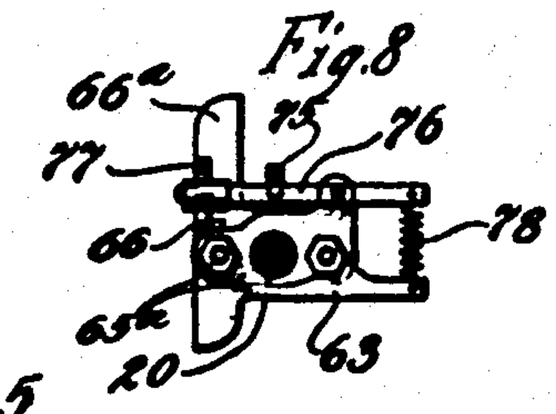


Fig. 9

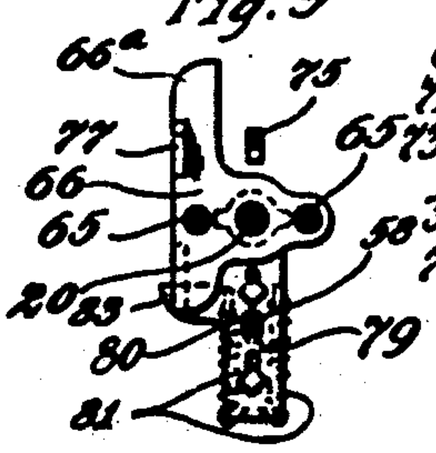


Fig. 12

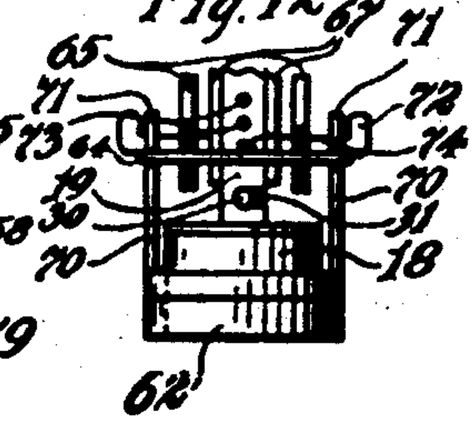


Fig. 5

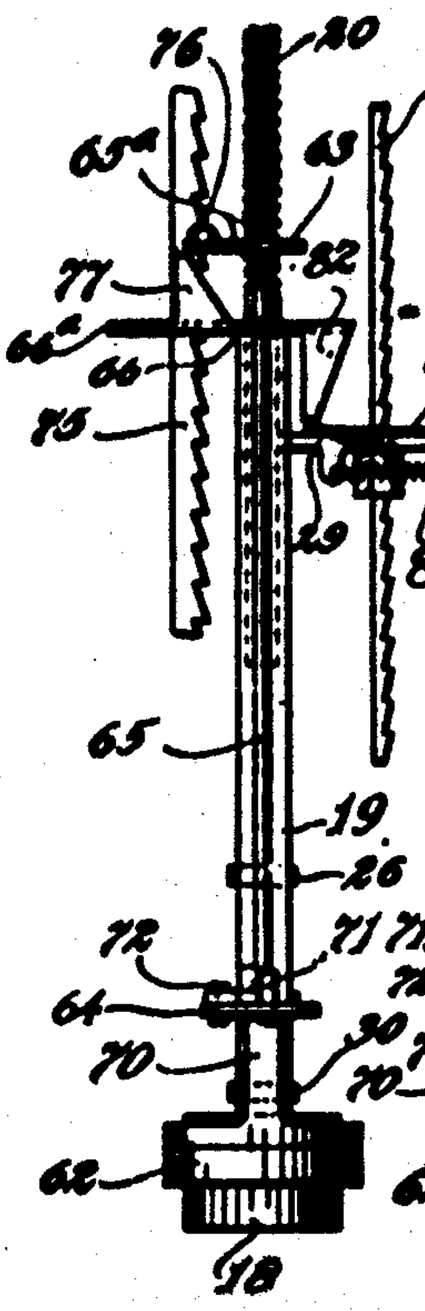


Fig. 6

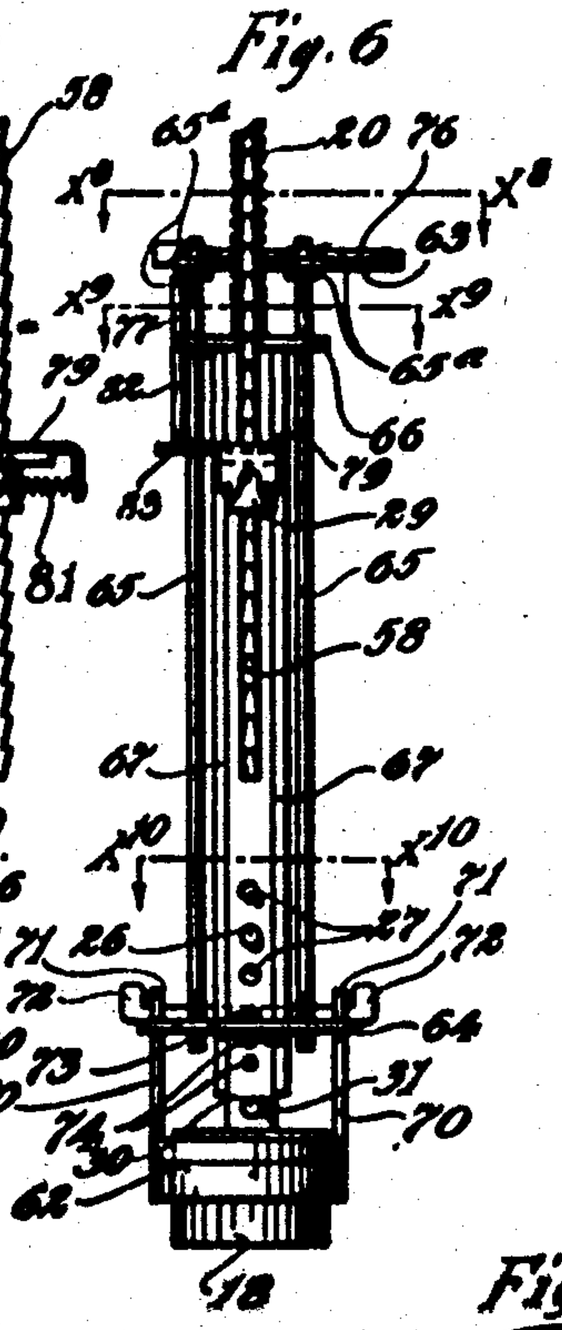


Fig. 7

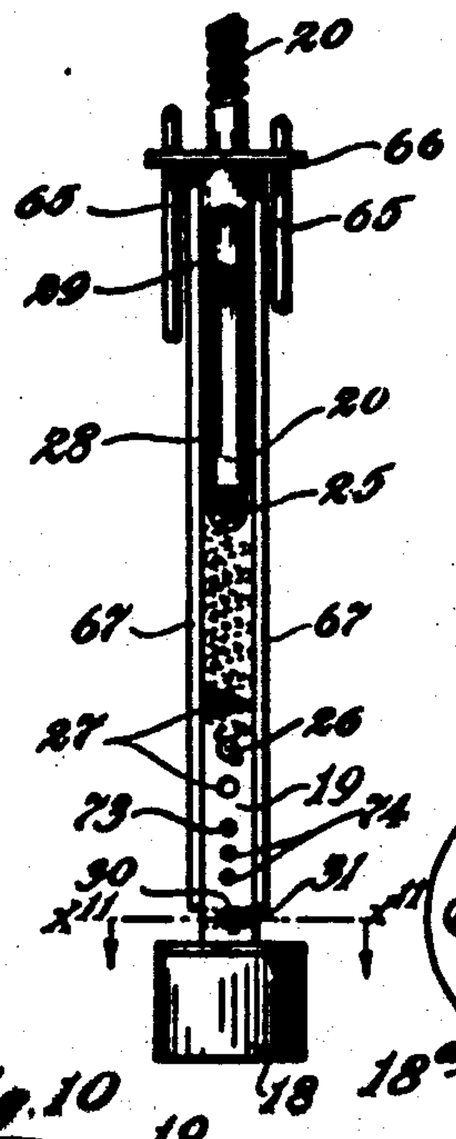


Fig. 11

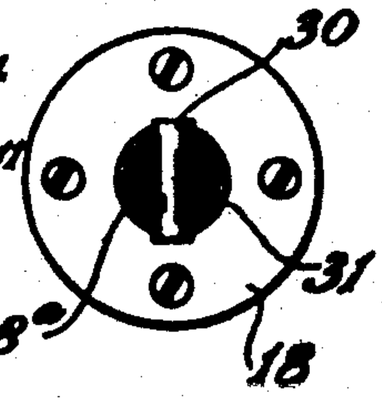
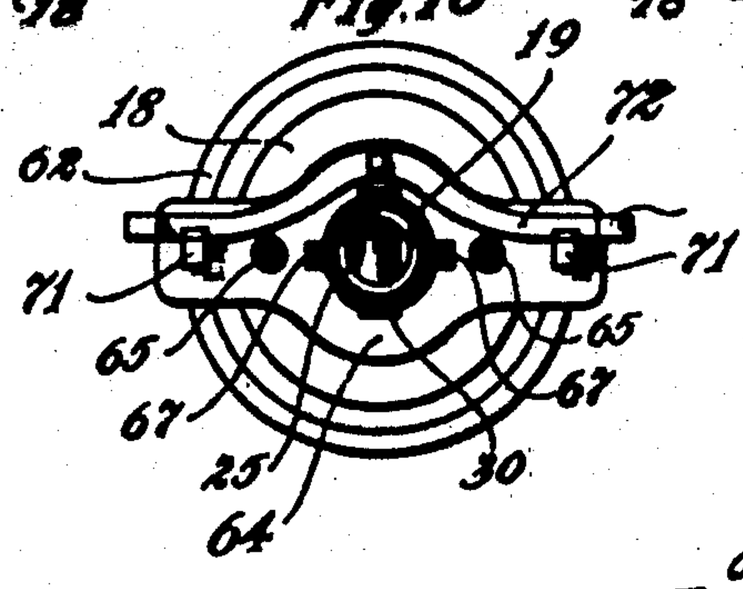


Fig. 10



Witnesses:

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BUTTER PACKING MACHINE.

APPLICATION FILED APR. 20, 1907.

899,119.

Patented Sept. 22, 1908.

6 SHEETS—SHEET 6.

Fig. 13

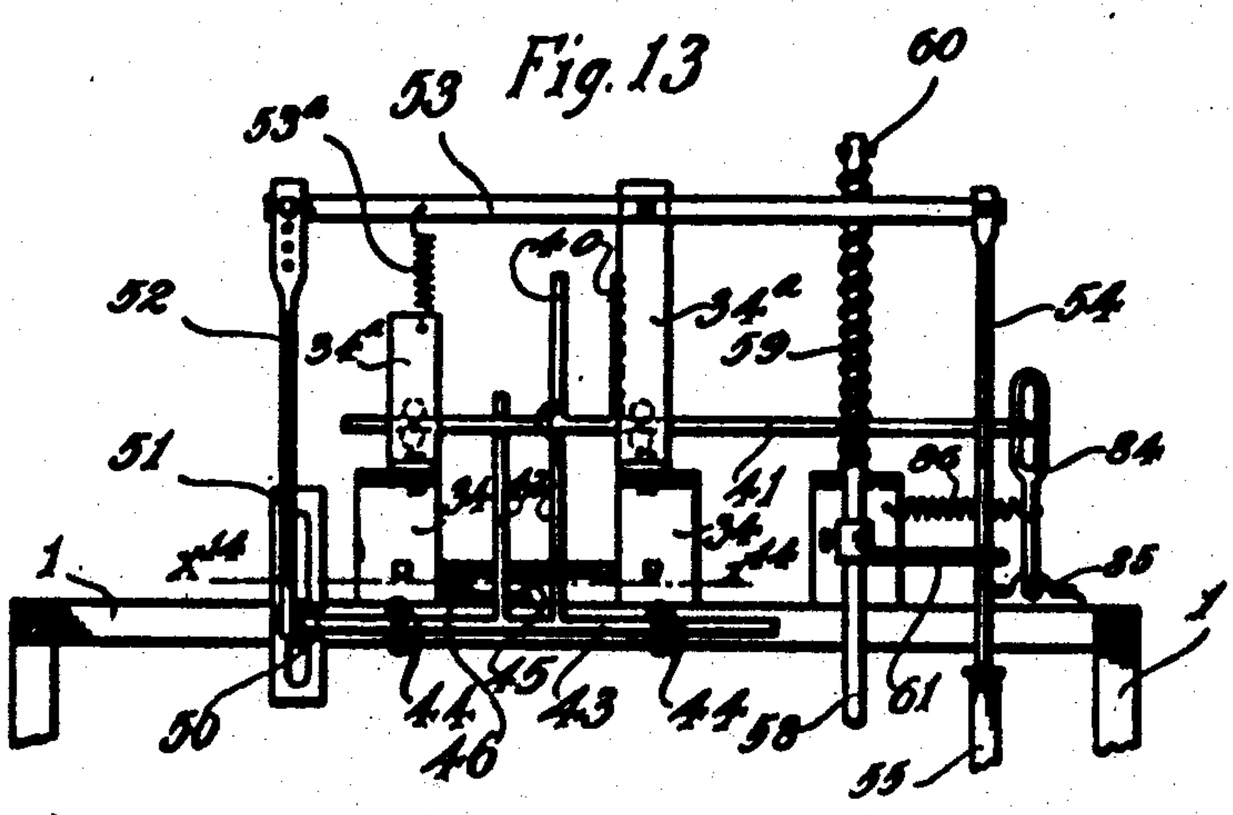


Fig. 14

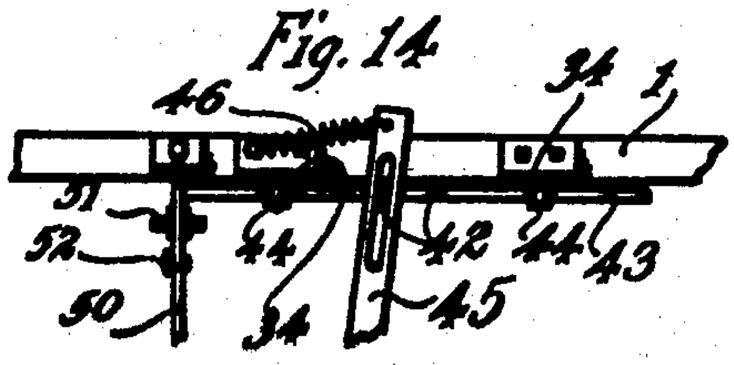


Fig. 15

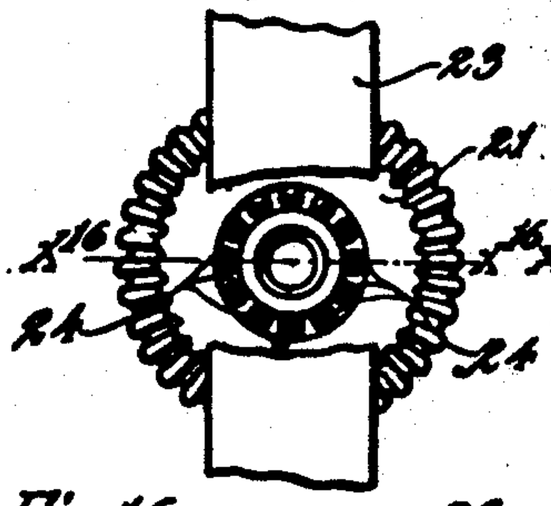


Fig. 16

Fig. 17

Fig. 18

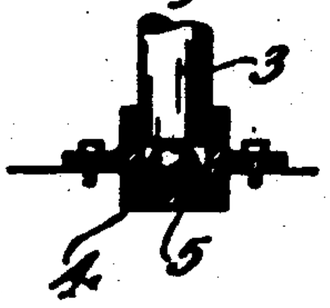
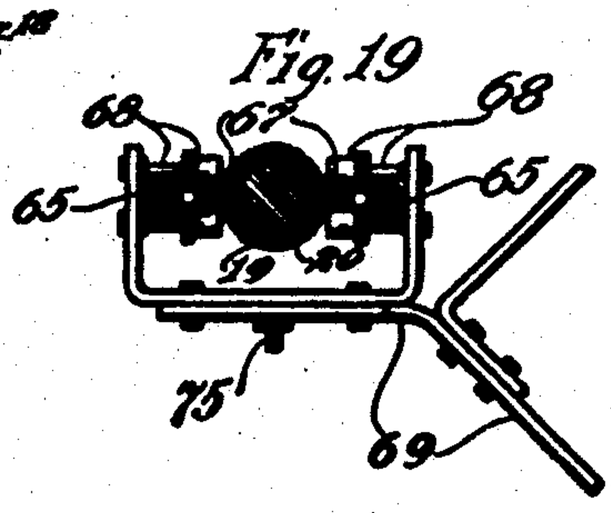


Fig. 19



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UNITED STATES PATENT OFFICE.

JOHN MATTSON, OF DRESSER JUNCTION, WISCONSIN.

BUTTER-PACKING MACHINE.

No. 899,119. Specification of Letters Patent. Patented Sept. 22, 1908.

Application filed April 20, 1907. Serial No. 369,259.

To all whom it may concern:

Be it known that I, JOHN MATTSON, a citizen of the United States, residing at Dresser Junction, in the county of Polk and State of Wisconsin, have invented certain new and useful Improvements in Butter-Packing 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 present invention relates to machines for packing butter and other plastic materials within tubs, jars or other suitable receptacles, and has for its object to improve the same in the several particulars hereinafter noted.

The invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

This invention is in the nature of an improvement on the machine disclosed and broadly claimed in my prior patent No. 806,159, issued of date December 5, 1905, and entitled "Butter packing machine".

The present improvement is particularly directed to the tripping mechanism whereby, under predetermined pressure, the plunger actuating mechanism is tripped out of action and then reversed, to thereby automatically effect the return movement of the plunger to its normal position after it has completed a working stroke.

The invention, however, involves other minor but important features of improvement, as will hereinafter appear, both in the specification and in the claims.

The improved machine is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a side elevation of the improved machine, with some parts sectioned on the line x^1 x^1 of Fig. 2. Fig. 2 is a front elevation of the improved machine, showing the butter receiving tub in position for filling, said tub being shown in vertical section. Fig. 3 is a plan view of the machine, with some parts broken away. Fig. 4 is a horizontal section taken on the line x^4 x^4 of Fig. 1. Fig. 5 is a detail view in side elevation, showing the packing plunger, coöperating stripper and associated parts of the tripping mechanism. Fig. 6 is a front elevation of the parts shown in Fig. 5; Fig. 7 is a detail in front elevation, showing the plunger and its carrier, some parts being broken away. Fig. 8 is a horizontal section taken on the line x^8 x^8 of Fig. 6. Fig. 9 is a detail in horizontal section, taken on the line x^9 x^9 of Fig. 6. Fig. 10 is a horizontal section taken on the line x^{10} x^{10} of Fig. 6, and showing the parts on an enlarged scale. Fig. 11 is a horizontal section taken on the line x^{11} x^{11} of Fig. 7, and showing the parts on an enlarged scale. Fig. 12 is a detail view in front elevation, showing the plunger, coöperating stripper and means for connecting the same, and illustrating an adjustment thereof differing from that shown in other views. Fig. 13 is a vertical section taken on the line x^{13} x^{13} of Fig. 3, some parts being broken away. Fig. 14 is a detail in horizontal section, taken on the line x^{14} x^{14} of Fig. 13. Fig. 15 is a detail in plan with parts broken away, looking at the top of the nut acting thrust gear which works on the upper end of a threaded plunger actuating bolt. Fig. 16 is a vertical section taken on the line x^{16} x^{16} of Fig. 15. Fig. 17 is a detail view in plan, showing a bearing step with the lower end of the vertical shaft of the tub or receptacle carrier. Fig. 18 is a vertical section on the line x^{18} x^{18} of Fig. 17; and Fig. 19 is a horizontal section taken on the line x^{19} x^{19} of Fig. 1.

All of the parts of the machine are supported, directly or indirectly, from a skeleton framework 1, the base of which is adapted to rest upon the floor. The tubs or receptacles in which the butter or other plastic material is to be packed are indicated by the character *z* and these are adapted to be supported and presented, one after the other, under the plunger of the machine by a parcel carrier made up, as shown, of four radial arms 2, which at their inner ends are rigidly secured to the lower end of a vertical carrier shaft 3. The lower end of this shaft 3 (see Figs. 17 and 18) is journaled in a step bearing or socket 4 which is secured to the lower beams of the frame work 1. A bearing ball 5 is preferably interposed between the lower end of said shaft 3 and the bearing socket 4. The upper end of said shaft 3 is shown as journaled in a bearing 6 on the upper portion of the framework 1. Secured to the outer end of each arm 2 is a tub holder 7 which, as shown, is made up of three arms, two of which are formed with in-turned barbs and the third of which is provided with a clamping screw 8.

When one of the tub holders 7 is moved into a position to locate the tub held thereby under the packing plunger of the machine, its supporting arm 2 rests upon a rigid support or anvil shown as in the form of a metallic strap or bar 9 secured at one end to the framework 1 and having a down-turned end that is adapted to rest upon the floor. As will presently appear, this support 9 holds the positioned tub or receptacle against downward movement under the compressing force of the packing plunger.

The carrier shaft 3 is shown as provided with an operating wheel 10 by means of which it may be rotated at will to move the tub holders and tubs held thereby, one after another, under the packing plunger. For locking the tub carrier with one or the other of the tub holders properly alined under the packing plunger, a suitable latch is provided. This latch is preferably in the form of a spring bar 11 secured at one end to the framework 1, having a notched cam lug 12 (see Figs. 1 and 2) that is adapted to engage and hold a lock flange 13 on the end of the alined carrier arm 2. The upward movement of the spring latch bar 11 is, as shown, adapted to be adjusted by means of a set screw 14 that works through a small bracket 15 secured to braces 16 of the framework 1. The numeral 17 indicates a thrust resisting set screw which has threaded engagement with the supporting bar 9 with its upper end in position to engage and prevent any material downward movement of the alined carrier arm 2.

The packing plunger 18 is supported by a telescopic carrier made up, as shown, of a sleeve 19 and a threaded shaft 20, the latter of which telescopes into the former and the threaded portion of which is engaged by the threaded hub of a nut acting gear 21. This gear 21 is, as shown, in the form of a bevel gear and is arranged to work between vertically spaced metallic retaining straps 22 and 23 that are rigidly secured to the upper portion of the framework 1. Bearing balls 24 are shown as interposed between the upper strap 23 and the upper face of the gear 21 for the purpose of reducing friction due to end thrusts. A coiled spring 25 is placed within the sleeve 19 and is compressed between the lower end of the shaft 20 and a pin 26, which pin is adapted to be passed through any one of several perforations 27 in the said sleeve to vary the tension of said spring. The sleeve 19 is formed with a longitudinal slot 28 at its front face. The stem of a flattened stud or pawl support 29 works through the slot 28 and is rigidly secured to the lower end of the threaded shaft 20. The spring 25 tends to maintain engagement between the stem of the said stud 29 and the upper extremity of the slot 28. The packing plunger 18 has a shank 18^a that fits within the lower end of the sleeve 19 and is detachably securable to said sleeve by bayonet joints shown as made up of a diametrically extended pin 30 in said stem and angular slots 31 in said sleeve.

The nut acting bevel gear 21 meshes with a similar gear 32 carried, as shown, by one end of a horizontally disposed driving shaft 33 mounted in suitable bearings 34 secured on top of the framework 1. On this shaft 33 is a pair of laterally spaced loose pulleys 35 and 36 and an intermediate fixed pulley 37. Power driven belts 38 and 39 run over the pulleys 35, 36 and 37 and are shifted from one to the other of the said pulleys by mechanism presently to be described. One of the said belts should be a crossed belt so as to adapt the feed belts to drive in reverse directions. Normally, the belt 38 runs on the idle pulley 36 and the belt 39 runs on the idle pulley 35. The position of the belt 39 is controlled by the prongs 40 of a shipper rod 41 mounted to slide but held against rotary motion on bearing extensions 34^a of the bearings 34. The belt 38 is guided by the prongs 42 of a second shipper rod 43 which is mounted to slide between guides 44 on the top of the framework 1 (see Figs. 2 and 13). The shipper rod 43 is pivotally connected to a lever 45 which, at its rear end, is pivotally connected to the framework 1, and at its free end is connected to said framework by a spring 46. The tension of the spring 46 is such as to normally hold the belt 38 on the loose pulley 36. One of the prongs 42 is bent at its end for engagement with one of the prongs 40 of the shipper rod 41.

The machine is thrown into action by moving the belt 38 onto the fixed pulley 37 of the shaft 33, and to accomplish this result, I have shown a foot piece 47 which is slidably mounted on one of the uprights of the framework 1, and is connected, by a small chain or flexible connection 48, to the free end of the lever 45. The intermediate portion of said chain 48 runs over an idle guide sheave 49 on the upper portion of the framework 1. When the lever 45 is moved toward the left so as to move the said belt 38 onto the fixed pulley 37, as just described, the said parts will be temporarily locked in such position by the engagement with the outer end of the shipper rod 43 with the free end of a latch lever 50, which latch lever, at its rear end, is pivoted to the upper portion of the framework 1 (see Figs. 1, 3, 13 and 14). The free end of said latch lever 50 is held against lateral movements by a vertically slotted guide plate 51 that is rigidly secured to the upper portion of the frame 1. Also, the free end of said latch lever is connected by a link 52 to an oscillatory beam or lever 53 that is intermediately pivoted to the upper portion of the bearing extension 34^a above noted. To the other end of the beam 53 is pivotally at-

tached a depending trip rod 54. On the lower end of the trip rod 54 is an adjustable stop sleeve 55. This stop sleeve has a longitudinal slot that is formed in one edge with oblique notches 56 any one of which is adapted to engage a small pin 57 of the said tripping rod, to thereby adjustably support said sleeve from said rod.

Mounted to slide vertically through the guide straps 22 and 23 before described, is a ratchet toothed rod, so-called, the tripping rack 58. This rack 58 is spring supported by a light coiled spring 59 placed on the upper end thereof and reacting against the guide strap 23 and a pin 60 in the upper end of said rack. Rigidly secured to the intermediate portion of the tripping rack 58 is a laterally projecting arm 61 through a perforation in the outer end of which the tripping rod 54 is passed. Under downward movement of the tripping rack 58 the arm 61 is engageable with the upper end of the stop sleeve 55.

The stripper, so-called, is in the form of a heavy ring 62 which surrounds the packing plunger 18. The stripper 62 is supported by a stripper carrier which is independent of the plunger carrier, or at least capable of movements independent thereof. This stripper carrier is preferably made up of an upper head plate 63, a lower head plate 64 and a pair of vertically extended connecting rods 65, which latter are located one on each side of the sleeve 19 of the plunger carrier. The head plates 63 and 64 are perforated and slide vertically upon the sleeve 19 and rod 20, respectively, of the plunger carrier. Near their upper ends, the rods 65 work freely through perforations in a flange 66 that projects from the upper end of the sleeve 19. The lower head plate 64 is held against rotation on said sleeve 19 by vertical ribs 67 formed on the sides of said sleeve. The said sleeve 19 is itself held against rotation by roller equipped studs 68 that are arranged in pairs for engagement with the ribs 67 and are supported from the framework 1 by a bracket 69 (see particularly Figs. 2 and 19). The stripper 62 is detachably securable to the lower head plate 64 of the stripper, and to this end it is provided with a pair of diametrically opposite vertically extended arms 70 having hooked ends 71 that are passed through perforations in said lower head plate 64 and are engaged by and interlocked with the free ends of a spring latch bar 72, which latch bar is intermediately connected to the said plates 64, as best shown in Fig. 10. It will be noted that the lower ends of the rod 65 have threaded engagement with the lower head plate 64, and that the upper ends of said rod are connected to the upper head 63 by nuts 65ª. This makes it possible to adjust the two heads 63 and 64 with respect to each other: A pin 73 which is adapted to be inserted in any one of several perforations 74 in the lower end of the sleeve 19 is located above the lower head plate 64 of the stripper carrier and acts on said head 64 to force the stripper downward after the packing plunger has been given a predetermined but variable initial downward movement.

Normally, the head plates 63 of the stripper carrier is supported by the flanged upper end 66 of the sleeve 19 of the plunger carrier, in which position the plunger will be drawn up into the stripper a greater or less distance, depending on the adjustment of the rods 65. At the rear of the plunger carrier, is a vertically disposed ratchet bar 75 which is rigidly secured at its upper end to the guide bar 22 and at its lower end to the bracket 69. The teeth of this rack 75 are arranged to work reversely to those of the ratchet teeth of the so-called tripping rack 58. Pivoted to the upper head plate 63 (see Figs. 5 and 8) is a lock dog 76, the free end of which is normally engaged by a cam or wedge block 77 carried by the flange 66 at the upper end of the sleeve 19. A spring 78 attached to said dog 76 and to a projection of the head plate 63 serves to throw the dog 76 into engagement with the teeth of the ratchet bar 75 whenever downward movements of the stripper is stopped by engagement with the butter and the plunger continues to move.

Mounted to slide on the flattened stud 29, which latter, as has been noted, is carried by the threaded shaft 20, is a lock dog 79. This lock dog 79, as shown, has a perforation 80 through which the tripping rack 58 is passed, and one extremity or side of this perforation engages with the teeth of said tripping rack under the tension of one or more springs 81 attached to said dog and to said flattened stud 29. Normally, however, this dog 79 is held out of engagement with the teeth of said rack 58 by a cam block or plate 82 which is secured to and depends from the flange 66 of the sleeve 19, and engages with a projecting lug 83 of said lock dog.

The projecting end of the shipper rod 41, above described, is connected to the slotted upper end of an arm 84 of a rock shaft 85 mounted in suitable bearings on the upper portion of the framework 1. A spring 86 attached to said arm and to the guide strap 23 tends to throw said shipper rod 41 toward the right with respect to Fig. 2. An oblique arm 87 which is preferably weighted at its free end, is rigidly secured to the rock shaft 85 and is normally engaged by a projection 66ª of the sleeve flange 66. The engagement of the said projection 66ª with the oblique arm 87 holds the shipper rod toward the left with respect to Fig. 2, and the belt 39 on the loose pulley 35, when the parts are in normal position and when the sleeve 19 of the plunger carrier is, of course, in its extreme uppermost position.

Operation: Before the machine is started into action, a tub or receptacle for the butter or other plastic material to be packed, must, of course, be properly positioned directly under the packing plunger. As already stated, when the machine is at rest, the belt 39 runs upon the loose pulley 35 and the belt 38 runs upon the loose pulley 36, and to start the machine into action the operator steps upon the foot piece 47, thereby moving the belt 36 onto the pulley 37 of the shaft 33, as already described. The shaft 33 and the nut acting gear 21 are thus given rotary motion in a proper direction to move the threaded shaft 20 vertically downward. When the shipper rod 43 is moved toward the left with respect to Figs. 1, 2 and 3, and from the left toward the right with respect to Fig. 13, the latch lever 50 under the tension of the spring 53ª is moved in line with the end of said shipper rod, and thereby temporarily locks the same in a position to hold the belt 38 on the pulley 37. When the non-rotary threaded rod 20 is moved downward, it carries with it the sleeve 19, the packing plunger 18, the stripper 62 and the stripper carrier, all of which parts maintain their normal relative positions with respect to each other until the said stripper is stopped by engagement with the butter or material which is to be packed within the bucket or receptacle. After the stripper has been engaged with the butter and its downward movement temporarily intercepted, the packing plunger continues its downward movement through the stripper and into engagement with the butter. The distance which the said plunger will be moved while the stripper remains stationary depends on the distance which the pin 73 is normally set above the lower head plate 64. When, however, the said pin 73 is moved downward into engagement with the said plate 64, the stripper will be caused to move downward with the plunger, thereby causing both the plunger and stripper to compress and pack the butter. That movement of the plunger 18 and its sleeve 19 which takes place after the movement of the stripper has been temporarily intercepted, and before the downward movement of the said stripper is continued by engagement of the pin 73 with the plate 64 carries the cam block 77 out of engagement with the end of the lock dog 76 and thereby permits the spring 74 to throw the said dog into action on the teeth of the fixed rack bar 75, so that under continued downward movement of the stripper, the said dog will slip over the said ratchet teeth and temporarily lock the stripper in the lowest position to which it may in the particular instance, happen to be forced. Otherwise stated, the said stripper is thus automatically locked in its lowermost position and against initial return movement with the plunger. When the plunger hits the butter under its downward movement its further downward movement will take place under increasing resistance which will compress the spring 25 and cause the threaded shaft 20 to move downward faster than the sleeve 19 and plunger 18, and this will cause the sliding lock dog 79 to move away from the cam block 82, as shown in Fig. 5, and the spring 81 will then cause the said lock dog to engage the teeth of the trip rack 58 and thereby cause the latter to commence its downward movement with the threaded shaft 20. It will thus be noted that the dog 79 is thrown into action on the tripping rack 58 approximately simultaneous with the release of the dog 76 for action on the ratchet bar 75. The latter dog, however, slips over the fixed rack 75, while the said dog 79 locks itself to the said tripping rack 58. Further downward movements of the plunger 18, stripper 62, tripping rack 58 and other parts will, through the said tripping rack, move the tripping arm 61 into engagement with the upper end of the sleeve 56 which is on the tripping rod 54, and under still further downward movements of said parts, the said tripping rod will be moved downward and through the beam 53 and link 52, the latch lever 50 would be raised above the engaged end of the shipper rod 43, thereby permitting the spring 46 to move the shipper 42—43 toward the right with respect to Fig. 2, to throw the belt 38 back onto the idle pulley 36. Also, when the said shipper 42—43 is thus moved toward the right, the crooked upper end of its inner arm 42 moves away from the previously engaged arm of the shipper 40—41, and permits the spring 86 to simultaneously become operative to move the belt 39 from the loose pulley 35 onto the fixed pulley 37, and thereby reverse the direction of rotation of the shaft 33 and of the nut acting gear 21. It will, of course, be understood that at this time the projection 66ª of the head plate 66 of the sleeve 19 is lowered so that it will not intercept the downward movement of the weighted arm 87.

As is evident, when the rotary movement of the nut acting gear 21 is reversed, as just above described, upward or return movement will be imparted to the shaft 20 and sleeve 19, but it will also be understood that the return movement of the plunger 18 and sleeve will not begin until the so-called flattened stud 29 reaches the upper extremity of the slot 28 of the said sleeve 19. That movement of the shaft 20 upward with respect to the sleeve 19 which takes place under expansion of the spring and before the stud 29 has reached the upper extremity of the slot 28, causes the cam block 82 to throw the dog 78 out of engagement with the teeth of the tripping rack 58 and thereby release the latter, whereupon the said tripping rack will, of course, be moved upward to its nor-

mal position by its spring 59. A little further upward return movement of the plunger and its sleeve, in respect to the stripper and its carrier, causes the wedge block 77 to act upon the pawl 76 and throw the same out of engagement with the teeth of the fixed ratchet bar 75. It will, however, be noted that the said stripper and its carrier are positively locked against return movements until the plunger has been given an initial return movement sufficient to bring the same upward within the stripper and into its normal relative position in respect thereto. As already indicated, this normal position of the plunger with respect to the stripper, that is, the distance or extent to which it will be drawn into the said stripper, depends upon the distance which the lower head plate 64 of the stripper carrier is set from the upper head plate 63, and such adjustment may be varied by means of the adjustably connected rods 65.

When the threaded shaft 20 has been moved about one-half the distance upward from its lowered to its normal position, the projection 66ª of the sleeve flange 66 engages the weighted lever 87 and moves the same upward, thereby moving the belt shipper 40 41 toward the left with respect to Fig. 2, with the result that when the plunger, its carrier, the stripper and its carrier have been restored to normal positions, the belt 39 will be moved from the pulley 37 onto the loose pulley 35, thereby stopping further rotation of the shaft 33 and further upward movement of the shaft 20. It will, of course, be understood that the shipper 42—43 under the action of its spring 46, will be held toward the right with respect to Fig. 2, so as to maintain the belt 38 on the loose pulley 36 until the machine is again thrown into action, by the operator stepping on the foot piece 47.

Attention is here directed to the important fact that the pressure under which the butter or other material will be packed may be varied by adjustments of the stop sleeve 55 on the tripping rod 54. Otherwise stated, the amount of movement in the compressing action that will be given to the plunger, after the spring 25 has been given its initial compression, will depend on the normal position of the said stop sleeve, in respect to the cooperating tripping arm 61 of the tripping rack 58. Also, it will be understood that the amount of compression which will be given to the butter or other material may be varied to a considerable extent by varying the initial tension of the said spring. It has already been noted that the tension of the said spring may be varied by adjustments of the pin 26 in the perforations 27 of the sleeve 19.

What I claim is:

1. In a machine of the kind described, the combination with a plunger and means for reciprocating the same, of adjustable means for reversing the plunger actuating mechanism under predetermined force applied to the plunger, which reversing mechanism comprises a trip rod, an adjustable stop sleeve on said trip rod and a tripping element operative on said sleeve and adapted to be coupled for movement with said plunger, substantially as described.

2. In a machine of the kind described, the combination with a plunger and means for reciprocating said plunger, of means for reversing said plunger actuating mechanism comprising a plunger, a plunger carrier and means for reciprocating said plunger carrier, means for reversing the action of said plunger actuating mechanism under predetermined force applied to said plunger, said reversing means comprising a yieldingly supported tripping rack, means for coupling said tripping rack to said plunger carrier under predetermined pressure applied to said plunger, a yieldingly supported tripping rod, and an adjustable stop sleeve on said tripping rod subject to said tripping rack, substantially as described.

3. In a machine of the kind described, the combination with a plunger, of a two part plunger carrier including a yielding element, means for reciprocating said plunger carrier, means for reversing the action of said plunger actuating means, when said plunger reaches the upper limit of its movement, and means for reversing the movement of said plunger actuating mechanism at the other limit of the plunger's movement and under predetermined pressure applied to the plunger, said latter reversing means comprising a yieldingly supported tripping rack, a rack engaging dog carried by the positively moved member of said plunger carrier, means carried by the yieldingly supported member of said plunger carrier normally holding said dog out of action on said rack, but permitting said dog to become active on said rack when said plunger is subjected to predetermined pressure, a tripping rod, and an adjustable stop on said tripping rod arranged to be actuated by said tripping rack under predetermined but variable movement of the latter, substantially as described.

4. In a machine of the kind described, the combination with a plunger, of a two part plunger carrier including a yielding element, means for reciprocating said plunger carrier, means for reversing said plunger actuating mechanism at the limit of its upward movement, means for reversing the plunger actuating mechanism at the limit of the plunger's downward movement and under predetermined pressure applied to the plunger, comprising a tripping rack, means for coupling said tripping rack to said plunger carrier under predetermined compression of the yielding element of said plunger carrier, a stripper surrounding said plunger, a plunger carrier having a limited movement with respect to

said plunger carrier, means for locking said stripper and its carrier in a lowered position while said plunger is given an initial return movement, and means for releasing said stripper and its carrier under continued return movement of said plunger, substantially as described.

5. In a machine of the kind described, the combination with a plunger, of a two part plunger carrier including a sleeve, a threaded shaft and an interposed spring, a gear working as a nut on the threaded end of said shaft, a reversible drive to said gear, and means for reversing the said drive under predetermined pressure applied to said plunger at the limit of its downward movement, substantially as described.

6. In a machine of the kind described, the combination with a plunger, of a two part carrier therefor comprising a sleeve, a threaded shaft and an interposed spring, a gear working as a nut on said threaded shaft, a reversible gear drive, means for reversing said gear drive at the upward limit of said plunger's movement, and means for reversing said gear drive at the limit of the downward movement of said plunger, comprising a tripping rack, means for coupling said tripping rack to the threaded shaft of said plunger carrier when said plunger is subjected to a predetermined pressure, a tripping rod connected to said reversible drive, and an adjustable stop on said tripping rod subject to said tripping rack, substantially as described.

7. In a machine of the kind described, the combination with a plunger and plunger carrier, of a stripper carrier mounted on said plunger carrier and comprising a lower head plate 64, a stripper 62 surrounding said plunger and provided with hooked arms 70 terminating in hooked ends 71 that work through seats in said plate 64, and a lock spring 72 intermediately attached to said plate 64 and the ends of which are engageable with said hooked ends 71, substantially as described.

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

JOHN MATTSON.

Witnesses:
MALIE HOEL,
F. D. MERCHANT.