

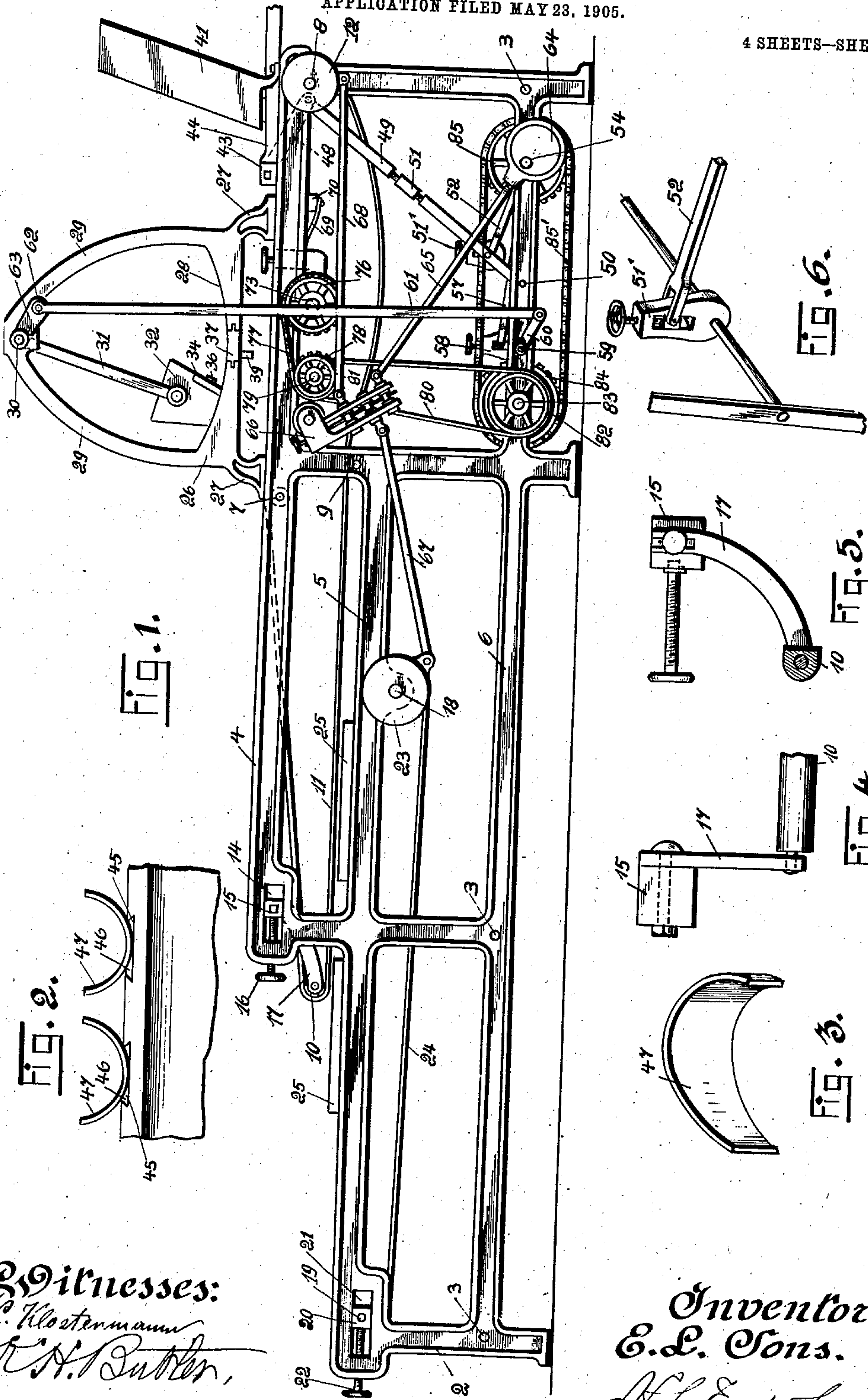
No. 815,226.

PATENTED MAR. 13, 1906.

E. L. SONS.
ICING MACHINE.

APPLICATION FILED MAY 23, 1905.

4 SHEETS—SHEET 1.



Witnesses:
C. Klostermann
R. H. Butler

Inventor.
E. L. Sons.
by H. C. Co. Attorneys.

No. 815,226.

PATENTED MAR. 13, 1906.

E. L. SONS.
ICING MACHINE.

APPLICATION FILED MAY 23, 1905.

4 SHEETS—SHEET 2.

FIG. 2.

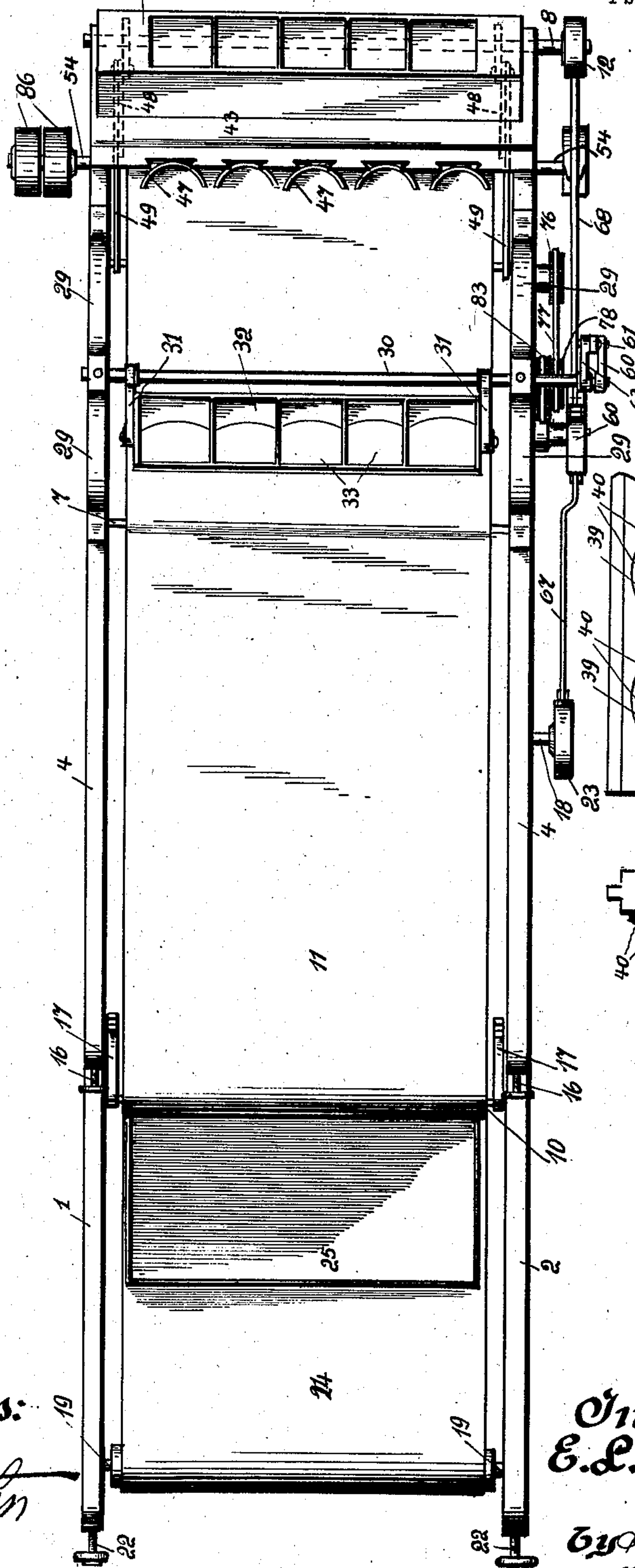
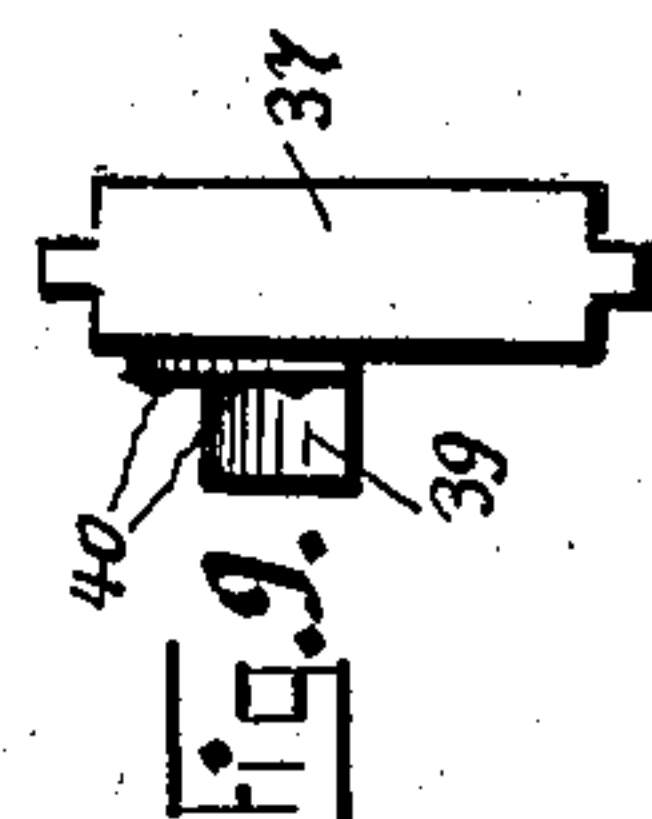
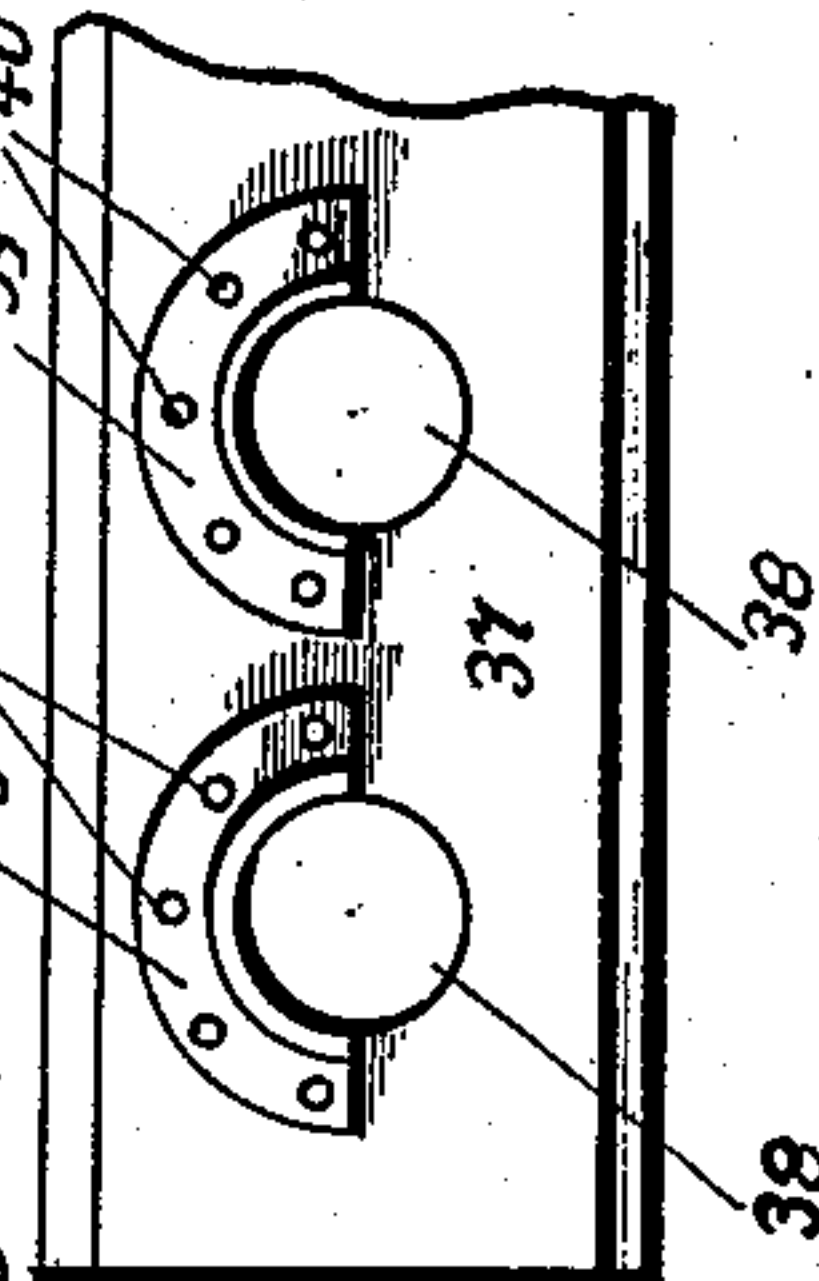


FIG. 8.



Witnesses:
C. K. Sternman
H. H. Butler

Inventor.
E. L. Sons.
by H. H. Butler
Attorneys.

No. 815,226.

PATENTED MAR. 13, 1906.

E. L. SONS.

ICING MACHINE.

APPLICATION FILED MAY 23, 1905.

4 SHEETS—SHEET 3.

FIG. 10.

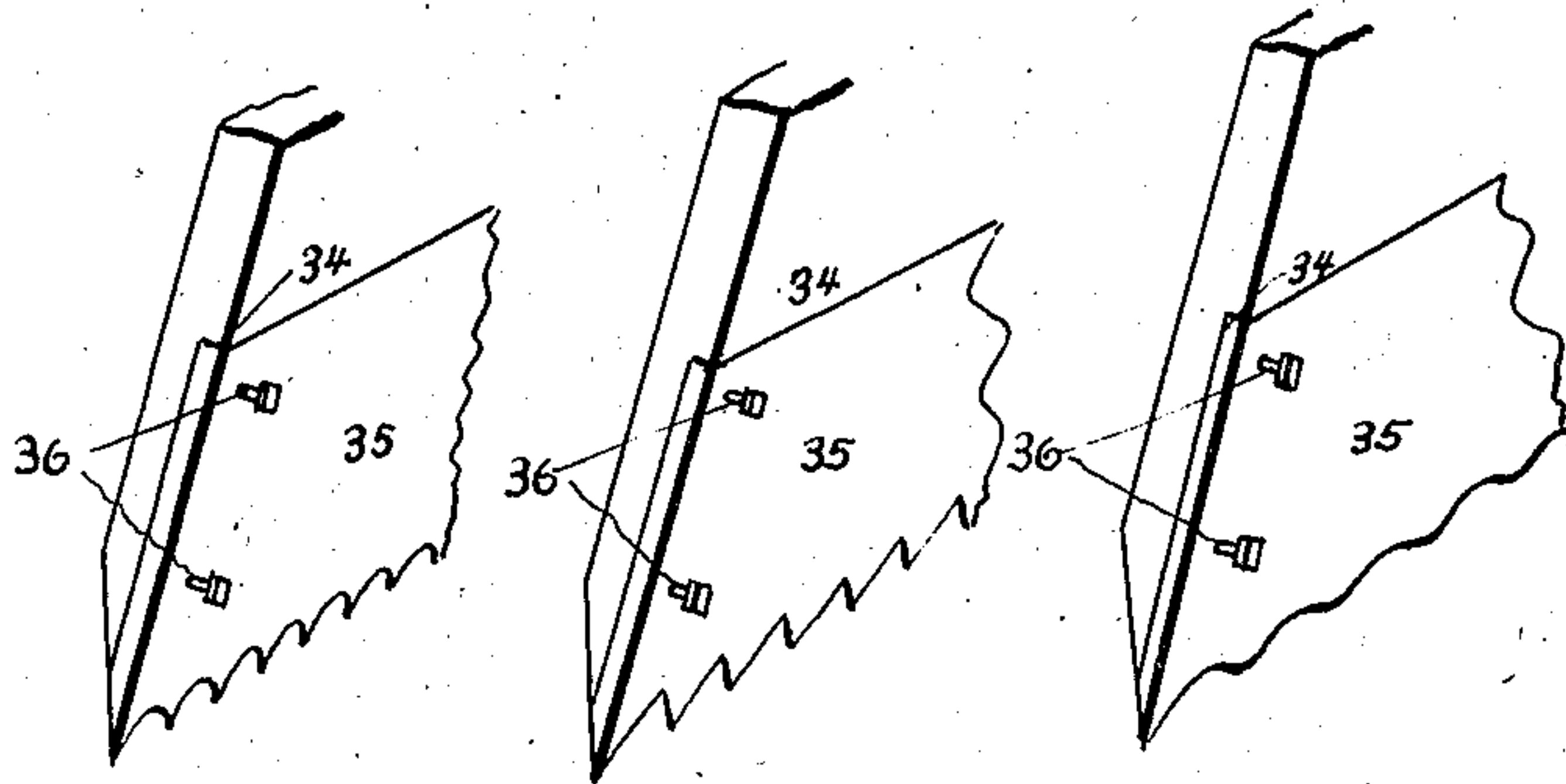
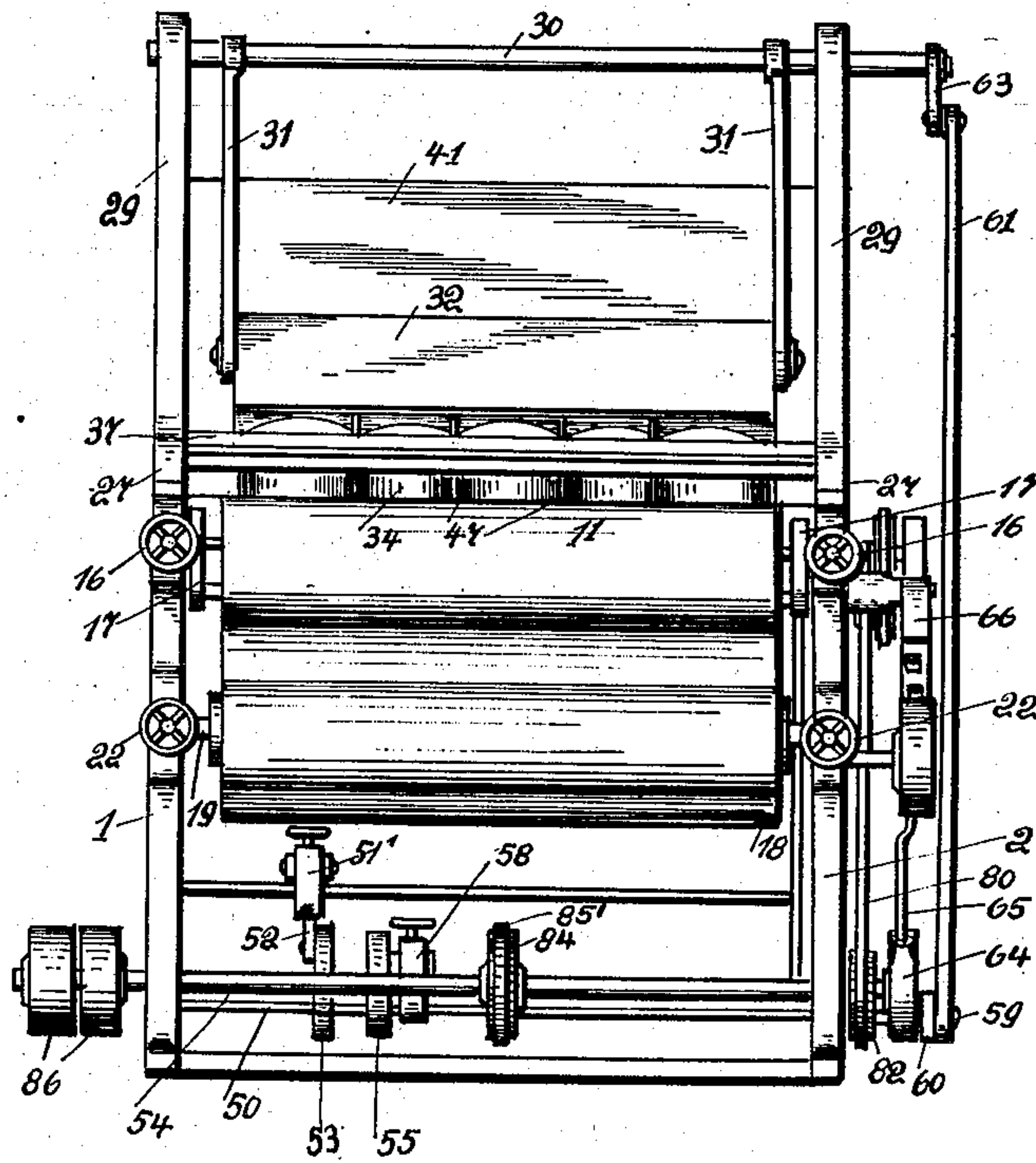


FIG. 11.

FIG. 12.

FIG. 13.

Witnesses:

C. Klottermann.

K. H. Dutton.

Inventor.
E. L. Sons.

By H. C. Ewert & Co.
Attorneys

No. 815,226.

PATENTED MAR. 13, 1906.

E. L. SONS.
ICING MACHINE.
APPLICATION FILED MAY 23, 1905.

4 SHEETS—SHEET 4.

Fig. 14.

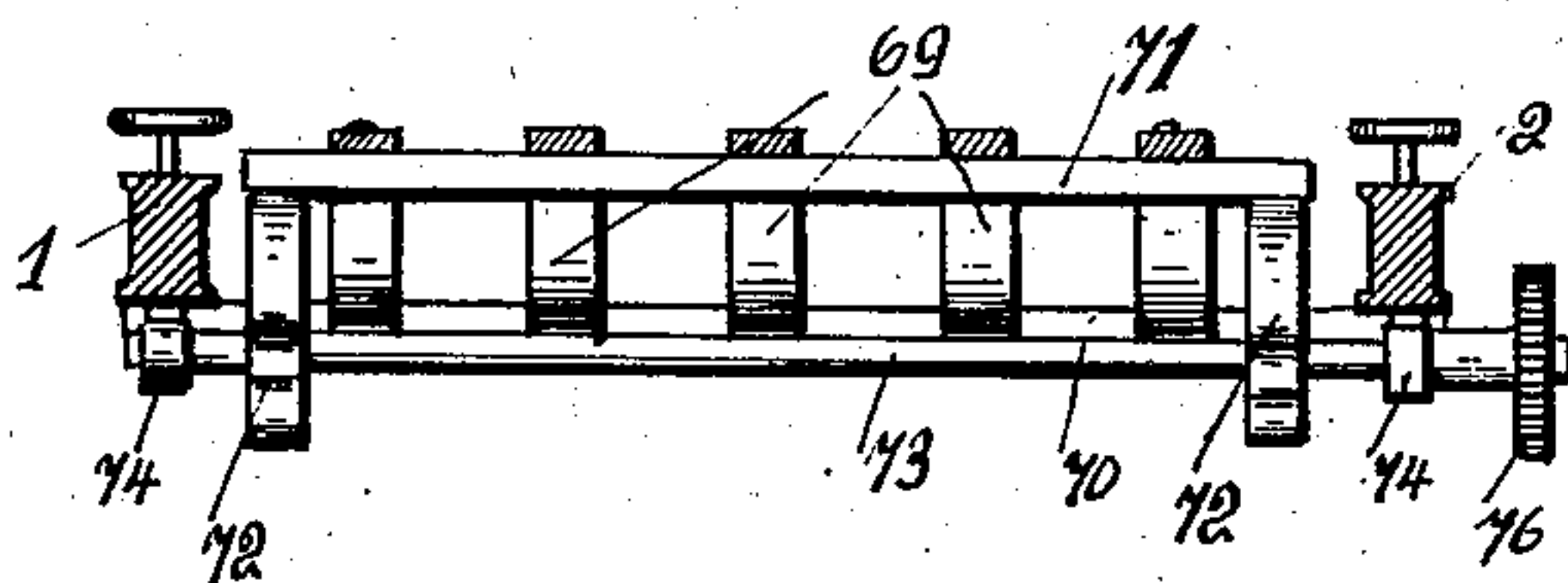


Fig. 15.

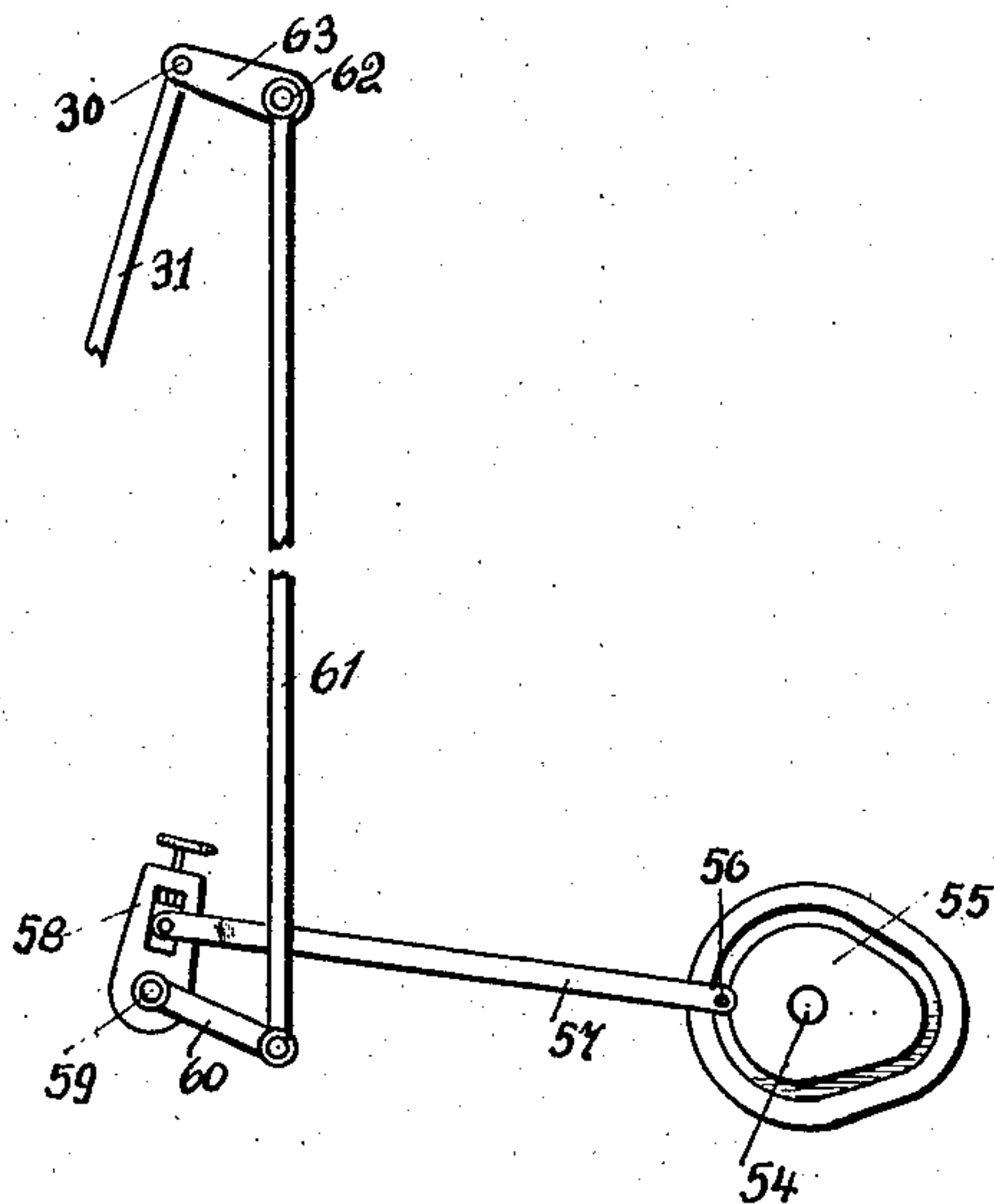
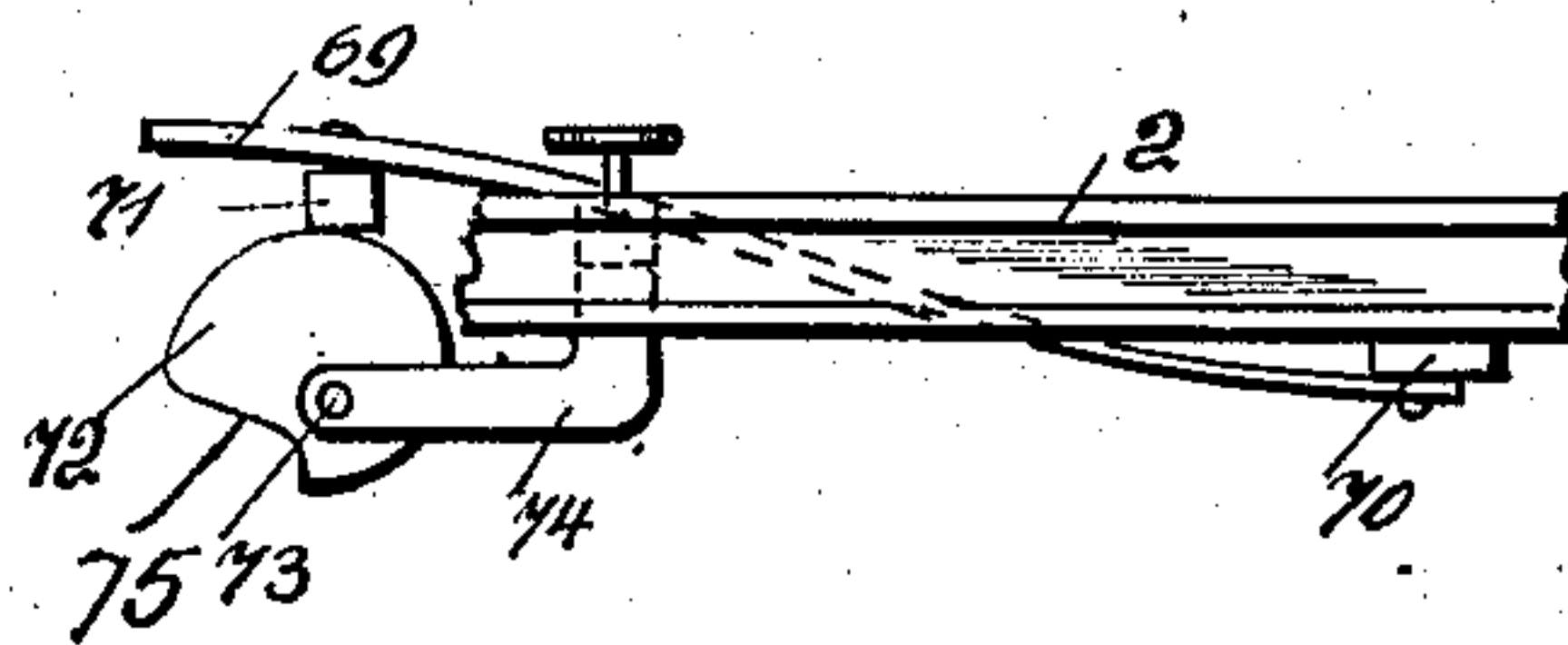


Fig. 16.

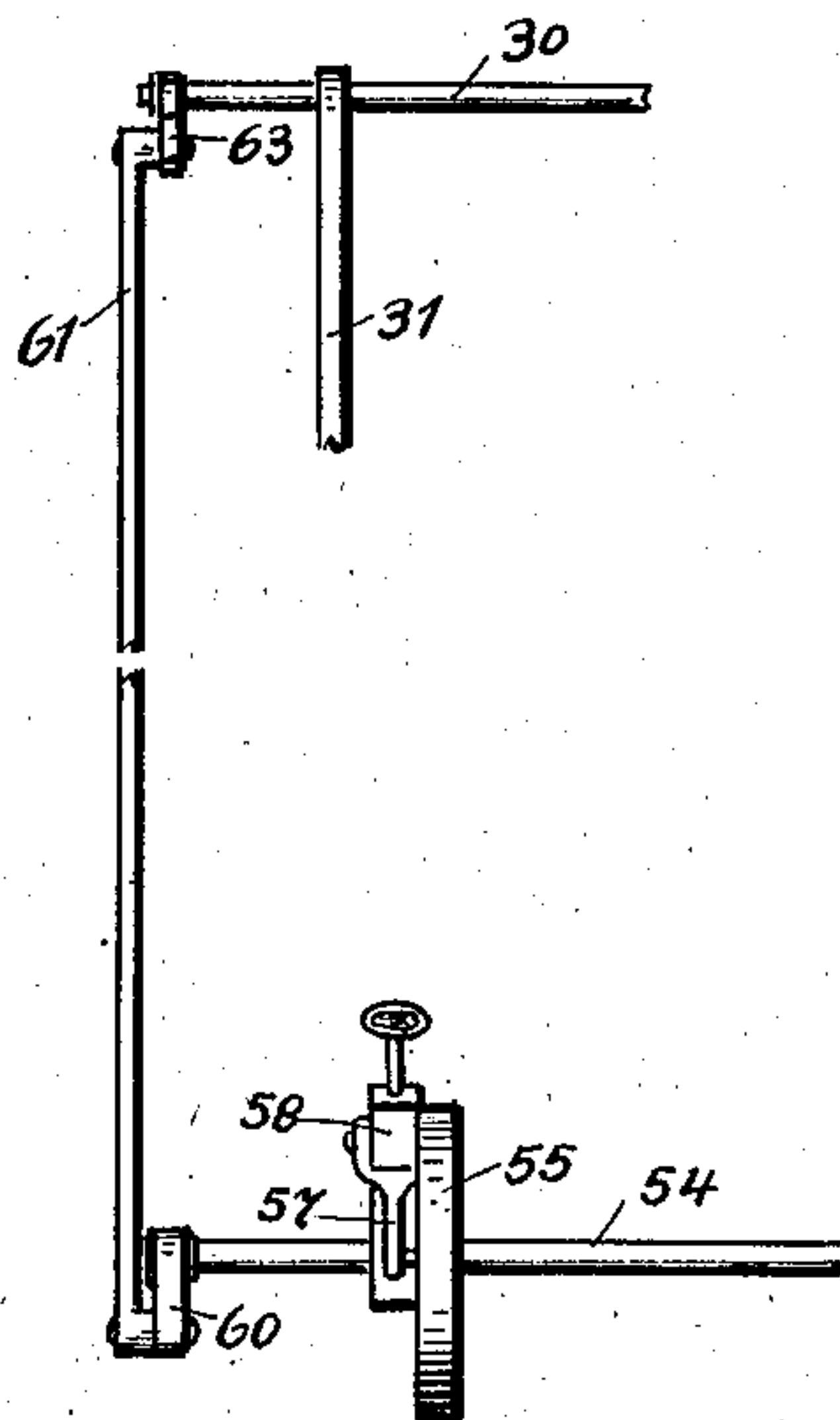


Fig. 17.

Witnesses:
C. Klottermann
W. H. Dutton

Inventor.
E. L. Sons.
by H. C. Covert & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

ERNEST L. SONS, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO BAIR-&-GAZZAM MANUFACTURING COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

ICING-MACHINE.

No. 815,226.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed May 23, 1905. Serial No. 261,903.

To all whom it may concern:

Be it known that I, ERNEST L. SONS, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Icing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in icing-machines, and more particularly to that type of machine wherein a plurality of cakes can be coated with icing or other coating substances, such as jelly or the like.

15 The primary object of this invention is to provide a machine by means of which icing or other coating material may be applied to cakes in quick succession and with perfect uniformity of thickness, whereby it will be possible to coat large quantities of cakes in a comparatively short period of time.

20 Another object of this invention is to provide a novel form of machine in which a plurality of cakes can be rapidly coated, novel means being provided whereby each cake can be independently adjusted during the coating operation and then conveyed to suitable receptacles adapted to contain the same.

25 The machine as constructed by me embodies certain novel features of construction which heretofore, to the best of my knowledge, have never been embodied in a machine of this type. It is a well-known fact that in the manufacture of cakes the thickness of cakes vary, and as the same are very brittle it is necessary that the same be handled carefully. Heretofore in machines of this type the variable thickness of cakes has not been taken into consideration, and on this account a large quantity of cakes have been destroyed during the icing or coating process, owing to their variable thicknesses. I have provided a novel self-adjustment for each and every cake being handled in my improved machine. I have also embodied novel means for coating cakes of various designs, novel means for producing corrugated or like designed surfaces upon the coated cakes, novel means for automatically feeding a plurality of cakes to the coating mechanism of my improved machine, and various other novel mechanisms

which are essential to produce a practical machine.

The invention consists in the novel construction, combination, and arrangement of parts, which will be hereinafter more fully described and then specifically pointed out in the claims, and, referring to the drawings accompanying this application, like numerals of reference designate corresponding parts throughout the several views, in which—

Figure 1 is a side elevation of my improved machine. Fig. 2 is a fragmentary view of part of the cake-feeding mechanism. Fig. 3 is a detail perspective view of one of the detachable retainers used in connection with the feeding mechanism. Fig. 4 is an end view of a portion of an adjustable apron-guide. Fig. 5 is a side elevation of the same. Fig. 6 is a perspective view of a portion of the feeding mechanism. Fig. 7 is a top plan view of my improved machine. Fig. 8 is a bottom plan view of an adjustable die constructed in accordance with my invention. Fig. 9 is an edge view of the same. Fig. 10 is an end view of my improved machine. Figs. 11 to 13, inclusive, are detail perspective views of different forms of surface-producing attachments used in connection with my improved machine. Fig. 14 is a front view of a self-adjusting mechanism used in connection with my improved machine. Fig. 15 is a side elevation view of the same. Fig. 16 is a detail view, in side elevation, of a portion of the operating mechanism of my improved machine; and Fig. 17 is an end view of the same.

In the accompanying drawings I have illustrated the preferred manner of constructing my improved machine, and in putting the same into practice I have embodied certain mechanisms which are of a conventional form and which were clearly illustrated in a machine somewhat similar to the present type for which an application was filed in the United States Patent Office November 10, 1904, Serial No. 232,118. I therefore do not deem it necessary to illustrate these mechanisms in detail and desire it to be understood that in lieu of these mechanisms other means may be employed for accomplishing the same results.

The machine as constructed by me com-

prises two skeleton frames 1 and 2, which are braced by suitable tie rods or bolts 3. Each frame consists of upper side rails 4, intermediate rails 5, and lower side rails 6.

Between the side frames 1 and 2 are mounted rollers 7 8 9 and a guide 10. These rollers, together with the guide 10, carry an apron or endless belt 11. The end of the roller 8 extends outside of the side frame 2 and is provided with a conventional form of box-ratchet 12. The apron-guide 10 is adjustably mounted in the side frames by forming a slot 14 in each one of the upper rails 4, in which are mounted blocks 15 15. These blocks are adjusted in the slots 14 14 by screws 16, and each block carries a depending curved arm 17, which supports the apron-guide 10. By means of the adjustable apron-guide the tension of the apron can be regulated.

Between the intermediate rails 5 5 of the machine and at the forward end thereof are mounted rollers 18 and 19, the roller 19 being mounted between blocks 20, which are slidably mounted in slots 21, formed in the intermediate rails 5, and these blocks are adjusted by screws 22. The roller 18 protrudes through the side frame 2 and is provided with a box-ratchet 23, similar to the box-ratchet 12 heretofore mentioned. Over the rollers 18 and 19 travels an endless belt or apron 24, which is adapted to carry one or more receptacles 25, such as pans, which are ordinarily used in connection with this type of machine.

Supported by the upper rails 4 4 is a platform 26, mounted on depending legs 27. The upper face of the platform is formed concave, as indicated at 28, and the sides of said platform are provided with substantially oval-shaped frames 29, between which is journaled an axle 30, upon which is suspended by arms 31 an icing receptacle or hopper. The icing-receptacle 32 has its bottom formed upon an arc corresponding to the concavity of the platform 26, and this receptacle is partitioned off into a number of compartments 33. The one side of the receptacle is cut away, as indicated at 34, whereby a surface-producing attachment can be secured thereto, the object of which will be hereinafter more fully described. These surface-producing attachments are illustrated in Figs. 11 to 13 of the drawings, and each attachment consists of a plate 35, which is secured to the receptacle by suitable set-screws 36. The plate forming each attachment is provided with serrated edges, as clearly illustrated in the above-mentioned figures.

The platform 26 is provided with a removable die 37, which is preferably tongued upon its sides to feed into grooves formed in the slotway of the platform 26. The die 37 is provided with a plurality of apertures 38, and these apertures are adapted to correspond to the contour or configuration of the cakes to

be iced or otherwise coated. The die 37 is provided adjacent to each aperture with a retainer 39, these retainers corresponding to the shape of the apertures 38, with the exception that they are mounted upon the one side of the apertures, and in this instance, where the apertures are circular, the retainers are semicircular. The retainers are preferably secured to the die by flanging the edges of the same and securing them upon the under face of the die by screws 40.

The reference-numeral 41 designates a receptacle which is mounted at the rear end of the machine upon the upper rails 4 4, and this receptacle is adapted to contain the cakes that are to be iced or coated. The receptacle 41 is provided with compartments corresponding to the number of compartments formed in the icing-receptacle 32.

To feed the cakes from the receptacle 41 to the icing mechanism of the machine, I have provided a novel form of feeding mechanism, which will now be described.

Mounted upon the apron 11 is a plate 43. The top surface of said plate has an inclined portion 44. The forward edge of the plate is provided with a plurality of wedge-shaped grooves 45, in which are secured substantially wedge-shaped blocks 46, carrying retainers 47. One of these retainers is illustrated in Fig. 3 of the drawings and comprises a substantially semicircular piece of metal or like material, which is of a greater depth intermediate of its ends than at its ends, this construction being employed whereby when the retainers engage a cake they will hold and guide the same during the forward movement of the plate 43. To carry the plate forwardly upon the apron, I have pivotally connected to the ends of the plate bars 48, which are pivotally connected to rods 49. These rods are pivoted upon a shaft 50, that is mounted between the lower rails 6 at the rear end of the machine. Each rod is provided with a turnbuckle 51, whereby the rod may be adjusted. The shaft 50 is adapted to oscillate or rock, and to impart such movement to the same I have provided the shaft with a slotted arm 51', to which is adjustably connected a rod 52, that is connected to an eccentric 53, mounted upon the main drive-shaft 54. This drive-shaft is journaled between the lower rails 6 6 at the rear end of the machine.

The reference-numeral 55 designates a substantially heart-shaped grooved cam which is mounted upon the shaft 54, and operating in the groove of the cam is a pin 56, carried by the rod 57, that is adjustably connected to an arm 58. The arm 58 is carried by a shaft 59, journaled between the lower rails 6 6 of the machine. The one end of the shaft protrudes through the side frame 2 and is provided with a crank-arm 60, which is pivotally connected to an upwardly-extend-

ing rod 61, that in turn is connected, as indicated at 62, to a crank-arm 63, carried by the one end of the shaft of the axle 30.

The end of the shaft 54 which protrudes through the side frame 2 is provided with an eccentric 64, to which is connected a rod 65, that is adjustably connected to a rocking arm 66, carried by the upper rail 4 of the side frame 2. The box-ratchets 12 and 23 are adjustably connected to the rocking arm 66 by rods 67 and 68.

It will be observed by referring to Fig. 1 of the drawings that the platform 26 is elevated above the apron 11, and in order that the cakes may be properly iced or coated it is necessary that this apron be elevated when the cakes are to be iced or coated. It is also necessary that after the icing or coating has been applied to the cakes the cakes be removed from the dies with considerable rapidity to assure a perfect surface of icing or coating being deposited upon the cakes. To accomplish this, I have provided novel means for raising the apron 11 and for permitting each cake to adjust itself to the die through which the icing or coating is deposited upon the cake. To this end I have employed flat springs 69, which are connected to a bar 70, that is supported from the under face of the top rails 4. These springs lie under the apron, and the springs are further supported by a bar 71, that rests upon substantially cam-shaped wheels 72. These wheels are of a particular formation, which will be presently described, and they are mounted upon a shaft 73, journaled in the adjustable arms 74, carried by the top rails 4 of the machine. Each of the wheels 72 is provided with a flat surface 75, which is preferably formed at a radius to the axis of said wheels. The shaft 73 is revolved by providing the same with a sprocket-wheel 76, over which travels a chain 77, that also passes over a sprocket-wheel 78, carried by a shaft 79, journaled between depending lugs carried by the top rails 4. The shaft 79 is revolved by a belt 80, which travels over pulleys 81 and 82, carried by the shafts 79 and 83, the last-named shaft 83 being journaled between the lower rails 6 of the machine. The shaft 83 also carries a sprocket-wheel 84, over which a chain 85' travels from a sprocket-wheel 85, carried upon the main operating-shaft 54.

The reference-numerals 86 86 designate two pulleys which are mounted upon the shaft 54, whereby a suitable drive-belt may be used for imparting a rotary motion to the shaft 54 to place the machine in operation.

Operation: We will assume that the shaft 54 is rotating and that the aprons or endless belts 11 and 24 are being spasmodically moved by the box-ratchets 23 and 12, motion being imparted to these ratchets through the medium of the rods 65, 67, and 68, rocking arms 66, and eccentric 64. It is therefore

obvious that when cakes are deposited upon the apron 11 they will be gradually carried to the forward end of the machine and deposited into the receptacles or pans 25, which are moved spasmodically, whereby the cakes will be deposited in rows in the pans. The cakes are placed in the receptacle 41 one upon the other, and they are held in this receptacle by the plate 43. This plate is reciprocated upon the apron 11 through the medium of the bars 48, adjustable rods 49, oscillating shaft 50, and eccentric 53. When the plate 43 is moved forward, the cakes are retained in the receptacle 41 by the top surface of the plate, and when the front edge of the plate recedes to a position beneath the receptacle the cakes which have been resting upon the top surface are carried by the incline 44 and deposited in the retainers 47, carried by the front edge of the plate 43. The distance the plate 43 travels is regulated through the medium of the turnbuckle 51 and the adjustment of the rod 52 at the oscillating arm 51'. The forward movement of the plate is limited by the depending retainers 39, carried by the die 37. During the forward movement of the plate 43 the apron 11 is being gradually elevated through the medium of the shaft 83, which is revolved by a sprocket-chain and sprocket-wheel 85, belt 80, pulleys 81, and shaft 73, which latter carries the wheels 72. These wheels are substantially cam-shaped and are adapted to elevate the bar 71, carrying the flat springs 69. As these springs bear against the under face of the apron it is raised into close proximity to the dies, the gradual elevation of the plate 43 being permitted through the pivotal connection of the bar 48 with said plate and said bar with the rod 49. When the cakes have been positioned beneath the die 37, an intermittent movement is imparted to the icing or coating receptacle 32 through the medium of the heart-shaped cam 55, the rocking arm 58, rod 61, and shaft 30, and as the receptacle is suspended from this shaft it will be moved across the die 37, back again, and then held stationary for a short period of time while the apron 11 is receding and the plate 43 is returning to receive other cakes from the receptacle 41. I have provided the substantially cam-shaped wheel 72 with the flat surface 75, whereby after the icing or other coating has been applied to the cakes a sudden and positive withdrawal of the apron 11 from the die 37 is accomplished, this occasioned by the bar 71, carrying the springs 69, dropping from the maximum radius of the wheel 72 to the minimum radius thereof. The forward movement of the icing-receptacle 32 deposits a thin layer of icing or other coating upon the surface of the cakes exposed through the openings of the die, and the return movement of the receptacle places a serrated or corrugated surface upon the icing or other coating. To accomplish this,

I have provided the surface-producing attachments illustrated in Figs. 11 to 13, inclusive, which consist of the plate 35, having an edge suitable for producing the surface required. By attaching one of these plates to the side of the receptacle I can produce various surfaces upon the icing or other coating that has been previously deposited upon the cakes by the forward movement of the icing-receptacle. During the operation of the machine should any of the cakes vary in thickness the cakes will adjust themselves to the die-openings through the medium of the springs 69, the forward ends of which permit cakes of greater thicknesses than the other cakes receding slightly, whereby the same amount of icing or other coating will be placed upon each cake being iced. To permit of cakes being coated of thicknesses that vary more than one-eighth of an inch, I have made the arms 74 adjustable, whereby the elevation of the shaft 73 can be changed, whereby a cake an inch in thickness can be coated as perfectly as a cake one-eighth of an inch in thickness. The slight adjustment of the arm 74 will not interfere or require an adjustment of the chain 77, as this chain can be made sufficiently loose upon the sprocket-wheels to permit of the adjustment of the shaft 73.

To accomplish the intermittent movement described by the receptacle 32, I have employed the heart-shaped cam 55; but I do not care to limit myself to this mechanical device for accomplishing this movement, nor do I care to confine myself to the other mechanical devices employed to operate the machine and produce the spasmodic oscillating and reciprocatory movements used in connection with my improved machine.

It will be understood that while I have herein shown the machine as being constructed capable of coating five cakes at a time the size of the machine can be increased to produce a greater quantity of coated cakes.

What I claim, and desire to secure by Letters Patent, is—

1. In a machine of the character described, the combination with a frame, of an endless apron adapted to carry cakes, an oscillating receptacle suspended above said apron, and adapted to deposit material upon cakes, means for oscillating said receptacle, and means for imparting an intermittent movement to said apron.

2. In a machine of the character described, the combination with a frame, of an intermittently-moving endless apron adapted to carry cakes, a receptacle suspended above said apron and adapted to deposit material upon said cakes, means to simultaneously impart movement to said apron and an oscillating intermittent movement to said receptacle, substantially as described.

3. In a machine of the character described,

the combination with a frame, of a moving belt adapted to carry cakes, an icing-receptacle suspended above said apron, means to elevate said apron in close proximity to said receptacle, means to independently adjust the cakes carried by said apron in relation to said receptacle, means to produce a serrated surface upon the icing deposited upon said cakes, and means to impart an oscillating intermittent movement to said receptacle.

4. In a machine of the character described, the combination with a frame, of a moving apron adapted to carry cakes, an icing-receptacle suspended above said apron, a reciprocating feeding-plate operating upon said apron, and means for oscillating said receptacle to deposit the contents of the same upon the cakes.

5. In a machine of the character described, the combination with a suitable frame, of a moving endless apron adapted to carry cakes, a receptacle suspended above said apron and adapted to deposit material upon said cakes, a reciprocating feeding-plate mounted above said apron, means carried by said receptacle to produce a serrated surface upon the material deposited upon said cakes, and means to intermittently impart an oscillating movement to said receptacle, and a reciprocating movement to said feeding-plate.

6. In a machine of the character described, the combination with a frame, of an intermittently-moving apron, a receptacle suspended above said apron, a feeding-plate mounted above said apron, means to simultaneously elevate said apron and impart a reciprocatory movement to said feeding-plate, and means to oscillate said receptacle, substantially as described.

7. In a machine of the character described, the combination with a frame, of an endless intermittently-moving apron adapted to carry cakes, a reciprocating feeding-plate mounted above said apron, a receptacle suspended above said apron and adapted to deposit material upon said cakes, means carried by said receptacle to produce a rough surface upon said material after it has been deposited upon said cakes, means to elevate said apron and quickly lower the same, means to independently adjust each cake in respect to said receptacle, and means to oscillate said receptacle.

8. In a machine of the character described, the combination with a frame, of endless aprons adapted to carry cakes, a receptacle suspended above one of said aprons and adapted to deposit material upon said cakes, a reciprocating feeding-plate mounted above said apron, and adapted to feed cakes in close proximity to said receptacle, means to elevate said cakes, and quickly lower the same, means to independently adjust said cakes when in an elevated position, and means to oscillate said receptacle.

9. In a machine of the character described, the combination with a frame, of an endless apron, a receptacle suspended above said apron, means to elevate said apron and quickly lower the same, means to adjust said apron in respect to said receptacle when in an elevated position, and means to oscillate said receptacle.

10. In a machine of the character described, the combination with an intermittently-moving apron adapted to carry cakes, of an oscillating receptacle suspended above said apron, and adapted to deposit icing upon said cakes, means carried by said receptacle to produce a rough or serrated surface upon said icing, and means to independently adjust said cakes in respect to said receptacle.

11. In a machine of the character described, the combination with intermittently-moving endless aprons, of an intermittently-oscillating receptacle suspended above one of said aprons, a reciprocating feeding-plate, means to intermittently elevate one of said aprons, and means to operate said receptacle, substantially as described.

12. In a machine of the character described, the combination with a platform having openings formed therein, of an endless apron mounted below said platform, a receptacle

suspended above said platform and adapted to deposit material through said openings, and means to oscillate said receptacle, substantially as described.

13. In a machine of the character described, the combination with a moving apron, and means for elevating the same, of a platform mounted above said apron, said platform having openings formed therein, an oscillating receptacle suspended above said platform and sliding thereon, said receptacle adapted to intermittently deposit material through said openings, and means for oscillating said receptacle, substantially as described.

14. In a machine of the character described, the combination with a suitably-supported platform having openings formed therein, of a moving apron adapted to carry cakes, a receptacle suspended above said platform and adapted to deposit material upon said cakes, and means to oscillate said receptacle, substantially as described.

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

ERNEST L. SONS.

Witnesses:

E. E. POTTER,
C. KLOSTERMANN.