No. 785,914. PATENTED MAR. 28, 1905.

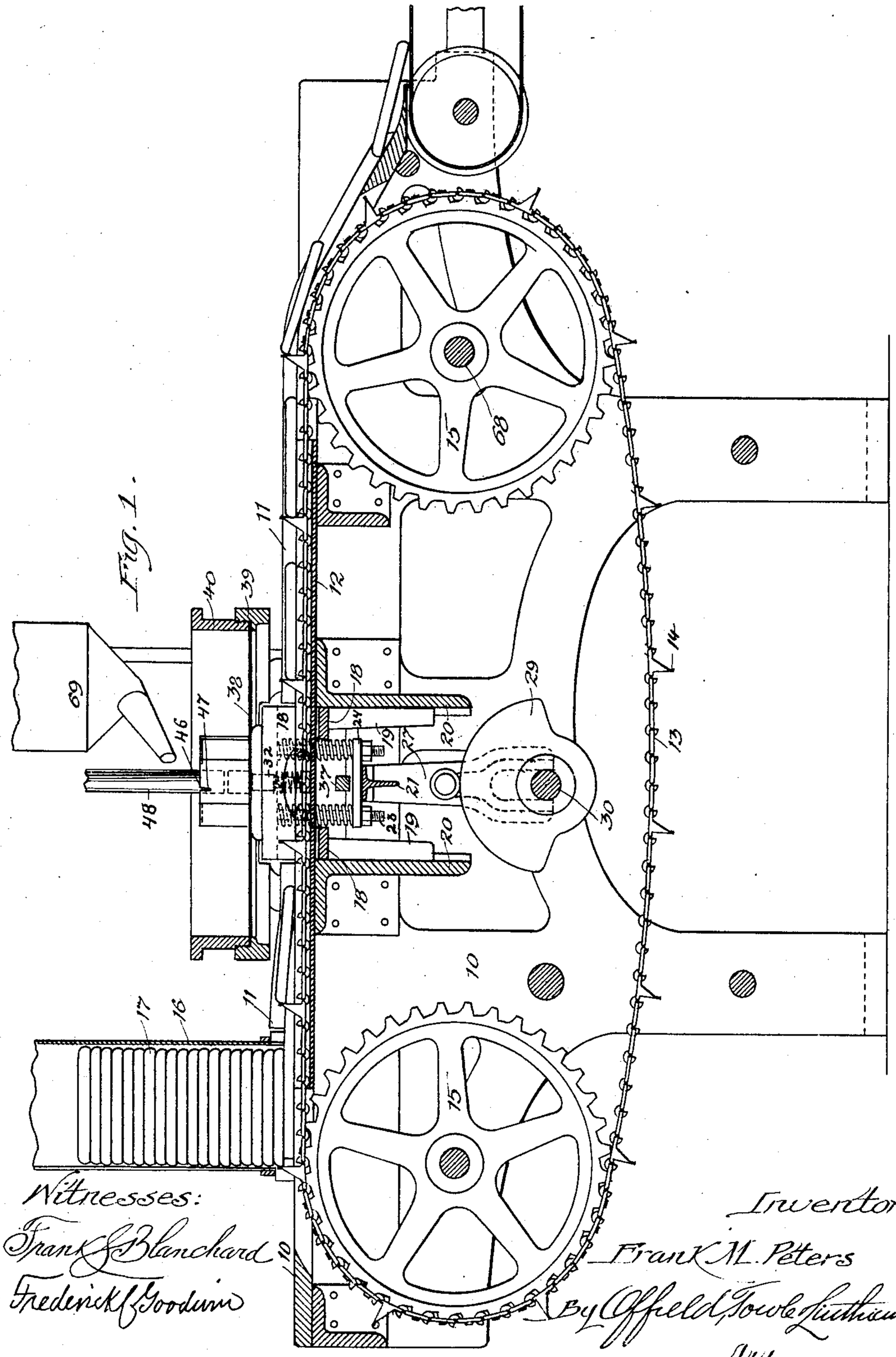
F. M. PETERS.

CAKE MACHINE.

APPLICATION FILED JUNE 9, 1902.

6 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

Frank L. Blanchard

Frederick L. Goodwin

Inventor:

Frank M. Peters

By Offield, Towle & Linthicum

Attorneys.

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6 SHEETS—SHEET 2.

Fig. 3.

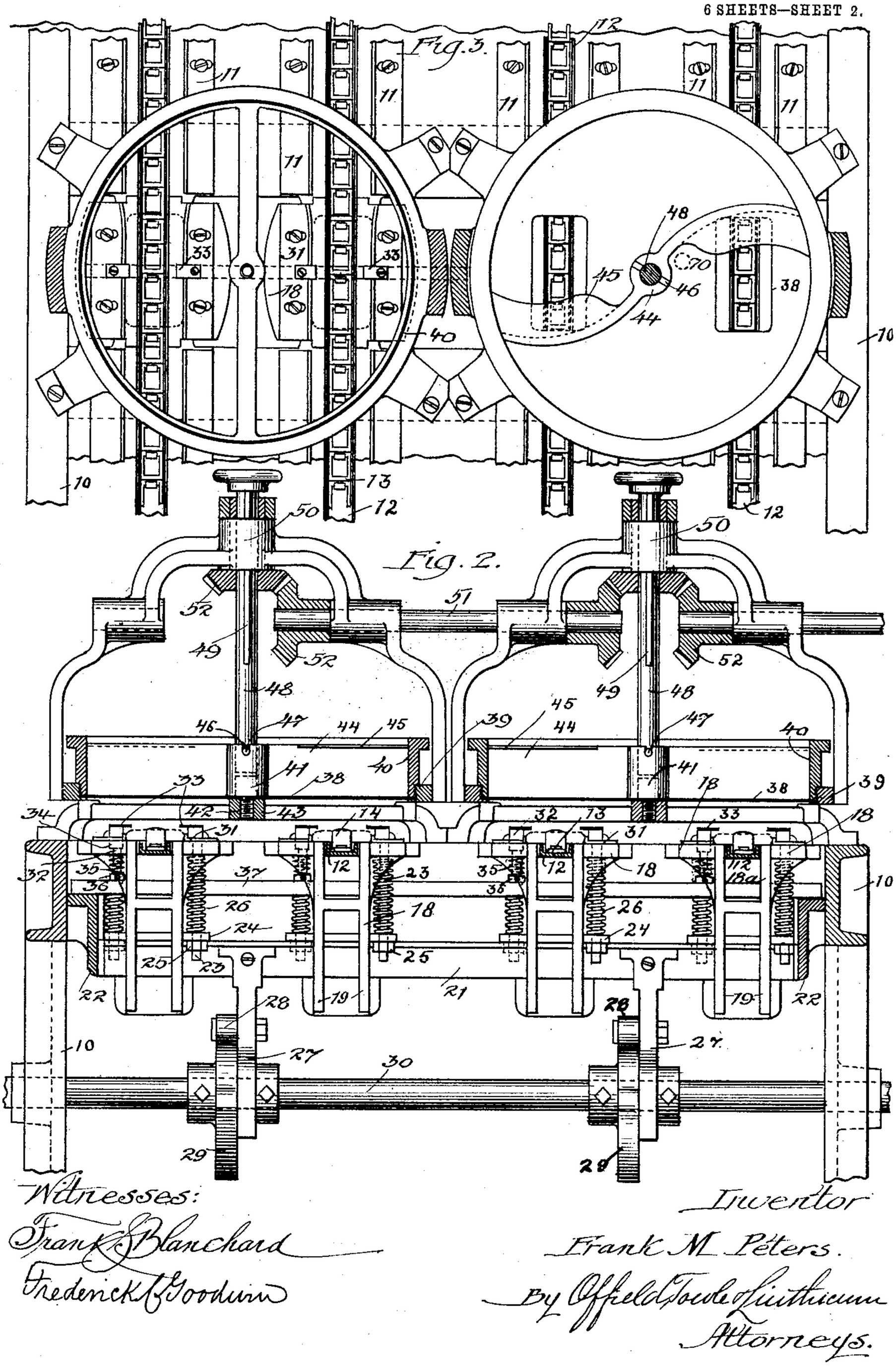

Fig. 2.

Witnesses:
Frank S. Blanchard
Frederick L. Goodwin

Inventor
Frank M. Peters.
By Offield Towle & Linthicum
Attorneys.

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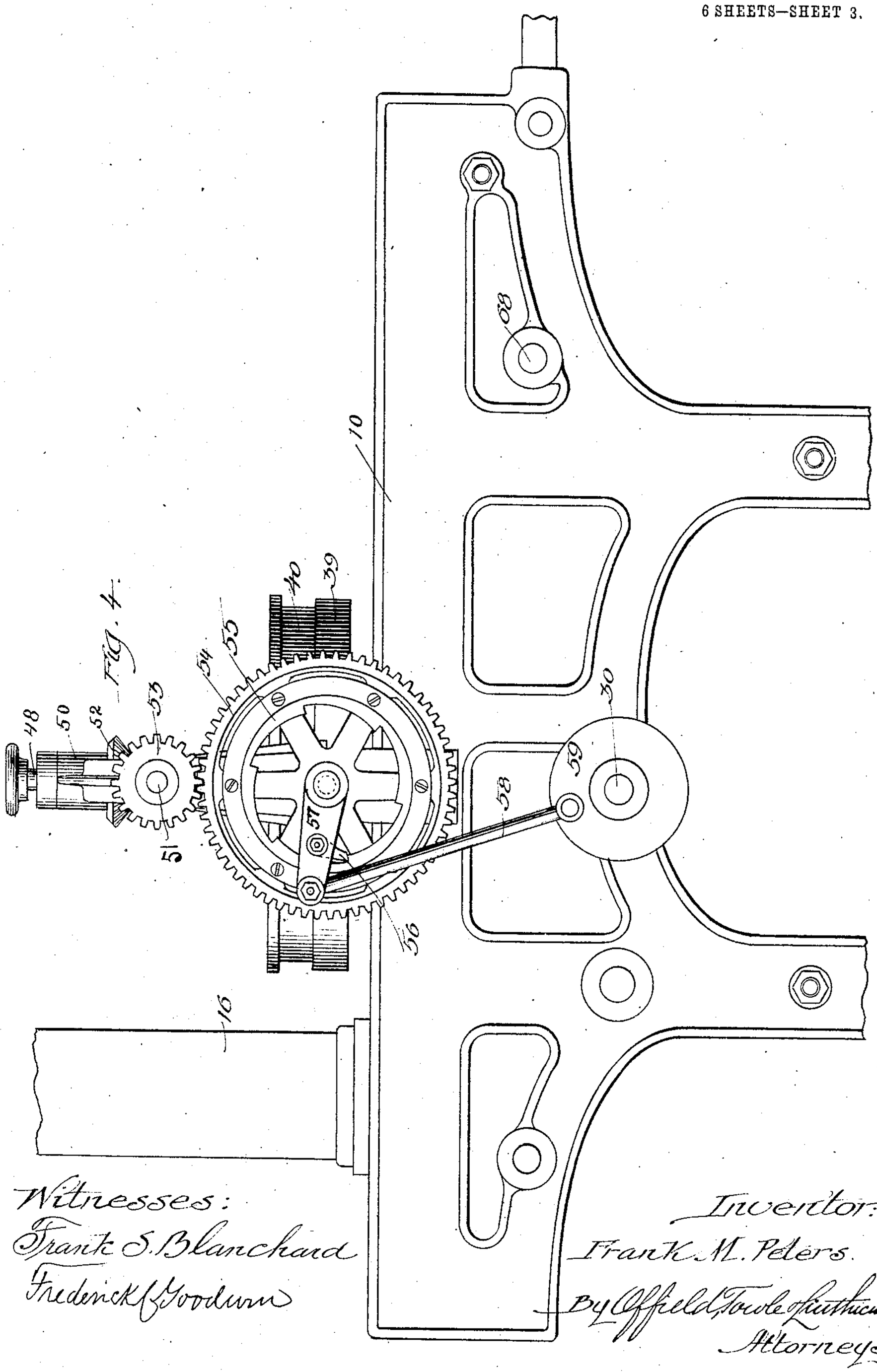
6 SHEETS—SHEET 3.

Fig. 4.



Witnesses:
Frank S. Blanchard
Frederick L. Goodwin

Inventor:
Frank M. Peters.
By Offield, Towle & Linthicum
Attorneys.

PHOTO LITHOGRAPHED BY SACHETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

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6 SHEETS—SHEET 4.

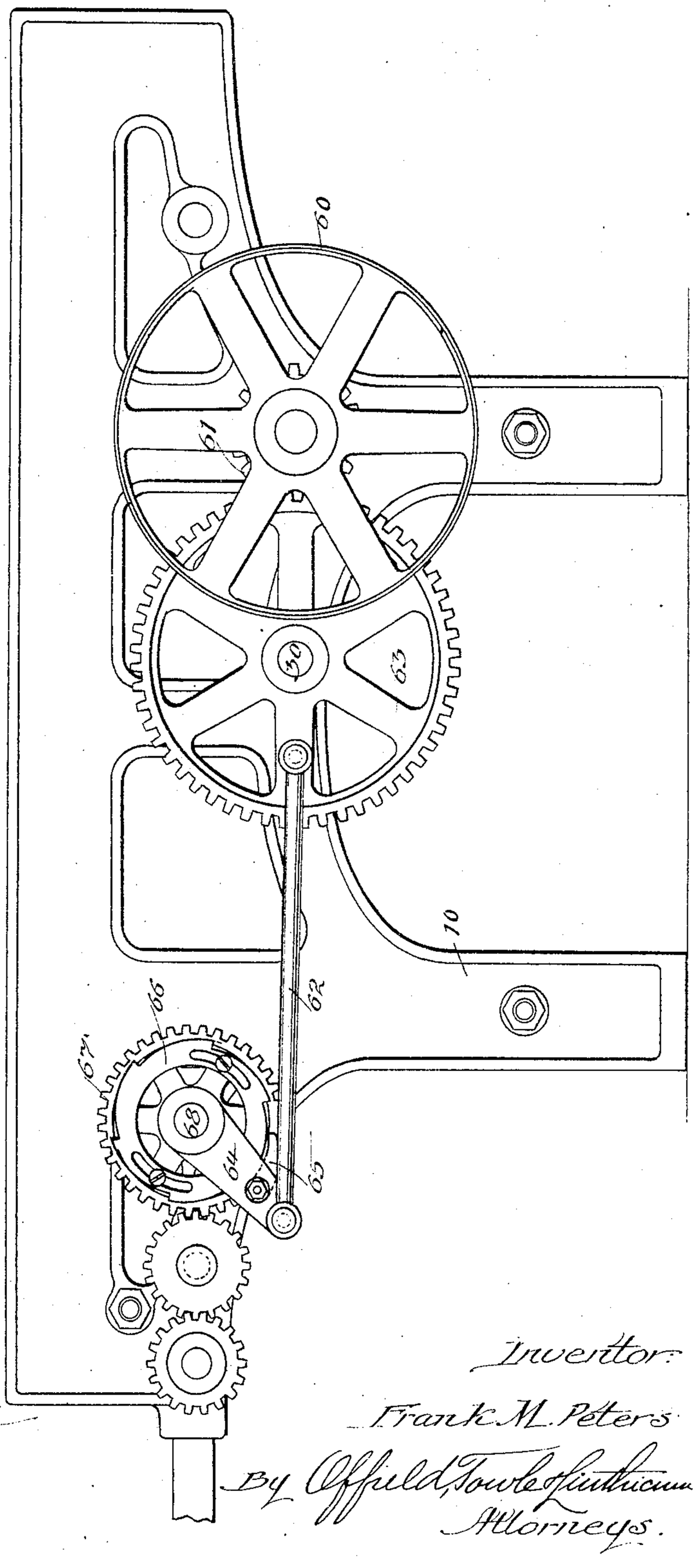

Fig. 5.

Witnesses:
Frank L. Blanchard
Frederick L. Goodwin

Inventor:
Frank M. Peters
By Offield, Towle & Linthicum
Attorneys.

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6 SHEETS—SHEET 5.

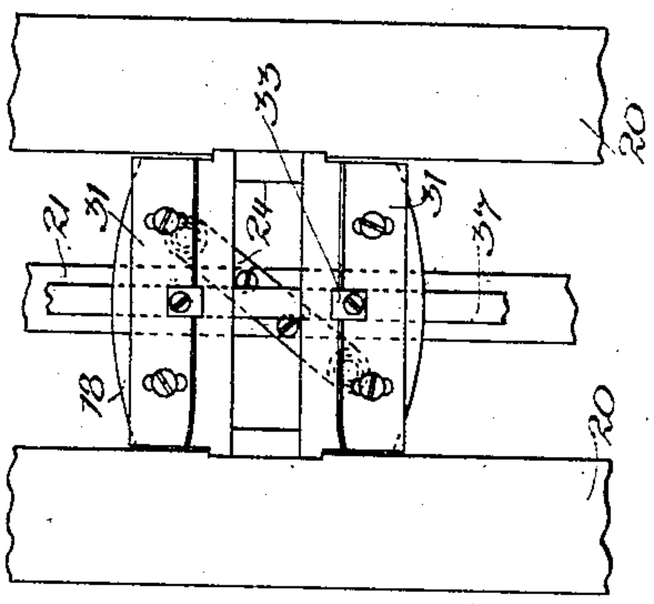

Fig. 7.

Fig. 6

Witnesses:

Frank S. Blanchard

Frederick L. Goodwin

Inventor:

Frank M. Peters.

By Offield, Towle & Linthicum

Attorneys.

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F. M. PETERS.

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6 SHEETS—SHEET 6.

Fig. 8.

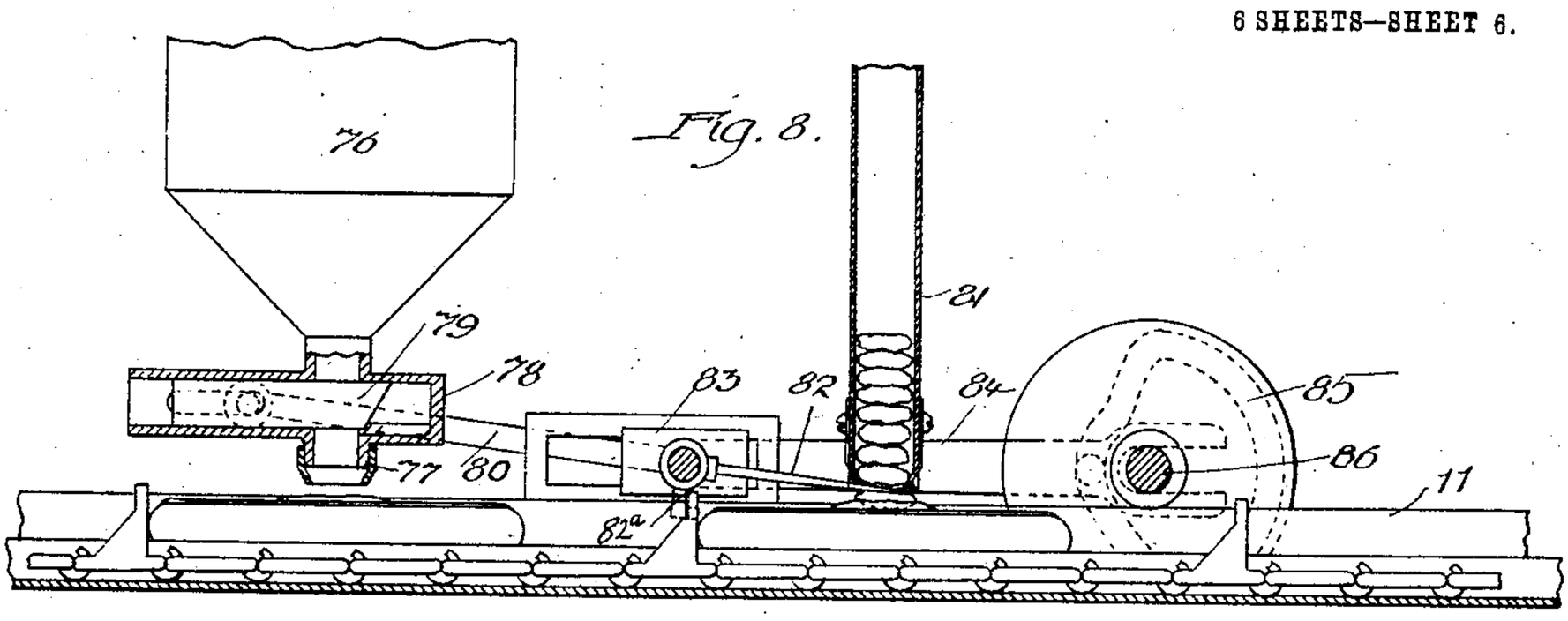
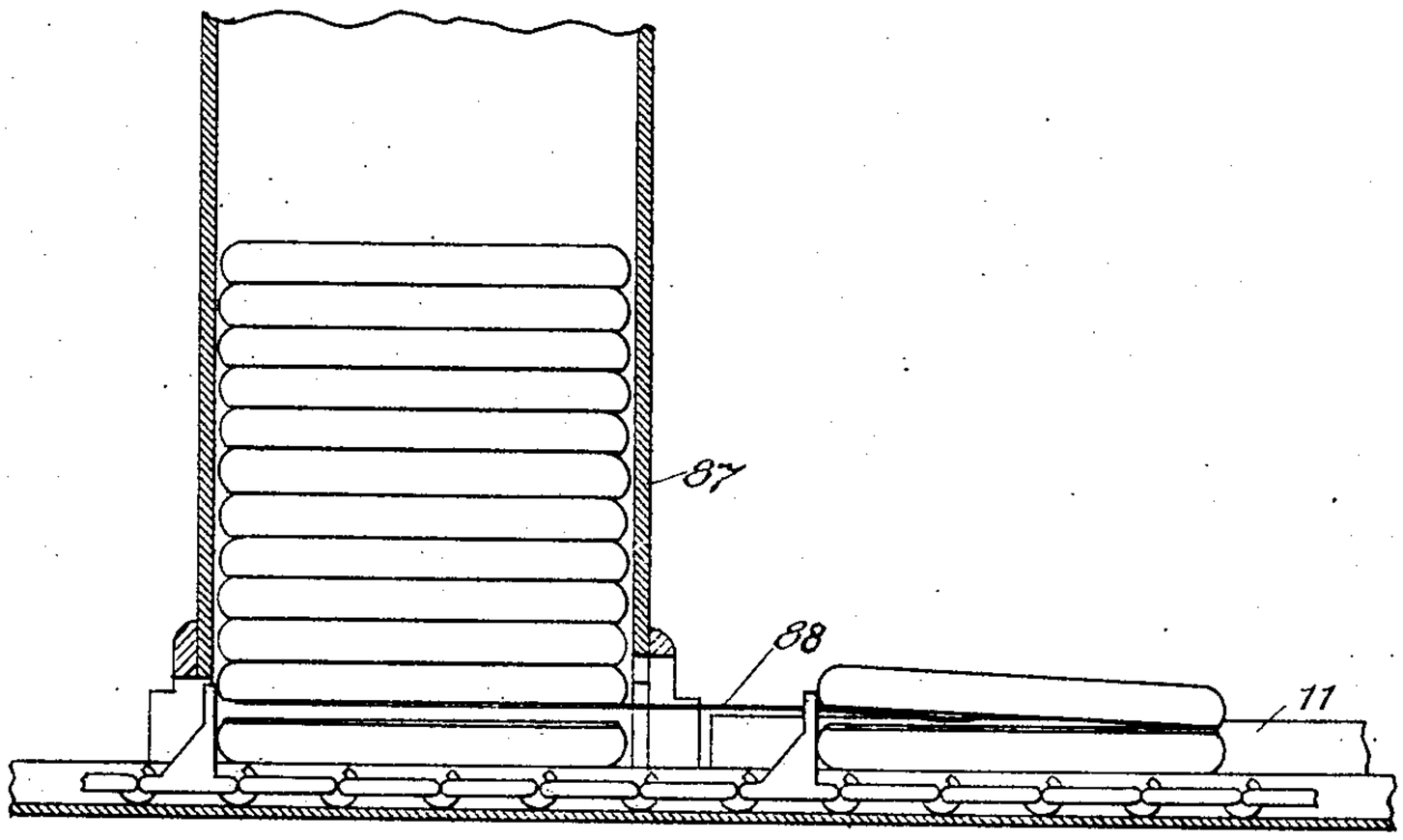


Fig. 9.



Witnesses:
Frank S. Blanchard
Frederick J. Goodwin

Inventor:
Frank M. Peters.
By Offield, Towle, Linthicum
Attorneys.

PHOTO-LITHOGRAPHED BY SACHETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 785,914. Patented March 28, 1905.

UNITED STATES PATENT OFFICE.

FRANK M. PETERS, OF CHICAGO, ILLINOIS.

CAKE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 785,914, dated March 28, 1905.

Application filed June 9, 1902. Serial No. 110,851.

To all whom it may concern:

Be it known that I, FRANK M. PETERS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cake-Machines, of which the following is a specification.

This invention relates to a machine or apparatus for treating cakes, biscuits, and the like, and is applicable to various treatments of such cakes—for example, applying icing, jelly, or any other coating or covering material to the surfaces thereof; and the invention consists in the several novel instrumentalities and combinations of devices for the purpose of carrying out said purposes and objects, as hereinafter described, and more particularly pointed out in the claims.

Generally described, the apparatus comprises the following instrumentalities: a receptacle or container for the cakes to be treated and which is preferably so constructed and associated with a movable carrier that the cakes are withdrawn one at a time from the store and advanced into a position where the surfacing material is applied thereto; a carrier, which in the preferred form consists of endless link belts or chains having lugs or flights thereon adapted to remove the cakes singly from the store and advance them into position to be coated; a chamber to contain the coating material and having movably mounted therein a revolving or reciprocating discharger adapted to force regulated quantities of the coating material through a suitable aperture in the bottom of the chamber upon the cake when it is brought into position; a vertically-reciprocating table adapted to lift the cake from the carrier and bring it into a position beneath the discharge-aperture of the chamber; means for holding the cake upon the plate or table during the coating operation; and suitable gearing or actuating mechanism whereby the several moving parts of the apparatus are operated to withdraw the cakes from the container, present them in position beneath the hopper, discharge the coating material thereon, lower the cakes upon the carrier, and advance them to the point of discharge from the apparatus. These several mechanisms may be considerably varied in their particular construction, and I have shown in the accompanying drawings some illustrations of practicable variations of the particular mechanism, and I have also shown associated with the principal apparatus or machine certain additional mechanisms adapted to perform other operations upon the cake than the coating thereof.

In the accompanying drawings I have shown a quadruple machine adapted to operate on four cakes simultaneously.

Figure 1 is a sectional elevation longitudinally of the machine, the cakes within the container, a reservoir for the coating material, and the carrier showing in side elevation. Fig. 2 is a transverse sectional elevation. Fig. 3 is a broken plan view, partly in section, one side of the view showing the discharge sweeps or arms and the bottom plate of the chamber removed. Figs. 4 and 5 are elevations of the framework of the machine from opposite sides thereof and showing the driving mechanism or gearing for actuating the operative parts. Fig. 6 is a view similar to Fig. 1, showing a modification wherein a reciprocating discharging apparatus is employed instead of the revolving dischargers shown in the former figure and showing also the discharger connected to the reservoir. Fig. 7 is a detail plan view of the vertically-reciprocating plate or table for lifting the cakes; and Figs. 8 and 9 are views of apparatus for performing subsidiary operations upon the cake, Fig. 8 showing at the left of the view means for dropping a semifluid or plastic substance upon the surface of the cake and at the right of the view showing means for depositing a nut-meat, fruit, or the like upon the surface of the cake; and Fig. 9 shows means for superposing a second cake upon one which has been previously iced or coated.

In the drawings, 10 represents the framework of the machine, on the top of which is mounted a series of guides 11, which may be conveniently composed of angle-iron and which form guides for the cakes in their movement through the apparatus.

12 represents channel-irons constituting tracks for the upper strand of the endless car-

rier 13, the latter being provided with flights or lugs 14 and turned over the sprocket-wheels 15.

At one end of the frame there is provided a container or reservoir 16 to contain a stack of cakes, biscuit, or the like, (indicated at 17.) The rear wall of the hopper or reservoir is cut away the thickness of one of the cakes desired to be operated upon, so that the lowermost cake of the stack may be removed by the flights of the carrier, which is preferably composed of link belts or chains. The flights successively engage the rear edges of the cakes and push them out of the hopper, the guides 11 being so arranged and adjusted as to constitute the track over which the cakes may be moved.

Centrally of the machine the guides 11 are cut away to permit of the reciprocation of a table 18, which is made of yoke or U form, as shown at 18ª, to permit of the reception of the channel 12 and the carrier-chain and the raising of the table, said table having extensions or legs 19, which constitute guides operating between the transverse beams 20 20. The table is reciprocated or lifted by means of a bar 21, extending transversely across the machine and reciprocating with its ends in the guides 22. To the under side of the table are secured posts 23, which pass loosely at their lower ends through a bar or strap 24, which is hung to the posts by the nuts 25. Spiral springs 26 surround the posts or pins and bear at their upper ends on the under side of the table and at their lower ends upon the upper surfaces of the straps. These springs afford a yielding support for the table and permit operation on cakes which are slightly warped or of abnormal thickness without injury or unduly compressing the springs. The springs also permit such adjustment or shortening vertically of the table as to enable it to operate on cakes of different thicknesses without changing the table-raising mechanism. The posts 23 are not placed in the same line transversely of the table, but are situated, respectively, on opposite sides of the transverse bar 21, and the strap 24 is fastened to the top of the transverse bar 21 and lies obliquely thereacross.

To the bar 21 is rigidly connected a yoke 27, which carries a roller 28, which is engaged by a cam 29 of regular formation mounted upon a rotating shaft 30. The lower end of the yoke is made to straddle the shaft, so as to afford a guide for the yoke and retain the roller in contact with the cam-surface. Mounted upon the table 18 are guide-sections 31, which register with the main guides 11 and which are likewise adjustable toward and from each other. Extending through a slot in the leaves or sides of the table are vertical pins 32, which carry at their upper ends the clips 33, the pins passing through sleeves 34, connected with the guide-sections 31. The pins 32 have springs 35 coiled around them, and the lower ends of these springs are retained by a collar 36. A cross-bar 37, resting on the top of the guides 22, forms a stop or buffer for the lower ends of the pins of the clips. Obviously at each revolution of the shaft 30 the cam will raise the table through the instrumentalities described, and if at the proper time a cake is lying within the path of the table it will be raised clear of the carrier-chain and may be presented to the aperture in the lower portion of the chamber containing the coating material. This chamber is of circular form, as shown in Figs. 1, 2, and 3, while in Fig. 6 a chamber of rectangular form is shown. These chambers preferably consist of an apertured bottom plate 38, fitted within an annular base-ring 39, in which is threaded the annular side wall 40. These parts are preferably of metal and threaded together, so that they may be readily separated and thoroughly cleansed. The bottom plate is held in place by a stud 41, having a threaded shank 42 entering a nut or threaded boss 43, formed in the bed or frame of the machine. Revolving on said stud as an axis is a two-armed sweep or discharger 44, the arms or sweeps being preferably curved from end to end and having a horizontal flange or fin 45 toward their outer ends, so as to prevent the material from passing up over the arm and falling behind it. The hub of this sweep has a notch 46, which receives a driving-pin 47, secured to a vertical driving-shaft 48, the latter having a spline or key 49 adapted to a suitable keyway or groove in the bearing formed in the crown or apex of the casting 50. This construction of the shaft permits the ready separation and removal of the several parts. Within the casting 50 is also provided a bearing for the shaft 51, by which power is communicated, through the bevel-gears 52, to the shaft 48. This shaft 51 may be driven in any convenient way, and, as shown in Fig. 4, it is driven through a pinion 53 from the large gear 54, the latter having an internal ratchet-plate 55, which is engaged by a pawl 56 on the pawl-arm 57, connected by a pitman 58 with a crank-wheel 59, and the latter may be mounted on the main shaft 30 of the machine. Continuous motion is imparted to this main shaft 30 from the belt-pulley 60 through a pinion 61, as shown in Fig. 5. In said figure is also shown the means for driving the chains, said means comprising a pitman 62, driven by the gear 63 on the shaft 30, and pawl-arm 64, whose pawl 65 drives the ratchet 66, adjustably secured to the gear 67, the latter being fixed to the sprocket-wheel shaft 68.

I have shown in the drawings an apparatus having four carriers arranged side by side or parallel to each other, with two chambers for the coating or covering material, each chamber having its bottom plate 38 provided with two apertures for the discharge of the coat-

ing material, and these apertures are located, respectively, immediately above the carrier-chains, as clearly shown in Figs. 2 and 3, and said apertures of course conform to the shape of the cake, while the thickness of the bottom plate should be approximately the desired thickness of the layer of coating material which is to be deposited on the cake. The coating material may be fed into the receptacle from the reservoir or hopper 69, and the feed may be continuous, the point of discharge being indicated by a dotted circle 70 in Fig. 3.

The operation of the mechanism thus far described is as follows: The cakes to be treated or coated being stored in the container 16 and the reservoir 69 being supplied with the coating material and the power applied, the carrier-chain 13 will be put in motion and the flights 14 will withdraw a cake from each of the containers 16. The cake when freed from the container 16 passes between the guides 11 and is advanced to a point immediately above the table 18. The apparatus is so timed that the movement of the carrier-chain is arrested and the upward movement of the table begins simultaneously. The cam or cams act to raise the transverse bar 21, and thereby the several tables 18. Normally the clips 33 are held in a raised position by the contact of their pins or stems with the bar 37; but as the table begins to rise, thus carrying the pins away from said bar, the springs surrounding the pins draw the clips down and cause them to engage the edges of the cakes on their upper surfaces, and thereby clamp them to the tables. The upper surface of the cake is presented to the aperture, and the sweeps are geared so that their revolution sets in as soon as the cake has been seated in or brought against the margins of the apertures in the receptacles, and these sweeps cause the coating or covering material to be swept into the apertures and spread uniformly over the surfaces of the cakes, the coating being substantially equal to the thickness of the bottom wall of the receptacle.

It will be seen that a single chamber for the coating material and a single two-arm sweep will serve to apply the coating material to two cakes simultaneously; but it is obvious that the principle of operation may be extended or that the cakes may be operated upon singly.

In Fig. 6 I have shown a modification of the apparatus above described, said modification consisting substantially in the substitution of a rectangular form of chamber for the coating material, said chamber being marked 71, and a reciprocating feed-box 72, connected by a flexible pipe 73 with the reservoir for the coating material. This feed-box may be made of metal and of a width corresponding to that of the rectangular chamber 71 and may be driven by a pitman 74 from the crank-wheel 75, which will be so timed in its revolution as to cause a reciprocation of the feed-box after the cake has been presented to the aperture by the upward movement of the table.

In Figs. 8 and 9 I have shown certain auxiliary devices or apparatus, which it will be understood may be located upon the frame 10 or an extension thereof and which are adapted to perform additional operations upon the cake or some operation in substitution of the coating thereof. Thus in Fig. 8 is shown at 76 a reservoir to contain a semifluid or plastic material, such as jelly, having a discharge-chute 77, surrounded by a feed-box or casing 78, in which works a piston or plunger 79, reciprocated by means of the pitman 80. In the same figure is shown a hopper or receptacle 81 for containing nut-meats or fruits, the lower end of said hopper being open and the meats, fruit, or the like being separately removed by means of the reciprocating spear 82, pivoted in the block or cross-head 83 and adapted on the forward motion to pierce one of the particles of fruit or the like. The pivot of the spear has a lug 82^a, which comes in contact with a stop, thereby rocking the spear on its pivot and causing it to deposit the fruit or the like upon the surface of the cake. The cross-head 83 may be driven by the pitman 84 and the latter by the cam 85, mounted on shaft 86. In Fig. 9 I have shown a receptacle 87 containing cakes, which are successively withdrawn from the receptacle by the flights of the carrier-chain and moved out over a rest or support 88 and deposited upon a cake which has been previously coated. These auxiliary operations may, when the mechanisms described are mounted upon the same machine in which the cakes are coated, be all performed without loss of time and in the operation of icing or coating, and of course two or more of such operations may be performed simultaneously.

Without, therefore, limiting my invention to exact details of construction or to the performance of the several operations above mentioned in the order and relation stated or in conjunction with each other, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cake-machine, the combination with a chamber having an apertured bottom and adapted to contain material to be applied to the surface of the cake, of means for introducing the cake to said aperture, and a rotatable sweep operating within the chamber to spread the material over the cake through said aperture, substantially as described.

2. In a cake-machine, the combination with a chamber having an apertured bottom and adapted to contain material to be applied to the surface of the cake, of a vertically-reciprocating table adapted to receive and present the cake to said aperture, and a rotatable

sweep operating within the chamber to spread the material over the cake through said aperture, substantially as described.

3. In a cake-machine, the combination with a traveling carrier, of a vertically-reciprocating table adapted to lift the cakes from the carrier, and a chamber to contain a material to be applied to the surface of the cake, said chamber having an aperture to which the cake is lifted by the table, and means for applying the material contained within the chamber to the surface of the cake, substantially as described.

4. In a cake-machine, the combination with a traveling carrier, of a vertically-reciprocating table, a chamber to contain a material to be applied to the surface of the cake, and a rotatable sweep operating within the chamber to apply said material, substantially as described.

5. In a cake-machine, the combination with an endless carrier, of a receptacle to contain the cakes to be operated upon and from which they are successively withdrawn by the carrier, a reciprocating table adapted to lift the cakes from the carrier, a chamber to contain a material to be applied to the surface of the cakes, a rotary sweep operating within the chamber and the latter having an aperture to which the cake is lifted and through which the material is discharged by the sweep, substantially as described.

6. In a cake-machine, the combination with a suitable framework, of a receptacle to contain cakes to be operated upon, a carrier to withdraw the cakes from the receptacle and advance them singly, a reciprocating table adapted to lift the cakes from the carrier, guides mounted upon the framework, said guides being interrupted to permit the reciprocation of the table above and below the plane thereof, guide-sections upon the table, a chamber to contain a material to be applied to the cakes, and means for discharging the material through an aperture in said chamber and upon the cakes, substantially as described.

7. In a cake-machine, the combination with a carrier for moving the cakes, a chamber to contain a material to be applied to the surface of the cakes, and a reciprocating table adapted to lift the cakes from the carrier and present them to an aperture in the chamber, said table being yieldingly supported, substantially as described.

8. In a cake-machine, the combination with a carrier for the cakes, of a reciprocating table having vertically-sliding clips adapted to engage the top of a cake and clamp the same to the table during the reciprocating movement of the latter, substantially as described.

9. In a cake-machine, the combination with a carrier, track-supports for the carrier, guides for the cakes, a table having its central portion cut away to receive the carrier, guide-sections on the table, clips adapted to hold the cakes upon the table, and a stop to release the clips, substantially as described.

10. The combination with a cake-reservoir, of an icing-table, a feeding-belt for conveying the cakes from the reservoir to the icing-table, a supporting-table slotted for the passage of the belt, and a pair of adjustable strips carried by the icing-table and forming side guards for preventing lateral displacement of the cakes.

11. The combination with an icing-support having an opening for the passage of icing, a yieldably-mounted cake-receiving table, and means for moving the table upward to press the cake against the bottom of said icing-support, the distance to which the table is moved being determined by the thickness of the cake.

12. The combination with an icing-support having an opening, of a yieldably-mounted cake-receiving table, an endless conveyer having feeding-pins extending through a central opening in the table, and means for moving the table independently of the feeding-chain.

13. The combination with an icing-support having an opening, of a slotted cake-receiving table, means for moving the table toward and from the opening, and an intermittently-actuated feed-belt extending through the slot of the table.

FRANK M. PETERS.

Witnesses:
C. C. LINTHICUM,
FREDERICK C. GOODWIN.