

(No Model.)

4 Sheets—Sheet 1.

J. H. SMITH.
CONFECTIONERY MACHINE.

No. 533,397.

Patented Jan. 29, 1895.

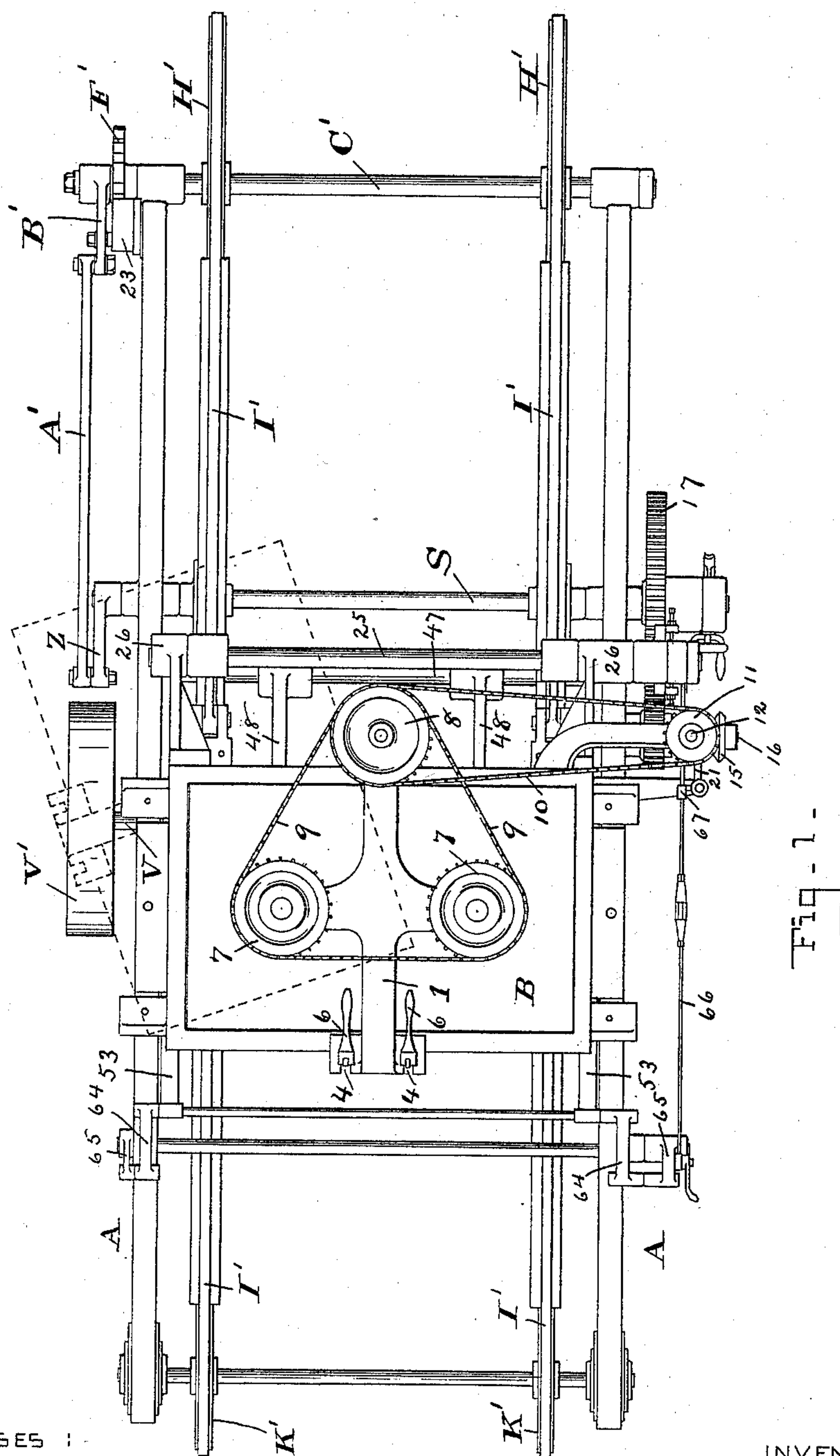


Fig. 1.

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Chas. B. Mann Jr.

INVENTOR :

Jos H. Smith
By Chas B. Mann

ATTORNEY :

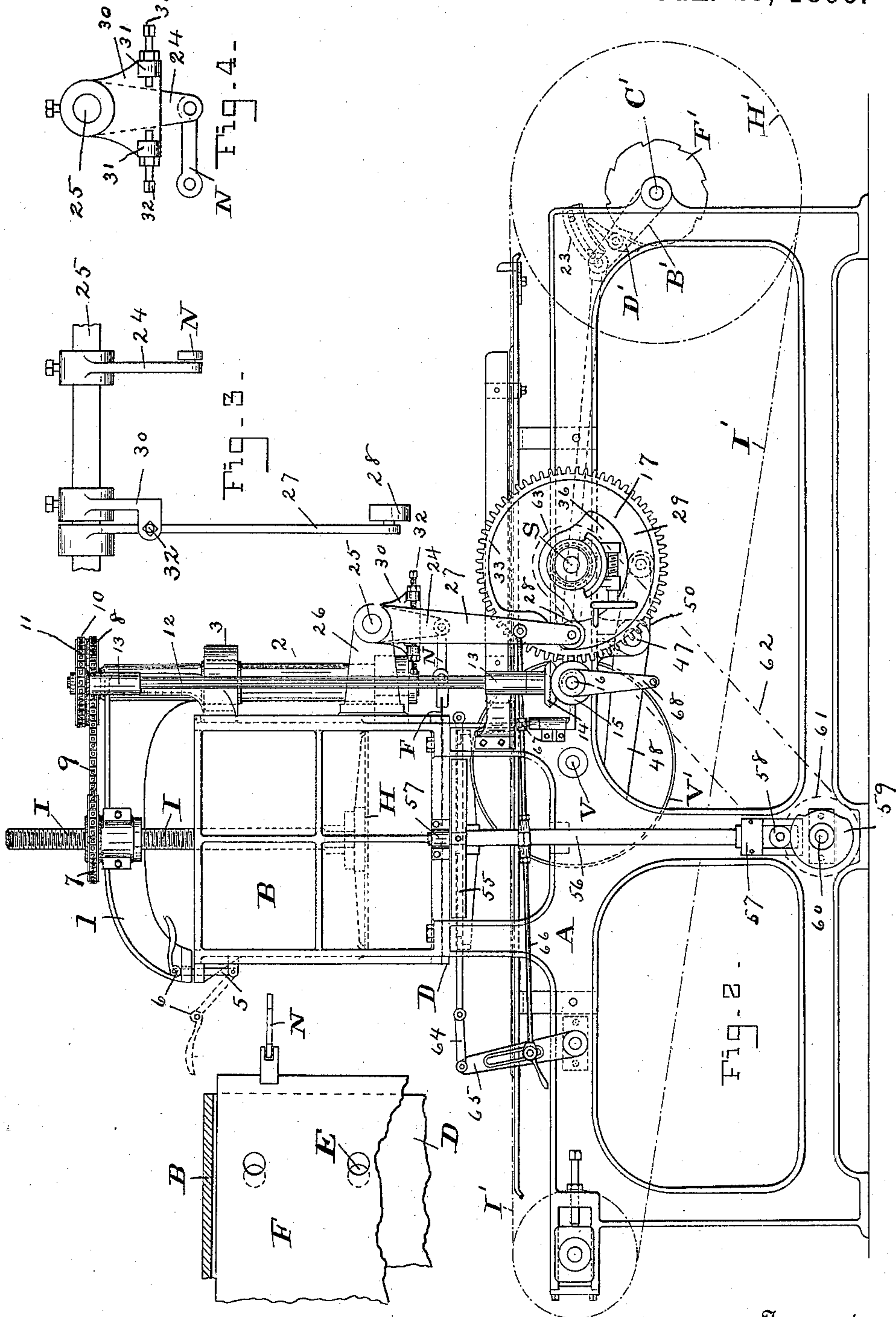
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Fig. 4a -

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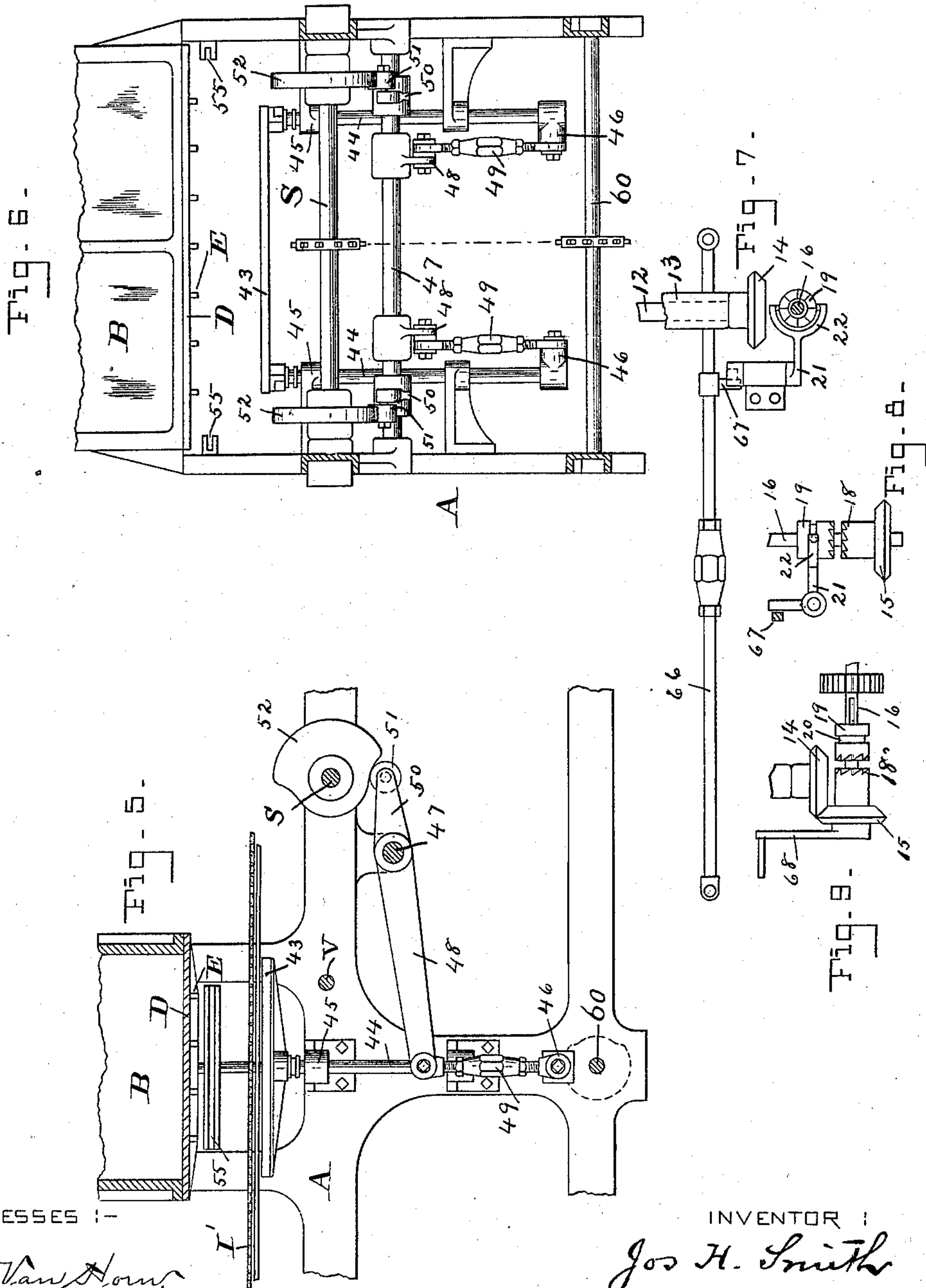
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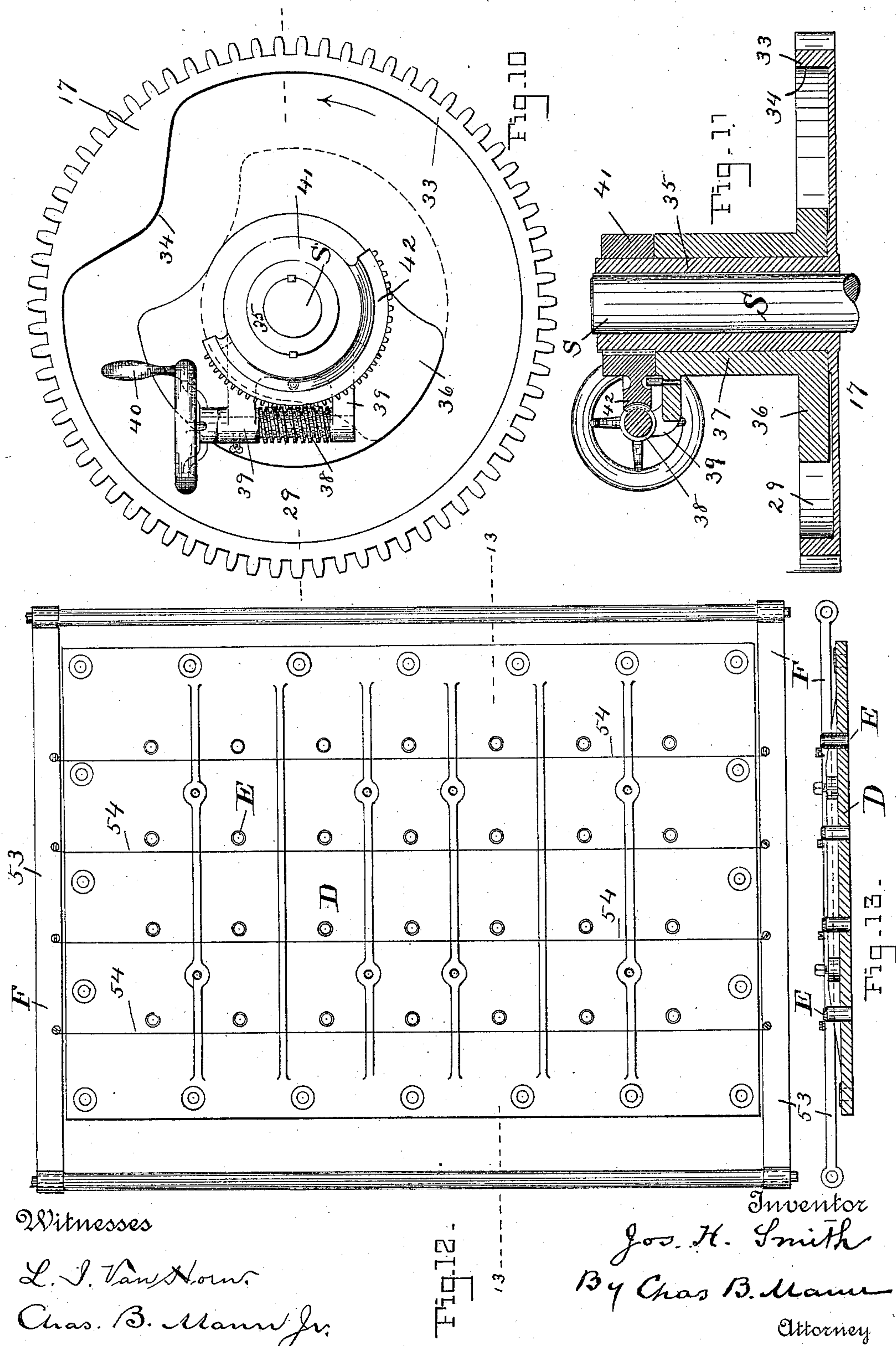
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4 Sheets—Sheet 4.

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Fig. 12.

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UNITED STATES PATENT OFFICE.

JOSEPH H. SMITH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE SMITH-DIFFENDERFER MANUFACTURING COMPANY OF BALTIMORE CITY, OF MARYLAND.

CONFECTIONERY-MACHINE.

SPECIFICATION forming part of Letters Patent No. 533,397, dated January 29, 1895.

Application filed March 31, 1894. Serial No. 505,809. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. SMITH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Confectionery-Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in machines for dropping confectionery and cake-dough.

The machine is of the same class as that for which Letters Patent of the United States were granted me July 22, 1890, No. 432,912, and the object of the present invention is to provide such improvements as will increase the capabilities of that machine, make it more efficient and adapted for a wider range of work, and more convenient in use.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a top or plan view of the machine. Fig. 2 is a side elevation of same. Figs. 3 and 4 show the mechanism for adjusting the movement of the slide cut-off in order to determine the size of the dough cut-off openings. Fig. 4^a shows a partial register of the dough-openings. Fig. 5 is a vertical section of the elevator parts. Fig. 6 is an elevation of the elevator,—being a vertical cross-section of the machine. Figs. 7, 8 and 9 are details of the clutch mechanism. Figs. 10 and 11 are views of the adjustable cam which varies or regulates the time during which the dough cut-off openings are open. Fig. 12 is an inverted or bottom view of the receiver showing the drop-tubes and wire-carrying frame. Fig. 13 is a cross-section of same on the line 13—13.

In the drawings herewith all parts which are shown in my former patent are here designated by letters of reference the same as those employed in said patent, and all parts comprised in the improvements now about to be described are designated by numbers.

The frame, A, may be of any preferred construction. A receiver, B, for the confectionery or cake-dough is mounted on the frame, and has a bottom, D, provided with openings or tubes, E, and an inner slide cut-off, F, rest-

ing on the bottom. A follower, H, is in the receiver and two screws, I, rigidly attached thereto press it down and raise it. A crane-arm, 1, extends entirely across the top of the receiver and at each side has a short lateral arm. In plan view the crane-arm has the form of a cross. See Fig. 1. Each follower screw, I, passes vertically through an internally-screw-threaded sprocket-wheel, 7, which is mounted on one of the lateral arms so as to revolve thereon. The revolution of these screw-wheels, 7, causes the screws, I, to raise or lower. At one side of the receiver is a vertical standard, 2, mounted in bearings, 3, so as to turn, and the crane-arm, 1, is attached to the upper end of said standard, 2. By this construction, when the follower, H, is raised entirely out of the receiver, the follower and crane-arm may be swung laterally, as indicated by broken lines in Fig. 1 to fully uncover the top of the receiver. The free end of the crane-arm has a head with two slots, 4, and the side of the receiver has two bolts, 5, attached at their lower ends by pivots so that their upper ends can swing into the slots, 4, or swing out of said slots. Each of the bolts, 5, has a cam-lever, 6, which, when the bolts are in the slots, serve to tighten on the head of the crane-arm, and thereby firmly hold said arm against the lifting strain of the screws, I, at the time the follower, H, is being pressed down.

The top-end of the standard, 2, has a double sprocket-wheel, 8—i. e., a wheel with two faces or two sets of sprockets. An endless chain, 9, passes about the two internally-threaded sprocket-wheels, 7, and about the lower face of the sprocket-wheel, 8. Another endless chain, 10, passes about the upper face of the sprocket-wheel, 8, and about a sprocket-wheel, 11, on the upper end of a revoluble shaft, 12. By this arrangement when the shaft, 12, is revolved both of the threaded sprocket wheels, 7, turn and thereby act on the screws, I. When the shaft revolves in one direction it causes the follower, H, to press down on the dough in the receiver, and in the opposite direction it causes the follower to be raised.

The vertical shaft, 12, turns in bearings, 13, and on its lower end has a bevel wheel, 14,

which gears with another wheel, 15, loose on a horizontal shaft, 16, extending in a direction crosswise of the machine. This shaft has a pinion which gears with a cam wheel, 17, by which it is turned continuously. Clutch mechanism is on the horizontal shaft, 16, and is employed to transmit the motion of that shaft to the vertical shaft, 12 at the moment it is desired to cause the screws, I, to press down the follower, H. This clutch is constructed as follows: The bevel wheel, 15, is always in gear with the wheel, 14, but, as already stated, is loose on the shaft, 16, and its hub has teeth, 18. A clutch hub, 19, is on the shaft, 16, and by means of an ordinary spline and groove is movable longitudinally thereon but must revolve with the shaft. This clutch hub, 19, has teeth to engage with the teeth, 18, on the wheel, 15, and also has an exterior circumferential groove, 20. A bell-crank lever, 21, has a bifurcated or forked end, 22, which partly encircles the clutch hub and is provided with lugs which engage the circumferential groove, 20. The movement of the bell-crank lever causes the clutch hub to slide on the shaft, 16, and engage or disengage the wheel, 15.

The letter, V, designates the driving-shaft and V', the pulley on it by which motion is imparted to it. The shaft, S, carries the cam-wheel, 17, and also a crank-arm, Z, to which one end of the operating rod, A', is attached while the other end is attached to a lever, B', pivoted loosely on the end of a shaft, C', mounted at one end of the frame. This shaft carries a ratchet-wheel, F'. The lever, B', carries a pivoted pawl or dog, D', which engages with the ratchet-wheel, F'. A curved plate, 23, is secured to the side of the frame so as to have position above the pawl or dog, D'. This curved plate has such relation that the upper end of the pawl or dog will strike it and be released from the ratchet-wheel, F' when the lever, B', is near the end of its forward throw. Then on the backward throw of the lever the pawl or dog moves away from the curved plate. By the arrangement here described the continuous rotation of the shaft, S, causes an intermittent rotary motion of the shaft C', same as in my former patent.

The intermittently-revoluble shaft, C', has two large chain wheels, H', and a shaft mounted at the opposite end of the frame carries two small chain-wheels, K', while endless chains, I', pass around and connect the large wheels, H', and the small wheels, K'.

Two parallel longitudinal rails serve for the upper stretch of the chains, I', to slide along, and the trays which are to receive the drops of dough are to be placed upon these chains at one end of the machine and thereby are carried to the other end—pausing at intervals by reason of the intermittent movement of the chains. The slide cut-off, F, is a thin plate having openings corresponding in number, size and location to the openings or tubes, E, in the bottom, D, of the receiver. This

plate, F, lies flat on the said bottom, D, and slides in and out at one side through a narrow slot in the lower part of the wall of the receiver. A link or links, N, connect this cut-off plate, F, with pendent arms, 24, fixed on a rock-shaft, 25, extending crosswise and mounted in bearings, 26.

The slide cut-off plate has a reciprocating movement in and out.

The material cake-dough, gum-work, cream-work, or whatever may be in the receiver is forced through the openings in the slide cut-off plate, F, and the openings or tubes, E, in the bottom when the said openings of the slide-plate are coincident with the openings or tubes, E. When the plate, F, slides one way these two sets of openings are coincident, and when it slides the opposite way the holes are not coincident and in this movement the slide-plate acts as a cut-off to cut the material and allow the small particles cut off to drop onto the trays.

It is important to be able to adjust or regulate the movement of the slide-plate, F, in order to determine the size of the dough-cut-off openings, that is, where it is desired that the two sets of openings shall register with each other to an extent less than the full size of the opening, as shown in Fig. 4^a. In order to effect this regulation the following mechanism is employed: A lever, 27, has its upper end loose on the rock-shaft, 25, and its lower end carries a roller, 28, which takes in the cam-groove, 29, on the wheel, 17. By means of the rotation of this wheel the cam-groove has the effect to vibrate the said lever, 27. The rock-shaft, 25, has a pendent-plate, 30, provided with a hub by which it is rigidly attached alongside of the lever, 27, which is loose. This pendent plate has on its side two lugs, 31, each of which has an adjusting screw, 32, the ends of which point toward each other. These two screws, 32, take on opposite sides of the lever, 27, as shown in Figs. 2, 3 and 4. By means of the adjusting screws, 32, the relative position on the rock-shaft, 25, of the lever, 27, and the pendent arms, 24, may be varied or changed enough to have the dough-openings in the slide-plate, F, register only partially with the openings or tubes, E, in the bottom, D, as seen in Fig. 4^a. It is also important to be able to regulate and vary the time during which the two sets of dough cut-off openings are in register with each other. In order to accomplish this regulation I have provided an adjustable cam to coact with the lever, 27. This cam is shown in detail in Figs. 10 and 11.

The wheel, 17, is mounted on the shaft, S, rigidly and has a hollow face formed by the peripheral flange or internal rim, 33, which has an in-curve, 34. The wheel also has a hub, 35. A movable cam, 36, sets within the hollow face of the wheel and has a sleeve, 37, which fits loose around the hub, 35, so as to turn thereon. The sleeve carries a worm, 38, in bearings, 39, fixed to the sleeve, and the

worm has a crank, 40, to turn it. A collar, 41, surrounds the hub, 35, on which it is fixed tight. This collar has a segment-shaped rack, 42, which meshes with the worm, 38.

5 By turning the worm-crank, 40, the cam, 36, may be shifted or rotated about the hub, 35, so as to adjust its curved face (which, with the rim, 33, forms the cam-groove, 29) relative to the fixed in-curve, 34, on the wheel. By
10 this means the dough cut-off openings may be kept open a longer or shorter time.

I provide mechanism to elevate a tray above the chain carriers, I'. This elevator lifts only that tray which pauses immediately below the receiver. The elevator mechanism is shown in detail in Figs. 5 and 6. A horizontal plate, 43, serves to lift the tray referred to. This plate rises and falls between the two endless chains, I', and is mounted on two
20 vertically-movable standards, 44, which are in guides, 45. The lower end of each standard has a lateral foot, 46. A rock-shaft, 47, extends across the frame and carries two lever arms, 48, and a connecting rod, 49, connects the lateral foot, 46, of each standard
25 with the end of each lever, 48. These connecting rods, 49, are extensible by means of screws. The rock-shaft, 47, also carries two shorter lever arms, 50, projecting in the opposite direction from the other lever arms, and each of these shorter arms has a roller, 51, and a cam, 52, acts on the said roller. The two cams, 52, are mounted on the same revolvable shaft, S.

35 It will be seen that the revolution of the shaft, S, and the cams, 52, has the effect to lift the elevator plate, 43, up to the openings or tubes, E, in the bottom of the receiver.

A feature of the invention is the combinations whereby the follower, H, in the receiver has pressure brought on it intermittently—the pressure being exerted by the revolution of the screw-threaded wheels, 7, at the instant of a pause in the movement of the chain-carriers.
45

A feature of the invention is the combinations whereby the follower, H, has pressure brought on it intermittently—the pressure being exerted at the instant the elevator is
50 up; also in this connection the movement of the slide cut-off plate, F, to allow the dough to drop from the receiver.

A feature of the invention is the combinations whereby the follower, H, presses the dough at the instant the slide cut-off plate, F, moves to open the drop-tubes, E.
55

While there are other features of invention, these are here mentioned only by way of pointing out the mode of operation of these parts.

60 The foregoing parts have reference to operating with material, to be placed in the receiver, that is thin, in distinction to stiff. Where the material operated with is stiff or "tight dough," as it is termed, I provide a
65 wire cut-off device to clip the dough from the drop tubes, E. This device is shown in Figs. 12, 13, 2 and 5.

A rectangular frame, 53, see Fig. 12, has, in the present instance, four wires, 54, stretched across it. The two opposite sides to which the
70 wires are attached fit loosely in horizontal slides, 55, in which the frame reciprocates. The two slides, 55, which are at opposite sides of the frame, A, are vertically movable. Each
75 slide, 55, is mounted at the upper end of a vertical rod, 56, which moves up and down in two guides, 57. The lower end of the rod has a roller, 58, which rests on a cam, 59, on the end of a cross-shaft, 60. This cross-shaft has a sprocket-wheel, 61, and is driven by a
80 chain, indicated by the line 62, passing over a sprocket-wheel, 63, on the shaft, S. The action of the cams, 59, on the rollers and rods, 56, is to elevate and lower the frame, 53, which carries the wires. This frame is caused to re-
85 ciprocate by two links, 64,—one attached at each end—and each link connected with an upright pivoted arm, 65, and a horizontal rod, 66, connecting each arm to the lever, 27, so that as this lever vibrates this mechanism
90 will cause the frame, 53, to reciprocate in the slides, 55.

The wire cut off device may be dispensed with in some cases when the slide cut-off plate, F, is used, and in other cases both may be
95 used together. The slide cut-off plate, F, may be dispensed with in some cases when the wire cut-off is used.

The clutch mechanism for setting in motion the screw-threaded wheels, 7, to cause
100 the follower, H, to press downward, is actuated by the movement of the horizontal rod, 66, which is connected with the lever, 27. This rod, 66, has a pendent finger, 67, (see Figs. 7 and 8, also Figs. 1 and 2) which, when
105 the rod moves, comes in contact with the bell-crank lever, 21, having the bifurcated end, and by moving this lever causes the clutch hub, 19, to slide and engage with the teeth, 18, on the bevel wheel, 15, and thereby set in motion the vertical shaft, 12, chain 10, sprocket-wheel, 8, chain, 9, and the two screw-threaded wheels, 7, which act on the follower screws, I.
110

From the foregoing description the operation or action of the parts will be understood.
115 I may state, however, that all the parts of the machine are connected up so as to work automatically.

When it is desired to replenish the receiver, B, the motion of the machine is first stopped.
120 Then the follower, H, is raised by turning the hand-crank, 68, on the bevel-wheel, 15. When the follower is above the top edge of the receiver the cam-levers, 6, are turned to release the two bolts, 5, from the slots, 4. Then the
125 crane-arm, 1, screws, I, and follower, H, may be swung laterally on the pivoted standard, 2, and thus uncover the top of the receiver.

Having thus described my invention, what I claim as new, and desire to secure by Letters
130 Patent, is—

1. In a confectionery machine, the combination of a dough-receiver having in its bottom openings or tubes; a follower in the re-

ceiver; two screws attached to the follower and an internally-threaded sprocket-wheel for each screw; a third sprocket-wheel having two faces; a revoluble shaft, 12, having a fourth sprocket-wheel; an endless chain, 9, passed about the two internally-threaded sprocket-wheels and about one face of the third sprocket wheel; and another endless chain, 10, passed about the second face of the third sprocket-wheel and about the said fourth sprocket-wheel.

2. In a confectionery machine, the combination of a stationary dough-receiver having in its bottom openings or tubes; a cut-off device co-acting with said openings or tubes; a follower in the receiver; one or more screws to raise and lower the follower; means co-acting with and operating the screws; a continuously revoluble shaft; and clutch mechanism transmitting intermittent motion between the said means which operates the screws and the continuously-revoluble shaft, whereby the follower will press the dough in the receiver at the moment it is desired to force the dough through the said bottom openings or tubes.

3. In a confectionery machine, the combination of a dough-receiver having in its bottom openings or tubes; a slide cut-off plate in the bottom of said receiver having openings to register with those in said bottom; a rock-shaft, 25; a lever, 27, pivoted loose on said rock-shaft; means to vibrate said lever; arms, 24, fixed on the said rock-shaft; links, N, connecting the slide cut-off plate and said arms; and a plate, 30, rigidly attached to the rock-shaft alongside of the loose lever and provided with two adjusting screws, 32, each of which engages on an opposite side of the lever.

4. In a confectionery machine, the combination of a dough-receiver having in its bottom openings or tubes; a slide cut-off plate in the bottom of said receiver having openings to register with those in said bottom; mechanism to cause the slide cut-off plate to reciprocate; and means to adjust or regulate the extent of registry of the two sets of openings, so as to have the openings register to any degree less than full size of the opening, as may be desired.

5. In a confectionery machine, the combination of a dough receiver having in its bottom openings or tubes; a slide cut-off plate in the bottom of said receiver having openings to register with those in said bottom; a lever, 27, carrying at one end a roller; suitable connections between the slide cut-off plate and said lever; a wheel having an internal rim forming one side of a cam-groove wherein the said lever-roller enters; a cam central on said wheel and forming the other side of said cam-groove and rotatably adjustable; a segment-shaped rack, 42, attached to the hub of the said wheel; and a worm, 38, mounted in bearings fixed on the rotatable cam and said worm meshing with the segment-rack.

6. In a confectionery machine, the combi-

nation of a dough receiver having in its bottom openings or tubes; a slide cut-off plate in the bottom of said receiver having openings to register with those in said bottom; a lever, 27, carrying at one end a roller; suitable connections between the slide cut-off plate and said lever; a wheel having an internal rim forming one side of a cam-groove wherein the said lever-roller enters; and a cam central on said wheel and forming the other side of said cam-groove and rotatably adjustable so as to change the form of the cam-groove, whereby the dough cut-off openings may be kept open a longer or shorter time.

7. In an organized machine, the combination of a stationary dough receiver having in its bottom openings or tubes; a follower in the receiver; a continuously-revoluble shaft, 16; a clutch mechanism to intermittently transmit the motion of the continuously-revoluble shaft; mechanism to press down the follower and connections between said follower and the clutch mechanism; and an endless chain carrier to move the trays horizontally under the receiver, said carrier having an intermittent movement.

8. In an organized machine, the combination of a dough receiver having in its bottom openings or tubes; a follower in the receiver; a slide cut-off plate movable at the bottom of the receiver to open and close the said openings or tubes; and mechanism to bring pressure to bear on the follower intermittently, said pressure being exerted at the instant the slide cut-off plate moves to open the dough drop openings.

9. In an organized machine, the combination of a dough receiver having in its bottom openings or tubes; a follower in the receiver; an elevator directly below the receiver to lift the trays up to the said openings; a slide cut-off plate movable at the bottom of the receiver to open and close the said openings or tubes; and mechanism to bring pressure to bear on the follower intermittently, said pressure being exerted at the instant the slide cut-off plate moves to open the dough drop openings.

10. In a confectionery machine, the combination of a dough-receiver having in its bottom openings or tubes; a follower in the receiver; one or more screws to raise and lower the follower; means coacting with and operating the screws; a carrier to move the trays under the receiver; horizontal slides, 55, below the receiver; means to impart a vertical reciprocating movement to said slides; and a frame carrying a number of cut-off wires, said frame reciprocating horizontally in the said slides.

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

JOSEPH H. SMITH.

Witnesses:

C. C. HINES,

CHARLES B. MANN, Jr.