

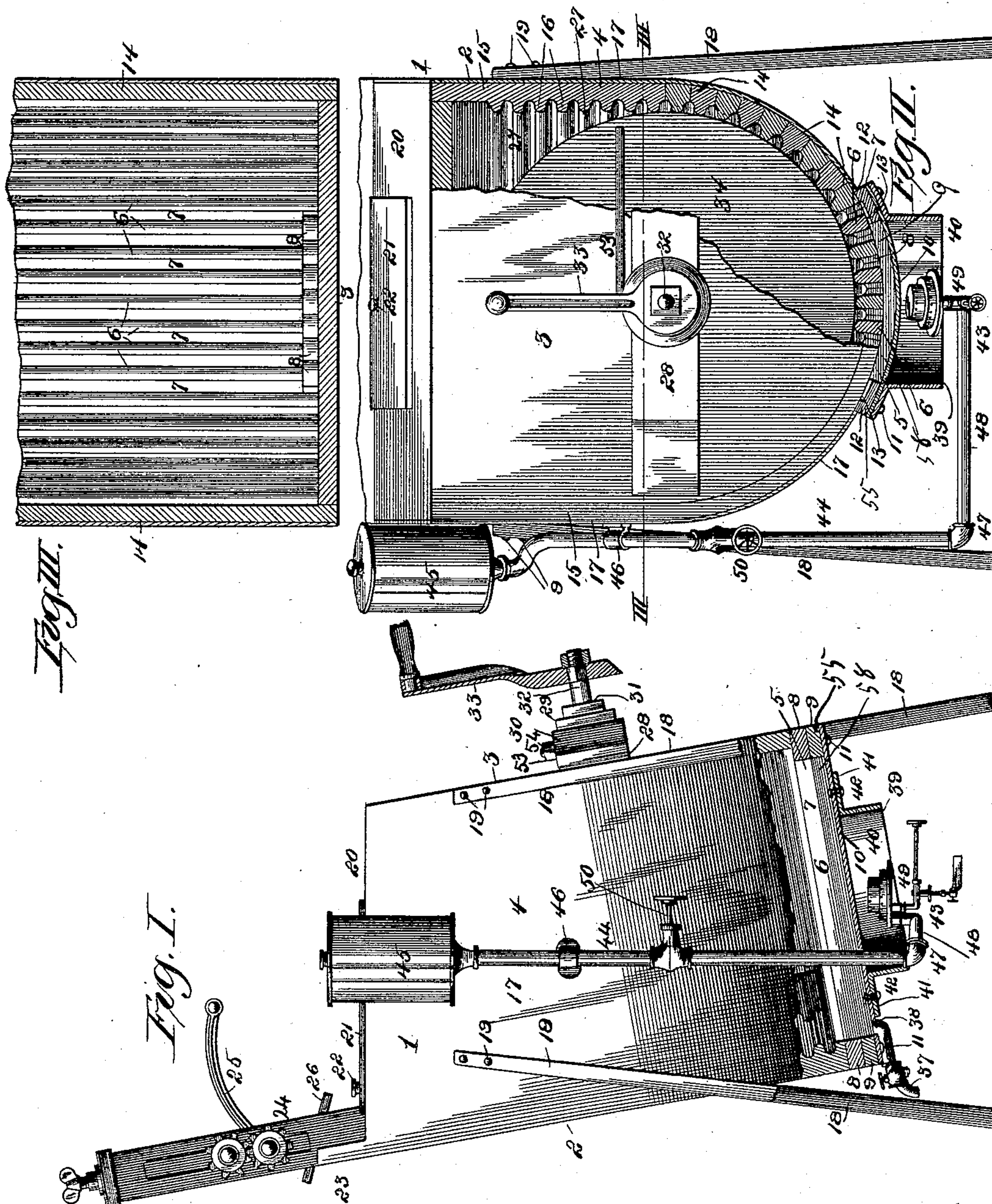
(No Model.)

3 Sheets—Sheet 1.

F. W. SCHUSTER & W. R. SCHNEIDER.  
WASHING MACHINE.

No. 488,094.

Patented Dec. 13, 1892.



Attest:  
George E. Bruce,  
Edward D. Knight.

Inventors:  
Fred<sup>W</sup> Wm. Schuster.  
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By Knight Bros.  
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(No Model.)

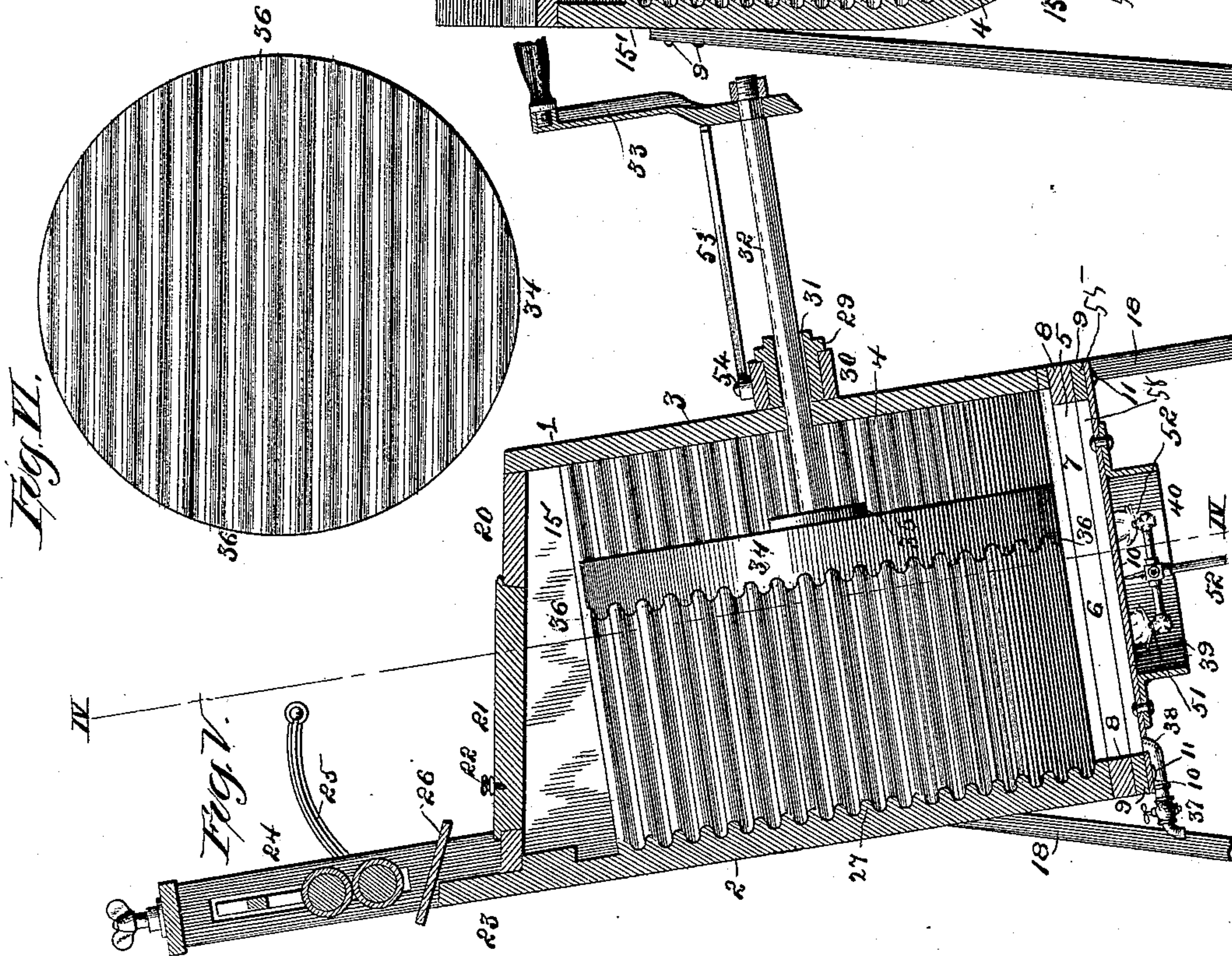
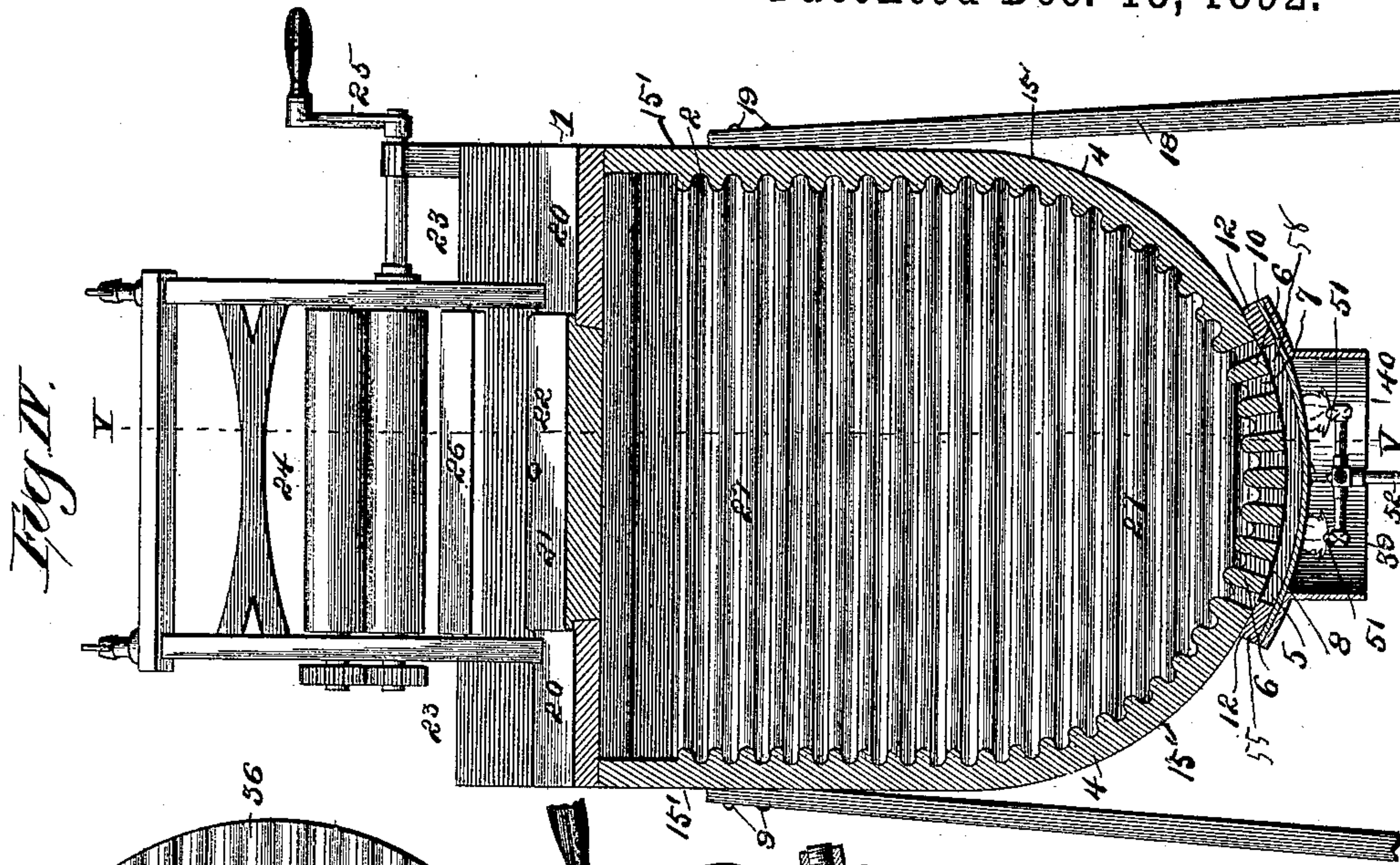
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F. W. SCHUSTER & W. R. SCHNEIDER.

WASHING MACHINE.

No. 488,094.

Patented Dec. 13, 1892.



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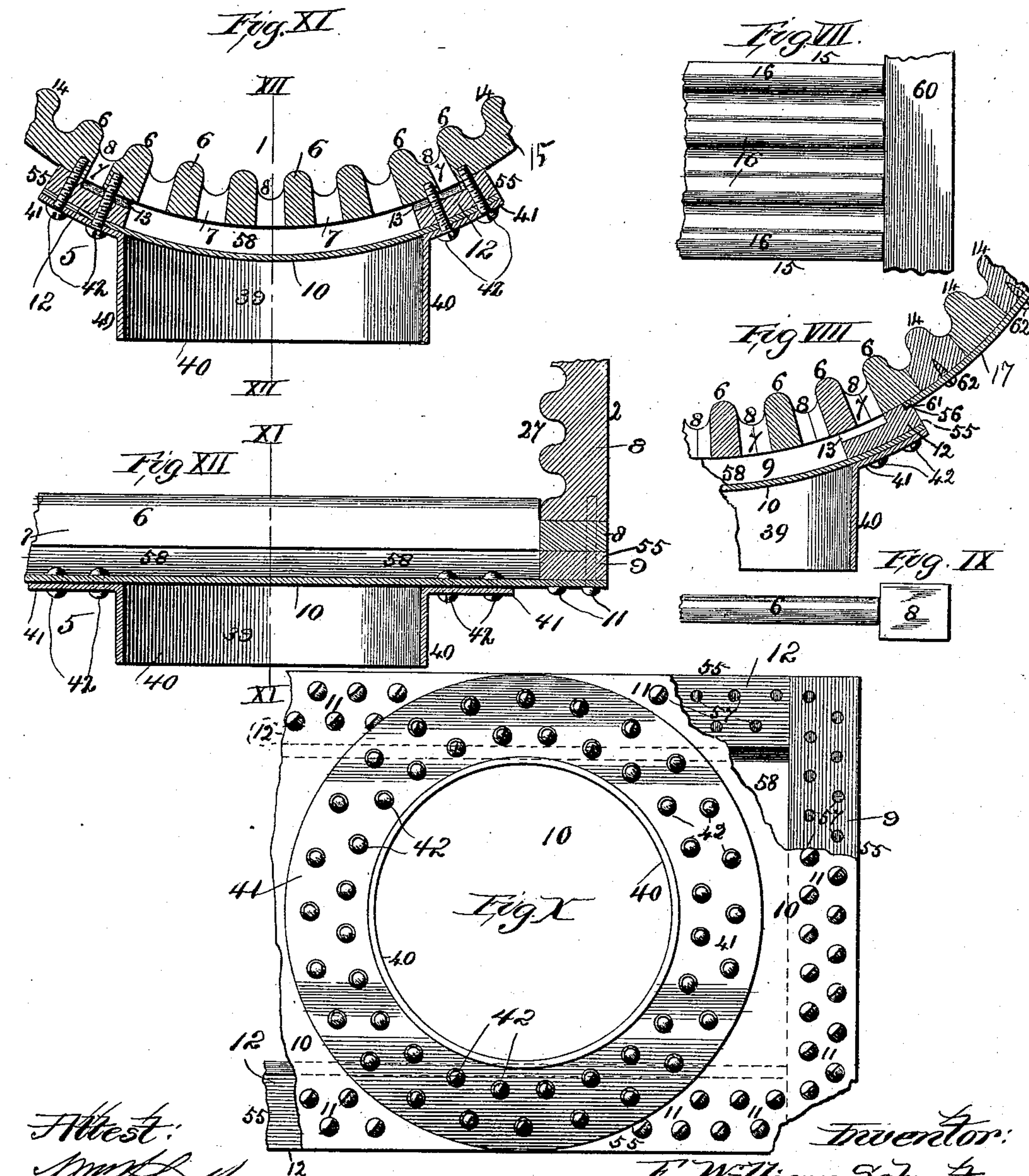
(No Model.)

3 Sheets—Sheet 3.

F. W. SCHUSTER & W. R. SCHNEIDER.  
WASHING MACHINE.

No. 488,094.

Patented Dec. 13, 1892.



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# UNITED STATES PATENT OFFICE.

FREDERICK WILLIAM SCHUSTER AND WILLIAM ROBERT SCHNEIDER, OF  
ST. LOUIS, MISSOURI.

## WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 488,094, dated December 13, 1892.

Application filed February 29, 1892. Serial No. 423,233. (No model.)

*To all whom it may concern:*

Be it known that we, FREDERICK WILLIAM SCHUSTER and WILLIAM ROBERT SCHNEIDER, both of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Self-Heating and Self-Adjusting Washing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a self-heating washing-machine in which the burners that effect the heating play on a copper arc-shaped heating-plate that forms the central bottom of the drum-tank of the washer and underlies the open water-spaces between the bottom corrugated bars to raise the temperature of the water, the said drum-tank having a corrugated surface around its periphery on either side and bottom and a corrugated back wall, the said drum-tank having a downward pitch toward the rear and being provided with a rubber disk with a corrugated face, the journal-bearing of whose crank-shaft is on a like incline to that of the drum-tank, thereby enforcing the downward pressure of said rubber corrugated disk as it rotates and rubs against the clothes that are immersed in the hot studs between said rotary corrugated rubber disk and said corrugated back wall; and the invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a side elevation of our preferred form of said washer with part of the drum broken away to show in section the position of the bottom copper heating-plate, the gasoline-burner, the hot-air chamber around the burner, one of the open spaces between the corrugated bars at bottom, by which spaces the water finds free access to the heating-plate, and the intact marginal edges of the bottom of the corrugated drum, which edges carry the individual bottom corrugated bars between which the water passes. Fig. II is a front elevation of the machine with part broken away and part in section and shows the heating-plate, the bottom corrugated bars with the cut-out spaces between them for the free passage of the water to the heating-plate,

the far marginal arc edge that carries its end of said corrugated bars, the sectional corrugated bars around the remainder of the arc curve of the drum, the straight corrugated side above said arc, and the metal plate that incases said sectional corrugated bars and said straight surmounting corrugated sides. Fig. III is a detail section taken on line III III, Fig. II, and show the corrugated bottom, the corrugated bars, individually intact, with the marginal edges that carry them and with a free open passage for the water between said bars, and the sectional corrugated bars around the remainder of the arc, with the metal casing that incloses said sectional corrugated bars. Fig. IV is an approximately-vertical section taken on line IV IV, Fig. V, and shows a modification in which the corrugated drum is integral, its arc portion being bent into shape, and the marginal edges that carry the ends of the bottom corrugated bars are in construction bent around the former with the rest of the arc of the corrugated drum, so as to firmly hold all parts of the modified integral corrugated drum in right position. The said figure also shows gas-jets instead of gasoline as the heating means. Fig. V is a vertical section taken on line V V, Fig. IV, and shows the rear back position of the drum-tank and the consequent rearward pressure against the clothes, while working, of the rotary crank-operated corrugated disk. Fig. VI is a view of the working side of the rotary corrugated disk. Fig. VII is an enlarged inside view and shows a detail of one of the vertical integral corrugated side sections of the drum-tank. It also shows the integral internally-corrugated construction of said surmounting vertical side sections. Fig. VIII is an enlarged detail view and shows the hot-air chamber, the heating-plate that surmounts said chamber, the individual corrugated bars that occupy the arc exterior of the drum, one of the spacing strips or sides of the bed-frame between said heating-plate and said bars, the intervening spaces between the bottom corrugated bars for the passage of hot suds, and the incasing-plate that incloses around the drum-tank. Fig. IX is an enlarged detail of one of said individual bottom corrugated bars and shows one of its enlarged marginal heads at the end



that insure an intervening space between said bars for the passage of water and suds. Fig. X is an enlarged bottom view and shows the hot-air chamber, the circular metallic in-  
 5 closure of said chamber, its flange riveted to the heating-plate, and said heating-plate riveted or bolted to the intervening spacer-frame that holds said heater-plate aloof from the corrugated drum. Fig. XI is an enlarged ver-  
 10 tical section taken on line XI XI, Fig. XII, and shows the bottom of the drum-tank of a modification in which the corrugated bars of said drum-tank are made integral in one  
 15 piece of timber and bent to shape, there being intervening spaces or slots between the bottom integral bars and no incasing plate, and the heating-plate on a transverse line to  
 20 that of the corrugated bars being of arc form; and Fig. XII is an enlarged vertical section taken on line XII XII, Fig. XI, and shows the heating-plate where on line with the corru-  
 25 gated bars on a straight line parallel with said bars, making a hot-suds intercommunicatory chamber between said heating-plate and said  
 corrugated bars. It also shows the corrugated back of the drum-tank.

Referring to the drawings, 1 represents the drum-tank of the washing-machine, which is inclined over rearward, so as to constitute a  
 30 working presentation toward the corrugated inside friction-surface 27 of the rear side or back wall 2 of said tank. 3 is the front side, and 4 is the circular-bottomed drum that connects said rear and front sides.

5 represents the bottom section or series of individual corrugated bars 6, of which there are preferably about eight or nine, and 7 are  
 40 cut-away open spaces which extend along the sides of said bars, with the exception of their marginal ends or supporting-heads 8 and with the exception of the upper sides of the upper  
 45 ones of said bars 6, which are not cut away, but straight-joint with the succeeding corrugated individual bars 14. The said cut-aways provide a free intercourse between said cor-  
 50 rugated bars 6 for the passage of hot water and suds. The said marginal ends or heads 8 fit, respectively, snugly against each other, the fitting sides of said heads being slightly conical or bevel form, so as when congregated to-  
 55 gether to present the arc form of the bottom of the drum of the tank as seen in Figs. III and VIII.

9 represents the end and 12 the side bars of the spacing bed-frame 55, the said end bars being curved to the arc form of the bottom of the drum-tank on the line transverse to that  
 60 of the corrugated bars, and, on the other hand, said bars 12 of the bed-frame are straight to conform on line therewith to said individual longitudinally-straight corrugated bars.

10 represents a heating-plate, which is preferably made of copper, but may be of galvanized iron or any other suitable material. The  
 65 said heating-plate is conformed to the shape and size of the under surface of said arc-curved bed-frame, to which it fits, and is se-

cured by the screw-bolts 11, which pass through and are seated in coincident perforations 57 in said heating-plate 10 and said  
 70 bed-frame 55 and are screw-seated in the lower edges of the corrugated bars 6 and of their heads 8 and in front and rear are also screw-seated in the back wall 2 and front wall 3, so that said bed-frame and heating-plate  
 75 are securely attached to the tank. The heads 8 of said corrugated bars 6 rest on said curved or concave end bars 9 of said bed-frame. It will thus be seen that said corrugated bars are  
 80 elevated by said bed-frame sufficiently above the heating-plate 10 to constitute the heating water and suds chamber 58, which has free intercourse with the water and suds in the tank above *via* the cut-away spaces 7 between  
 85 the adjacent sides of said individual corrugated bars. 13 are channel-spaces that are formed by cut-aways in portions of the tops of the sides 12 of the bed-frame 55, which interspaces communicate between the outer cut-  
 90 away spaces 7 and the heating water and suds chamber 58, and thus form supplemental intercommunicatory channels for the suds and water in their passage to and from said heating-chamber. It will thus be seen that by said bot-  
 95 tom corrugated bars 6, with their intervening open interspaces 7, the supporting-heads 8 of said bars resting on the curved end pieces 9 of the bed-frame 55, an open grating is formed, through which the suds and water pass freely  
 100 to and from the heating-chamber 58. The said heads 8 of said corrugated bars fit tightly together, and thus hold from crowding down together and filling the interspaces 7. The outer sides of the outer ones of said corrugated bars 6 are not cut away, but fit all along the way  
 105 from end to end to the lower ones of a series of individual tight-jointed corrugated bars 14, of which there may be seven or eight on each side of the drum-tank, (more or less,) that fill the space between said corrugated bars 6 and  
 110 the vertical integral sections 15 of the walls of said drum, which upper integral sections ascend with a straight smooth outer surface to the top or rim 59 of the tank. The insides of said sections are formed with a series of  
 115 corrugations 16, except the marginal edges 60, which are formed straight to match-joint with the aforesaid rear side or back wall 2 and front side 3.

The corrugated sections of the drum are  
 120 preferably made of wood, but may be of any other suitable material.

17 represents the metal casing-plate, that incloses all portions of the drum-tank except the part inclosed by the bed-frame 55, and the  
 125 lower edges 56 of said casing-plate are seated and securely held in the channel-groove 61 around the upper outer edges of said bed-frame, the opening cut out of the center of said casing-plate for the passage of the water  
 130 and suds to and from the heating-plate being slightly smaller than said bed-frame 55, so as to provide said insertion 56, that is seated around said bed-frame in said channel-groove



61. The said incasing plate is secured to the outside of the drum-tank by the screws 62.

18 represents the legs of the machine, which are secured thereto by the bolts 19. 20 is the cover that incloses the top of said machine, and 21 is its removable cover, that is lifted by the knob 22.

23 represents a surmounting lug that projects above the rear of the machine. 24 is the wringer, that is secured to said lug and is turned by the crank-handle 25, and 26 is the inclined drip-board, which runs the drippings from the clothes back into the machine during wringing.

27 represents the corrugated internal face of the rear side of the drum-tank.

28 represents a reinforce-bar, which is secured transversely about midway outside the front side 3 of the drum-tank.

29 represents an elongated journal-tube, which is fast-mounted in the box 30, that is secured to said reinforce-bar 28, and 31 is the water-tight journal-bearing which passes through said elongated tube 29 and through the front side of the drum-tank.

32 represents the progressively-inclined journal-shaft, which is worked in said bearings by the crank-handle 33, that is mounted thereon.

34 represents the rotary rubber disk, which is firmly mounted on the wide attachment-flange 35 on the inner end of said journal-shaft 32, and said disk has a corrugated face 36.

37 represents the draw-off cock, which enters the drum-tank at the lowest rear inclined corner through the outlet 38, in which said cock is tight-seated. It will be seen from the inclined rearward tilt of the machine that the used suds-water can be drawn clear off by said cock.

39 represents the hot-air chamber, which is inclosed by the circular sheet-metal inclosure 40, the surrounding surmounting flange 41 of which is secured to the heating-plate by the rivets or screw-bolts 42, which are seated in said parts and bring them up to a tight joint together. Screw-bolts are preferably used where the bars 12 of the bed-frame surmount said attachment-flange of the hot-air chamber, in which case said screws pass through said bed-frame and into the corrugated bars above. (See Figs. X and XI.)

43 represents a gasoline-burner, (see Figs. I and II,) whose vertical supply-pipe 44 carries the surmounting tank 45, and said pipe is secured to one side of the drum of the machine by the clutch-bracket 46. An elbow 47 at the foot of the primary vertical supply-pipe connects with the horizontal supply-pipe 48, which latter pipe is connected to the usual form of needle-valve aerated gasoline-burner 49, whose jets are approximately close to and heat the heating-plate 10, the supply of oil being controlled by the valve 50, that works in the vertical supply-pipe.

51 represents gas-jets, and 52 is the pipe that supplies said jets, which may be used

instead of the gasoline-burner when more convenient for heating purposes. (See Figs. IV and V.)

In Figs. IV, V, XI, and XII is shown a modification of the drum of the washing-tank in which said internally-corrugated drum is made integral in one piece 15' and bent on a former to its shape. In said modification the spaces between the corrugated bars that are located over the heating-plate are alike open, except at the marginal side strips 8, as in the previously-described preferred form, for the free intercourse of the hot water and suds between said bars. It will thus be seen, as shown in Figs. IV, V, XI, and XII, that both the construction as a whole and the functions of the modification are substantially the same as the preferred form; but the lower and intermediate corrugated bars 6 and 14 of the preferred form, surmounted by the integral corrugated side sections 15, are all integral in one piece in the modification, (although of the same conformation otherwise;) also, the lower corrugated bars 6 in both the preferred form and in the modification have the cut-aways 7 for the free passage back and forth of the water and suds in their cleansing mission. The counterpart of the heads 8 of the preferred form of the corrugated bars 6 is in the modification all in one piece, alike numbered 8; also, as the whole length of the corrugated bars 14 are integral with each other and also with the corrugated surmounting sides 15 above them, as well as with said corrugated bars 6 below, the whole integral construction in said modification after the usual steaming process can be and is bent in a former and retains its construction without the use of the casing-plate 17. When, as in said modification, the drum is made integral, the casing-plates shown in Figs. I, II, and VIII may be dispensed with, as, the drum itself being integral and bent to true shape on a former, the holding of said integrate drum form to said shape is effected by the rear and front sides. It is thus (not being divided into sections) securely held without said metal casing. (See Figs. IV, V, XI, and XII.)

53 represents a stay-bar, which is mounted by the pivot-bolt 54 on the box 30, that carries the journal-tube 29. When the rotary corrugated rubber disk 34, with the shaft that carries it, are retired to the position shown in Fig. V when the lid 21 is removed for either the reception or withdrawal of the clothes, the said stay-bar is turned round on its pivot-bolt until its far end comes in contact with the inner side of the crank-handle 33, and thus holds said rubber disk from pressing down on the clothes at said times of insertion and of withdrawal. (See Fig. V.) When the machine is again ready for starting with its quota of clothes to be washed inserted therein, the said stay-bar is turned back into its inoperative position. (See Figs. I and II.) The crank-handle 33 is then turned around and its journal-shaft 32, running in downwardly-inclined



bearings in the elongated journal-tube 29, forces the rubber disk 34 it carries and rotates it against the clothes being washed. The said downwardly - inclined rotating corrugated rubber disk as it presses and rubs against the clothes forces them against the stationary corrugated back and against the also-stationary corrugated arc drum of the tank. The said rotary rubber thus both presses against the clothes in the hot suds and squeezes them against said stationary corrugated parts and rubs them over the same, while at the same time its corrugated face also directly rubs the clothes itself and squeezes out the dirty suds.

The suds may be either heated by the burners from the first or hot suds be supplied to the machine, and the burners are then used for keeping up the heat and increasing the same, or said burners may be used for the continued boiling of the clothes—as, for instance, for bleaching purposes after washing.

We claim as our invention—

1. In a washing-machine, the combination of the drum-tank tilted from the bottom rearward, the drum of said tank having the arc-placed corrugated bars 6, the said bars integrally connected by the marginal strips 8 and provided with intervening open spaces 7 for the free intercourse of the water, the heating-plate 10, and the burners beneath said plate, substantially as described.

2. In a washing-machine, the combination of the tilted drum-tank of the machine, the drum of said tank having the arc-placed corrugated bars 6, the said bars being integrally connected at their ends and provided with intervening open spaces for the intercourse of the water, the heating-plate 10 beneath said openings, the burners beneath said plate, the said drum also having the corrugated sectional bars 14 and the vertical surmounting plurally-corrugated sections 15, the casing-plate 17, and the inclined self-adjusting rotary corrugated rubber disk 34, substantially as described.

3. In a washing-machine, the combination of the inclined drum-tank, the internally-corrugated back of said tank, the internally-corrugated drum, the said drum having separably-spaced corrugated bars at its lower end, the said bars being connected by the integral margin-strips 8 at their ends and provided with intervening spaces 7 for the intercourse of the water, the heating-plate 10 beneath said open spaces, the burners beneath said heating-plate, the metal-wall inclosure around said burners, and the spacing-strips 12, provided with the channel-spaces 13, which strips connect said heating-plate to said drum, and the self-adjusting corrugated rotary rubber disk 34, substantially as described.

4. In a washing-machine, the combination of the tilted drum-tank having the internally-corrugated rear side and the internally-corrugated drum and having interspaced corrugated bars 6 at the bottom of said drum, provided with the intervening water-channels 7, the heating-plate 10, the hot-air inclosed chamber beneath said heating-plate, the burner secured to said drum-tank, the self-adjusting inclined rotary rubber disk having a corrugated face, the lid 21 of said tank, and the straddle-legs 18, that support the inclined tank in its tilted position, substantially as described.

5. In a washing-machine, the combination of the inwardly-corrugated drum-tank 1, provided with the open spaces 7 between its lower corrugations for the passage of suds and water, the spacing bed-frame 55, provided with channel-groove and suds and water courses on its sides 12, and said frame inclosing around the heating-chamber 58, the heating-plate 10, and the tubular inclosure 40 of the hot-air chamber 39, substantially as described.

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In presence of—

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SAML. KNIGHT.