

No. 662,666.

Patented Nov. 27, 1900.

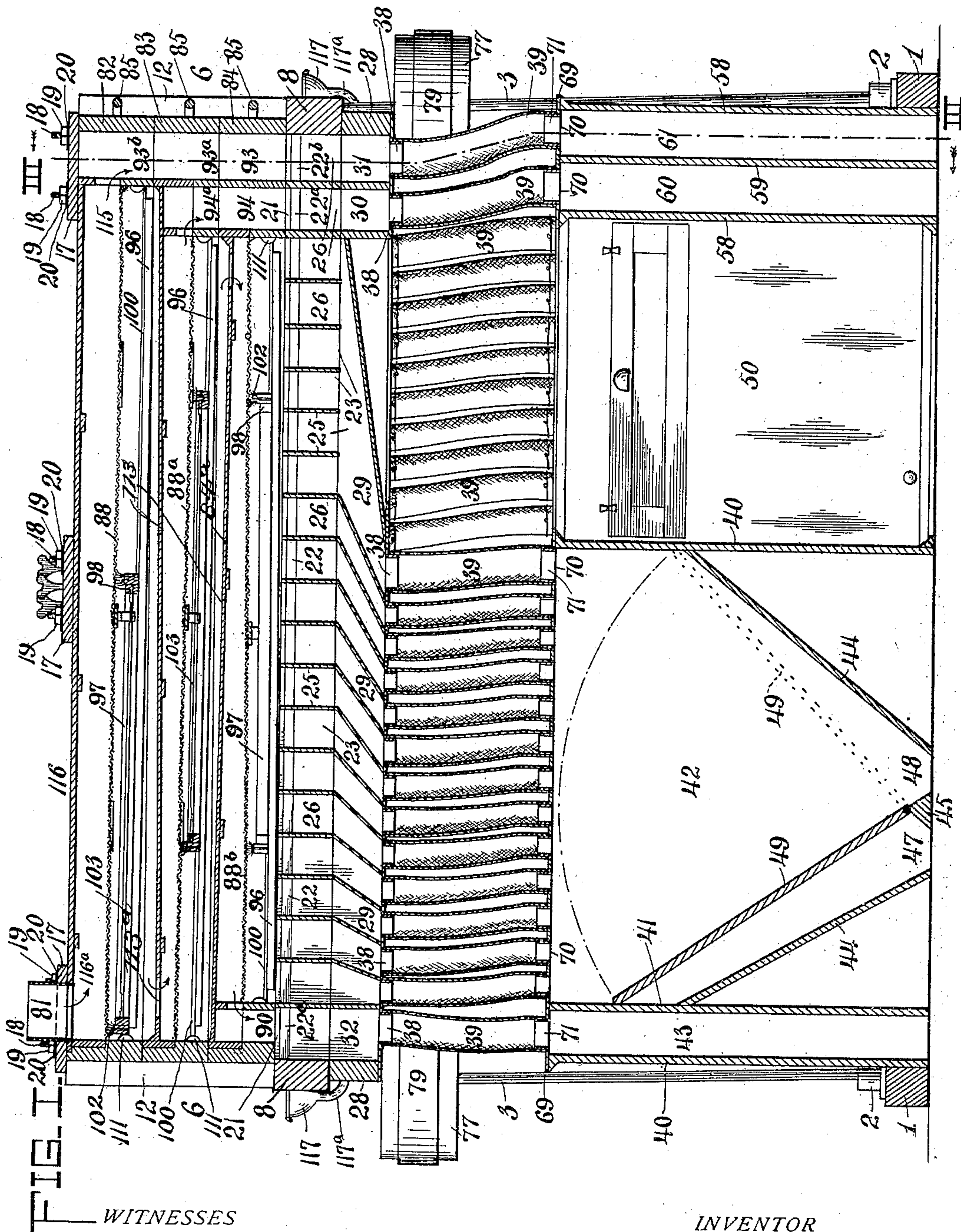
W. L. BURNER.

BOLTER.

(Application filed Feb. 27, 1900.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES

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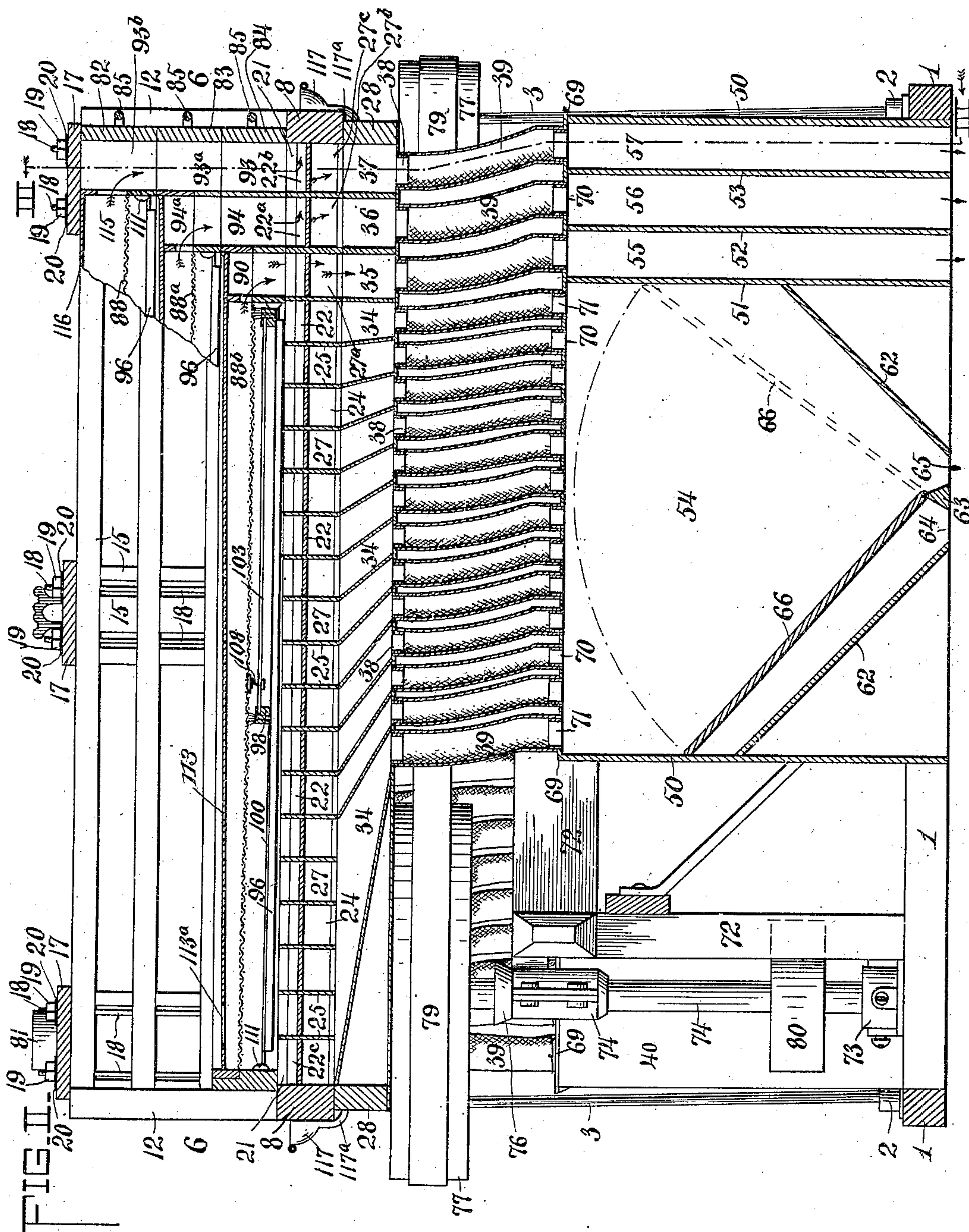
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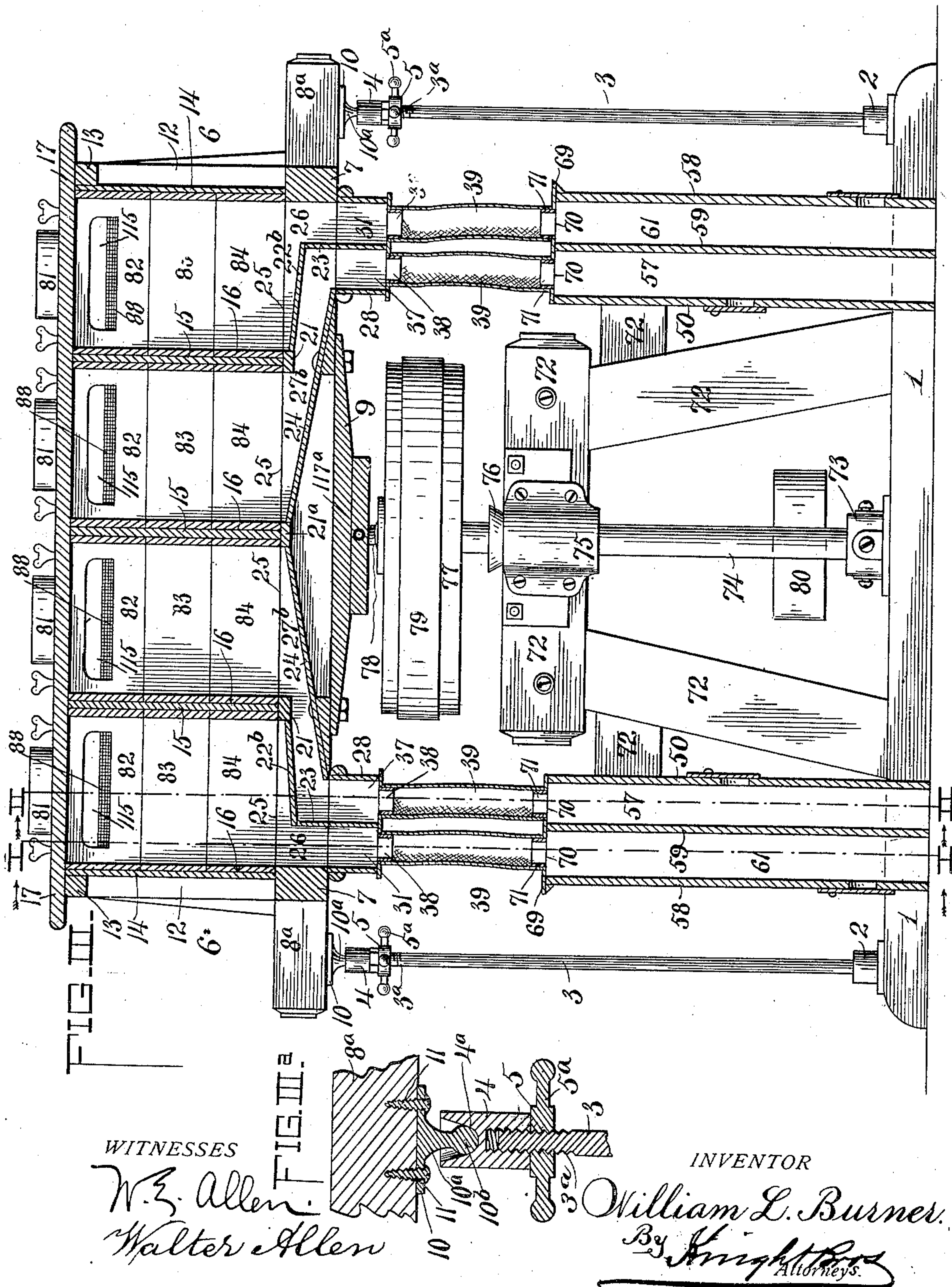
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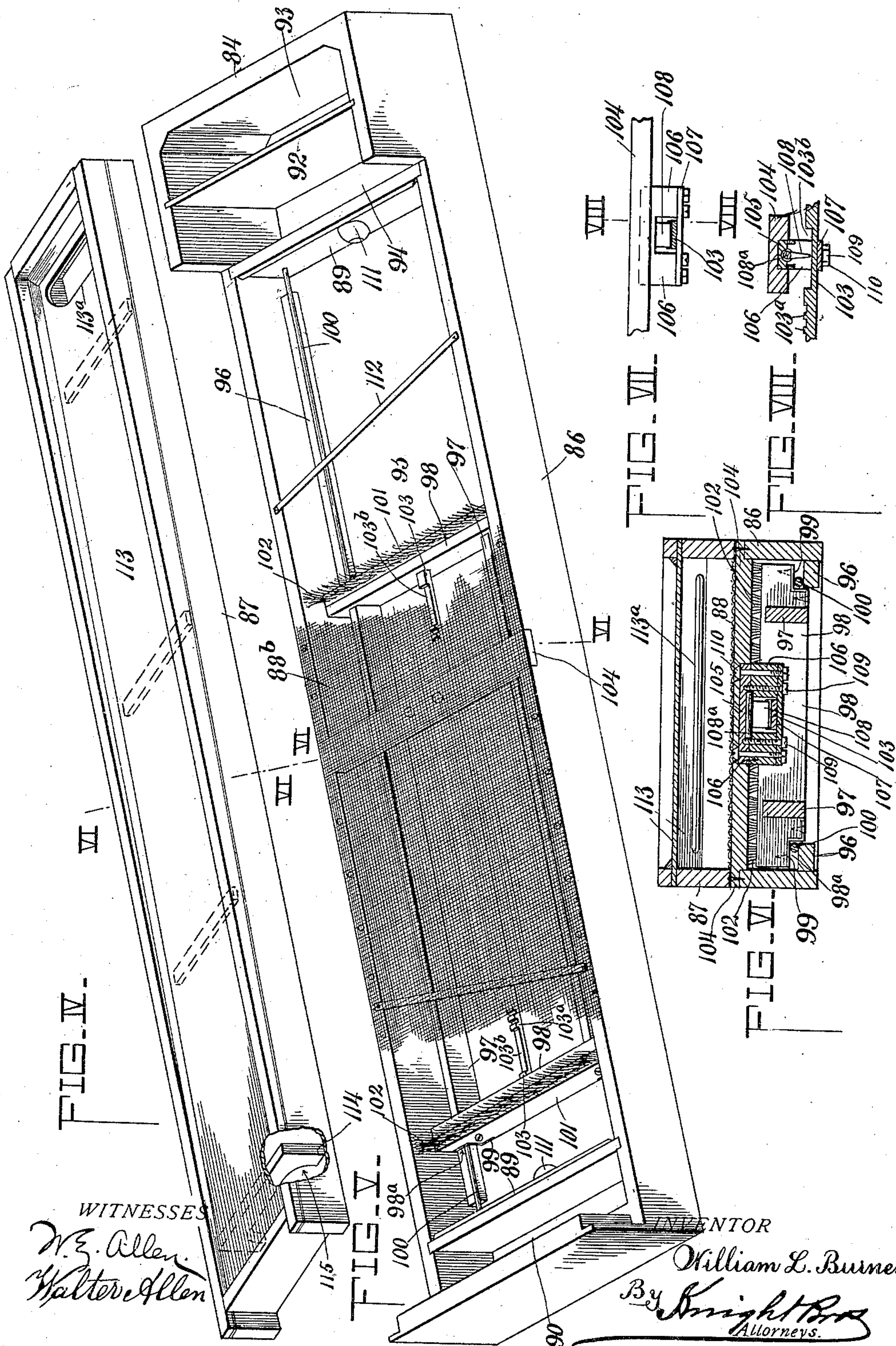
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# UNITED STATES PATENT OFFICE.

WILLIAM L. BURNER, OF COLUMBUS, OHIO, ASSIGNOR TO THE CASE  
MANUFACTURING COMPANY, OF SAME PLACE.

## BOLTER.

SPECIFICATION forming part of Letters Patent No. 662,666, dated November 27, 1900.

Application filed February 27, 1900. Serial No. 6,750. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM L. BURNER, a citizen of the United States, and a resident of Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Bolters, of which the following is a specification.

My present invention is an improvement on that construction of bolter shown, described, and claimed in United States Letters Patent No. 645,453, granted March 13, 1900, for improvement in bolters on my application filed the 1st day of February, 1898, Serial No. 668,764.

My improvements consist in certain novel features of construction whereby the usefulness of such a machine is greatly enhanced, as hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure I is a vertical longitudinal section of my improved bolter on the line I I, Fig. III. Fig. II is a vertical longitudinal section of the same on the line II II, Fig. III. Fig. III is a vertical transverse section of the same on the line III III, Figs. I and II. Fig. III<sup>a</sup> is a detail vertical section of a bearing-bracket and socket-nut. Fig. IV is a perspective view of the upper member of a lower outer sieve drawer or box. Fig. V is a perspective view of the lower member of the same. Fig. VI is a vertical transverse section on the line VI VI, Figs. IV and V. Fig. VII is a detail elevation of the cross-bar and pawl-supporting block and a transverse section of the rack-bar. Fig. VIII is a vertical transverse section on the line VIII VIII, Fig. VII.

1 is the base-frame of the machine, on which the screen and the power mechanism for shaking the screen are supported. At each corner of the base-frame are located step-bearings 2, in which the lower ends of screen-supporting rods 3 are loosely inserted, so as to enable them to vibrate therein. The upper ends of these rods are formed with screw-threads 3<sup>a</sup> to adapt them to receive nuts 4, which have sockets 4<sup>a</sup>, and are adjustable thereon for leveling the screen and locked and held at the required height by lock-nuts 5, which are pro-

vided with radial arms 5<sup>a</sup> for hand adjustment and are located thereunder.

6 is the screen, having a supporting-frame comprising longitudinal side timbers 7 and transverse end timbers 8, having extensions 8<sup>a</sup> and secured to the longitudinal timbers.

9 represents end blocks forming tables for the screen and bolted thereto over the power device.

10 represents metal bearing-brackets secured by suitable fastenings 11 to the under side of the extensions 8<sup>a</sup> of the screen-supporting frame. These brackets have pendent conical parts 10<sup>a</sup>, formed with rounded bearings 10<sup>b</sup>, located in the sockets 4<sup>a</sup> of the nuts 4, whereby the screen-supporting frame is loosely mounted on the screen-supporting rods 3.

12 represents uprights located on and secured to the screen-supporting frame and surmounted by longitudinal timbers 13 for bracing the body of the screen.

14 represents longitudinal side walls, and 15 represents longitudinal skeleton partitions dividing the space between the side walls into a series of sieve-compartments 16. Extending across the top of the body are a series of bracing-strips 17, secured by vertical tie-rods 18, fastened at their lower ends to the screen-supporting frame and provided with securing-nuts 19 and washers 20 above the strips. Beneath the longitudinal partitions 15 the screen-supporting frame is provided with longitudinal outer strips 21 and with a central strip 21<sup>a</sup>, from which extend the intermediate tie-rods 18. Inclined outwardly from the outer strips 21 are longitudinal upper outer bottoms 22, leading to vertical longitudinal partitions 23, and also inclined outwardly from the central strip 21<sup>a</sup> are longitudinal lower inner bottoms 24, extending to a point beneath the outer bottoms. The outer and inner bottoms are divided by transverse partitions 25 into outer chutes 26 and inner chutes 27. Beneath the discharge ends of the chutes of the screen-supporting frame and secured thereto are subframes 28, each subframe having a series of outer spouts 29, inclined longitudinally toward one end of the screen, two outer vertical spout-sections 30 and 31, located at one end of the subframe,



an outer vertical spout-section 32, located at the other end of the subframe, a series of inner spouts 34, inclined longitudinally toward the other end of the screen, and three inner vertical spout-sections 35, 36, and 37, all located at one end of the subframe. The outer chutes 26 connect with the outer spouts 29 and the inner chutes 27 with the inner spouts 34. The chutes 22<sup>a</sup> 22<sup>b</sup> 22<sup>c</sup> and 27<sup>a</sup>, 27<sup>b</sup>, and 27<sup>c</sup> connect, respectively, with the spout-sections 30 31 32 and 35, 36, and 37. Each of the spouts and spout-sections at its discharge end is provided with a collar 38 for the attachment of its appropriate flexible sleeve or tube 39, through which the material is directed to its receiving chamber or receptacle. 40 are outer parts of the side casings, which are supported on the base-frame on the opposite sides thereof. Each outer part is divided by a vertical partition 41 into an outer receiving-chamber 42 and an outer receptacle 43. The receiving-chamber 42 is divided by downwardly-converging partitions 44 and a valve-bearing block 45, so as to provide two outlets 47 and 48 on opposite sides of the bearing-block 45, which are controlled by an upwardly-extending cant board or valve 49, which acts to conduct the material passing through the receiving-chamber in the desired direction, according to the position in which it is placed between that shown in full lines and that shown in dotted lines in Fig. I.

50 is an inner part of the casing divided by vertical partitions 51, 52, and 53 into an inner receiving-chamber 54 and inner receptacles 55, 56, and 57. In front of the inner part of the casing is an outer part 58, divided by a partition 59 into outer receptacles 60 and 61. The receiving-chamber 54 of the inner part is also divided by downwardly-converging partitions 62 and a valve-bearing block 63, so as to provide two outlets 64 and 65, which are controlled by an upwardly-extending cant board or valve 66, which acts to conduct the material passing through the receiving-chamber in the desired direction. This cant board or valve 66 can be moved from the position shown in full lines to the position shown in dotted lines, Fig. II. The top 69 of the casing is provided with openings 70, having collars 71 for the attachment of the flexible sleeves or tubes leading thereto.

72 is a suitable framing built on the base-frame for supporting the power device for shaking the screen.

73 represents step-bearings located on the base-frame, in which are inserted the lower ends of vertical shafts 74.

75 represents shaft-boxes surmounted by oil-cups 76. The upper ends of the shafts carry pulleys 77, each provided with an eccentrically-arranged pin 78, journaled in the central blocks of the screen and connected by a belt 79.

80 is a driving-pulley fixed to one of the vertical shafts.

81 represents feed-tubes located at one end of the sieve-compartments, through which the material to be treated is conducted to the screen. Located within each of the sieve-compartments 16 are a series of three removable sieve-drawers or sieve-boxes 82, 83, and 84, superposed one on the other and provided with handles 85, whereby they can be withdrawn. The construction of one of these sieve-drawers or sieve-boxes is clearly shown in detail in Figs. IV, V, VI, VII, and VIII, which represent the lower sieve-drawer or sieve-box 84 of an outer series thereof.

86 and 87 are respectively the lower and upper members of the sieve-drawer, fitted together, as shown. Between the two members is secured the sieve-cloth 88, inclined so as to tail toward the rear end thereof. The lower member is constructed near the ends thereof with transverse partitions 89, providing a single spout-section 90 at its rear end and a chamber at its front end subdivided by a partition 92 into an outer spout-section 93 and inner spout-section 94. The space between the transverse partitions 89 provides a brush-chamber 95. Extending along each side of the brush-chamber are rearwardly-inclined longitudinal strips 96, between and on which a brush-frame is adapted to slide back and forth, being propelled automatically, as hereinafter described. This brush-frame consists of a pair of longitudinal side pieces 97 and transverse end pieces 98, having recesses 98<sup>a</sup> at their ends provided with wear-plates 99 where they are adapted to slide on rearwardly-inclined longitudinal rods or rails 100, supported at their ends in the transverse partitions 89 and parallel with longitudinal strips 96. To the transverse end pieces 98 are secured the brush-strips 101, having upwardly-extending cleaning-brushes 102, bearing against the sieve-cloth. The brush-frame is automatically reciprocated by the following means:

103 is a longitudinal centrally-arranged rack-bar having upwardly-projecting teeth 103<sup>a</sup> and end depressions or recesses 103<sup>b</sup> and is supported in the transverse end pieces 98. Over the brush-chamber beneath the sieve-cloth is secured a centrally-arranged bar 104. Depending from this bar is a pawl-frame consisting of an inner plate 105, seated in the bar, journal-blocks 106, and outer plate 107.

108 is a pendent pawl having a pivot-pin 108<sup>a</sup>, whereby it is loosely mounted between the journal-blocks 106 and the inner plate 105. The outer plate 107 and journal-blocks 106 are secured to the inner plate 105 by bolts 109, and the pawl-frame is fastened to the transverse bar by bolts 110. The rack-bar 103 extends through the pawl-frame and slides therein, the movement of the screen causing the pawl 108 to engage with the teeth 103<sup>a</sup> of the rack-bar 103 and automatically advance the brush-frame step by step until the pawl reaches an end depression or recess



103<sup>b</sup>, where it assumes a pendent position and is automatically reversed by the movement of the screen to return the brush-frame.

111 represents spring-cushions or rubber buffers located on the transverse partitions 89 and adapted to receive the impact of the advancing brush-frame and to start it on its return trip simultaneously with the disengagement of the pawl, which causes the reversal of the latter. Located obliquely across the path of the cleaning-brushes 102 and secured to the lower member over the brush-chamber are brush-cleaning rods 112. The upper member 87 of the sieve-drawer has a forwardly-inclined carrying board or top 113, provided with an opening 113<sup>a</sup>, delivering the material onto the forward end of the sieve-cloth 88. Near the rear end of the carrying-board 113 and located over the rear transverse partition 89 is a bridge-piece 114 through the opening 115, beneath which the material tails off into the rear spout-section 90. The intermediate sieve-drawer 83 of the outer series of sieve-drawers has its sieve-cloth 88<sup>a</sup> inclined forwardly, so that the bridge-piece 114, with opening 115, is located at the forward end, and the material tails off into the spout-section 94<sup>a</sup> through spout-section 94. The carrying-board of this sieve-drawer 83 is inclined toward the rear end of the screen. Consequently the material tails off through opening 113<sup>a</sup>. The upper sieve-drawer 82 of the outer series has its sieve-cloth 83 inclined forward, so as to tail off through the end opening 115 into the spout-sections 93<sup>b</sup> 93<sup>a</sup> 93. The top 116 of this upper sieve-drawer 82 has an opening 116<sup>a</sup>, with which a feed-tube 81 is connected. The inner series of sieve-drawers have all their sieve-cloths inclined forwardly, as their respective spout-sections 90 94<sup>a</sup> 94 and 93<sup>b</sup> 93<sup>a</sup> 93 from the respective sieve-cloths 88 88<sup>a</sup> 88<sup>b</sup> are located at the front end of the screen. The sieve-cloths 88, 88<sup>a</sup>, and 88<sup>b</sup>, respectively, of the upper, intermediate, and lower sieve-drawers have different degrees of fineness, the lower sieve-cloth 88 being of the finest mesh. The carrying-boards 113 of the lower and intermediate sieve-drawers 84 83 are necessarily inclined rearwardly.

117 represents oil-cups having oil-tubes 117<sup>a</sup>, leading to the bearings of the eccentric-pins 78 in the central bearing-blocks 9. The material is sifted through the machine in the direction indicated by the arrows.

Both sides of the bolter are similar in construction, so that in describing one half of the machine the description sets forth the other half thereof.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A bolter comprising a base-frame, the step-bearings mounted thereon, a screen-supporting frame, the brackets depending from the screen-supporting frame and having conical parts formed with rounded bearings, the screen-supporting rods loosely inserted in the

step-bearings and having screw-threaded upper ends, the lock-nuts adjustable on the screw-threaded ends of the rods, and the nuts having sockets receiving the rounded bearings of the brackets and adjustable on the screw-threaded ends of the rods above the lock-nuts; substantially as described.

2. A bolter comprising side casings; each casing being constructed with an outer part having a front chamber and a front receptacle at one end of the casing, and an inner part having a rear chamber and three rear and two front receptacles at the other end of the casing, a screen having longitudinal sieve-compartments, a series of removable sieve-drawers located in each of the sieve-compartments, a screen-supporting frame constructed with transversely-partitioned outer and inner inclined bottoms extending toward the sides of the screen and the subframes each having a series of outer spouts inclined longitudinally in one direction toward the outer chamber of the casing and spout-sections in line with the front receptacles of the casing and a series of inner spouts inclined longitudinally in the other direction toward the inner chamber and spout-sections in line with the inner receptacles, and flexible sleeves connecting the inclined spouts with their chambers and the spout-sections with their receptacles; substantially as described.

3. A sieve-drawer comprising lower and upper members, the lower member being constructed with a transverse partition dividing it into a forward spout-section and into a brush-chamber, and the upper member being constructed with a top having a feed-opening and a bridge-piece providing a discharge-opening over the partition of the lower member, a sieve-cloth located between the lower and upper members and inclined toward the discharge-opening and a reciprocating brush within the brush-chamber; substantially as described.

4. A sieve-drawer comprising lower and upper members, the lower member being constructed with a transverse partition dividing it into an end chamber and into a brush-chamber, and a partition dividing the end chamber into outer and inner spout-sections, the upper member being constructed with a carrying-board having a discharge-opening and inclined toward the discharge-opening thereof, and a bridge-piece providing a discharge-opening over the lower member, a sieve-cloth on the lower member inclined toward the discharge-opening of the bridge-piece and a reciprocating brush within the brush-chamber; substantially as described.

5. A sieve-drawer comprising lower and upper members, the lower member being constructed with transverse partitions dividing it into a rear spout-section, into an end chamber, and into a brush-chamber, and a partition dividing the end chamber into outer and inner spout-sections, the upper member being constructed with a carrying-board having a



discharge-opening and inclined toward the discharge-opening thereof, and a bridge-piece providing a discharge-opening over the rear spout-section, a sieve-cloth inclined toward  
5 the discharge-opening of the bridge-piece and a reciprocating brush within the brush-chamber; substantially as described.

6. A sieve-drawer comprising a brush-chamber, the inclined longitudinal side strips, the  
10 inclined longitudinal rods, the brush-frame having longitudinal bars, and transverse bars formed with end recesses receiving the longitudinal rods upon which they slide, the brushes secured to the transverse bars, a cen-

trally-arranged longitudinal bar having end 15 depressions and secured to the transverse bars, a fixed transverse bar secured to the sieve-drawer, and a pendent pawl-frame secured to the fixed transverse bar carrying a pawl adapted to engage the centrally-ar- 20 ranged longitudinal bar which passes there-through for automatically reciprocating the brush-frame; substantially as described.

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Witnesses:

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