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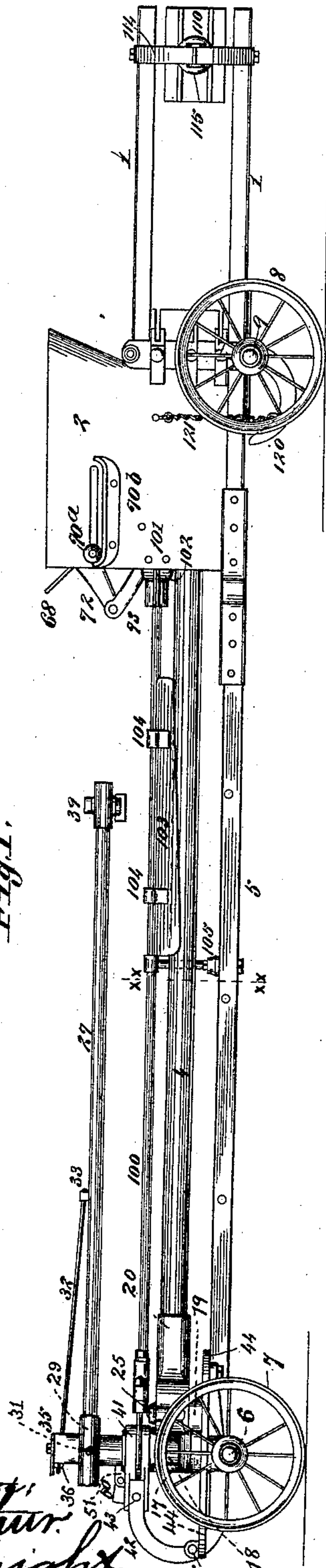
W. S. LIVENGOOD.
BALING PRESS.

5 Sheets—Sheet 1.

No. 422,236.

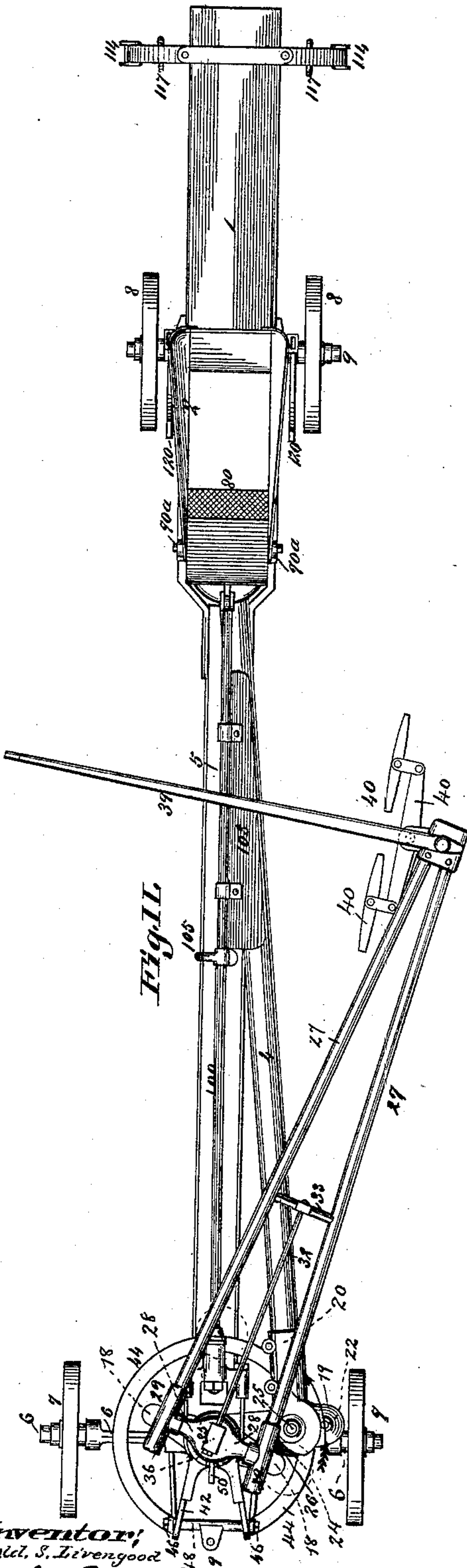
Patented Feb. 25, 1890.

Fig. I.



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Fig. II.



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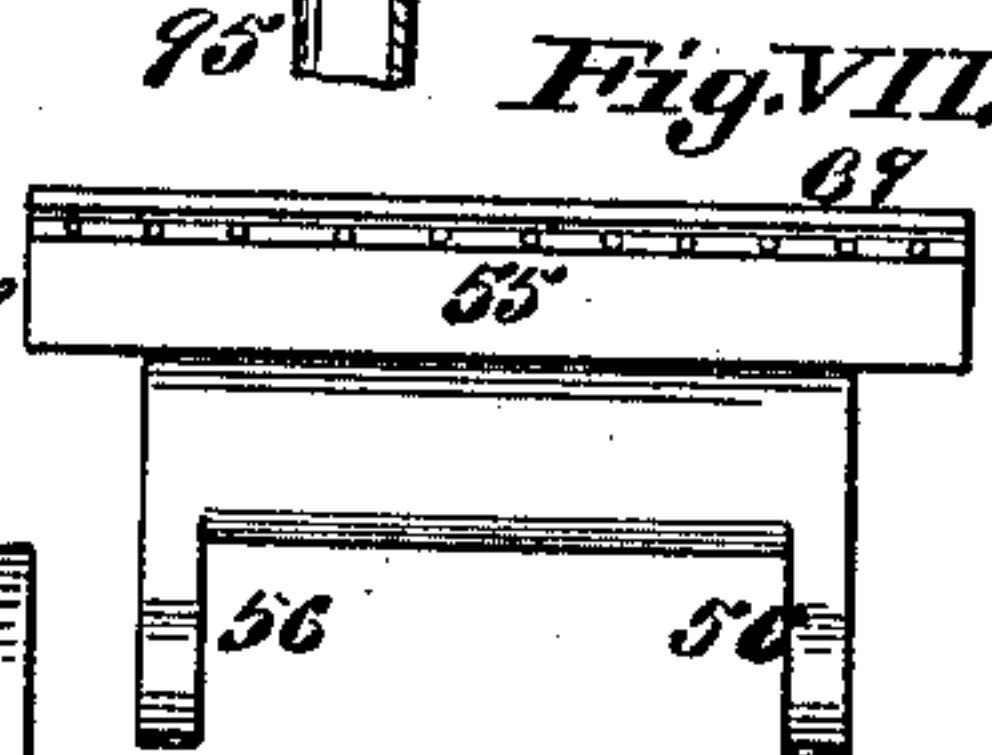
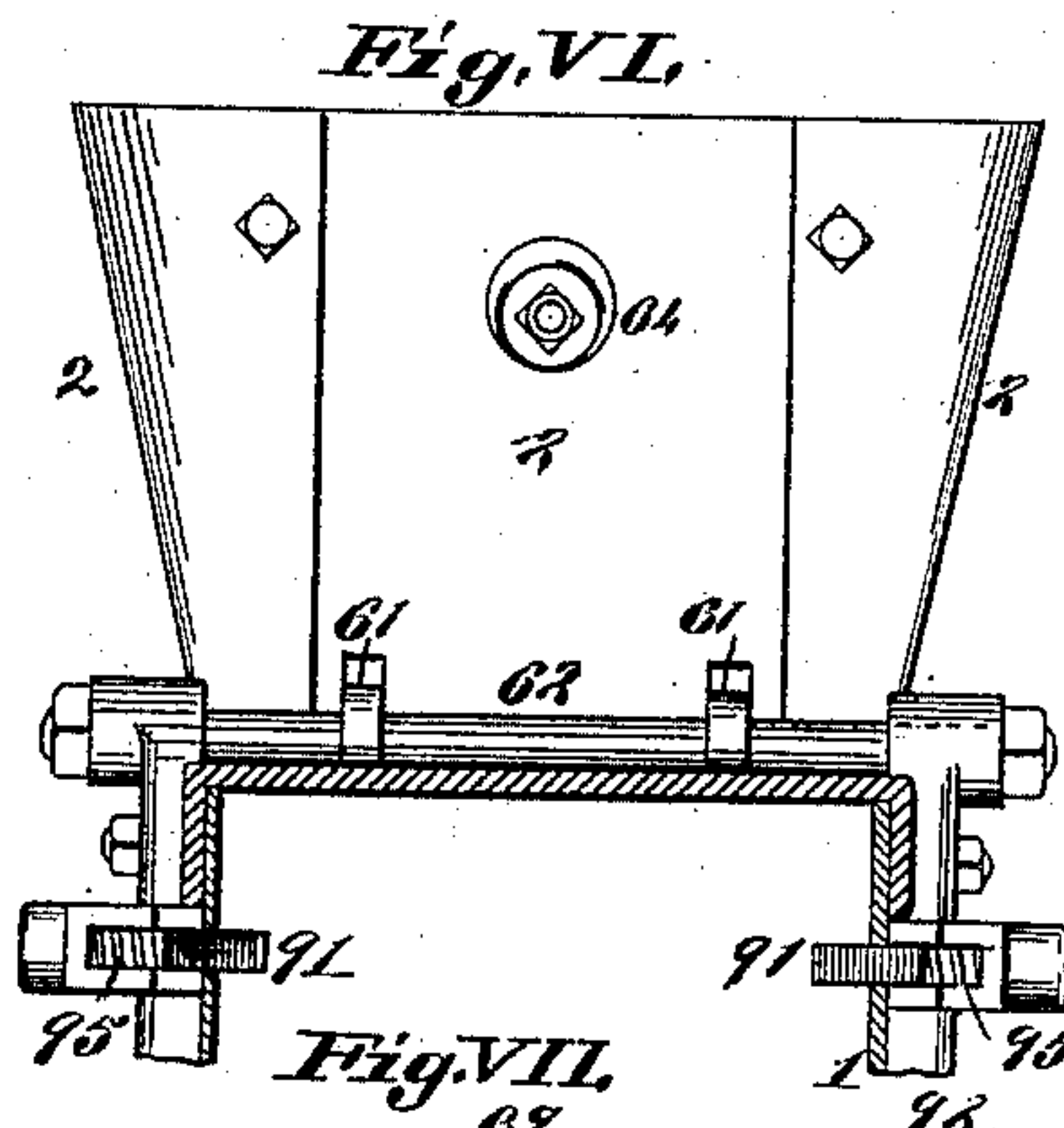
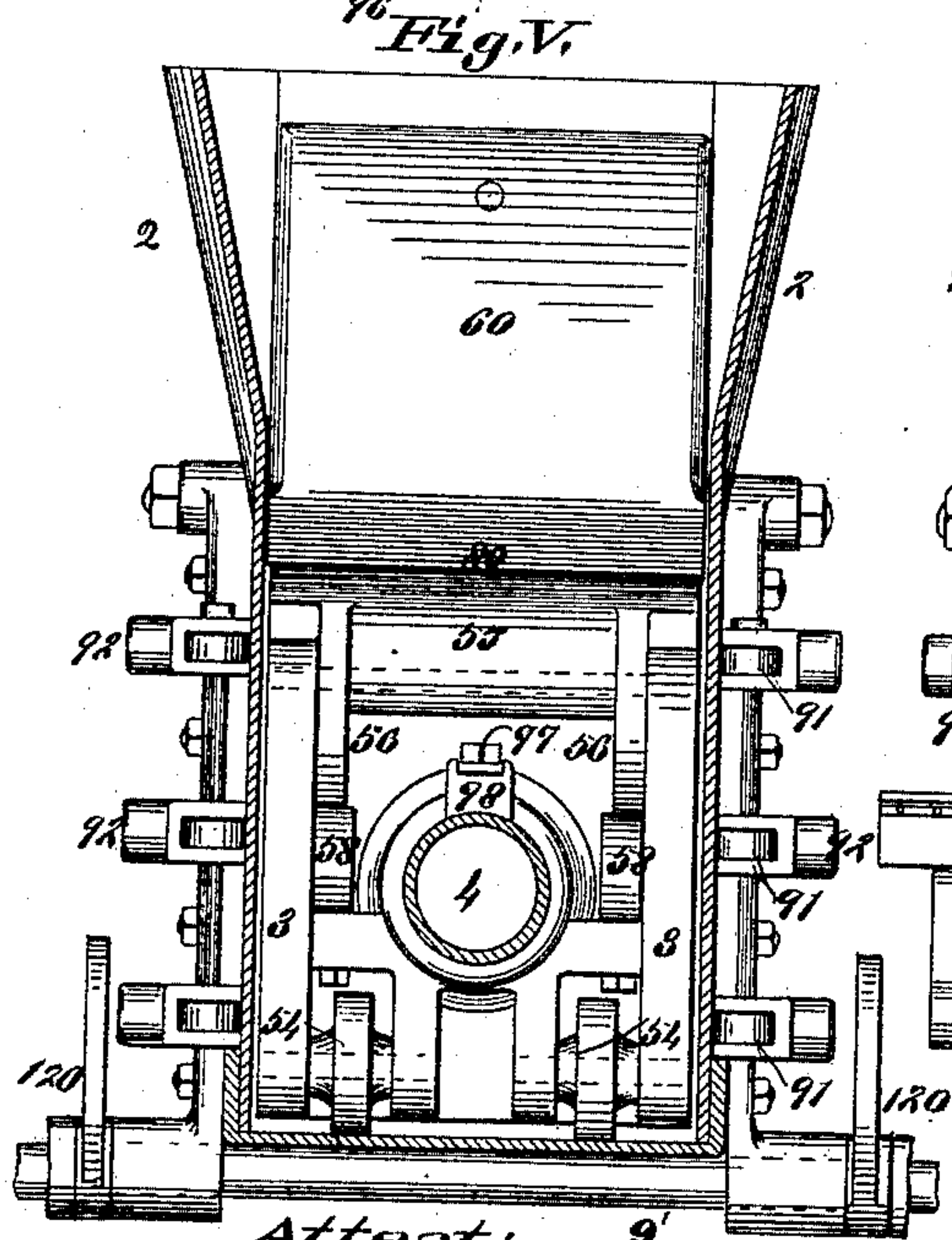
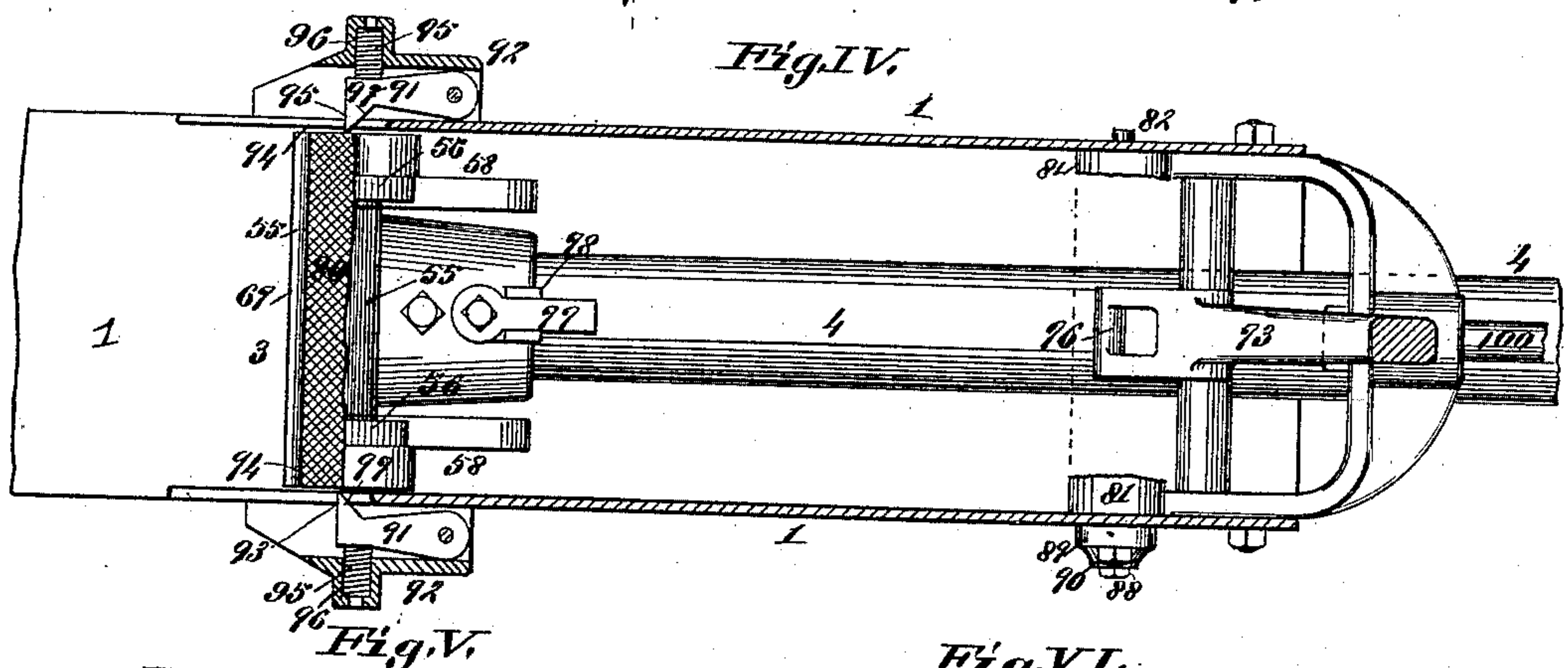
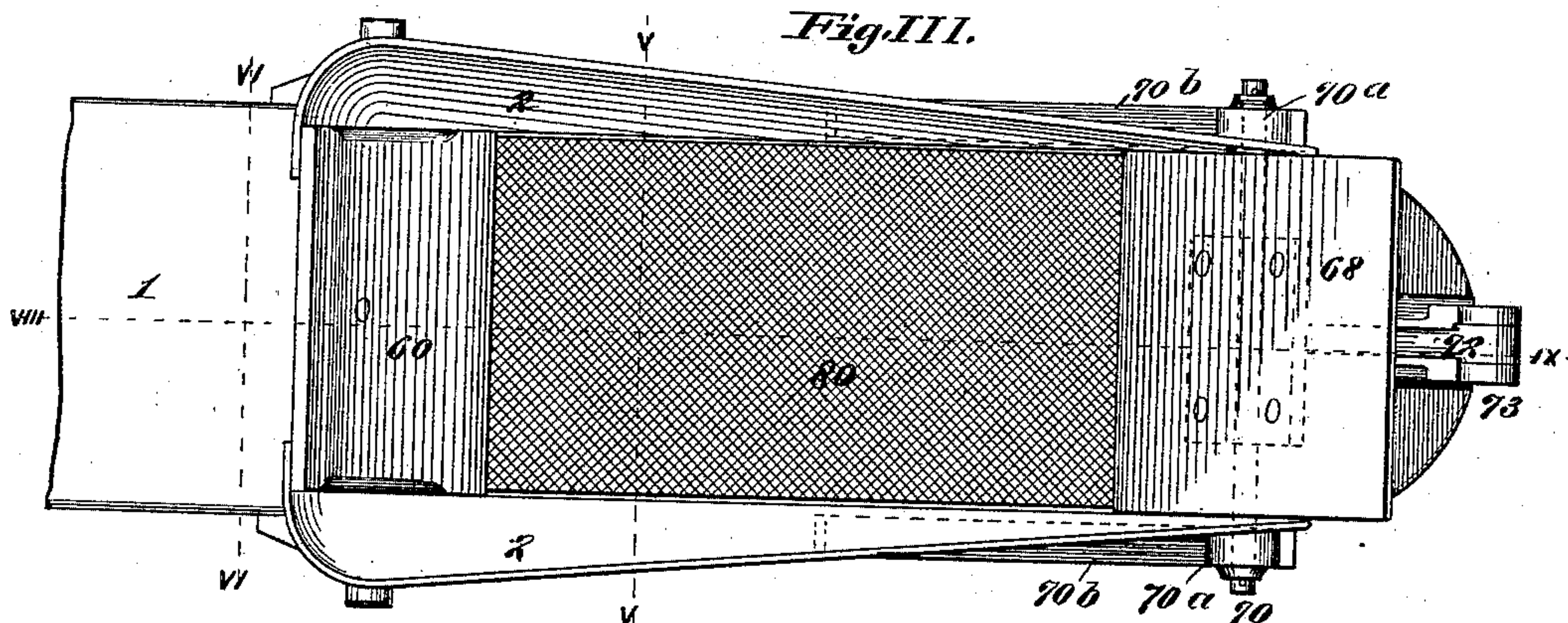
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5 Sheets—Sheet 2.

No. 422,236.

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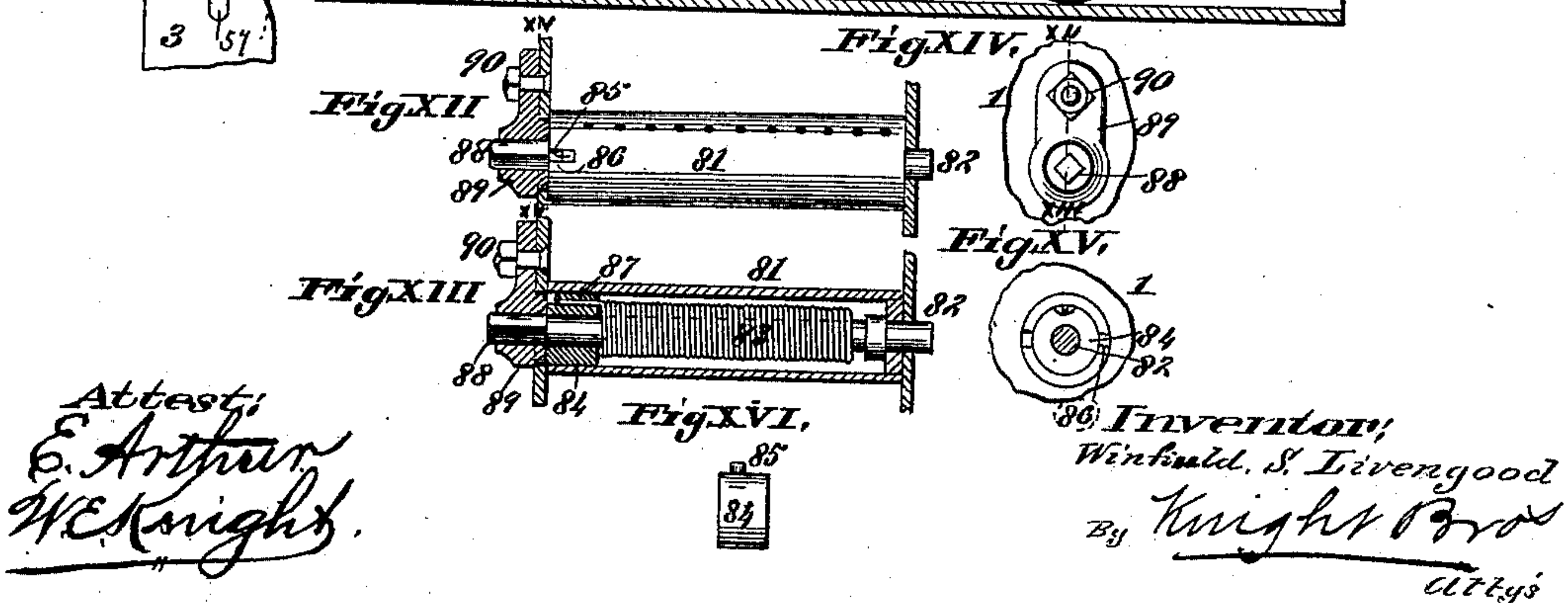
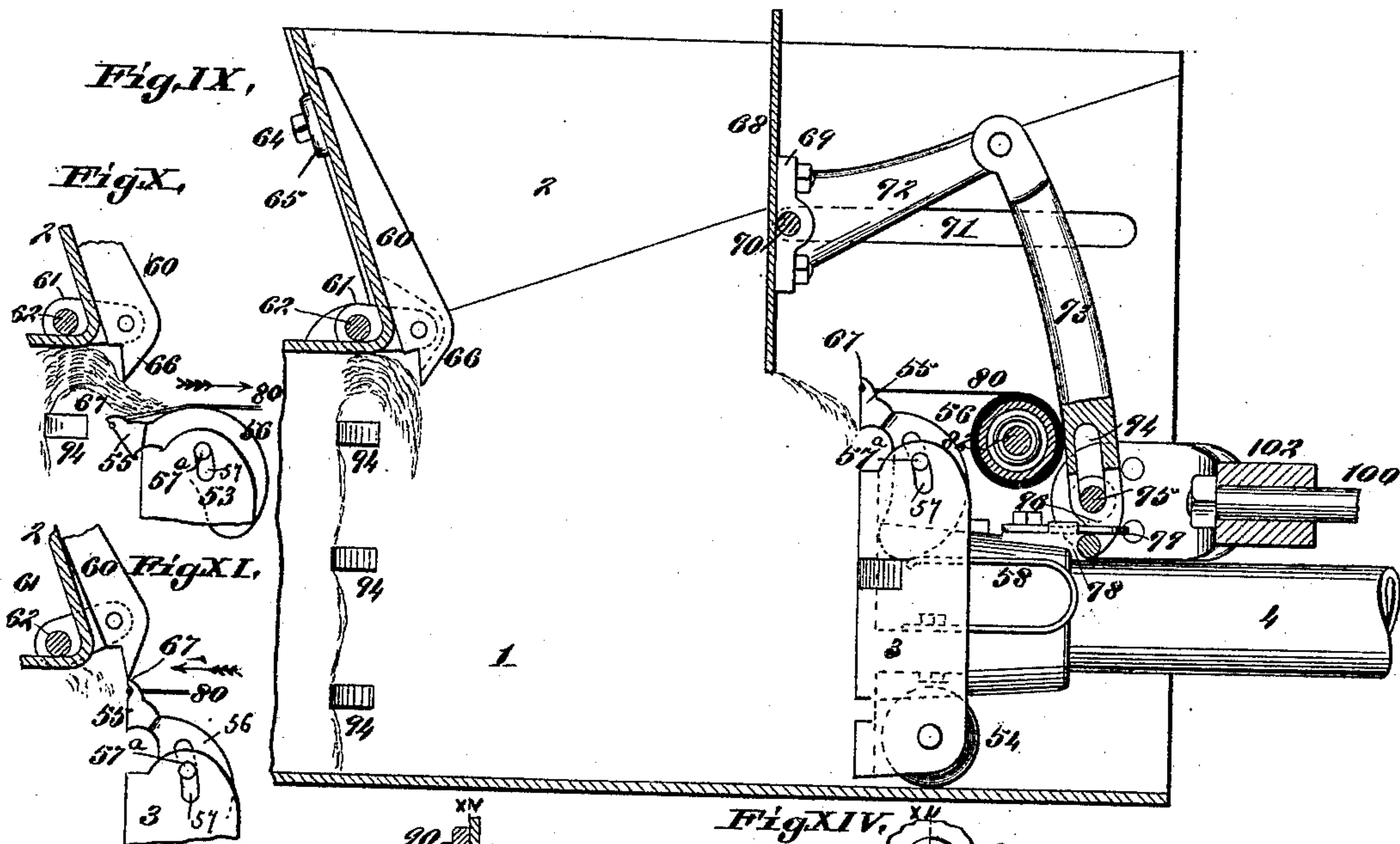
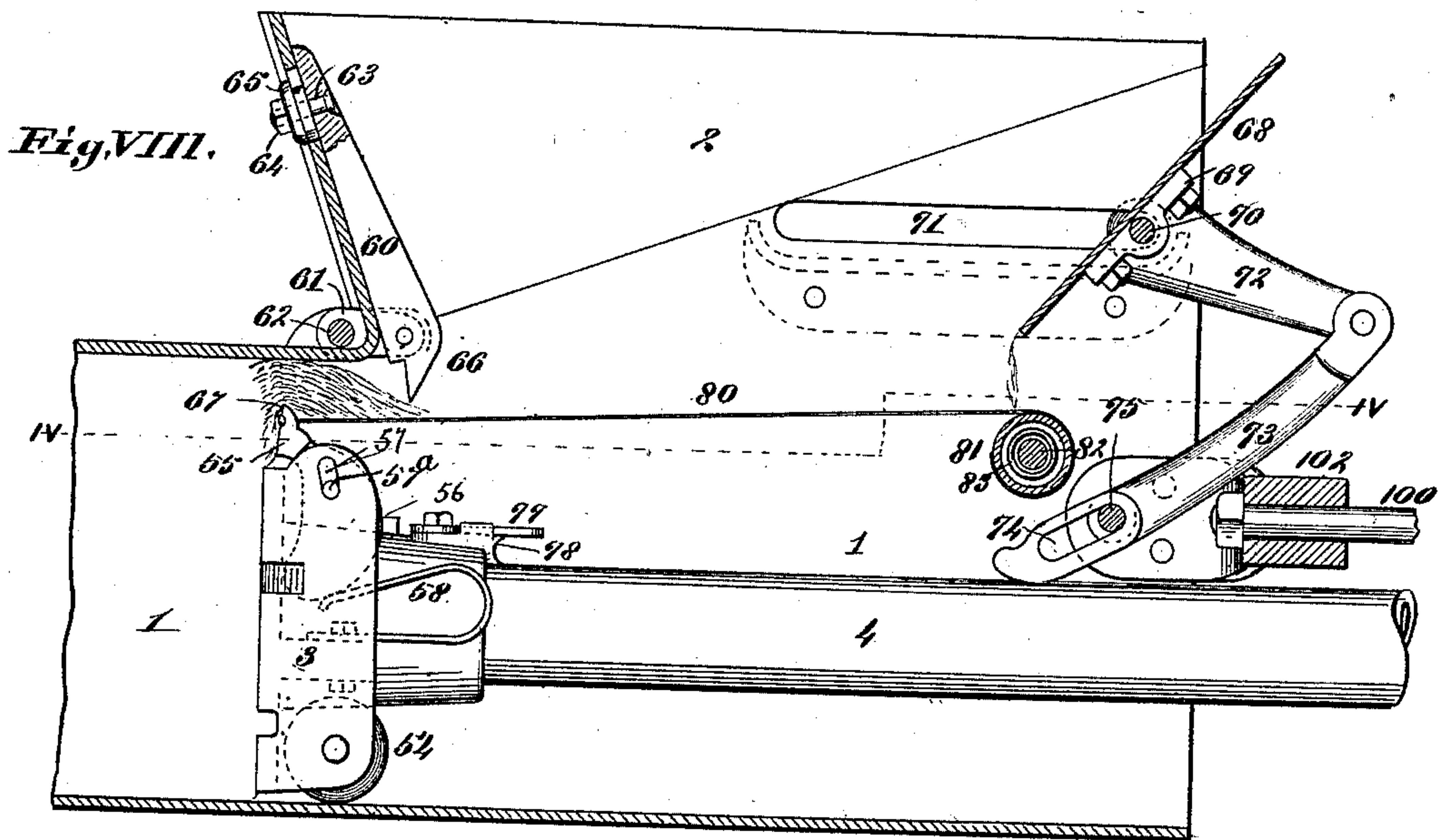
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W. S. LIVENGOOD.
BALING PRESS.

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No. 422,236.

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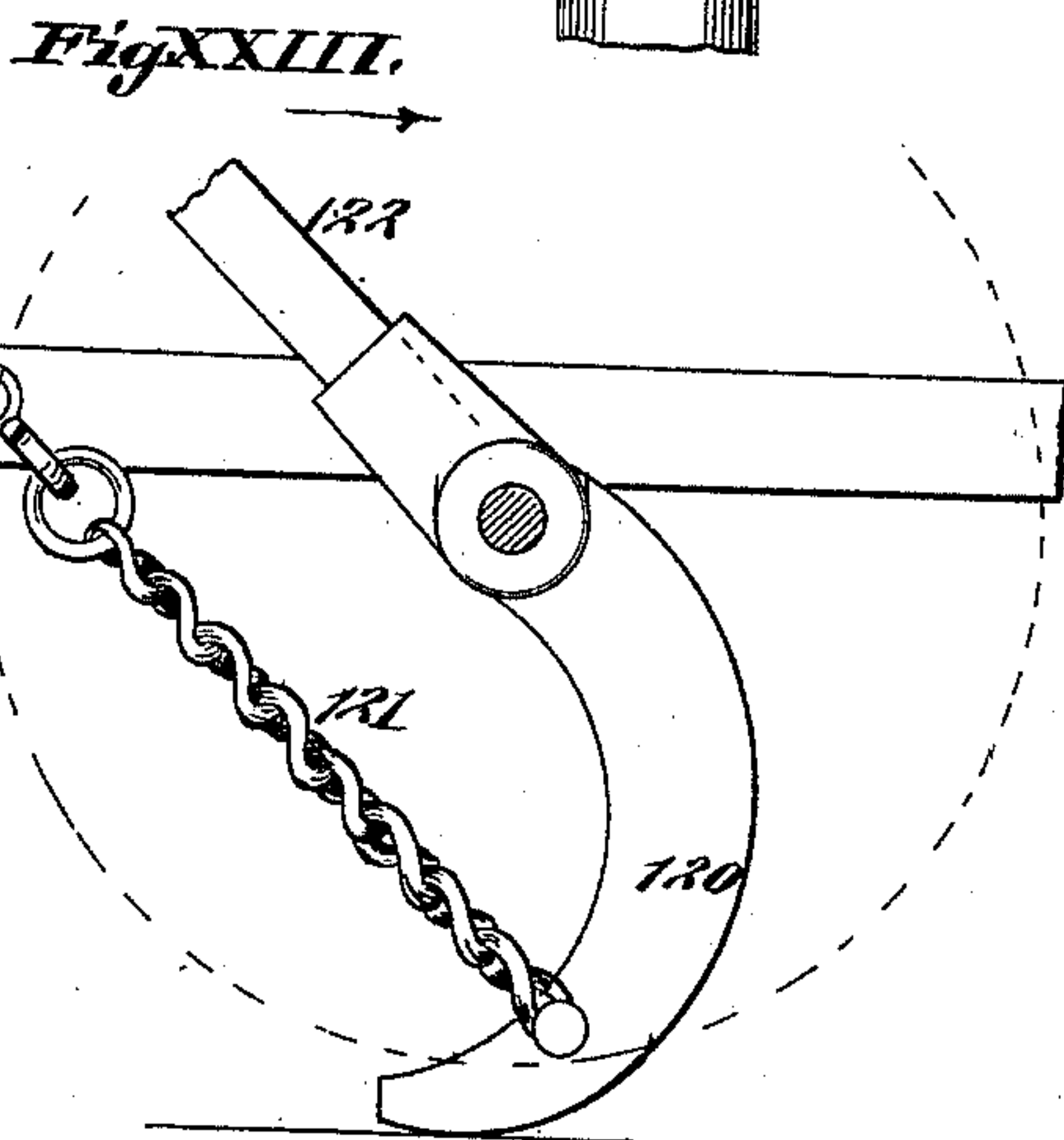
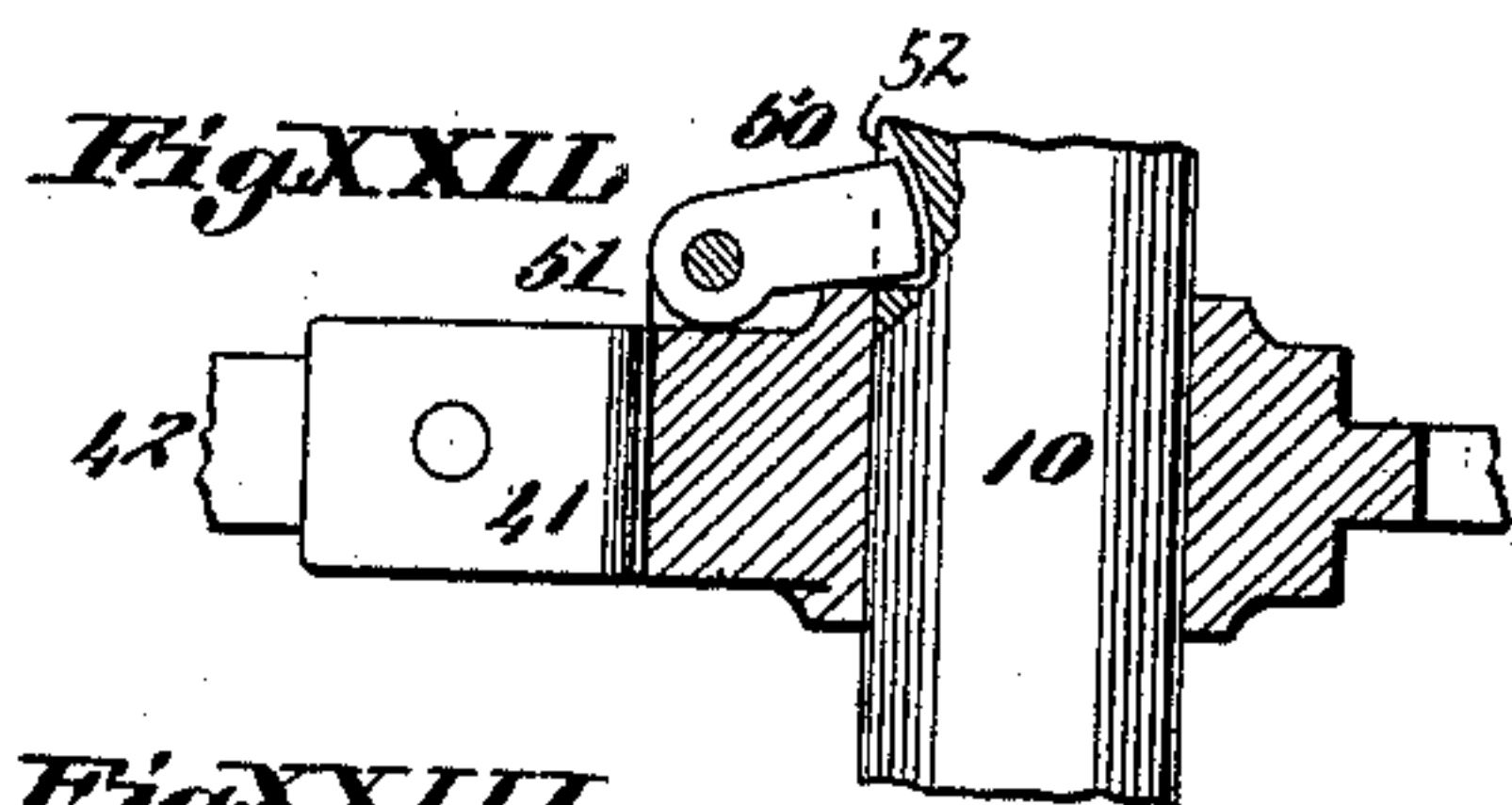
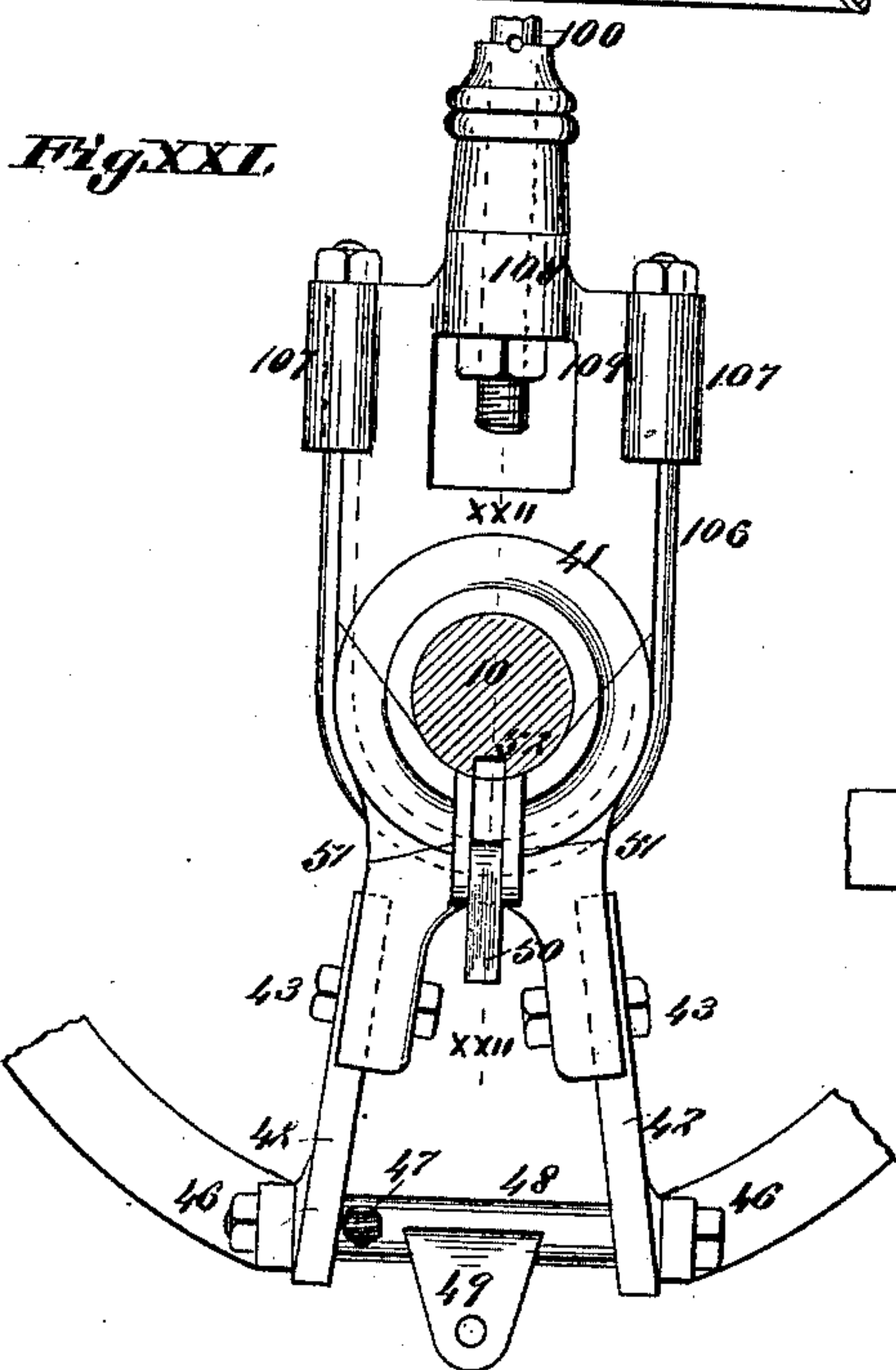
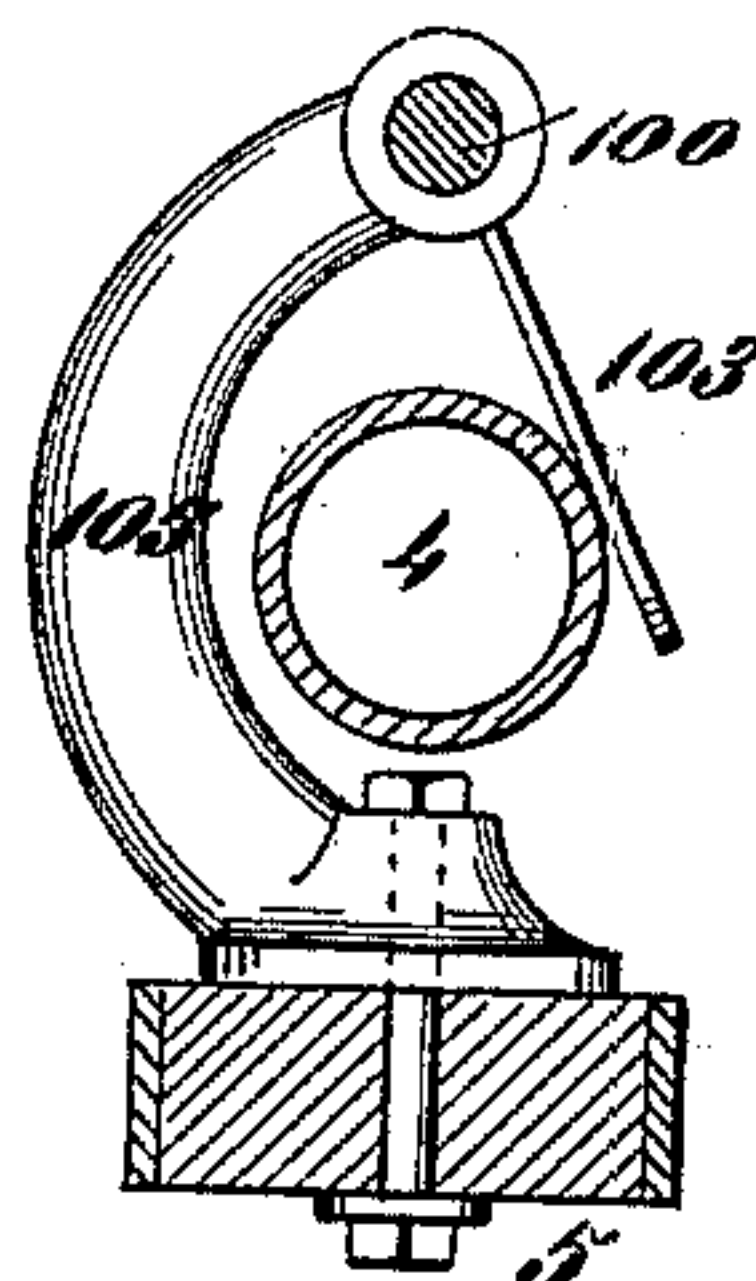
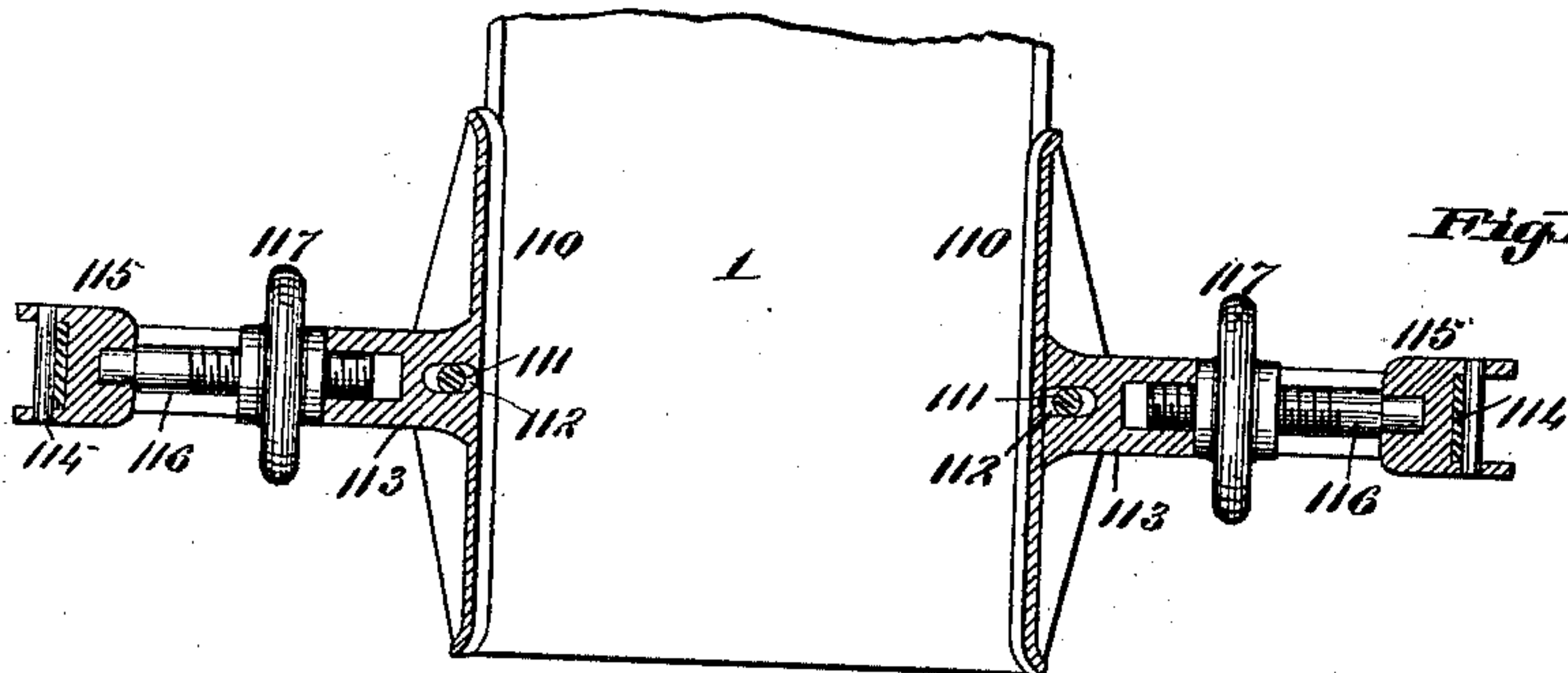
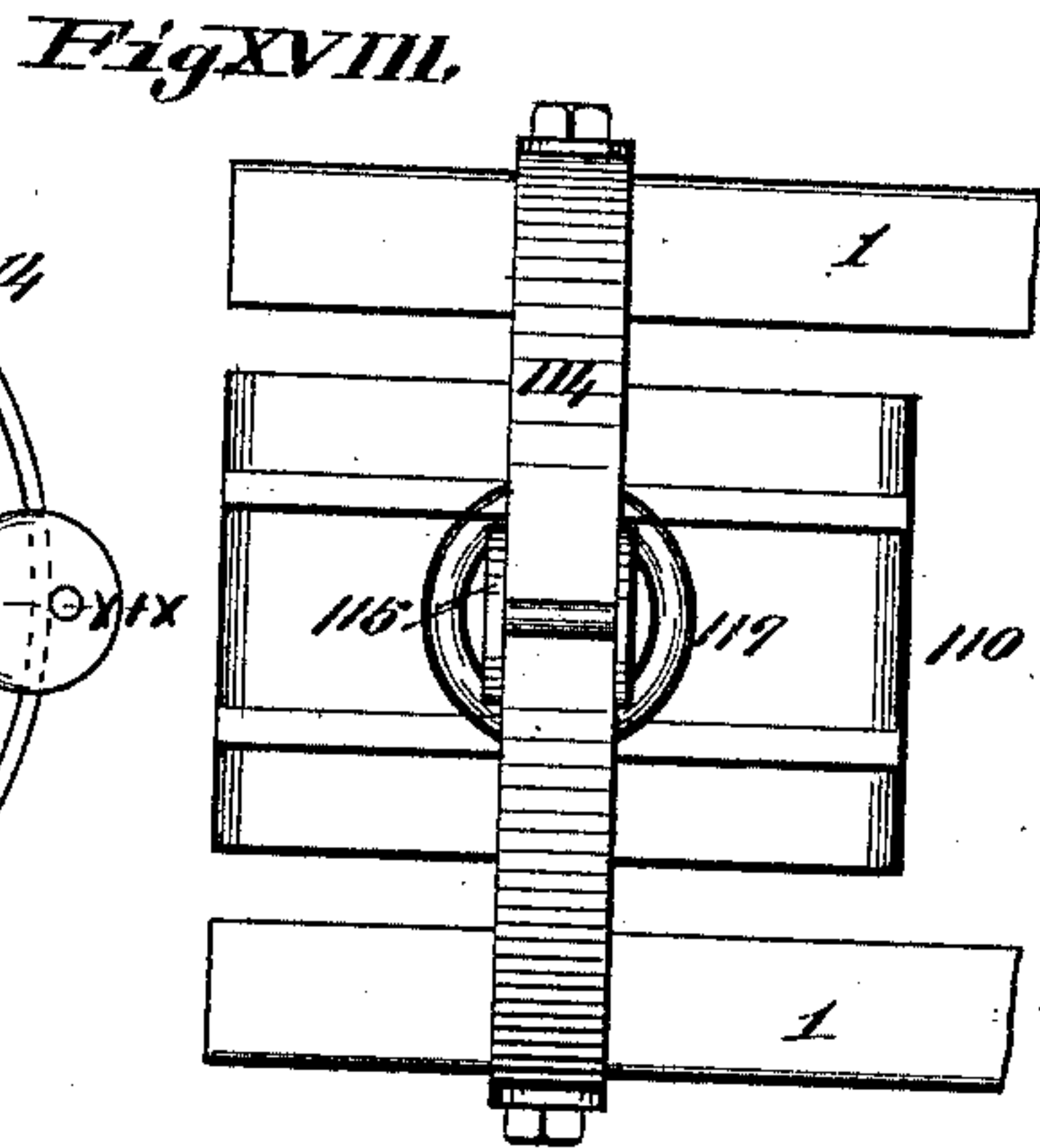
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W. S. LIVENGOOD.
BALING PRESS.

No. 422,236.

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Attest,
E. Arthur
W. E. Knight

Inventory
Winfield. S. Livengood
By Knight Bros attys

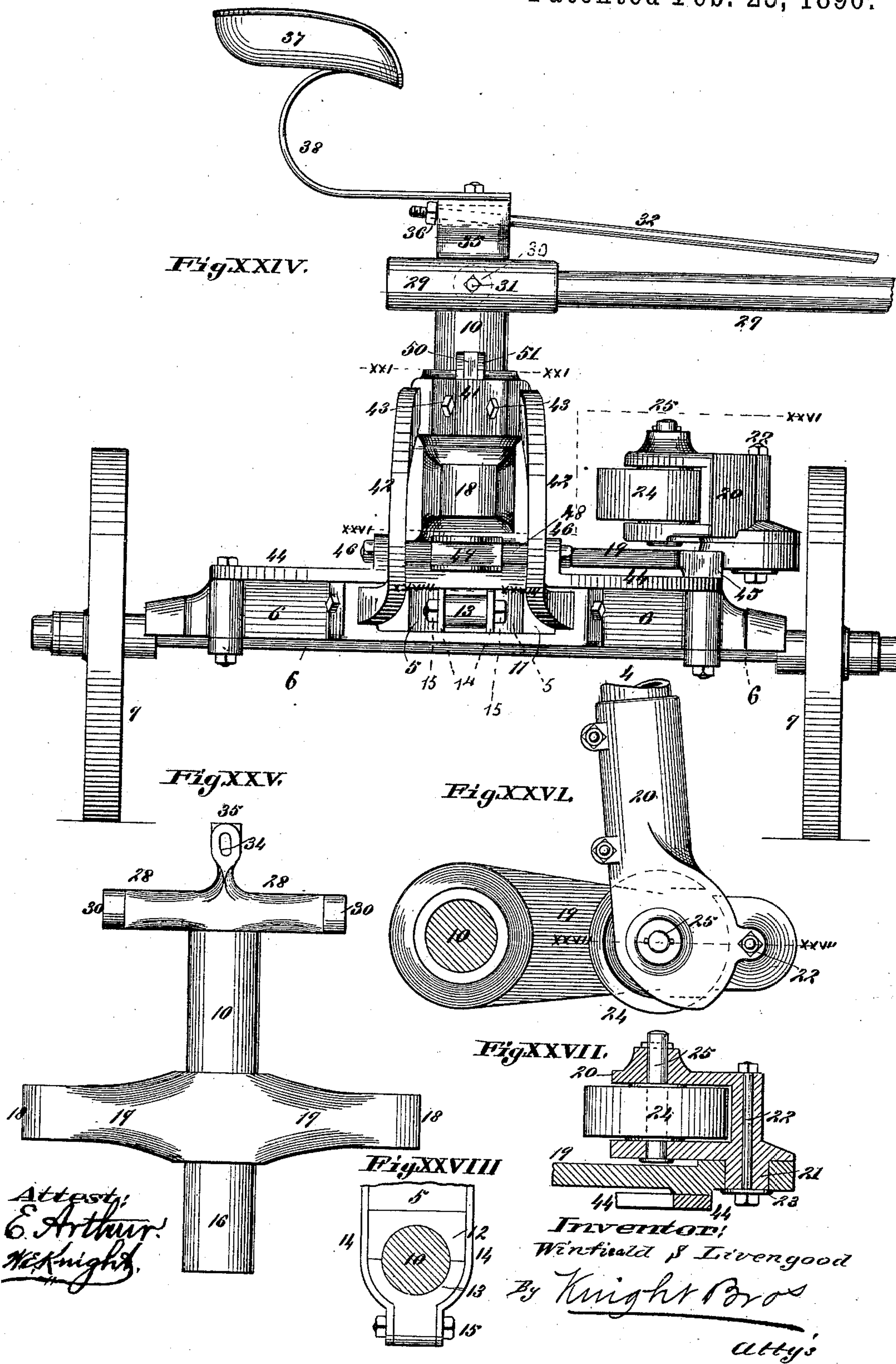
(No Model.)

5 Sheets—Sheet 5.

W. S. LIVENGOOD.
BALING PRESS.

No. 422,236.

Patented Feb. 25, 1890.



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UNITED STATES PATENT OFFICE.

WINFIEALD S. LIVENGOD, OF KANSAS CITY, MISSOURI, ASSIGNOR OF ONE-HALF TO CHARLES L. BALLINTINE, OF SAME PLACE.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 422,236, dated February 25, 1890.

Application filed February 5, 1889. Serial No. 298,745. (No model.)

To all whom it may concern:

Be it known that I, WINFIEALD S. LIVENGOD, of Kansas City, in the county of Jackson and State of Missouri, have invented a certain new and useful Improvement in Baling-Presses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure I is a side elevation of my improved press. Fig. II is a top plan view. Fig. III is an enlarged detail top view showing the central part of the machine. Fig. IV is a detail view, and is a horizontal longitudinal section taken on line IV IV, Fig. VIII. Fig. V is a vertical transverse section taken on line V V, Fig. III. Fig. VI is a similar view taken on line VI VI, Fig. III. Fig. VII is an enlarged front view of the flexible top of the traverser. Figs. VIII and IX are vertical sections taken on line VIII IX, Fig. III, and showing the parts in different positions. Figs. X and XI are detail views illustrating the operation of the folding device. Figs. XII and XIII are sections taken on line XII XIII, Fig. XIV. Fig. XIV is an end view of the apron roller or drum. Fig. XV is a section taken on line XV XV, Fig. XII. Fig. XVI is a side view of the plug on the shaft of the apron-drum. Fig. XVII is a rear end view of the press. Fig. XVIII is a side elevation of the rear end of the press. Fig. XIX is a horizontal section taken on line XIX XIX, Fig. XVII. Fig. XX is a vertical transverse section taken on line XX XX, Fig. I. Fig. XXI is a horizontal transverse section taken on line XXI XXI, Fig. XXIV. Fig. XXII is a detail section taken on line XXII XXII, Fig. XXI. Fig. XXIII is a vertical section of the rear axle and showing the device for elevating the rear end of the machine for the purpose of removing the wheels. Fig. XXIV is a front elevation of the machine. Fig. XXV is a view of the trip-lever, the vertical shaft or spindle that carries it, and the cross-bar to which the sweep is secured. Fig. XXVI is a horizontal section taken on line XXVI XXVI, Fig. XXIV. Fig. XXVII is a vertical section taken on line XXVII XXVII, Fig. XXVI.

Fig. XXVIII is a horizontal section taken on line XXVIII XXVIII, Fig. XXIV.

My invention relates to certain improvements in machines for baling hay, straw, cotton, excelsior, and the like; and my invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring to the drawings, 1 represents the baling-chamber, the forward end of which is provided with a feed-hopper or extension 2.

3 represents the traverser or plunger as a whole.

4 represents the pitman.

5 represents the reach; 6, the front axle; 7, the wheels of the front axle, and 8 the wheels of the rear axle 9.

The reach 5 extends from the forward end of the baling-chamber to the front axle 6, to which it is secured by a vertical shaft or spindle 10. The end of the reach fits in an opening 11 of the front axle, as shown in Fig. XXIV, and the shaft or spindle passing through it allows the axle to turn on the reach in transporting the machine from one place to another. This end of the reach is shown in detail in Fig. XXVIII, and here the shaft is also shown in section. The reach has preferably an inner box 12 and an outer box 13, held by straps or strips of metal 14, secured to the reach, a bolt 15 passing through the outer edges of the straps and the outer box 13. The shaft or spindle is best shown in Fig. XXV, the lower end 16 being the part that passes through the front axle and through the reach. On the shaft, above the end 16, is rigidly secured a trip-lever 17, that has rounded ends 18. Between this lever 17 and the front axle a crank-arm 19 is loosely mounted on the shaft. This is best shown in Fig. XXVI. To the outer end of this arm the pitman 4 is secured, preferably by means of a sleeve 20, securely clamped to the pitman, and which has a projection 21 fitting in a perforation in the outer end of the arm and held thereto by means of a bolt 22 and washer 23. (See Fig. XXVII.)

24 represents an anti-friction roller journaled by means of a pin 25 in the sleeve 20. The anti-friction roller 24 is located in the

path of the outer ends of the lever 17, so that as the shaft 10 revolves the rounded ends 18 of the lever 17 come against the roller, as shown at 26, Fig. II, and the pitman is thus forced forward, carrying the traverser or plunger with it.

As the point of bearing between the pitman and arm 19 is outside or beyond the point of bearing between the ends of the lever 17 and the pitman, (or anti-friction roller carrying the pitman,) it will be understood that the ends of the lever will leave or pass the end of the pitman before the pitman and arm are quite brought into line, or before the pitman reaches a straight line from the traverser to the pivot of the arm 19, and as soon as the ends of the trip-lever pass the end of the pitman the traverser rebounds, the arm and pitman coming back into the position shown in Fig. II, thus always rebounding on the same side of the press.

The press is what is called a "full-circle press"—that is, the draft-animals pass around a complete circle. When the traverser has thus been forced forward by the contact of one of the ends of the trip-lever with the pitman, and this end of the lever leaves the pitman, the traverser will rebound and the animals continuing round on the circle bring the other end of the trip-lever into engagement with the pitman, and the traverser is again forced forward to compress another charge, and in this way two charges are pressed at each complete round of the sweep.

27 represents the sweep. It is connected by its inner ends to a cross-head 28, (rigidly secured to or formed in one part with the upper end of the shaft 10,) by means of sockets or sleeves 29, which receive the ends of the sweep, and which fit over reduced ends 30 of the cross-head 28 and are held loosely thereon by screws or bolts 31. The cross-head is best shown in Fig. XXV, and the sleeves (which are not shown in Fig. XXV) are best shown in Figs. I, II, and XXIV. The outer end of the sweep is supported by means of a rod 32, which extends from a cross-piece 33 back through a slot 34 in a projection 35 on the cross-head 28. The rod 32 and cross-piece 33 are best shown in Figs. I and II, and the slotted projection 25 in Figs. XXIV and XXV. The outer end of the rod 32 has upon it a nut 36. By tightening this nut the outer end of the sweep may be raised, and by loosening the nut the outer end of the sweep may be lowered, the sleeves 29 turning on the cross-head. While this rod limits the downward movement of the outer end of the sweep, it does not prevent the upward movement in case, during transportation, the wheels of the press should pass into ruts, and thus the strain is relieved from the necks of the animals.

It will be understood that the set-screws 31, while they hold the sleeves 29 on the cross-head, still do not prevent the turning of the sleeves in a vertical plane.

37 represents the driver's seat, connected by a spring-arm 38 to the projection 35. (See Fig. XXIV.) This projection 35 turning with the sweep on the shaft 10, the driver always faces the forward end of the sweep.

39 represents the draft-tongue, and 40 the single and double trees by which the animals are connected to the sweep in operating the press. By the use of the tongue (which, of course, would be supplied with the usual neck-yoke) the sweep is prevented from being thrown against the animals by the rebound of the plunger, as any tendency of this kind is received by the necks of the animals through the usual connection of the neck-yoke.

When the machine is in operation, the shaft 10 turns loosely in its lower bearing with the front axle 6 and its upper bearing, which consists of a box 41, mounted by curved arms 42, (see Figs. I and XXIV,) which connect the box to the front axle. The box is bolted to the upper ends of the arms 42 at 43, and it fits on the shaft 10 directly over the trip-lever 17.

44 represents a circular track which supports the outer end of the crank-arm 19, as shown at 45, Fig. XXIV, and the ends of this track are secured at 46 to the arms 42. (See Figs. I, XXIV, and XXVI.) They are thus connected by a bolt 47, passing through the ends of the track, through the arms 42, and through a sleeve 48, placed between the arms. The sleeve is provided with perforated lugs 49, to which the single and double tree 40 is connected when the machine is to be moved from one place to another. When the machine is thus moved, the sweep is utilized as a tongue, (the tongue proper 39 at this time being turned back into line with the sweep, so as to be out of the way,) and it will be necessary to provide some means to prevent the sweep turning on the shaft 10 during transportation. As a means to prevent this, I prefer to employ a dog or block 50, which is pivoted to ears or projections 51 on the box 41. The shaft 10 is provided with a notch or groove 52, which (when the sweep is in line with the body of the machine and projecting away from the machine) is opposite the ears 51. By throwing the block 50 over into engagement with the notch or groove in the shaft the latter is thus prevented from turning relatively to the box, (which means also relatively to the front axle, as the box is connected to this axle,) and thus the sweep is rigidly connected to the front axle and is utilized as a guide-tongue.

The dog 50 and its operation are best illustrated in Figs. XXI and XXII.

3, as stated, represents the traverser secured to the inner end of the pitman 4. Its construction is best shown or illustrated in Figs. VIII and IX. It is provided at bottom with anti-friction rollers 54, that bear on the bottom of the baling-chamber to relieve the friction. To its upper side is secured a movable

plate or cross-piece 55, having downwardly-extending ears or projections 56, which have slot 57 and pin 57^a connecting with the traverser. The normal position of this plate or cross-piece is shown in Fig. IX, where it is held by springs 58, secured to the traverser and bearing against the underside of the ears 56. The plate 55 extends entirely across the traverser, as shown in Fig. IV, and the ears or projections 56 are secured at or near the respective ends to the plate. (See Fig. VII.) There is a spring 58 beneath each ear or projection. This is also shown in Fig. IV.

The object of the plate 55 is to form a yielding top to the traverser to prevent its severe binding (caused by part of the material getting between the top of the traverser and the upper wall of the baling-chamber.) It will be understood that in baling-presses the material which is fed into the baling-chamber when the traverser is in its rear position very frequently extends slightly into the feeding-hopper, and thus a portion of the material is liable to, and nearly always does, get between the top of the traverser and the top of the baling-chamber, thus causing a great deal of friction and resulting sometimes in the breakage of the press. My object is to construct a traverser which will have a yielding portion at top to avoid these difficulties.

The normal position of the plate 55, as stated, is that shown in Fig. IX. When the traverser is forced forward beyond the feeding-hopper, this plate is compressed toward the position shown in Fig. VIII, but will be only so far compressed as the amount of material between it and the top of the baling-chamber necessitates. The springs 58 yield under this pressure, but are of sufficient force to hold the plate supported at all other times. It will thus be seen that the traverser will yield to this pressure of the material and avoid much unnecessary friction, and also avoid danger of breaking the press. When the traverser recedes, the portion of the material which thus overhangs the top of the traverser is left in the position shown in Figs. IX and X, and it will be forced in advance of the next charge. For the purpose of folding this material down upon the withdrawal of the traverser, I employ a plate or block 60, which is connected at its lower end by links 61 to a rod 62, that extends across the machine. This rod and the links are shown plainly in Figs. VI and VIII. The plate is connected at its upper end to the rear end of the hopper by means of a short bolt 63, having a nut 64 and a washer 65. The hole in the hopper through which the bolt passes is elongated sufficiently to allow the plate 60 to rise and fall. As the traverser comes forward the plate 55 comes against the inclined end 66 of the plate, and lifting the plate passes it. By the time the traverser recedes this plate has fallen again, and the plate 55 will in passing the plate 60 turn, as shown in Fig. X, and

the material extending, as described, is tucked down into the chamber by the plate 60.

The plate 55 is preferably provided with a sharp cutting-edge 67 at its top. The object of this is that if there is too much pressure between the traverser and the top of the baling-chamber when the plate has been forced downward to the limit of its movement this material will be cut by the sharp edge, and thus avoid friction and danger of breaking the press in these unusual instances.

For the purpose of condensing the material in the hopper before it falls into the baling-chamber, I use a plate or disk 68. This is connected to the hopper by a box 69 on a rod 70 fitting in slots 71 in the sides of the press. The ends of the rod outside the hopper are provided with friction-rollers 70^a, bearing on tracks 70^b, secured to the hopper. (See Figs. I and III.) These relieve the plate of friction.

72 represents an arm secured to the plate, to the outer end of which is connected a lever or rod 73. The lower end of this lever is slotted, as shown at 74 in Figs. VIII and IX. Through this slot passes a rod 75 fitting in the walls of the baling-chamber. The lower end of the lever is formed with an opening 76, as shown in Figs. IV and IX.

On the traverser is a plate 77. Just before reaching the limit of its backward movement the plate 77 passes into the opening 76 in the lower end of the lever 73, and a lug 78 on the traverser just beneath the plate 77 comes against the lower end of the lever and forces the lever in an outward and upward direction, the slot 74 moving over the rod 75. This brings the plate 68 from the inclined position shown in Fig. VIII to a vertical position and then moves the plate forward from the position shown in Fig. VIII to the position shown in Fig. IX, thus condensing the material in the hopper. When the traverser moves forward again, the plate 68 will be drawn back to the position shown in Fig. VIII (from the position shown in Fig. IX) by the friction between the lower end of the lever 73 and the pitman 4, the lever resting on the pitman, as shown in Fig. IX. In this manner I produce an automatic device for condensing the material in the hopper before it passes into the press, the device being inexpensive and not liable to get out of order.

As the material is condensed on the backward movement of the traverser, it is of course necessary to have some means that will prevent the material from falling into the baling-chamber behind the traverser. To accomplish this I use a flexible apron 80. The forward end of this apron is connected to the plate 55, or to the upper end of the traverser, and its inner end is secured to a spring-drum or windlass 81. (See Figs. VIII, IX, XII, and XIII.) As the traverser moves forward the apron is unwound from the drum, and then as the traverser recedes the apron is wound again upon the drum. When the traverser

is in its forward position, as shown in Fig. VIII; the apron forms a bottom to the hopper and supports the material until the traverser recedes.

5 My preferred manner of constructing the drum is to form a cylinder to which the apron is secured, and which surrounds a central spindle 82. On the spindle 82 a spiral spring 83 is wound. One end of this spring is con-
 10 nected to the spindle and the other to the cylinder, preferably by means of a plug 84, (see Figs. XIII and XVI,) the plug having a projection 85 fitting in a notch 86 of the cylinder (see Fig. XV) and having a hole 87, into
 15 which one end of the spring is inserted, as shown in Fig. XIII. The plug 84 fits loosely on the shaft or spindle 82. The shaft or spindle has a square portion 88 extending beyond the wall of the press, and it is supported by
 20 fitting in holes made in the sides of the baling-chamber. Over this end 88 is fitted a plate 89, which is secured by a bolt 90 to the baling-chamber. This plate prevents the turning of the shaft or spindle, but does not prevent the
 25 turning of the outer cylinder 81. If additional tension is necessary, the plate 89 can be removed by removing the bolt 90, and then by turning on the spindle (by a crank or key applied to its non-circular portion 88) in the
 30 proper direction the spring can be tightened, and then by reapplying the plate 89 the spindle will be held from being turned by the spring. The spring-apron, besides serving the function of forming a temporary bottom to the
 35 hopper, also serves as an additional means or force for causing the rebound of the traverser.

As a means for preventing the material expanding in the baling-chamber beneath the
 40 feed-hopper on the return of the traverser, I pivot a number of plates or dogs 91 to the side of the baling-chamber, (see Figs. IV and VI,) which are inclosed by a casing 92. The forward ends of these plates are provided
 45 with points 93, that enter slots 94 in the sides of the baling-chamber, and they are forced into the baling-chamber a short distance by springs 95, fitting in sockets 96, made in the housing 92. The front faces of the points 93
 50 are tapering, as shown at 97, Fig. IV, so that as the material is forced forward the points will be forced out of the baling-chamber against the pressure of the springs 95, and when the material has passed the springs will
 55 force them in again to prevent the material following back, as shown in Fig. VI. I do not broadly claim these pivoted plates, as I know that dogs or plates have been used for this purpose in baling-presses.

60 100 represents a rod extending from the box 41 to the baling-chamber, to which it is secured, as shown at 101, by means of a cross-piece 102. This cross-piece is shown in Figs. I and IX. The object of this rod is to form
 65 a bond between the shaft 10 and the baling-chamber, to add strength to the shaft, and it

also affords a means of attaching a guard-plate to prevent the animals from stepping on the pitman as they pass over it.

103 represents the guard-plate. It is loosely 70 connected to the rod 100 by means of clips 104. Its lower edge rests upon the pitman, as shown in Fig. I, and it is located where the animals cross the pitman as the press is operated.

105 represents an arm connecting the rod 75 to the reach 5. This is best illustrated in Fig. XX, where the pitman and plate 103 are also plainly shown. The outer end of the rod 100 is connected to the box 41 by means 80 of a yoke 106, passing around the box and through lugs 107 thereon. This yoke also serves to connect the two parts of the box together. Between the lugs the box has a socket 108, through which the end of the rod 100 85 passes and is held by a nut 109. (See Fig. XXI.)

As a means for retarding the movement through the press of the material being baled, and thus to regulate its density, I employ 90 friction-blocks 110. These are best shown in Figs. XVII, XVIII, and XIX. They are supported on vertical rods 111, fitting in slots 112 on the plates, or in projections 113 on the plates. The blocks 110 fit on the respective 95 sides of the baling-chamber, and it will be seen that by adjusting them inwardly or outwardly the delivery of the material will be more or less free. As a means for adjusting them, I secure a frame 114 on each side of the 100 press, and to the center of this frame pieces 115 are secured, as shown in Figs. XVII and XIX.

116 represents threaded rods stepped or fitted at their outer ends in pieces 115 and 105 entering the sockets of the projections 113 of the blocks 110. On the rods are hand-wheels 117. It will thus be seen that by turning the rods by means of the hand-wheels the blocks 110 may be adjusted in and out at will, as 110 stated.

Before using a press it is generally desirable to remove the hind wheels and let the rear end of the press down upon a fixed or substantial support. For the purpose of accom- 115 plishing this I secure curved arms or bars 120 to the rear axle or to the frame of the press. I connect their lower ends by chains 121 to the frame of the press. The upper ends of the arms or bars are slotted to receive levers 120 122. Thus when the wheels are to be removed the arms or bars are thrown down into contact with the ground and the animals started. This will cause the wheels to be lifted off the ground, as shown in Fig. XXIII, 125 the chains serving the purpose of preventing the lower ends of the arms or bars passing behind their pivots, so that the machine will be supported while the wheels are being removed. Then by taking hold of the levers 130 122 and moving them in the direction indicated by the arrows in Fig. XXIII the ma-

chine may be lowered. The arms or bars may also be used for the purpose of elevating the machine again to apply the wheels.

I claim as my invention—

5 1. In a baling-press, the combination of a traverser, a crank-arm, a pitman, a sleeve secured to the outer end of the pitman, a projection on the sleeve entering a perforation in the crank-arm, a connecting-bolt 22, a friction-roller journaled in the sleeve, a trip-lever, a sweep, and a vertical shaft to which the trip-lever and sweep are secured, substantially as and for the purpose set forth.

15 2. In a baling-press, the combination of the traverser, a vertical shaft, connections between the shaft and traverser, a trip-lever secured to the shaft, a cross-head on the shaft, sleeves loosely fitting on the cross-head, a sweep secured to the sleeves, and an adjustable supporting-rod connecting the sweep to the cross-head, substantially as and for the purpose set forth.

25 3. In a baling-press, the combination of the traverser, a vertical shaft, a connection between the traverser and shaft, a trip-lever secured to the shaft, a cross-head on the shaft, a slotted projection on the cross-head, a sweep loosely mounted on the cross-head, and a rod provided with a set-screw connected at one end to the sweep and fitting at the other end in the slot of the projection on the cross-head, substantially as and for the purpose set forth.

35 4. In a baling-press, the combination of a traverser, a vertical shaft, a connection between the traverser and shaft, a crank-arm on the shaft, a trip-lever secured to the shaft, a cross-head on the upper end of the shaft, sleeves 29, loosely mounted on the cross-head, a sweep fitting in the sleeves, a slotted projection 35 on the cross-head, a rod 32, connected to the sweep by means of a cross-piece 33 and fitting at its inner end in slotted projections, and a set-screw on the inner end of the rod, substantially as and for the purpose set forth.

45 5. In a baling-press, the combination of a traverser, a vertical shaft having a groove 52, a connection between the traverser and shaft, a trip-lever secured to the shaft, a sweep secured to the shaft, a box fitting the shaft and connected to the front axle of the machine, and a pivoted dog 50 for engaging the groove in the shaft, substantially as and for the purpose set forth.

55 6. In a baling-press, the combination of the traverser, a vertical shaft, a connection between the traverser and shaft, a sweep secured to the shaft, a box loosely mounted on the shaft, curved arms connecting the box to the front axle of the machine, ears on the box, and a dog pivoted to the ears and adapted to fit in a groove in the shaft, substantially as and for the purpose set forth.

65 7. In a baling-press, the combination of a traverser, a vertical shaft, a connection between the traverser and shaft, a trip-lever

secured to the shaft, a box loosely mounted on the shaft over the trip-lever, arms connecting the shaft to the front axle of the machine, a sweep secured to the shaft, and a sleeve located between the said arms for the attachment of a doubletree, substantially as and for the purpose set forth.

8. In a baling-press, the combination of a baling-chamber, a traverser having a top composed of a pivoted plate and a flexible apron, substantially as and for the purpose set forth.

9. In a baling-press, the combination of a baling-chamber and a traverser, the latter having a pivoted top provided with a cutting-edge and an apron attached thereto, substantially as and for the purpose set forth.

10. In a baling-press, the combination of a baling-chamber having a slotted feed-hopper, a traverser, and a plate 60, connected by links 61 and rod 62 to the baling-chamber, and connected by a bolt 63 to the hopper, substantially as and for the purpose set forth.

11. In a baling-press, the combination of the traverser, a baling-chamber provided with a feed-hopper, a sliding plate having a rod 70, rollers 70^a, tracks 70^b, an arm on the plate, and a lever pivoted to the arm and having a slot-and-rod connection with the baling-chamber, substantially as and for the purpose set forth.

12. In a baling-press, the combination of the traverser, a baling-chamber, a sliding plate, an arm secured to the plate, a lever pivoted to the arm, and having slot-and-rod connection with the baling-chamber, and having a perforation in its lower end, and a plate 77 and lug 78 on the traverser, all substantially as and for the purpose set forth.

13. In a baling-press, in combination with a traverser and a baling-chamber having a feed-hopper, a flexible apron forming a temporary bottom to the hopper, substantially as and for the purpose set forth.

14. In a baling-press, the combination of a traverser, a baling-chamber having a feed-hopper, and an apron secured by one end to the traverser, and a spring drum or windlass to which the other end of the apron is secured, substantially as and for the purpose set forth.

15. In a baling-press, the combination of a traverser, a baling-chamber having a feed-hopper, an apron secured by one end to the traverser, a drum to which the other end of the apron is secured, a spindle fitting within the drum, a spring secured by one end to the spindle, and a plug connected to the drum, and to which the other end of the spring is connected, substantially as and for the purpose set forth.

16. In a baling-press, the combination of a traverser, a baling-chamber having a feed-hopper, an apron connected by one end to the traverser, and a windlass to which the other end of the apron is connected, said windlass consisting of a drum, a spindle located within the drum, a spring surrounding the spindle,

a plug fitting in the drum and connected thereto, and to which one end of the spring is connected, a non-circular extension on the spindle, and a plate connecting the spindle to the side of the baling-chamber, substantially as and for the purpose set forth.

17. In a baling-press, the combination of a traverser, a baling-chamber having a feed-hopper, and an apron connected by one end to the traverser, and means for winding and unwinding the apron as the traverser recedes and advances, substantially as and for the purpose set forth.

18. In a baling-press, the combination of a traverser, a baling-chamber, a vertical shaft, a sweep on the shaft, a pitman connecting the traverser to the shaft, a rod 100, and a guard-plate 103, pivoted to the rod 100, substantially as and for the purpose set forth.

19. In a baling-press, the combination of a traverser, a baling-chamber, a sweep, a vertical shaft to which the sweep is connected, a pitman connecting the traverser to the shaft, a rod 100, connecting the baling-chamber to the shaft, a guard-plate 103, and an arm 105, connecting the rod to the reach of the ma-

chine, substantially as and for the purpose set forth.

20. In a baling-press, the combination of a traverser, a baling-chamber, adjustable blocks 110, supporting-rods 111, and threaded set-rods 116, supported by the frame 114 and provided with hand-wheels 117, substantially as and for the purpose set forth.

21. In a baling-press, the combination of the traverser, a baling-chamber, blocks 110, having extensions 113, rods 111, fitting in slots 112 in the blocks, frames 114, plates 115, threaded rods 116, and hand-wheels 117, substantially as and for the purpose set forth.

22. In a baling-press, the combination, with the press frame or body, of the pivoted arms or bars 120, substantially as and for the purpose set forth.

23. In a baling-press, the combination, with the press frame or body, of the pivoted arms or bars 120, chains 121, and levers 122, substantially as and for the purpose set forth.

WINFIEALD S. LIVENGOOD.

In presence of—

JAS. E. KNIGHT,
M. H. KNIGHT.