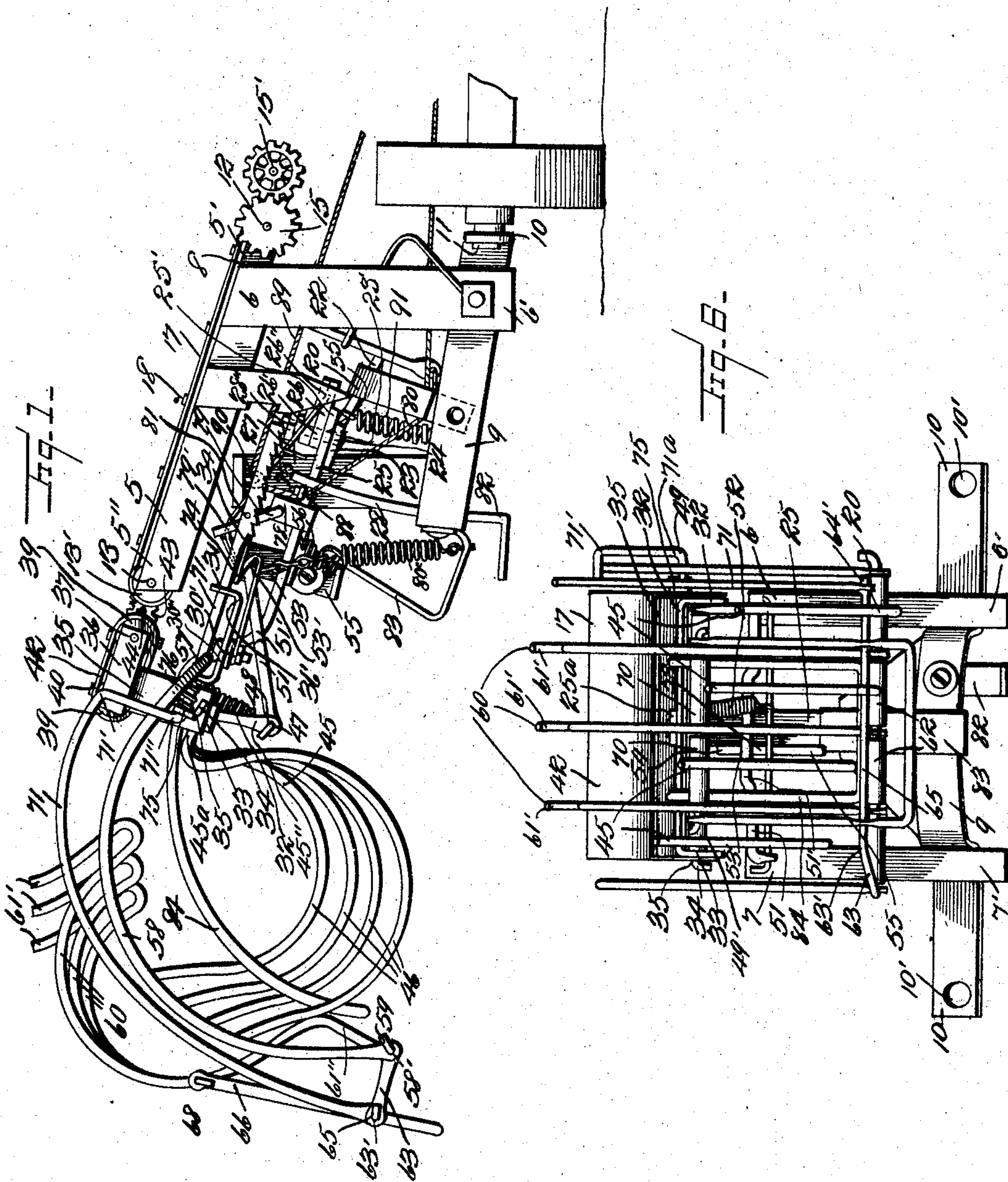


No. 781,440.

PATENTED JAN. 31, 1905.

E. A. MARX.
SHOCKING MACHINE.
APPLICATION FILED JAN. 20, 1904.

5 SHEETS—SHEET 1.



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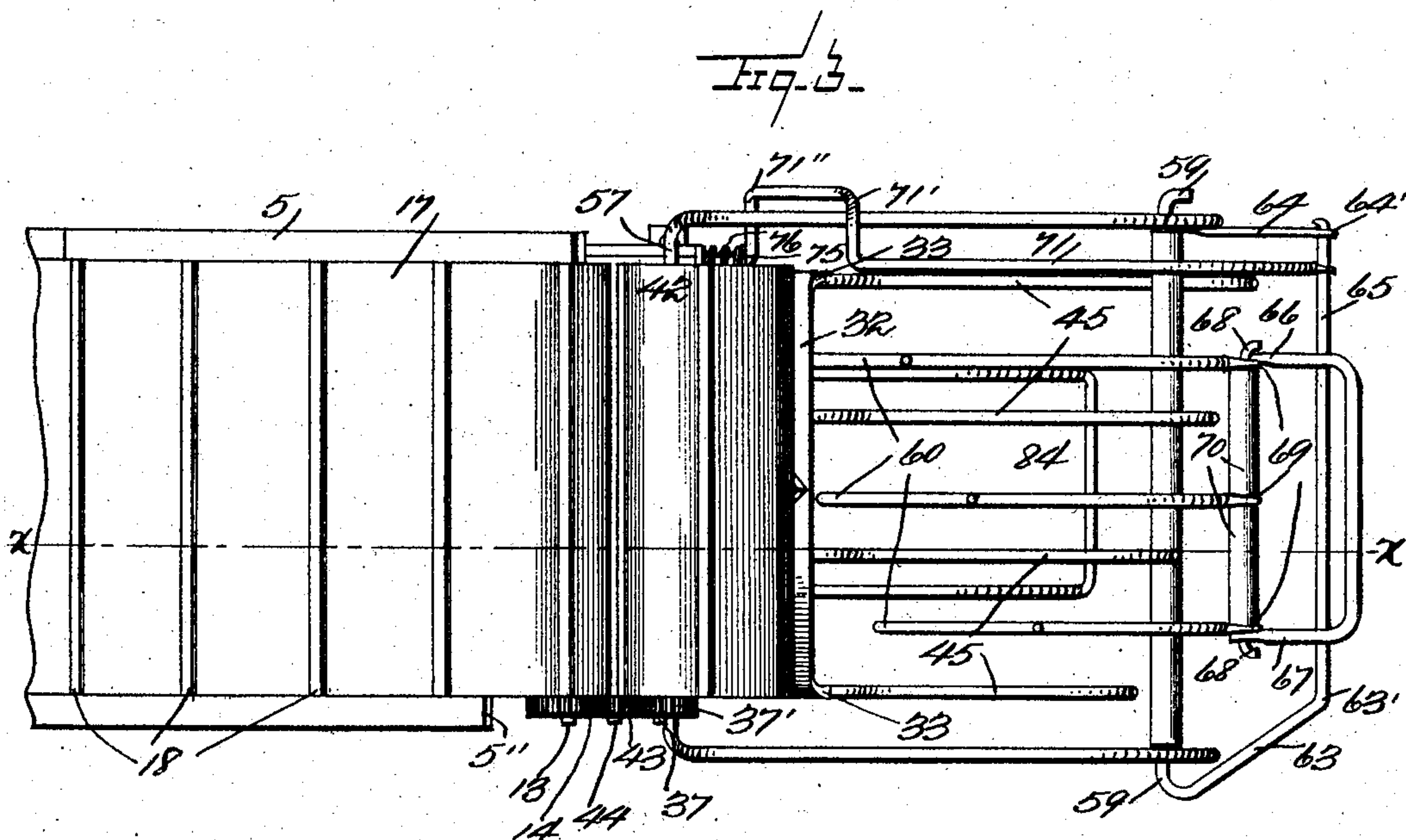
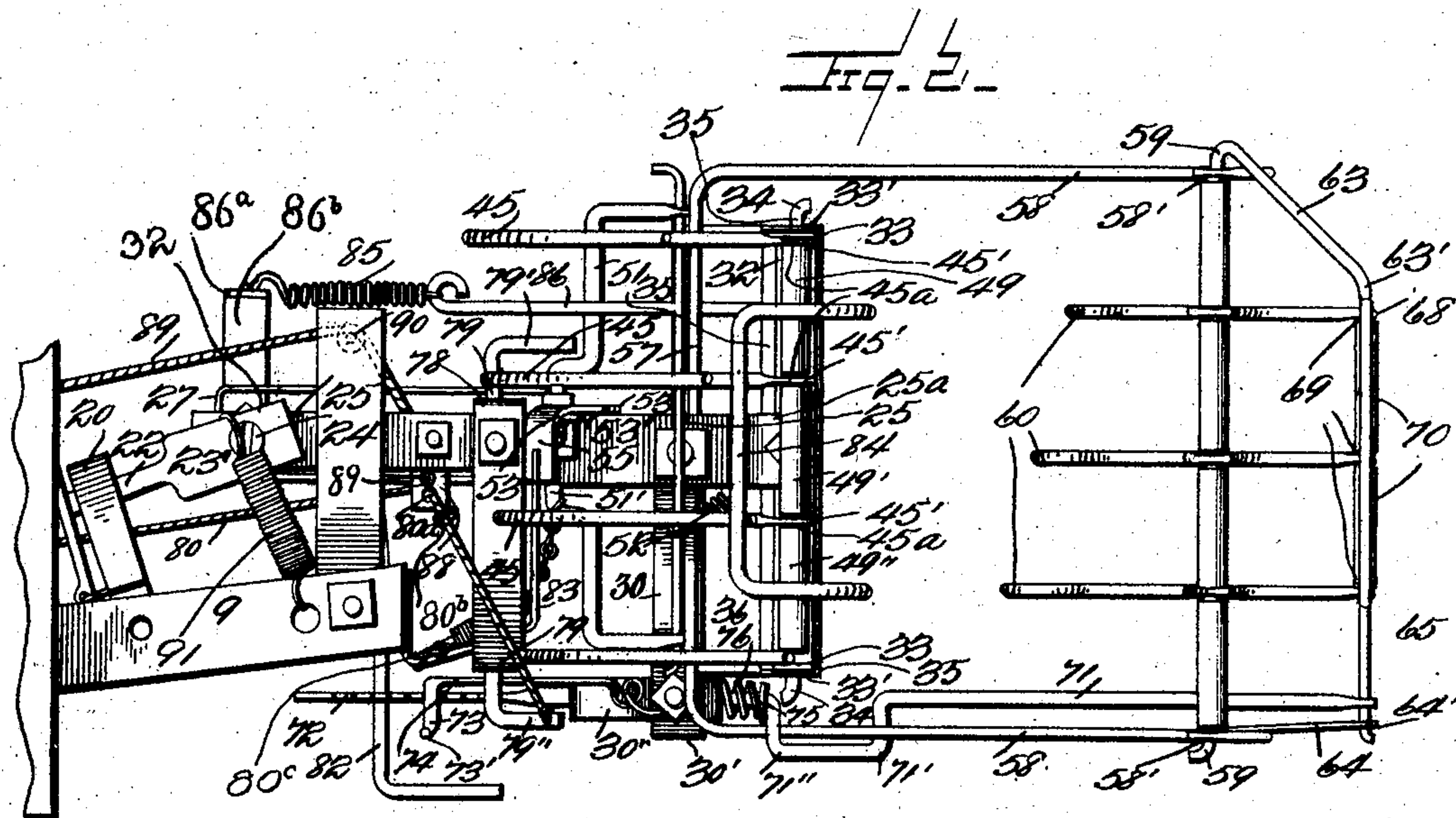
Samuel S. Handley Attorney

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5 SHEETS—SHEET 2.



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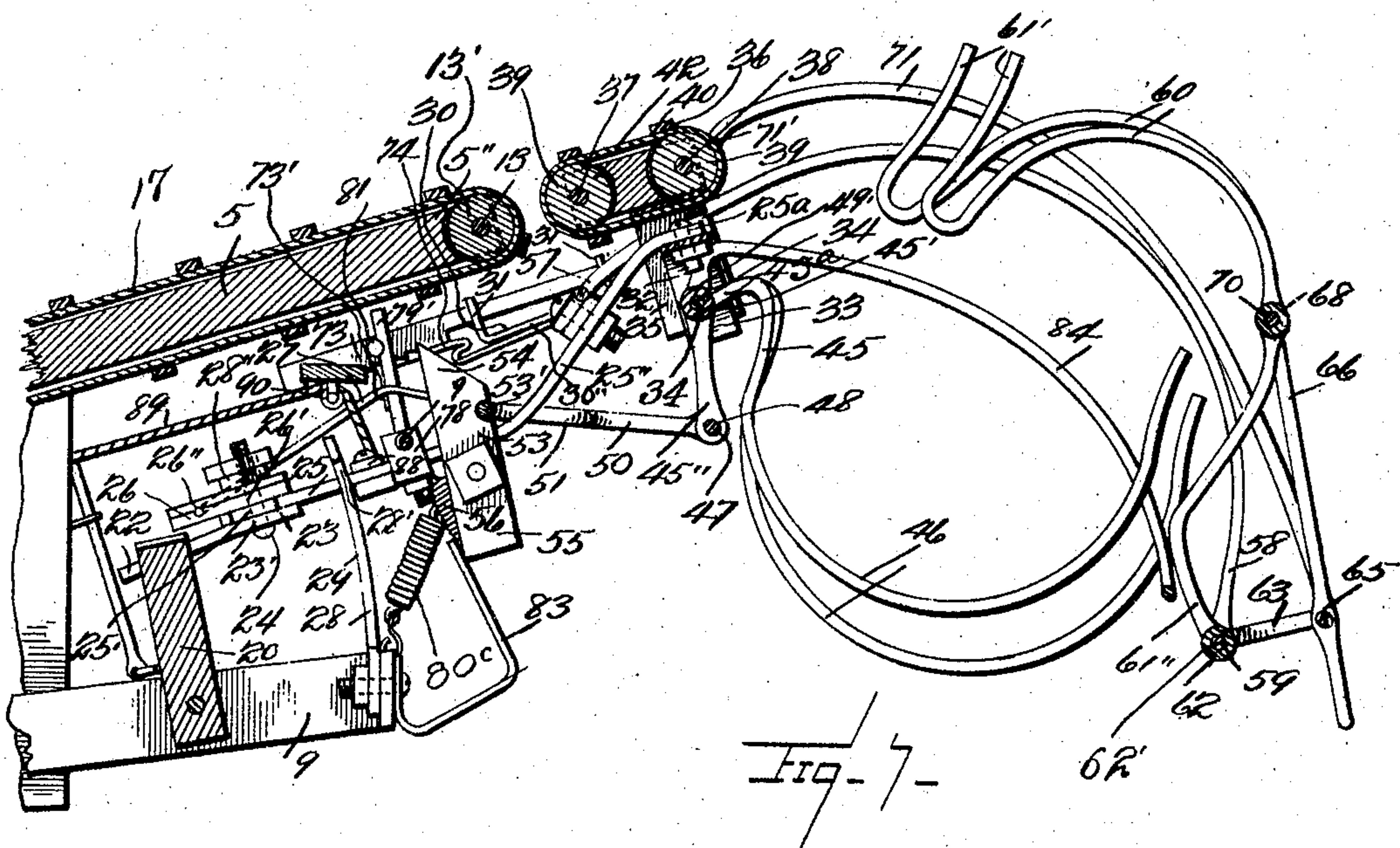
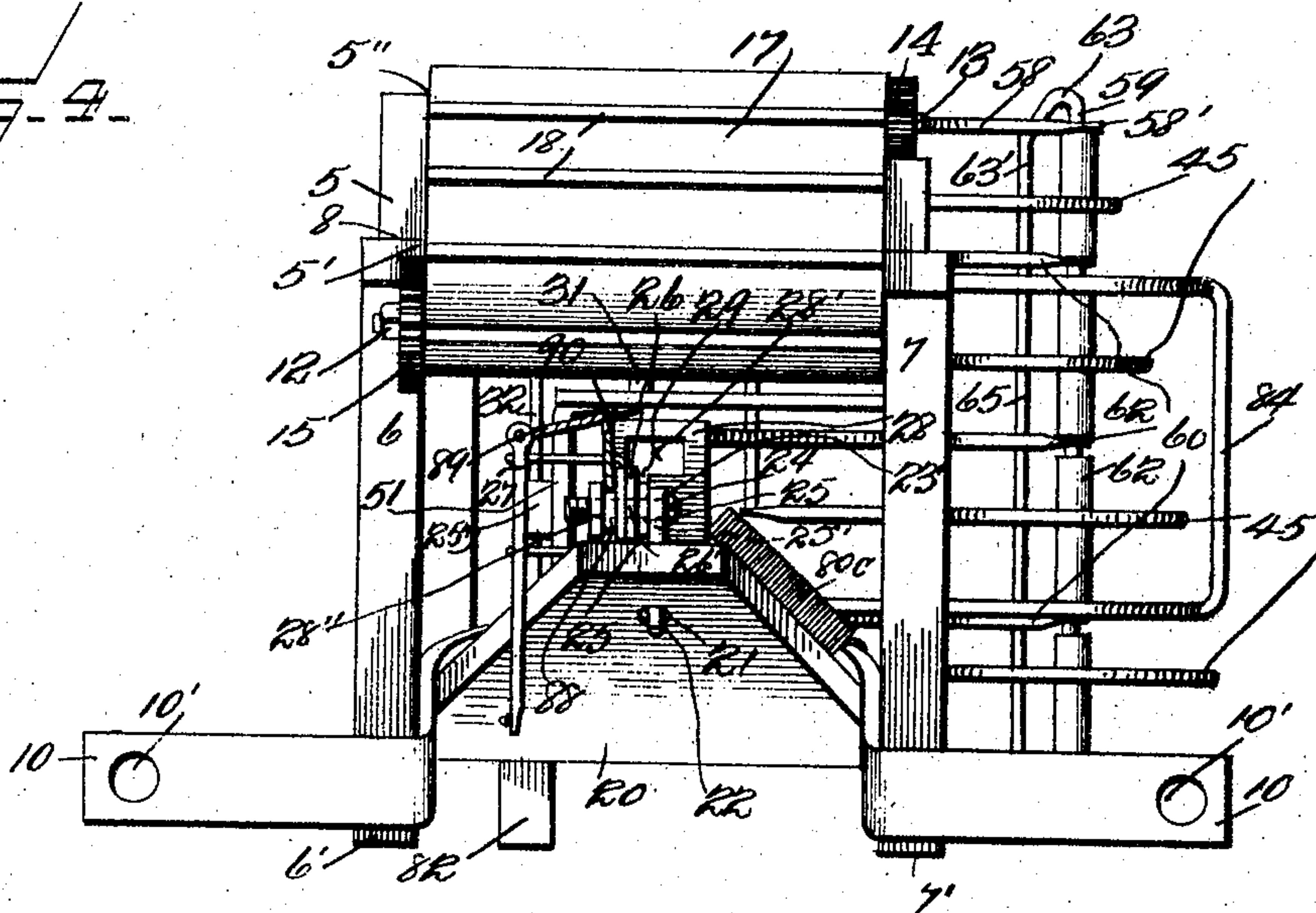
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5 SHEETS—SHEET 3.

Fig. 4.



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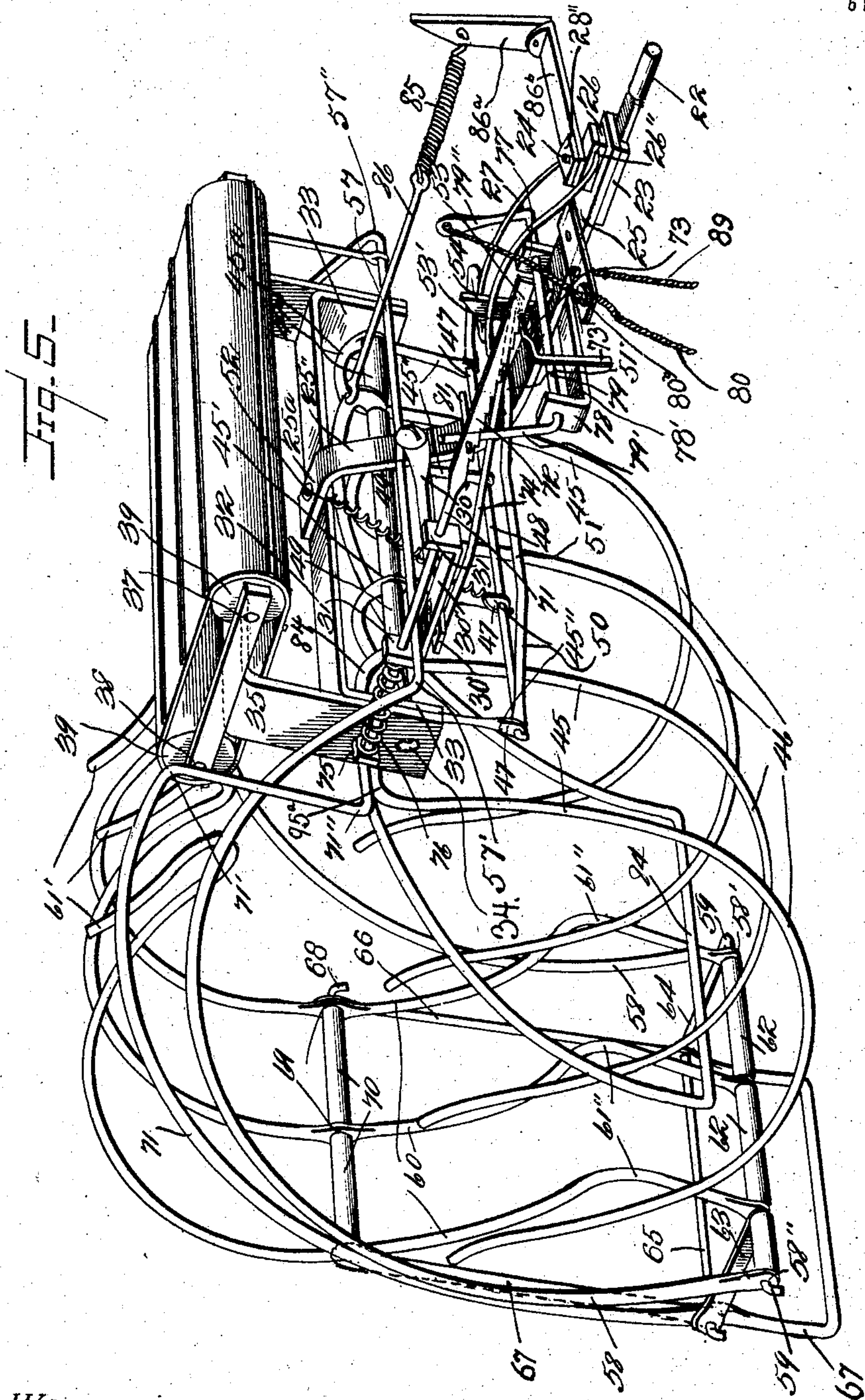
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5 SHEETS—SHEET 5.

Fig. 8.

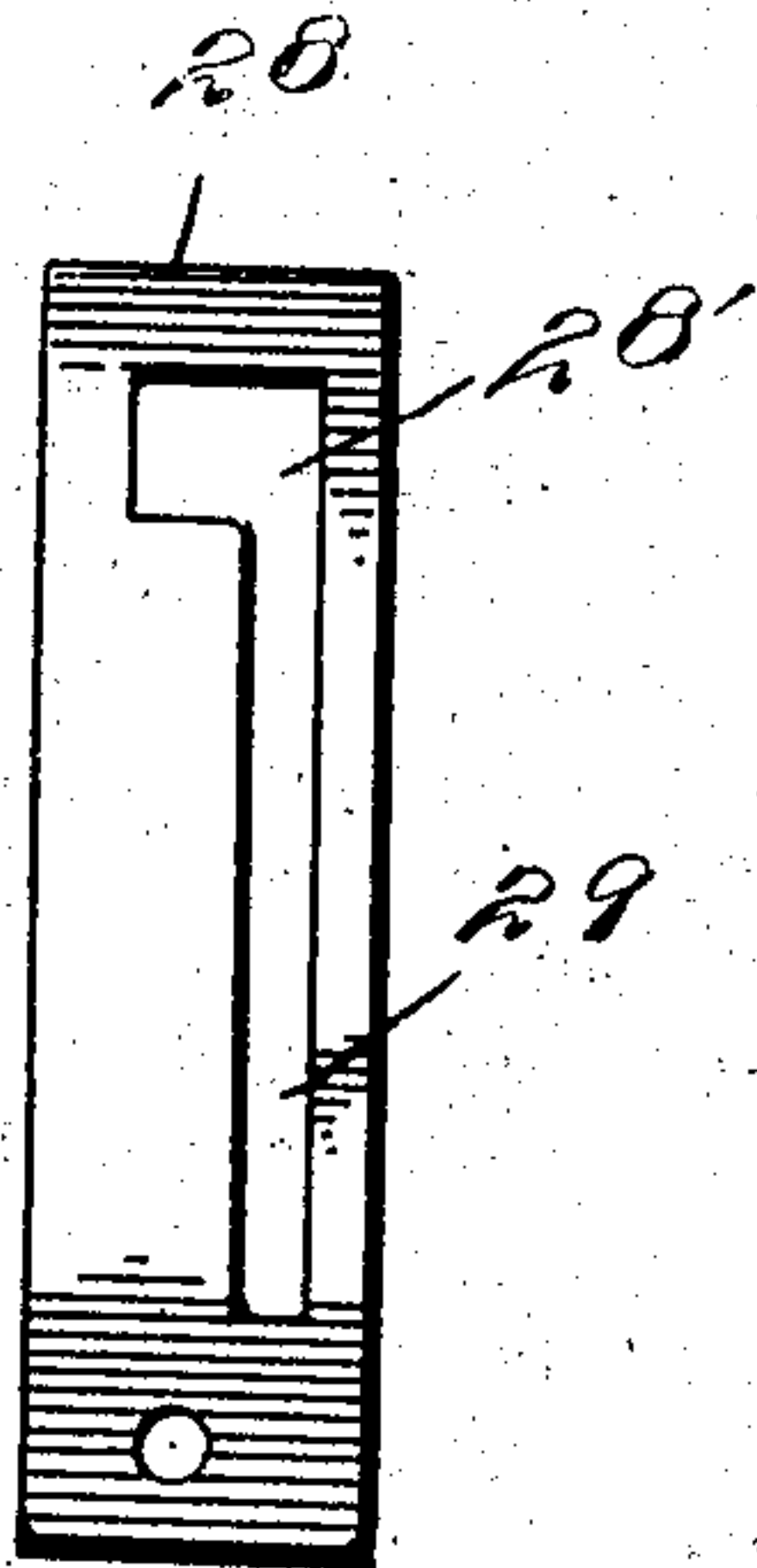
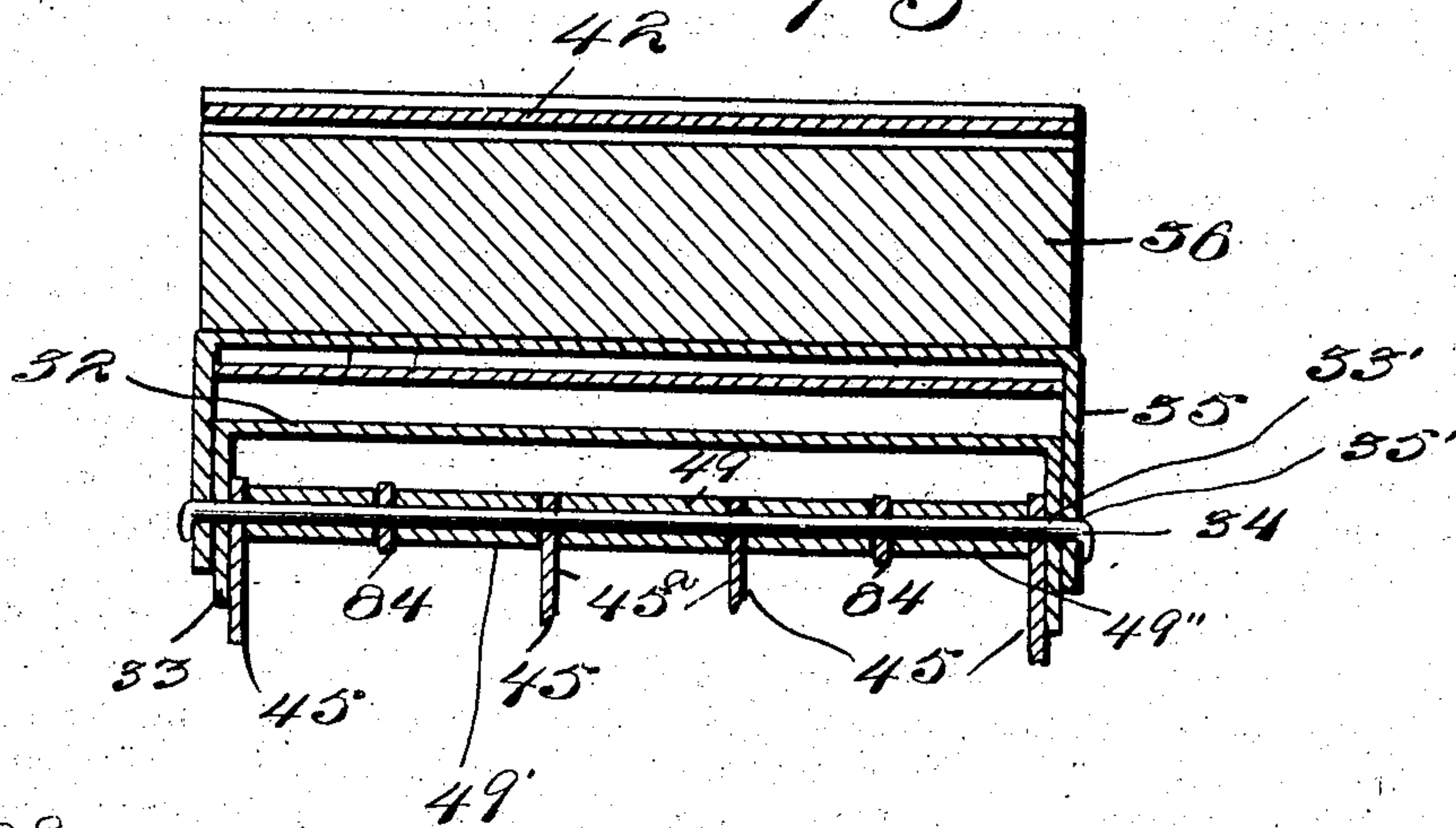


Fig. 9.

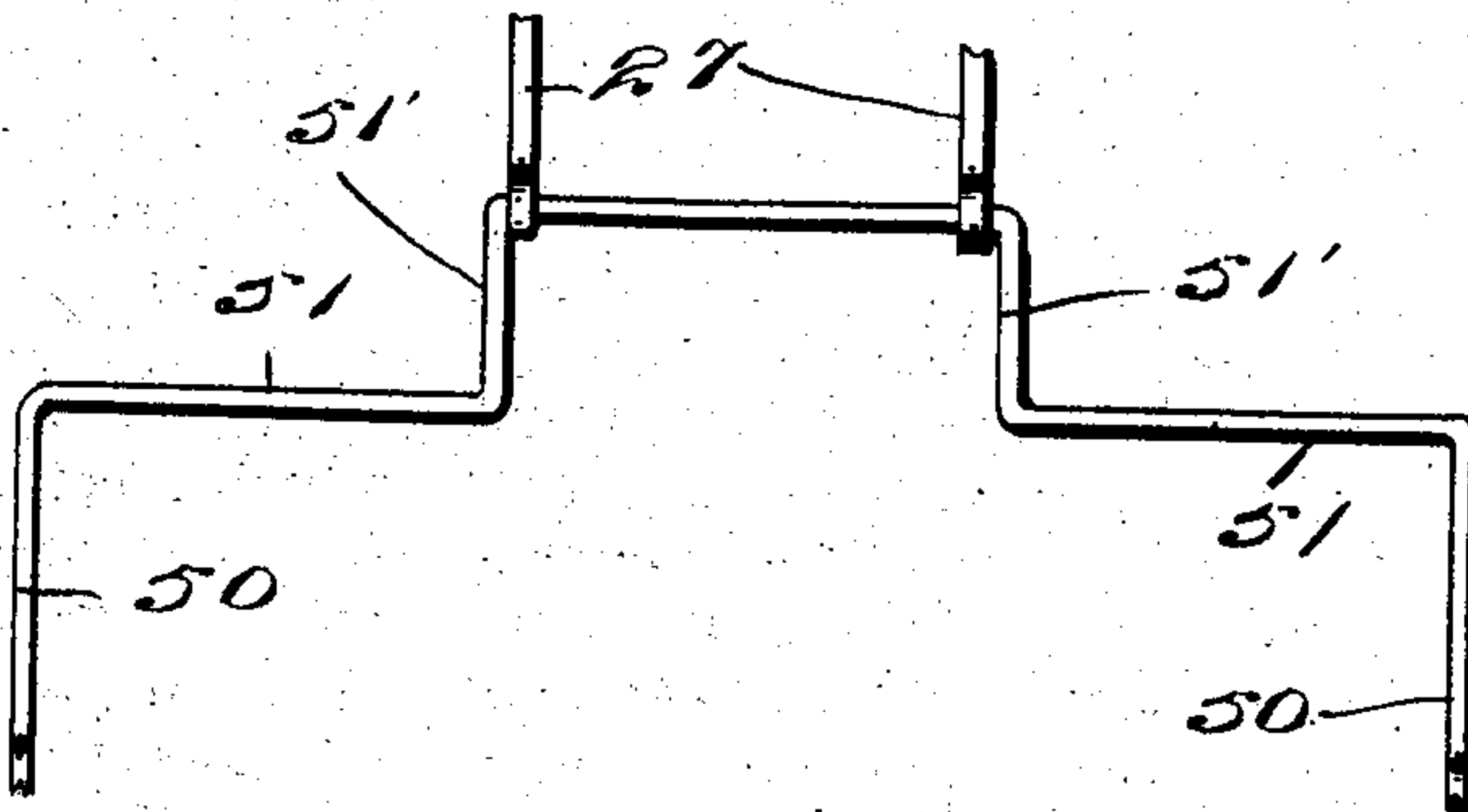


Fig. 10.

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UNITED STATES PATENT OFFICE.

EMIL A. MARX, OF ROYAL CENTER, INDIANA.

SHOCKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 781,440, dated January 31, 1905.

Application filed January 20, 1904. Serial No. 189,836.

To all whom it may concern:

Be it known that I, EMIL A. MARX, a citizen of the United States, residing at Royal Center, in the county of Cass, State of Indiana, have
 5 invented certain new and useful Improvements in Shocking-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which
 10 it appertains to make and use the same.

This invention relates to binders, and more particularly to shocking attachments therefor, and has for its object to provide a device of this nature which will receive the sheaves from
 15 the binder, gather them horizontally into shocks, and finally deposit the shock in an upright position with the base of the shock resting upon the ground, after which the mechanism will release the shock and return to its
 20 original position.

A further object of the invention is to provide a mechanism which after depositing the shock upon the ground will be automatically operated to release the shock.

25 In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a side elevation of the present invention, showing a portion of the binder to
 30 which it is attached. Fig. 2 is a view showing the movable portion of the attachment turned to deposit a shock upon the ground. Fig. 3 is a top plan view of Fig. 1. Fig. 4 is an end view of Fig. 2. Fig. 5 is a perspective view of the movable portion of the attachment removed from the supporting-frame.
 35 Fig. 6 is an end view of the device detached from the harvester, taken oppositely from Fig. 4; and Fig. 7 is a section on line *xx* of Fig. 3. Fig. 8 is a longitudinal section of the movable platform and the parts carried thereby. Fig. 9 is a detail view of the slotted plate. Fig. 10 is a detail view of the U-shaped member.

45 Referring now to the drawings, the present invention comprises a platform 5, having depending members 6 and 7 attached to the rear corners 8 thereof and extending downwardly and rearwardly therefrom. Between the lower
 50 ends 6' and 7' of the depending members is a

yoke 9, which extends forwardly of the members and has its rearward ends 10 bent at right angles to its sides rearwardly of the members 6 and 7 and extending outwardly therebeyond. Each of these angular portions 10 has a perforation 10' therethrough. From Fig. 1 of the drawings it will be seen that the shocking mechanism is adapted for attachment to a binder by the angular portions 10 of the yoke, and when so attached it lies with the rearward
 55 edge 5' of the platform 5 in position to receive the sheaves from the binder. At the rearward edge 5' and forward edge 5'' of the platform there are disposed shafts 12 and 13, respectively, one end of the shaft 13, carrying a
 60 gear-wheel 14, while a similar wheel 15 is carried by one end of the shaft 13, meshing with a gear-wheel 15', mounted upon the binder and driven thereby. The shafts 12 and 13 also are provided each with a roller, one of which is
 65 shown at 13', and upon which is disposed the conveyer-apron 17, composed of canvas or other suitable material, which has cleats 18 secured transversely thereof.

Pivoted between the sides of the yoke 9 is
 75 a block 20, which extends upwardly above the yoke and has a bearing 21 in its upper edge which receives a cylindrical bearing-shaft 22, which is formed integral with and projects from the rearward end of a slotted plate 23.
 80 With the slot 23' of the plate there is engaged a headed bolt 24, the upper end of which is passed through a perforation 25' in a beam 25 and which is also engaged with a perforation 26' in a plate 26. This plate is also provided
 85 with a transverse perforation 26'', with which there is engaged the bight of a U-shaped spring-metal bar 27, the free ends of which project forwardly and are designed for a purpose which will be hereinafter described. The
 90 bight of this U-shaped member 27 is rigidly secured within the perforation 26''. The beam 25 and plate 26 are held against disengagement from the bolt 24 by nuts 28'', disposed upon the end thereof. The plate 23 and the beam
 95 25 lie in parallel planes. Just forward of its connections with the plate 23, just described, the beam 25 passes through an opening 28' in an upwardly-extending supporting-plate 28, which is attached at its lower end centrally of
 100

the bight of the yoke 9. At one side of the supporting-plate 28 a slot 29 extends downwardly therethrough and connects at its upper end with the opening 28'. Forwardly of the supporting-plate 28 and at a point adjacent to the forward edge 5" of the platform 5 the beam 25 is bent upwardly and forwardly at an angle to itself and again at an angle resulting in angular portion 25" and an offset portion 25^a, which lies in a plane parallel to that occupied by the major portion of the beam. Just rearward of the portion 25" of the beam there is secured thereto the end of a laterally-projecting arm 30, which has at its outer end 30' a cross-piece 30'', carrying at its ends a pair of supports 31.

To the end of the offset portion 25^a there is secured a transverse plate 32, which has downwardly-directed bearing-blocks 33 upon its ends. In the perforations 33' of the blocks 33 are disposed the ends of a shaft 34, which project outwardly therebeyond and have attached thereto the ends of a support 35, which have perforations 35', engaged with the ends of the shaft 34. To the upper ends of the support 35 there is secured a supplemental platform 36, carrying shafts 37 and 38 at its rearward and forward edges, respectively. The shafts carry rollers 39, which engage the belt 40 of a conveyer-apron 42 similar to the apron 17. The platform 36 lies forwardly of the platform 5 and in a plane therewith. The shaft 37 carries a gear-wheel 37', which is driven by a pinion 43, carried by a shaft 44, which projects from the rearward edge of the platform 36 and meshes with the gear-wheel 14. It will thus be seen that there are provided two platforms 5 and 36, the latter lying forwardly of the former and adapted to receive sheaves conveyed thereto by the apron 17. It will also be seen that by reason of the shaft 22 and the beam 25 being rotatable in the openings 21 and 28', respectively, the transverse plate 32, and with it the platform 36, may be turned to lie at right angles to the platform 5. The object of this movement will be apparent from later description of the various parts.

The shaft 34, above referred to, between the bearing-blocks 33 has pivotally disposed thereon a number of shocking-fingers 45, which have substantially the shape of the numeral 5. The shaft 34 lies in perforations 45' at the union of the wings 45'' and the stem 45^a of the 5-shaped shocking-fingers. In this position the loops 46 of the shocking-fingers are directed downwardly and forwardly of the shaft 34, and the wings 45'' project downwardly at right angles from the shaft 34. The ends of the wings 45'' are perforated, as shown at 47, and engaged with the perforations there is a rod 48. The fingers 45 are spaced one from another on the shaft 34 and are held in such spaced relation by means of a plurality of cylindrical sections

49, 49', and 49'', disposed upon the shaft 34. In the device shown in the drawings there are employed four shocking-fingers 45, which are disposed with the outside fingers lying against the inner faces of the bearing-blocks 33 and spaced from the inner fingers by the sections 49 and 49'', as shown. Pivotally attached at their ends to the rod 48 are the legs 50 of a U-shaped member 51, which has an offset portion 51' centrally of its bight and which lies with this offset portion above and inclosing the beam 25 just rearwardly of the laterally-projecting arm 30. With this offset portion 51' are engaged the free ends of the U-shaped spring-bar 27, mentioned above. It will thus be seen that the wings 45'' of the fingers 45 act as levers to move the fingers upon the shaft 34 and that the upward tendency of the arms of the spring-bar 27 would be communicated, through the member 51, to these wings to move the loops 46 of the shocking-fingers rearwardly. To facilitate this movement, a helical spring 52 is secured at one end to the rod 48 and at its remaining end to the beam 25.

To hold the loops 46 of the fingers 45 normally forward, as shown in Fig. 1 of the drawings, a trigger 53, having a notch 53' therein, is pivoted to the edge of the beam 25 with its notched end 54 extending upwardly therefrom, and this notch 53' normally engages the offset portion 51' of the member 51, holding the member and fingers 45 against the action of the spring-bar 27 and the helical spring 52. The lower end 55 of the trigger is bent at an angle to itself and lies below the beam 25, and a helical spring 56 is attached at one end thereto and at its remaining end to the beam to hold the end 54 of the trigger projected forwardly and its notch in engagement with the offset portion 51'.

Secured to the angular portion 25" of the beam 25 is a transverse bar 57, which extends outwardly beyond the supports 35, which is bent forwardly at the points 57' and 57'' to form a pair of forwardly and downwardly directed arc-shaped arms 58. The ends 58' of these arms lie in a plane with the lowermost points of the fingers 45 and are connected at their ends by means of a rod 59 passed through the perforations 58'' in the ends of the arms 58. Upon the rod 59 are disposed a plurality of shocking-fingers 60, which are similar to the fingers 45, the difference being that the wings 45'' are omitted and that their bills are bent backwardly upon themselves, as shown at 61'. The stems 61'' of the fingers 60 correspond to the stems 45^a of the fingers 45. These fingers 60 are perforated at the ends of the stems 61'', and these perforations are engaged with the rod 59. In this instance the fingers are spaced one from another, as in the former instance, by means of the spacing-blocks 62, having central passages 62' engaged with the rod 59. Similar

blocks hold the outside fingers 60 spaced from the arms 58. As will be seen from the drawings, the ends 61' of the fingers 60 lie below the supplemental platform 36 and spaced 5 from the fingers 45 to permit of the passage therebetween of grain carried by the conveyor.

Projecting forwardly from the rod 59 and rigidly attached thereto are a pair of arms 63 and 64, the outer ends 63' and 64' of which are connected by a transverse rod 65. Pivoted upon the rod 65 at one end are a pair of rods 66 and 67, which are attached at their remaining ends to the ends of a rod 68, which 15 is passed through perforations 69 in the fingers 60. Upon this rod are disposed a plurality of spacing-blocks 70, which act to hold the fingers 60 spaced.

Pivoted to the rod 65 at one of its ends is 20 a curved arm 71, which extends rearwardly to a point adjacent to the forward edge of a platform 36 and is then turned downwardly, as shown at 71', and again rearwardly at 71'' and lies with this portion slidably disposed in the hangers 31. Rearwardly of the hangers the arm 71 is provided with ratchet-teeth 72 upon 25 its lower edge and with which there is normally engaged a finger 73, carried at one end of a spring-plate 74, the remaining end of which is attached to the plate 30. The finger 73 has a lug 73' projecting downwardly from its free end. Just rearward of the downwardly-directed portion 71' of the arm 71 the portion 71'' of the arm has attached thereto a 35 collar 75, and between this collar and one of the hangers 31 there is disposed a helical spring 76, the tendency of which is to hold the arm 71 at the forward limit of its movement. The function of the finger 73, cooperating with the ratchet-teeth 72, is to hold the 40 arm 71 against the action of the spring 76. It will be apparent that any forward movement of the arm 71 would cause downward movement of the rod 65, which movement 45 transmitted through the arms 63 and 64 of the fingers 60 would cause the ends 61' of these fingers to move upwardly and forwardly away from the fingers 45.

A pair of supports 77 and 78 extend upwardly from a cross-piece 78', attached to the beam 25, and in these supports there is journaled a shaft 79, which has its ends 79' and 79'' turned upwardly exteriorly of the supports. To the angular end 79'' there is attached a chain 80, which extends to the driver's 55 seat upon the binder. By means of this chain the end 79'' of the shaft may be moved in an arc and with it the end 79', the upper end of which is thus brought into the path of movement of the cleats 18, by which it is engaged and moved rearwardly. Projecting from the inner face of the arm 71 and into the arc of the angular end 79' is a pin 81, which when 60 the end 79' is moved rearwardly is engaged

and moved thereby, and with it the arm 71 is 65 moved against the action of the spring 76.

Projecting downwardly and forwardly from the yoke 9 there is an angle-iron 82 for a purpose which will be hereinafter described. Projecting forwardly and diagonally upwardly from the yoke 9 is a second angle-arm 83, the purpose of which will be hereinafter described.

Pivoted upon the shaft 34 are the spaced ends of a U-shaped member 84, which projects forwardly between the shocking-fingers 45 and is held yieldably at the upward pivotal movement by a spring 85, which is connected to one of the ends of the U-shaped member by means of a link 86, the remaining 80 end of the spring being attached to a lever 86^a, which is pivoted to a brace 86^b, attached to the beam 25 in such a position that its free end lies in the path of the cleats 18 and is engaged by them successively. This successive 85 engagement causes momentary tension on the spring, which is removed as each cleat passes the lever. This movement results in oscillation of the member 84.

In operation the apron 17 receives the 90 sheaves from the discharge-opening of the binder, and they are carried forwardly over the platform 5 and deposited upon the carrier 42, which in turn deposits them within the shocking-fingers. The U-shaped member 84, 95 which may be termed a "packer," is held against the sheaves as they are deposited upon the shocking-fingers and moves downwardly as additional sheaves are introduced, thus preventing the sheaves from being jolted out of 100 the shocking-fingers. The oscillatory movement of the packer causes the sheaves to lie closely together. When a sufficient number of sheaves have been introduced between the sides of the shocking-fingers, a mechanism 105 which will be hereinafter described is set in operation, which revolves the beam 25 and the bearing-shaft 22 to bring the edge of the beam 25 into the slot 29, when the weight of the mechanism causes the beam to move downwardly through the slot 29, which is permitted by the pivotal mounting of the block 20 in the yoke 9. In this position the platform 36, the shocking-fingers, and other mechanism, 110 which comprise what may be termed the "head" of the attachment, lie at right angles to the platform 5, and the bases of the sheaves within the shocking-fingers are directed toward the ground, as shown in Fig. 2 of the drawings. The downward movement of the 115 beam 25 brings the lug 73' in engagement with the angle-iron 82, which disengages the finger from the ratchet-teeth 72 and allows the arm 71 to move forwardly under the tension of the spring 76. This movement of the arm, 120 as described above, causes the fingers 60 to move outwardly and forwardly and releases the sheaves. The downward movement of the

beam 25 also causes the angular end 55 of the trigger 53 to engage the diagonal portion of the angle-iron 83, which moves the lower portion of the trigger forwardly and disengages the notch from the offset portion 51' of the member 50, when the springs 27 and 52 operate to move the fingers 45 rearwardly and to disengage them from the sheaves at the same time that the fingers 60 are disengaged. This allows the ends of the sheaves to descend and rest upon the ground. The fingers 45 and the packer 84 now lie in such a position as to permit the sheaves to pass outwardly from the shocking-fingers, as shown in Fig. 4 of the drawings, as the machine is moved over the ground. To return the movable portion of the attachment to its original position, an arm 88 projects from the beam 25 and has attached thereto a cable 89, passing through pulleys 90. Strain brought upon the cable 89 will draw the beam 25 to the upper edge of the slot 29, after which further strain upon the cable will cause the beam to turn and lie within the opening 28'. This turning operation is aided by a spring 91, which is attached to the beam 25 and to the yoke 9. After the device has been returned to its initial position the cable 80 is drawn to move the shaft 79, as above described, and through the medium of the end 79' and the pin 81 return the arm 71 and shocking-fingers 60 to their original position. This cable 80 also acts to turn the beam 25 in the opening 28' to bring its edge into the slot 29. This is accomplished by passing the cable through a ring 80^a, attached to the beam, and providing the cable with a button 80^b, which is adapted to engage the ring. When the chain is pulled, the shaft is first moved, as above described, and afterward continued strain upon the cable will turn the beam 25, as described. The pulling of the cables 80 and 89 is accomplished by attaching them to reels which are operated by the binder and which may be thrown in or out of gear by a clutch mechanism. To return the fingers 45 to their original positions, a spring 80^c is attached to the member 51 and to the yoke, which as the head of the implement is turned to bring it into the initial position causes the offset portion 51' of the member 51 to engage the notch of the trigger 53.

What is claimed is—

1. A shocking attachment for harvesters comprising a platform, a frame attached to and located beneath the platform, a beam mounted in the frame and adapted for pivotal and vertical movement with respect thereto, a conveyer mounted upon the platform and adapted to receive sheaves from the harvester, arms carried by the beam and adapted to re-

ceive the sheaves from the conveyer to form a shock, means for revolving the beam and arms and for moving them downwardly to deposit the shock upon the ground and means for returning the beam and arms to their original positions.

2. A shocking attachment for harvesters comprising a platform, a frame attached to and located beneath the platform, a beam mounted in the frame and adapted for pivotal and vertical movement with respect thereto, a conveyer disposed upon the platform and adapted to receive sheaves from the harvester, a second conveyer carried by the beam and adapted to receive sheaves from the first-named conveyer, arms carried by the beam and disposed below the second-named conveyer to receive the sheaves therefrom and to hold them to form a shock, means for revolving the beams and arms and for moving them downwardly to place the shock upon the ground, means for operating the arms to release the shock and means for returning the mechanism to its original position.

3. A shocking attachment for harvesters comprising a platform, hangers depending from the rearward corners of the platform, a yoke disposed between the hangers and secured thereto the ends of its legs extending rearwardly beyond the hangers, and turned laterally and adapted for attachment to a harvester and sheaf-conveying and shock-forming mechanism carried by the platform and yoke.

4. A shocking attachment for harvesters comprising a platform a frame attached to and located beneath the platform, a beam mounted in the frame and adapted for pivotal and vertical movement with respect thereto, a conveyer mounted upon the platform and adapted to receive sheaves from the harvester, spaced arms carried by the beam and adapted to receive sheaves from the carrier therebetween, supplemental arms projecting into the space between the arms, means for holding the supplemental arms yieldably against the sheaves to prevent disengagement thereof from the arms and to form a shock, means for revolving the beam and arms, means for moving them downwardly to deposit the shock upon the ground, means for operating the spaced arms and supplemental arms to release the shock and means for returning the mechanism to its normal position.

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

EMIL A. MARX.

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