

No. 652,423.

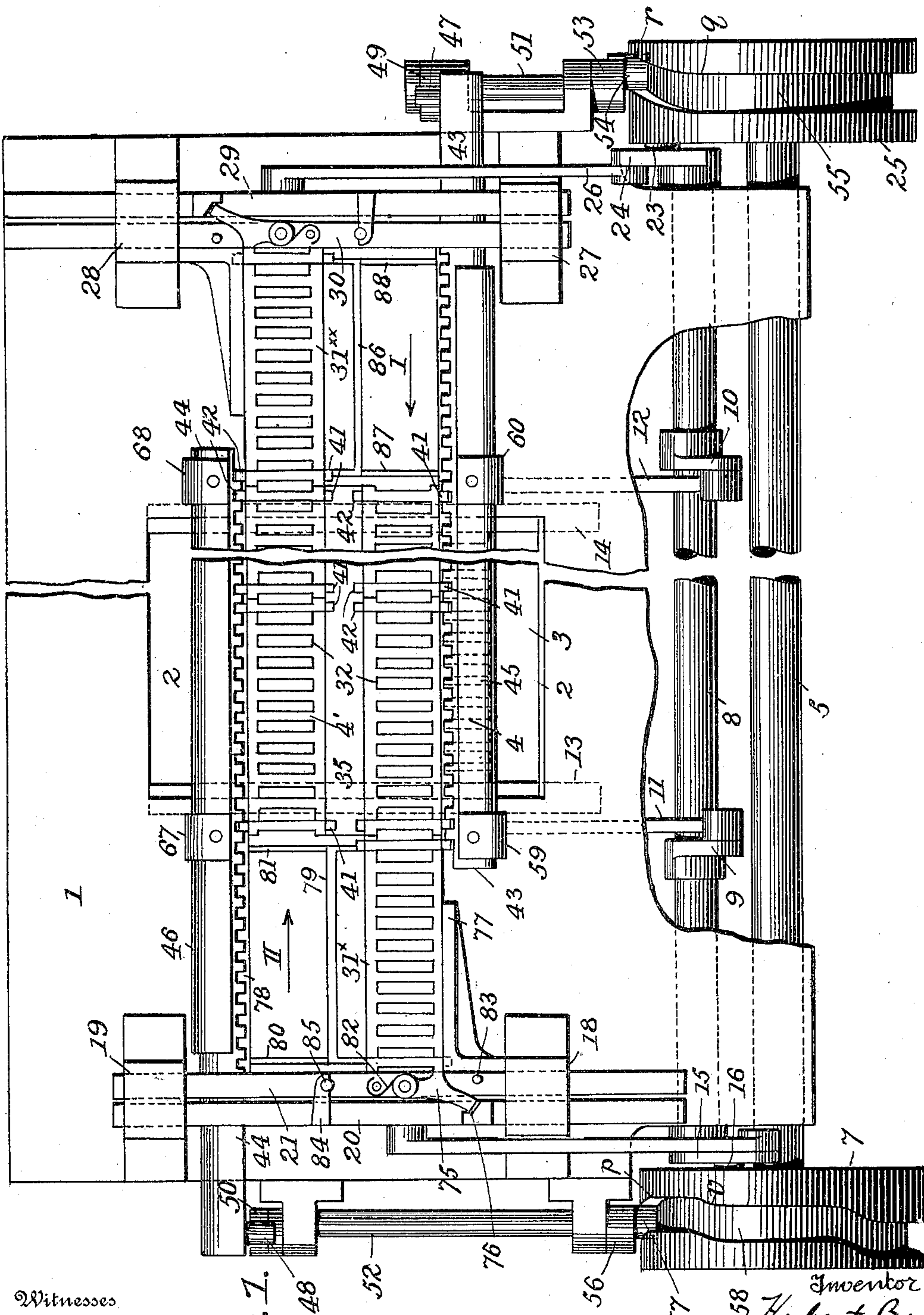
Patented June 26, 1900.

H. BURG.  
TYPE DISTRIBUTING MACHINE.

(Application filed Jan. 24, 1899.)

(No Model.)

5 Sheets—Sheet 1.



Witnesses

*J. Hinkel*  
*C. W. Clement*

Fig. 1.

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*Hubert Burg*  
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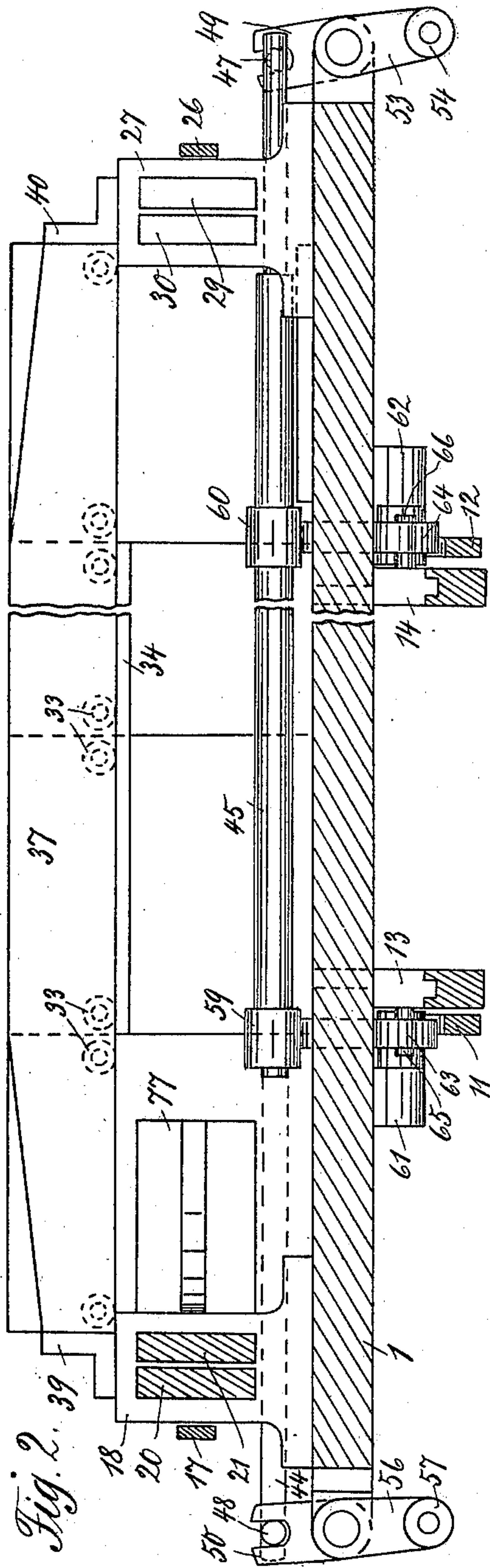


Fig. 2.

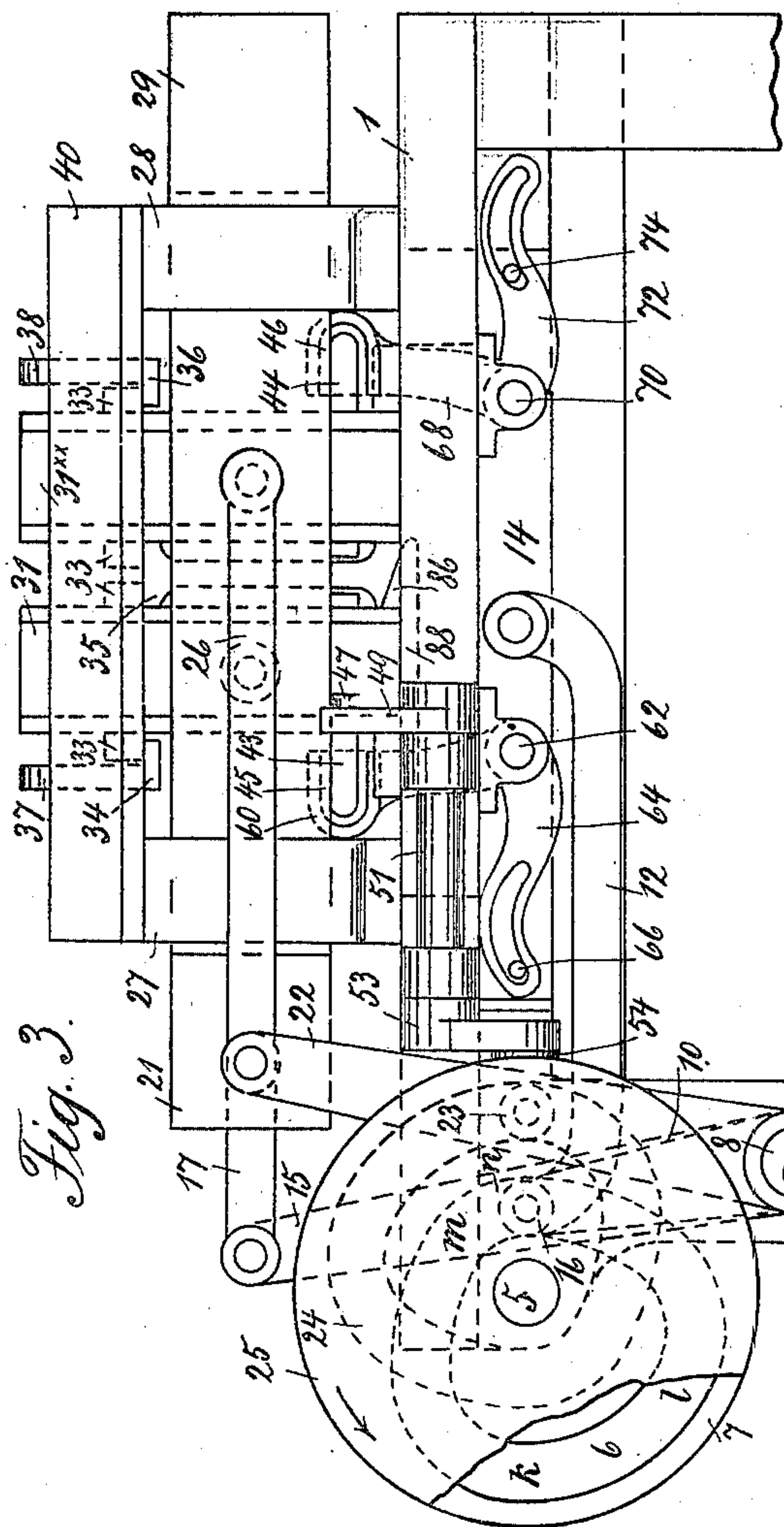


Fig. 3.

Fig. 4.

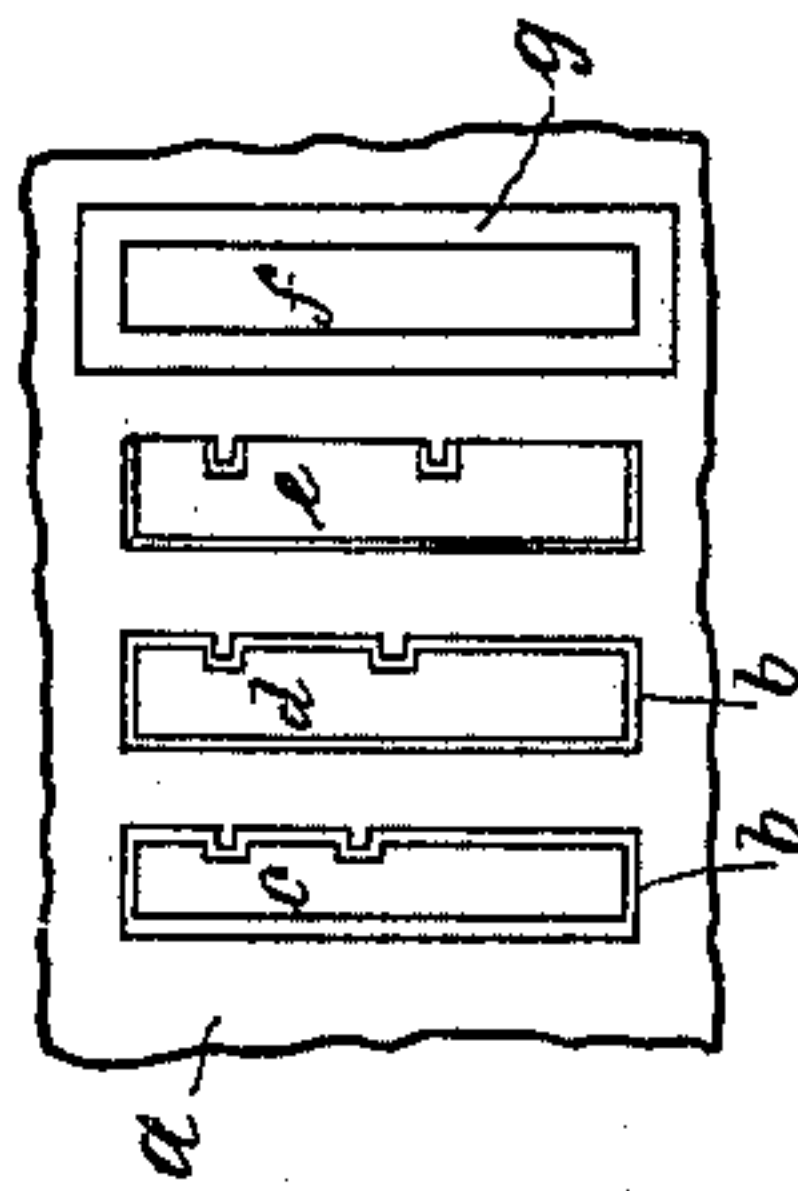


Fig. 5.

Witnesses

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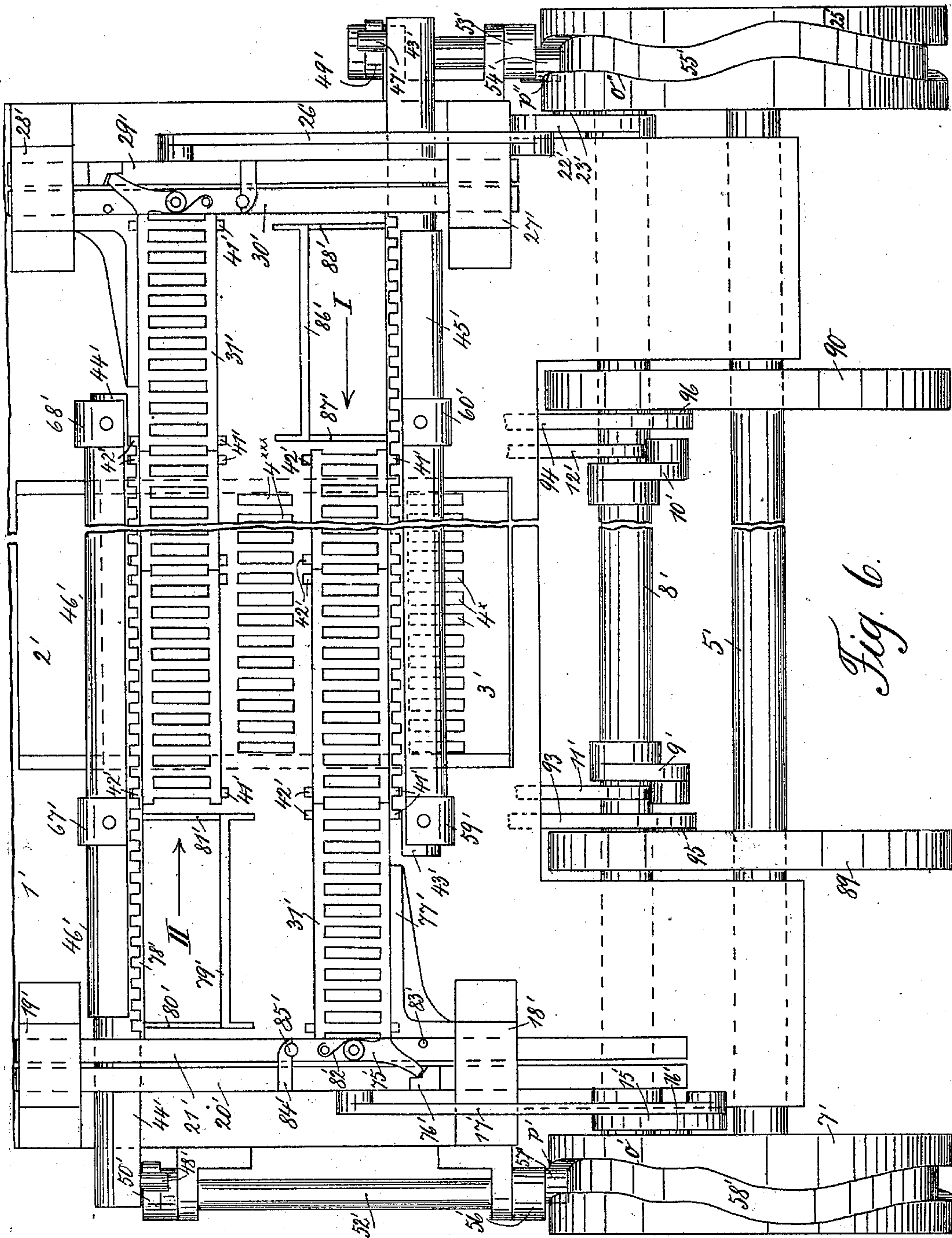


Fig. 6.

witnesses

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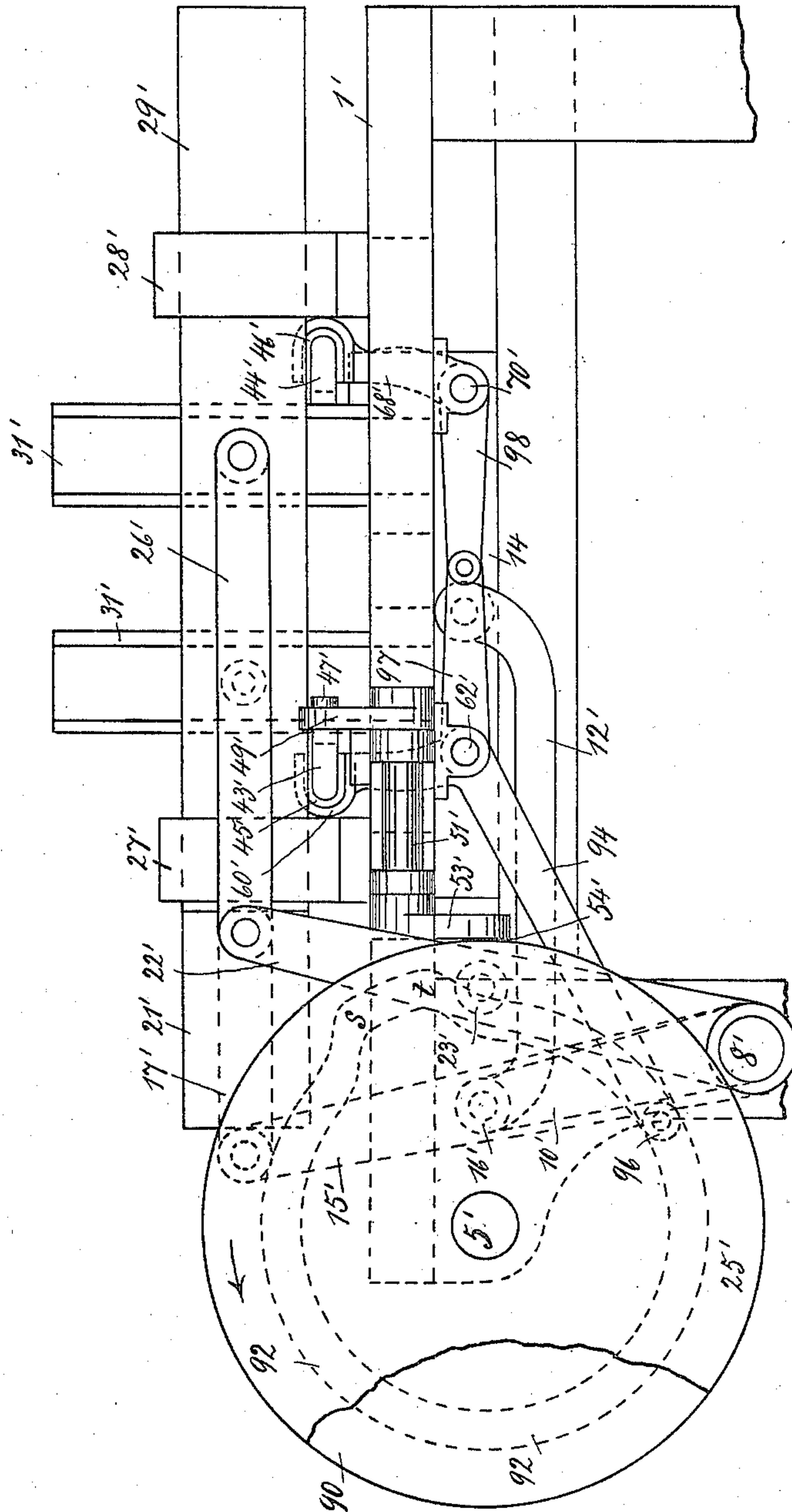
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5 Sheets—Sheet 4.

Fig. 7.



Witnesses  
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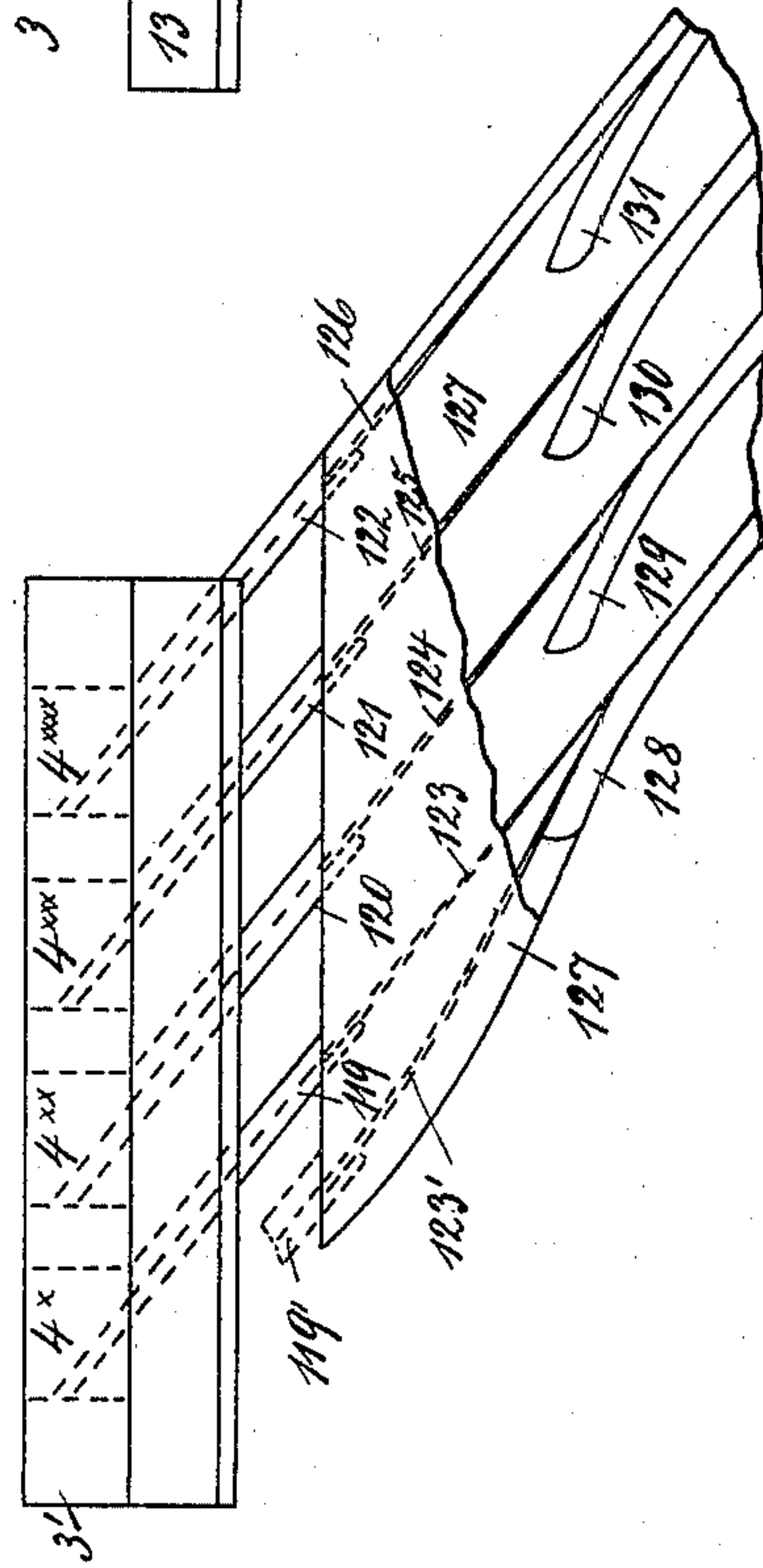
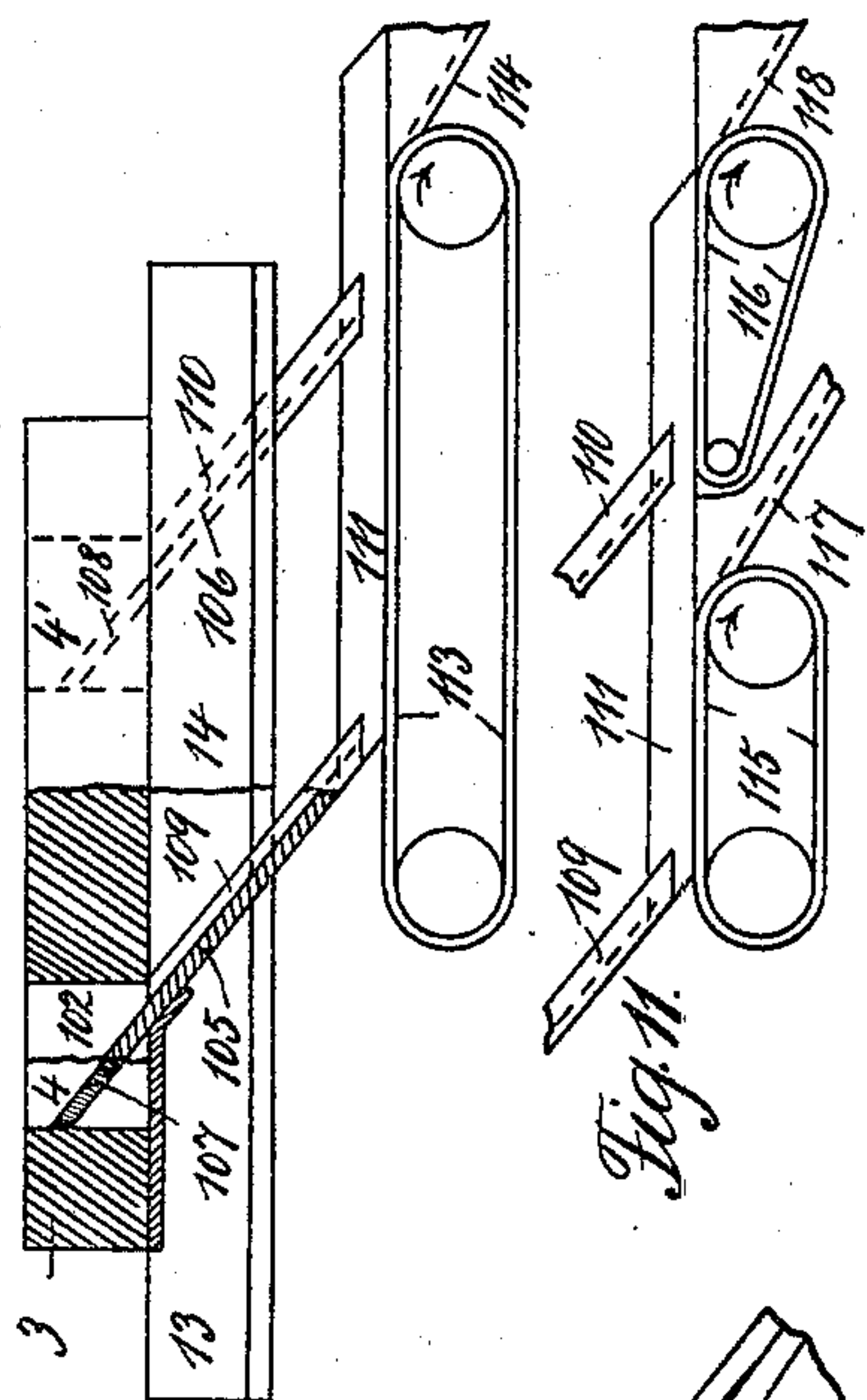
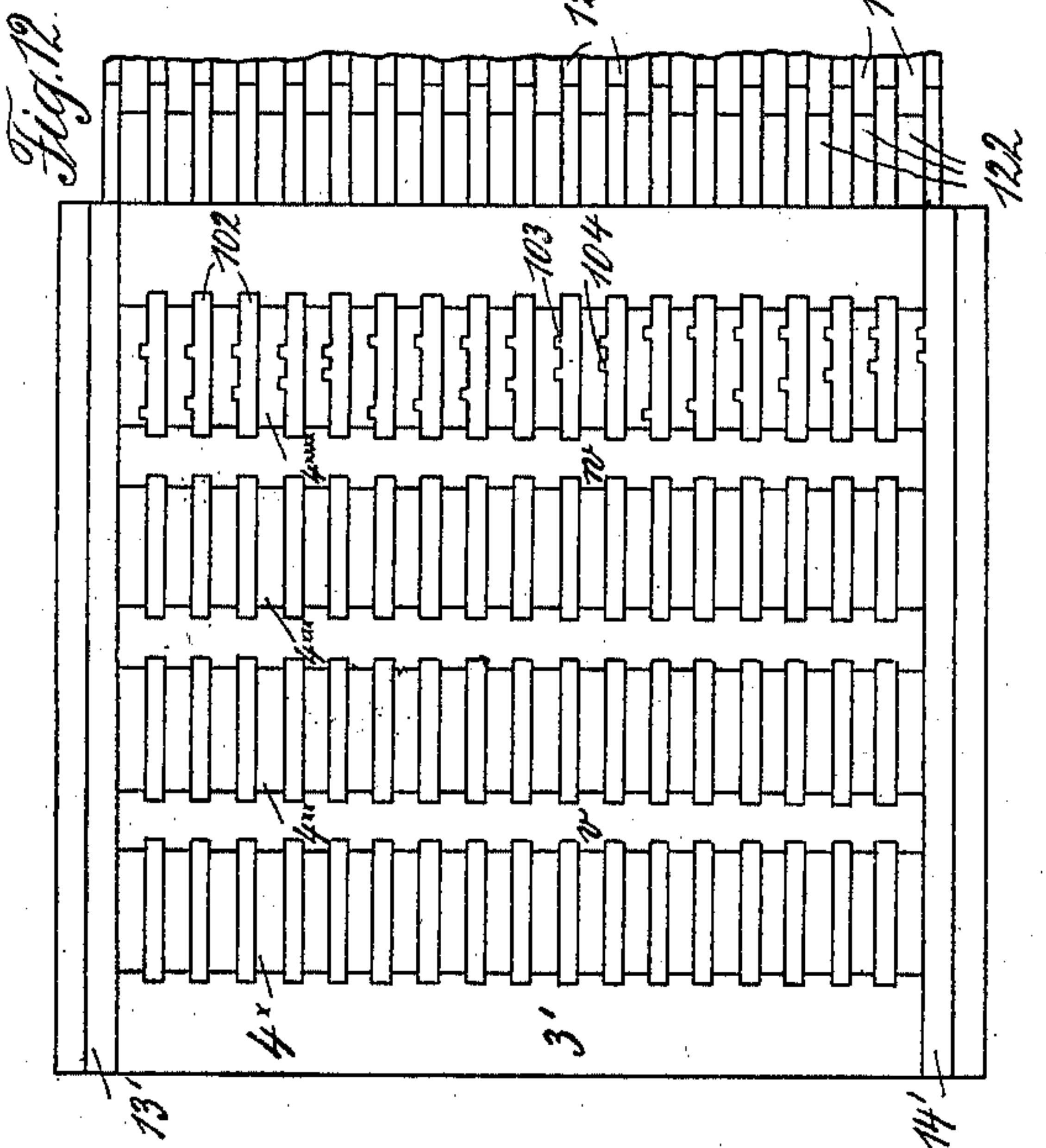
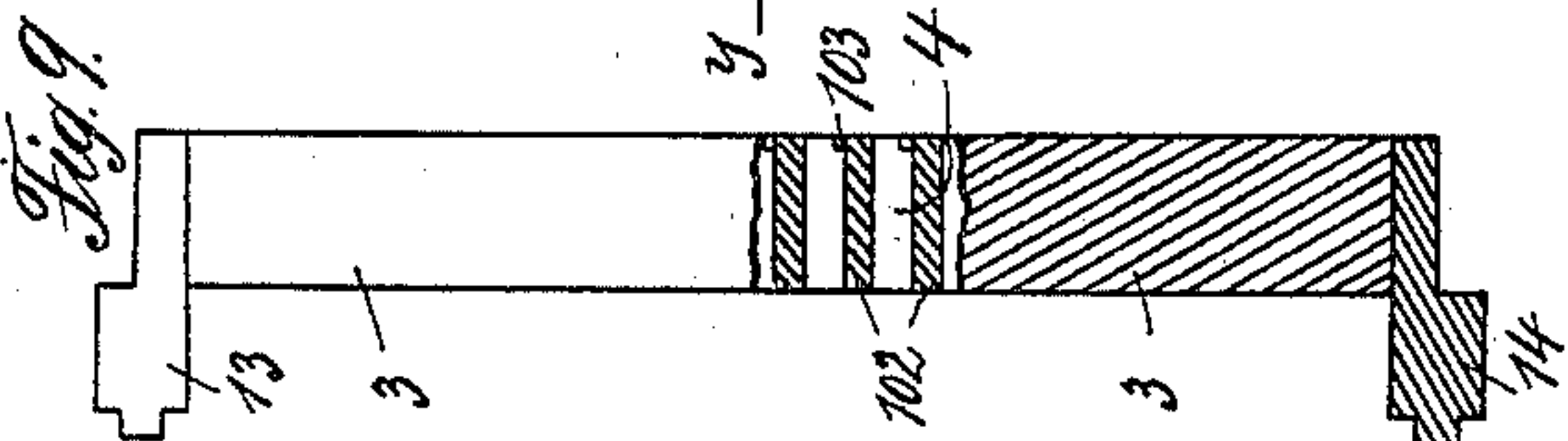
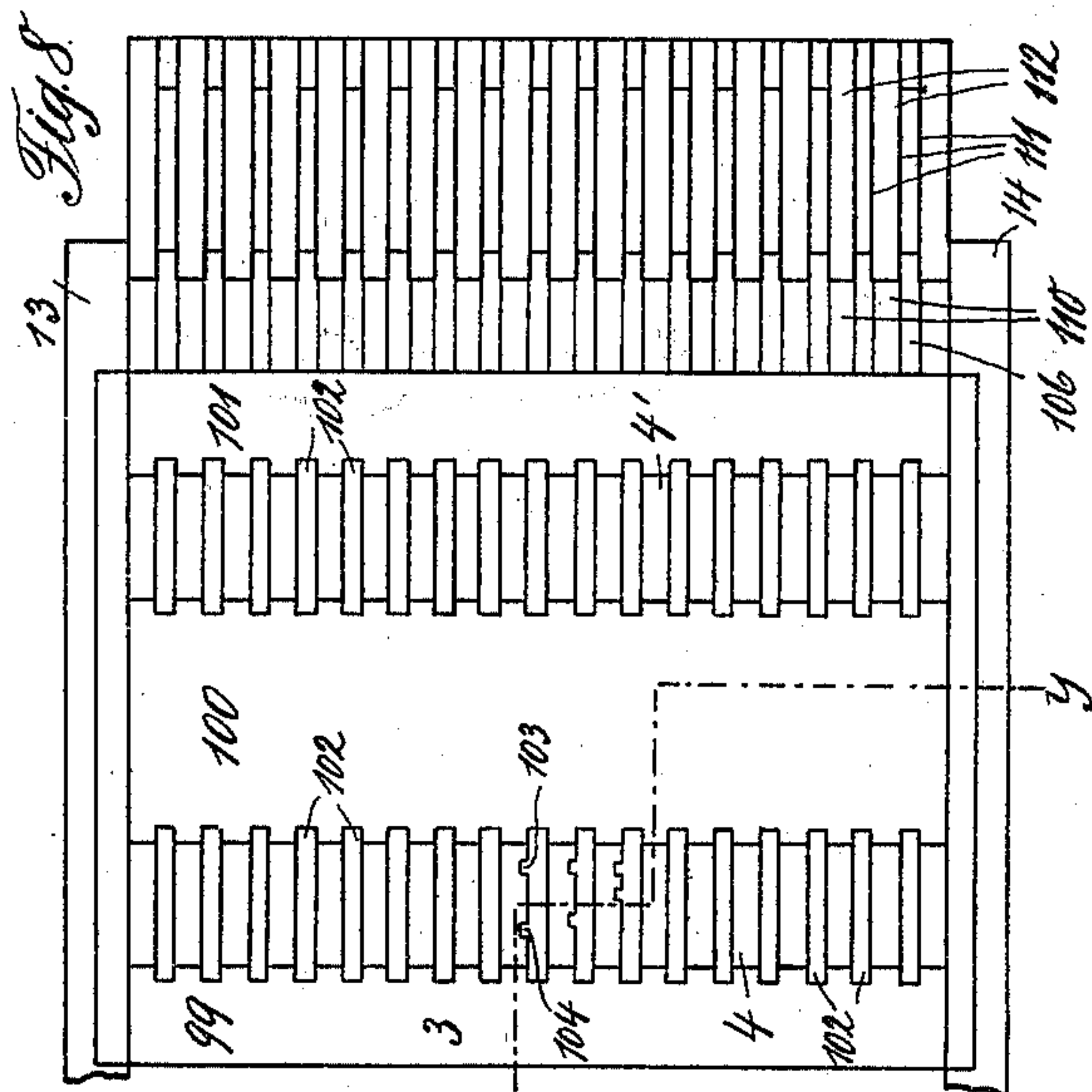
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TYPE DISTRIBUTING MACHINE

(Application filed Jan. 24, 1899.)

(No Model.)

5 Sheets—Sheet 5.



Witnesses  
William E. Neff  
E. M. Christed

Inventor  
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J. H. Watson, Atty



# UNITED STATES PATENT OFFICE.

HUBERT BURG, OF MOLLKIRCH, GERMANY.

## TYPE-DISTRIBUTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 652,423, dated June 26, 1900.

Application filed January 24, 1899. Serial No. 703,252. (No model.)

*To all whom it may concern:*

Be it known that I, HUBERT BURG, a subject of the German Emperor, residing at Mollkirch, near Rosheim, in the Province of Alsace-Lorraine, Germany, have invented new and useful Improvements in Type-Distributing Machines, of which the following is a specification.

My invention relates to distributing-machines for nicked types in which lines of types to be distributed are contained in channels and these latter, with the lowermost type successively presented to a series of distributing-slots, secured in a plate and provided with rib combinations corresponding to the several nick combinations of the types, so as to allow of the lowermost type being released from the line as it reaches its corresponding distributing-slot; and the objects of my invention are, first, to provide means for distributing types of different body sizes by one and the same set of distributing-slots, corresponding in width to the largest body to be used, and, second, to prevent breaking of types as arising hitherto in the said class of distributing machinery. I attain these objects by the means represented in the accompanying drawings, in which—

Figure 1 is a top view of my invention; Fig. 2, a front view thereof, partially in section; on line  $xx$  of Fig. 1; and Fig. 3, a side view looking from the right of Figs. 1 and 2, the guide-rails for the type-channels being removed in Fig. 1 for the sake of clearness. Figs. 4 and 5 are a diagrammatical top view and a corresponding sectional view, respectively, explaining the principle of my invention. Fig. 6 is a top view of a modification of my invention; and Fig. 7, a side view of the same looking from the right of Fig. 6, Figs. 6 and 7 corresponding to Figs. 1 and 3, respectively. Figs. 8 to 10, inclusive, are a top view and a partially-sectional view of the means for assembling the released characters, a slight modification of Fig. 10 being shown in Fig. 11; and Figs. 12 and 13 are a top view and a corresponding side view of a modified construction of the assembling means.

Similar letters and numerals refer to similar parts throughout the several views.

Referring first to the diagrammatical view, Fig. 4, in order to explain the principle of my

invention,  $a$  is a horizontal plate provided with ribbed distributing-slots  $b$  and showing, accordingly, nicked types  $cde$  within the said slots. The slots  $b$  are throughout of the same width, the types  $cde$ , however, showing different body sizes. Supposing these types being the lowermost ones of lines contained, respectively, in vertical channels, as indicated by numerals  $f$  and  $g$ , and in the position represented with respect to the several slots, they will be obviously released from the lines and drop through their respective distributing-slots independently of the size of the type-body. It will be likewise clear that in the said position of the types with respect to the slots any types not accordingly nicked are prevented by the ribs from passing through the respective slots; but supposing the type-channels being successively shifted across the slots, as commonly, a type—as  $c$ , for instance—of a comparatively-small body, which should not pass but through its proper distributing-slot, would obviously pass through any slot independently of its nick combination. Therefore when distributing types of a small body the type-channel cannot be allowed to pass over the distributing-slot but such a distance that the nicked type edge remains behind the projecting ends of the ribs, this distance, moreover, depending upon the depth of the nicks—that is to say, types, as  $c$ , with flat nicks are to be shifted farther than types with deeper nicks, as  $d$  and  $e$ . As concerning types of a larger body, as  $e$ , just fitting in the distributing-slots, or nearly so, they cannot be wrongly released, even though fully crossing such slots; but there are other inconveniences met therewith, as appearing from Fig. 5, the removing of which is likewise the object of my invention. Supposing the nick combinations of the lowermost types contained in the distributing-channels not conforming to the respective rib combinations of the distributing-slots, Fig. 5, the lowermost type will be prevented from passing through the slot and should be retained at its place, as shown with respect to line  $f'$  and channel  $g'$ ; but in practice the position of the lowermost type in that instance is somewhat different, as indicated by the types  $c' d' e'$ , their left-hand edges being not supported and therefore slightly lowered beneath the upper



level of slotted plate *a*, so as to thrust against the opposite edge of the slot when shifting the type-channel across the slot, as usual, and cause breakage of types. To prevent this, the type-channels therefore cannot be allowed to cross the distributing-slots. In order to avoid the said inconveniences, the type-channels in my invention are given two movements—say a reciprocating movement from the right to the left and back to the right, Fig. 4, for presenting their ends to the distributing-slots in the position represented in Fig. 4, and then removing them again from the slots without crossing the same, and, second, a shifting movement for successively bringing each channel into the reach of the several distributing-slots, the said shifting movement taking place after the slotted plate likewise having been shifted, so as to present full portions to the open ends of the type-channels, the lowermost types thus being firmly retained in their position.

I will now describe my invention with reference to Figs. 1 to 3 and 8 to 10. In a horizontal frame-plate 1 is provided an opening 2, and a plate 3 is reciprocated therein, being flush with plate 1 and provided with two rows of ribbed distributing-slots 4 4', as fully appearing from and hereinafter described with respect to Figs. 8 to 10. A reciprocating movement is imparted to plate 3 from the main driving-shaft 5 by means of a cam-groove 6 on the inside of a disk 7 and a rock-shaft 8, provided with levers 9 10 15, levers 9 10 being connected by rods 11 12 to guide-bars 13 14 of plate 3 and lever 15 engaging with groove 6 by a roller 16 and connected by a rod 17 to a slide 20. The latter is guided in bearings 18 19 and temporarily coupled with an adjacent slide 21. A lever 22 is loosely mounted on the other end of shaft 8, engaging by a roller 23 with a cam-groove 24 of a disk 25 on shaft 5 and connected by a rod 26 to a slide 29. The latter is guided in bearings 27 28 and temporarily coupled with an adjacent slide 30. By these means, as appearing from Fig. 3, slide 20 and plate 3 are reciprocated in conformity with each other and slide 29 in an opposite direction, respectively, the strokes of slide 20 and 29 being the same as to extent and about double of the stroke of plate 3. Above plate 1 are provided a series of receptacles or boxes 31, containing in channels 32 lines of types to be distributed. The type-boxes are carried along guideways I II, as represented by arrows, passing from guideway I to guideway II on the left and again from guideway II to guideway I on the right-hand end, so as to perform a continuously-circulating movement. On their way above plate 3 the boxes are supported by rollers 33 and guide-rails 34 35 36, Figs. 2 and 3, plate 3 thus being released from the weight of the boxes and only charged with the weight of the type-columns. Guide-rails 34 36 are fixed to bars 37 38, longitudinally extending between cross-bars 39 40, the latter being sup-

ported by the bearings 18 19 27 28, and guide-rail 35 consists of an I-shaped bar bearing with its ends on plate 1. For the sake of clearness with respect to the other parts guide-rails and bars 33 34 36 37 38 39 40 have not been represented in Fig. 1. Each type-box is provided on the lower part of its ends with teeth 41 42 to engage with racks 43 44, performing a swinging and a reciprocating movement and serving the purposes of reciprocating the type-columns to and from the distributing-slots and of shifting the same step by step into the reach of the several slots and carrying the boxes along their ways. The racks 43 44 are loosely guided in sleeves 45 46 and engage by studs 47 48 with the forked ends of levers 49 50, mounted on rock-shafts 51 and 52, respectively. Shaft 51 is rocked by a lever 53, fixed thereto and engaging by a roller 54 with a cam-groove 55 of a disk 25, and shaft 52 is similarly rocked by a lever 56, roller 57, and cam-groove 58 of disk 7. By these means the racks 43 44 are intermittently reciprocated within their guide-sleeves in accordance with the shape of cam-grooves 55 58. Sleeve 45 is supported by two arms 59 60, pivoted on studs 61 62 beneath plate 1 and firmly connected to slotted levers 63 64, pins 65 66 being fixed to the guide-bars 13 14 of plate 3 and engaging with the slots of levers 63 64. With respect to sleeve 46 the corresponding parts are indicated by numerals 67 68 69 70 71 72 73 74, respectively. Levers 63 64 and 71 72 extending, respectively, in opposite directions from their shafts, the sleeves 45 and 46 are simultaneously rocked in opposite directions, so as to bring racks 43 and 44 simultaneously into and out of engagement with the teeth 41 of the boxes traveling on guideway I and the teeth 42 of the boxes traveling on guideway II, respectively. Thus during the engagement of the racks with the teeth of the boxes the latter will be reciprocated, together with the racks, but remain stationary during the other time. By means of the cam-grooves 6 55 58 plate 3 and boxes 31 are shifted with respect to each other as follows: Plate 3 is kept at rest for a time at the ends of its stroke during the passage on roller 16 of the circular portions *k l* and *m n* of cam-groove 6. During the passage on roller 16 of the portion *m n* plate 3 is kept in the position represented in Fig. 1 with slots 4' in the guideway II and in the path of the type-boxes traveling that way, the row of slots 4 being out of guideway I and the path of the corresponding boxes. During this time of rest racks 43 44 are in engagement with the teeth 41 and 42 of the boxes on guideways I and II, respectively, as appearing from Figs. 1 and 3, and at the same time the portion *o p* of cam-groove 58 passes on roller 57 rack 44, together with the boxes on guideway II, will be shifted toward the left, presenting the lowermost types of these boxes to the slots 4' in a position as hereinbefore described with reference to Fig. 4. Rack 44 is then stopped.



for a short time in this position of the boxes in order to allow the respective types to drop through the corresponding slots and after that be reciprocated back the same distance to the position represented in Fig. 1, in which the type-columns bear against the full portions or partitions between the several slots 4' of plate 3. In the meantime portion *qr* of cam-groove 55 has passed on roller 54, shifting rack 43, together with the boxes on guideway I, from the right to the left a distance of two adjacent slots 4. As now plate 3 performs its stroke, racks 43 44 are temporarily disengaged from the teeth 41 42 of the boxes, owing to the shape of slots of the levers 63 64 and 71 72, Fig. 3, rack 43 thus being shifted inoperative toward the right and rack 44 kept stationary. During the following standstill period of plate 3 at the end of its stroke the racks are again engaging with the teeth of the boxes and the slots 4 placed in the path of the boxes on guideways I, slots 4' being at the same time removed out of the guideway II. As now rack 43 performs its reciprocating movement toward the left and back toward the right, together with the boxes on guideway I, the lowermost types of these boxes are presented to the distributing-slots 4 and the respective types released to pass through the corresponding slots, while at the same time the boxes on guideway II are shifted by rack 44 a distance of two adjacent slots, the lowermost types of the latter boxes bearing again on full portions of plate 3 during this shifting movement. During the following stroke of plate 3 rack 44 is shifted inoperative back toward the left and rack 43 kept stationary, thus all parts assuming again the position represented in the drawings after a complete revolution of shaft 5. By these means, therefore, the boxes on one guideway are reciprocated to present the types to the several distributing-slots without crossing the said slots by the type-channels, while the boxes on the other guideway are simultaneously shifted a distance of two adjacent slots, this shifting movement taking place on a full portion of the slotted plate and the shifting of the boxes thus being likewise performed without crossing the distributing slots by the type-channels.

The shifting of the type-boxes from guideway I to guideway II and back to guideway I is performed as follows: A pawl 75 is pivoted to slide 21 to engage with a tooth 76 of slide 20 and is normally held out of engagement with the tooth by a spring 82; but as the box 31<sup>x</sup> in its successive shifting movement on guideway I is forwarded to freely project therefrom it reaches the pawl, and the latter is thrown into engagement with tooth 76, plate 3 and slide 20 assuming then the position represented in Fig. 1. In consequence thereof at the next following stroke of slide 20 and of plate 3 slide 21 will be shifted, together with slide 20, taking along

with the released box by means of an angle-piece 77 and shifting the same into the path of guideway II. The shifted box is stopped by a fixed rail 78 and intercepted on its other side by a rail 79, projecting lengthwise from a spring-actuated swinging frame 79 80 81, so as to be guided between rails 78 and 79. Slide 20 performing its back stroke takes along with it the slide 21 by a finger 84, restoring slide 21 to its normal position represented in the drawings, while pawl 75, released from the pressure of the box, is thrown out of engagement with tooth 76 by means of a spring 82 to bear against a stop-pin 83. By similar means the boxes are shifted on the right-hand end from guideway II to guideway I, as appearing from the drawings, the corresponding swinging frame 86 87 88 being, moreover, represented in Fig. 3 in side view.

I am now describing the modification of my invention represented in Figs. 6, 7, and 12. In this modification distributing-plate 3' is provided with four rows of distributing-slots 4<sup>x</sup> 4<sup>xx</sup> 4<sup>xxx</sup> 4<sup>xxxx</sup> in order to enlarge the capacity of the apparatus. In Figs. 6 and 7 I have indicated by corresponding indexed numerals the parts corresponding to Figs. 1 and 3 as to construction and operation. I am therefore describing hereinafter only the novel parts appearing in the present modification. As concerning the lateral cam-grooves of disks 7' 25', to engage with the rollers 16' 23' of levers 15' 22', I have not represented the same in Fig. 7 for sake of clearness with respect to the other parts, as, moreover, they do not at all differ from the corresponding cam-grooves 6 24 appearing in Fig. 3. The rocking movement of sleeves 45' and 46' and racks 43' 44' is performed by means of cam-disks 89 90 and levers 93 94, engaging with cam-grooves 91 92 of the disks by rollers 95 96. Lever 94 is pivoted to a stud 62' and firmly connected to an arm 60' and a lever 97, the latter being pivotally connected to a lever 98, pivoting on a stud 70' and firmly connected to an arm 68'. By similar means the arms 59' 67' are actuated from lever 93. The racks 43' 44' therefore will engage with the teeth 41' 42' of the type-boxes during the passage on rollers 95 96 of the large circular portions of grooves 91 92 and will be kept out of engagement with teeth 41' 42' as the short projecting portions *s t* of grooves 91 92 pass on the said rollers, the period of the said disengagement beginning after three-quarters of one revolution of shaft 5' from its position represented in Figs. 6 and 7. During the standstill period of plate 3' at the end of its stroke represented in the drawings the distributing-slots 4<sup>xx</sup> are in place beneath the type-boxes on guideway I and slots 4<sup>xxxx</sup> beneath the type-boxes on guideway II. As then the portions *o' p'* and *o'' p''* of the cam-grooves of cam-disks 7' 25' passed on rollers 57' and 54', respectively, the type-boxes on



both guideways have been reciprocated by the racks 43' 44' engaging therewith to present the types to the distributing-slots, release types, respectively, and restore the boxes again to their position represented in the drawings, with the type-columns bearing on the full portions between the distributing-slots. As then plate 3' performs its stroke the boxes are kept stationary and the type-columns therefore further supported by full portions of plate 3'. At the end of the plate-stroke the slots 4<sup>x</sup> are in place beneath the type-boxes on guideway I and the slots 4<sup>xxx</sup> beneath the boxes on guideway II, the type-columns bearing again on the partitions between the several slots. Plate 3' is now kept stationary, and during this period the type-boxes still engaging with the racks are reciprocated to distribute types and assume again their normal position. Shaft 5' has then performed half a revolution and plate 3' begins its back stroke, the type-columns being again supported by full portions of the plate. On the midway of this stroke—that is to say, as the full sections *v w* of plate 3', Fig. 12, pass beneath the type-boxes on guideways I and II, respectively—the following movements take place: Racks 43' 44', being at the same time disengaged from the type-boxes, are shifted—viz., rack 43' a step toward the right and rack 44' a step toward the left—and then at once coupled again with the type-boxes (as the groove portions *s t* are very short) and at once shifted back—viz., rack 43' toward the left and rack 44' toward the right—thus shifting the type-boxes a distance of two adjacent slots on their respective guideways and in the direction of the arrows, respectively. Therefore at the end of the stroke of plate 3', as represented in the drawings, the type-columns are again bearing on the partitions between the slots 4<sup>xx</sup> and 4<sup>xxxx</sup>, respectively, the type-boxes, however, having been shifted a step. Plate 3' will then be reciprocated again and the above-described movements of parts repeated in the same succession. According to my invention the type-lines to be distributed are therefore shifted step by step on the guideways I and II and successively presented to the several distributing-slots without crossing the latter. The shifting of the type-boxes from guideway I into guideway II and from the latter back to guideway I is performed by the same means as described with reference to Fig. 1 and represented in the drawings.

The means for assembling the released types are represented in Figs. 8 to 13, inclusive, Figs. 8 to 11 referring to the feature of my invention represented in Figs. 1 to 3 and Figs. 12 and 13 to the modification shown in Figs. 6 and 7. Fig. 9 is a left-hand view of Fig. 8, partially in section, on line *y y*; and Fig. 10, a front and partially-sectional view of Fig. 8. Fig. 13 is a front view of Fig. 12.

Referring to Figs. 8, 9, and 10, the distributing-plate 3 consists of three sections 99 100 101, leaving clear spaces between each other and extending between bars 13 14. The distributing-slots are formed by partitions 102, inserted between the said sections and provided with rib projections 103 104 on their upper edge, as represented in Figs. 8 and 9 with respect to several slots 4. There are fixed to the under side of plate 3 inclined guide-plates 105 106, Fig. 10, extending, with strips 107 108, into the several slots 4 and 4', respectively, and provided with guide-grooves 109 110. There are secured partition-strips 111 at the lower ends of plates 105 106, leaving clear spaces 112 between each other in such manner that every two of the grooves 109 110 in line with each other will discharge into one and the same clear space 112. Beneath the strips 111 and in close proximity thereof an endless web 113 is continuously running, and an inclined guide-plate 114 is secured in front of the web, provided with grooves in line with the clear spaces 112, the said grooves discharging into the several assembling-channels for the types. As the types released pass through the distributing-slots they are at once intercepted by the strips 107 108 and accordingly tilted, so as to descend by gravity on guide-plates 105 106 and pass on web 113. By the latter, in combination with the guide-strips 111, the types are delivered to the respective grooves of guide-plate 114 and finally discharged into their assembling-receptacles. The web running continuously, while plates 105 106 perform a reciprocating movement, it may occur that the types are to be passed from the plates onto the web within the period of the commonly-directed movement of both. In order to prevent the types then being troubled in their course, the web is given a faster speed than the plates, so that the relative movement of both always takes place in the same direction independently of the plates being shifted either the one or the other way.

It will be obvious that in the construction represented in Fig. 10 each two distributing-slots 4 and 4', placed in line with each other, are supposed to be uniformly ribbed, so as to release both like type characters as the respective types reach one and the same assembling-receptacle. In order to free the said construction from such restriction, I have substituted for the one common web 113 two separate webs 115 116, Fig. 10, and accordingly provided two guide-plates 117 118, delivering each of the types to separate assembling-boxes.

In the assembling device represented in Figs. 12 and 13 endless running webs are disposed with, and the several distributing-slots 4<sup>x</sup> 4<sup>xx</sup> 4<sup>xxx</sup> 4<sup>xxxx</sup>, placed in line with each other, are supposed to release distinct type characters. For this purpose the guide-plates



119 120 121 122 (corresponding to plates 105 106 of Fig. 10) are provided with spring-tongues 123 124 125 126, extending from the several guide-grooves of the plates, between partitions 127 of a guide-box, and bearing against guide-rails 128 129 130 131, secured between each two partitions. In the relative position of the parts as represented in Fig. 13 the tongues are kept straight, while at the end of the left-hand stroke of plate 3' they will assume a slightly-curved shape, as indicated, with respect to plate 119 and its corresponding tongue 123, by numerals 119' and 123'. By these means each type released is carried to its assembling-box in whatever relative position of the reciprocated plate 3' with respect to the stationary guide-box.

It may be observed that the assembling apparatus represented in Figs. 11 and 13 can likewise be used in combination with a distributing-plate provided with a plurality of uniformly-ribbed distributing-slots releasing like type characters at different places, as it may be convenient with respect to the characters most frequently used, in order to enlarge the capacity of the distributing apparatus. This object is attained without any departure from the means represented by finally joining the several guide-grooves for like types to a common guide discharging into the respective assembling-box.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an apparatus for distributing nicked types, the combination of a type-box provided with channels for lines of types to be distributed, a guideway for guiding the type-box, means for alternately reciprocating and shifting the type-box along its guideway, a movable distributing-plate provided with ribbed distributing-slots, and means for reciprocating the said plate across the path of the type-box and underneath the same, substantially as and for the purposes described.

2. In an apparatus for distributing nicked types, the combination of type-boxes provided with channels for lines of types to be distributed, a guideway for guiding the type-boxes, means for alternately reciprocating and shifting the type-boxes along the guideway, means for shifting the type-boxes from and to the guideway, a movable distributing-plate provided with ribbed distributing-slots, and means for reciprocating the said plate across the path of the type-boxes and underneath the same, substantially as and for the purposes described.

3. In an apparatus for distributing nicked types, the combination of type-boxes provided with channels for lines of types to be distributed, a plurality of guideways parallel to each other for guiding the type-boxes, means for alternately reciprocating and shifting the type-boxes along the guideways, means for

shifting the type-boxes from and to the guideways, a movable distributing-plate provided with ribbed distributing-slots being arranged in parallel rows, and means for reciprocating the said plate across the path of the type-boxes and underneath the same, substantially as and for the purposes described.

4. In an apparatus for distributing nicked types, the combination of a type-box provided with channels for lines of types to be distributed, a guideway for guiding the type-box, a movable rack to temporarily engage with the type-box, means for alternately reciprocating, swinging and shifting the rack and thereby alternately reciprocating and shifting the type-box along its guideway, a movable distributing-plate provided with ribbed distributing-slots, and means for reciprocating the said plate across the path of the type-box and underneath the same, substantially as and for the purposes described.

5. In an apparatus for distributing nicked types, the combination of type-boxes provided with channels for lines of types to be distributed, a plurality of guideways parallel to each other for guiding the type-boxes, movable racks to temporarily engage with the type-boxes, means for alternately reciprocating, swinging and shifting the racks and thereby alternately reciprocating and shifting the type-boxes along the guideways, means for shifting the type-boxes from and to the guideways, a movable distributing-plate provided with ribbed distributing-slots being arranged in parallel rows, and means for reciprocating the said plate across the path of the type-boxes and underneath the same, substantially as and for the purposes described.

6. In an apparatus for distributing nicked types, the combination of type-boxes provided with channels for lines of types to be distributed, a plurality of guideways parallel to each other for guiding the type-boxes, means for alternately reciprocating and shifting the type-boxes along the guideways, a reciprocating slide arranged at each end of the guideways and crossing the same, a movable bar adjacent to each of the reciprocating slides and provided with a lateral arm to engage with the outmost type-box, means for temporarily coupling the movable bar with the reciprocating slide and at the same time shifting the outmost type-box from one guideway to the other, a movable distributing-plate provided with ribbed distributing-slots being arranged in parallel rows, and means for reciprocating the said plate across the path of the type-boxes and underneath the same, substantially as and for the purposes described.

7. In an apparatus for distributing nicked types, the combination of a movable distributing-plate provided with ribbed distributing-slots, means for reciprocating the said plate, inclined guide-plates fixed to the under side



of the distributing-plate underneath the slots  
and provided with guide-grooves for the re-  
leased types, stationary assembling-recepta-  
cles for the types, and movable connections  
5 between the said guide-plates and the sta-  
tionary assembling-receptacles, to receive the  
types descending from the guide-plates and  
carrying them to the assembling-receptacles,

substantially as and for the purposes de-  
scribed. 10

In witness whereof I have hereunto set my  
hand in presence of two witnesses.

HUBERT BURG.

Witnesses:

EDWARD P. MACLEAN,  
JOHN S. ABERCROMBIE.