

No. 803,667.

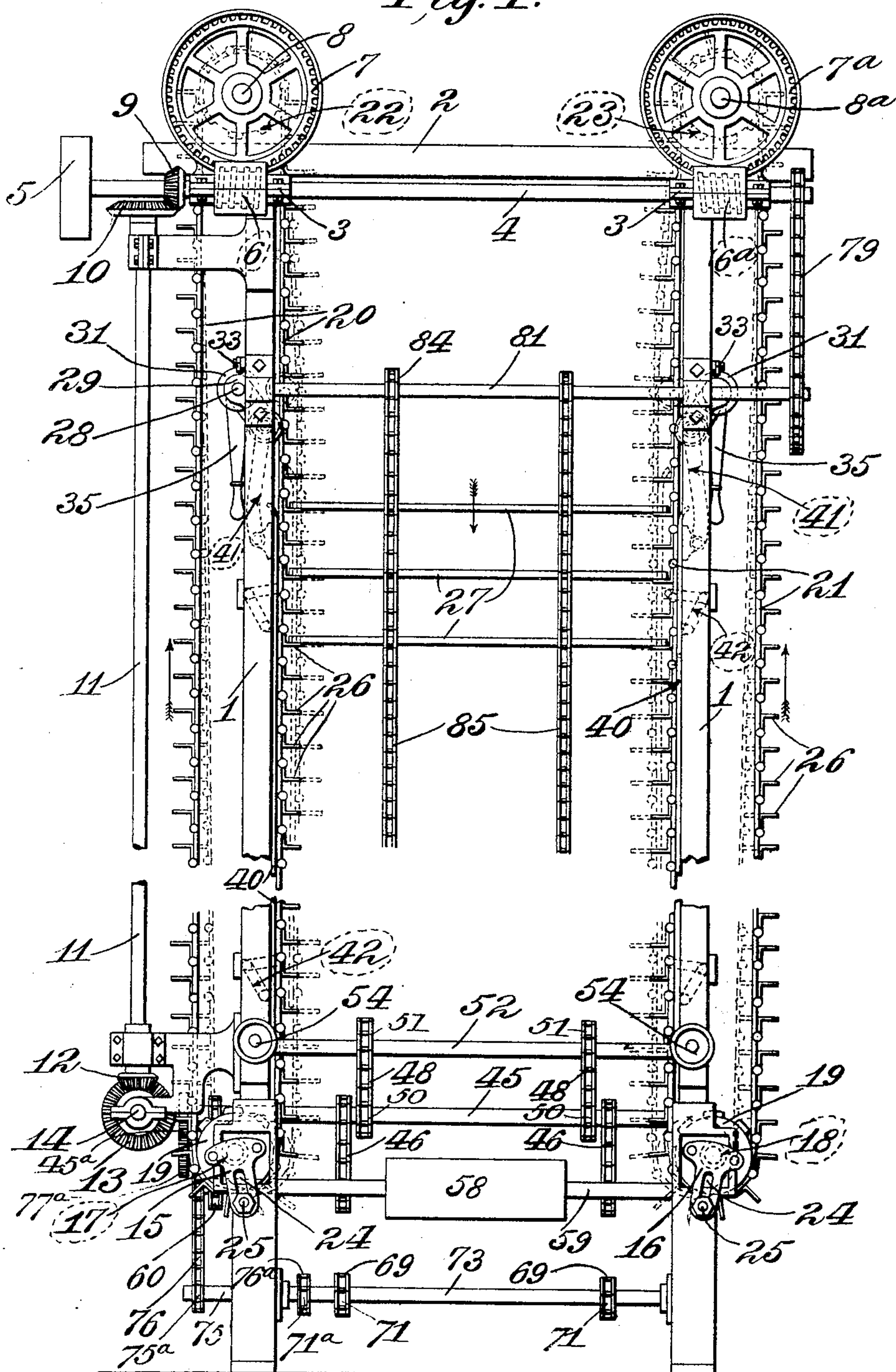
PATENTED NOV. 7, 1905.

J. L. CAUSEY.
CONVEYER.

APPLICATION FILED FEB. 23, 1905.

6 SHEETS—SHEET 1.

Fig. 1.



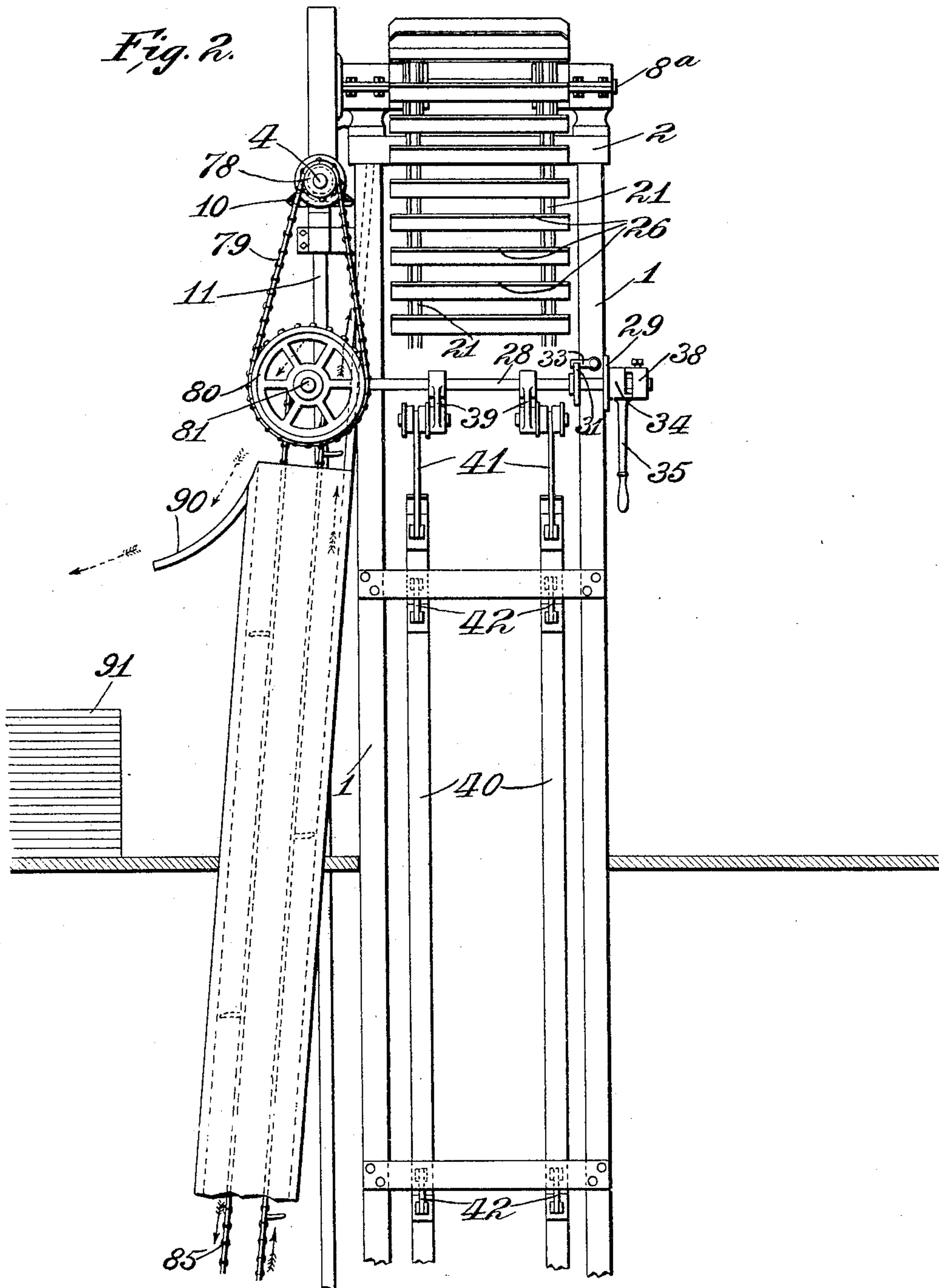
Witnesses:
G. A. Pennington
B. F. Frank

Inventor:
Joseph L. Causey,
by Bakewell Cornwall
Attys

J. L. CAUSEY.
CONVEYER.

APPLICATION FILED FEB. 23, 1905.

6 SHEETS—SHEET 2.



Witnesses:
G. A. Pennington
B. F. Frank

Inventor:
Joseph L. Causey,
by Bakewell Cornwall
Attys.

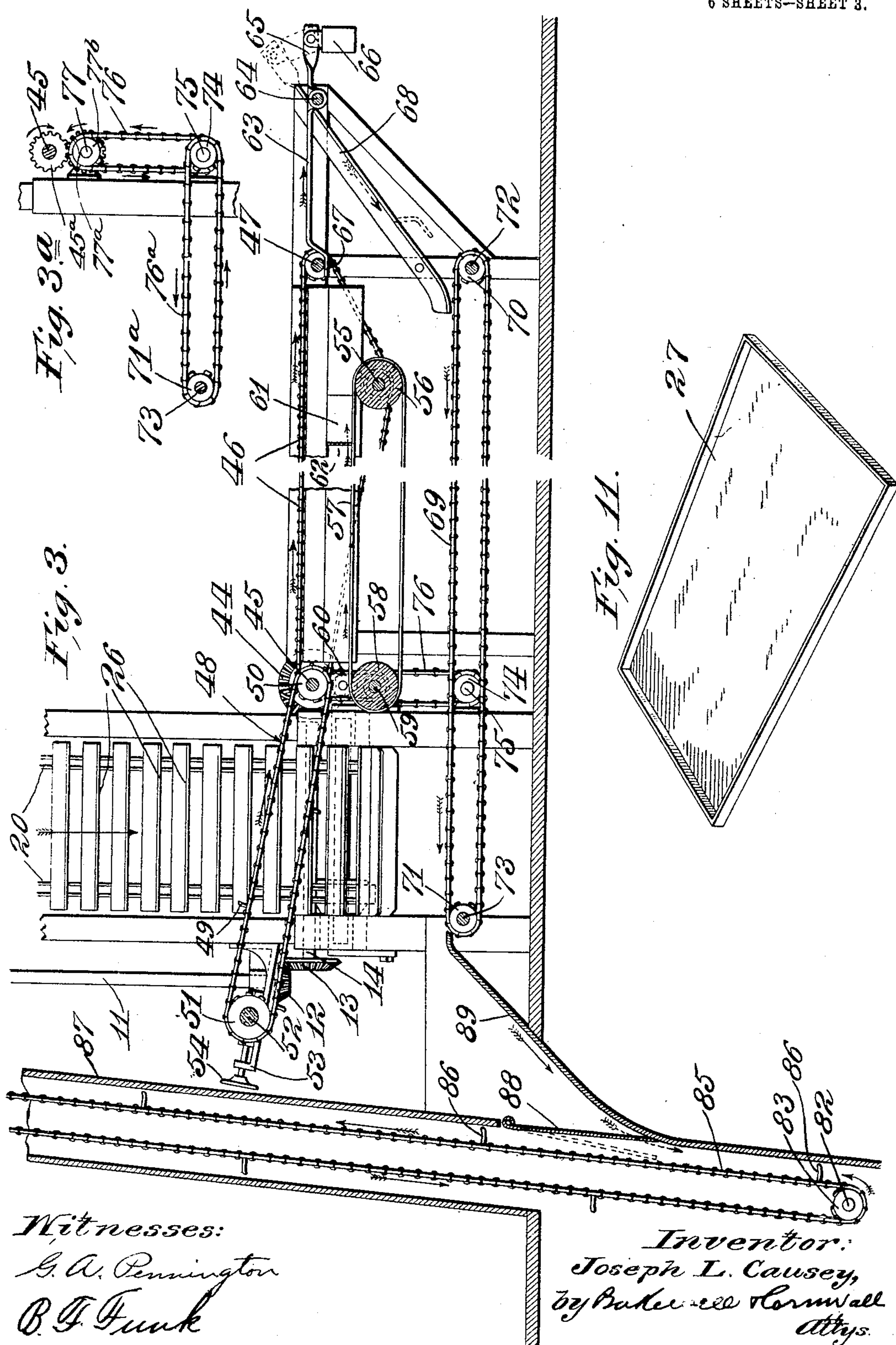
No. 803,667.

PATENTED NOV. 7, 1905.

J. L. CAUSEY.
CONVEYER.

APPLICATION FILED FEB. 23, 1905.

6 SHEETS—SHEET 3.



Witnesses:

G. A. Pennington
B. F. Funk

Inventor:
Joseph L. Causey,
by Baker & Cornwall
Attys.

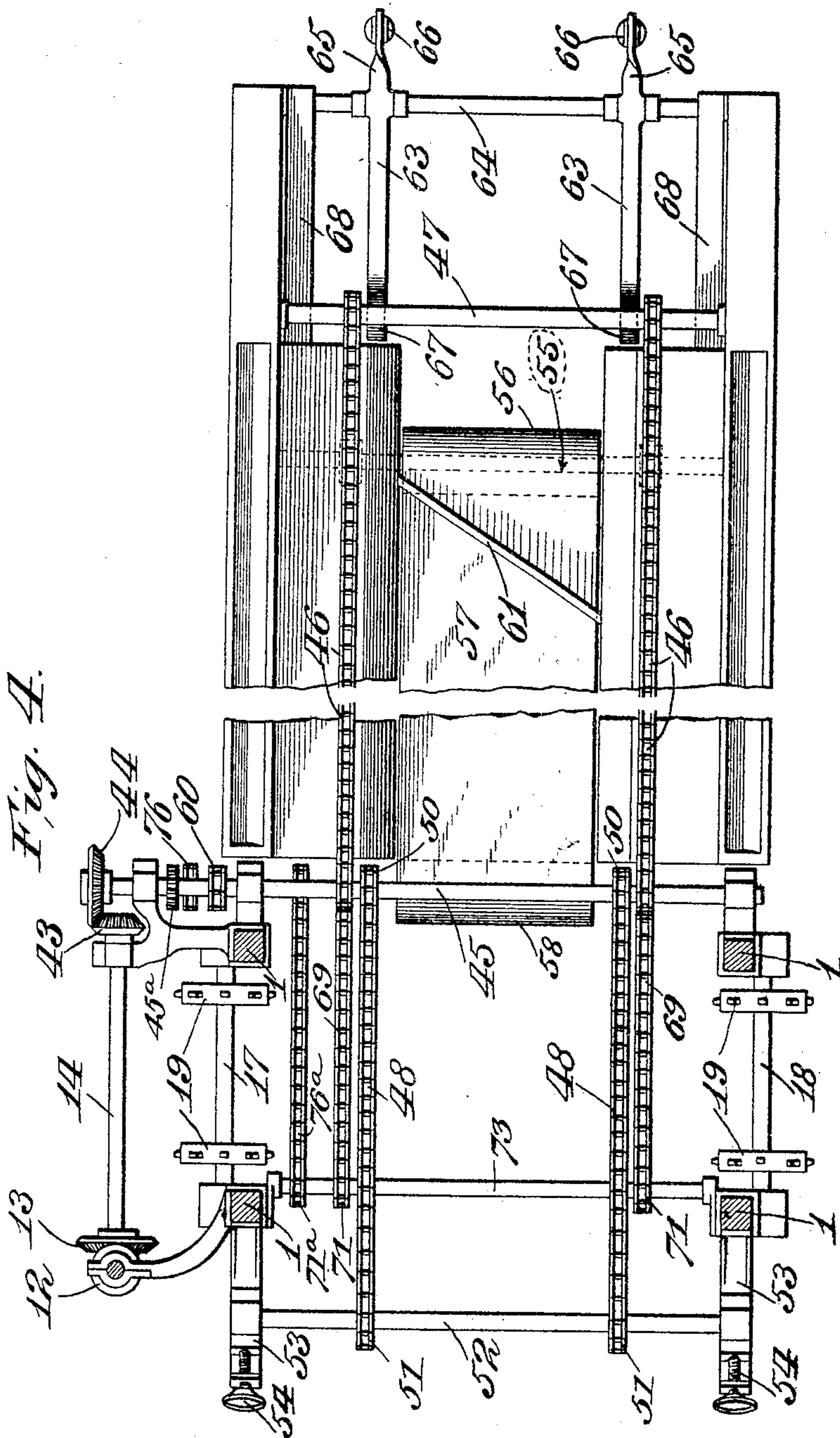
No. 803,667.

PATENTED NOV. 7, 1905.

J. L. CAUSEY.
CONVEYER.

APPLICATION FILED FEB. 23, 1905.

6 SHEETS—SHEET 4.



Witnesses:

G. A. Pennington

B. T. Funk

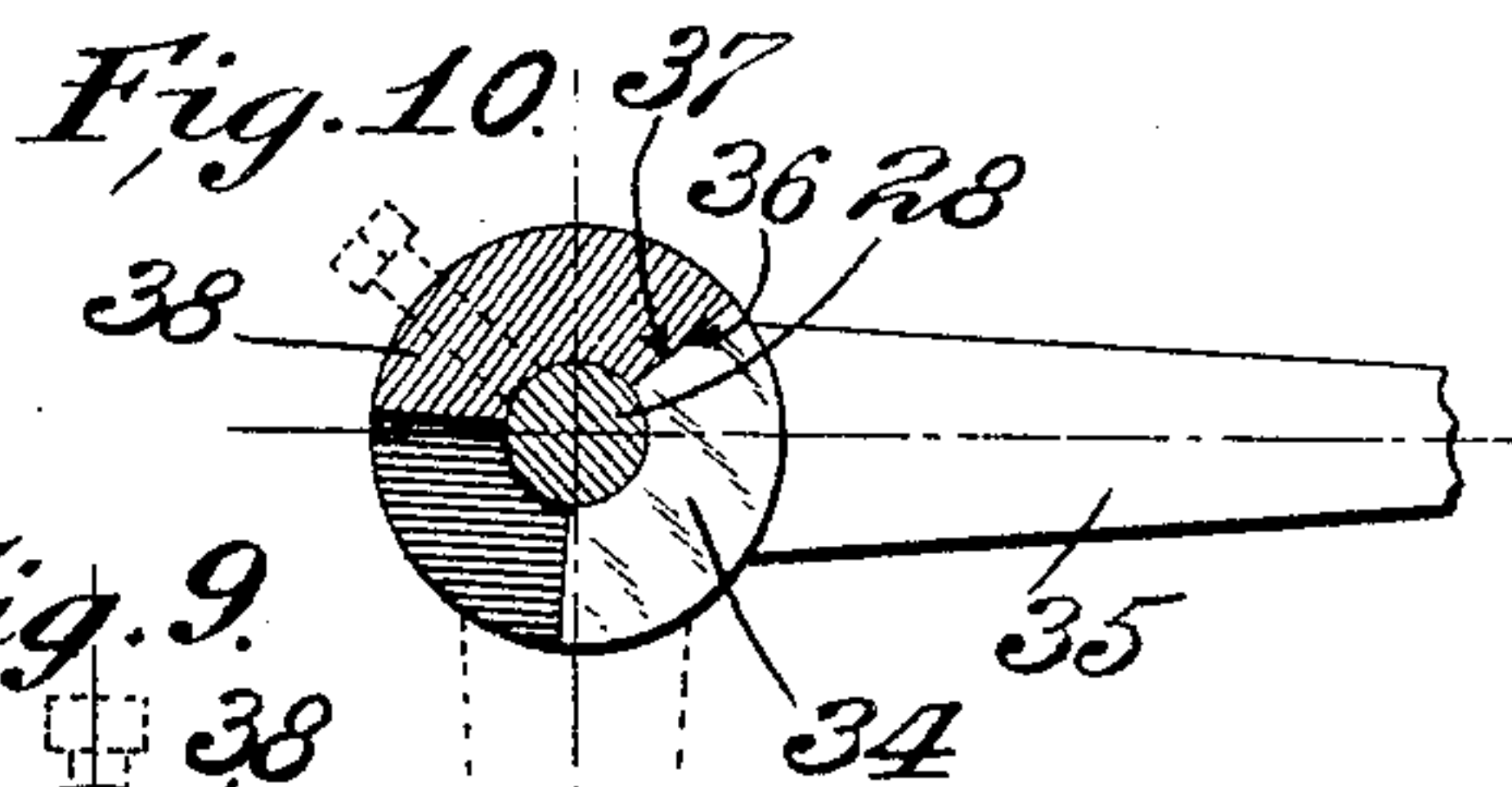
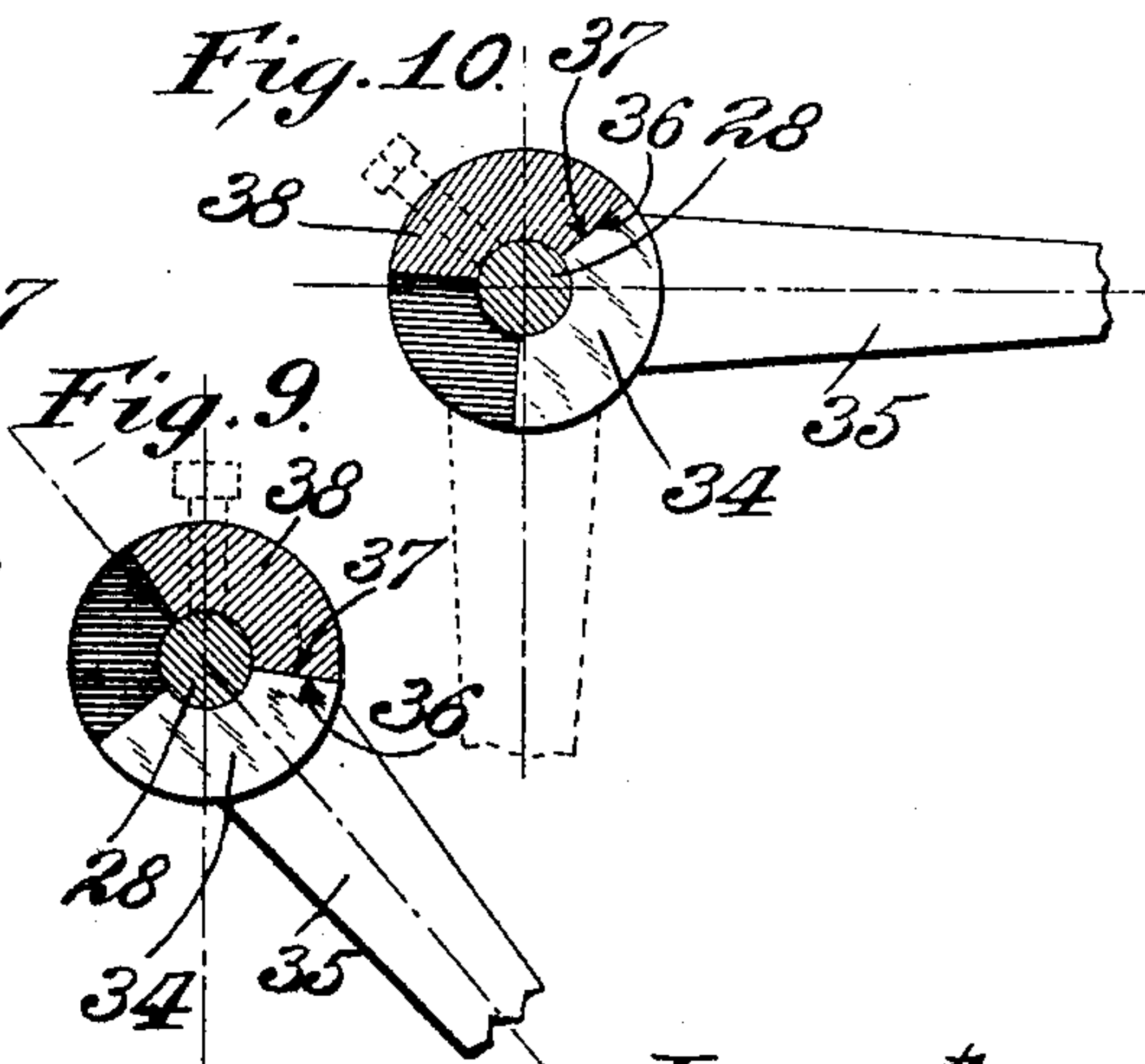
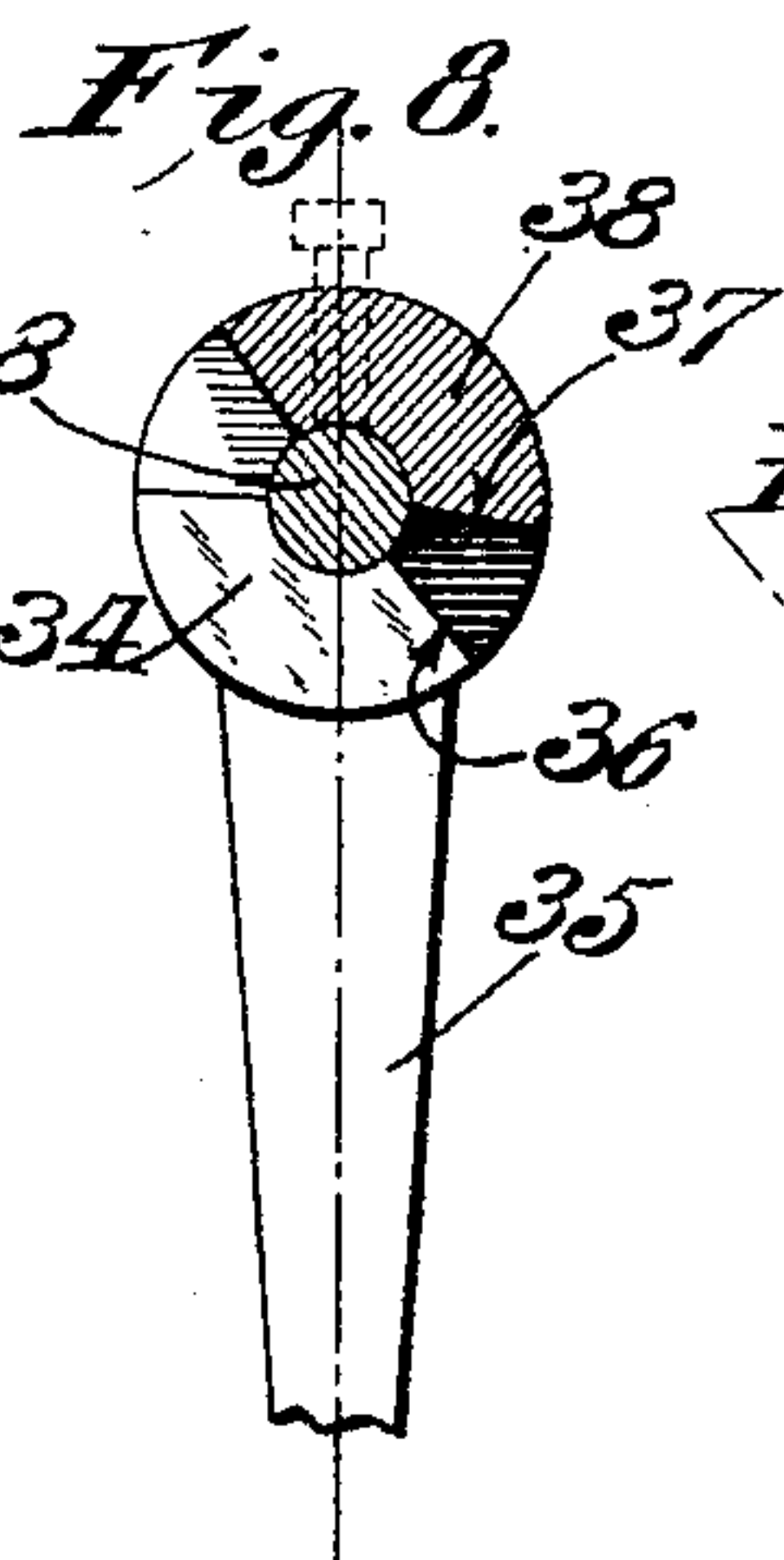
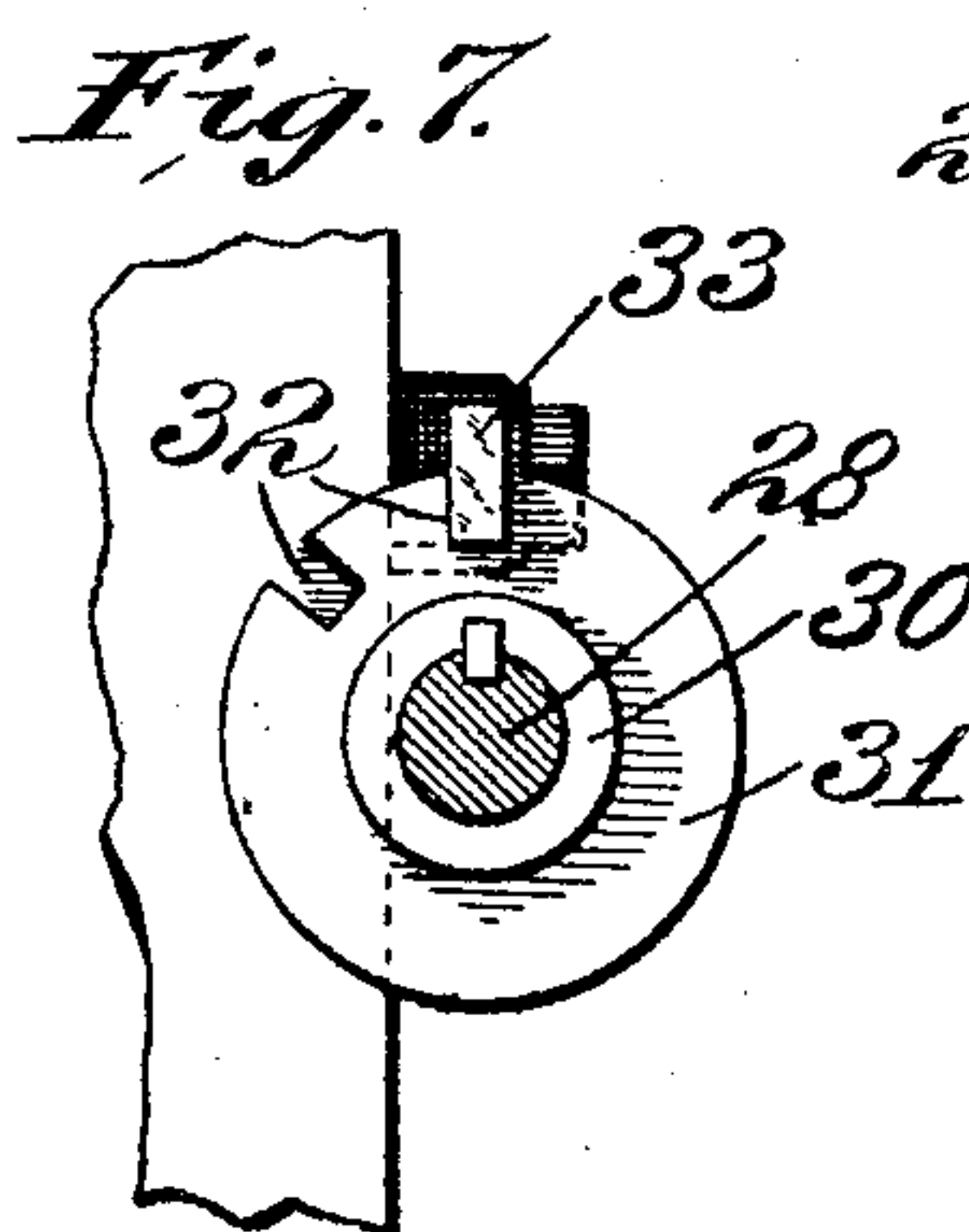
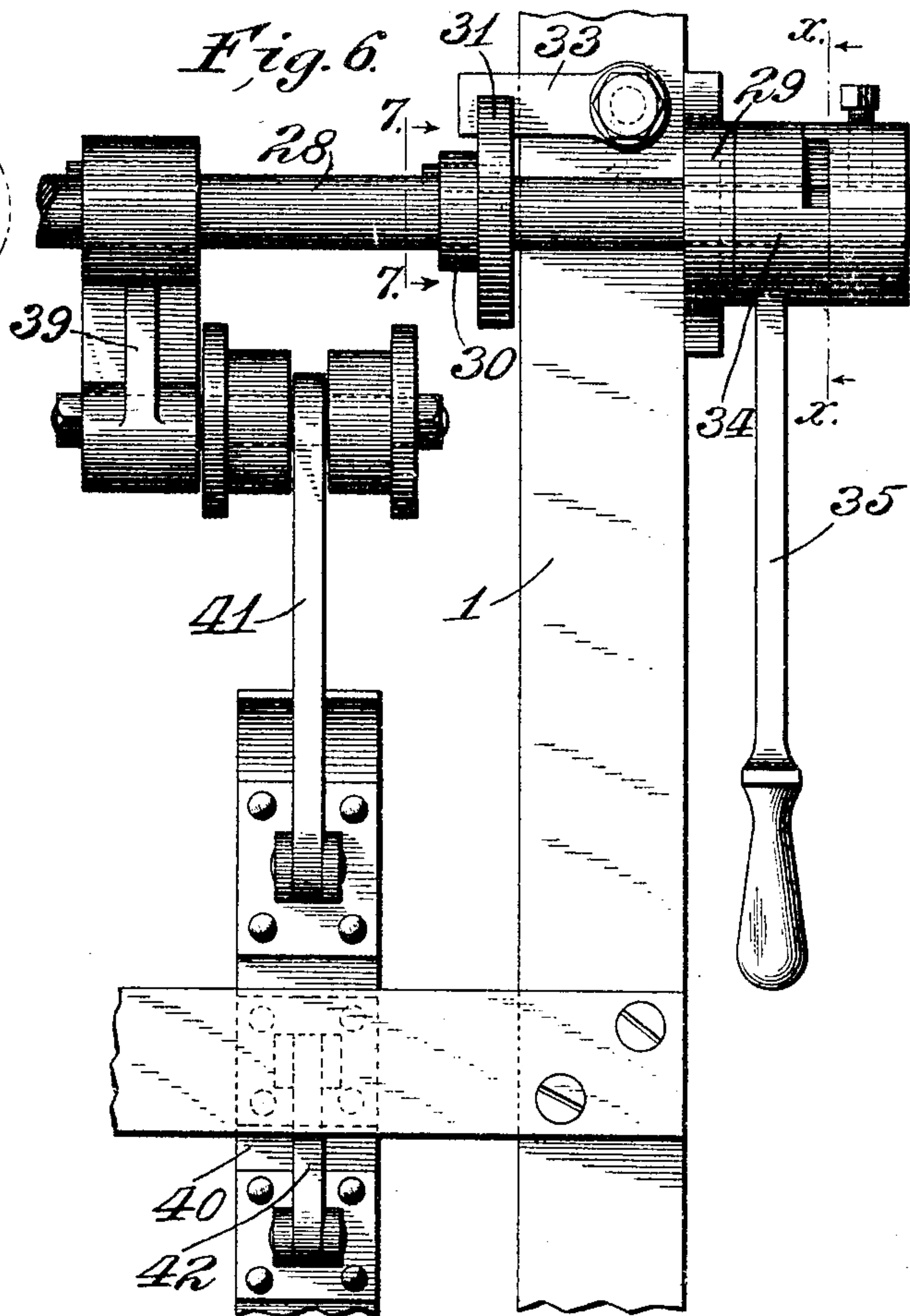
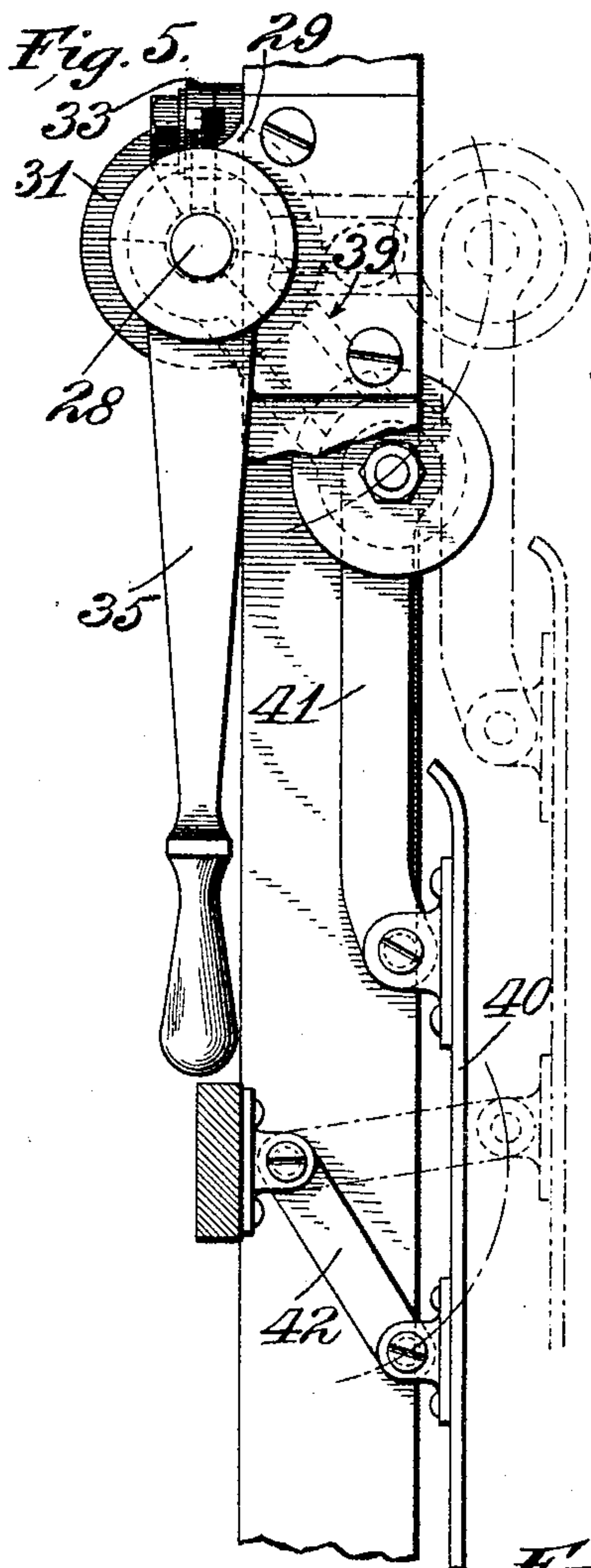
Inventor:

Joseph L. Causey,
by Frankwell Cornwall
Attys.

J. L. CAUSEY.
CONVEYER.

APPLICATION FILED FEB. 23, 1905.

6 SHEETS—SHEET 5.



Witnesses:
G. A. Pennington
B. F. Funk

Inventor:
Joseph L. Causey,
by Bakerwell & Lamwell
Attys.

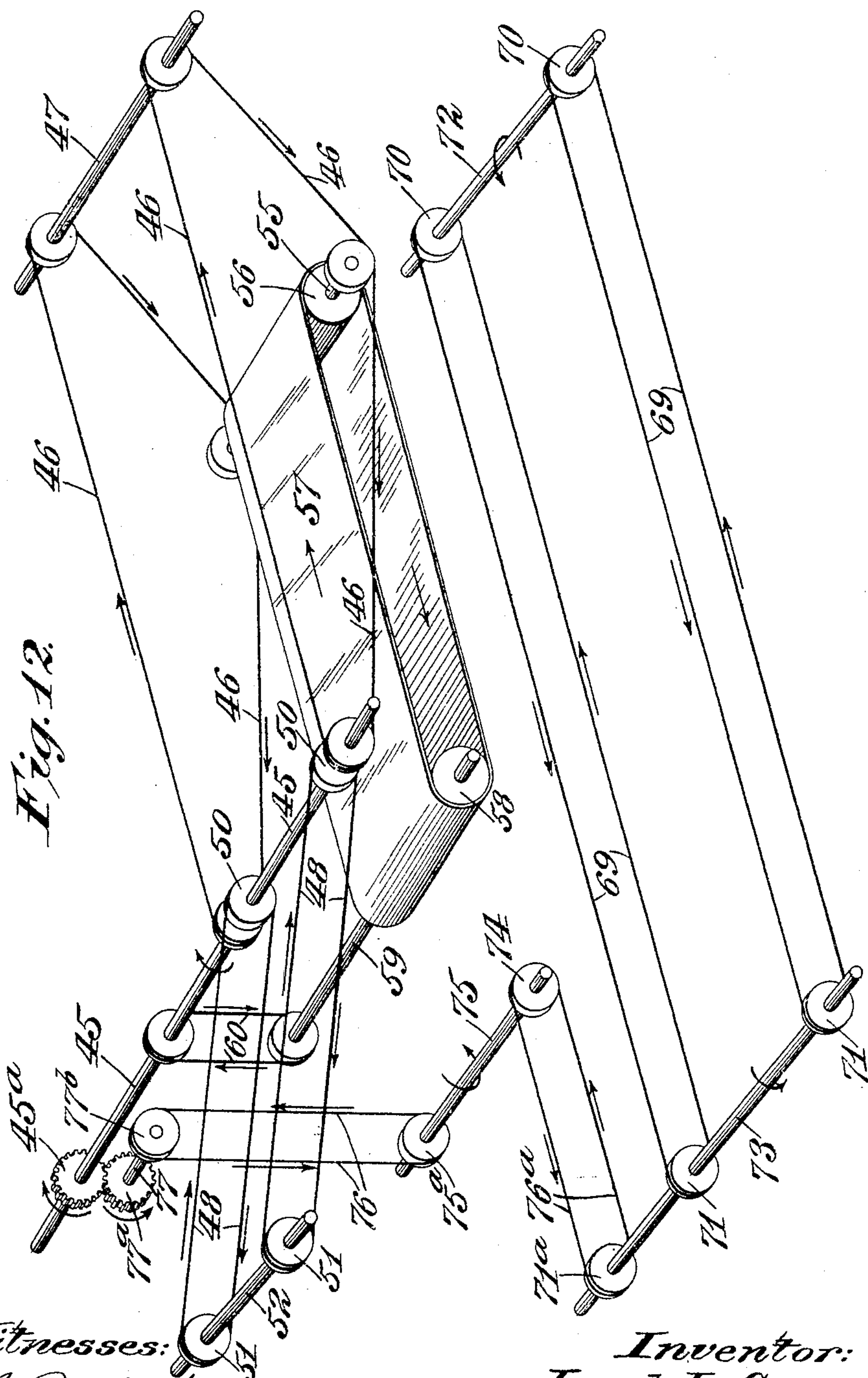
No. 803,667.

PATENTED NOV. 7, 1905.

J. L. CAUSEY.
CONVEYER.

APPLICATION FILED FEB. 23, 1905.

6 SHEETS—SHEET 6.



Witnesses:
G. A. Pennington
B. F. Frink

Inventor:
Joseph L. Causey,
by Markwell Cornwall
Attys.

UNITED STATES PATENT OFFICE.

JOSEPH L. CAUSEY, OF KANSAS CITY, MISSOURI, ASSIGNOR TO NORTH AMERICAN BISCUIT COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CONVEYER.

No. 803,667.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Application filed February 23, 1905. Serial No. 246,984.

To all whom it may concern:

Be it known that I, JOSEPH L. CAUSEY, a citizen of the United States, residing at Kansas City, Missouri, have invented a certain new and useful Improvement in Conveyers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a rear elevational view of the vertical portion of the conveyer for conveying the pans from the ovens to the distributing-tables. Fig. 2 is a side elevational view of the conveyer, showing the means by which the empty pans are returned. Fig. 3 is a view, partly in section and partly in elevation, of the lower portion of the conveyer, showing the mechanisms for lowering and elevating the pans. Fig. 3^a is a view of the mechanism for driving the return-conveyer. Fig. 4 is a top plan view of the horizontal portion of the conveyer. Fig. 5 is an enlarged detail view of the mechanism for controlling the distance between the pan-carrying belts. Fig. 6 is a rear elevational view of the belt-adjusting means. Fig. 7 is a sectional view on the line 7 7 of Fig. 6. Figs. 8, 9, and 10 are diagrammatical sectional views on the line X X of Fig. 6. Fig. 11 is a detail perspective view of one of the pans, and Fig. 12 is a diagrammatical view of the gearing for driving the horizontal return-belt and the appurtenances coöperating therewith.

This invention relates to conveyers; and the primary object is to provide a conveyer particularly adapted for use in bakeries, so that the pans of cakes, crackers, &c., removed from the ovens may be conveniently and expeditiously conveyed to the proper distributing or packing points in the premises in which the conveyer is located.

A further object is to provide a conveyer which is adapted to receive pans of different sizes.

Another object is to provide means whereby the pans will be automatically returned to the starting-point without the necessity of being manually handled; and a still further object of the invention is to provide means whereby the broken or fragmentary portions

of the cakes or crackers, generally called "scrap," may be conveniently removed.

The vertical portion of the conveyer is arranged so that it may be installed adjacent to the oven or ovens. In order to provide means whereby the pans may be conveyed from the oven to a suitable point, a vertical conveyer is utilized, which is illustrated as comprising a vertical skeleton frame consisting of four spaced vertical standards (designated by the reference-numeral 1) connected by the top members 2. Journaled in suitable bearings 3 on the vertical frame is a transverse drive-shaft 4, having a pulley 5 whereby power may be communicated to the shaft 4 from a suitable source of power. This drive-shaft 4 is provided with worm-gears 6 and 6^a, meshing with complementary gears 7 and 7^a, superimposed above the shaft 4 and rotating with driven shafts 8 and 8^a. A beveled pinion 9, fixed on the shaft 4, meshes with a similar pinion 10 on a vertical shaft 11, carrying a terminally-arranged pinion 12, meshing with a similar pinion 13 on the horizontal shaft 14 at the discharge end of the vertical conveyer-frame.

Mounted on the vertical standards are oppositely-swinging bearings 15 and 16, carrying shafts 17 and 18, on which sprockets 19 are mounted to receive the link conveyers 20 and 21, which pass around the sprockets 22 and 23 on the shafts 8 and 8^a. These swinging bearings 15 and 16 are provided with elongated slots 24 for the reception of the bolts 25.

The rotation of the shaft 4 will impart a rotary motion to the gears 7 and 7^a, thereby rotating the sprockets, around which the vertical conveyer-belts pass, so that the vertical conveyer-belts will be actuated. These belts are provided with seats for the pans, which seats are illustrated as comprising outstanding projections 26, so that they may receive the pans, such as those designated by the numeral 27 in Fig. 1.

Generally the ovens are arranged in the upper portion of the building, and the packing and distributing rooms are arranged in the lower portion of the building, so as to save time in handling. However, this arrangement is not absolutely necessary, as the invention may be arranged so as to provide for ovens arranged in the lower portion of the building, with the packing and distributing rooms in the

upper portion thereof. Therefore throughout this specification wherever the terms "hoist," "elevate," or "ascend" are used it is to be understood that they are not used in the sense of limiting this invention to a conveyor solely for the purpose of elevating the pans, but it is intended that they shall include conveyers for lowering or descending.

As the drawings illustrate the vertical conveyor as being adapted to lower the pans, reference will only be had to such a device in the following description: In actual practice the pans are made of various sizes. This is done for the reason that different-sized pans are used to fit different-sized machines. It is the purpose of this invention, as heretofore stated, to arrange the vertical conveyor so that it will be adapted to lower these various-sized pans without any material alteration, it being understood, of course, that in the event that the ovens are at the lower portion of the building the device will be modified so that the pans will be raised. The manner in which the pans are lowered is clearly illustrated in Figs. 1 and 5 to 10, in which 28 designates shafts journaled in suitable bearings 29 and on which are rigid collars 30, having peripheral flanges 31 provided with slots or notches 32 therein, which notches may be engaged by a stop, illustrated as a pivoted dog 33. On the shafts 28 are loosely mounted sleeves 34, carrying the levers 35, which sleeves are provided with shoulders 36, adapted to contact with the shoulders 37 on the collars 38, rigidly fastened to the shafts 28. By swinging the levers around until the shoulders on the loose sleeve and the collars contact and releasing the dog 33 from engagement with the flange 31 the levers may be actuated so as to rock the shafts 28, whereby the crank-arms 39 will be caused to move from a position at less than a right angle toward a right-angular position, or, in other words, said crank-arms will be caused to describe an arc of a circle, as illustrated in Fig. 5, which movement will cause the shoes 40 to move toward the longitudinal center of the frame on account of the connection 41 between the crank-arms 39 and the said shoes and the link connections 42 between intermediate parts of the shoe and intermediate parts of the frame. Inasmuch as these shoes are in close proximity to the conveyor-belts, they will be moved toward the longitudinal center of the frame, thereby decreasing the distance between the operative portions of the belts, so that pans of relatively small sizes may be conveyed from one point to another. The range of variation of the distance between the operative portions of the conveyor-belts will be limited only by the sizes of the disks and the number of slots for engagement by the dogs 33. When it is desired to decrease the distance between the belts 26, the swinging bearings 15 and 16 may be moved toward each other, the amount of swing given thereto de-

pending upon the extent of the adjustment imparted to the shoes, so that the side thrusts on the shafts 17 and 18, due to the tension of the conveyers 20 and 21, will be decreased to a minimum.

The shaft 14 carries a beveled pinion 43, meshing with a beveled pinion 44 on the transverse shaft 45. This shaft 45 constitutes the drive-shaft for the horizontal conveyor-belts 46, which belts pass around sprockets on the shaft 45 and on the shaft 47, near the discharge end of the horizontal conveyor. A transfer-apron 48 is positioned at the discharge end of the vertical conveyor and the receiving end of the horizontal conveyor, whereby the pans may be removed from the vertical conveyor and deposited onto the horizontal conveyor. This transfer-apron is provided with fingers 49 to positively engage the pans as they descend. Power is communicated to the apron by the shaft 45 and the sprockets 50, around which the apron travels, the rear end of the apron being supported by the sprockets 51 on the shaft 52, carried by the brackets 53, which brackets also support the apron-tighteners 54.

By reference to Fig. 3 it will be observed that the horizontal conveyor-belts 46 pass beneath the horizontal shaft 55, which supports the roller 56 for the scrap-apron 57, which travels longitudinally of the horizontal conveyor-frame and which apron is also supported by the roller 58 on the shaft 59, which shaft 59 is driven by a sprocket-chain 60 from the drive-shaft 45. The belts 46 impart motion to the shaft 55 through the medium of sprockets thereon which they engage.

Extending across the horizontal conveyor-frame and immediately above the apron 57 is a deflector, illustrated as an inclined board 61, having an end adjacent to an opening 62 in the side of the frame, whereby the scrap will be deflected through the opening to drop into a receptacle beneath the same provided to receive the scrap.

As the pans reach the discharge end of the horizontal conveyor they will be moved onto a tilting table having arms 63 fulcrumed on the shaft 64 at the rear end of the horizontal frame, and said arms are provided with rear projections 65, on which are hung counterbalancing-weights 66, so that the normal tendency of the table-arms will be to remain in a horizontal position, their upward tilting movement being limited by the projections 67, which are adapted to contact with the shaft 47, said projections 67 being in planes lower than the planes of the body portions of the arms 63. As soon as the pans have been deposited upon the tilting table the weight of the pans will be sufficient to overcome the counterbalancing-weights 66, so as to tilt the table and permit of their sliding onto the inclined tracks or guides 68, the lower ends of which terminate adjacent to the top of the

horizontally-movable return conveyer-belt 69, the ends of which are supported by the sprockets 70 and 71 on the idler-shafts 72 and 73.

The return conveyer-belt 69 passes around the sprockets 70 and 71 on the shafts 72 and 73, respectively. The shaft 73 is driven by a sprocket-chain 76^a, passing around a sprocket 71^a on the shaft 73 and around a sprocket 74 on the shaft 75. The shaft 75 carries a sprocket 75^a, around which passes a sprocket-chain 76, which sprocket-chain also passes around a sprocket 77^b on the shaft 77, which shaft also carries a gear 77^a, meshing with a gear 45^a on the shaft 45. The shaft 45 receives communication through the medium of suitable gearing on the shaft 4.

It will be seen that the transfer-apron, the horizontal pan-conveyer, the scrap-belt, and the return conveyer-belts are all driven from the drive-shaft 45.

Means are provided whereby the empty pans are returned to the machines above or below, as the case may be. This apparatus is driven from the main shaft 4, which main shaft carries a sprocket 78, around which passes a sprocket-chain 79, engaged by the teeth of a sprocket 80 beneath the sprocket 78, which sprocket 80 is on a horizontal shaft 81 below the shaft 4, and in a well below the horizontal conveyer and in rear thereof is a shaft 82. The shafts 81 and 82 are provided with sprockets 83 and 84, around which chains 85 pass, carrying projections 86 to elevate the pans. The chains 85 are incased in a housing 87, the receiving portion of which is an opening closed by a gravitating door 88, hinged at its top, the opening closed by the door 88 being adjacent a chute 89, the receiving end of which is adjacent to the discharge end of the horizontal return conveyer-belt 69. As the pans are fed onto the chute they will pass into the well by gravity and automatically open the door 88.

Inasmuch as the apparatus is provided with the belts which travel in the direction indicated by the arrows, which can be operated either up or down, the pans will start to ascend or descend as soon as they have passed through the opening closed by the door 88, and as the door 88 constitutes a portion of the wall of the housing the pans will be permitted to pass the same, so that they may be carried to the desired premises. As soon as the pans reach a suitable point the projections 86 will carry their bottom edges over and to one side of the shaft 81, permitting them to strike the deflector-board 90, so that they may be arranged one upon the other, the reference-numeral 91 indicating the pans which have passed off the deflector 90.

One of the pans is illustrated in detail in Fig. 11 and is designated by the numeral 27 and is preferably provided with a flange around its entire contour, although this flange may be left off, if desired.

As illustrated in the drawings, the invention

is arranged to receive the pans at the top of the vertical conveyer. Each seat or projection 26 on the respective belts comprising the vertical conveyer is adapted to receive a pan. As the pans successively reach the lower portion of the vertical conveyer the transfer-apron will receive them one by one and transfer them to the horizontal conveyer, where they will be moved along the horizontal conveyer during the time that the cakes are being removed by the packers or distributors on either side thereof.

As the horizontal conveyer consists of two belts or chains 46, a space is left between them, so that the cakes which are broken may be dropped by the operators onto the scrap-belt 57. These fragments will be carried along on the belt 57 until they are scraped off and deflected by the deflector 61 through the opening 62. By the time that the pans reach the end of the horizontal conveyer and are ready to be returned all of the cakes or other articles will have been removed and the pans will move onto the tilting table 63, the weight of each pan being equal to or slightly in excess of the counterbalancing-weights 66. As the table tilts the pans will be deposited on the tracks 68, down which they will slide onto the belt 69 to the hopper 89, thence through the opening closed by the door 88 to be elevated by the elevating apparatus in the housing 87, and finally pass through the top of the housing and off the deflector 90 to a suitable point conveniently near the machines, where they may be again used.

When the maximum-sized pans are used, the adjusting mechanism, including the levers 35 and the parts which cooperate with them, will not be operated to cooperate with the belts 25. However, when pans smaller than those of the maximum size are used the adjusting mechanism will be employed, as heretofore explained.

It will be apparent from the foregoing description that when the pans have been inserted at the top of the vertical conveyer they need not be handled until they have passed through the several operations and are released from the top of the housing 87. The advantage of this will be obvious when it is understood that heretofore it has generally been necessary to have these trays handled repeatedly by different persons in carrying out the operations above enumerated.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. A conveyer having parallel series of pan-seats, and means for regulating the distance between the series of pan-seats; substantially as described.

2. A conveyer including belts, means for maintaining the portion of one of the belts parallel with the other belt opposite it, means for regulating the distance between the par-

allel portions of said belts, said means comprising a shoe arranged longitudinally and in rear of one of the belts, and means for moving the shoe toward the opposite belt; 5 substantially as described.

3. A conveyer including belts, means for maintaining the portion of one of the belts parallel with the other belt opposite it, means for regulating the distance between the parallel portions of said belts, said means comprising a shoe arranged longitudinally and in rear of one of the belts, and means for moving the shoe toward the opposite belt including a rock-shaft, an arm on the rock-shaft, and a connection between the arm and the shoe; substantially as described. 15

4. A conveyer including belts, means for maintaining the portion of one of the belts parallel with the other belt opposite it, means for regulating the distance between the parallel portions of said belts, said means comprising a shoe arranged longitudinally and in rear of one of the belts, and means for moving the shoe toward the opposite belt including a rock-shaft, an arm on the rock-shaft, a connection between the arm and the shoe, and a lever loosely mounted on said rock-shaft and adapted to engage a projection rigid on said rock-shaft whereby the shaft 25 may be rocked; substantially as described.

5. The combination with a frame, of two conveyer-belts each having portions parallel with each other, means for regulating the distance between the parallel portions of said belts, said means having a plurality of adjustments; substantially as described. 35

6. In a conveyer, means for lowering pans, a horizontal conveying mechanism, a transfer for automatically removing the pans from the first-named means to a horizontally-movable means, a return-conveyer beneath the horizontally-movable means, means for automatically transferring the pans from the horizontally-movable means to the return-conveyer, and a hoist; substantially as described. 45

7. A device of the class described including a horizontally-movable conveyer, a return-conveyer below the first-named conveyer, a weighted tiltable table at the end of the first-named conveyer for transferring articles therefrom to the second-mentioned conveyer, and inclined guides adjacent to the tiltable table and terminating adjacent to and above the second-mentioned conveyer; substantially 55 as described.

8. In a device of the class described, a vertical conveyer for lowering pans, a horizontal conveyer adjacent thereto, a transfer-conveyer for transferring the pans from the vertical conveyer to the horizontal conveyer, a scrap-belt below the horizontal conveyer, and a deflector extending transversely across the scrap-belt; substantially as described. 60

9. In a device of the class described, the combination with a vertical conveyer, a horizontal conveyer, a transfer-conveyer cooperating with the two conveyers, a return-conveyer below the horizontal conveyer, means for automatically transferring articles from the horizontal conveyer to the return-conveyer, a hoist, and means whereby articles may be transferred from the return-conveyer to the hoist; substantially as described. 65

10. In a device of the class described, the combination with a vertical conveyer, a horizontal conveyer, a transfer-conveyer cooperating with the two conveyers, a return-conveyer below the horizontal conveyer, means for automatically transferring articles from the horizontal conveyer to the return-conveyer, a second vertical conveyer, and means whereby articles may be transferred from the return-conveyer to the second vertical conveyer; substantially as described. 75

11. The combination with a vertical conveyer, a horizontal conveyer, a scrap-belt below the horizontal conveyer, a deflector across the scrap-belt, a return-belt, a tiltable table at the end of the horizontal conveyer for transferring articles to the return-belt, a second vertical conveyer, and means whereby articles may be automatically transferred from the return-belt to the second vertical conveyer; substantially as described. 85

12. A conveyer including a return-belt, a vertical conveyer, a casing inclosing the vertical conveyer and provided with a hinged door, and a chute cooperating with the return-belt and the vertical conveyer, said chute communicating with the casing through the opening closed by said door; substantially as described. 95

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 11th day of February, 1905. 100

JOSEPH L. CAUSEY.

Witnesses:

JACOB L. LOOSE,
JOHN H. WILES.