

No. 785,928.

PATENTED MAR. 28, 1905.

A. M. ACKLIN.
APPARATUS FOR HANDLING GLASSWARE.

APPLICATION FILED APR. 18, 1904.

5 SHEETS—SHEET 1.

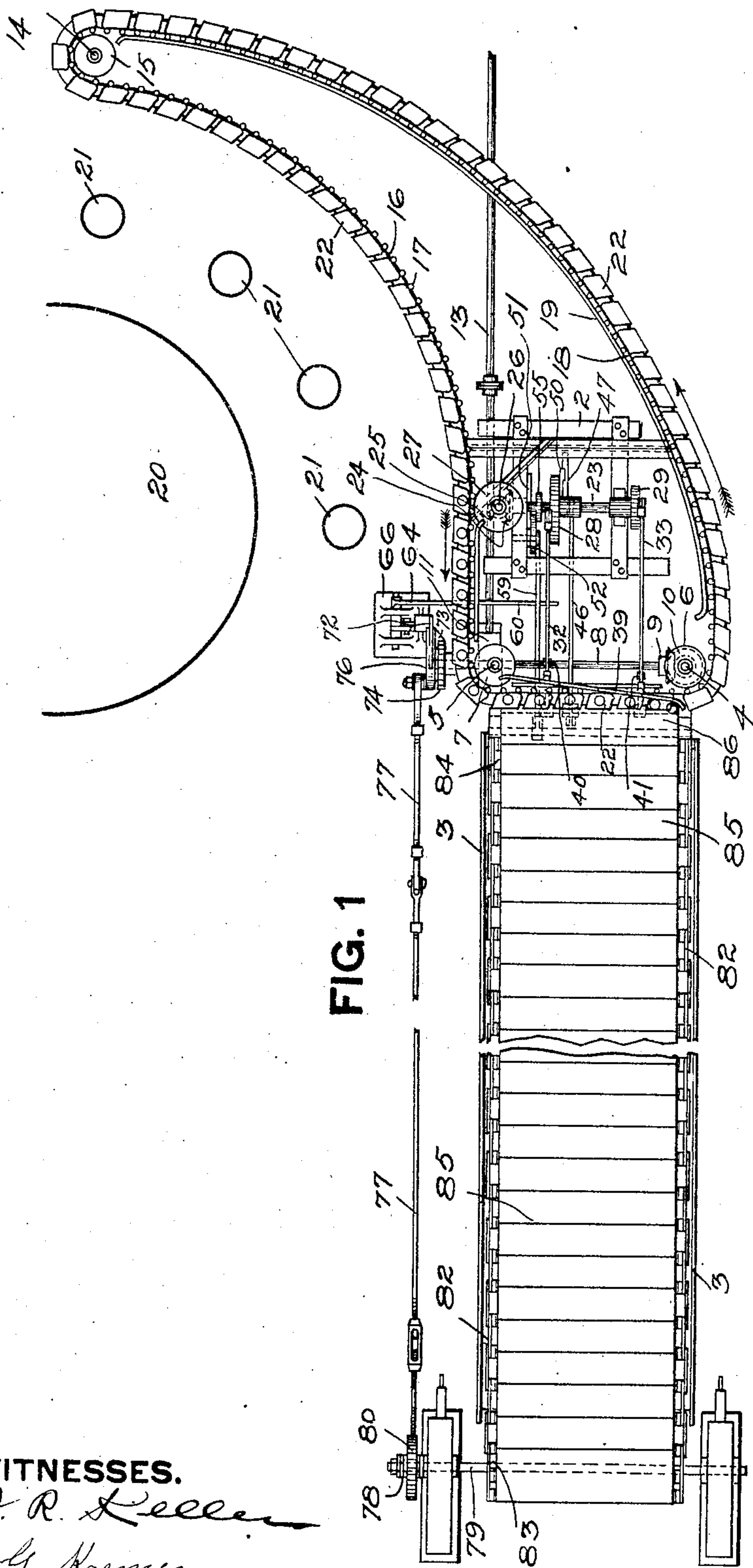


FIG. 1

WITNESSES.

J. R. Keller
G. Bremer

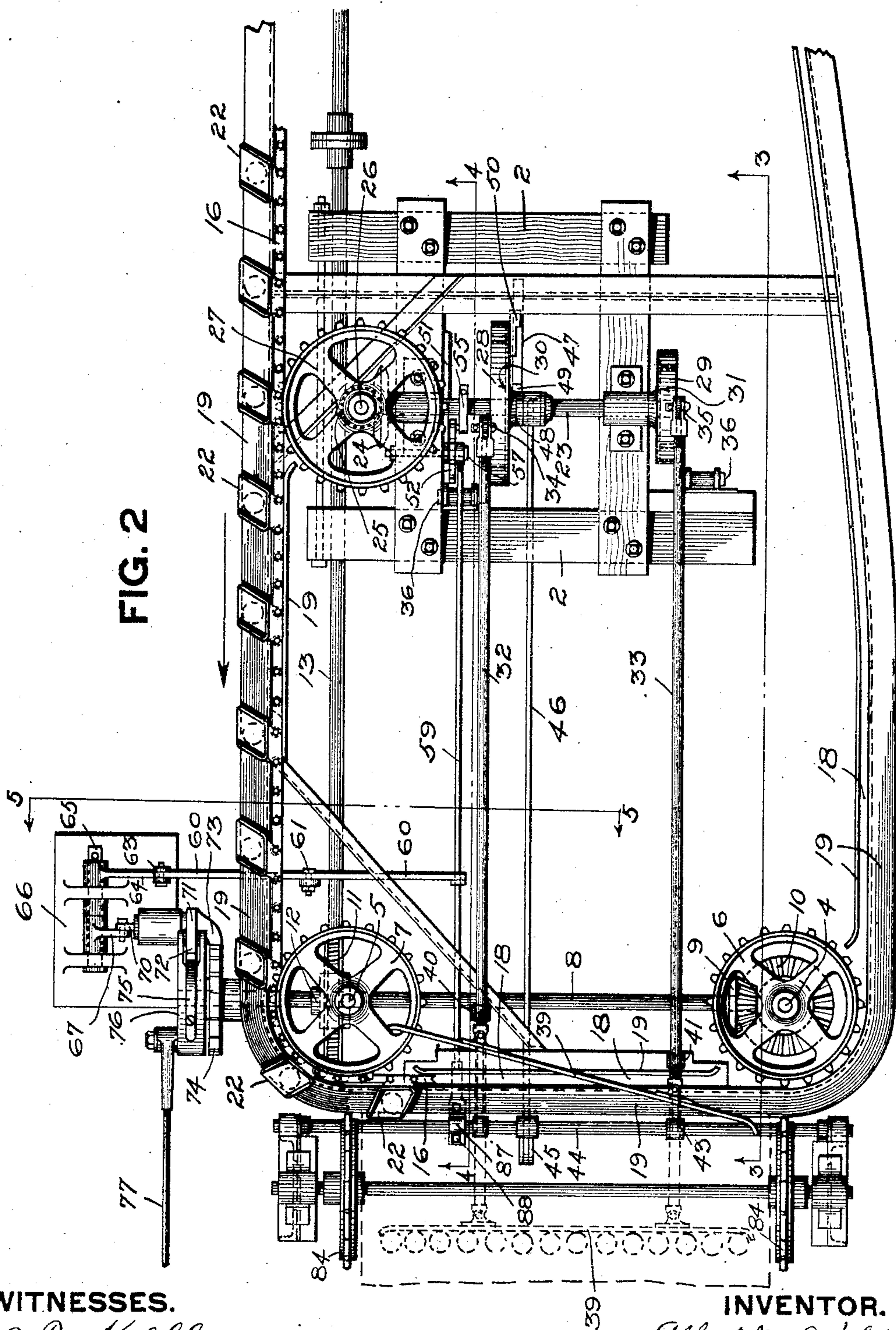
INVENTOR.

Alfred M. Acklin
By Kay Fothergill
attor

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APPARATUS FOR HANDLING GLASSWARE.

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5 SHEETS—SHEET 2.



WITNESSES.

J. R. Keller
L. Kremer

INVENTOR.

Alfred M. Acklin
By Ray John Smith
attys.

No. 785,928.

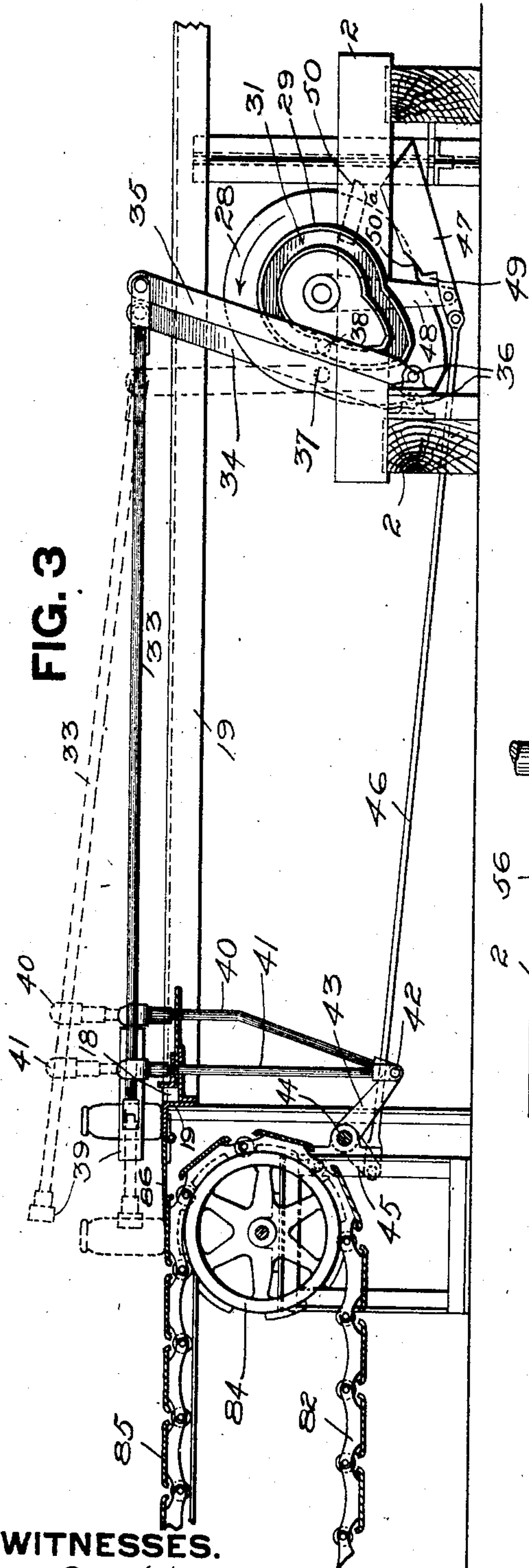
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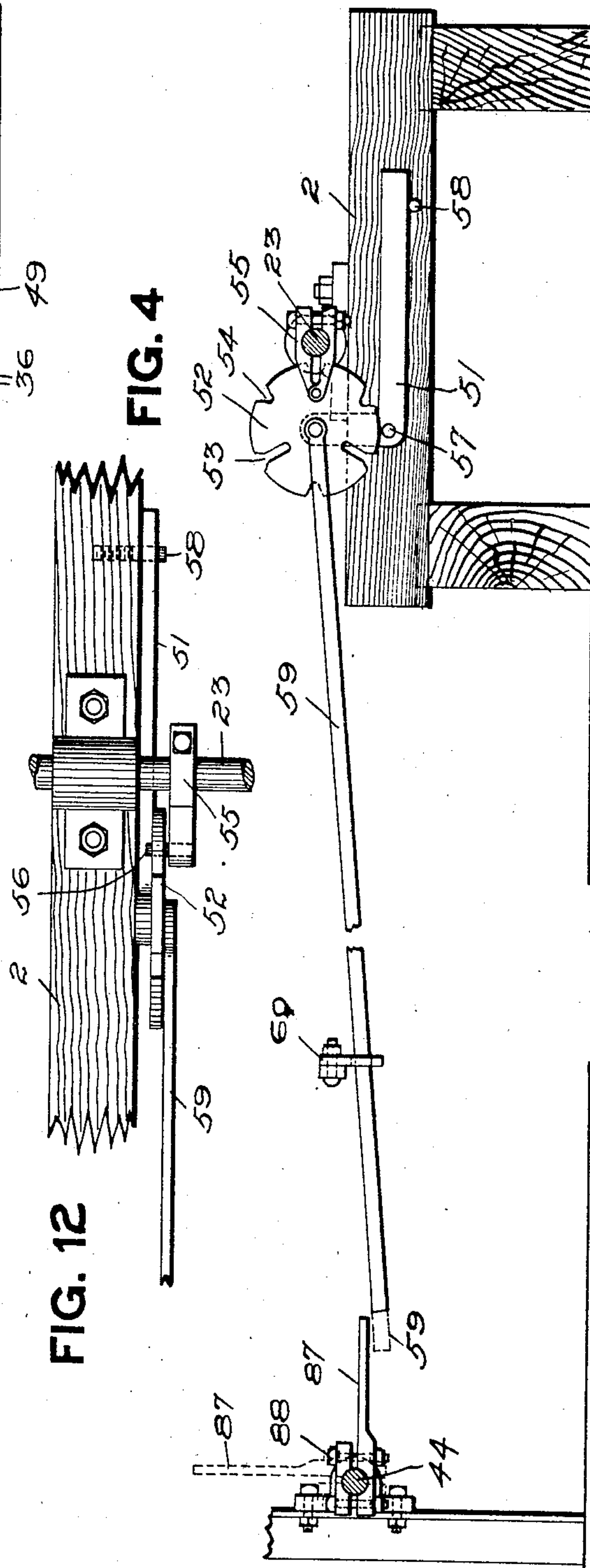
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5 SHEETS—SHEET 3.



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WITNESSES.

J. R. Keller
G. Bremer

INVENTOR.

Alfred M. Acklin
by Roy Folmer writer
attys

A. M. ACKLIN.
APPARATUS FOR HANDLING GLASSWARE

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5 SHEETS—SHEET 4.

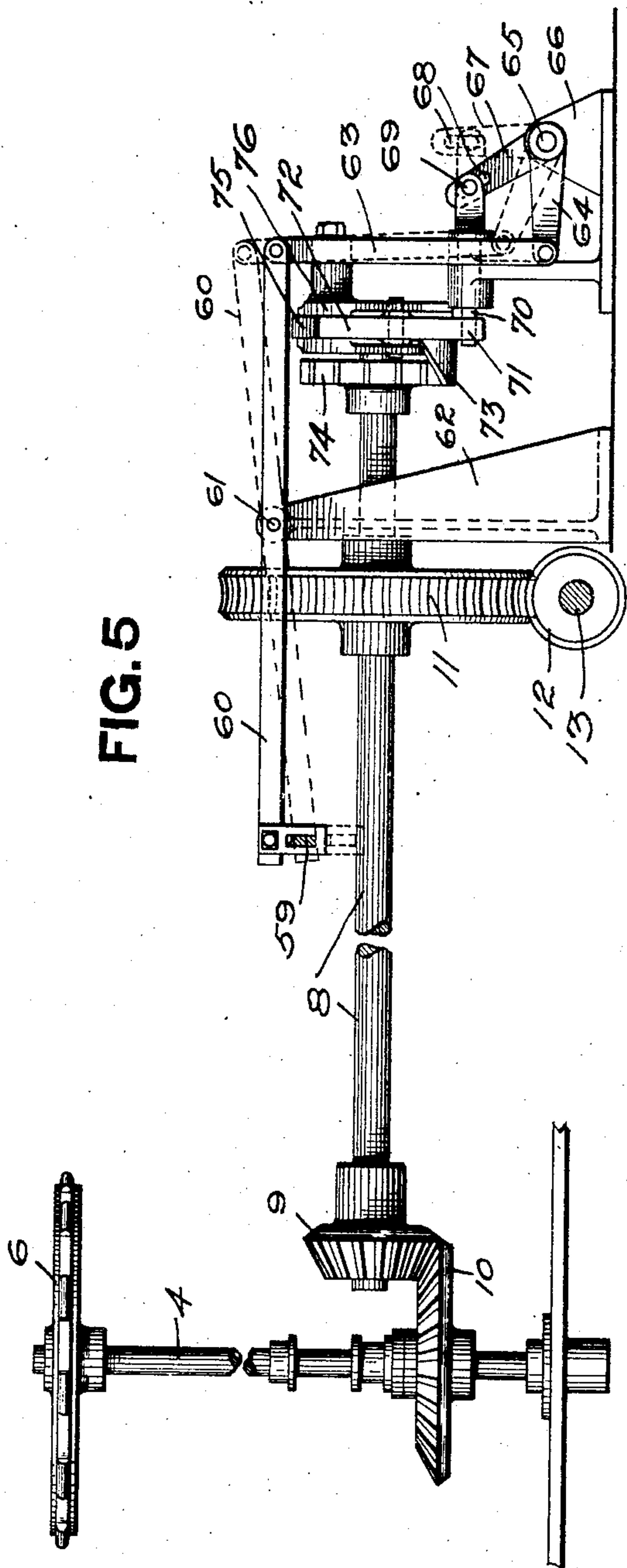


FIG. 5

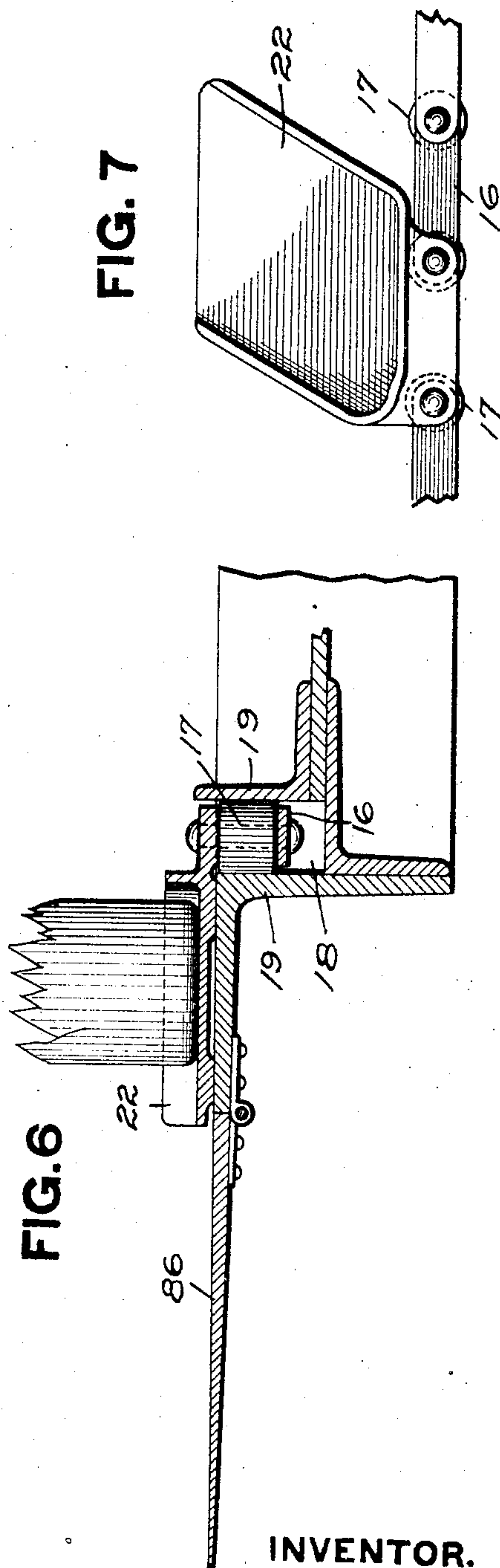


FIG. 6

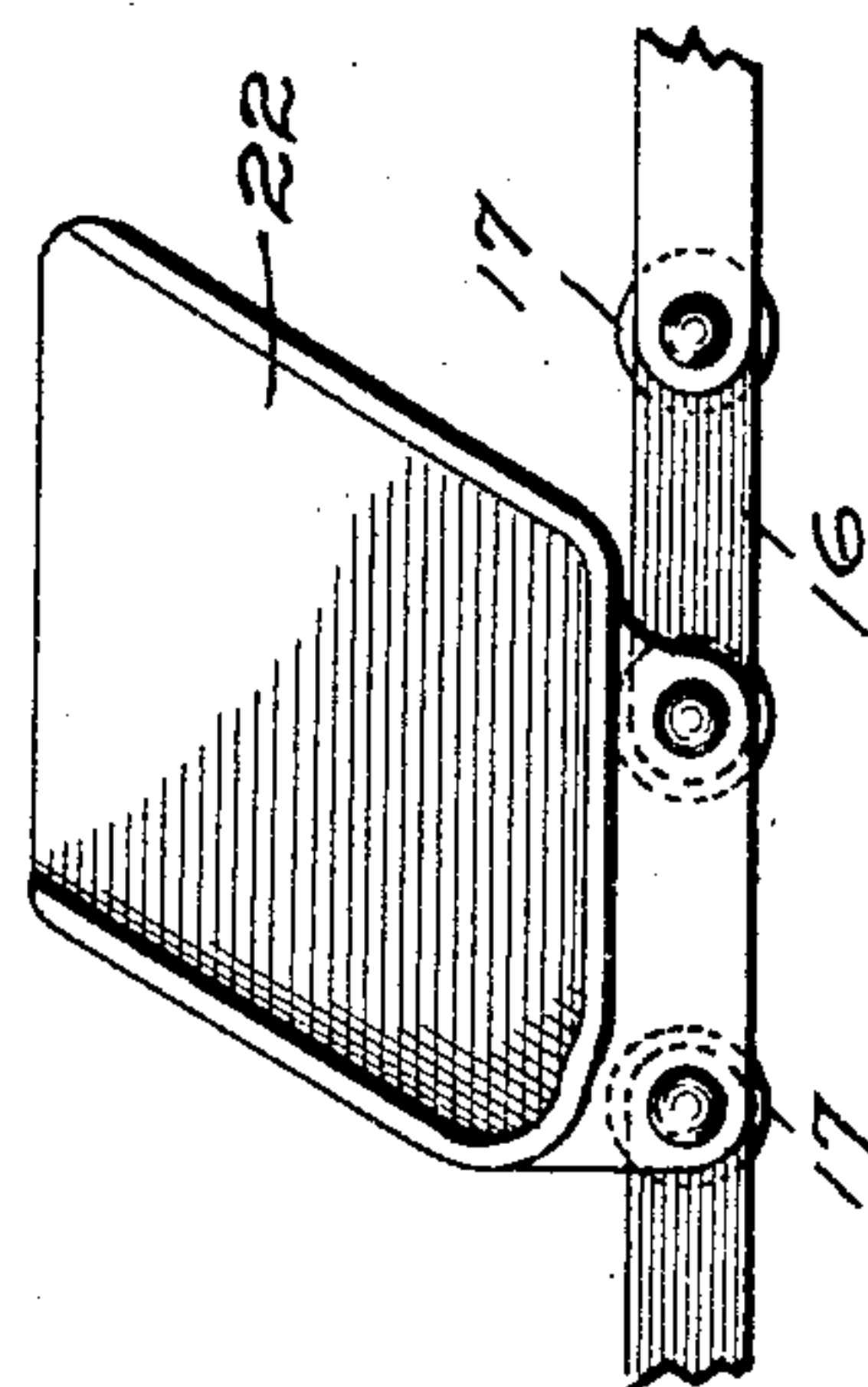


FIG. 7

WITNESSES.

J. R. Keller
G. Bremer

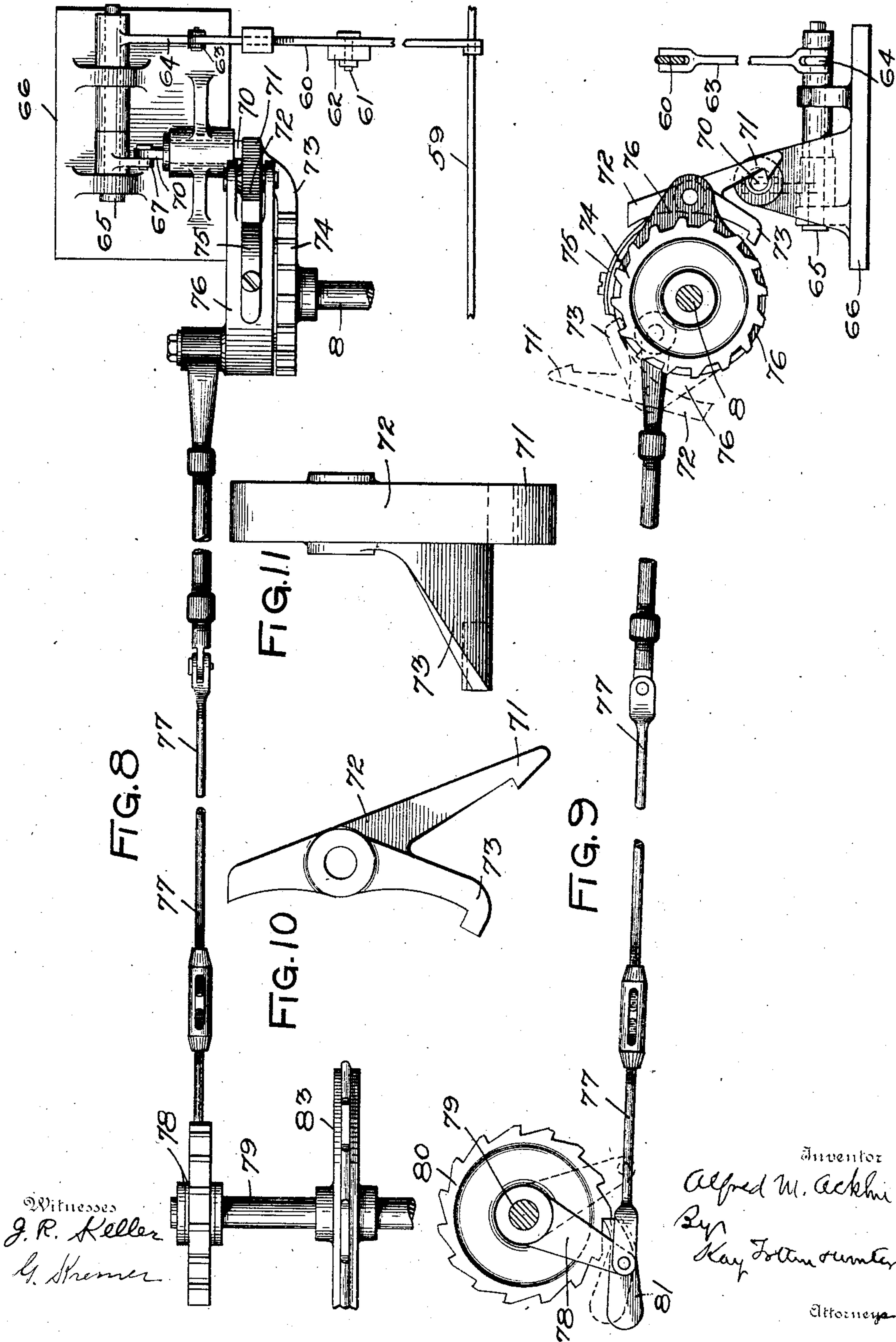
INVENTOR.

Alfred M. Acklin
by Kay F. Fenn
attorney

A. M. ACKLIN.
APPARATUS FOR HANDLING GLASSWARE.

APPLICATION FILED APR. 18, 1904.

5 SHEETS—SHEET 5.



UNITED STATES PATENT OFFICE.

ALFRED M. ACKLIN, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO
HEYL & PATTERSON, OF PITTSBURG, PENNSYLVANIA, A PART-
NERSHIP.

APPARATUS FOR HANDLING GLASSWARE.

SPECIFICATION forming part of Letters Patent No. 785,928, dated March 28, 1905.

Application filed April 18, 1904. Serial No. 203,727.

To all whom it may concern:

Be it known that I, ALFRED M. ACKLIN, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Handling Glassware; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to apparatus for handling articles of glassware, its object being to provide apparatus for the mechanical handling of articles of glassware after they have been blown or pressed and conveying them to a position with reference to the leer, so that they may be automatically transferred from the conveyer to the leer and carried forward therein to the opposite end.

To these ends my invention comprises the novel features hereinafter set forth and claimed.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a plan view of my improved apparatus. Fig. 2 is an enlarged plan view of the forward section of the conveying apparatus and a portion of the leer-carrier. Fig. 3 is a section on the line 3 3, Fig. 2. Fig. 4 is a section on the line 4 4, Fig. 2. Fig. 5 is a section on the line 5 5, Fig. 2. Fig. 6 is an enlarged sectional view of the ware-carrier and the connecting-shelf between the ware-carrier and leer-carrier. Fig. 7 is an enlarged plan view of a portion of the chain and one of the trays. Fig. 8 is a plan view of the mechanism for advancing the leer-carrier by an intermittent motion. Fig. 9 is a side view of same. Fig. 10 is an enlarged side view of the pawl device. Fig. 11 is an enlarged face view of said pawl device. Fig. 12 is an enlarged detail view of the device for automatically releasing the mechanism for operating the leer-carrier.

Like numerals indicate like parts in each of the figures.

In the drawings the numeral 2 designates a suitable framework erected in front of the

leer 3. Journaled in the forward end of the framework 2 are the vertical shafts 4 and 5, which carry at their upper ends the sprocket-wheels 6 and 7. A shaft 8 is journaled in suitable bearings, and secured to said shaft is the pinion 9, which meshes with the bevel-pinion 10 on the shaft 4. Mounted on the shaft 8 is the worm-wheel 11, which is driven by the worm 12 on the shaft 13. This shaft 13 extends back a suitable distance and may be driven by any suitable power. In the rear and somewhat to one side is the vertical shaft 14, upon which is mounted the sprocket-wheel 15. A suitable chain 16 engages the sprocket-wheels 6, 7, and 15, and said chain 16 is provided with the rollers 17, which engage the guideway 18, formed by the guide-rails 19. By these guide-rails the chain is given a curved form which conforms to the circular furnace 20 and the arrangement of the shops 21, which are usually arranged around the furnace in the manner indicated, so that the ware-carrier is at an equal distance from each shop and near enough thereto to provide for the convenient removal of the ware from the shop to the carrier. Secured to the chain 16 at suitable intervals are the trays 22, which are adapted to support the ware which is transferred from the shops thereto. These trays are preferably arranged at an angle to the chain 16 for the purpose fully hereinafter disclosed.

Journaled in the frame 2 is the shaft 23, said shaft having the pinion 24, which is engaged by the pinion 25 on the vertical shaft 26. This vertical shaft 26 is mounted at the upper end of the sprocket-wheel 27, which is engaged by the chain 16 and driven thereby, whereby rotary motion is imparted to the shaft 26 and through it to the shaft 23. Mounted on the shaft 23 are the cams 28 29, the cam 28 being larger than the cam 29 and both cams having camways 30 31. Rods 32 33 are connected to levers 34 and 35, respectively, said levers being pivoted to the frame at 36 and having the studs 37 and 38, which engage with the camways 30 and 31, respectively.

To the forward ends of the rods 32 and 33

is secured the pusher 39. The rods 32 and 33 are supported at their forward ends by the upright rods 40 and 41. The lower ends of the upright rods 40 and 41 are mounted on the pins 42, and connected to said pins are the levers 43, mounted on the rock-shaft 44. To the short arm 45 of the bell-crank 43 is connected the rod 46. The opposite end of said rod 46 is connected to the plate 47, suspended from the arm 48 on the shaft 23. This plate 47 has the notch 49, with which the projection 50 on the cam 28 is adapted to engage for the purpose fully hereinafter set forth. The plate 47 is further provided with the curved face 50^a, so that when the projection 50 passes beyond the notch 49 it will contact briefly with the face 50^a in order to prevent said plate being released until said projection has passed over said face.

Mounted on the swinging arm 51 is the notched wheel 52, this swinging arm 51 being pivoted to the frame at 57, and the movement of said arm is limited by the stop 58. The said wheel 52 has the notches 53 and 54, the notches 53 being deeper than the notches 54. Mounted on the shaft 23 is a crank 55, which has a pin 56, adapted to engage the notches 53 and 54 of the wheel 52, as clearly indicated in Fig. 12.

Connected to the wheel 52 is the rod 59, said rod engaging the cross-lever 60, mounted at 61 on the standard 62. The opposite end of the lever 60 is connected by the link 63 to the bell-crank 64, mounted on the shaft 65 in the bracket 66. The arm 67 of the bell-crank 64 has the slot 68, with which the pin 69 engages, connecting said arm 67 with the latch 70. The latch 70 is adapted to engage the finger 71 of the pawl 72. The other finger, 73, of the pawl 72 is adapted when the latch 70 is withdrawn to engage the teeth of the ratchet-wheel 74 on the shaft 8, the spring 75 acting to force said pawl into engagement with said ratchet when said latch is withdrawn, as fully indicated in Figs. 8 and 9. The ratchet 74 is rigidly secured to the shaft 8, while the pawl 72 is secured to the disk 76, loosely mounted on said shaft. A rod 77 extends from the disk 76 to the crank-arm 78 on the shaft 79, which operated the leer-carrier. A ratchet-wheel 80 is mounted on the shaft 79, and a pawl 81 is adapted to engage the teeth of the said ratchet-wheel, so as to rotate said wheel the distance of a tooth each time the rod 77 is operated.

Within the leer 3 is a suitable carrier, which consists of the chain 82, engaging the sprocket-wheels 83 at the forward end of the leer and the sprocket-wheels 84 at the rear end thereof. Connected to the chains 82 are the pans 85 upon which the ware is supported during its progress through the leer. A hinged shelf 86 acts to bridge over the space between the ware-carrier and the pans of the leer-carrier, so that the ware may be transferred from the

trays across said shelf to the pans of the leer-carrier.

Mounted on the shaft 44 is the arm 87, said arm being secured to said shaft by means of the bolts 88. This arm 87 is in alinement with the rod 59, so that when said arm 87, is lowered it will come in contact with the rod 59 and operate the same, all as fully herein-after set forth.

When my improved apparatus is in operation, the ware, either pressed or blown, manufactured at the shops 21, is transferred to the trays 22 of the ware-carrier 16. It is usual to construct the trays of such a size as to conveniently carry one article of glassware, as indicated in Fig. 6, and the articles placed upon the trays are carried by the continuously-moving ware-carrier around in position in front of the leer so as to be transferred from said ware-carrier onto the pans of the leer. As the shaft 23 runs continuously, the cams 28 and 29 also rotate continuously, and by the formation of the camways 30 and 31 the rods 32 and 33 are advanced and withdrawn by said cams. As the ware carried by the trays comes around in front of the leer each article of glassware as it comes in contact with the pusher 39 will be moved onto the shelf 86. In the meantime the rod 32 moves forward more rapidly than the rod 33, bringing the pusher-bar into a straight line, and by this time a line of articles extends across the shelf 86. This is due to the difference in size of the camways and the studs 37 and 38 on the rods 32 and 33 engaging said camways. When the studs arrive at the extremities of the camways, the rods 32 and 33 are carried forward at an equal rate of speed. The rods 32 and 33 now move forward together and at an increased rate of speed, owing to the shape of the camways 30 and 31, and the line of ware is pushed forward onto the pan of the leer in waiting to receive it, as indicated in dotted lines, Fig. 2. By having the trays 22 arranged obliquely to the chain 16 the ware is pushed off by the rod 39 with greater facility. Just as soon as the ware has been pushed onto the pan the tripper 50 comes in contact with the plate 47 and pulls back on the rod 46, which acts to rock the shaft 44 and draws up the levers 43 on the shaft 44, so that the rods 40 and 41 are lifted, and with them the rods 32 and 33. This lifts the pusher 39 out of the way of the ware which has been advanced in position in front of the leer, as indicated in dotted lines in Fig. 3. After the tripper 50 has passed the trip 47 the rods 32 and 33 descend into their normal position ready to advance the next line of ware onto the next tray of the leer.

By the rocking of the shaft 44 the arm 87 has been lifted to the position indicated in dotted lines, Fig. 4, and as said rock-shaft assumes its normal position upon the lowering of the rods 32 and 33 the arm 87 lowers and

comes in contact with the rod 59. This rod 59 has been advanced to the position indicated in dotted lines, Fig. 4, by the action of the pin 56, engaging the shallow notch 54 of the notched wheel 52. By its engagement with the shallow notch the wheel 52 has been advanced, carrying with it the rod 59, so that said rod is in position to be struck by the descending arm 87. It is apparent that when the pin 56 engages one of the deep notches 54 no advancement of the rod 59 takes place, but the wheel 52 swiftly rotates. By increasing the number of deep notches the time of the operation of rod 59 may be varied as desired. By the descent of the arm 87 the rod 59 is lowered slightly, so as to lower the lever 60 to the position indicated in dotted lines, Fig. 5. This operation of the lever 60, through the connections 63 and bell-crank 64, acts to withdraw the latch 70, which permits the pawl 72 to bring its finger 73 into engagement with the teeth of the ratchet 74, whereupon said pawl is carried around by said ratchet 74, which continuously revolves with the shaft 88 and carries with it the disk 76. This rotation of the disk 76 works through the rod 77 to turn the ratchet 80 on the shaft 79, so as to impart a movement to the leer-carrier sufficient to bring another pan in position to receive the ware from the ware-carrier. In the meantime the cams 28 and 29 have revolved sufficiently to operate the pusher 39 so as to advance the next line of ware onto the next tray of the leer-carrier. After the disk 76 has completed its revolution the latch 71 is returned to its normal position by the withdrawal of the rod 59, so that the pawl 72 is disengaged from the ratchet 74, and no further movement of the leer takes place until the pusher has advanced another line of ware onto the next pan of the leer.

What I claim is—

1. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer transversely to the direction of travel of said movable carrier, and mechanism for automatically transferring the ware from said ware-carrier to said movable carrier.

2. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer transversely to the direction of travel of said movable carrier, and a pusher adapted to automatically move the ware from said ware-carrier to said movable carrier.

3. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer transversely to the direction of travel of said movable carrier, and a reciprocating pusher adapted to automatically move the ware from said ware-carrier to said movable carrier.

4. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer transversely to the direction of travel of said movable carrier, a pusher, and mechanism for advancing said pusher each time to the full extent of its movement, whereby the ware in the path of said pusher is advanced onto the movable carrier.

5. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, and mechanism for transferring a plurality of said ware from said ware-carrier to said movable carrier.

6. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, and mechanism for transferring a line of ware extending across said opening to said movable carrier.

7. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a pusher-bar extending across said receiving-opening, mechanism for advancing and withdrawing said pusher-bar, and mechanism for lifting said pusher-bar on its return movement.

8. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a pusher extending diagonally of said ware-carrier, and means for operating said pusher.

9. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer transversely to the direction of travel of said movable carrier, a pusher-bar extending across said receiving-opening, and cam mechanism for advancing and withdrawing said pusher-bar.

10. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a pusher-bar extending diagonally of said ware-carrier, means for throwing said pusher-bar on a substantially parallel line with reference to said ware-carrier and for advancing same in that position.

11. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a pusher-bar extending diagonally of said ware-carrier, a shaft, cams on said shaft, and connections between said pusher-bar and said cams, whereby said pusher-bar is advanced thereon on a substantially parallel line with reference to said ware-carrier and advanced in that position.

12. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a pusher-bar extending

diagonally of said ware-carrier, a shaft, cams of different size on said shaft having camways formed therein, rods connected to said pusher-bar, the opposite ends of said rods engaging said camways, whereby said pusher-bar is thrown in a substantially parallel line with reference to said ware-carrier and advanced in that position.

13. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a pusher-bar, rods connected to said pusher-bar, means for advancing and withdrawing said rods, upright rods supporting said rods, and mechanism for raising said upright rods.

14. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a pusher-bar, rods connected to said pusher-bar, means for advancing and withdrawing said rods, upright rods supporting said rods, levers connected to said upright rods, and means for operating said levers.

15. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a pusher-bar, rods connected to said pusher-bar, means for advancing and withdrawing said rods, upright rods supporting said rods, levers connected to said upright rods, a rod connected to said levers, and means for moving said rod.

16. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a pusher-bar, rods connected to said pusher-bar, means for advancing and withdrawing said rods, upright rods supporting said rods, levers connected to said upright rods, a plate on said rod, and a projection moving in the path of said plate.

17. The combination with a leer, of a movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a pusher-bar extending across said receiving-opening, mechanism for advancing said pusher-bar, and mechanism for withdrawing and lifting the same simultaneously.

18. The combination with a leer, of an intermittently-movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a power-driven shaft, a loosely-mounted member on said shaft, connections between said loosely-mounted member and said intermittently-movable carrier, mechanism for throwing said member into operative engagement with said shaft, a lever connected to said last-named mechanism, a rod engaging the opposite end of said lever, means for advancing said rod, an arm adapted to contact with said

rod to depress same, and means for raising and lowering said arm.

19. The combination with a leer, of an intermittently-movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a power-driven shaft, a loosely-mounted member on said shaft, connections between said loosely-mounted member and said intermittently-movable carrier, mechanism for throwing said member into operative engagement with said shaft, a lever connected to said last-named mechanism, a rod engaging the opposite end of said lever, means for advancing said rod, a second shaft, a pin carried by said shaft, a swinging frame, a notched wheel on said frame having notches of varying depth adapted to be engaged by said pin, a rod connected to said wheel, and means for depressing said rod.

20. The combination with a leer, of an intermittently-movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a power-driven shaft, a loosely-mounted member on said shaft, connections between said loosely-mounted member and said intermittently-movable carrier, a ratchet-wheel rigidly secured to said shaft, a pawl, one finger of said pawl adapted to engage said ratchet-wheel, a latch engaging the other finger of said pawl, and mechanism for releasing said last-named finger.

21. The combination with a leer, of an intermittently-movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a power-driven shaft, a loosely-mounted member on said shaft, connections between said loosely-mounted member and said intermittently-movable carrier, a ratchet-wheel rigidly secured to said shaft, a pawl, one finger of said pawl adapted to engage said ratchet-wheel, a latch engaging the other finger of said pawl, a bell-crank connected to said latch, and mechanism for withdrawing said latch.

22. The combination with a leer, of a movable carrier arranged within said leer, a chain ware-carrier adapted to travel across the receiving-opening of said leer, mechanism for transferring the ware from said ware-carrier to said movable carrier, and means for operating said mechanism by the travel of said chain.

23. The combination with a leer, of an intermittently-movable carrier arranged within said leer, a chain ware-carrier adapted to travel across the receiving-opening of said leer, mechanism for imparting an intermittent movement to said movable carrier, and means for operating said mechanism by the travel of said chain.

24. The combination with a leer, of a movable carrier arranged within said leer, a ware-

carrier adapted to travel across the receiving-opening of said leer, a series of trays on said ware-carrier and arranged at an angle thereto, a pusher-bar extending diagonally of said ware-carrier, and mechanism for operating said pusher-bar.

25. The combination with a leer, of an intermittently-movable carrier arranged within said leer, a ware-carrier adapted to travel across the receiving-opening of said leer, a power-driven shaft, a loosely-mounted member on said shaft, and connections between said loosely-mounted member and said intermittently-movable carrier, mechanism for throwing said member into operative engage-

ment with said shaft, a lever connected to said last-named mechanism, a rod engaging the opposite end of said lever, means for advancing said rod, a second shaft, a pin carried by said shaft, a forwardly-movable notched wheel on said shaft having notches of varying depth adapted to be engaged by said pin, a rod connected to said wheel and means for depressing said rod.

In testimony whereof I, the said ALFRED M. ACKLIN, have hereunto set my hand.

ALFRED M. ACKLIN.

Witnesses:

ROBT. D. TOTTEN,
G. C. RAYMOND.