

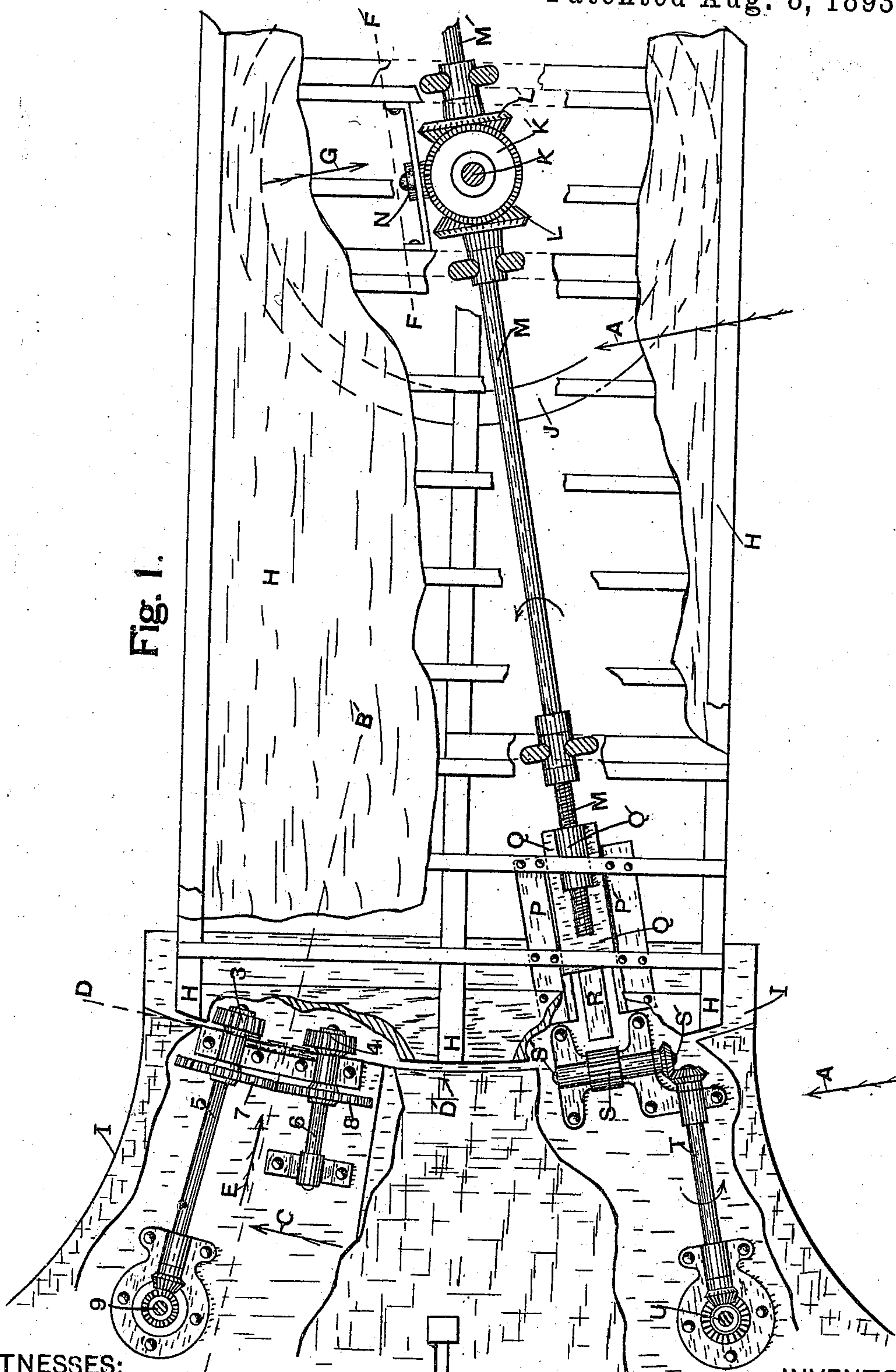
(No Model.)

S. SIMON & J. PLETKA.
BRIDGE GATE.

3 Sheets—Sheet 1

No. 502,779.

Patented Aug. 8, 1893.



WITNESSES:

H. A. Barker.
H. L. Brown

INVENTORS:

Poloman Timon.

By Their atty Oscar Snell John Pletka

(No Model.)

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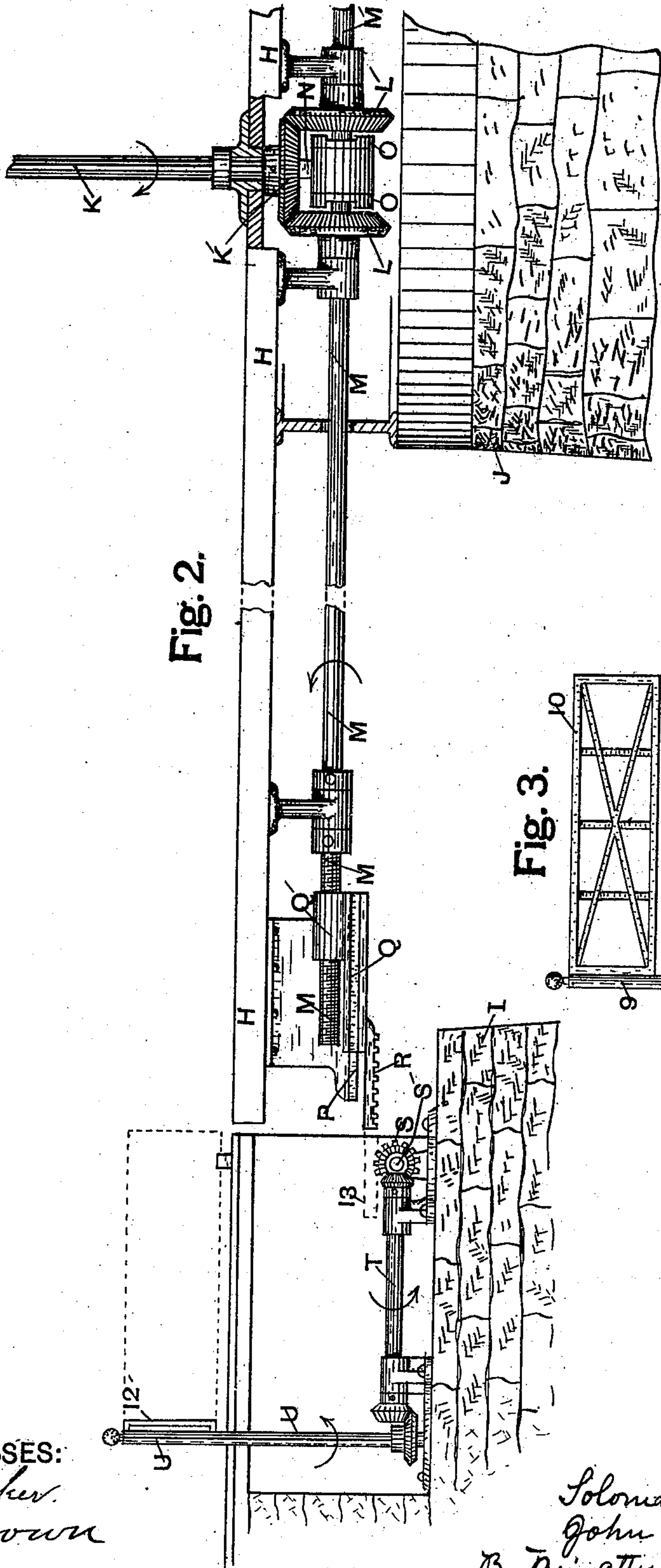


Fig. 2.

Fig. 3.

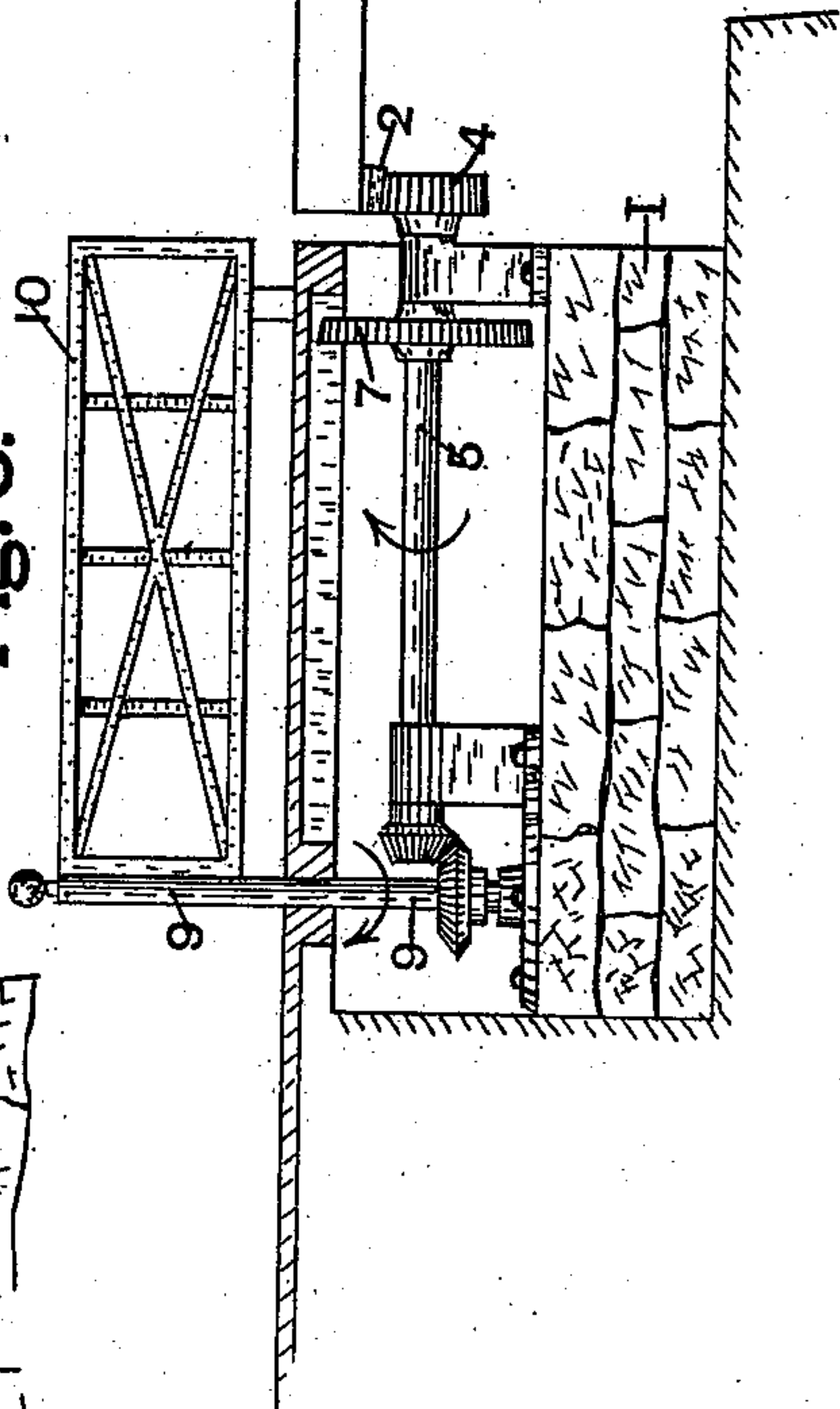
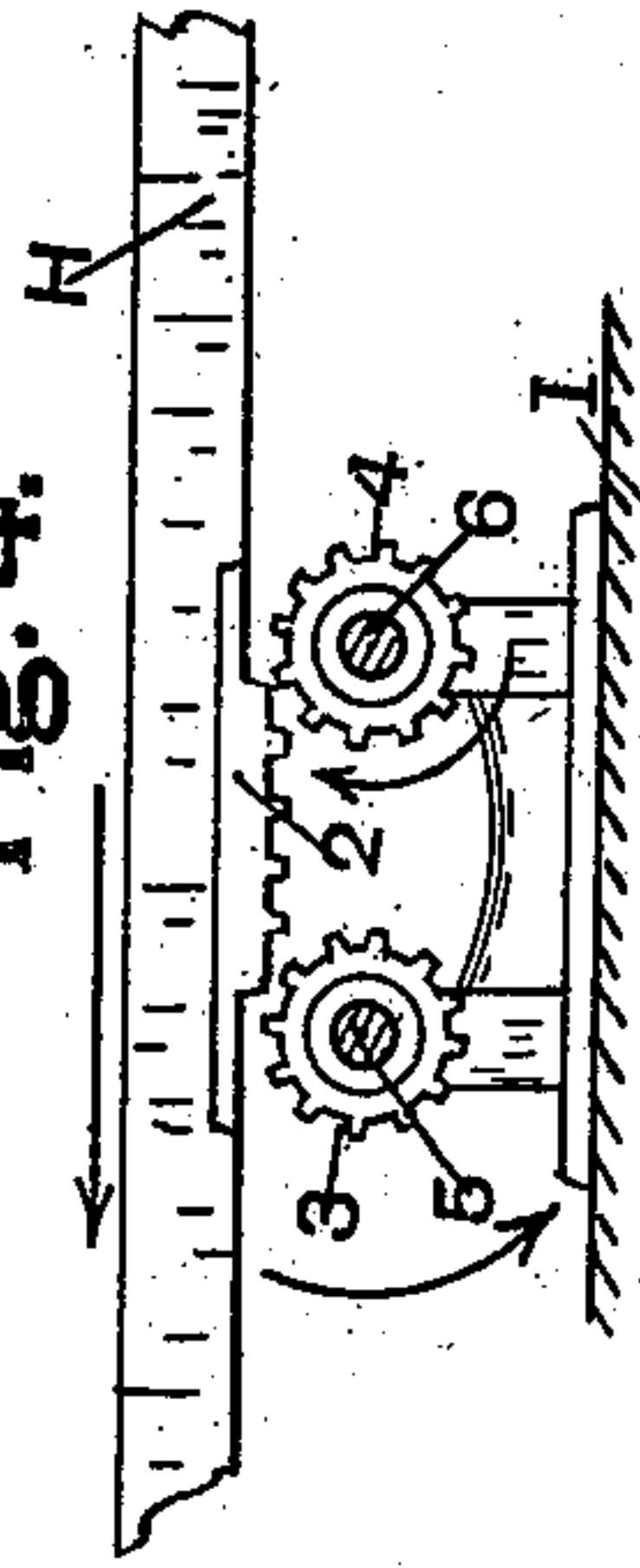


Fig. 4.



WITNESSES:
H. A. Barker.
H. S. Brown

INVENTORS:
Solomon Simon
John Pletka
By *Trinity, Oscar Trull*

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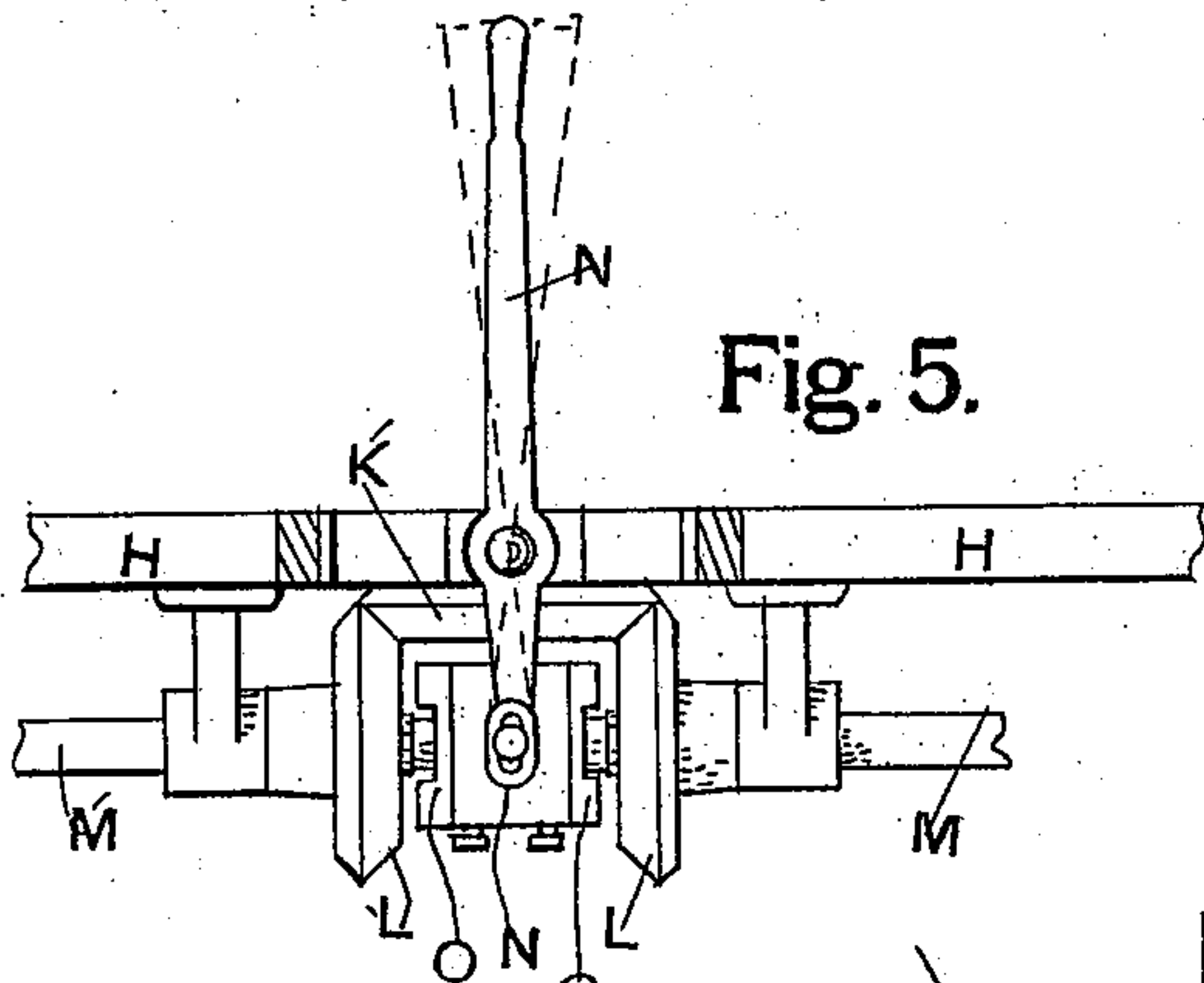


Fig. 5.

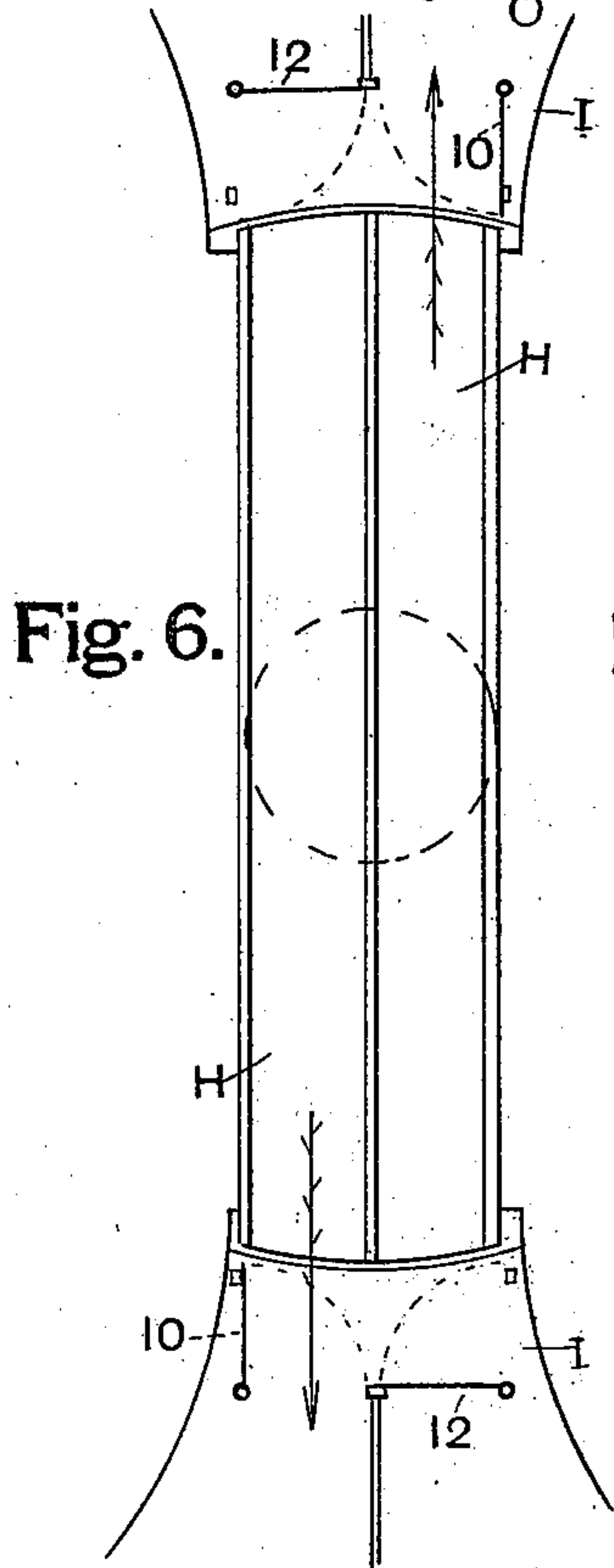


Fig. 6.

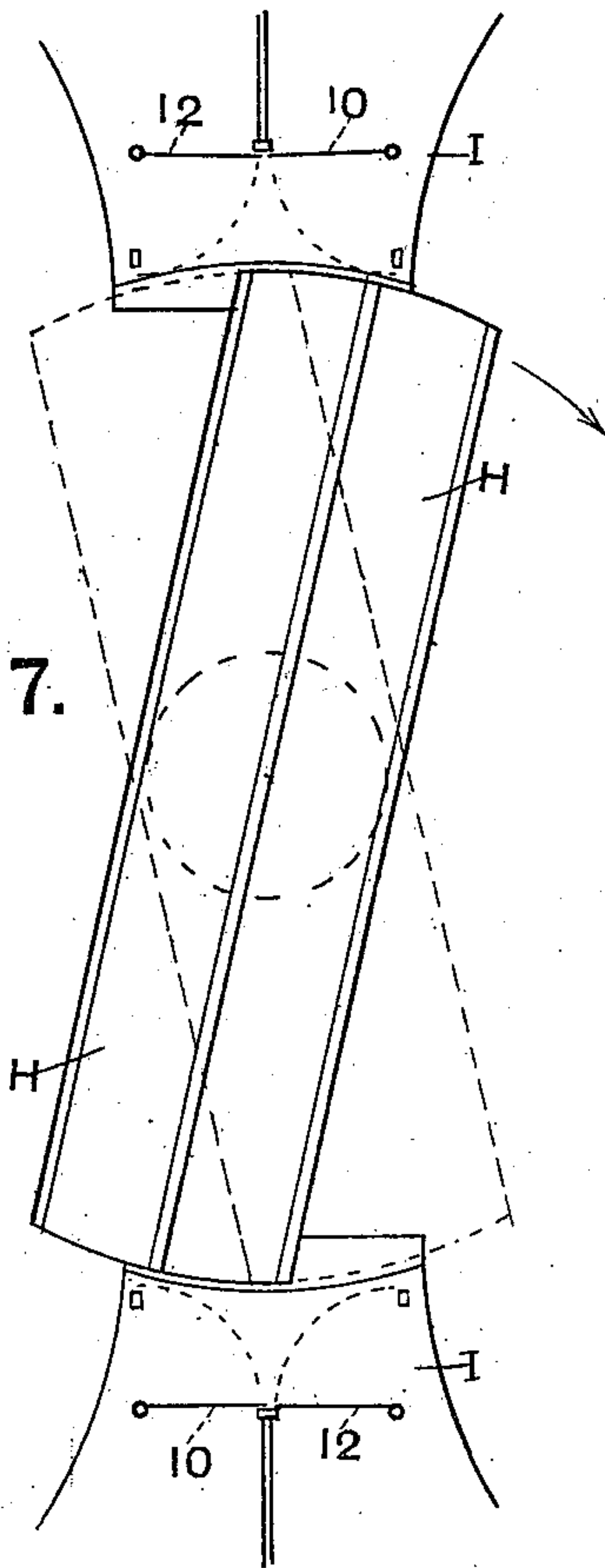


Fig. 7.

WITNESSES:

W. A. Barker
H. S. Brown

INVENTORS:

Solomon Simon
John Pletka
By Their atty Oscar Snell

UNITED STATES PATENT OFFICE.

SOLOMAN SIMON AND JOHN PLETKA, OF CHICAGO, ILLINOIS.

BRIDGE-GATE.

SPECIFICATION forming part of Letters Patent No. 502,779, dated August 8, 1893.

Application filed January 23, 1893. Serial No. 459,356. (No model.)

To all whom it may concern:

Be it known that we, SOLOMAN SIMON and JOHN PLETKA, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Means for Operating Gates for Draw-bridges, of which the following is a specification.

Our invention relates to means for operating the guard gates for swing draw-bridges and our objects are to provide a double means, each one of which operates independently of the other, yet the two serve in combination so that when the signal is given for opening the draw the gates which are to guard the approach to the bridge are closed first before the bridge starts to move, thus effectually preventing any incoming travel upon the bridge, these gates being operated either by the power which operates the bridge or by hand as may be necessary, but the gates which are to guard the exit side of the bridge are held open a short time after the approach gates are closed thus permitting those on the bridge to get off or to prevent them as the case may be, this system for operating bridge gates being applicable to both single and double bridges by always providing a right and left hand approach roadway at both ends of the bridge all of which objects are attained by the means hereinafter described and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of more than one half of a swing bridge, with portions of the floor removed, and also a portion of the approach with parts of the floor removed to show the mechanism by which the hereinbefore stated results are attained. Fig. 2 is a side elevation and partial section of Fig. 1 looking in direction of arrows A. Fig. 3 is a partial side elevation of a portion of the abutment and approach and a section of the approach on line B, B' Fig. 1 looking in direction of arrow C and is for the purpose of showing the relative position of one of the guard gates and of a portion of the mechanism for operating the same. Fig. 4 is a section on line D, D', Fig. 1 looking in direction of arrow E, toward the end of the bridge floor, and showing means by which the movement of the bridge operates the exit guard gates.

Fig. 5 is a side elevation of a portion of the clutch mechanism connected with the means for operating the approach gates which will be more fully explained hereinafter, Fig. 5 showing a partial section of the bridge floor on line F—F', the elevation of the clutch mechanism and operating lever being that by looking in direction of arrow G. Figs. 6 and 7 show, respectively, a closed and a partially open position of a swing draw bridge showing positions of gates as will be explained.

Similar letters and numerals indicate like parts throughout the several drawings.

H represents a bridge and I one of the abutments.

J is the center pier upon which the bridge is mounted to swing.

At K is a vertical shaft which we will suppose is revolved by power from an engine house situated upon the bridge, and this vertical shaft is provided with a miter wheel K' firmly secured to its lower end, which miter wheel is geared with miter wheels L and L', which are loosely mounted on the ends of shafts M and M', and there is a piece of clutch mechanism between wheels L and L' which is capable of connecting wheel L with shaft M, or wheel L' with shaft M' by the movement of lever N operating to slide the clutch sleeves O longitudinally of shafts M and M' either against one or the other of wheels L or L', so that, but one of the shafts M and M' is revolved at one time. It may be here stated that any form of clutch mechanism may be used to accomplish this result, therefore, no description of any particular mechanical movement for the purpose is described. Shafts M and M' are mounted to revolve in bearings which are secured to the under side of the bridge, and at each end of the bridge are securely fastened slides P and P' between which is fitted to slide a cross head Q, and at Q' on this cross head is a heavy lug which is screw threaded and into these threads are fitted to operate the screw threaded ends of the shafts M or M'.

Projecting from the forward end of the cross head is a heavy cog rack R, and at S, Figs. 1 and 2, is a cog wheel mounted upon a shaft S' which has bearings in heavy stands which are secured to the abutment. At one end of

shaft S' is a miter cog wheel which gears with a miter cog wheel on one end of shaft T, which shaft is mounted to revolve in bearings of stands secured to the abutments. Shaft T is
 5 geared to a vertical shaft U by means of bevel wheels, substantially as shown, and vertical shaft U is prolonged upward through the roadway, and to the top portion of this shaft is attached one of the bridge gates, as shown
 10 in Fig. 2, this train of mechanism being for the special purpose of opening and closing the gates which guard the approach to a bridge, and are operated at the will of the bridge tender independent of the movement
 15 of the bridge in opening and closing the draw, as will be further shown hereinafter. Operating independently, but in conjunction with this last described mechanism and in combination therewith, in one sense, to pro-
 20 duce the desired complete result of opening and closing all the necessary gates for a draw bridge at the proper time to insure safety, it is necessary to have gates which guard the
 25 exit entrance of a draw bridge, and these gates should be operated at a later time than those which guard the approach to the bridge.

In Figs. 1, 3 and 4 can be seen several different views of a system of mechanism which will operate the exit gates of a draw bridge
 30 by the motion of the bridge in either opening or closing the gates, always opening or closing in the right direction without regard to the direction the bridge is moving.

In Figs. 3 and 4 is shown a portion of the end of a bridge at H, and secured to the end
 35 of the bridge is a segmental rack of cogs 2, and at 3 and 4 are two cog wheels mounted on the ends of shafting 5 and 6, these shafts being mounted to rotate in bearings of heavy
 40 stands which are secured to the abutment. Cog wheels 3 and 4 are placed in line with segment rack 2, and these cog wheels are of a distance apart sufficient to prevent the seg-
 45 ment rack from gearing with both cog wheels at one time, when the segment rack is in the relative position shown in Fig. 4.

At 7 and 8 are cog wheels to connect shafts 5 and 6 so that, shaft 5 will always be re-
 50 volved, whether cog wheel 3 or 4 is revolved by the action of segment rack 2. The rear end of shaft 5 is connected to vertical shaft 9 by means of bevel gears, as shown, and shaft 9 projects up through the roadway floor,
 55 and to the top portion of the shaft is secured one of the exit gates 10. When the bridge is closed, and the gates open for travel at the approaches, the approach gates will have been moved around to occupy a position at
 60 the side of and parallel with the roadway, as shown in the dotted lines for approach gate 12, in Fig. 2, and when gate 12 is in the indicated open position, just stated, the rack with cogs R will be in gear with cog wheel S,
 65 the rack with cogs R having a position as shown by the dotted lines at 13. When the bridge is to be thrown open, vertical shaft K,

Fig. 2, is revolved, we will suppose, in the direction of the arrow, shown thereon, when if the clutch O O is thrown to the left it is
 70 capable of connecting shaft M with miter cog L. Then shaft M will be revolved in the direction of the arrow, shown thereon, and since the abutment end of shaft M is provided with
 75 a right hand screw, as indicated, the cross head Q with the attached rack with cogs R, will be drawn inward toward the pier J, and in this movement cause the engaged cog wheel
 80 S to revolve, which will revolve shafts T and U, in the direction of the arrows shown thereon and throw gate 12 across the approach to the bridge, as is shown in both Figs. 2 and 6,
 85 the rack with cogs being moved to the position shown by the solid lines, Fig. 2, entirely clear of any contact with the mechanism on abutment I, after which the clutch mechanism
 90 O O is shifted to operate shaft M', which operates to close the approach at the opposite end of the bridge in the same manner, so that gates 12 will have the position shown in
 95 Fig. 6, in which position no more travel can enter upon the bridge, but the exit gates 10 being open, as indicated in Fig. 6, those
 100 upon the bridge can move off as shown by the arrows. If, after this, the bridge is opened, for instance in the direction of the arrows, Figs. 4 and 7, the segment rack 2,
 105 Fig. 4, will go into gear with cog wheel 3 and turn it in the direction indicated by the arrow, causing shaft 5, Figs. 4 and 3, to revolve, together with shaft 9 in the direction of the
 110 arrows shown thereon, which will cause gate 10 to swing out across the roadway, and close the exit passage from the bridge, as is shown by Fig. 7. Should the bridge start to move
 115 in a direction opposite to that indicated by the arrows in Figs. 4 and 7, the segment rack 2 would contact cog wheel 4 and cause it to move in the direction of the arrow, and cog
 120 wheel 4 being attached to its shaft 6, which is geared to shaft 5 by cog wheels 7 and 8, shaft 5 will turn in the same direction as when operated directly by the movement of segment
 125 rack 2 in gear with its cog wheel 3, when the bridge was swung out in the direction of the arrows, as first described, so that, it is obvious, in whichever direction the bridge is swung
 130 open, the exit gates 10, at each end of the bridge, are caused to swing out to close the exit roadway. When the bridge is swung around in the act of closing, in either direction, the segment rack 2, Fig. 4, will go into
 135 gear with one of the cog wheels, 3 or 4, and open the exit gates 10 to the position shown in Fig. 6. After the bridge is closed shaft K is revolved in a direction contrary to that indicated by the arrow thereon, and shafts M
 140 and M' successively operated in the direction contrary to the arrows marked thereon, when the approach gates 12, at each end of the bridge, will be opened by cog rack R being
 145 thrust forward and gearing with and turning cog wheel S together with shafts T and U in

the opposite direction to that indicated by the arrows on said shafts, when the bridge will be ready for travel.

5 We claim as our invention and desire to secure by Letters Patent—

1. A means for operating the approach gate of a swing draw bridge comprising a shaft disposed horizontally and substantially radially from the pivotal center of said bridge, said
10 shaft operated by means near the said pivotal center of said bridge, the outer end of said shaft screw threaded, and said screw threaded portion fitted to impart a rectilinear movement to a cog rack which cog rack is capable
15 of gearing with and imparting a rotary motion to a cog wheel which is secured to a shaft which is mounted upon the bridge abutment, said shaft geared to mechanism for operating said gate substantially as shown and de-
20 scribed in combination with but independent of said exit gates as stated.

2. A means for operating the exit gate at

one end of a swing draw bridge comprising a segment cog rack attached to the end of the bridge, two shafts mounted upon the abut- 25 ment of said bridge which are geared together to revolve in opposite directions, said segment cog rack, by virtue of the motion of said bridge, being capable of gearing with and revolving either one of said cog wheels, one 30 independent of the other, one of said shafts geared to operate the exit gate in combination with means independent thereof for operating the approach gate substantially as shown and described. 35

In testimony that we claim the foregoing we have hereunto set our hands, this 27th day of December, 1892, in the presence of witnesses.

SOLOMAN SIMON.
JOHN PLETKA.

Witnesses:

OSCAR SNELL,
J. H. WOODFORD.