

No. 697,126.

Patented Apr. 8, 1902.

J. BECKER.

LOADING TRAY FOR TRANSFERRING AMMUNITION.

(Application filed Jan. 2, 1902.)

(No Model.)

2 Sheets—Sheet 1.

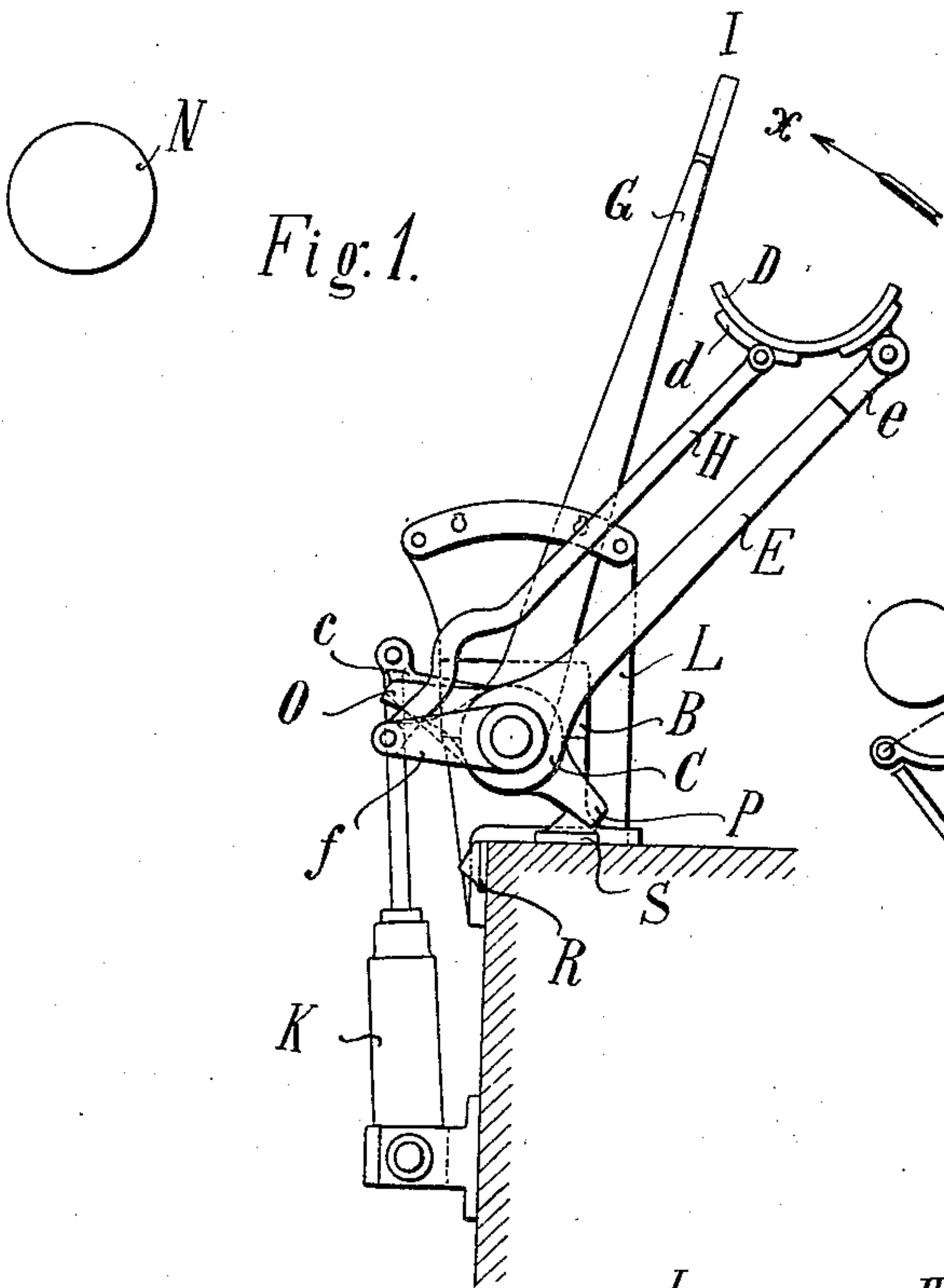


Fig. 1.

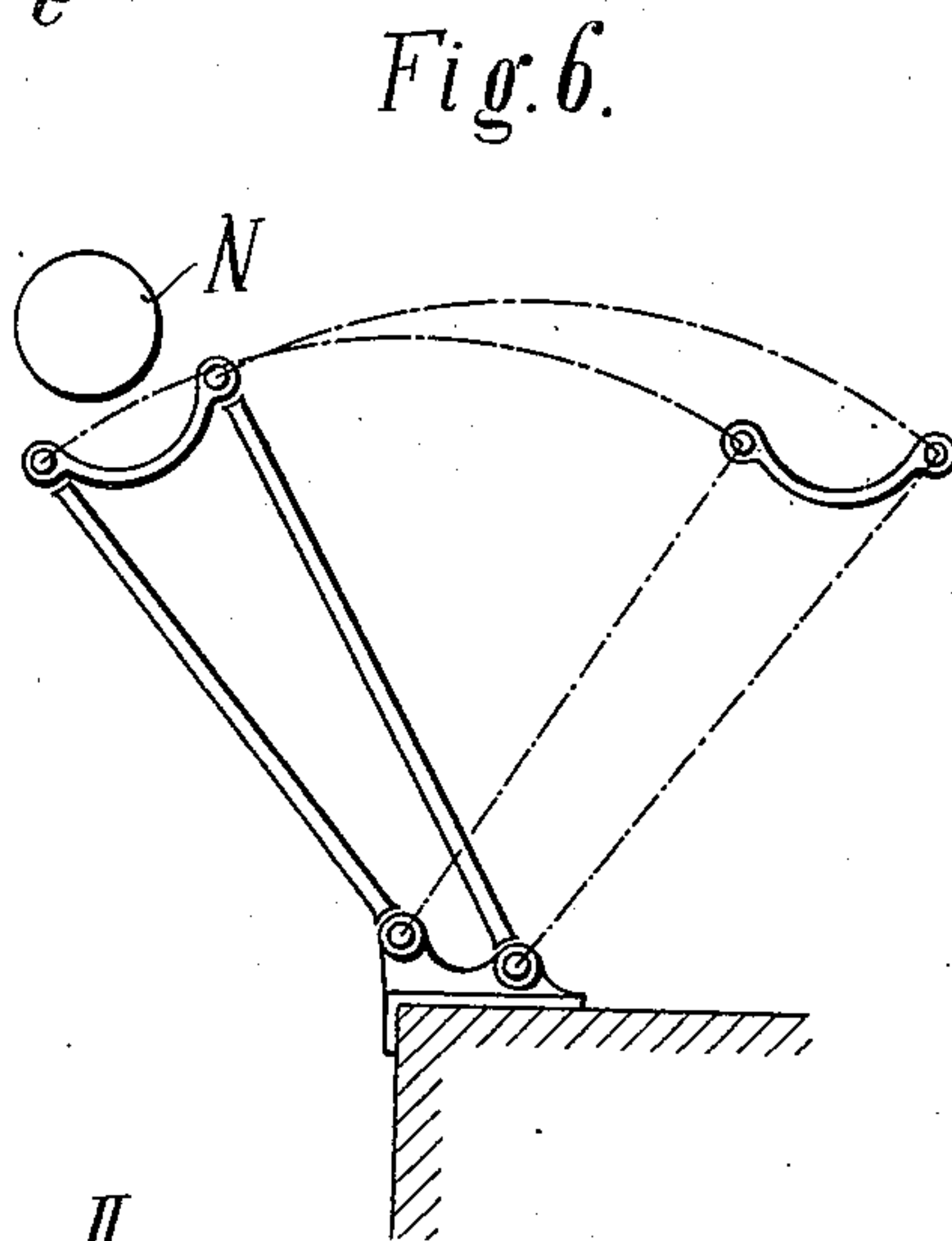


Fig. 6.

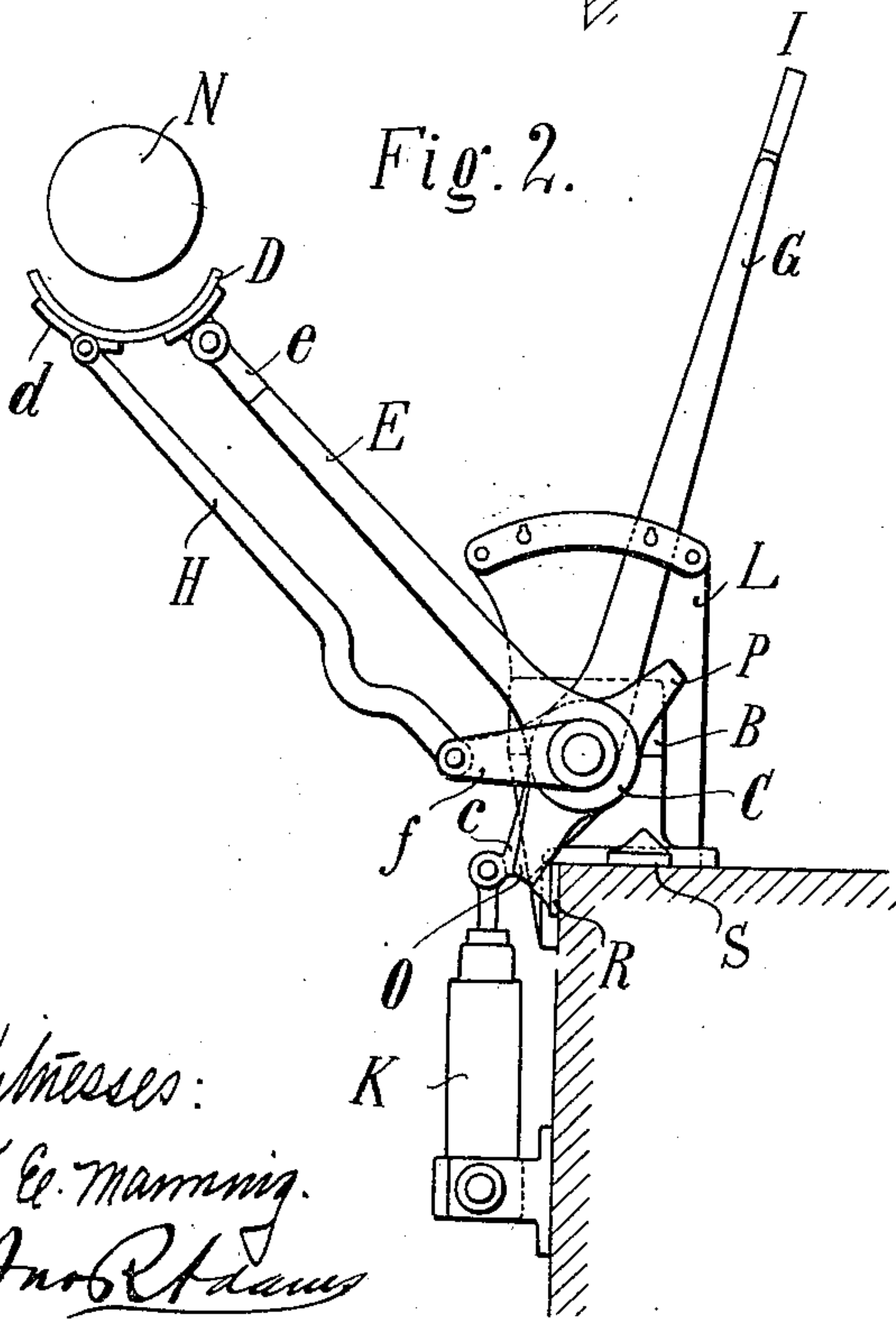


Fig. 2.

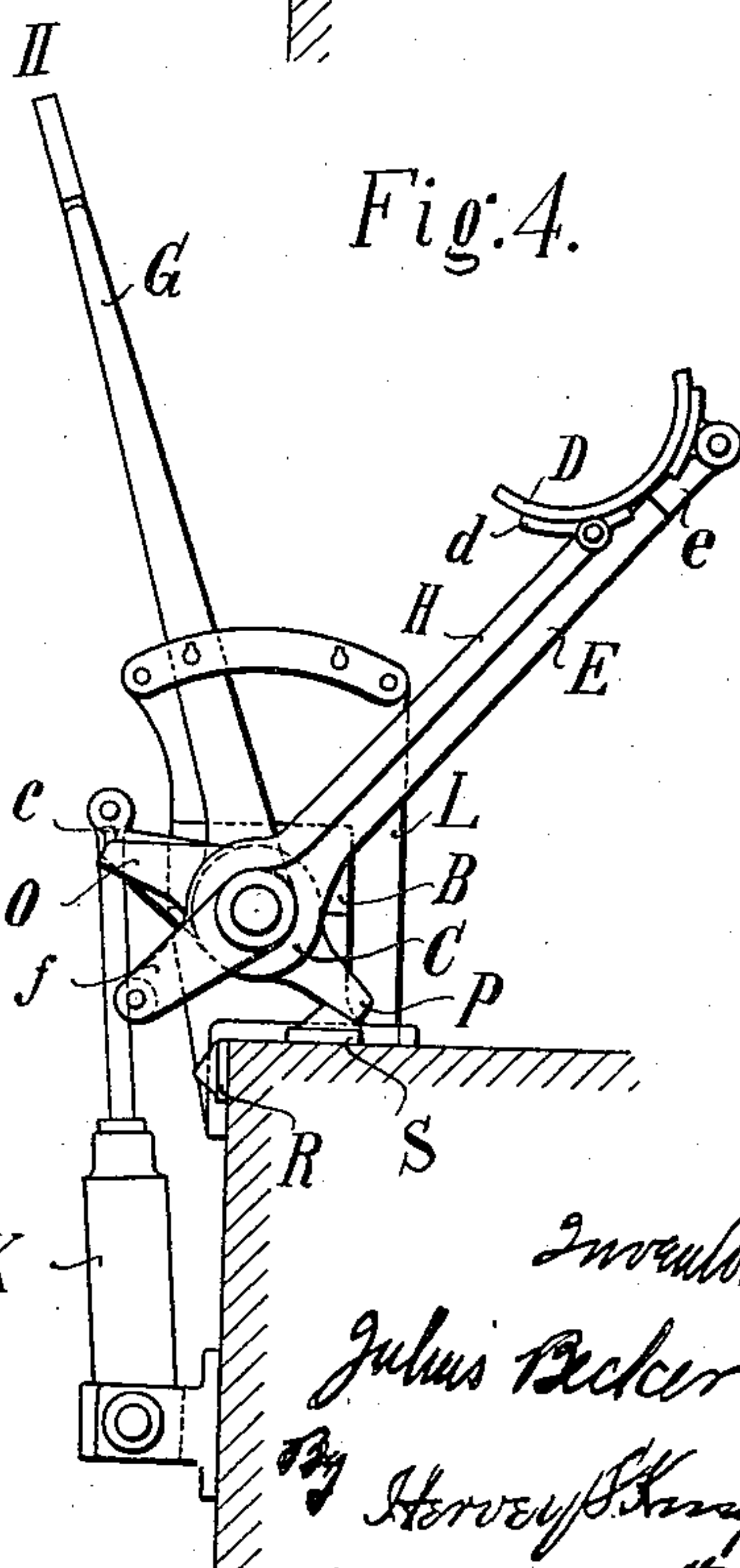


Fig. 4.

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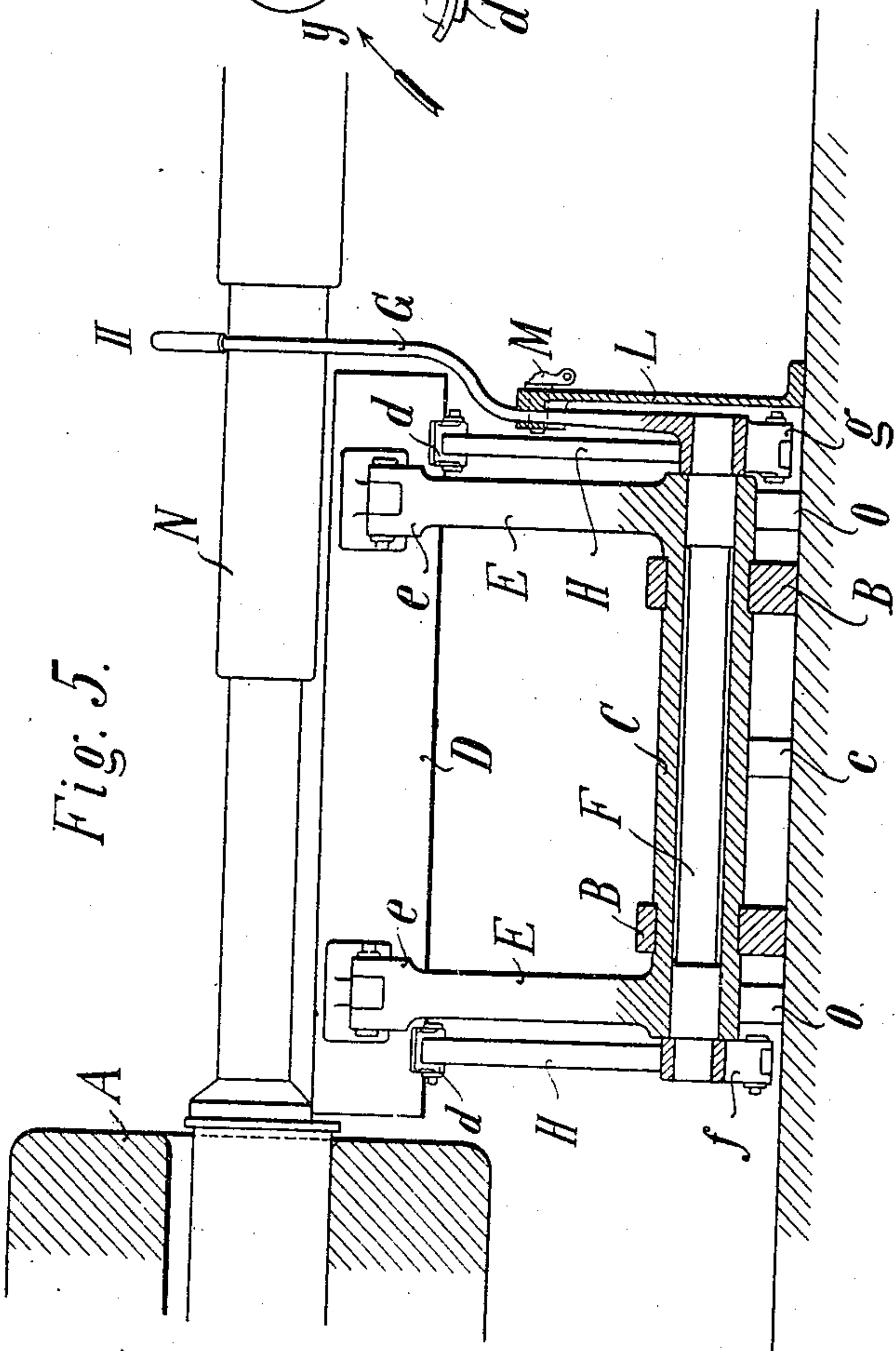
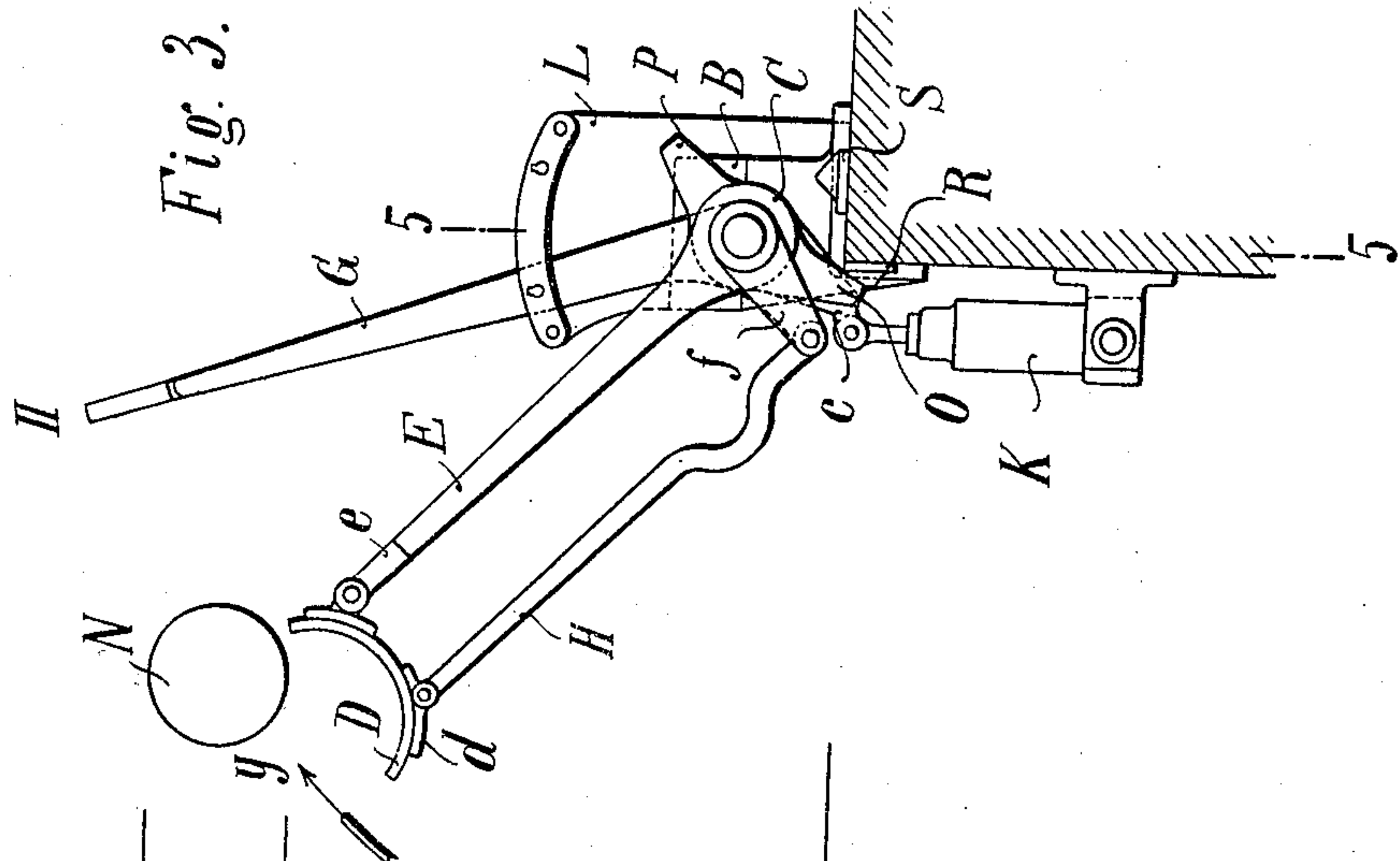
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(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

JULIUS BECKER, OF ESSEN, GERMANY, ASSIGNOR TO FRIED. KRUPP, OF
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LOADING-TRAY FOR TRANSFERRING AMMUNITION.

SPECIFICATION forming part of Letters Patent No. 697,126, dated April 8, 1902.

Application filed January 2, 1902. Serial No. 88,076. (No model.)

To all whom it may concern:

Be it known that I, JULIUS BECKER, engineer, residing at Essen-on-the-Ruhr, Germany, have invented certain new and useful
5 Improvements in Loading-Trays for Transferring Ammunition, of which the following is a specification.

The present invention relates to those guns to which ammunition is supplied through the
10 medium of an ammunition-lift located to one side thereof and introduced into the gun by means of a ram; and the said invention has for its object to transfer the ammunition from the lift to the loading-axis of the gun with the
15 least possible expenditure of work. According to this invention this purpose is accomplished through the medium of parts arranged in the form of a jointed quadrangle, having one side formed by the loading-tray, with the
20 side opposite the loading-tray fixed or so disposed that the arc in which the tray swings lies in a vertical or substantially vertical plane and its chord is horizontal or approximately horizontal. In other words, the tray
25 swings from one side to the other of the vertical planes of its pivots.

In the accompanying drawings, forming part of this specification, the invention is illustrated by two embodiments.

30 Figure 1 is a view of the loading-tray looking away from the gun and in position to receive the ammunition from the lift. Fig. 2 is a corresponding view of the loading-tray in the loading position. Figs. 3 and 4 show intermediate positions of the loading-tray, likewise viewed from the position of the gun. Fig.
35 5 is an elevation of the right-hand side of Fig. 3, partly in section, on the line 5 5 of said figure. Fig. 6 is a schematic representation of
40 another embodiment of the loading-tray.

Referring to the form illustrated in Figs. 1 to 5, A represents the gun; N, the ram. Located between the vertical plane of these parts and the position of the ammunition-lift
45 (not shown) a hollow shaft C is journaled in bearings B and carries upon each end an arm E, which lie parallel to each other and connected to the tray by eyes *e*. The shaft C carries a second shaft F, upon the end of which
50 distant from the gun an angle-lever G *g* is

rigidly attached. The upper arm G of this angle-lever is constructed as a controlling-lever, which travels in the guiding-slot of a frame L and is adapted to be locked at either end of its throw in said slot by means of a
55 locking-bolt M or the like. Parallel to the lower arm *g* of the angle-lever and upon the opposite end of the shaft F is rigidly fixed a lever *f* of the same length as the arm *g*. To the end of each of the levers *f* and *g* is con-
60 nected a link H, which connects with the eyes *d* of the loading-tray D. These links are of the same length as the arm E and are arranged parallel to the latter. In this manner the parts D, E, H, and *f* or *g* constitute a
65 jointed quadrangle, which when the angle-lever G *g* is fixed in one of its limits of movement can swing upon the side *g* or *f* backward and forward between the ammunition-
70 lift and the gun. For restricting this movement two projections O P are provided on each end of the shaft C, and corresponding arresting-stops R S are located upon the platform. There is also an arm *c* fixed upon the
75 shaft C between the two bearings B, with which is connected the piston-rod of the hydraulic driving-cylinder K, pivotally mounted upon the platform of the carriage, so that when fluid-pressure is introduced to the cyl-
80 indier for the movement of its piston a swinging movement is imparted to the loading-tray.

After the reception of the ammunition the several parts assume the position shown in Fig. 1. After the ammunition has been shifted from the lift to the loading-tray fluid-pres-
85 sure is admitted above the piston of the cylinder K, so that the piston moves downward and the loading-tray receives a swinging movement in the direction of the arrow *x*, Fig. 1. At the end of the piston-stroke the
90 projection O strikes against the stop R, which limits the movement of the loading-tray and absorbs in a great measure the momentum of the moving parts, so as to relieve the motor. In this position of the loading-tray, Fig. 2,
95 and as soon as the ram has shifted the ammunition far enough to relieve the loading-tray the controlling-lever G is thrown from the position indicated by I to the position indicated by II, in consequence of which the
100

loading-tray is shifted to the position shown in Fig. 3, and while in this position its track will not intersect that of the ram. Consequently the loading-tray can be swung back 5 into the receiving position before the ram begins to withdraw. At this time the under side of the piston is supplied with fluid-pressure, so that the loading-tray swings in the direction of the arrow *y*, Fig. 3, to the position shown in Fig. 4. The swinging movement is now restricted at the end of the piston-stroke by the stop S, upon which the projection P impinges. The controlling-lever is now thrown to the position I, and the loading-tray is thereby brought again into the position to receive a new charge of ammunition, as shown in Fig. 1.

In Fig. 6 an embodiment of the loading-tray is illustrated, in which the under side of 20 the jointed rectangle remains constantly fixed. The shifting of the loading-tray in such a way that its track will not intersect that of the ram is obviously discarded in this case, and the links are not of equal length 25 with the arms nor are they parallel therewith.

Obviously any desired motor could be substituted for the hydraulic motor illustrated in the drawings.

30 Having thus described the invention, the following is what is claimed as new therein:

1. A device for transferring ammunition from a receiving-point to the loading-axis of a gun, comprising a quadrangular structure 35 swinging upon pivots located between the vertical planes of said receiving-point and loading-axis, one side of the quadrangle formed by the loading-tray, and said loading-tray moving in a vertical arc with its chord horizontal or approximately horizontal. 40

2. A loading-tray for transferring ammunition from the lift to the loading-axis of the gun, comprising a jointed quadrangular structure swinging upon horizontal axes, having one side formed by the loading-tray, the side of the quadrangle opposite the loading-tray being shiftable substantially as described to change the angle of the loading-tray and permit its return to receiving position 50 prior to the withdrawal of the rammer.

3. A loading-tray for transferring ammunition from the lift to the loading-axis of the gun, comprising a jointed quadrangular structure swinging upon horizontal axes, having 55 one side formed by the loading-tray, the side of the quadrangle opposite the loading-tray being shiftable substantially as described to change the angle of the loading-tray and permit its return to receiving position prior to the withdrawal of the rammer, and having a controlling-lever for shifting said side. 60

4. A loading-tray for transferring ammunition from the lift to the loading-axis of the gun, comprising a jointed quadrangular structure swinging upon horizontal axes, having 65 one side formed by the loading-tray, the side of the quadrangle opposite the loading-tray

being shiftable substantially as described to change the angle of the loading-tray and permit its return to receiving position prior to 70 the withdrawal of the rammer, and having a controlling-lever for shifting said side, provided with means for locking it at the opposite ends of its throw.

5. A loading-tray for transferring ammunition 75 from the lift to the loading-axis of the gun, comprising a jointed quadrangular structure swinging upon horizontal axes, located between the vertical planes of the lift and of the axis of the gun, having one side formed 80 by the loading-tray, and suitable stops for limiting the throw of the loading-tray, engaging a part of the swinging structure near the axes upon which it swings.

6. A loading-tray for transferring ammunition 85 from the lift to the loading-axis of the gun, comprising a jointed quadrangular structure swinging upon horizontal axes, located between the vertical planes of the ammunition-lift and of the loading-axis, having one 90 side formed by the loading-tray, a motor located and connected with the structure adjacent to the axis upon which it swings, for swinging the quadrangle from side to side, and bringing the loading-tray from one position to another, and suitable stops for limiting the motion of said parts, engaging a part 95 of the swinging structure adjacent to said axes.

7. An ammunition-conveyer for transferring 100 ammunition laterally from the ammunition-lift to the loading-axis of the gun, comprising a quadrangular structure having one side formed by the loading-tray, swinging upon horizontal axes in a vertical arc having 105 a substantially horizontal chord, an arm connected with one side of the quadrilateral structure near its axis, and a motor-cylinder and piston, one of which is pivotally connected to a fixed support and the other of 110 which is connected to said projections.

8. An ammunition-conveyer comprising a rectangular structure having one side formed by a loading-tray, horizontal axes located between the vertical planes of the receiving-point and the loading-axis of the gun, and causing the tray to swing in a vertical arc with a substantially horizontal axis, stops located near said axes, and arms projecting from the quadrangular structure near the 120 axes, engaging said stops as the tray reaches the opposite limits of its movement.

9. An ammunition-conveyer comprising concentric horizontal shafts C and F, long arm E and angularly-disposed short arm *f* projecting 125 from said shafts, link H, jointed to the short arm *f*, tray D jointed to arm E and link H, arm *c* projecting from shaft C, and motor K secured to a fixed support and connected with the arm *c*. 130

10. In an ammunition-conveyer, the combination of the concentric shafts C and F, arms E, E, projecting from the shaft C, arms *f*, *g*, projecting from the shaft F, links H, H,

jointed to the arms *f, g*, and paralleling the arms *E, E*, and tray *D* having hinging connection with arms *E, E*, and links *H, H*.

11. In an ammunition-conveyer, the combination of the concentric shafts *C* and *F*, arms *E, E*, projecting from the shaft *C*, arms *f, g*, projecting from the shaft *F*, links *H, H*, jointed to the arms *f, g*, and paralleling the arms *E, E*, tray *D* having hinging connection with arms *E, E*, and links *H, H*, and stop-arms *O, P*, projecting from shaft *C*.

12. In an ammunition-conveyer, the combination of the concentric shafts *C* and *F*, arms *E, E*, projecting from shaft *C*, arms *f, g*, projecting from the shaft *F*, links *H, H*, jointed to the arms *f, g*, and paralleling the arms *E, E*, tray *D* having hinging connection with arms *E, E*, and links *H, H*, stop-arms *O, P*, projecting from shaft *C*, stops *R, S*, impinged by said stop-arms at opposite ends of the tray's movement, and controlling-arm *c* also projecting from shaft *C*.

13. In an ammunition-conveyer, the combination of the concentric shafts *C* and *F*, arms *E, E*, projecting from shaft *C*, arms *f, g*, projecting from the shaft *F*, links *H, H*,

jointed to the arms *f, g*, and paralleling the arms *E, E*, tray *D* having hinging connection with arms *E, E*, and links *H, H*, stop-arms *O, P*, projecting from shaft *C*, stops *R, S*, impinged by said stop-arms at opposite ends of the tray's movement, controlling-arm *c*, also projecting from shaft *C*, and motor-cylinder *K* pivoted to a fixed support and having its piston connected with arm *c*.

14. In an ammunition-conveyer, the combination of the concentric shafts *C* and *F*, arms *E, E*, projecting from the shaft *C*, arms *f, g*, projecting from the shaft *F*, links *H, H*, jointed to the arms *f, g*, and paralleling the arms *E, E*, tray *D* having hinging connection with arms *E, E*, and links *H, H*, and lever *G* connected with shaft *F* for changing the angle of arms *f, g*, relatively to arms *E, E*, and thereby tilting the tray.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JULIUS BECKER.

Witnesses:

PETER LIEBER,

WILLIAM ESSENWEIN.