

No. 770,623.

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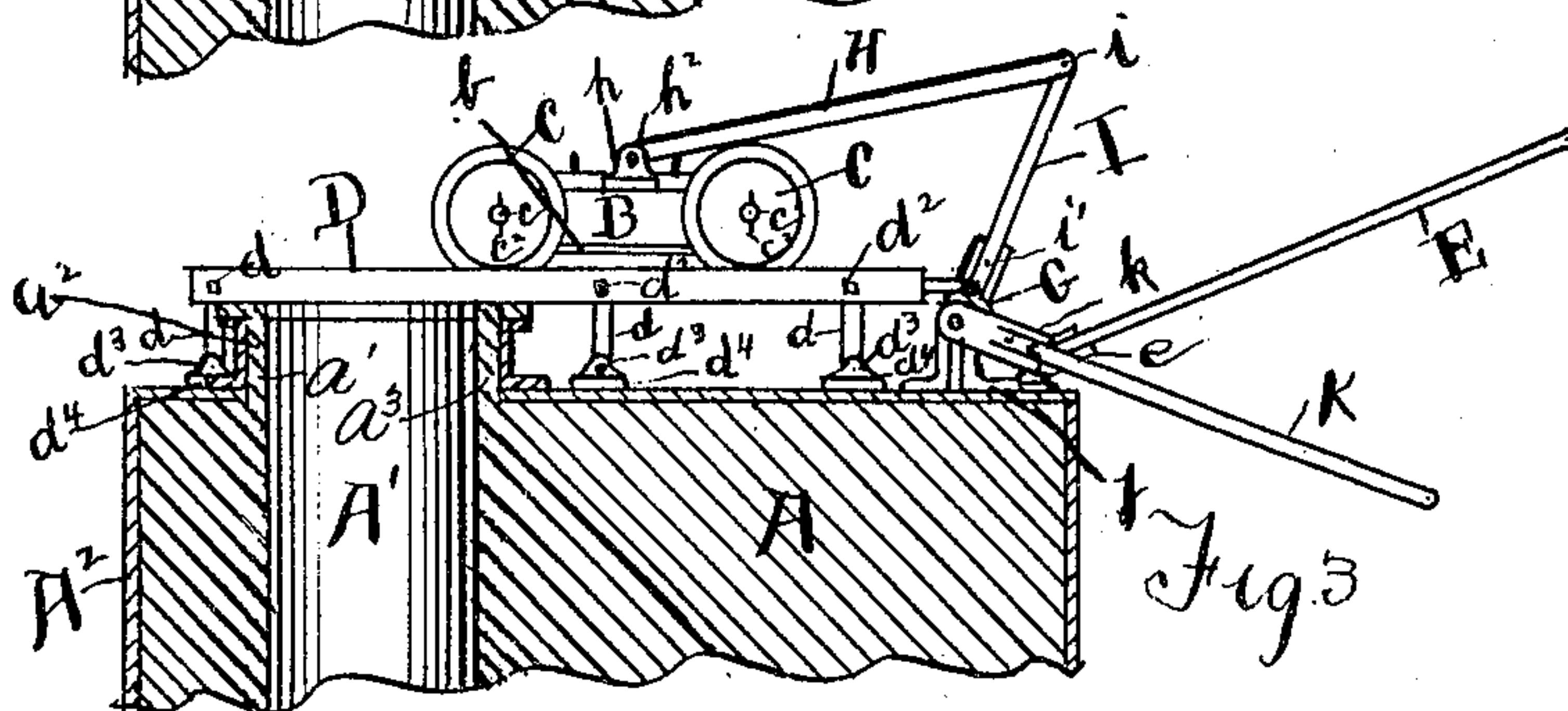
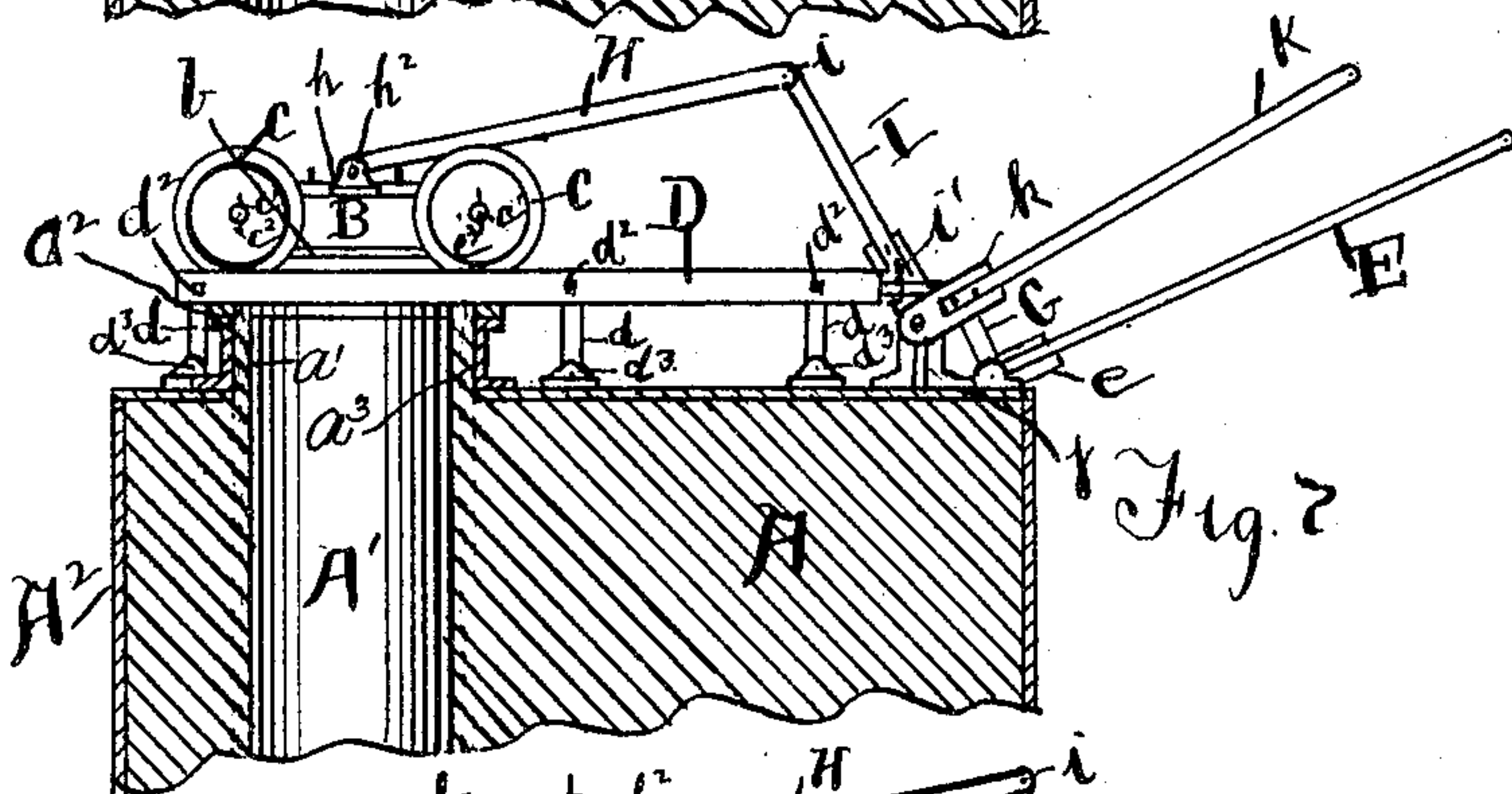
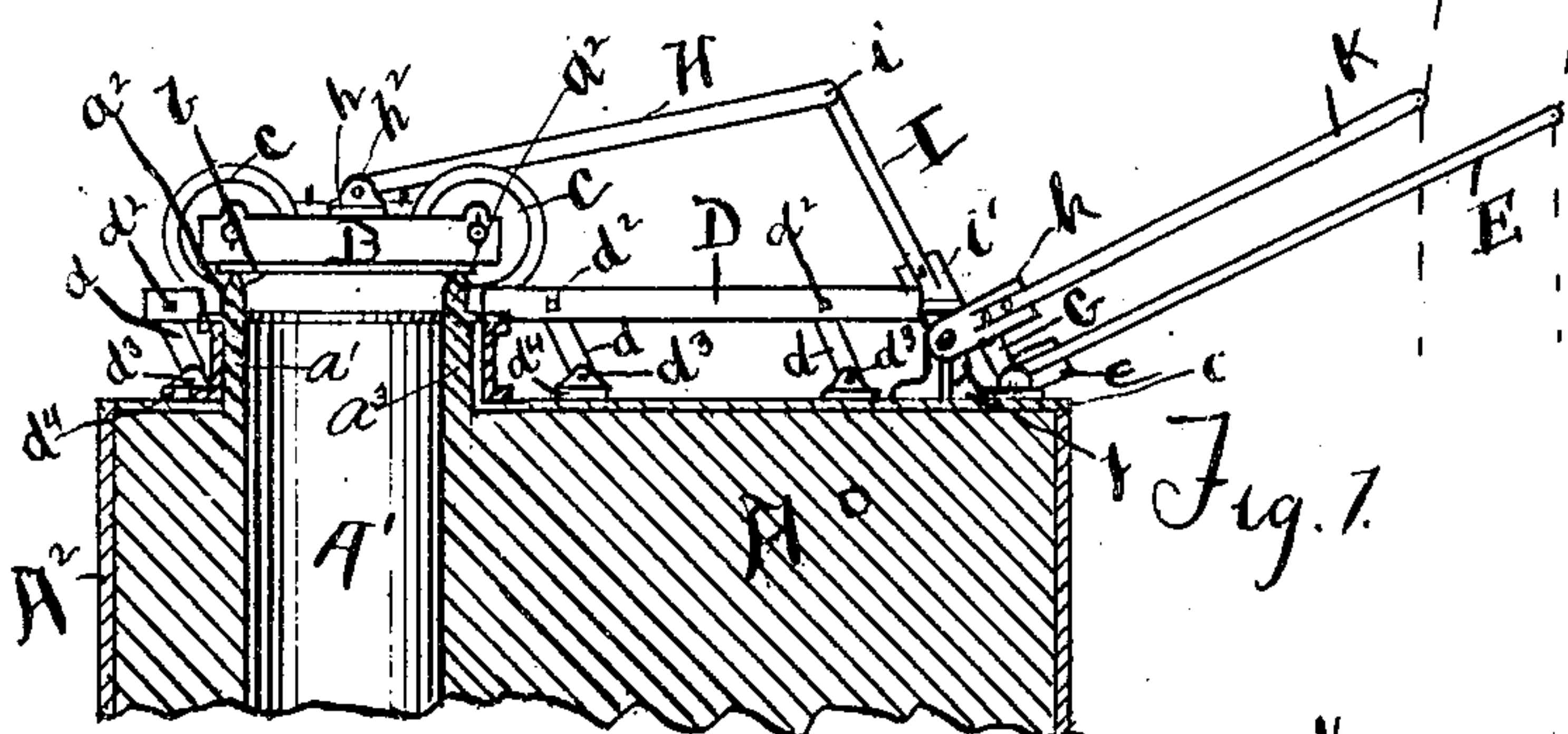
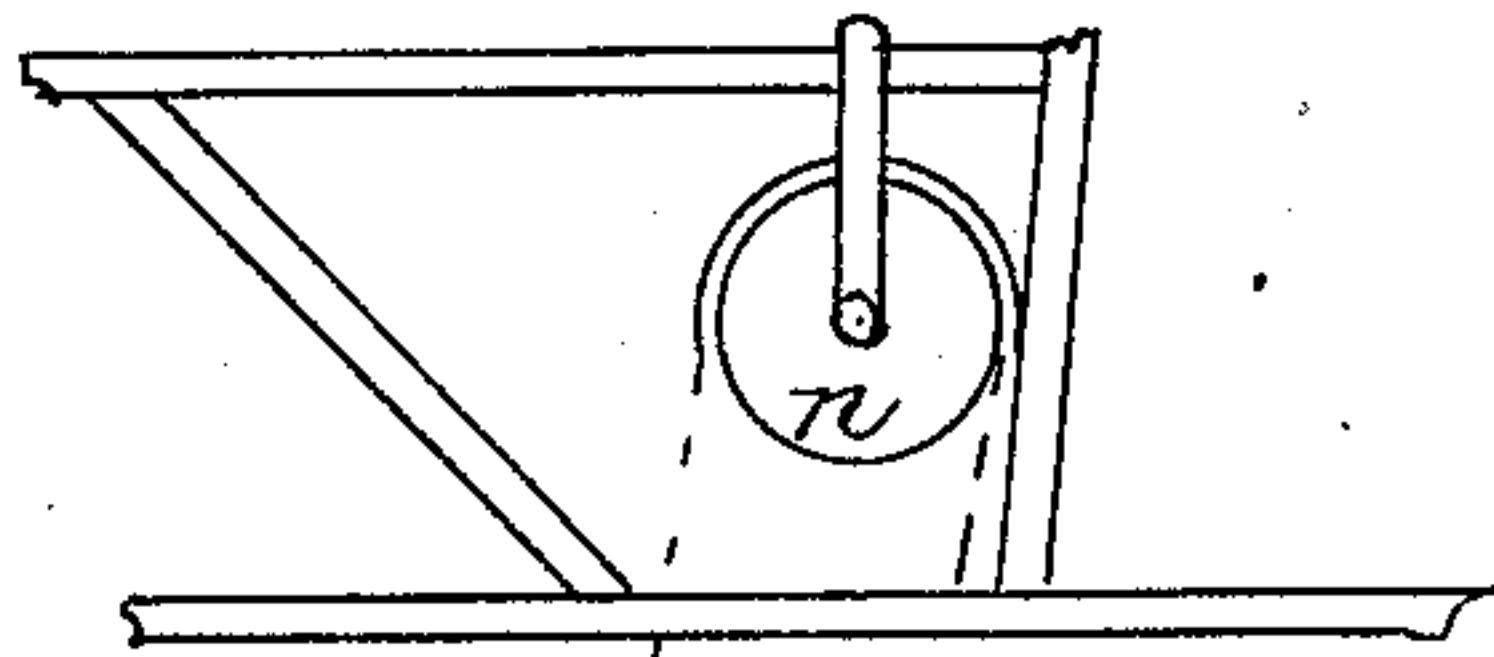
J. ZANDER.

MECHANISM FOR OPERATING THE DAMPER VALVES OF GAS GENERATORS.

APPLICATION FILED FEB. 23, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



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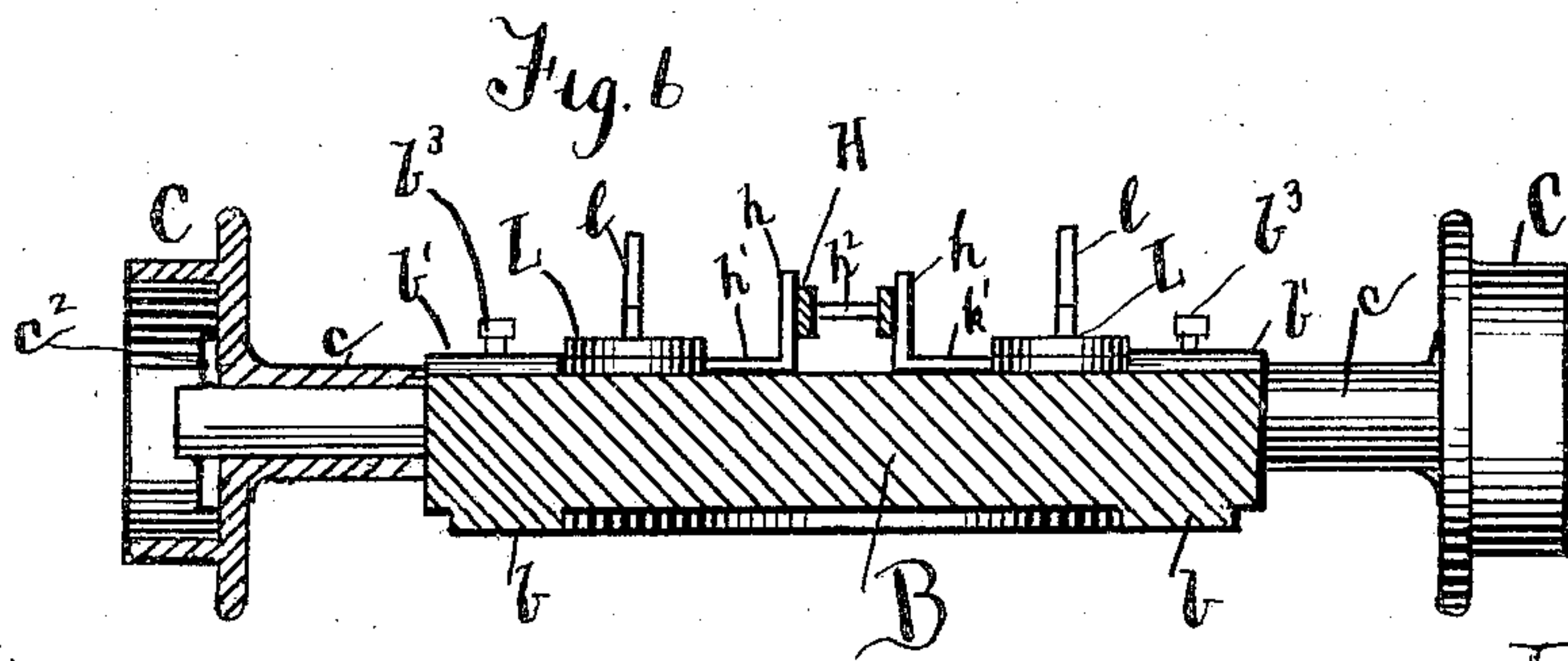
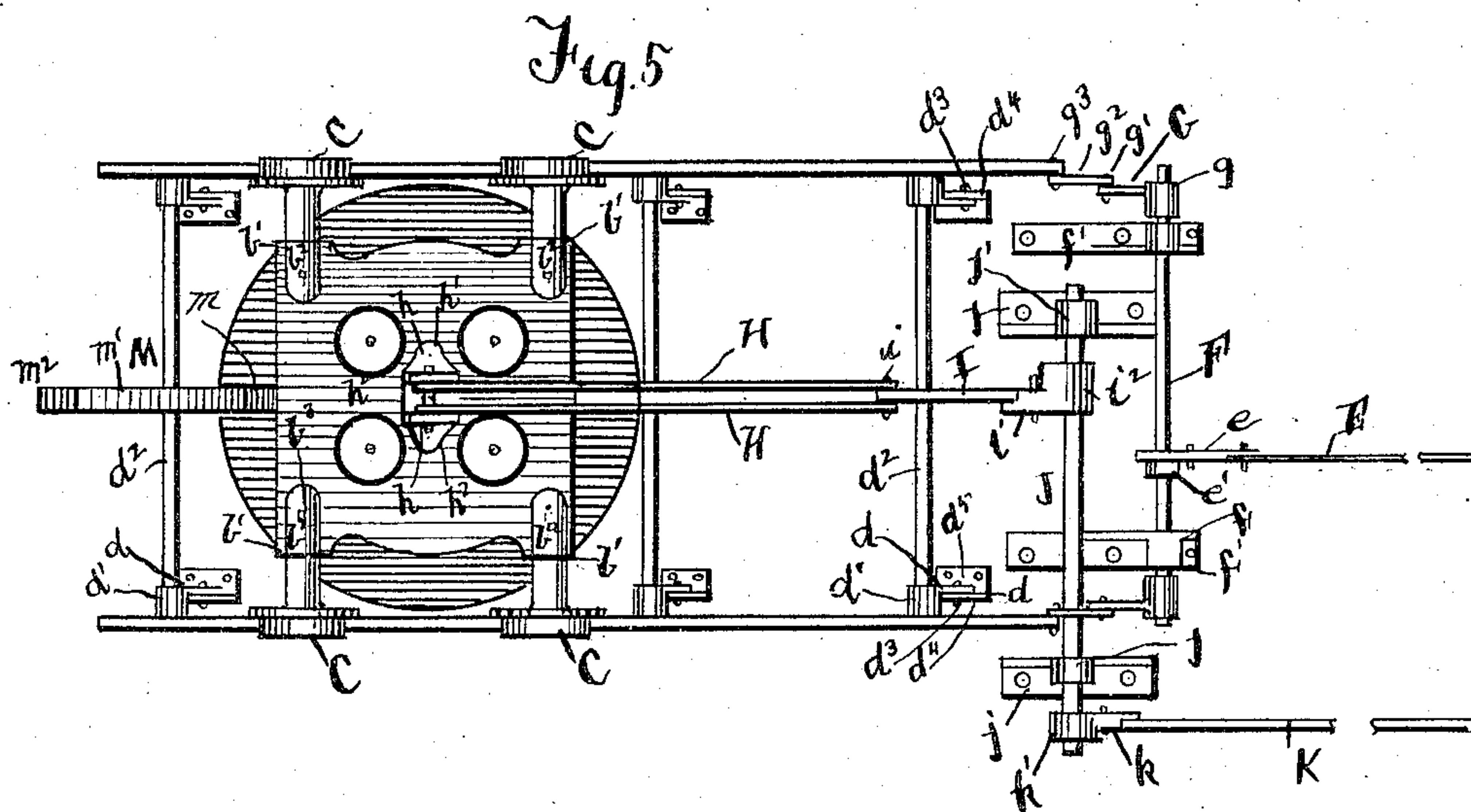
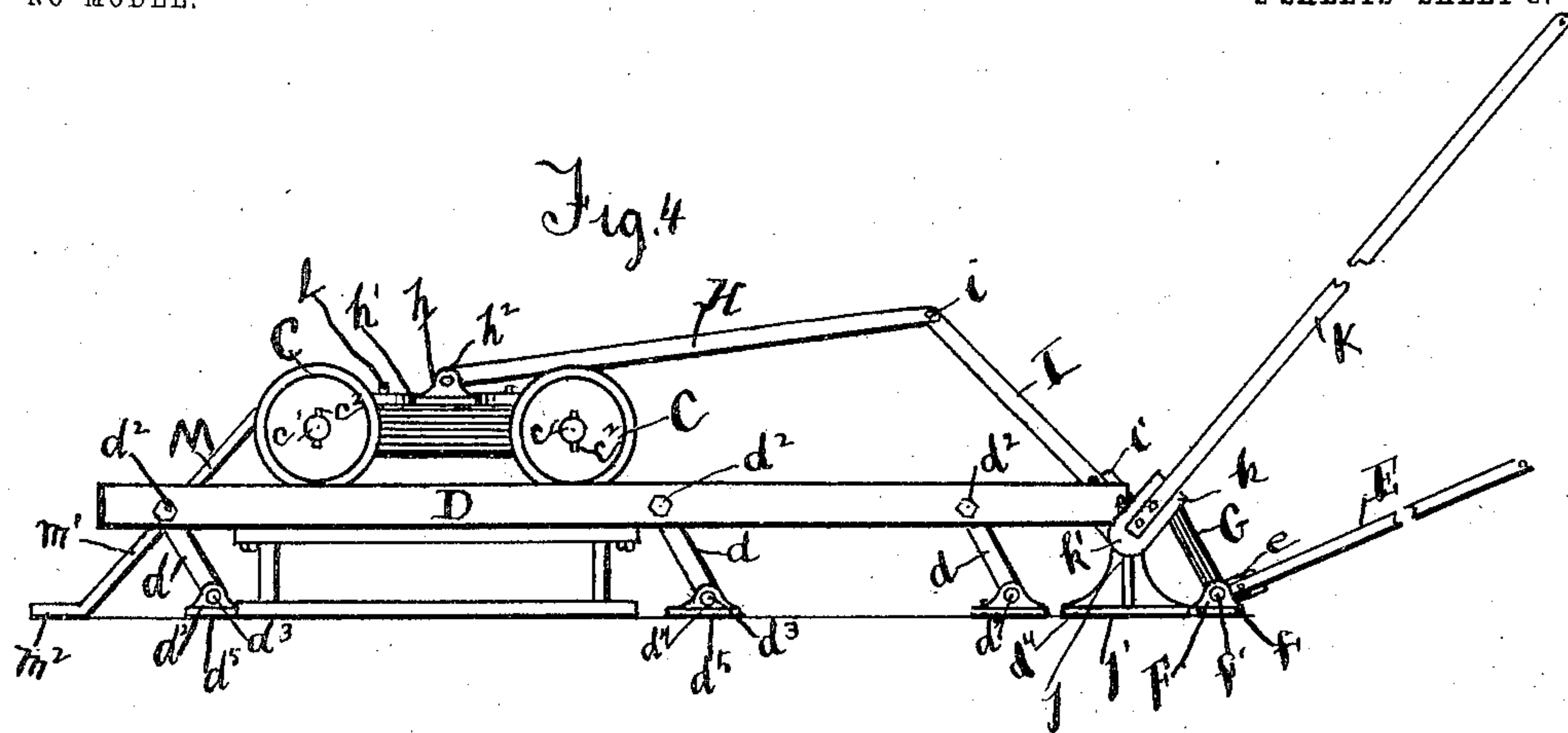
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UNITED STATES PATENT OFFICE.

JOHN ZANDER, OF CHICAGO, ILLINOIS, ASSIGNOR TO JOHN WILLIAMSON,
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MECHANISM FOR OPERATING THE DAMPER-VALVES OF GAS-GENERATORS.

SPECIFICATION forming part of Letters Patent No. 770,623, dated September 20, 1904.

Application filed February 23, 1904. Serial No. 194,820. (No model.)

To all whom it may concern:

Be it known that I, JOHN ZANDER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented certain new and useful Improvements in Mechanism for Operating the Damper-Valves of Gas-Generators, of which the following is a specification.

The damper-valve for gas-generators, by
10 which is meant the valve for closing the outlet-flue of the generator, seats directly onto the edge of the flue and is made heavy in order to insure its retention in place and to effect tight closing of the flue against the escape
15 of the generated gas. This damper-valve is located on top of the generator and with generators of considerable height is exceedingly difficult to handle, owing to its elevated position and its great weight.

20 The object of this invention is to mount the damper-valve for gas-generators on a support which can be raised and lowered and on which the valve can be advanced to properly seat against the end of the outlet-flue and can
25 be reeded so as to be out of line with the outlet-flue, to furnish a truck for carrying the damper-valve and mounting such truck on a rising and falling rail-support, to furnish swinging links carrying the rail-support for
30 the truck of the damper-valve and to furnish an operating-lever connected with the rail-support and by which the rail-support can be raised and lowered on its swinging links, to furnish a draw-bar and arm connected with
35 the truck of the damper-valve and operated by a swinging arm and a lever for advancing and receding the truck on the rail-support, and to improve generally the construction and operation of the several appliances which
40 enter into the mechanism as a whole.

The invention consists in the features of construction and combinations of parts hereinafter described and claimed.

45 In the drawings, Figure 1 is a side elevation of the damper-valve and its operating mechanism, showing the valve in position for closing the outlet-flue of the generator, the upper end of the generator-wall being shown in section; Fig. 2, a similar view to Fig. 1,

showing the damper-valve initially raised for
opening the outlet-flue; Fig. 3, a similar view to Fig. 1, showing the damper-valve raised and reeded to fully open the outlet-flue; Fig. 4, a side elevation of the damper-valve and its
operating mechanism detached from the gen-
erator; Fig. 5, a top or plan view of the dam-
per-valve and its operating mechanism, and
Fig. 6 a cross-section through the damper-
valve and its truck.

The gas-generator is not shown, as it can
be of any of the usual and well-known forms
of construction.

The drawings show in Figs. 1, 2, and 3 a
portion of the top wall A of the generator
with the outlet-flue A' leading from the dis-
charge or delivery chamber (not shown) of
the generator. The wall A, as shown, is sur-
rounded by a metallic casing A² with a cap-
plate a², and the outlet-flue has an annular
wall a', terminating in a seating face or edge
a, which wall a' is surrounded by a metal
casing a³, as usual.

The outlet-flue A' is controlled by a damper-
valve consisting of a solid metal plate B, hav-
ing a seating edge b to coact with the seating
edge or face a at the top of the outlet-flue.
This metal plate B is of the requisite thick-
ness and dimensions to furnish the weight for
seating the face b and have the face b surround
the seating-face a of the flue, and this plate B
also forms the body or frame of the truck.
Each corner b' of the base or frame has, as
shown, sockets b² for the attachment of the axle
spindles or journals for the wheels of the
truck.

The wheels C for the truck can be of any
usual construction having a thread-rim and a
bearing-flange, and these wheels are mounted
and travel on rails D, which can also be of
any suitable form in cross-section and other-
wise. Each rail D is carried by swinging
links d, each link at its upper end having a
socket to receive a cross-rod d², extending
from link to link in the arrangement shown,
and each link at its lower end is mounted on a
pin or pivot d³, carried by an ear d⁴ on a plate
d⁵, which can be bolted or otherwise secured
to the cap-plate of the generator or otherwise

held in position on top of the generator. As shown, each rail D is carried by three swinging links; but a greater or less number of links can be used as may be desired or required for supporting the rails and the truck and damper-valve.

The rails are raised and lowered by their swinging links through a lever E, one end of which is secured to an arm e on a socket e' , which socket is fixedly secured to a rock-shaft F, mounted in journal boxes or bearings f on plates f' , which plates f' can be bolted or otherwise attached to the top of the generator or be otherwise secured in position. Each end of the rock-shaft F projects beyond its journal support or bearing f and has secured thereto by a socket g an arm G, which arm at its outer end is connected by a pin or pivot g' with one end of a link g^2 , the other end of which is connected by a pin or pivot g^3 to the end of the rail, so that by raising and lowering the lever E the rails D will be raised and lowered by the links d swinging on the arc of a circle. The raising and lowering of the rails D raises and lowers the truck, and consequently raises and lowers the damper-valve carried by the truck.

The damper-valve carried by the wheels C is to be advanced and receded on the supporting-rails D, and for this purpose a draw-bar is employed. The draw-bar in the arrangement shown consists of two bars H, pivoted at their forward ends between ears h , extending up from a plate h' , by a pivot h^2 , and the plate h' is bolted or otherwise secured to the top of the damper-plate. The bars H at their rear ends have a link I pivoted thereto by a pin or pivot i , and the opposite end of the link I is secured to an arm i' on a socket i^2 , which is fixedly mounted on a rock-shaft J, which shaft is supported in journal boxes or bearings j , extending up from plates j' , which plate can be attached by bolts or otherwise to the top of the generator or supported in some other manner. The rock-shaft J at one end projects beyond its journal bearing or support j and has secured thereto a lever K, one end of the lever being attached to an arm k on a socket k' , which is fixedly attached to the end of the shaft J, so that with the movement of the lever K the shaft J will be rocked.

The plate B if not sufficiently heavy to closely seat the valve-face b can have its weight increased by additional weights L, which can be entered on pins or studs l , extending up from the face of the plate or frame B, and, as shown, four of these pins are provided, so that an equal amount of additional weight can be added centrally around the damper-valve. The limit of forward or advance movement of the damper-valve and drop of the rails D to seat the valve in the arrangement shown is controlled by a bumper M, consisting of a vertical bar m , a diagonal or brace bar m' , and a foot m^2 , which can be

bolted or otherwise secured to the top of the generator or be fixedly attached to a suitable support therefor.

The lever E in the arrangement shown is operated by a chain or cable N, and the lever K in the arrangement shown is operated by a chain or cable N', both chains or cables running over a guide or pulley wheel n , suitably supported from the roof of the house inclosing the generator or otherwise, and the chains or cables N and N' extend down by the side of the generator and run over a lower pulley, (not shown,) so that the operator on the floor of the generator-house can by pulling the chains or cables raise and lower the operating-levers E and K for the movement of the operating-levers E to raise and lower the supporting-rails D and for the movements of the operating-lever K to recede and advance the truck carrying the damper-valve.

The operation is as follows: The outlet-flue is closed with the parts of the mechanism, as in Fig. 1. The rails D are swung down on their links to the limit of the down movement, at which the seating-face b of the damper-valve contacts the seating-face a of the flue-outlet. This closes the fuel-outlet against the escape of heat and gas, and this closing is performed and maintained during the time the generator is making the gas. The flue-outlet is to be opened for the escape of heat units and the products of combustion while the chambers of the generator are being brought to the requisite degree of heat for generating the gas. The movement of the lever E downwardly to a sufficient extent to move the rails D rearwardly raises the links d and raises the damper-valve above the end of the outlet-flue, so that the seating-face of the damper-valve is free and clear of the seating-face of the flue, with the damper-valve, the truck carrying the damper-valve, and the rails for the truck in the position shown in Fig. 2. The damper-valve is wholly withdrawn from over the outlet-flue by a downward movement of the lever K, which, through the draw-bar connected with the plate or frame B, moves the truck rearwardly, and such movement is continued until the forward end or edge of the plate or frame B is clear of the outlet-flue, leaving a free escape through the flue for the heat units and products of combustion, as shown in Fig. 3, in which the damper-valve is withdrawn from over the flue. The flue is to be left open until the chambers of the generator have been brought to the required degree of heat, and when this point is reached an upward pull on the lever K carries the truck, and with it the damper-valve, back to the position shown in Fig. 2 from the position in Fig. 3, and with the parts in this position an upward movement of the lever E carries the rails D downwardly, bringing the parts into the position shown in Fig. 1 and closing the outlet-flue.

It will be seen that the opening and closing of the damper-flue is attained through the movements of the levers E and K, and as these levers have the advantage of a long radius of swing the amount of power required to raise the rails and the damper-valve and to carry the truck for the damper-valve rearwardly is nominal as compared with the power that would be required to lift the damper-valve direct, and this is also true with respect to the dropping of the rails and the advancing of the damper-valve into closing position. The truck furnishes a rolling support for carrying the damper-valve, which enables the valve to be moved forward and back with great ease and without the exertion of a great amount of power, and when in a raised position the damper-valve has a vertical support by which it is held in its raised position, and with the throwing down of the vertical support furnished by the swinging links the weight of the valve and the truck and rails assists in carrying and forcing the face of the damper-valve to its coacting seat on the outlet-flue. The damper-valve can be operated from the floor or support on which the generator rests, thus saving the necessity of workmen climbing to the top of the generator in order to open and close the valve, and inasmuch as this damper-valve has to be opened and closed repeatedly during the operation of the generator a great saving of time is attained from its capability of being raised and lowered and opened and closed from below. The stop or bumper furnishes a perfect guide in connection with the rails and the truck by which the seating of the damper-valve will be assured with each forward movement of the truck and drop of the rails, and this without any particular attention on the part of the workmen. The mechanism is simple in construction, and by its use the handling of the damper-valve is made easy and can be accomplished without the exertion of a great amount of force and without any waste of time, and it will be understood that the construction and arrangement of the rising and falling rails, the trucks, and the operating-levers for the rails and the truck can be changed and varied mechanically to suit the location and arrangement of the outlet-flue and the generator without departing from the spirit of the invention.

What I regard as new, and desire to secure by Letters Patent, is—

1. In a damper-valve for gas-generators, the combination of a base or bed plate having a

seating-face and constituting the damper-valve, carrying-wheels on which the base or bed plate is mounted, a rising and falling rail-support for the carrying-wheels, means for raising and lowering the rail-support, and means for traveling the carrying-wheels forward and backward on the rail-support to close and open the damper-valve, substantially as described.

2. In a damper-valve for gas-generators, the combination of a base or bed plate having a seating-face and constituting the damper-valve, a carrying-wheel at each corner of the base or bed plate, a rising and falling rail-support for the carrying-wheels, means for raising and lowering the rail-support, and means for traveling the carrying-wheels forward and backward on the rail-support to close and open the damper-valve, substantially as described.

3. In a damper-valve for gas-generators, the combination of a base or bed plate having a seating-face and constituting the damper-valve, a carrying-wheel at each corner of the base or bed plate, a rising and falling rail-support for the carrying-wheels, swinging links for the rail-support, an operating-lever, a rock-shaft actuated by the operating-lever, and a connection between the rock-shaft and the rail-support for swinging the links and raising and lowering the rail-support, and means for traveling the carrying-wheels forward and backward of the rail-support to close and open the damper-valve, substantially as described.

4. In a damper-valve for gas-generators, the combination of a base or bed plate having a seating-face and constituting the damper-valve, a carrying-wheel at each corner of the base or bed plate, a rising and falling rail-support for the carrying-wheels, swinging links for the rail-support, an operating-lever, a rock-shaft actuated by the operating-lever, and a connection between the rock-shaft and the rail-support for swinging the links and raising and lowering the rail-support, a draw-bar connected with the base or bed plate, an arm connected with the draw-bar, a rock-shaft on which the arm is fixedly mounted, and a lever for actuating the rock-shaft and traveling the carrying-wheels forward and backward on the rail-support to close and open the damper-valve, substantially as described.

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Witnesses:

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