

(No Model.)

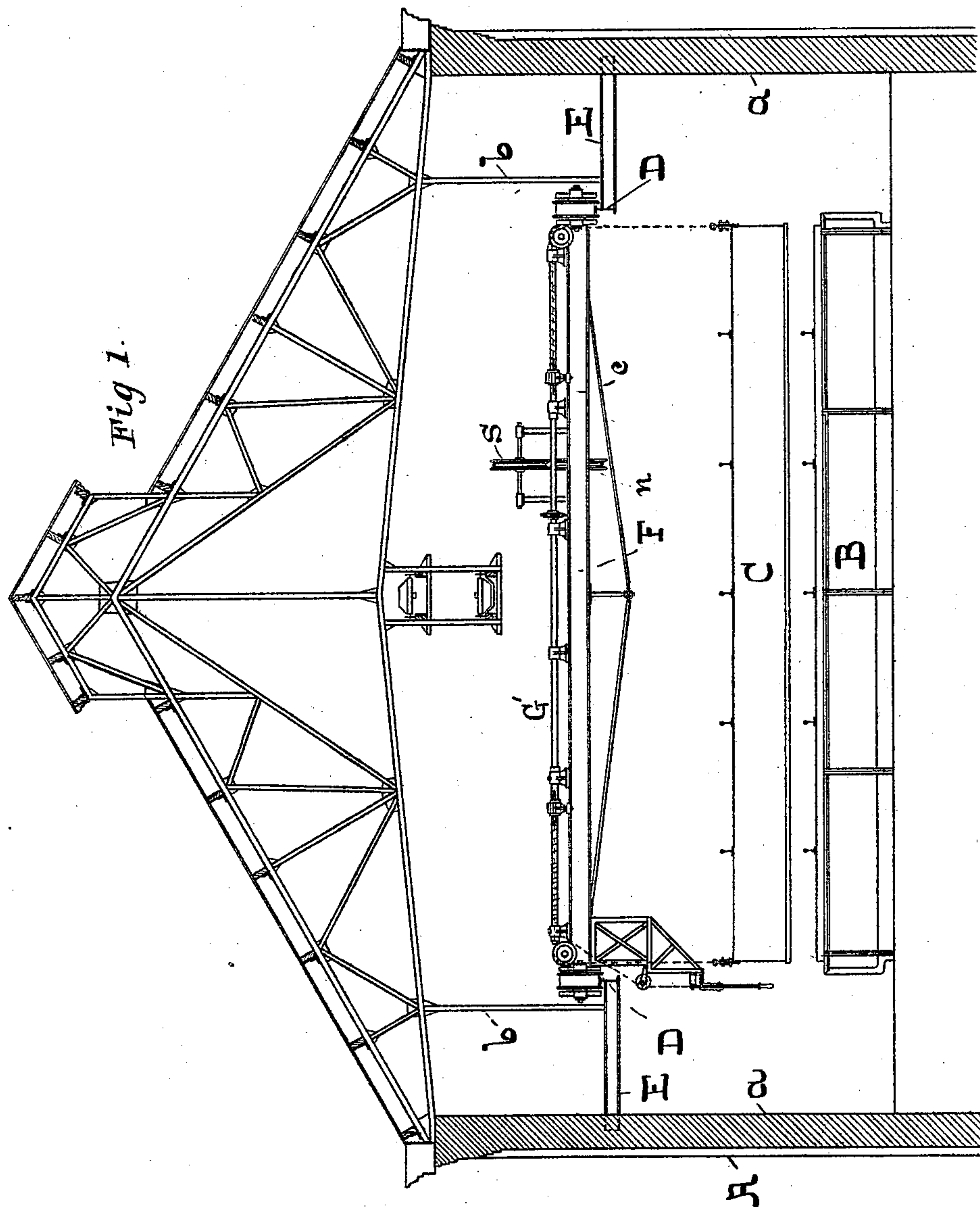
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F. MAYER.

APPARATUS FOR MANIPULATING LIDS OF PURIFIER BOXES IN  
GAS WORKS.

No. 539,628.

Patented May 21, 1895.



WITNESSES.

Dan'l Fisher  
George Hensley

Frederick Mayer,

INVENTOR

BY *C. H. T. Howard,*

ATTORNEYS.

5 Sheets—Sheet 2.

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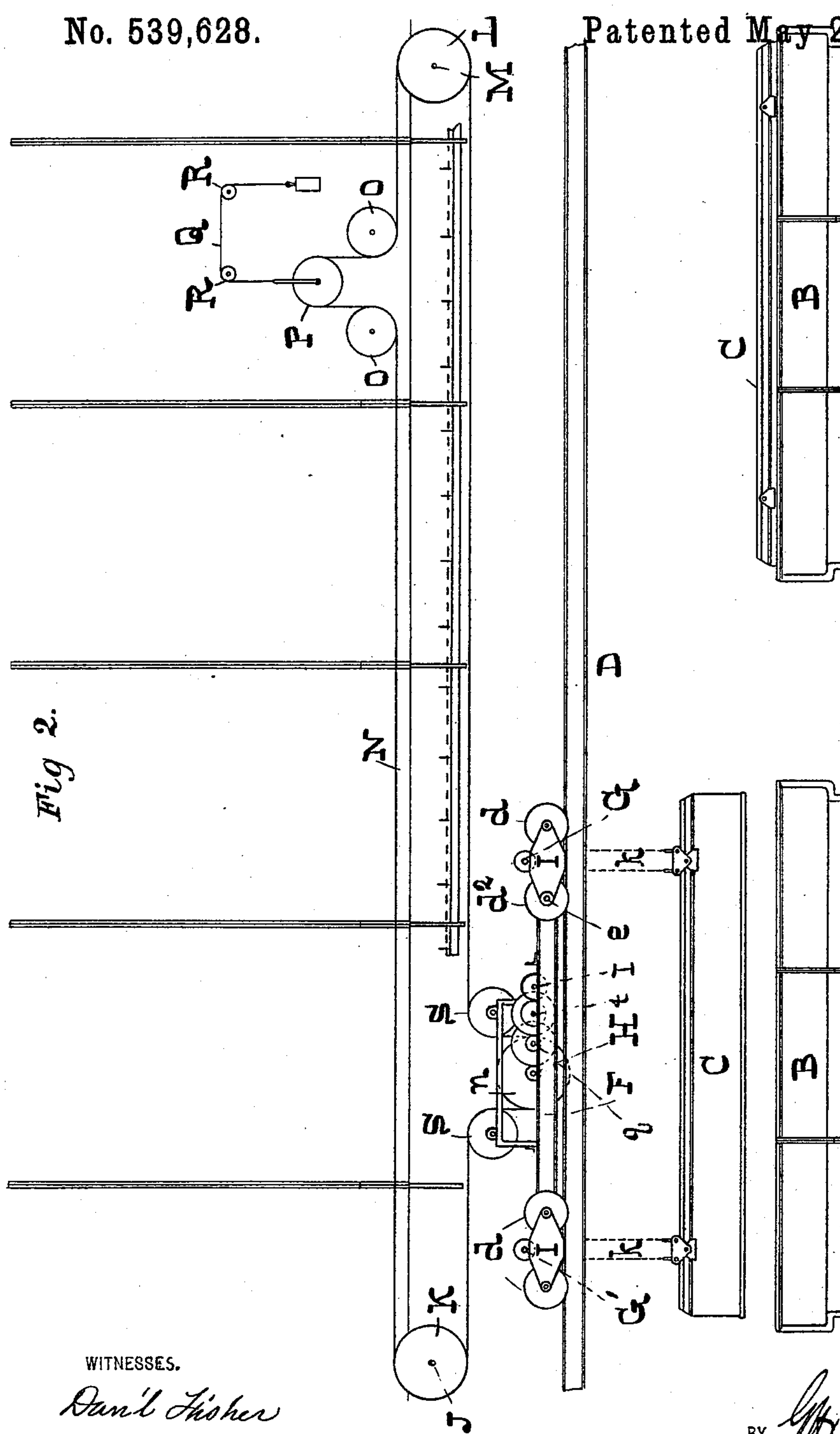


Fig 2.

WITNESSES.

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(No Model.)

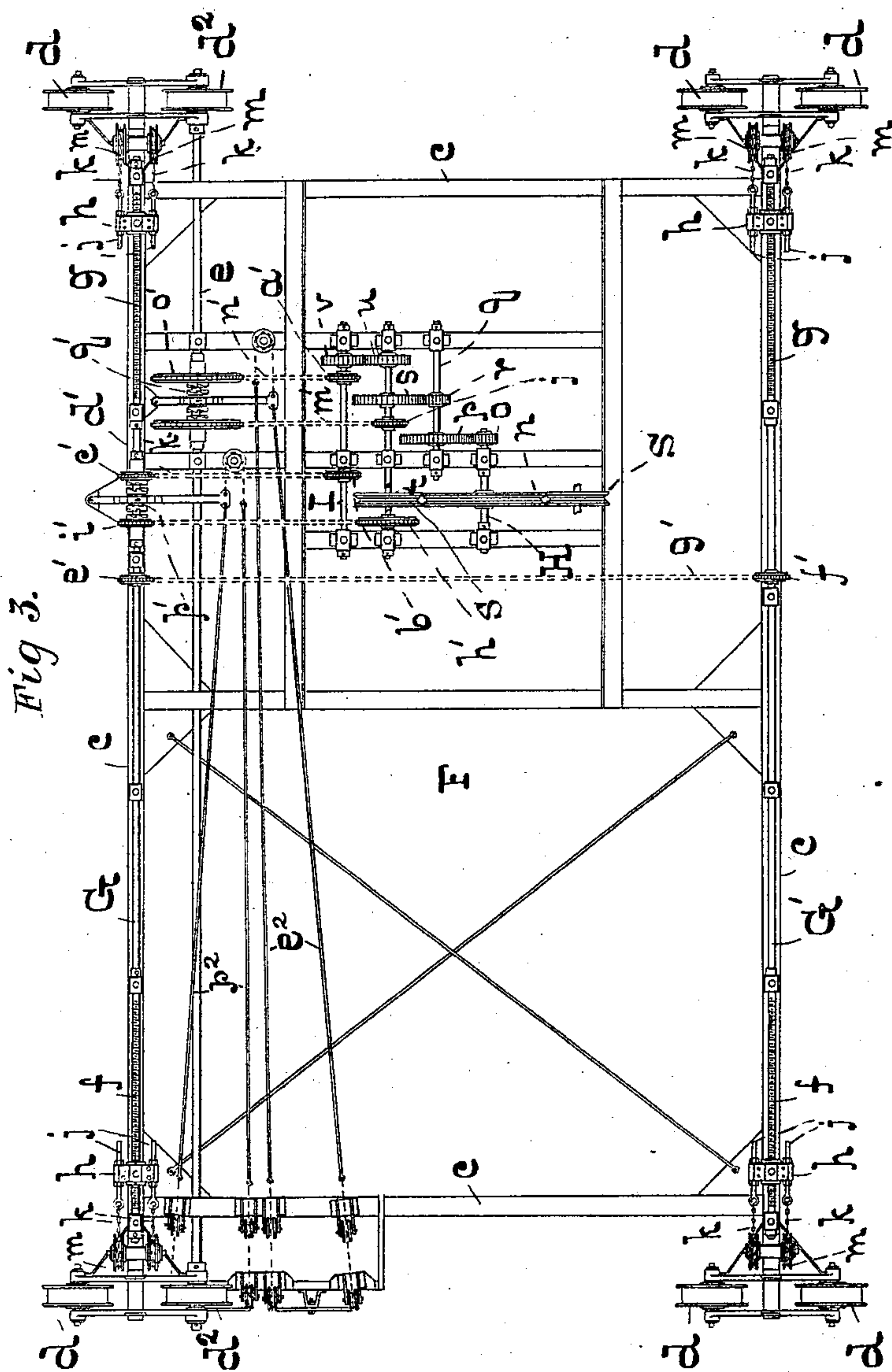
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No. 539,628.

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WITNESSES.

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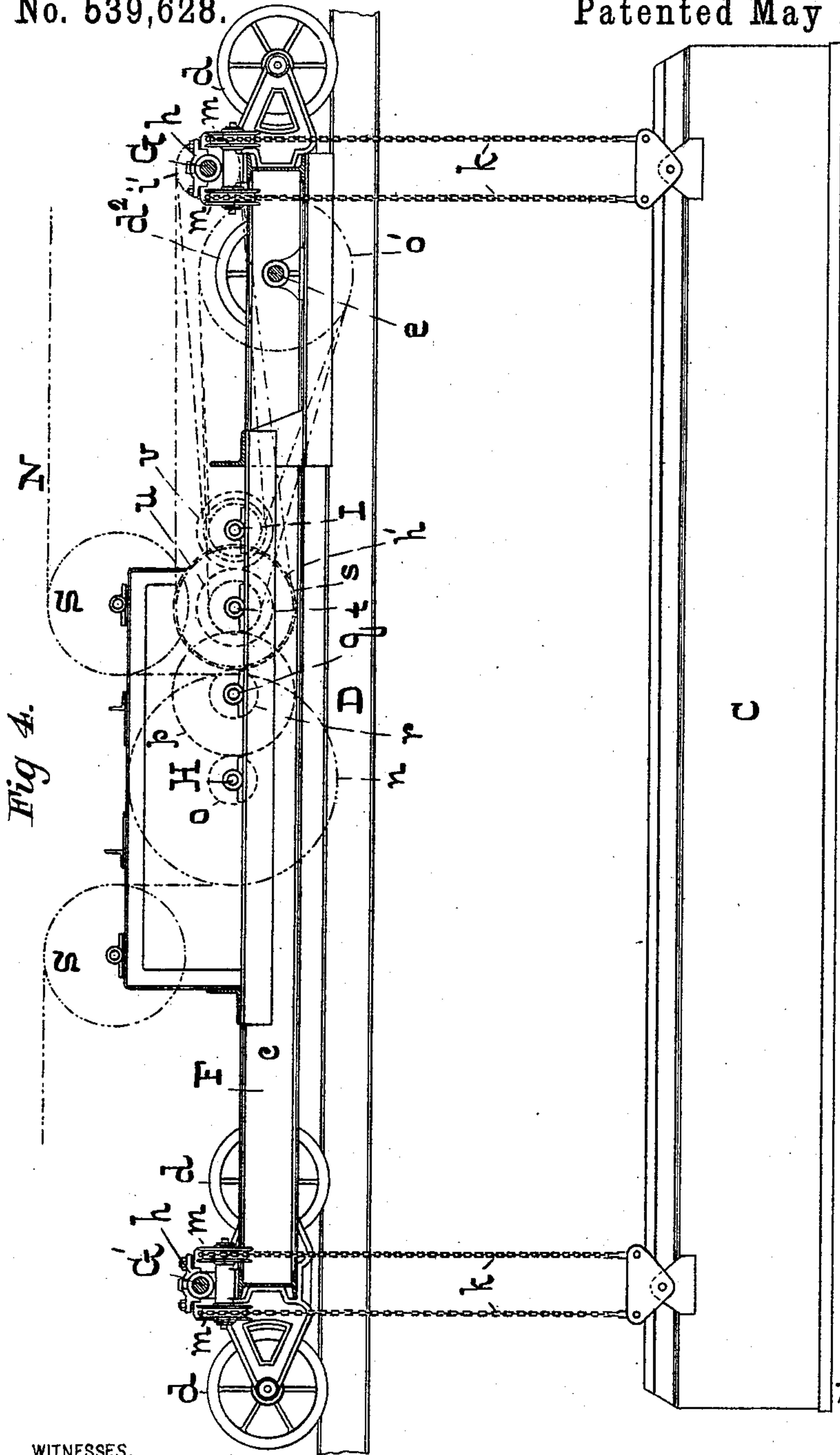
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F. MAYER.  
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Patented May 21, 1895.



WITNESSES.

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George Hemsley

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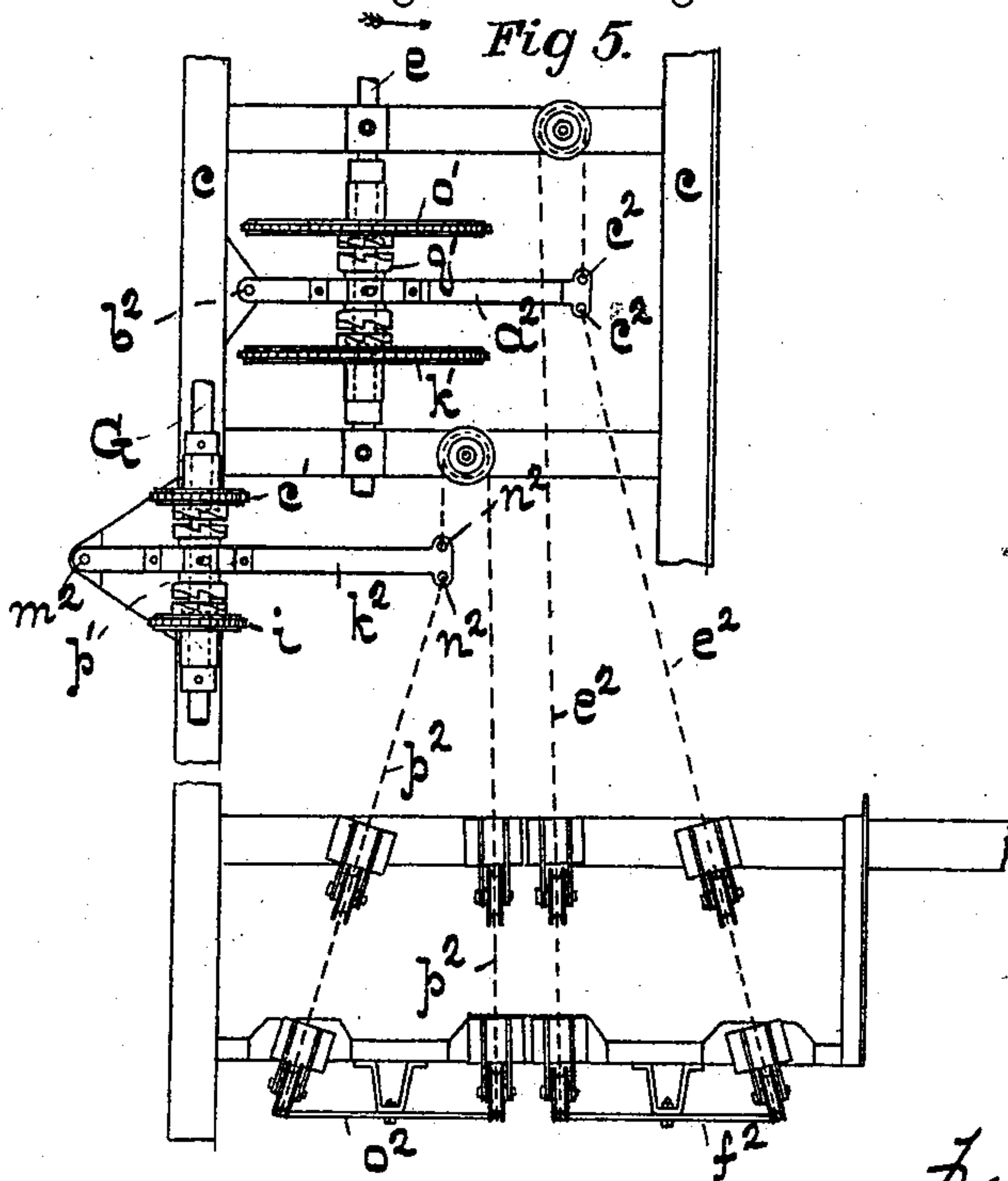
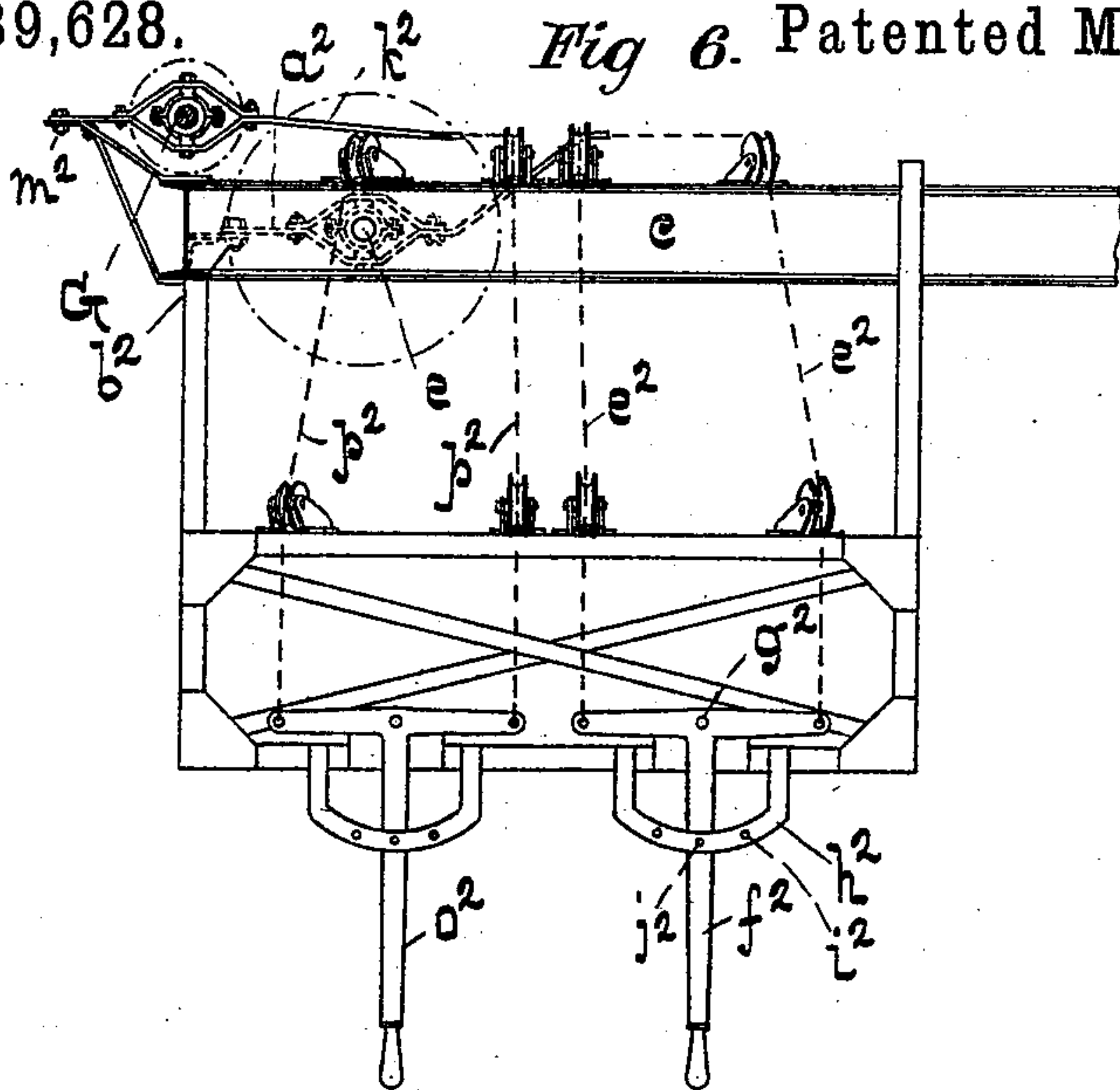
ATTORNEYS.

(No Model.)

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F. MAYER.  
APPARATUS FOR MANIPULATING LIDS OF PURIFIER BOXES IN  
GAS WORKS.

No. 539,628. *Fig 6.* Patented May 21, 1895.



WITNESSES.

*Wm. L. Fisher*  
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INVENTOR

BY *Wm. H. T. Main*

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

FREDERICK MAYER, OF BALTIMORE, MARYLAND.

APPARATUS FOR MANIPULATING LIDS OF PURIFIER-BOXES IN GAS-WORKS.

SPECIFICATION forming part of Letters Patent No. 539,628, dated May 21, 1895.

Application filed November 20, 1894. Serial No. 529,393. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK MAYER, of the city of Baltimore and State of Maryland, have invented certain Improvements in Apparatus for Manipulating the Lids of Purifier-Boxes in Gas-Works, of which the following is a specification.

In the description of the said invention which follows, reference is made to the accompanying drawings, forming a part hereof, in which—

Figure 1 is a transverse section of a purifier-house, together with its contents, which include the apparatus embodying the present invention. Fig. 2 is a longitudinal sectional view of a part of the purifier-house, together with a portion of the apparatus shown in Fig. 1. Fig. 3 is an enlarged plan view of the raising and shifting apparatus alone. Fig. 4 is a still enlarged sectional view of a carriage and purifier-lid, shown in Fig. 2. Fig. 5 is an enlarged view of parts of Fig. 3, and Fig. 6 an end view of Fig. 5.

Referring now to the drawings, A is the purifier house and B B are the purifier boxes. C C are the lids of the said boxes, which have to be raised and shifted in position.

D. D are track rails consisting of I bars which extend longitudinally of the house A. These track rails are supported by other I bars E, which project from the side walls *a* of the building, and also by rods *b* pendent from the roof truss.

F is a carriage on the rails D, adapted to be moved longitudinally thereof. The carriage is formed of bars *c* which united constitute the carriage frame and it has truck wheels *d* and *d*<sup>2</sup>, which sustain it on the track rails. The truck wheels *d*<sup>2</sup> are secured to the shaft *e* which is revolved to move the carriage longitudinally of the track rails D. The other truck wheels are idlers and merely support the carriage.

G and G' are spindles one at each end of the carriage, provided with a right-hand thread *f* at one end, and a left hand thread *g* at the other, as shown particularly in Fig. 3. On each threaded portion of the spindles is a nut *h* having eye-bolts *j* to which chains *k* are fastened. These chains lead over pulleys *m* and may be attached to the lid C of a purifier box

B. From this it will be seen that a lid may be raised by turning the spindles in one direction and lowered by a reverse turning.

H is a shaft having a rope sheave *n* and a pinion *o*. This pinion is in engagement with a gear wheel *p* on a shaft *q* which shaft carries a pinion *r* in mesh with a gear wheel *s* on a shaft *t*. I is another shaft driven from the shaft *t* by means of gears *u* and *v* which are of equal size. The shaft I carries two sprocket wheels *a'* and *b'*. The sprocket wheel *b'* is connected to a similar sprocket wheel *c'* which is loose on the plain or unthreaded portion of the spindle G, by means of a chain belt *d'*. On the said spindle is a similar tight sprocket *e'* which is connected to a similar sprocket *f'* which is tight on the other threaded spindle G', by a chain belt *g'*. The shaft *t* has also a sprocket wheel *h'*, larger than the one *b'* on the shaft I, and it is connected by a chain belt to a sprocket wheel *i'* which corresponds in size with the one *c'*. The said shaft *t* has also another sprocket wheel *j'* about the same diameter as the one *a'* on the shaft I. The sprocket *j'* drives, by means of a chain belt *m'*, a loose sprocket wheel *k'* on the shaft *e* to which the driving truck wheels *d*<sup>2</sup> are fastened.

The sprocket wheel *a'* before alluded to, drives, by means of a chain belt *n'*, a loose sprocket *o'* on the shaft *e*.

A double faced sliding clutch member *p'* is fastened to the spindle G, and the loose sprockets *c'* and *i'* have clutch teeth on their opposing faces. The clutch member can thus be made to engage with either sprocket by moving it longitudinally of the spindle. When the clutch member *p'* is brought into engagement with the teeth of the sprocket wheel *c'* the spindle is turned in the direction required to bring toward each other, the nuts *h*, and the chains *k* being tightened, the purifier box lid C to which they are attached, is elevated; but when the said clutch member *p'* is made to interlock with the teeth of the sprocket *i'* and leaves the one *c'*, the direction of revolution of the spindle G is reversed and the lid lowered, and the lid is lowered faster than it was raised, in view of the sprocket *h'* being larger than the one *b'*. Another double faced sliding clutch member



$q'$  tight on the shaft  $e$  may be interlocked with either of the loose sprockets  $k'$  or  $o'$ , the said sprockets having teeth similar to the ones on the clutch. By this gearing, the lids of the purifier boxes may be either raised or lowered, and the raised lid which is suspended from the carriage moved longitudinally of the building.

To give movement to the shaft H, a main driving shaft J which is at one end of the building, and receives its motion from any source, is provided with a rope pulley K. A similar pulley L on a shaft M at the other end of the building is connected to the pulley K by an endless rope N. In order that the rope N may be always tight, and have a uniform tension, the upper section of the rope runs around the sheaves O and P the latter being suspended by a weighted cord Q which runs over the small pulleys R. The lower section of the endless rope N passes over pulleys S S shown in Fig. 3 on the carriage F, and under the sheave  $n$  which is on the shaft H having the first gear wheel of the train described. Now it will be seen that by moving the endless rope N the train of gearing described is set in motion, and when the clutch  $q'$  is brought into engagement with either of the sprockets  $k'$  or  $o'$ , the carriage is moved longitudinally of the track rails and of the building. The clutch member  $q'$  has a shifting lever  $a^2$  fulcrumed at  $b^2$  to the carriage, and at its outer end is provided with eyes  $c^2$  to which rods and chains  $e^2$  are attached. These rods and chains are connected at the other end to a T hand lever  $f^2$  pivoted at  $g^2$ , and provided with a guide  $h^2$ . The said hand lever and the guide have holes  $i^2$  through which a pin  $j^2$  may be inserted to hold the hand lever in any one of its three positions. By moving the handle  $f^2$  the clutch member  $q'$  may be brought into engagement with either of the sprockets  $k'$  or  $o'$  and the carriage thereby made to traverse the track rails D in either direction. The clutch member  $p'$  has a lever  $k^2$  fulcrumed at  $m^2$  to a part of the carriage, having eyes  $n^2$  which are united to a T hand lever  $o^2$  by means of rods and chains  $p^2$ . The operation of this hand lever is the same as the one  $f^2$  except that it moves a different clutch member and one which may be connected to either of the sprocket wheels  $c'$  or  $i'$  on the spindle G. By this arrangement the chains  $k$  are practically lengthened and shortened so as to lower or

elevate a purifier box lid when attached thereto as shown particularly in Fig. 4.

When the lid of a purifier box is to be raised and then carried away from the box so that the same may be filled, or emptied of its contents, the hand lever  $o^2$  is moved in the direction indicated by the arrow and held in the new position until the ends of the chains  $k$  can be coupled to the box lid. The said hand lever is then moved to the other extreme position which effects the elevation of the lid and this elevation continued until the lid is raised to the desired height. The hand lever is then placed in a central position which disconnects the clutch operated by it from both adjacent sprocket wheels, and the movement of the spindle is stopped. The hand lever  $f^2$  is then moved in such direction as will effect the transportation of the lid to the desired part of the building and when this place is reached, the lid may be either left suspended or lowered, as required. To stop the longitudinal movement of the carriage the lever  $f^2$  is placed in a central position.

After the box has been filled with new material the operation described is reversed by a proper manipulation of the hand levers.

It will be understood that the rope N produces all the operations described in connection with the purifier box lid by merely moving the hand levers as described.

I claim as my invention—

In an apparatus for raising, lowering and shifting the lids of purifier boxes in gas works, the combination of an overhead track, a carriage adapted to traverse the track, a pair of revoluble spindles supported by the carriage, each spindle having a right hand thread at one end and a left hand thread at the other, a nut on each threaded portion of the spindles having hoisting chains adapted for attachment to a purifier lid, gearing to effect a joint movement of the two spindles in either direction of revolution, to lift or lower the purifier box lid, other gearing to effect the movement of the carriage longitudinally of the overhead track, and an endless moving rope to give motion to the said gearing, substantially as specified.

FREDERICK MAYER.

Witnesses:

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DANL. FISHER.