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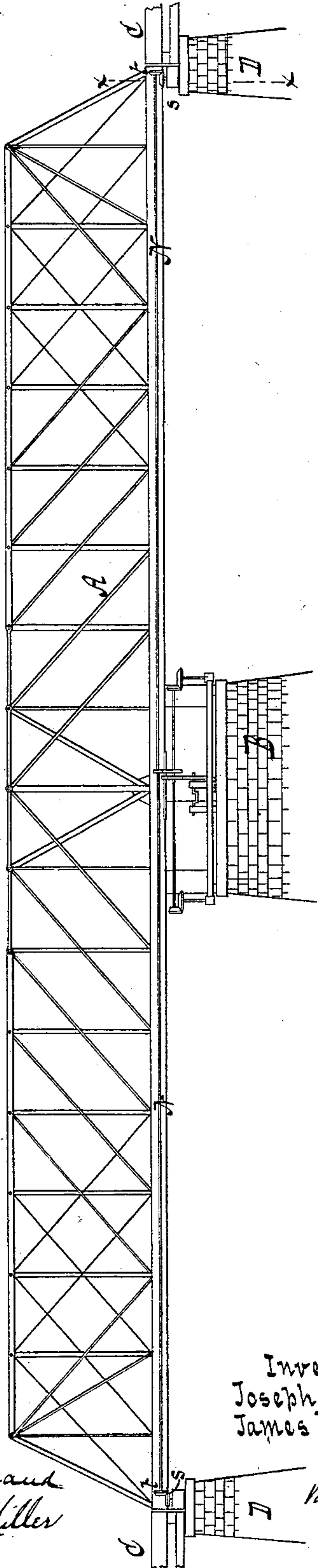
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DRAW BRIDGE.

No. 254,627.

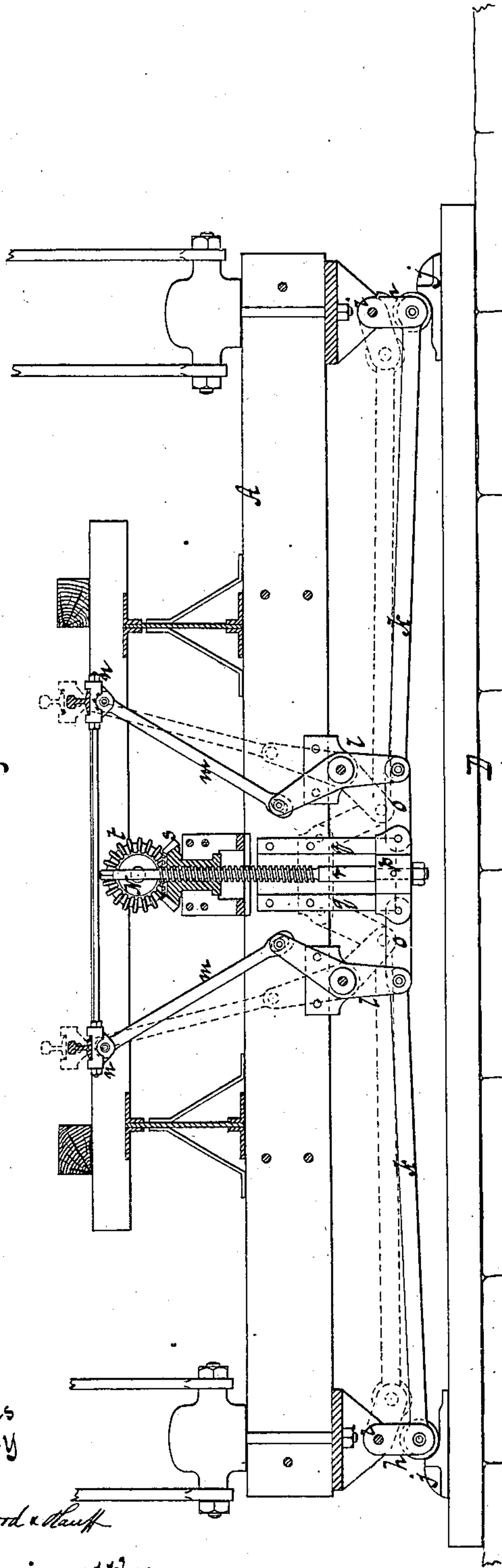
Patented Mar. 7, 1882.

Fig. 1.



Witnesses
Otto Aufel and
William Miller

Fig. 2.



Inventor
Joseph Edwards
James R. F. Kelly

by
Van Santwood & Hauff

their att'ys

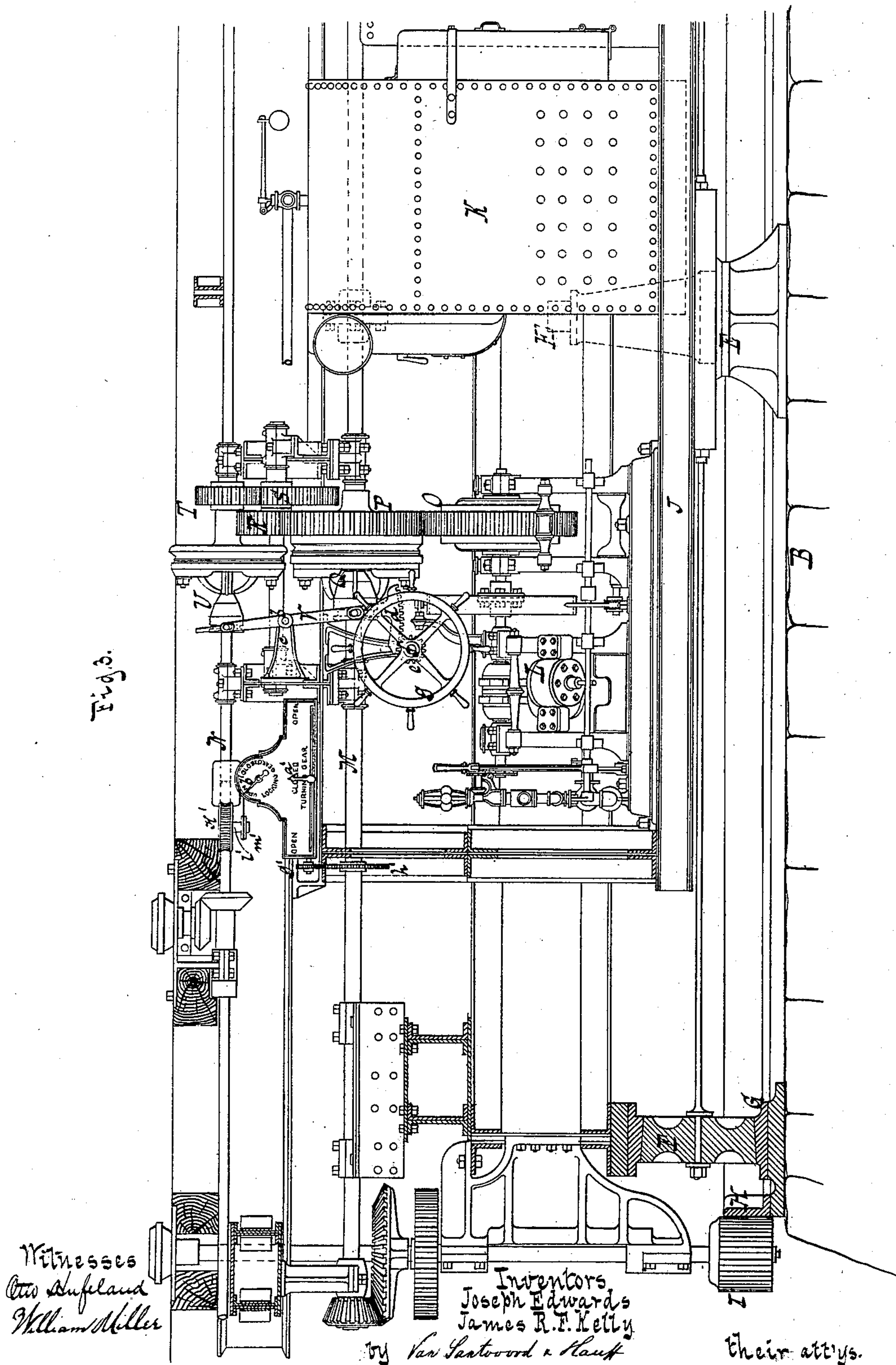
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DRAW BRIDGE.

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Patented Mar. 7, 1882.



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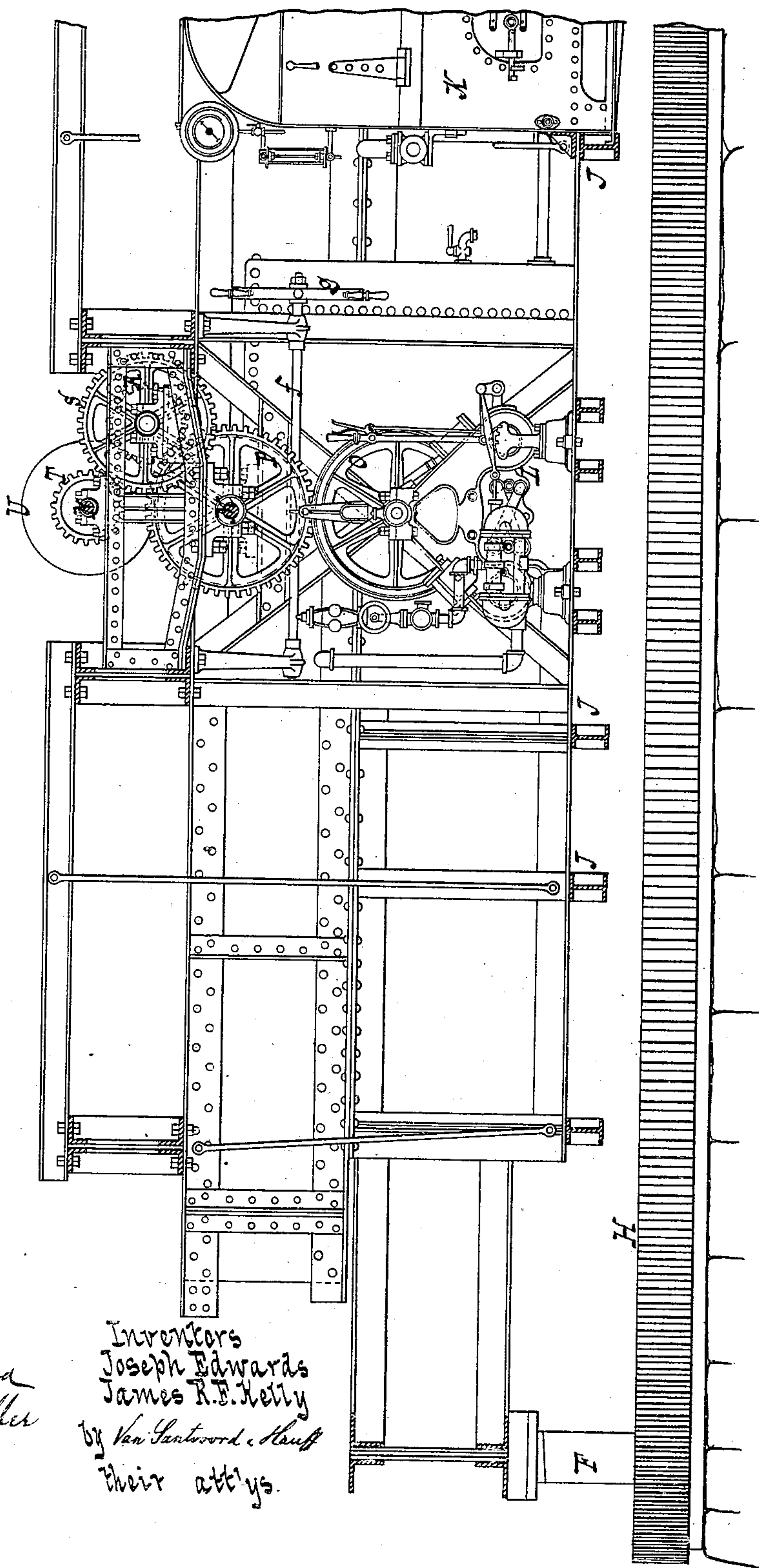
J. EDWARDS & J. R. F. KELLY.

DRAW BRIDGE.

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Patented Mar. 7, 1882.

Fig. 4.



Witnesses
Otto Hafelund
William Miller

Inventors
Joseph Edwards
James R. F. Kelly
by Van Santvoord & Hauff
their att'ys.

(No Model.)

5 Sheets—Sheet 4

J. EDWARDS & J. R. F. KELLY.

DRAW BRIDGE.

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Fig. 6.

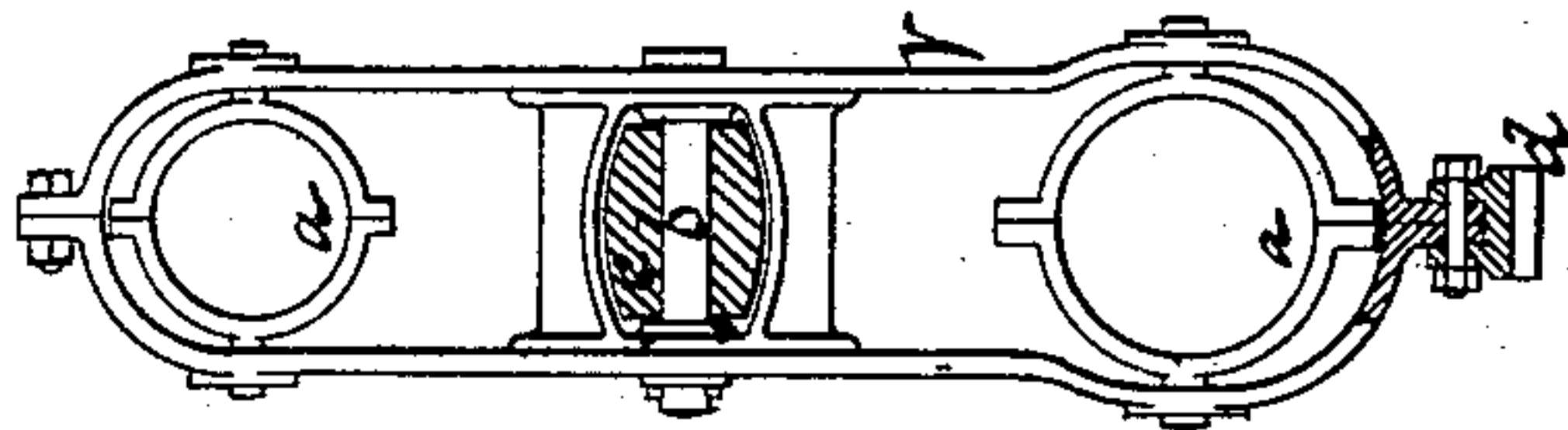
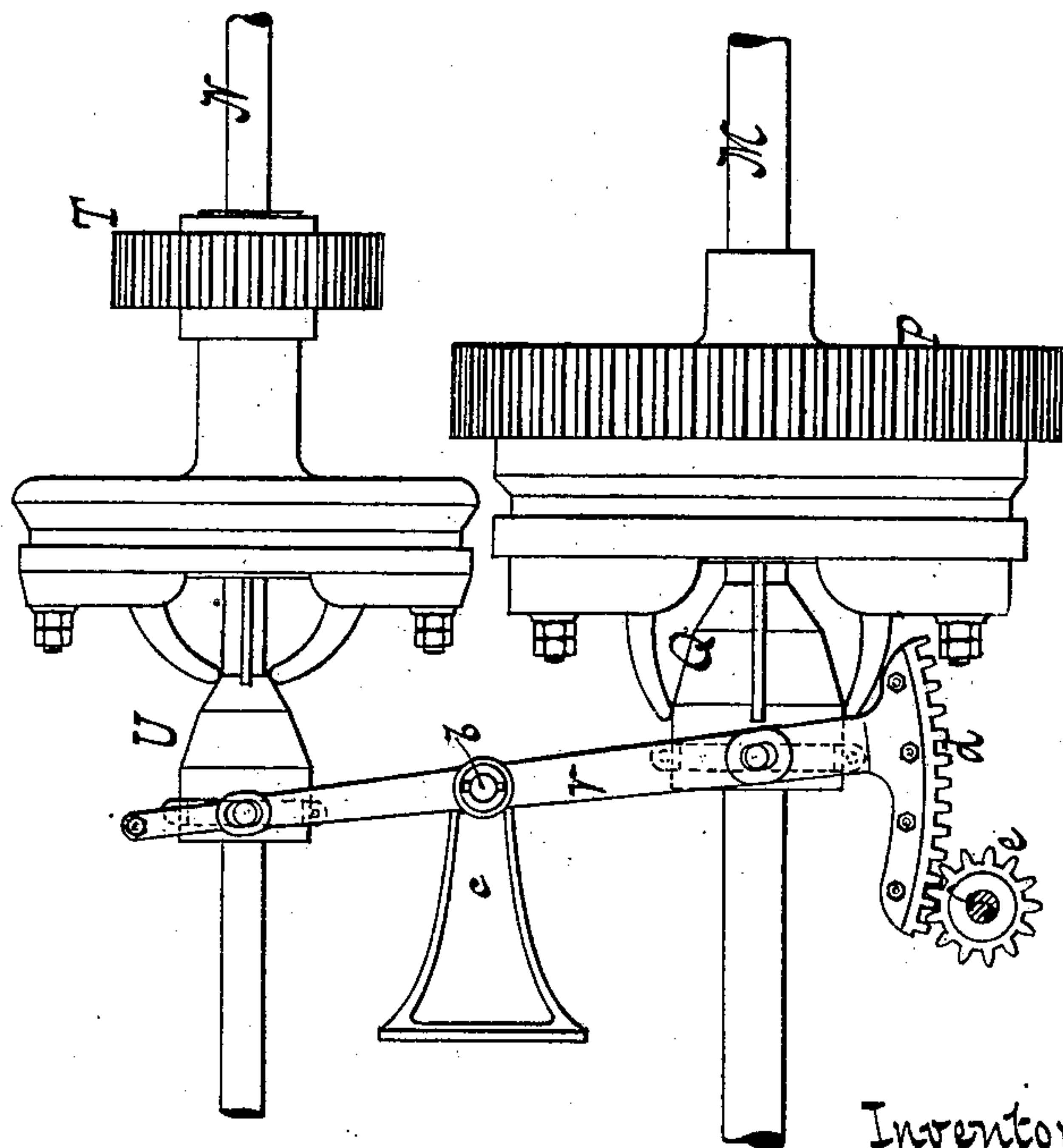


Fig. 5.



Witnesses
Otto Hufeland
William Miller

Inventors
Joseph Edwards
James R. F. Kelly
by Van Santvoord & Hauff
their att'ys

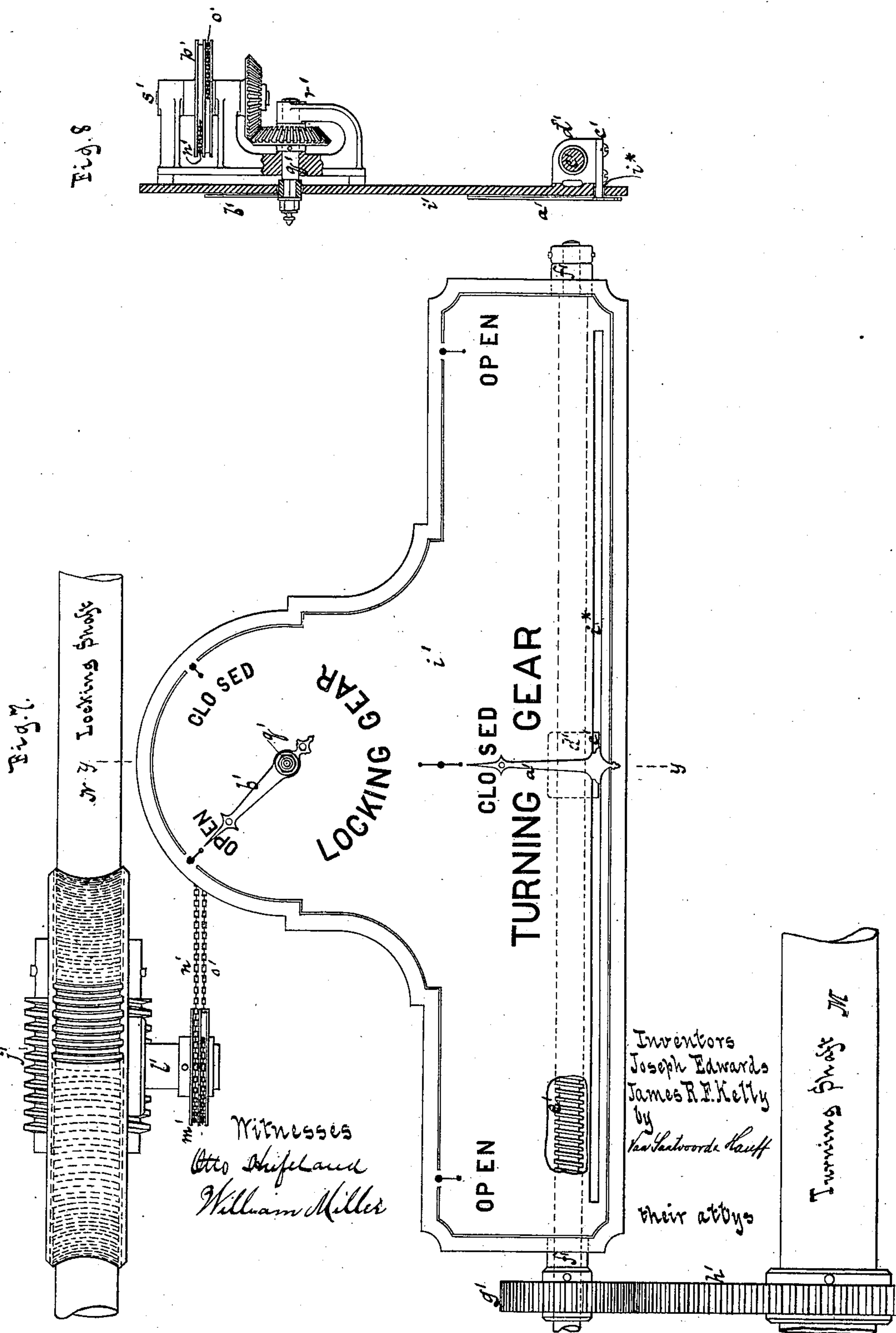
(No Model.)

5 Sheets—Sheet 5.

J. EDWARDS & J. R. F. KELLY.
DRAW BRIDGE.

No. 254,627.

Patented Mar. 7, 1882.



UNITED STATES PATENT OFFICE.

JOSEPH EDWARDS AND JAMES R. F. KELLY, OF BROOKLYN, NEW YORK.

DRAW-BRIDGE.

SPECIFICATION forming part of Letters Patent No. 254,627, dated March 7, 1882.

Application filed December 17, 1881. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH EDWARDS and JAMES R. F. KELLY, both citizens of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Draw-Bridges, of which the following is a specification.

This invention relates to the mechanism for operating the locking-gear and the turning-gear of the draw, and also for indicating the position of the locking-gear and of the draw, as fully described and illustrated in the following specification and the drawings appertaining thereto.

In these drawings, Figure 1 represents a side view of the draw. Fig. 2 is a transverse section of the draw in the plane xx , Fig. 1, showing the locking-gear on a larger scale than the previous figure. Fig. 3 is a side view of the draw, partly in section, showing the turning mechanism and the mechanism for operating the locking-gear. Fig. 4 is a front view of the same. Fig. 5 is a side view of the clutch mechanism detached, on a larger scale than the previous figures. Fig. 6 is an end view of the clutch-lever. Fig. 7 is a face view of the indicator which shows the position of the turning-gear and of the locking device. Fig. 8 is a transverse section of the same in the plane yy , Fig. 7.

Similar letters indicate corresponding parts.

In these drawings, the letter A, Fig. 1, designates the draw, which is supported by the central pier, B, and which, when closed, connects with the ends C C of the bridge, said ends being supported by the piers D D. From the central pier, B, rises a vertical spindle, E, Fig. 3, round which the draw turns, said draw being supported by a series of wheels, F, which run on a circular track, G, that is fastened on the central pier, B. With this track is firmly connected a stationary master-wheel, H, into which gears a pinion, I, so that by turning this pinion the draw is caused to turn round the spindle E. All these devices are of a well-known construction, and they form no part of our invention; but we have shown them in the drawings in order to be able to give an intelligible description of our invention.

The spindle E carries a platform, J, which is steadied by the wheels F, and which supports a steam-boiler, K, and an engine, L, by means of which motion is imparted to the turning-gear and to the locking-gear.

M is the turning-shaft, and N is the locking-shaft. The turning-shaft is geared together with the engine by cog-wheels O P, Figs. 3 and 4, the cog-wheel P being mounted loosely on the turning-shaft, and being provided with a clutch mechanism, Q, Fig. 5, by means of which it can be thrown in and out of gear with said shaft at any moment. The locking-shaft N is geared together with the engine by cog-wheels O, P, R, S, and T, Figs. 3 and 4, the cog-wheel T being mounted loosely on the locking-shaft, and being provided with a clutch mechanism, U, Figs. 3 and 5, by means of which it can be thrown in or out of gear with said shaft whenever it may be desired.

The clutch mechanisms Q U may be of any suitable construction. The devices which we have represented in the drawings are such as described in Letters Patent No. 186,296, dated January 16, 1877; but since the same form no part of our present invention we do not deem it necessary to give a detailed description of the same in this present specification. Both clutches Q and U connect by rings aa , Fig. 6, with a lever, V, which has its fulcrum on a pin, b , mounted in a fixed standard, c . By referring to Figs. 3, 5, and 6 it will be seen that the clutches Q U are situated on different sides of the fulcrum-pin b of the lever V, so that by the action of this lever one clutch is thrown in gear when the other is thrown out of gear, and vice versa.

On the lower end of the clutch-lever V is secured a toothed segment, d , Figs. 3 and 5, which gears into a pinion, e , mounted on a shaft, f , to which motion can be imparted in either direction by means of a hand-wheel, g . (Best seen in Figs. 3 and 4.) This wheel is in a convenient position to be operated by the engineer, and by turning the same in one direction the clutch U is thrown in gear and motion is imparted to the locking-shaft N, and by turning said hand-wheel in the opposite direction the clutch Q is thrown out of gear, the

locking-shaft becomes stationary, the clutch Q is thrown in gear, and motion is imparted to the turning-shaft M.

If desired, separate levers may be provided, one for each clutch, and in this case both levers are geared together with the shaft *f*, so that by turning the hand-wheel *g* the clutch mechanisms are operated in an opposite sense.

The locking mechanism may be of any suitable construction, and forms no part of our invention. In Fig. 2 we have represented a locking mechanism which consists of latch-rollers *h h*, which are connected to the ends of the draw A by pivots *i*, and which, when the draw has reached its closing position, engage with stops *j*, which accurately adjust and centralize the draw. Said latch-rollers connect by rods *k* with the lower arms of levers *l*, the upper arms of which connect by rods *m* with the shoes *n*, that support the rails. The lower arms of the lever *l* connect by links *o* with a slide, *p*, which can be moved up and down on suitable guides, *q*, and to which motion is imparted by a screw-spindle, *r*, that extends through and is tapped into a bevel-wheel nut, *s*, which is operated by a bevel-wheel, *t*, mounted on the end of the locking-shaft N. When the draw is to be turned in either direction the latch-rollers *h h* have to be raised to the position shown in dotted lines in Fig. 2. This is done by imparting to the locking-shaft a revolving motion, so as to raise the slide *p* to the position shown in dotted lines, and by raising the slide the shoes *n*, which support the rails, are also raised, so that they permit the draw to be turned.

In order to enable the engineer to observe the position of the locking-gear and of the draw without leaving his position in front of the hand-wheel *g*, we have combined with the turning-shaft M and with the locking-shaft N suitable indexes, *a'* *b'*. (See Figs. 3 and 7.)

The index *a'* is secured to a projection, *c'*, which is fastened to a head, *d'*, Fig. 8, that is tapped to fit a screw-spindle, *e'*. This screw-spindle has its bearings in brackets *f'*, attached to the dial-plate *i'*, and it is geared together with the turning-shaft M by cog-wheels *g'* *h'*. The dial-plate *i'* is provided with a slot, *i**, to guide the projection *c'*, and with appropriate marks corresponding to the positions of the draw when it is open and when it is closed.

The index *b'* is geared together with the locking-shaft N as follows: On the locking-shaft is mounted a worm, *j'*, which gears into a worm-wheel, *k'*, Figs. 7 and 3, mounted on a vertical spindle, *l'*, which has its bearings in a suitable bracket. (Not shown in the drawings.) On the lower end of this spindle is mounted a double chain-wheel, *m'*, to which are secured two chains or ropes, *n'* *o'*. These chains or ropes are wound round the chain-wheel in opposite directions, and their opposite ends are fastened to a double chain-wheel, *p'*, Fig. 8, on which said chains are also wound in opposite directions. The index *b'* is mount-

ed on one end of a shaft, *q'*, which has its bearing near this end in the dial-plate *i'*, and at its opposite end in a bracket, *r'*, secured to said dial-plate. The chain-wheel *p'* is mounted on a shaft, *s'*, Fig. 8, which is geared together with the shaft *q'* of the index *b'*. On the dial-plate *i'* are two marks, one of which corresponds to the position of the locking mechanism when the same is open and the other to the position when it is closed.

If the draw is to be opened, the engineer starts his engine, and then he turns the hand-wheel *g* so as to throw the clutch mechanism U of the locking-shaft N in gear until the index *b'*, Fig. 7, shows that the locking mechanism is open. Then the engineer turns the hand-wheel *g* so as to throw the clutch mechanism Q of the turning-shaft M in gear, causing the turning-shaft to revolve until the index *a'*, Fig. 7, shows that the draw is open. For the purpose of closing the draw the motion of the turning-shaft is reversed until the index *a'* shows "Closed," then this shaft is thrown out of gear by the action of the hand-wheel *g*, the locking-shaft is thrown in gear, and motion is imparted to it until the index *b'* shows "Closed." From this description it will be seen that the engineer is enabled to control the position of the locking-gear and the motion of the draw by means of the hand-wheel *g*, or by the action of the clutch-lever V, so that he can remain in the same position at his post, and at the same time he is enabled to observe at all times the position of the locking-gear and also that of the draw.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination, substantially as hereinbefore described, of the draw, the turning-shaft and its clutch mechanism, the locking-shaft and its clutch mechanism, and the clutch-lever common to both clutch mechanisms, but acting on them in an opposite sense.

2. The combination, substantially as hereinbefore described, of the draw, the turning-shaft and its clutch mechanism, the locking-shaft and its clutch mechanism, and the hand-wheel which is geared together with both clutch mechanisms, so as to actuate them in an opposite sense.

3. The combination, substantially as hereinbefore described, of the draw, its turning-shaft, and the index *a'*, geared together with the turning-shaft and serving to indicate the position of the draw.

4. The combination, substantially as hereinbefore described, of the draw, its locking-shaft, and the index *b'*, geared together with the locking-shaft and serving to indicate the position of the locking mechanism.

5. The combination, substantially as hereinbefore described, of the draw, its turning-shaft, its locking-shaft, and the indexes *a'* *b'*, geared together with said shaft, one to indicate the position of the draw and the other that of the locking-gear.

6. The combination, substantially as herein-
before described, of the draw, the turning-
shaft, its clutch mechanism and index, the lock-
ing-shaft, its clutch mechanism and index, and
5 the clutch-lever common to both clutch mech-
anisms, but acting on them in opposite direc-
tions.

In testimony whereof we have hereunto set

our hands and seals in the presence two sub-
scribing witnesses.

JOSEPH EDWARDS. [L. S.]
JAMES R. F. KELLY. [L. S.]

Witnesses:

W. HAUFF,
WILLIAM MILLER.