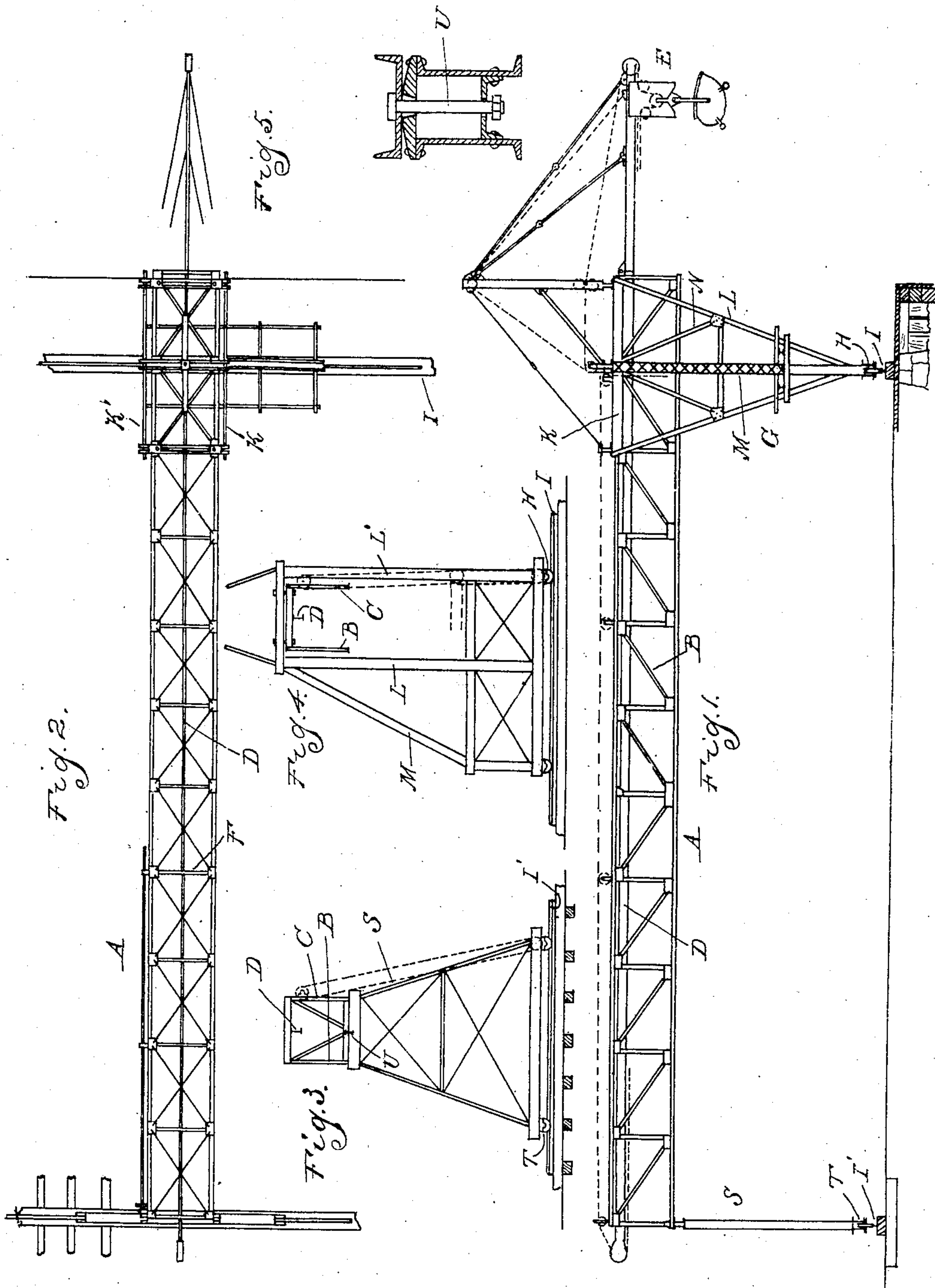


W. R. KALES.  
GAUNTREE CRANE.  
APPLICATION FILED FEB. 15, 1904.

3 SHEETS—SHEET 1.



Witnesses  
Geo. H. Gannon  
Jas. P. Barry.

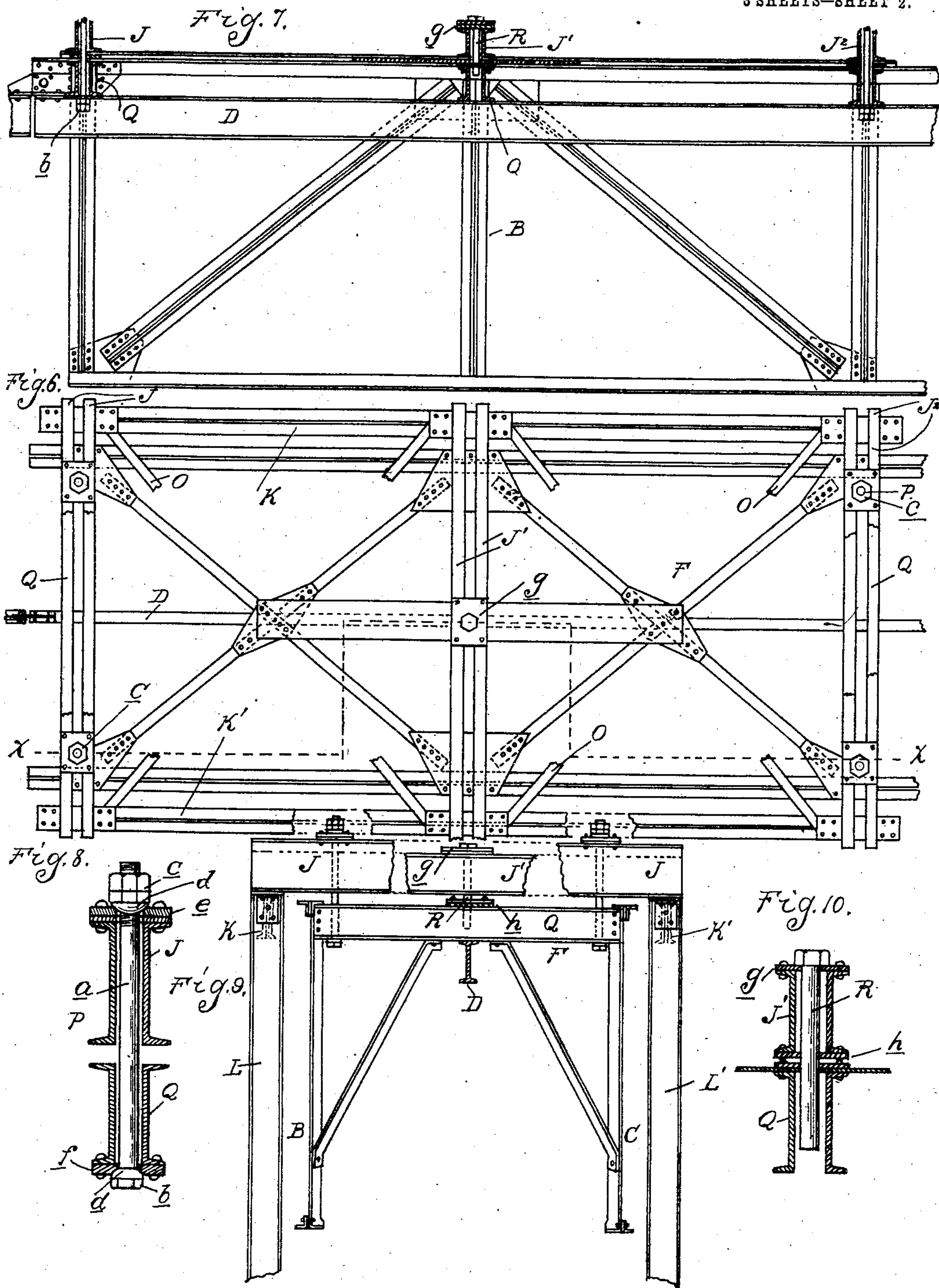
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No. 786,362.

PATENTED APR. 4, 1905.

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3 SHEETS—SHEET 2.



Witnesses  
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3 SHEETS—SHEET 3.

Fig. 11.

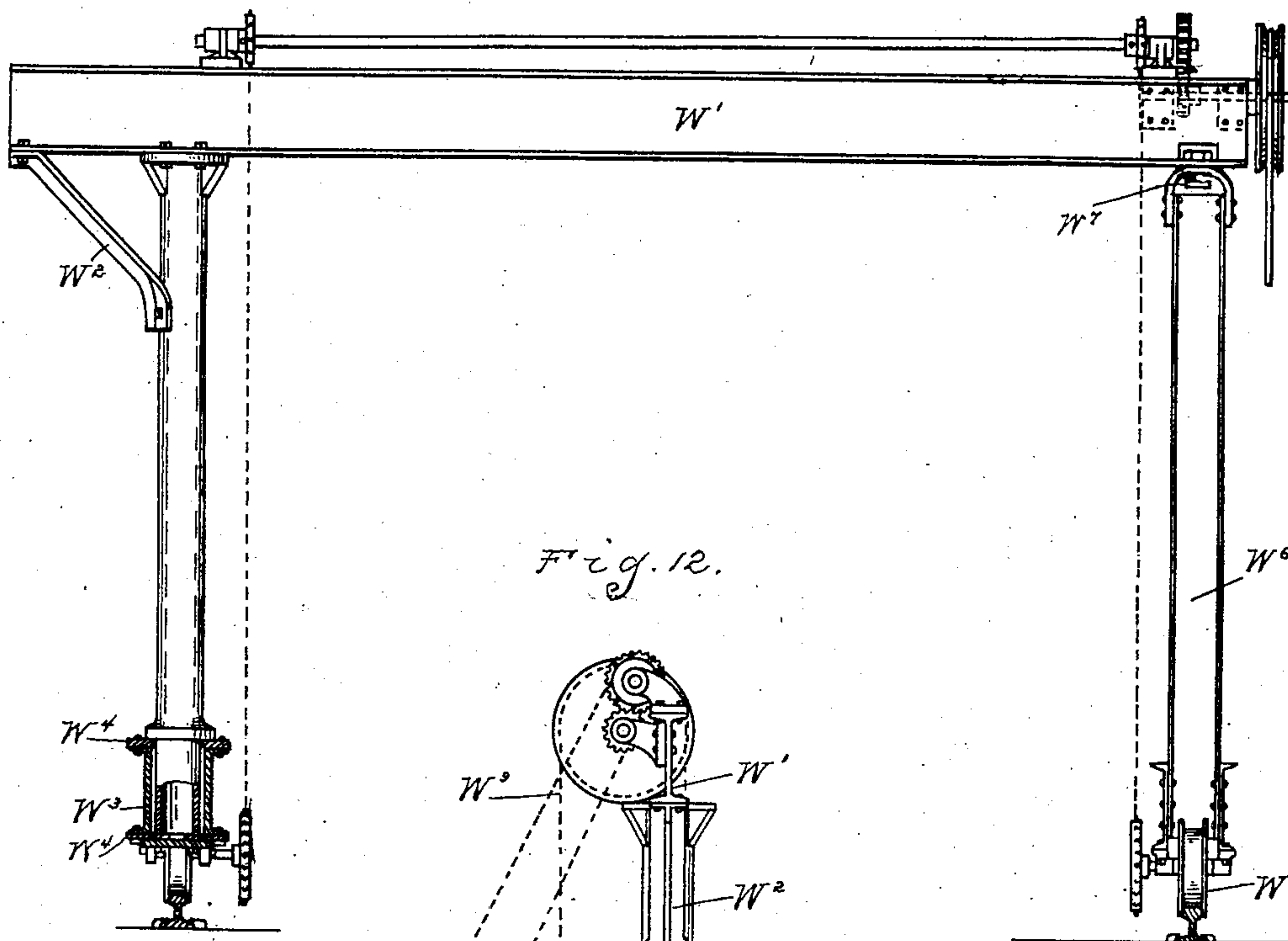
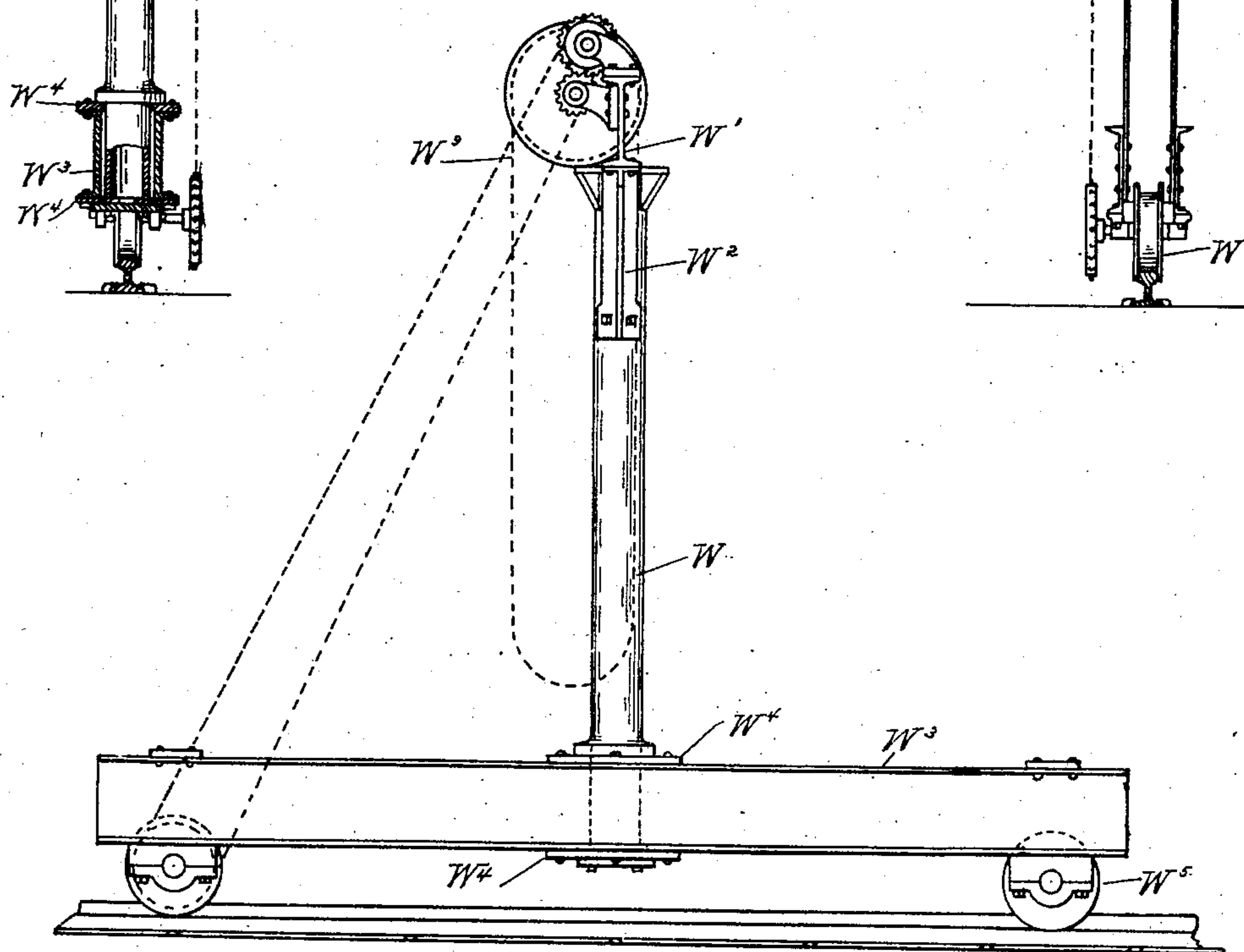


Fig. 12.



Witnesses

*Geo. A. Green*  
*Geo. P. Barry*

Inventor

*William R. Kales*  
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# UNITED STATES PATENT OFFICE.

WILLIAM R. KALES, OF DETROIT, MICHIGAN.

## GAUNTREE-CRANE.

SPECIFICATION forming part of Letters Patent No. 786,362, dated April 4, 1905.

Application filed February 15, 1904. Serial No. 193,602.

*To all whom it may concern:*

Be it known that I, WILLIAM R. KALES, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Gauntree-Cranes, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to structures commonly known as "gauntree-cranes," and which are characterized by the arrangement of a bridge supported at opposite ends by piers, the latter being travelingly mounted upon parallel tracks. The bridge forms a support for the traveling crane-carriage, which is sufficiently elevated to give clearance for the material to be handled by the crane between the piers. Heretofore structures of this character have been formed in which the pier at one end is formed with a wide wheel-base and at its upper end pivotally supports the bridge. The pier at the opposite end is also flexibly secured to the bridge and is supported on a narrow wheel-base traveling upon a single track. The wheels for both piers are adapted to be driven, and as a consequence whenever motion is imparted thereto the bridge will be caused to travel without straining its structural parts, the pivotal connections compensating for any slight inequalities in the movement of the opposite piers. At the same time stability is given to the structure by reason of the wide wheel-base for one of the piers.

The objection to the structure just described is that the wide wheel-base for the one pier necessitates a clearance of a considerable area of available space. It further requires three tracks for supporting the structure, two for the pier having a wide base and a third for the opposite pier.

It is the object of the present invention to obtain a construction in which each of the piers is formed with a narrow base travelingly supported upon a single track, so that but two tracks are required for the structure.

It is a further object to impart stability to the structure without interfering with the necessary flexibility and avoid straining the parts.

With these objects in view the invention

consists in the construction as hereinafter set forth.

In the drawings, Figure 1 is an elevation of the crane, showing the supporting-tracks therefor in transverse section. Fig. 2 is a plan view. Fig. 3 is an elevation looking at one end. Fig. 4 is an elevation of the opposite end. Fig. 5 is an enlarged view of the pivotal connection shown in Fig. 3. Fig. 6 is an enlarged plan of a portion of Fig. 2. Fig. 7 is a longitudinal section on line *xx*, Fig. 6. Fig. 8 is an enlarged section through one of the hangers shown in Fig. 7. Fig. 9 is an enlarged end elevation of Fig. 7. Fig. 10 illustrates the central pivot shown in Fig. 7. Fig. 11 is a side elevation of a modified construction. Fig. 12 is an end elevation thereof.

A is the bridge, which may be of any suitable construction; but is preferably provided with the separate side trusses B and C and the central track D for travelingly supporting the carriage E. This track, as shown, is formed of an I-beam secured to the under side of the top sections F of the bridge, and the carriage may be of any suitable construction to travel over this track.

G is a pier for supporting one end of the bridge. This pier is provided with a narrow base which is supported upon grooved wheels H, engaging with the track I. The upper end of the pier is enlarged in width, preferably upon opposite sides of the plane of the track, and the structure is so formed as to arch over the bridge, as shown in Figs. 4 and 9 of the drawings. The top portion of the pier is preferably of substantially rectangular form and, as illustrated in Fig. 6, comprises a plurality of pairs of separated channel-beams J, J', and J'', extending transversely and supported upon the longitudinally-extending beams K and K'. The latter form the upper ends of the sides of the pier, which latter are formed by oppositely-inclined struts L and L', the central posts M, and suitable intermediate bracing N. The rectangular form of the top is maintained by suitable diagonal braces O.

The pier constructed as above described supports the bridge by a plurality of pendent



hangers P, which are arranged, preferably, upon opposite sides of the plane of the track and also preferably upon opposite sides of the central plane of the bridge. As shown in Figs. 4, 6, and 9, such hangers are provided, which are arranged at the four corners of the rectangle. Each hanger comprises a rod *a*, which passes downward between the channel-beams J and also between the separated channels Q, which form cross-girders of the bridge. The opposite ends of these rods are headed, one head *b* being preferably formed integral with the rod and the opposite head being formed by nuts *c*, engaging the threaded end of the rod. *d* represents segmental spherical washers arranged on the rods adjacent to the heads, and these washers respectively engage with annular seats formed in plates *e* and *f*, respectively, secured to the channels J and Q. Thus the bridge is supported from the arch of the pier at four points by the hangers P adjacent to the four corners of the rectangle.

R is a pivot-pin secured to a central plate *g* upon the central pair of channels J'. This pin extends downward and engages with an apertured plate *h* on the central cross-girders Q of the bridge.

S is a pier supporting the opposite end of the bridge, the base of which is provided with grooved wheels T for engaging with the track I'. The bridge is pivotally secured to the pier S by suitable means, such as the bolt U, which is arranged centrally of the pier and bridge.

The parts being constructed as shown and described, it will be understood that the hangers P will permit of a limited swinging movement of the bridge in relation to the pier. This movement is, however, limited to a rotary or swiveling movement by the central pivot-pin R. At the same time the hangers being arranged upon opposite sides of the plane of the track I will serve to hold the bridge in stable equilibrium. Whenever the wheels H and T are driven, which is accomplished by suitable mechanism, (not shown,) the piers will be caused to travel along the tracks I and I', and any irregularity in these tracks or variation in the width between them will be compensated for either by the swinging movement of the hangers P or by the flexible connection U. As both piers are supported upon single tracks, all the space between said tracks is available.

In Figs. 11 and 12, as shown, is a modification in which in place of forming a swivel connection between the pier and bridge the said parts are rigidly attached to each other, and the pier is provided with a swivel-base.

As shown, W is the pier in the form of a column rigidly secured to the bridge W', which is in the form of an I-beam and braced thereto by the member W<sup>2</sup>. W<sup>3</sup> is a base formed by a pair of separated channel-bars, the column W being swiveled in plates W<sup>4</sup>, secured

to said beams. W<sup>5</sup> represents wheels which are journaled in bearings secured to the beam W<sup>3</sup> and adapted to engage with the track. The opposite pier W<sup>6</sup> is swiveled at W<sup>7</sup> to the bridge W' and carries at its lower ends the track-wheels W<sup>8</sup>, and W<sup>9</sup> is a suitable mechanism for driving the track-wheels. With this construction, where one pier moves slightly in advance of the other, all stress is relieved from the structure by the swiveling of the column W in the base W<sup>3</sup>. At the same time the structure is perfectly stable on account of the rigid and braced connection between the column W and the bridge W'.

What I claim as my invention is—

1. In a gauntree-crane, the combination with a bridge, of a supporting-pier therefor, having a narrow base, and a bracing connection between said pier and bridge, adapted to hold the same rigid in the vertical longitudinal plane of said bridge, while permitting a relative horizontal swiveling.

2. In a gauntree-crane the combination with the bridge of a tapering supporting-pier therefor having its narrow portion at its base and a connection between said pier and bridge permitting of a swiveling in an approximately horizontal plane of said base in relation to said bridge.

3. In a gauntree-crane the combination with the bridge of a supporting-pier therefor having a narrow base and a top arching over the bridge and a flexible connection between said top and bridge at a plurality of longitudinally-separated points whereby stability is imparted to the structure while permitting of a limited swiveling in a horizontal plane.

4. In a gauntree-crane the combination with the bridge of a supporting-pier therefor having a narrow wheel-base, and a relatively widened top, extended longitudinally upon opposite sides of the plane of the wheels and hangers depending from the opposite sides of said top and supporting said bridge, said hangers permitting a slight movement relative thereto.

5. In a gauntree-crane the combination with the bridge of a supporting-pier therefor having a narrow wheel-base and a top, of substantially rectangular form, and hangers depending from said top near the several corners thereof, and connected at their lower ends with said bridge.

6. In a gauntree-crane, the combination with a bridge, of a supporting-pier therefor, having a narrow base, a bracing connection between said pier and bridge, holding the same rigid in the vertical longitudinal plane of said bridge, while permitting a relative horizontal swiveling, and a pier supporting the opposite end of said bridge, said latter pier permitting the longitudinal movement of said bridge in relation to the pier-base.

7. In a gauntree-crane the combination of a supporting-pier, the opposite sides of which

being tapered, with the narrowed portion  
lowermost, said tapered sides being secured  
at their upper ends to a substantially rectan-  
gular frame, a bridge, supports for the bridge  
5 depending from said frame at its respective  
corners, permitting a slight swinging move-  
ment relative to the frame.

In testimony whereof I affix my signature in  
presence of two witnesses.

WILLIAM R. KALES.

Witnesses:

JAMES P. BARRY,  
H. C. SMITH.