

No. 682,703.

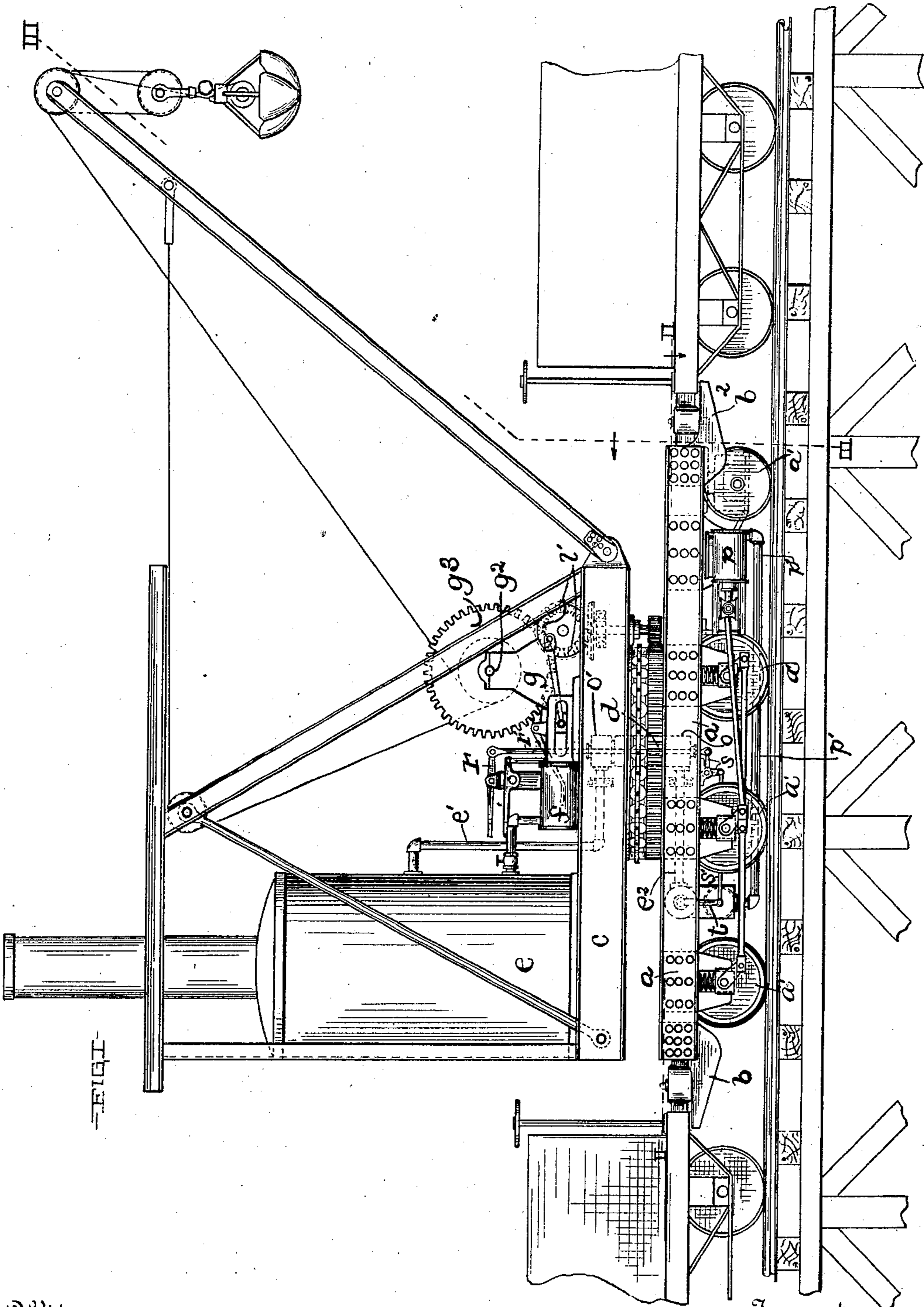
Patented Sept. 17, 1901.

F. E. HULETT.
LOCOMOTIVE REVOLVING CRANE.

(Application filed Dec. 28, 1900.)

(No Model.)

4 Sheets—Sheet 1.



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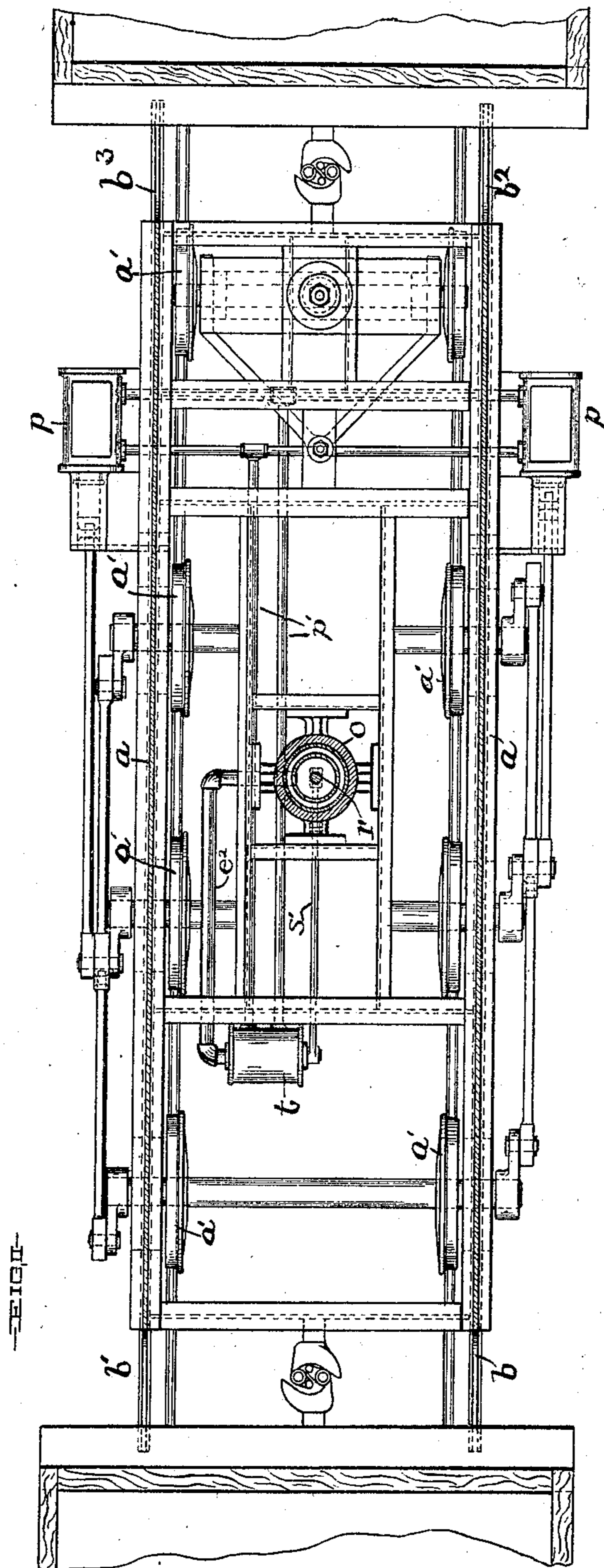
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4 Sheets—Sheet 2.



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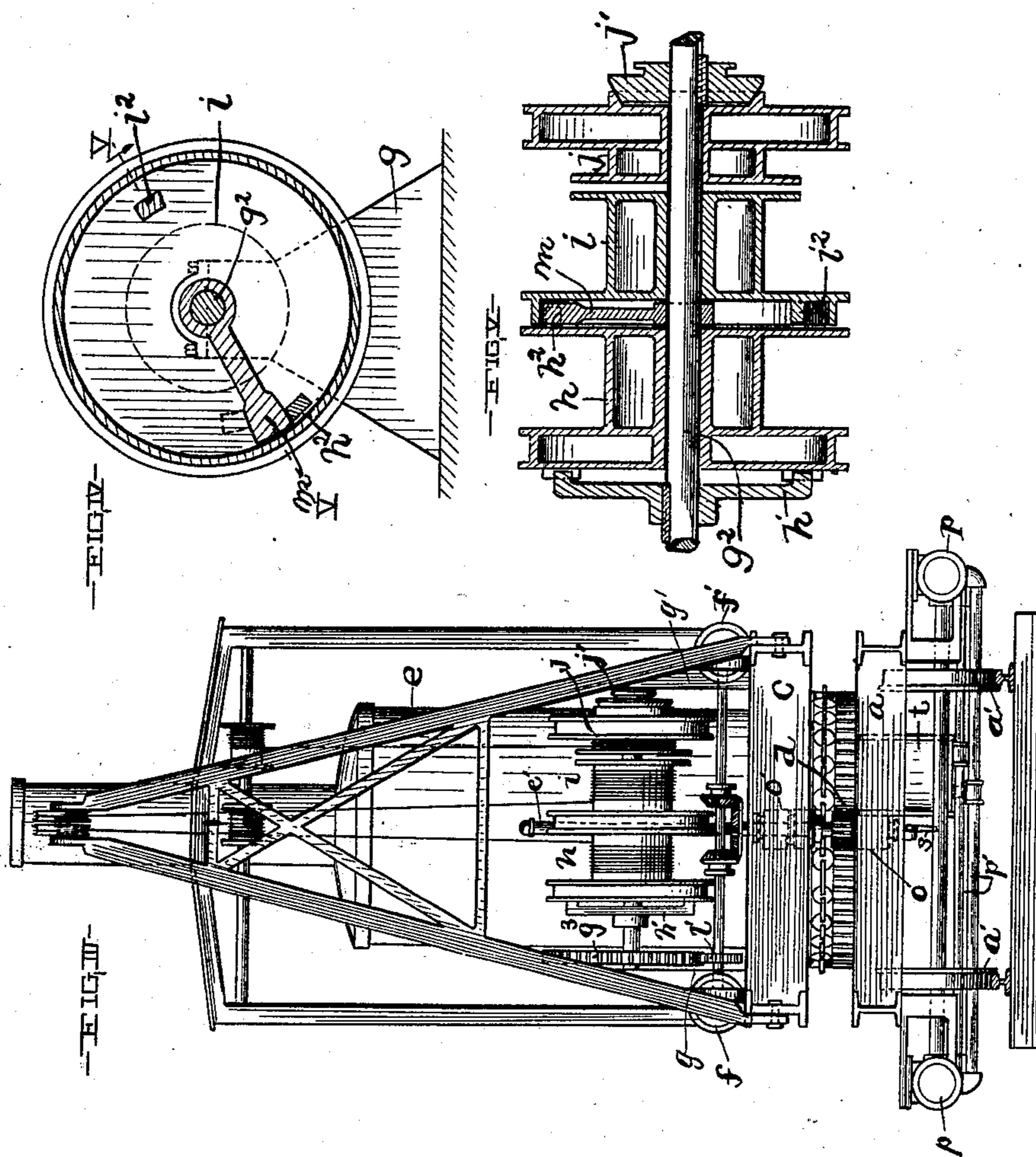
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4 Sheets—Sheet 3.



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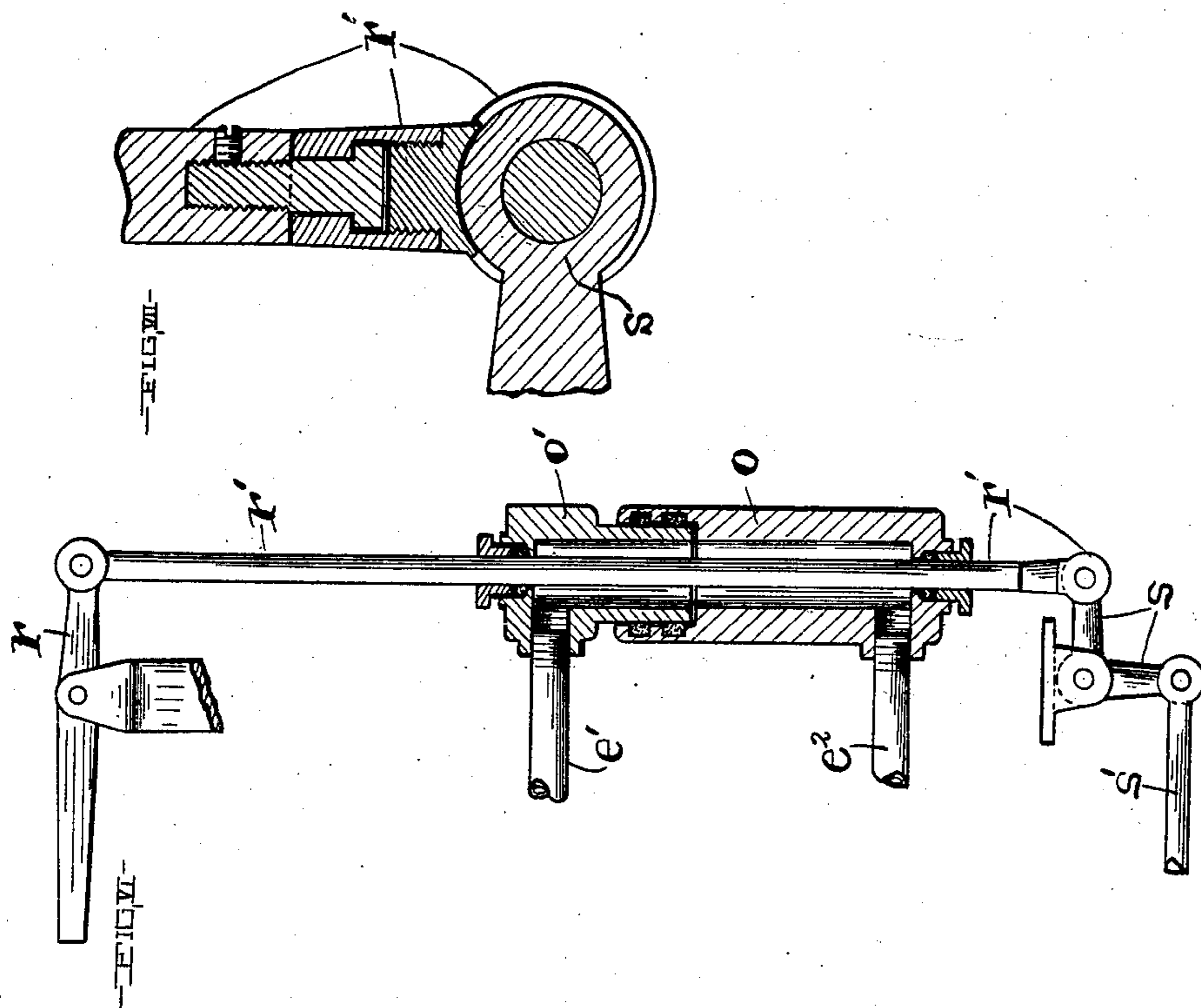
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

FRANK E. HULETT, OF AKRON, OHIO.

LOCOMOTIVE REVOLVING CRANE.

SPECIFICATION forming part of Letters Patent No. 682,703, dated September 17, 1901.

Application filed December 26, 1900. Serial No. 41,107. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. HULETT, a resident of Akron, Summit county, Ohio, have invented certain new and useful Improvements in Locomotive Revolving Cranes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

10 This invention relates to improvements in the construction of locomotive revolving cranes or derricks.

The object of this invention is to provide a crane of the character indicated especially adapted to be operated upon trestles, bridges, and similar structures.

A further object of my invention is to provide a crane of this character comprising improvements in the construction and arrangement of the hoisting and motive machinery, whereby the working of the crane is greatly facilitated and a considerable reduction is secured in the cost of operating the same.

My invention therefore consists in providing means for steadying and retaining the crane on the track of a trestle or similar structure by coupling the truck thereof to a movable ballast or counterweight.

My invention also consists in constructing a crane of this character provided with a motive engine and a hoisting-engine, each capable of operating independently of the other, and means for supplying both of the engines from the same boiler or steam-supply.

My invention further consists in the features of construction and combination of parts hereinafter fully described in the specification, pointed out in the claims, and illustrated in the drawings.

40 The locomotive-cranes to which my invention particularly relates are designed to travel on standard-gage tracks, and are used for excavating coal, ore, or other material and loading it into cars. This employment generally necessitates that the tracks upon which the crane travels be elevated upon a trestle or similar structure. Heretofore great difficulty has been experienced when operating a crane upon a trestle in preventing the crane from being overturned by the weight of the load in the grapple-bucket or through the reaction caused by the sudden releasing of the

load from the grapple-bucket. As it is impossible to block up or prop the crane on a trestle in the same manner as can be done on the level ground, this difficulty has been overcome to some extent by clamping the truck of the crane to the rails; but this method has been found cumbersome and inexpedient. By my invention I provide means located at each of the four corners of the framework of the truck of the crane adapted to engage the adjacent corners of cars coupled at either end of the said crane. By these means the weight of the cars used for hauling the material excavated may be utilized as a ballast or counterweight to prevent the overturning of the crane. A great advantage of thus steadying the crane by the weight of an adjacent tender or car coupled thereto results from the fact that the stability of the crane will be the same whether the crane is moving or stationary upon the tracks. The crane can therefore be used for excavating at one place and filling in at an adjacent place without loading the material into cars, which would be impractical in case the truck of the crane had to be clamped to the rails each time the grapple-bucket was swung.

Referring to the drawings, Figure I represents a side elevation of my crane. Fig. II shows a section on lines II II, Fig. I. Fig. III is a section on lines III III, Fig. I. Fig. IV is an enlarged view of the sheaves. Fig. V is a sectional view on lines V V, Fig. IV. Fig. VI is an enlarged view showing the swivel-joint in the steam-pipe connecting the boiler and motive engine. Fig. VII is an enlarged view of a portion of the rod for operating the reversing mechanism of the motive engine.

Again referring to the drawings, *a* represents the truck of the crane, which is mounted in the usual way upon suitable sets of wheels *a'*. At each of the four corners of the truck are secured the arms *b*, *b'*, *b²*, and *b³*. These arms project beyond the respective ends of the truck a sufficient distance to pass under the adjacent ends of the cars coupled at each end of the said truck.

On the truck *a* is mounted a platform *c*, supported on a turn-table *d* in the usual way. On this platform *c* are mounted a steam-boiler *e*, an engine *f*, and the standards *g* and

g^1 , which support a shaft g^2 . On the shaft g^2 are loosely mounted the sheaves h , i , and j . The sheaves h and j are provided with clutch members h' and j' for securing them so as to revolve with the shaft g^2 . The shaft g^2 is operatively connected with the engine f by means of a gear-wheel g^3 , which is rigidly mounted on the shaft g^2 , and a gear l' , which is connected in the usual way with the piston-rod of the engine f . A steam-pipe f' connects the boiler e with the hoisting-engine f . Between the sheaves h and i a bar m is mounted so as to revolve freely on the shaft g^2 . The sheaves h and i are provided with lugs h^2 and i^2 , respectively. When the sheave h is revolved, it will make about one turn and will then pick up the bar m and will carry it around another revolution until the bar engages the lug i^2 on the sheave i and the two sheaves will revolve together. Likewise, when the sheave h is reversed it will revolve once, then pick up the bar m , and then turn once more before engaging the sheave i .

To the floor of the truck a is secured a double-cylinder engine p , which is connected in the usual way with the driving-wheels of the truck. A reversing-valve t is secured to the floor of the truck and is connected with the cylinder of the engine by pipes p' . A steam-pipe e' leads from the boiler e to the upper part of a vertical pipe or cylinder o , which passes through the center of the turn-table. The pipe e' is secured to the cylinder o by means of a swivel-joint o' , which allows the upper portion to turn while the lower portion remains stationary. A steam pipe e^2 connects the lower portion of the cylinder o with a reversing-valve t . A lever r is mounted on the platform c , one end of which is connected to a rod r' , which passes down through the cylinder o and is connected at its lower end to a bell-crank lever s . The openings in the cylinder o are well packed to prevent the escape of steam. The bell-crank lever is in turn connected to a rod s' , which is secured to the operating-arm of the reversing-valve. This allows the engine to be started or reversed from the platform c .

As a means for reversing the driving-engine I have shown a reversing-valve located between the steam-supply and cylinders of the driving-engine; but I do not claim this as part of my invention, as my means for actuating the reversing mechanism can be adapted to operate any style of reversing mechanism, either reversing valves or links.

What I claim is—

1. The combination of a truck, a derrick mounted upon said truck, and means formed integral with and arranged at the respective corners of the said truck adapted to engage the adjacent corners of a car coupled to the said truck.

2. In a locomotive crane or derrick, a truck provided with horizontal arms or projections arranged at each side and extending length-

wise beyond the frame of the said truck and adapted to engage the adjacent corners of a car coupled to the said truck.

3. In a locomotive crane or derrick, a truck having a horizontal arm or projection secured at each of its four corners, said arms being arranged lengthwise of the said truck and extending beyond the ends of said truck, substantially as described, for the purpose set forth.

4. In a locomotive crane or derrick, a truck, a driving-engine mounted upon said truck and operatively connected with the wheels of said truck, a platform mounted upon said truck, and adapted to revolve thereon, a boiler mounted upon said platform, and a steam-pipe connecting the said boiler with the said engine, said steam-pipe being provided with a swivel-joint which allows the upper portion to revolve while the lower portion remains stationary, substantially as described and for the purpose set forth.

5. In a locomotive crane or derrick, the combination of a truck, an engine secured to the bottom of said truck and operatively connected with the wheels thereof, a reversing-valve secured on said truck for controlling the admission of steam to the cylinders of said engine, a turn-table mounted on said truck, a boiler located upon said turn-table, a steam-pipe connecting said boiler with the said reversing-valve, and means substantially as described for operating the said reversing-valve from the said turn-table.

6. In a locomotive crane or derrick, the combination of a truck, a motive engine secured to the bottom of said truck and operatively connected with the wheels thereof, a turn-table mounted upon the said truck, a hoisting-engine located upon the said turn-table, a boiler mounted upon the said turn-table, a steam-pipe connecting said boiler and said hoisting-engine, a steam-pipe connecting said boiler and said motive engine, said last-mentioned steam-pipe having a swivel-joint which allows the upper part to turn while the lower part remains stationary.

7. In a locomotive crane or derrick, the combination with a truck, an engine secured to the bottom of the said truck, and operatively connected with the wheels thereof, a reversing-valve secured to said truck for controlling the operation of the said engine, a platform mounted upon said truck and adapted to revolve thereon, a boiler mounted upon said platform, a vertical cylinder secured in the center of said turn-table, a steam-pipe secured to the top of said cylinder by means of a swivel-joint, a steam-pipe connecting the bottom of said cylinder with said reversing-valve, a rod slidably mounted in said vertical cylinder and having its lower end connected by means of a bell-crank with the reversing-valve, substantially as described, for the purpose set forth.

8. In a locomotive crane or derrick, the combination of a truck, a driving-engine

mounted on said truck and operatively connected with the wheels of said truck, mechanism located on said truck for reversing said engine, a platform mounted on said truck
5 and adapted to revolve thereon, and a lever mounted on said platform and operatively connected with said reversing mechanism on said truck.

9. In a locomotive crane or derrick, the
10 combination of a truck, an engine secured to the bottom of said truck and operatively connected with the wheels thereof, reversing mechanism secured to said truck and adapted to control the operation of said engine, a plat-
15 form mounted on said truck and adapted to revolve thereon, a boiler mounted on said platform, a vertical cylinder secured in the center of rotation of said platform, a steam-pipe secured to the top of said cylinder by
20 means of a swivel-joint, a steam-pipe connecting the bottom of said cylinder with the cylinders of the said engine, a rod slidably mounted in said vertical cylinder and having its lower end operatively connected with the
25 said reversing mechanism, for the purpose set forth.

10. In a locomotive crane or derrick, the combination of a truck, an engine mounted on said truck, a platform mounted on said
30 truck and adapted to revolve thereon, a boiler

mounted on said platform, a flexible steam connection between the said boiler and said engine, reversing mechanism mounted on said truck and operatively connected with said engine, a lever mounted on said platform, a
35 vertical rod mounted at the center of rotation of said platform, said rod having its upper end secured to the said lever, and its lower end operatively connected with the said reversing mechanism. 40

11. In a locomotive crane or derrick, the combination of a truck, an engine mounted on said truck, a turn-table mounted on said truck, a boiler mounted on said turn-table, a
45 flexible steam connection between said boiler and said engine, reversing mechanism mounted on said truck and operatively connected with said engine, and means for operating said reversing mechanism mounted on said
50 turn-table and extending down through the center of rotation of said turn-table and operatively connected with the said reversing mechanism.

Signed by me at Cleveland, Ohio, this 17th day of November, 1900.

FRANK E. HULETT.

Witnesses:

VICTOR C. LYNCH,
DORR E. WARNER.