

(No Model.)

4 Sheets—Sheet 1.

W. RUSSELL.
TRAVELING CRANE.

No. 548,725.

Patented Oct. 29, 1895.

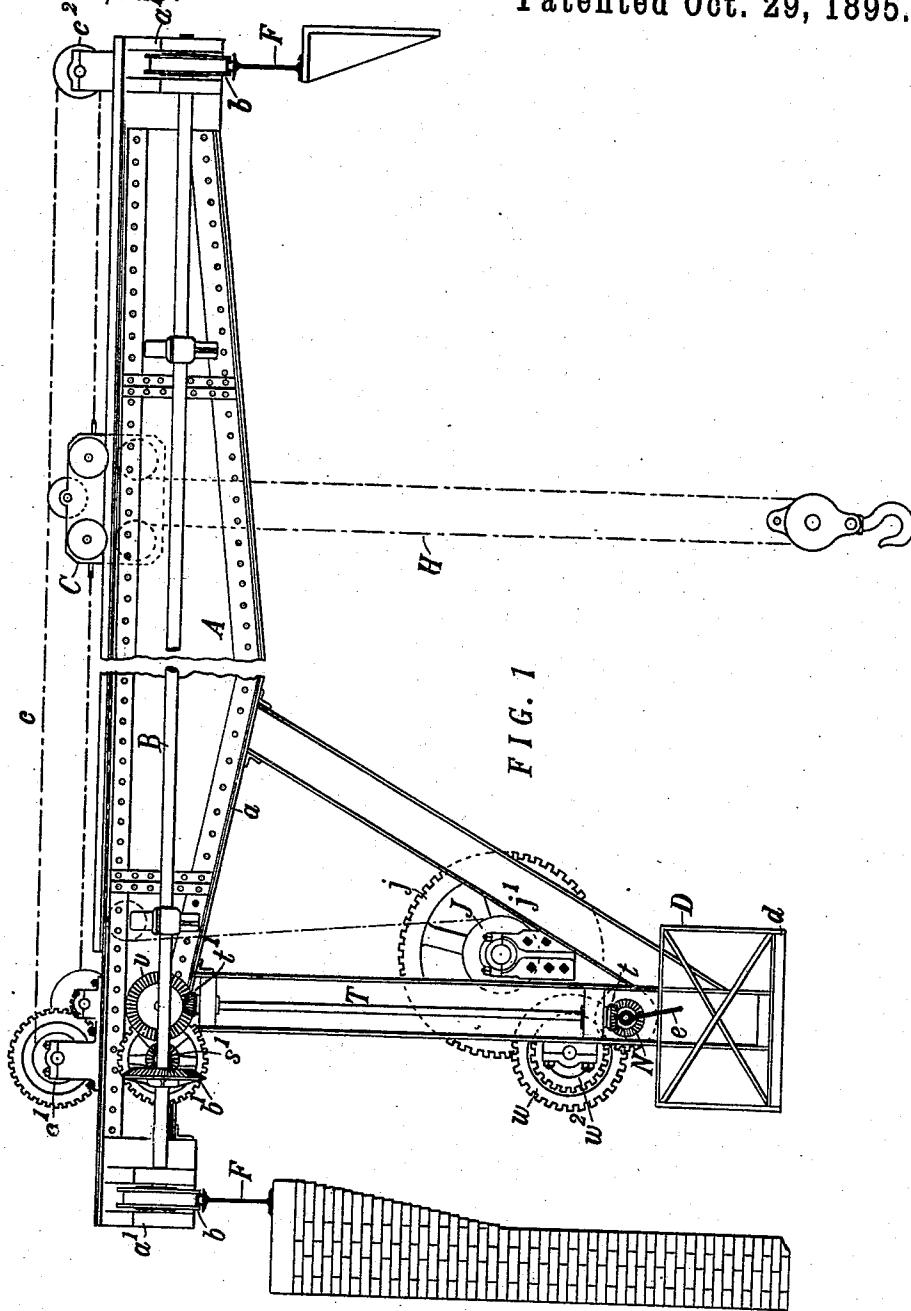


FIG. 1

WITNESSES.

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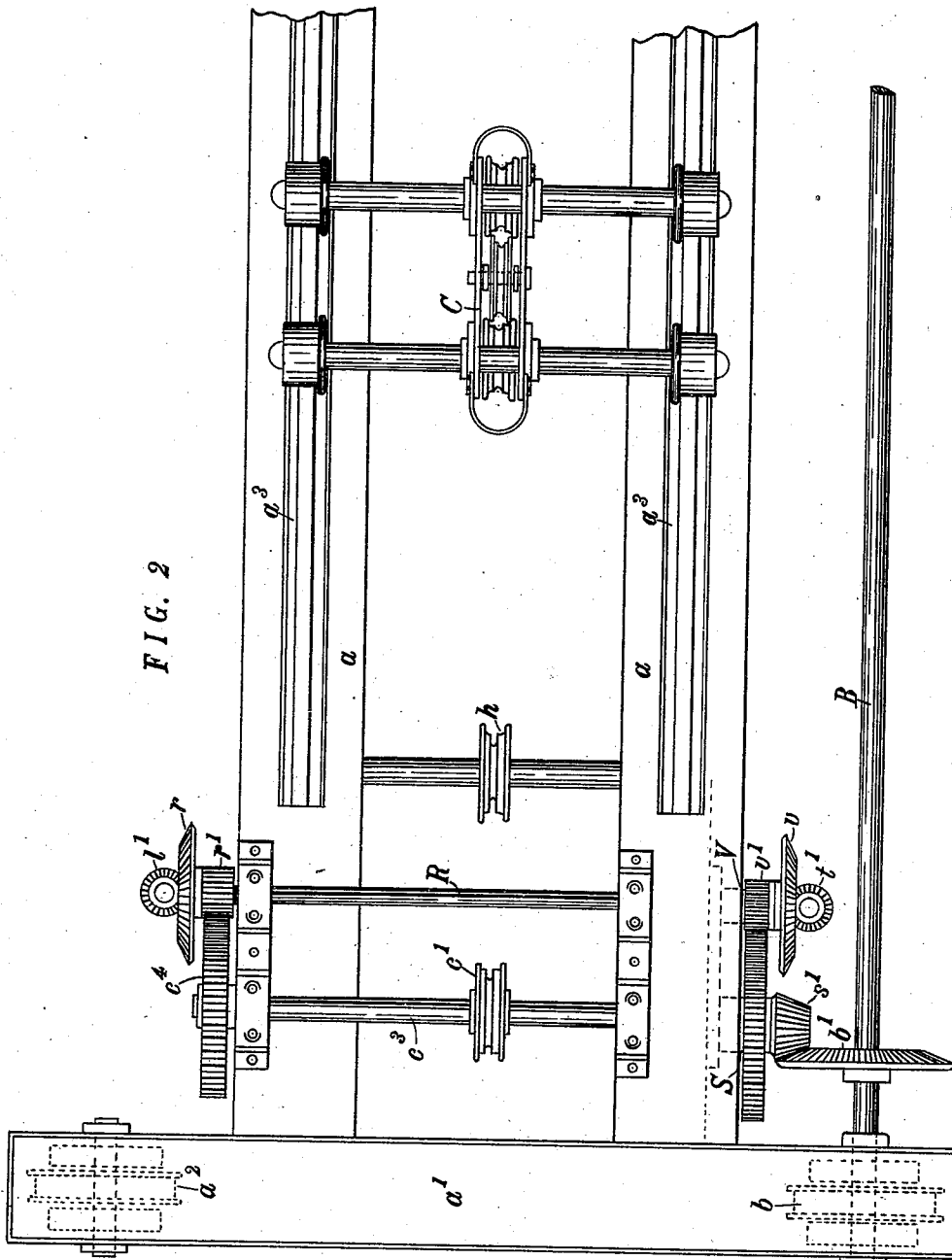
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TRAVELING CRANE.

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Patented Oct. 29, 1895.



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(No Model.)

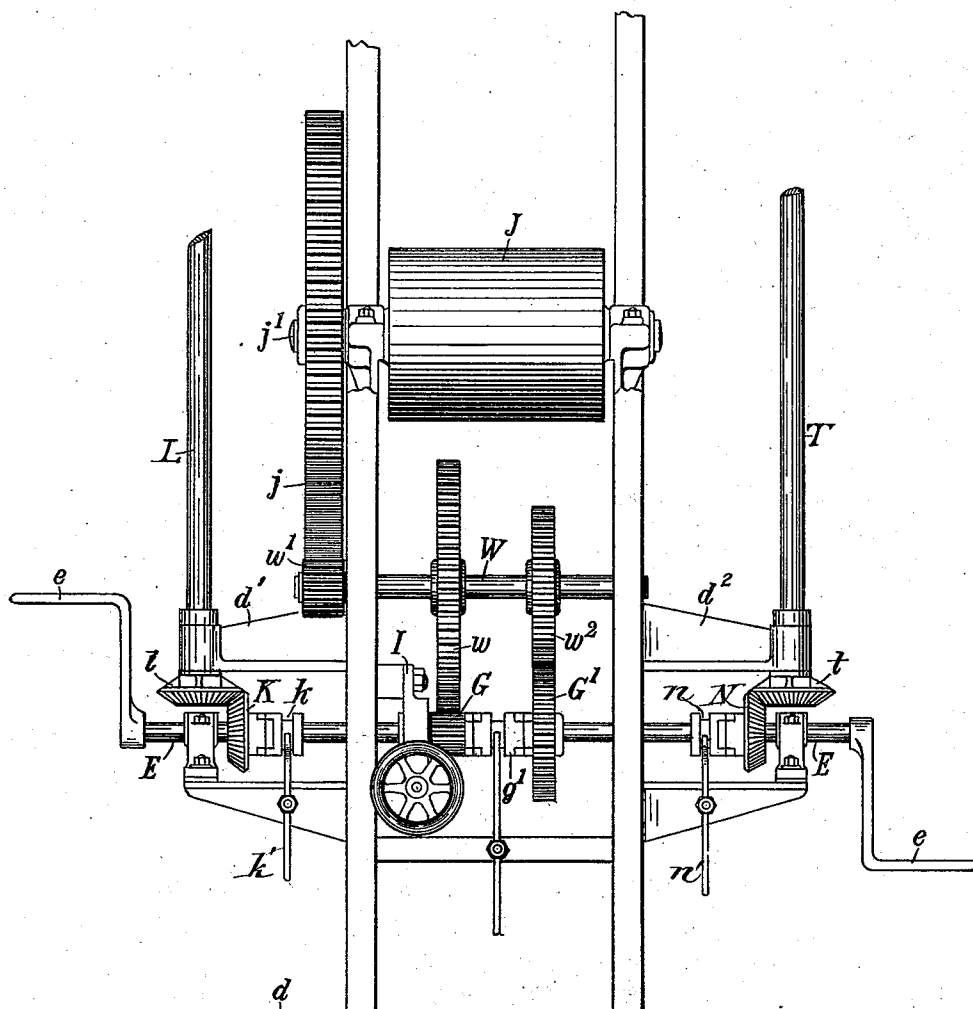
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FIG. 3



WITNESSES.

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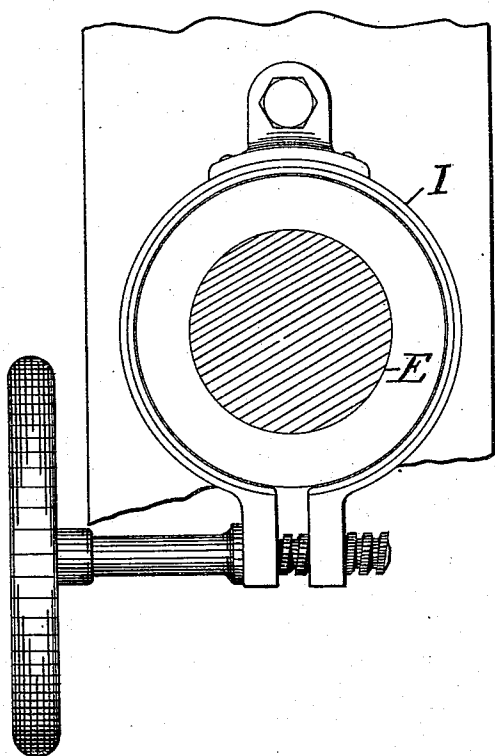


Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM RUSSELL, OF CLEVELAND, OHIO.

TRAVELING CRANE.

SPECIFICATION forming part of Letters Patent No. 548,725, dated October 29, 1895.

Application filed November 15, 1893. Serial No. 491,037. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM RUSSELL, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Traveling 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 appertains to make and use the same.

My invention relates to a mechanism where-with all of the movements incident to travel-ing cranes may be separately produced by a prime mover carried by a cage or frame, which is suspended from one end of the bridge. The construction shown in the drawings is especially contrived so that it may be oper-ated by a man or men on said cage.

The invention consists in the construction and combination of parts hereinafter de-scribed, and pointed out definitely in the claims.

In the drawings, Figure 1 is a side eleva-tion of my improved traveling crane. Fig. 2 is a partial plan view of the same. Fig. 3 is a view of the mechanism supported upon the cage as it appears viewed from the left of Fig. 1, and Fig. 4 is detail of the brake-band from the right in Fig. 3.

Referring to the parts by letters, A repre-sents the bridge, which is of common con-struction, consisting of two beams *a a* and the wheel-trucks *a' a'*, to which the ends of the said beams are connected. Each truck is supported by two or more wheels *a² b*, which rest and run on the fixed tracks *F F*. One wheel *b* of each truck is secured to a shaft *B*, which extends from one truck to the other and is mounted in suitable bearings in said trucks. By the revolution of this shaft in one direction or the other the traction-wheels *b b* are correspondingly revolved and the bridge caused to move on said tracks *F*.

A trolley *C*, of ordinary construction, is mounted on tracks *a³ a³* on the top of the beams *a a*. It is moved by means of a chain *c*, which is secured at its ends to opposite ends of the trolley and passes over the two wheels *c' c²*, mounted on the bridge at oppo-site ends thereof. One of the said wheels *c'* is a chain-wheel, and it is secured to a shaft *c³*, which is mounted on the bridge.

The hoisting-chain *H* is secured at one end to one end of the bridge. It passes over and down between two sheaves carried by the trolley, then over a sheave *h*, mounted on the bridge, and thence to the hoisting-drum *J*, which is mounted on the suspended cage *D*.

The cage *D* is suspended from the bridge, at one end thereof, and has a platform *d*, on which a man may stand to operate the main driving-shaft and the clutch mechanisms. Mounted in suitable bearings on the cage-frame is a main driving-shaft *E*, having a crank or cranks *e e*, by means of which a man stand-ing on the cage-platform may operate it. Loosely mounted on said shaft near its ends, respectively, are the two bevel-gears *K* and *N*. Secured to one side of the cage-frame are two brackets *d'*, in which is mounted a vertical shaft *L*, having secured thereto near its ends, respectively, the bevel-gears *l l'*, the lower one of which meshes with the bevel-gear *K*. The bevel-gear *l'* meshes with a bevel-gear *r*, se-cured to shaft *R*, which is mounted on the bridge. A pinion *r'* on said shaft meshes with a gear *c⁴* on the shaft *c³*. Only the lower bracket *d'* is shown in the drawings, Fig. 3; but the position of the upper bracket *d'* cor-responds to the position of the upper bracket *d²* on the opposite side of the cage, as shown in Fig. 1.

A clutching device is provided for connect-ing the bevel-gear *K* with the shaft *E*. It consists of a sleeve *k* on shaft *E*, secured thereto by a feather, which permits of its lon-gitudinal movement. The hub of the bevel-gear *K* and the sleeve *k* are provided on their proximate ends with jaws, which are adapted to interlock when the sleeve is moved against the hub of the gear, thereby fastening the gear to shaft *E*. The pivoted lever *k'*, which engages with a groove in sleeve *k*, affords means for operating said sleeve. On the op-posite side of the cage-frame are two brackets *d² d²*, in which is mounted the vertical shaft *T*, having secured thereto near its ends, re-spectively, two bevel-gears *t t'*, the lower one of which meshes with the bevel-gear *N*. The bevel-gear *t'* meshes with a bevel-gear *v* on shaft *V*, which is mounted in suitable bear-ings on one of the beams *a*. A pinion *v'*, also secured to said shaft, meshes with a gear *s* on the shaft *S*, which is journaled in suitable

bearings on said beam *a*. On this shaft *S* is a bevel-gear *s'*, which meshes with a bevel-gear *b'* on shaft *B*.

A clutching device *n* is provided for connecting the bevel-gear *N* with the shaft *E*, which clutching device is similar in construction to that previously explained for connecting the bevel-gear *K* to said shaft, and it includes the sliding sleeve *n*, which is operated by a lever *n'*, similar to lever *k'*.

A pinion *G* is loosely mounted on shaft *E*, and a clutching device *g'*, similar in construction and operation to those hereinbefore described, is provided for connecting it with the shaft *E*. Said pinion meshes with a gear *w*, secured to shaft *W*, which is journaled on the cage-frame. A pinion *w'*, secured to said shaft *W*, meshes with a gear *j*, secured to the shaft *j'* of the drum *J*.

A brake-band *I* is secured to the cage-frame. It embraces the hub of the pinion *G*, and it is tightened so as to grasp and rigidly hold said hub by means of a hand-wheel on a screw which draws the separated edges of the brake-band together. When this brake is set, the drum *J* is prevented from revolving, thereby upholding the load.

A gear *G'* is loosely mounted on shaft *E* and a clutching device *g'* is provided for connecting them. A gear *w²* is secured to shaft *W* and meshes with gear *G'*. The gears *G'* and *w²* are relatively of different sizes than the gears *G* and *w*, and either gear *G* or *G'* may be secured to shaft *E*, depending on the speed at which it is desired to run the drum *J*.

Having described my invention, I claim—

1. In a traveling crane, the combination of the bridge, a cage suspended from one end thereof, a shaft extending the entire length of the bridge and journaled in the trucks at its ends, traction wheels secured to said shaft and adapted to ride on fixed rails, with a vertical shaft journaled in brackets on the cage frame, a horizontal main shaft mounted on the cage frame, a bevel gear loosely mounted on the main shaft, a clutching device for connecting said bevel gear to main shaft, a bevel gear on the vertical shaft meshing with the bevel gear last named, a bevel gear on the upper end of said vertical shaft, and gears connecting said last named bevel gear with the shaft carrying the traction wheels, substantially as and for the purpose specified.

2. In a traveling crane, the combination of the bridge, a cage suspended from one end thereof, a hoisting drum journaled on the cage frame, a main shaft likewise journaled on the cage frame, a gear loosely mounted on said main shaft, a clutching device adapted to connect said shaft and gear, a brake secured to the cage frame adapted to embrace the hub of said gear and thereby prevent its revolution, and mechanism connecting said gear with the hoisting drum, substantially as and for the purpose specified.

3. In a traveling crane, the combination of the bridge, a cage suspended from one end thereof, a main shaft mounted on the cage frame, and a hoisting drum also mounted on the cage frame, with a shaft *B* mounted in the bridge trucks having traction wheels on its ends, two gears loosely mounted on the main shaft, clutching devices adapted to connect either of said gears with the main shaft, and mechanisms connecting one of said gears with the shaft *B* and the other with the hoisting drum, and a brake adapted to prevent the movement of the hoisting drum, substantially as and for the purpose specified.

4. In a traveling crane, in combination, a bridge, a cage suspended from one end thereof, a horizontal main shaft *E* mounted on the cage and adapted to be driven by a prime mover on said cage, a bevel gear loosely mounted on said shaft, a pinion loosely mounted on the said shaft, independent clutching devices for connecting the bevel gear and pinion to said shaft, a drum mounted on the cage, gears connecting said drum and pinion, a vertical shaft *T* mounted in brackets which are secured to one side of the cage, a bevel gear on its lower end in mesh with the bevel gear on the main shaft, a shaft *B* mounted on the bridge and extending from one end to the other of said bridge, traction wheels on said shaft adapted to run on fixed tracks, and gears connecting the upper end of the vertical shaft with the shaft *B*, substantially as and for the purpose specified.

5. In a traveling crane, in combination, a bridge, a cage suspended from one end thereof, a horizontal driving shaft *E* journaled on said cage and adapted to be revolved by a prime mover on said cage, two vertical shafts *L* and *T*, journaled in brackets on opposite sides of the cage, bevel gears fixed to the lower ends of said vertical shafts respectively, two bevel gears loosely mounted on the main shaft in mesh respectively with the bevel gears on the vertical shafts, independent clutching mechanisms for connecting the main shaft with the bevel gears thereon, a shaft *B* journaled on the bridge and extending from one end thereof to the other, traction wheels secured to the ends of said shaft and adapted to run on fixed tracks, a trolley mounted on the bridge, a chain for moving it, a chain wheel shaft *c³* mounted on the bridge, bevel gears on the upper ends of said vertical shafts, and gears connecting said bevel gears respectively with the shafts *B* and *c³*, substantially as and for the purpose specified.

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

WILLIAM RUSSELL.

Witnesses:

L. C. SHIPHERD,
E. L. THURSTON.