

No. 792,272.

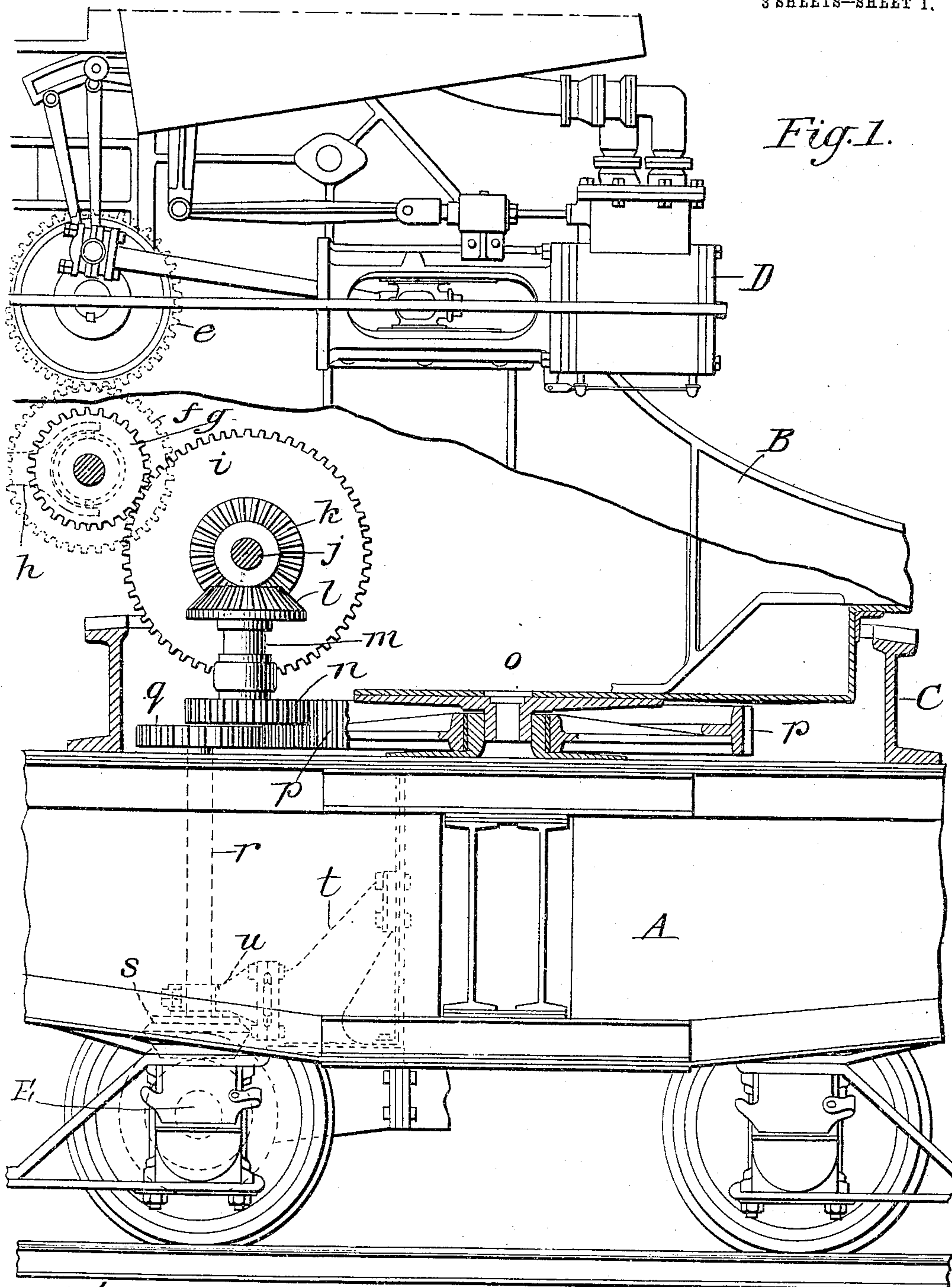
PATENTED JUNE 13, 1905.

S. L. G. KNOX.

PROPELLING MECHANISM FOR RAILWAY CARS.

APPLICATION FILED OCT. 22, 1904.

3 SHEETS—SHEET 1.



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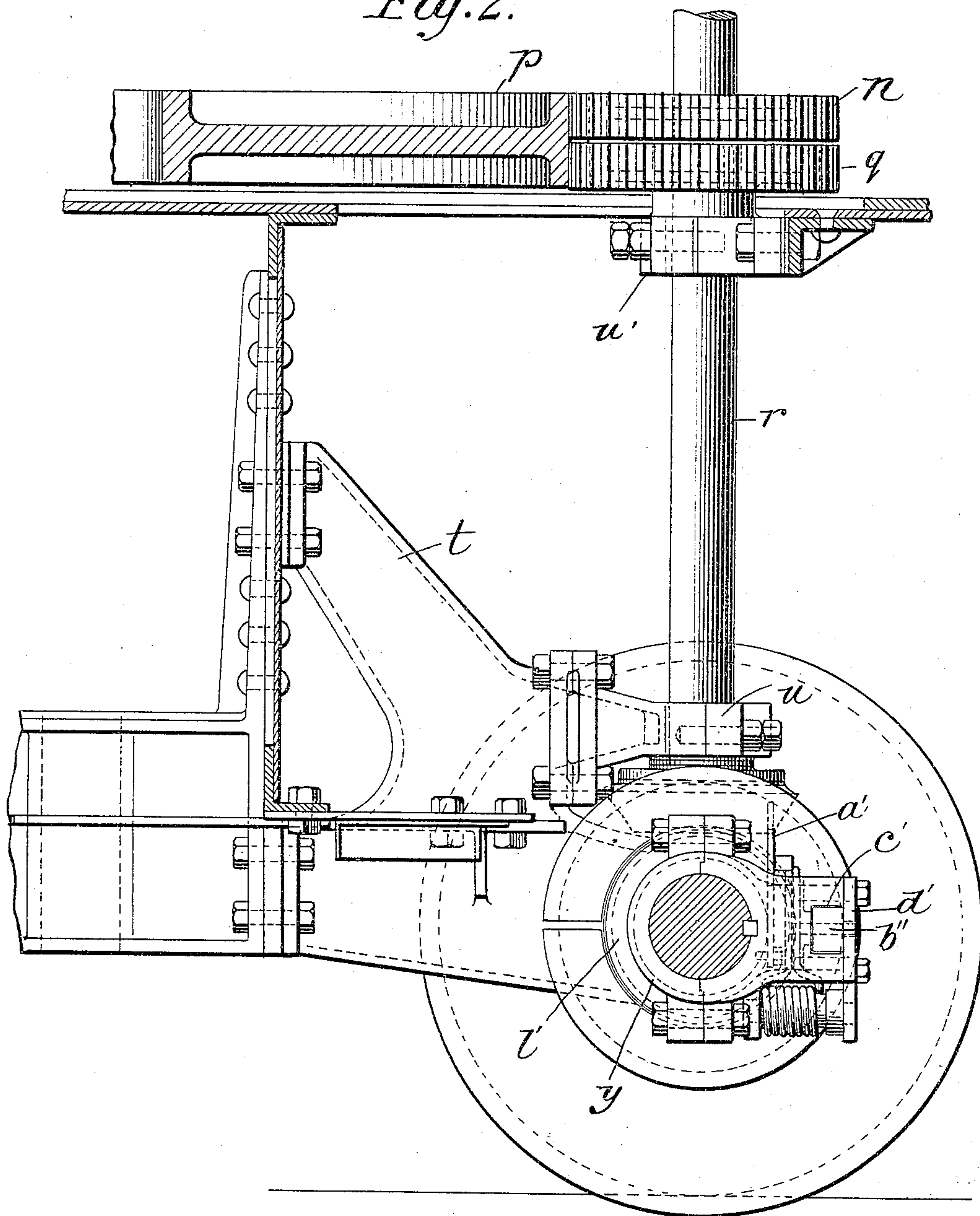
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3 SHEETS—SHEET 2.

Fig. 2.



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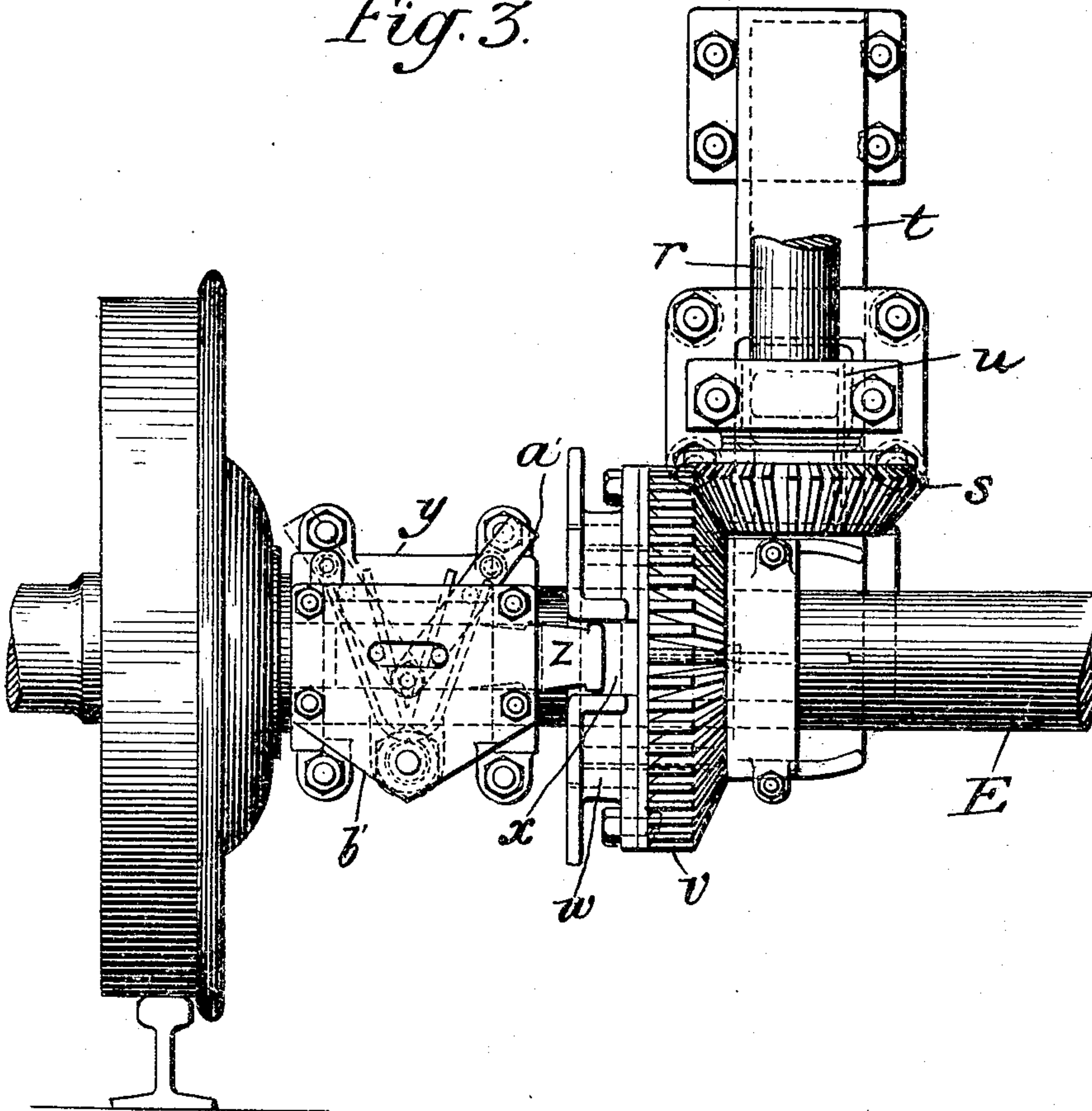
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3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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PROPELLING MECHANISM FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 792,272, dated June 13, 1905.

Application filed October 22, 1904. Serial No. 229,579.

To all whom it may concern:

Be it known that I, SAMUEL LIPPINCOTT GRISWOLD KNOX, a citizen of the United States, residing at Milwaukee, county of Milwaukee, State of Wisconsin, have invented certain new and useful Improvements in Propelling Mechanism for Railway-Cars; 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.

This invention relates to means for propelling a railway-car or the like by means of a prime mover located thereon, so that the car may be moved along the track when necessary by the engine or other motor which is employed to actuate other mechanism on said car.

The invention finds particular application to railway wrecking-crane, pile-drivers, and the like which are provided with engines for operating the auxiliary mechanism of the crane, pile-driver, or like apparatus.

The object of the invention is to provide a propelling mechanism for the car, preferably to be actuated by the prime mover on the car, as aforesaid, so constructed and arranged that the car may be propelled along the track by the operating-motor irrespective of the relation of the latter to the car-body and of the car-body to the track.

To this end the invention comprises a collar rigidly connected to the car-axle, a sleeve loosely surrounding the axle and rotatably supported in a bracket rigidly supported on the car-body and connected by suitable gearing with the prime mover on the car, and clutch mechanism, preferably comprising a sliding bolt for connecting the collar and the sleeve, so that when said clutch is in operative position the car-axle is driven from the prime mover and the axle is permitted a relatively free movement within the surrounding sleeve to permit the wheels to take the curves and lateral inclines in the track without imposing any dangerous strains upon the sleeve and the connecting-gearing.

Referring to the drawings, Figure 1 is a

fragmentary sectional elevation of a railway wrecking-crane embodying the invention. Fig. 2 is an enlarged sectional elevation showing the connections between the actuating-gear and the car-axle. Fig. 3 is a corresponding end elevation of the last-mentioned parts.

In the particular embodiment of the invention illustrated in the drawings the same is shown as applied to a railway wrecking-crane, comprising the usual rotary superstructure, upon which the engine and other operating parts are mounted, so that the crane may be swung to any desired position upon a circular trackway on the top of the car-body. It is to be understood, however, that the invention may be applied with equal advantage to other car structures and is not limited to the particular application herein illustrated.

Referring to the drawings, E indicates one of the axles of the car, upon which is rigidly secured by means of a spline, cotter, or equivalent securing means a collar *y*, which is preferably constructed of sections secured together by tie-bolts, so that it may be readily applied to or removed from the axle. In one side of said collar there is provided a slot or recess *c'*, in which is mounted for sliding movement a bolt *z*, which is held in position in said slot by a face-plate *b'*, bolted to the collar. A short pivoted lever *a'*, mounted in a suitable recess in the collar to the rear of the sliding bolt, is connected to said bolt by means of a pin *b''*, which passes through the bolt and engages a slot in the face-plate *b'*, which serves to limit the throw of the bolt *z* in both directions.

Rigidly secured to the under side of the car-body A is an angular bracket *t*, having at its forward end an enlarged hollow bearing *l'*, upon which is mounted for revoluble movement an annular frame or sleeve *w*, to one face of which is bolted a beveled gear-rim *v*. The enlarged hollow bearing *l'* surrounds the car-axle, so as to leave a considerable space between its interior walls and said axle, so that the axle may have a relatively free movement laterally or in a vertical direction to per-

mit the wheels to take the curves and lateral inclines in the track without imposing undue strain upon the said bearing and its connected gearing. In the face of the sleeve *w*, opposite the gear-rim *v*, there is provided a transverse slot or recess *x*, which is adapted to engage the forward end of the bolt *z* when the latter is projected, so that the collar will be clutched to the rotatory sleeve and the car-axle will be driven thereby. The recess *x* is preferably provided with flanged walls, as shown, and the end of the bolt is provided with rounded edges, so that said bolt may move freely in said slot and operatively connect the sleeve and collar whether the axis of the axle be coincident with that of the sleeve *w* and driving-gear *v* or not. It is to be observed that by connecting the gear-rim *v* by means of any appropriate system of gearing with a prime mover on the car-body the car will be propelled along the track by said prime mover whenever said bolt *z* is moved into engagement with the recess *x* on the collar *w*. The particular character of the connecting-gearing between the prime mover on the car and the gear-rim *v*, as well as the location or operation of the prime mover itself upon the car, are immaterial and may, in fact, be constructed and arranged so as to best subserve the considerations of space, economy of operation, and simplicity of construction, which must be more or less dependent upon the character of the apparatus itself. It is essential only that the gear-rim *v* be connected by suitable driving mechanism to the prime mover in such relation that the latter may drive the said gear-rim and its appurtenant connections whatever be the location or relation of the prime mover on the car.

As illustrated in the accompanying drawings, the prime mover *D* is the operating-engine of a wrecking-train, said engine being mounted upon the rotary superstructure *B* of the train, which superstructure revolves upon the circular trackway *C*, secured upon the top of the car-body, as illustrated in Fig. 1. Fixed in suitable bearings upon the deck or superstructure *B* is a short vertical shaft *m*, carrying upon its top a bevel-gear *l*, which is driven by a train of gears *e f g i k*, which in turn receive rotary motion from the engine-shaft. A suitable clutch *h*, interposed at any desired point in said gear-train, is adapted to throw the same into and out of operation. Upon the lower end of the shaft *m* is mounted a spur-gear *n*, which meshes with the teeth on the outer periphery of a relatively large floating gear *p*, journaled on the hollow center bearing *o* of the deck or superstructure, which bearing of course is secured to the upper side of the car-body. It will be seen that the gears *n* and *p* remain constantly in mesh irrespective of the positions of the superstructure with respect to the car-body and that the said floating gear *p* may be freely driven by

the gear *n* when the train of gearing connected to its shaft *m* is coupled to the engine-shaft.

Journaled in a bearing *u'* on the car-body is a vertical shaft *r*, upon the upper end of which is mounted a spur-gear *q*, meshing with the floating gear *p*. Of course it is to be understood that the gears *n* and *q*, both of which mesh with the teeth on the periphery of the floating gear *p*, are so arranged that the gear *q* may pass freely under the gear *n* as the superstructure is rotated. The lower end of the vertical shaft *r* is journaled in a bearing *u*, which forms a continuation of the rigid bracket *t*, secured to the car-body, as hereinbefore described. Secured to the lower end of the shaft *r* is a beveled gear *s*, meshing with the beveled gear-rim *v* on the sleeve *w*, and as both the gear-rim *v* and the gear *s* are rigidly held in the bearings on the same bracket *t* the said gears *s* and *v* are held properly in mesh at all times.

When the shaft *m* is driven from the engine on the superstructure, rotary motion is thereby imparted to the floating gear *p*, which in turn drives the vertical shaft *r* through the gearing *q*, and rotary motion is imparted to gears *s* and *v*, and if the latter be clutched to the shaft *E* by the engagement of the sliding bolt *z* with the recess in the sleeve *w* the car-axle is rotated and the car propelled along the track. By virtue of the relatively loose connection between the bolt *z* and the open recess *x* in the sleeve *w* driving connection will be maintained between the gear *v* and the driving-axle, even if the axle is not concentric with the gear *v*—as, for instance, when the car is upon a curve or upon a laterally-inclined section of track—and as the gear *v* and its sleeve loosely surround the axle and a considerable space is left between the hollow bearing *l'* and said axle it will be seen that any lateral or vertical movement of the axle will not affect the accurate meshing of the gears *s* and *v* and that under no circumstances can undue or dangerous strains from the axle be imposed upon the gearing.

What I claim as my invention is—

1. In a railway-car, the combination of a collar secured to the car-axle, a sleeve loosely surrounding said axle, a bracket rigidly attached to the car-body and supporting said sleeve for rotatory motion, means for connecting the rotatory sleeve and the collar, and gearing connecting a prime mover on the car with said sleeve to rotate the latter and propel the car.

2. In a railway-car, the combination of a collar secured to the car-axle, a sleeve loosely surrounding said axle, a bracket rigidly attached to the car-body and supporting said sleeve for rotatory motion, a sliding bolt on said collar adapted to engage a recess in said sleeve and connect said sleeve and collar, a gear-rim on said sleeve, and gearing connecting said gear-rim with a prime mover on the car.

3. In a railway-car, the combination of a collar secured to the car-axle, a bracket rigidly attached to the car-body, a sleeve having a gear-rim revolubly supported on said bracket and loosely surrounding the axle to permit the axle to move freely therein, a clutch connecting the car and the sleeve, and gearing connecting the sleeve with a prime mover on the car.

10 4. In a railway-car, the combination of a collar secured to the car-axle, a bracket rigidly attached to the car-body, a sleeve having a gear-rim revolubly supported on said bracket and loosely surrounding the axle to permit the
15 axle to move freely therein, a sliding bolt on said collar and adapted to engage a recess in said sleeve to connect the collar and sleeve, means for shifting said bolt into and out of engagement with said recess, and gearing connecting the sleeve with the prime mover on
20 the car.

5. In a railway-car, the combination of a collar secured to the car-axle, a bracket rigidly attached to the car-body, a sleeve revolubly supported on said bracket and loosely surrounding the axle to permit the axle to move
25 freely therein, a sliding bolt on said collar adapted to engage a recess in said sleeve to connect the collar and sleeve, a rotary superstructure on the car-body having a prime
30 mover thereon, a floating gear between the superstructure and the car-body and gearing connecting said floating gear with the prime mover and with the sleeve surrounding the car-
35 axle.

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

SAMUEL LIPPINCOTT GRISWOLD KNOX.

Witnesses:

HARRY B. HAYDEN,
PAUL C. BODE.