

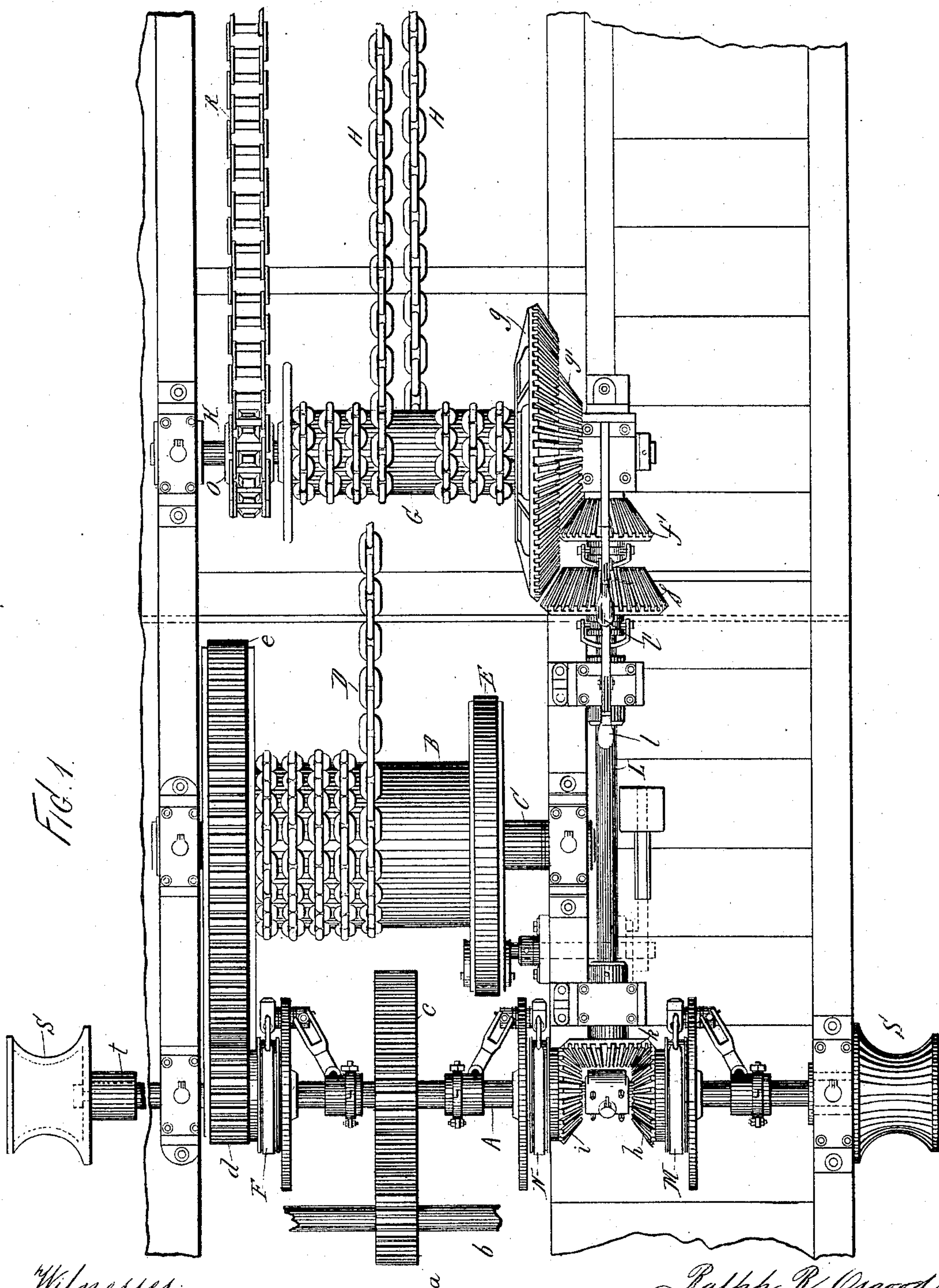
(No Model.)

2 Sheets—Sheet 1.

R. R. OSGOOD.  
EXCAVATOR.

No. 313,613.

Patented Mar. 10, 1885.



Witnesses:  
John Buckler  
L. H. Osgood.

Ralph R. Osgood  
Inventor.  
By Nath Osgood  
Morney.

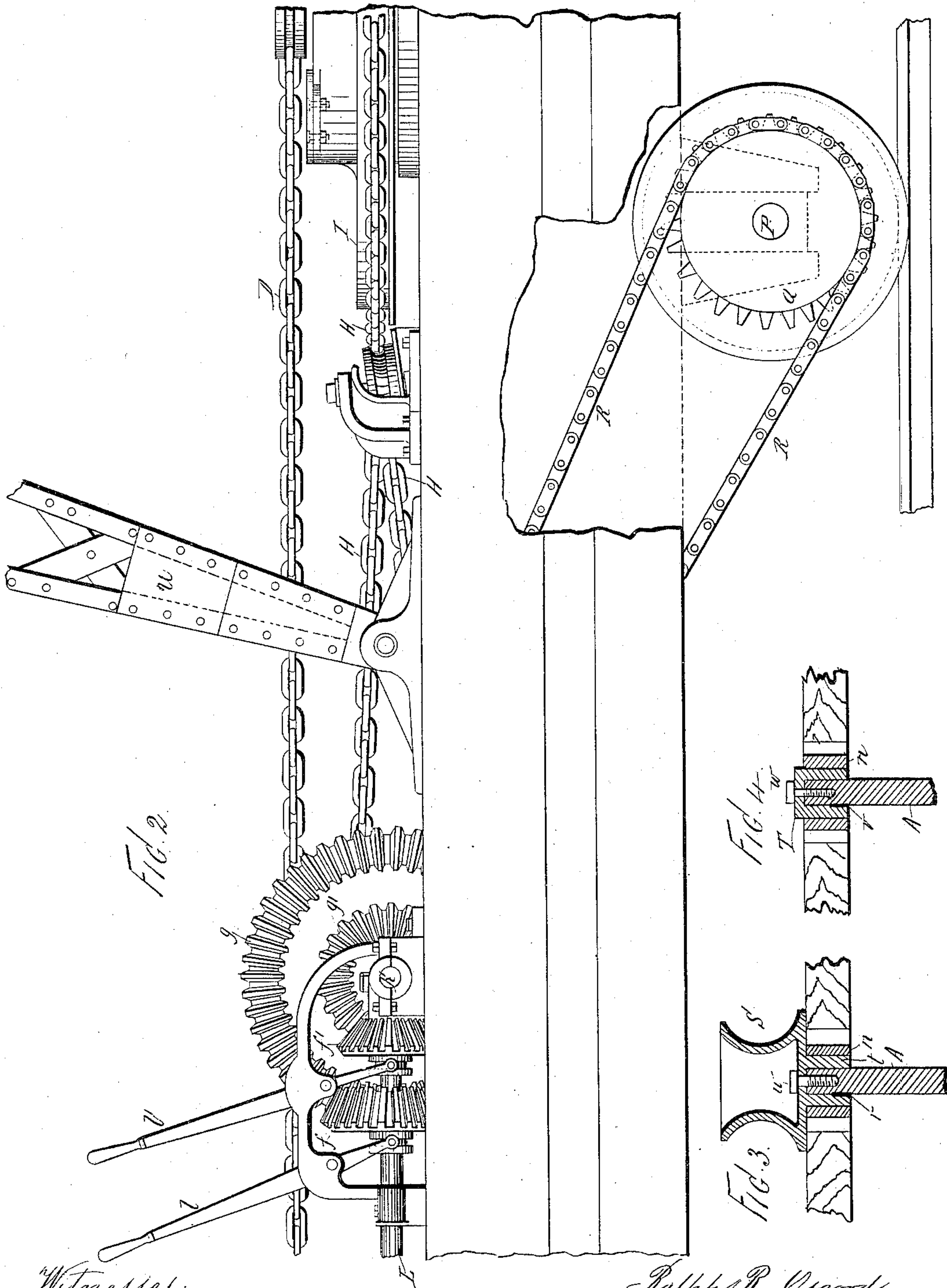
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By North Osgood  
Attorney.



# UNITED STATES PATENT OFFICE.

RALPH R. OSGOOD, OF ALBANY, NEW YORK.

## EXCAVATOR.

SPECIFICATION forming part of Letters Patent No. 313,613, dated March 10, 1885.

Application filed June 4, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, RALPH R. OSGOOD, of Albany, county of Albany, and State of New York, have invented certain new and useful  
5 Improvements in Excavators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 My invention has relation to that class of machines employed for excavating, raising, and lowering material—such as earth—and ordinarily known as “excavators.” The machines of this class are ordinarily mounted  
15 upon car-wheels or car-trucks, and, being quite heavy, are usually arranged to be moved upon ways or tracks.

The objects of my invention are to simplify and improve the construction and arrangement  
20 of the mechanism employed for moving the various chains or cables, (and through them the load;) to adapt the said mechanism for use also in propelling the car or machine either backward or forward upon the road, as when  
25 traveling from one place to another; and to provide a simple and convenient capstan so arranged that it may be easily removed in order that the machine may be perfectly adapted for traveling on any road, as in a train of cars,  
30 or otherwise. To accomplish these objects my improvements involve certain novel and useful peculiarities of construction, relative arrangements or combinations of parts, and principles of operation, all of which will be  
35 herein first fully described, and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of a portion of the improved excavator machinery sufficient for the purposes of the present  
40 description, the boiler, engine, dipper, and parts not directly connected with my improvements being omitted. Fig. 2 is a side elevation of a portion of the machine having a fragment broken out to illustrate the connection  
45 of the driving-chain with one of the axles. Fig. 3 is a sectional view showing the capstan mounted upon the shaft. Fig. 4 is a similar view showing the cap for the shaft which is  
50 mounted in place of the capstan when the latter is removed.

In all these figures like letters of reference,

wherever they occur, indicate corresponding parts.

A is a shaft running through from side to  
55 side of the machine or the platform on which the machinery is mounted, said shaft being driven by the engine through the medium of any suitable connections, as by pinion *a* on shaft *b* meshing into wheel *c*, which is secured  
60 upon shaft A.

B is the main drum or hoisting-chain drum mounted upon shaft C, and preferably so as to turn either thereon or therewith; and D is the main or hoisting chain leading from drum B  
65 to its point of connection with the dipper. The shaft C is turned by a pinion, *d*, on shaft A, meshing into gear-wheel *e*, secured to shaft C.

E represents a band of a friction-clutch, by means of which drum B and shaft C are com-  
70 pelled to revolve together or the drum allowed to turn loosely on its shaft, as occasion may require.

F is the band of another clutch, by which the connection of pinion *d* with shaft A is con-  
75 trolled.

G is the drum for the swinging chains H H, the latter leading to and connected with the turn-table, part of which is shown at I, Fig. 2, by which the dipper or load is swung from one  
80 side to the other or held at any desired position with respect to the axis of the machine. The drum G is made to revolve upon its shaft K by means of a beveled gear, *f*, meshing into a corresponding wheel, *g*, mounted upon the  
85 drum, and when the latter is turned one of the chains H is wound and the other correspondingly unwound in a manner readily understood. The gear *f* is turned by a shaft, L,  
90 taking its motion in either direction from shaft A through the medium of bevel-gears *h i* upon shaft A, which gears mesh into a bevel-wheel, *k*, upon shaft L, and either of which is capable of being clutched with shaft A by friction-  
95 belts, as M and N, thus determining the direction of motion in G. The wheel *f* is thrown in or out of gear with *g* by means of a handle or lever, *l*.

With the appliances thus compactly and conveniently arranged the working-chains are  
100 controlled and the operations of digging or excavating proceeded with. The shaft K may be turned independently of the drum mounted thereon, and it carries a chain-wheel, O, con-



connected with one of the car-axes P or its chain-drum Q through the medium of the driving chain R.

Upon shaft K is a bevel-wheel,  $g'$ , with which another bevel-wheel,  $f'$ , is made to engage, the latter being connected with shaft L, and thrown in or out of gear with  $g'$  by means of a handle or lever,  $l'$ .

When the machine is at work, the axle K remains at rest, and when it is desired to propel the machine  $f$  is thrown out and  $f'$  thrown into gear, and the car-axle thus turned according to the direction of motion in shaft L, which can be regulated by the clutches represented by M and N, as above set forth. This constitutes a very simple and effective appliance for propelling the machine, using for the purpose only the connections with the main driving-shaft and such few and simple adjuncts thereto as above explained. The whole is compact, easily managed and controlled, not liable to get out of order, and is ready for use at an instant's warning, requiring no more preparation than the shifting of a lever.

On each side of the machine are capstans S, employed for aiding in shifting the machine short distances, dragging cars, removing obstructions, and such like work around the machine. When the machine is coupled in a train of cars, or when being moved on an ordinary railway, these capstans are required to be detached, and heretofore this operation has involved much work, time, and delay not only in the removal, but in replacing them, and in some constructions requiring that the driving-shaft be unshipped—that is, when the driving-shaft was made to project beyond the body of the car.

According to my invention I make the driving-shaft A to extend only to the exterior of the car-body on either side. (In Fig. 1 one side of the car body or platform is broken away.) Each capstan is formed with a neck,  $t$ , which fits over the end of the shaft and revolves in a suitable box or bearing,  $u$ , the neck being connected with the shaft, as by any feather or key,  $v$ , and prevented from being accidentally displaced by a bolt,  $w$ , tapped into the end of the shaft. (See Fig. 3.) To remove the capstan it is only necessary to unturn the bolt  $w$  and slide it off the end of the shaft. The shaft then is too small for the box, and in order to properly sustain the shaft when the capstan is removed I provide the cap T of the same size as the neck  $t$ , which cap is slipped on the shaft and held by same bolt  $w$ , as will appear from Fig. 4. Each end of the shaft is similarly supported, and it will be seen from this construction that while the capstans are equally strong and durable, and may be applied for all the ordinary purposes, the shaft may be made shorter, and the machine quickly placed in condition to be transported upon the railroad without disturbing any of the working parts of the machine.

When constructed and arranged for operation substantially in accordance with the foregoing explanations, the improvements will be found to answer the purposes or objects of the invention as previously set forth.

The details of construction may be variously modified, and parts which are not shown herein may be of any approved pattern.

In Fig. 2, U represents a portion of an A-frame, which I prefer for supporting a boom, and through it the load or dipper; but the load may be otherwise sustained, if desired.

Instead of driving by use of chain R, other connections may be made between shaft K and the car-wheel axle, as will be readily understood, the principle being that the driving shall be accomplished by use of the shaft of the drum.

The capstan may be mounted on any shaft or projection other than A.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the character herein set forth, the propelling mechanism actuated by the shaft of the drum, said shaft being arranged to be turned independently of the drum, substantially as and for the purposes set forth.

2. In combination with the shaft carrying the propelling-chain wheel, the drum loosely mounted upon said shaft, and the bevel-gears and bevel-wheels serving to connect said drum and shaft with the driving-shaft, substantially as and for the purposes set forth.

3. In an excavator, the combination, with the swinging chain-drum, of a shaft passing through said drum arranged to be turned independently thereof, and carrying the driving-wheel for the driving mechanism, substantially as and for the purposes set forth.

4. In a machine of the character herein set forth, the combination, with the main or driving shaft, of a removable capstan applied upon the end thereof, and provided with the neck for supporting the shaft within the journal-box, substantially as and for the purposes set forth.

5. In a machine of the character herein set forth, the combination, with the main or driving shaft, of the removable cap arranged to be applied, substantially as and for the purposes set forth.

6. The herein described capstan having the projecting neck, the same being arranged to be mounted upon and removed from its support, substantially in the manner and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

RALPH R. OSGOOD.

Witnesses:

JOHN BUCKLER,  
WORTH OSGOOD.