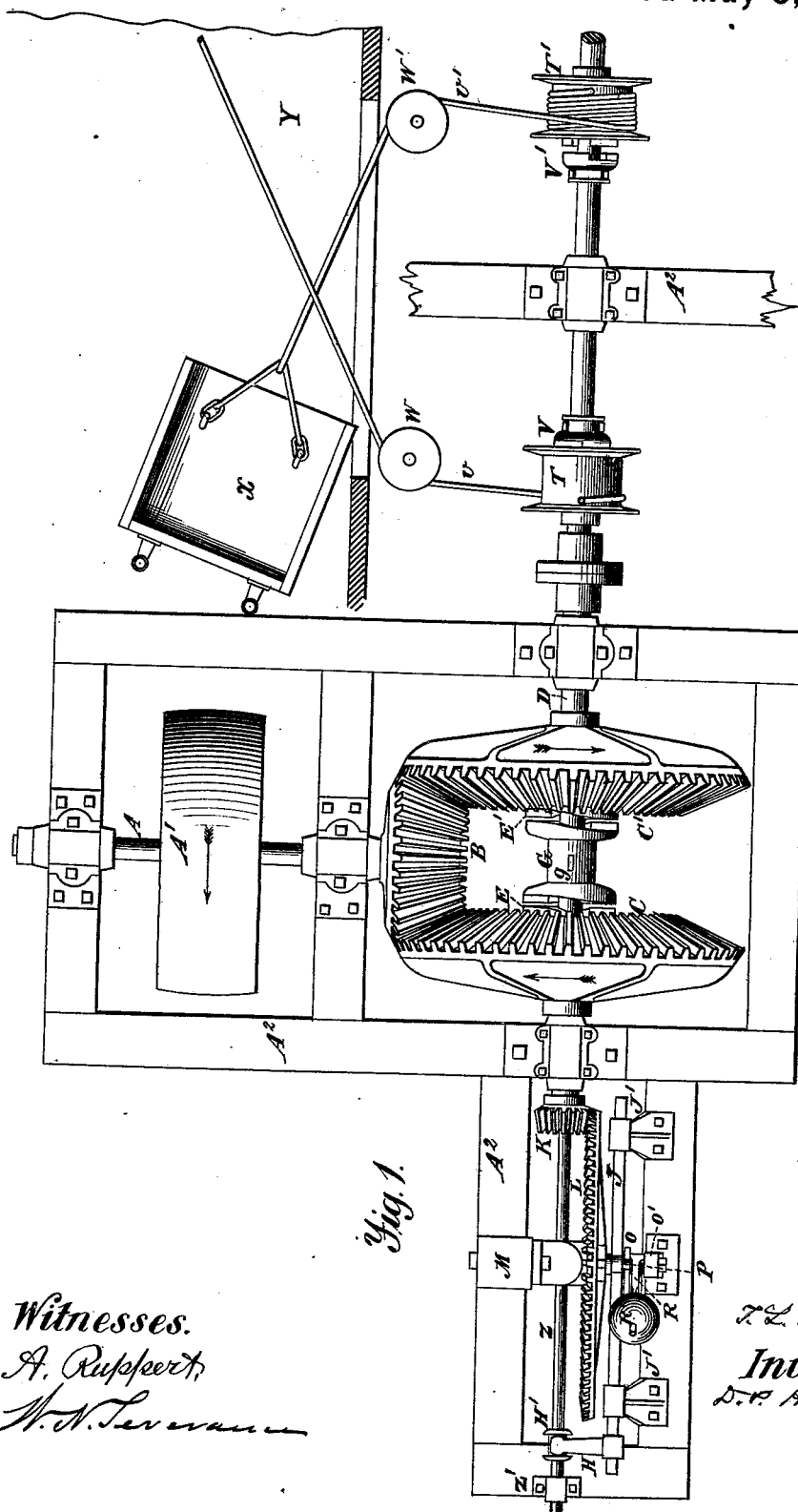


T. L. CLARK.

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No. 215,045. Patented May 6, 1879.

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*Witnesses.*

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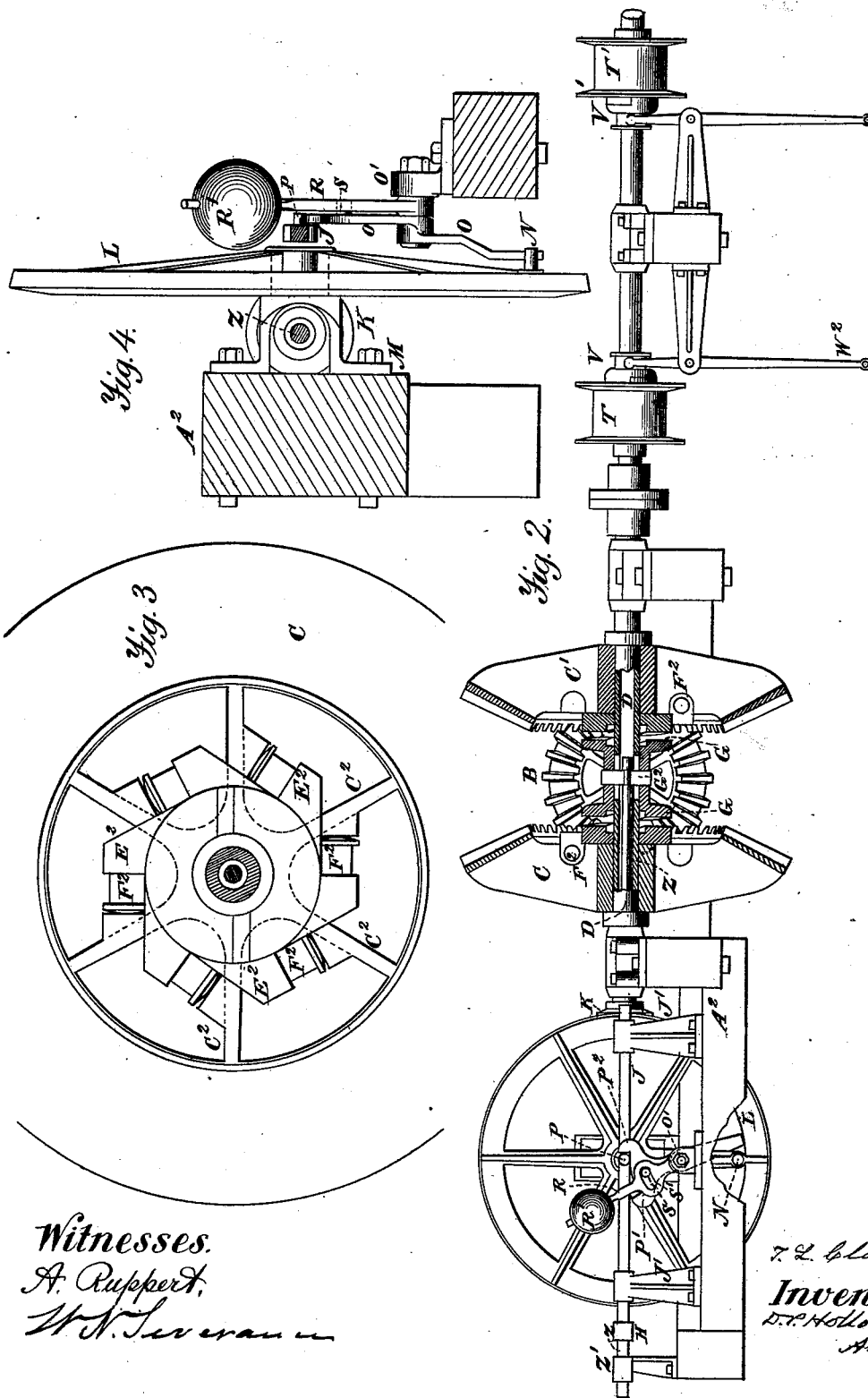
T. L. Clark

*Inventor:*

D.P. Holloway 960  
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T. L. Clark  
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Att'y

# UNITED STATES PATENT OFFICE.

THADDEUS L. CLARK, OF MOUNT VERNON, OHIO.

## IMPROVEMENT IN MACHINERY FOR UNLOADING GRAIN FROM CARS.

Specification forming part of Letters Patent No. **215,045**, dated May 6, 1879; application filed December 21, 1878.

*To all whom it may concern:*

Be it known that I, THADDEUS L. CLARK, of Mount Vernon, in the county of Knox and State of Ohio, have invented certain new and useful Improvements in Machinery for Unloading Grain from Cars; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a plan view of my invention. Fig. 2 is an elevation of my invention. Fig. 3 is a rear elevation of spur-wheel C. Fig. 4 is a vertical section of a part of device.

The same letters are used to refer to the same parts in the drawings.

My invention relates to machinery for unloading grain in bulk from cars; and it consists in a shaft which extends parallel with the line of cars to be unloaded, and is automatically reversed in its revolutions, and to which scoops are attached by means of ropes for drawing the grain from the cars as the shaft revolves in one direction, and allowing the scoops to be returned as it revolves in the opposite direction.

A is the driving-shaft of the machine, which revolves in one direction only, as indicated by the arrow on the driving-pulley A<sup>1</sup>. There is a suitable frame, A<sup>2</sup>, upon which the machinery is mounted.

The bevel-pinion B is rigidly attached to the shaft A, and meshes with and continuously drives in opposite directions the bevel spur-wheels C and C<sup>1</sup>, which are free upon the shaft D, and attached to them are the clutches E and E<sup>1</sup>. Between the lugs E<sup>2</sup> of the clutches E and E<sup>1</sup> and the arms C<sup>2</sup> of the wheels C and C<sup>1</sup>, I interpose springs or elastic cushions F<sup>2</sup>, to avoid the severity of the concussion caused by the rapid reversing of the revolutions of the mechanism.

The clutch G is attached to the shaft D by a feather, and so fitted as to allow the clutch to be moved freely longitudinally upon the shaft to engage with either of the clutch devices E E<sup>1</sup>. Keyed to shaft D is the bevel-pinion K, which

drives the bevel-wheel L. This wheel is six and one-half times the size of the pinion.

The stud M is attached to the frame, and supports the wheel L, and is perforated to admit the revolving reversing-rod z. This wheel has a pin, N, projecting from the web near its periphery. O is a lever pivoted on the stud O', the lower end of which engages with the pin N. The upper end of this lever is formed with two lugs, P<sup>1</sup> and P<sup>2</sup>, which are located at the extremes of a segment of a circle whose center is the pivot O', and so constructed and arranged that as the lever is swung on its pivot these lugs will alternately engage the pin P, which is located in the reversing-rod J.

Pivoted to the stud O' is the lever R, which has a heavy weight, R', to its free end. There is a pin, S, inserted in the free or cam end of the lever O, which works in the segment-slot S' of the lever R.

J is a reversing-bar, which is located horizontally near the center of the wheel L, and is supported by the standards J'. Upon the outer end of this rod J, in the rear of the wheel L, the stud H is attached, which engages the flanged sleeve H', which is attached to the bar Z. This bar Z and sleeve H' are round, and revolve with the shaft D upon its bearing Z'. This bar Z extends into the hollow of the shaft D, and has a key, G<sup>2</sup>, rigidly inserted in an opening in the rod and extending outward at each end and engaging the double clutch G by entering the holes g.

T and T' are spool-drums, loose on the shaft D. V and V' are clutches attached by feather to the shaft D, which may at will be engaged or disengaged with the clutches of the spool-drums T and T'.

A rope, v, is attached to the spool-drum T, which has but about a one-half turn upon the spool, and passing through a sheave, w, attaches to a scoop in the rear end of the car y. Another rope, v', is coiled six and one-half or seven times around the spool T' and attached thereto, and, passing through the sheave w<sup>1</sup>, is attached to the scoop x, located at the car-door.

The operation of the machine is as follows, the shaft A turning in the direction indicated by the arrow, and the clutch G in connection

with the wheel C'. The wheel L will make nearly one revolution in the direction of the arrow-head, when the pin N will engage the lower end of lever O and drive it with it until the cam end of this lever engages the pin P by its contact with the lug P<sup>2</sup>. This wheel L, continuing to revolve in the same direction as before, the pin N, lever O, lug P<sup>2</sup>, and pin P move the reversing-bar J in the direction to release the double clutch G from the clutch E' of the wheel C'. The pin P is so located on the reversing-bar J that, by the proper construction and arrangement of the pin S and segment-slot S', and lugs P<sup>1</sup> and P<sup>2</sup>, the lever R, carrying the weight R', will have passed the vertical position before or just as the double clutch G is released from the clutch E', when the weight R' will fall through the arc of a circle a distance depending upon its position on the lever R and the length of the segment-slot S', when it will instantly and with great force cause the double clutch G to be engaged with the clutch E of the wheel C, through the medium of the rod J, stud H, revolving rod Z, and key G<sup>2</sup>. The pinion B continuing to revolve in the same direction, the revolutions of the shaft D are reversed by the last-described operation, and after six and one-half revolutions of shaft D the operations of the levers O and R above described are reversed by the contact of the pin N from the opposite direction, which, in turn, again reverses the revolutions of the shaft D.

For the purpose of applying the motion of this reversing-shaft D to the unloading of grain in bulk from cars, I attach a rope, *v*, with six and one-half turns on the spool T' and to a scoop located at the door inside of the car, and another rope, *v*, is attached to the spool T and the other end to a scoop in rear end of the car.

Laborers attend these scoops, setting and holding them in the grain as the rope is being wound up, and returning them as the ropes are being unwound, thus providing an alternate regular mechanical movement for drawing the grain from the cars by the scoops.

This shaft D is to be extended to any required length, and provided with two spools for each car to be unloaded, by which means one reversing device will provide means for unloading in this manner any required number of cars at the same time.

In case the rope on any spool should become detached or slack, the clutch of the spool

may be detached by the use of the lever *w*<sup>2</sup>, by which the spool attached may be stopped to make repairs without delaying the operation of any other scoop, or stopping or delaying the operation of the machine.

I am aware that heretofore scoops for unloading grain in bulk from cars have been attached by ropes to shafts running in one direction, and the spools detached from the clutches by various cast-off devices; also, that pinion, crank, and rack have been employed to produce an alternate movement for the scoops; also, that the required alternate motion has been derived by means of an endless chain or bolt traveling over two driving-drums with a cross-head attached to it by a stud attached to the edge of the belt or chain; but,

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

1. In a machine for unloading grain in bulk from cars, the scoops attached by ropes *v v'* to the spools T T', which are on a shaft which is automatically reversed in its revolution, so that as the rope on one spool is wound up to draw the scoop forward the rope on the other spool is unwound, allowing the scoop to be drawn back and refilled, substantially as set forth.

2. In a machine for unloading grain, the cam-lever O, in combination with the pin N and pin P, the reversing rod J, and the intervening connections with the double clutch G, as and for the purposes substantially as described.

3. The combination of the cam-lever O with the weighted and slotted lever R, the pins P and S, and the lugs P<sup>1</sup> and P<sup>2</sup>, as and for the purposes substantially as described.

4. The combination of the perforated stud M and oscillating wheel L with the pinion K and the reversing-shaft D, as and for the purposes substantially as described.

5. The revolving rod *z*, provided with the flanged sleeve H' and key G<sup>2</sup>, in combination with the hollow shaft D, the holes *g*, and the double clutch G, as and for the purposes substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

THADDEUS L. CLARK.

Witnesses:

T. EUGENE CLARK,  
A. R. MCINTIRE.