

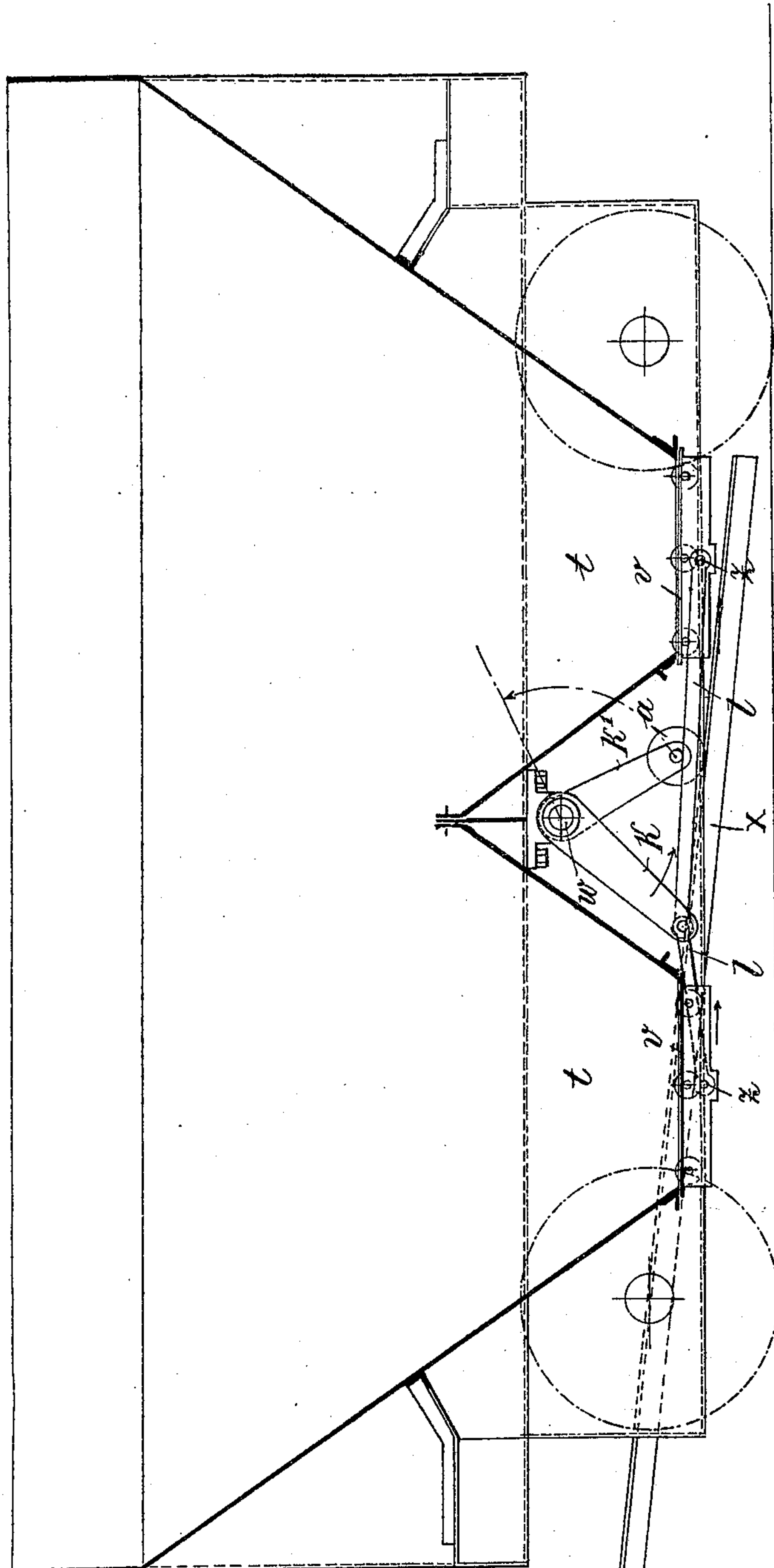
E. ULLMANN.
HOPPER CAR.
APPLICATION FILED JULY 2, 1907.

934,860.

Patented Sept. 21, 1909.

3 SHEETS—SHEET 1.

Fig. 1.



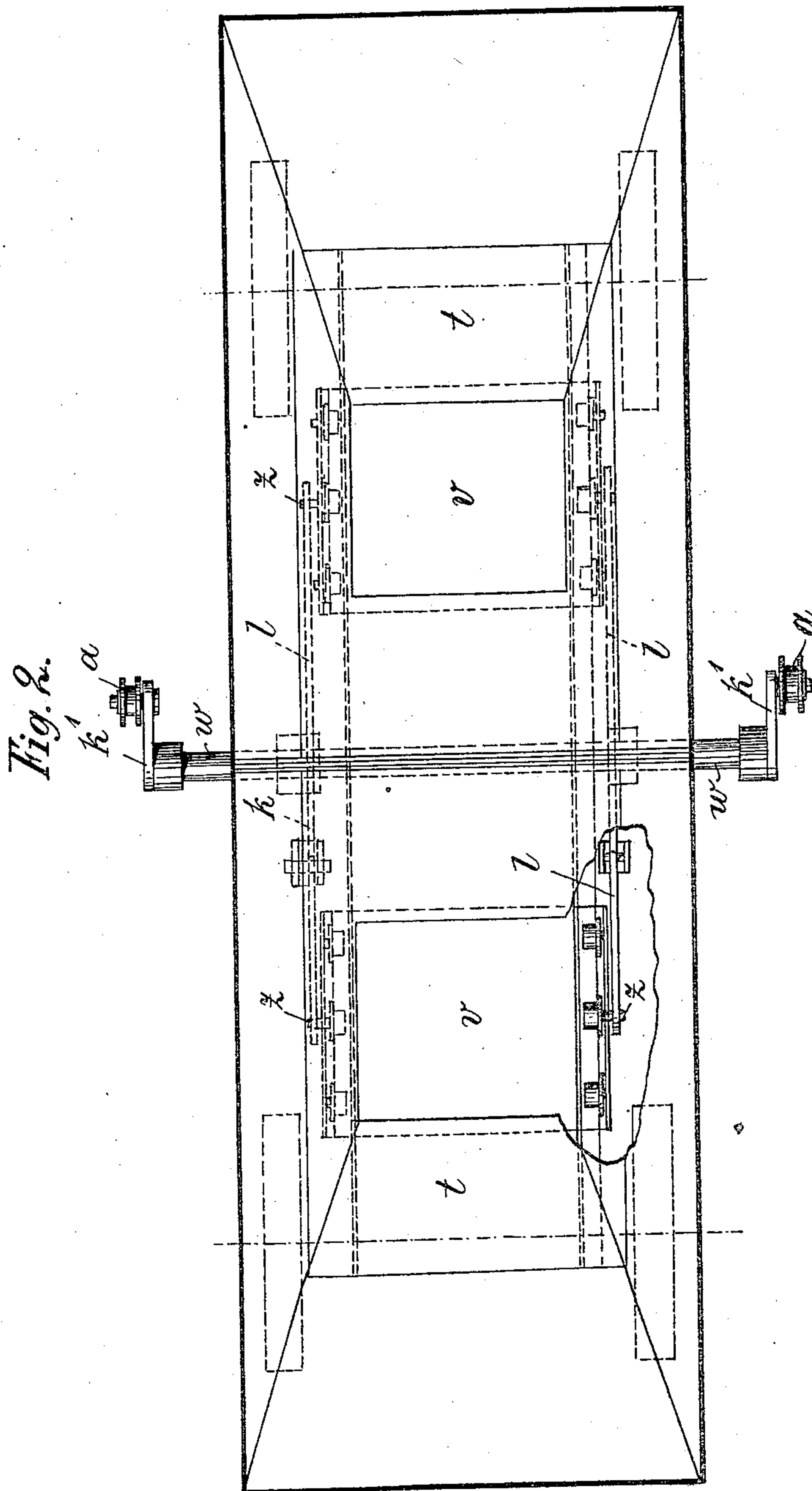
WITNESSES
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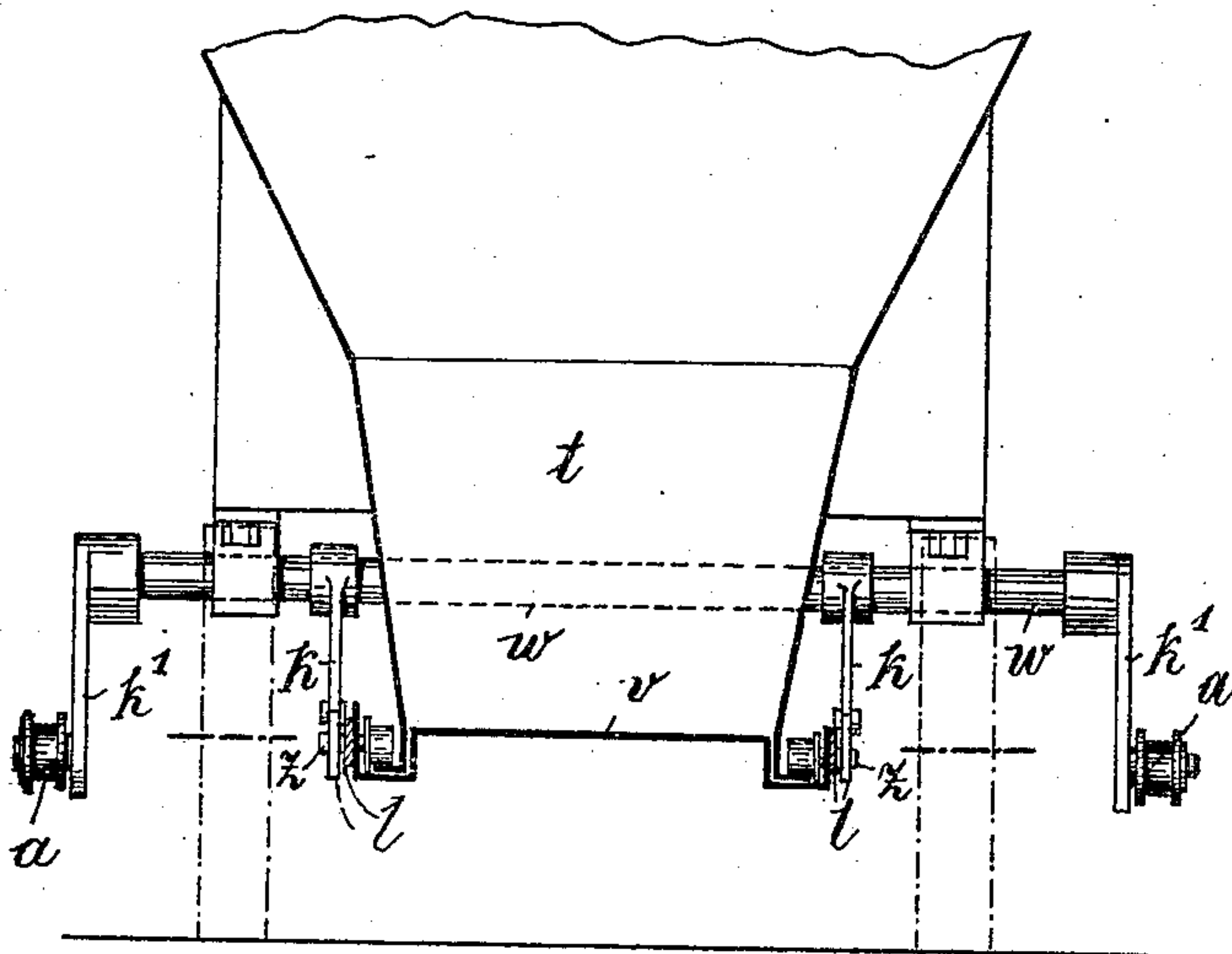
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3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

EMIL ULLMANN, OF BERLIN, GERMANY, ASSIGNOR TO ARTHUR KOPPEL AKTIEN-GESELLSCHAFT, OF BERLIN, GERMANY.

HOPPER-CAR.

934,860.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed July 2, 1907. Serial No. 381,868.

To all whom it may concern:

Be it known that I, EMIL ULLMANN, citizen of Germany, residing at Berlin, Germany, have invented new and useful Improvements in Hopper-Cars, of which the following is a specification.

My invention has reference to railway cars furnished with one or more stationary hoppers, and relates to an improved construction of door or shutter for the latter, which is more simple and certain in its action than prior devices and can be conveniently actuated either by hand or power, etc.

According to my invention, the hopper door, which runs on rollers in well-known manner, constitutes the slide of a crank-gear, the slide being connected by means of a rod and crank in a vertical plane with a horizontal cross-shaft, from which it is operated in order to open and close the hopper.

As compared with the slides of prior construction with horizontal crank mechanism, as employed for hopper cars and silos, my new crank-gear possesses the advantages that connecting-rod and crank can oscillate adjacent to the hopper without obstruction; that the shaft can be safely mounted below the car frame, and that in the case of double-hopper cars the space between the two hoppers can, therefore, be utilized for the purpose. Furthermore, two or more crank-gears can be conveniently mounted on the horizontal shaft, whereby certain parallel motion of the slide is insured. Two or more connecting-rods operating in opposite directions may be jointed to the same crank, for instance, when the two hoppers of a double-hopper car are to be controlled; or only one of the doors may be actually operated by means of the rod of the crank-gear, the two doors being rigidly connected together.

One form of construction of my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section through a double-hopper car. Fig. 2 is a plan of the car, a portion of one of the hoppers being removed to display underlying parts. Fig. 3 is a cross section through the car.

In the double-hopper car shown, each hopper *t* has a sliding door *v*, which to reduce the friction is mounted on rollers running at each side of the hopper outlet.

Each of the two center pins *z* of the slide ends holds a connecting rod *l*, whose other end is jointed to a crank *k*, secured to a transverse shaft *w*, mounted between the two hoppers. The shaft and the two cranks *k* are common to both hoppers, the rods *l* extending in both directions from the crank-pin.

To open or close the doors the shaft *w* must be rotated. This can be done by hand with the aid of levers, with or without intermediate gearing. Or it may be effected automatically by means of rollers on the car, running up suitable inclined rails *x*. In the drawings such rollers *x* are shown, carried by two cranks *k'* secured at the ends of the shaft *w*. Or instead of this arrangement the shaft *w* can be driven by suitable mechanism with the aid of a pressure-agent, which may be that employed for braking the train.

Having thus described my invention, I claim as new:—

1. In a double-hopper car, two hoppers, two slides connected together, one closing the outlet of each hopper, a shaft mounted on the car, a crank on the shaft the end of said crank in its lowest position reaching the horizontal plane of said slides, and a rod connecting the crank with both slides, substantially as and for the purpose described.

2. In a hopper car, a hopper, a slide closing the outlet thereof, a transverse horizontal shaft mounted on the car, a crank on the shaft, a rod connecting the crank with the slide, a second crank on the shaft, and an inclined rail on the track with which said second crank is adapted to engage, whereby the crank-shaft is rotated and the hopper opened and closed automatically, substantially as described.

3. In a hopper car, two slides, a transverse shaft mounted on the car, a crank on the shaft and rods connecting the crank with both slides, substantially as and for the purpose described.

4. In a hopper car, two slides, a transverse shaft mounted on the car, a plurality of cranks on the shaft and rods connecting each crank with both slides, substantially as and for the purpose described.

5. In a hopper car, a hopper, a slide closing the outlet thereof, a transverse horizontal shaft mounted on the car, a crank on the shaft, a rod connecting the crank

with the slide, a second crank on the shaft
and an inclined rail on the track with which
said second crank is adapted to engage,
whereby the crank-shaft is rotated and the
5 hopper opened and closed automatically,
substantially as described.

In testimony whereof I have signed my

name to this specification in the presence of
two subscribing witnesses.

EMIL ULLMANN.

Witnesses:

HENRY HASPER,
HANS HIMANN.