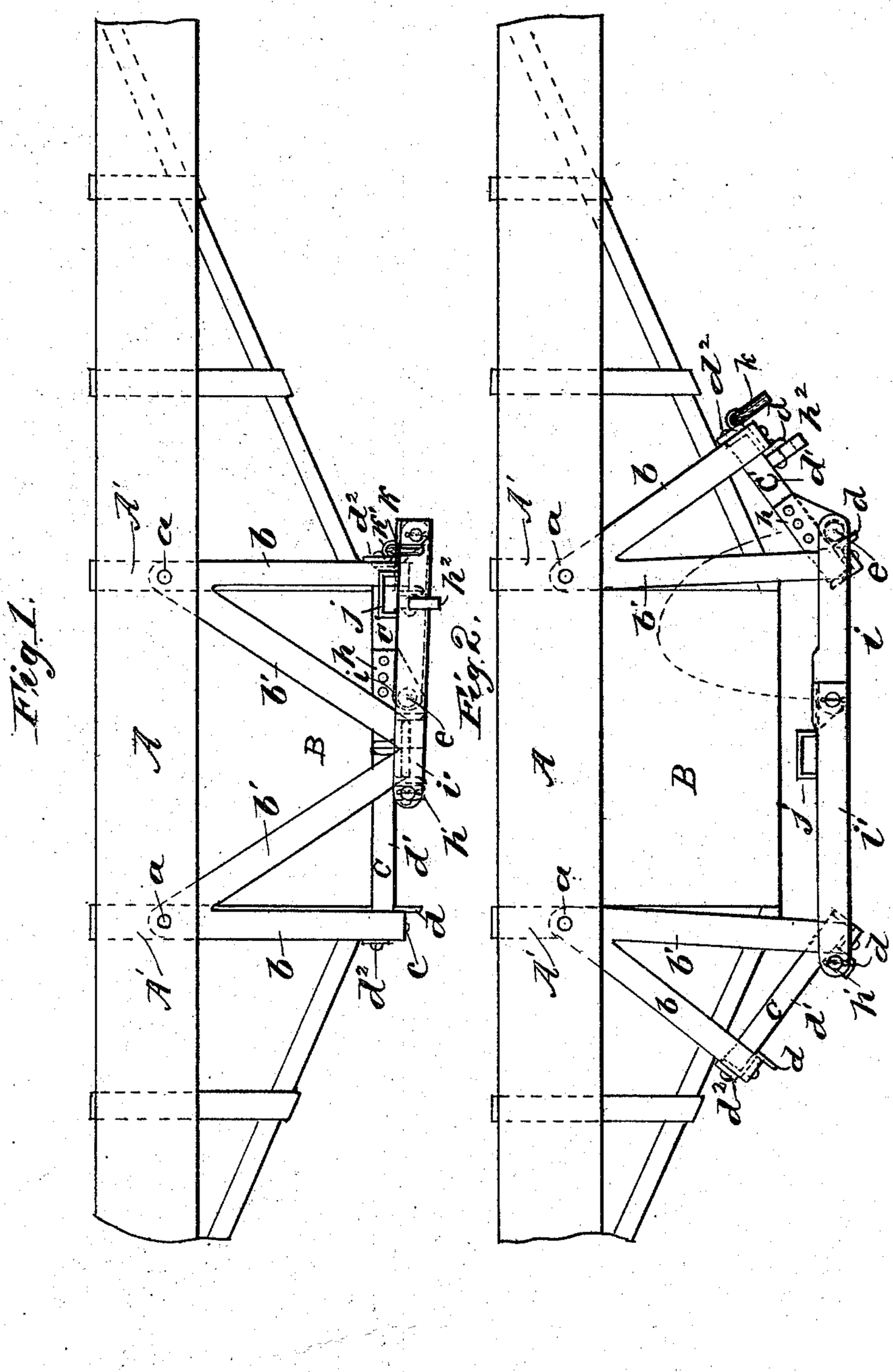
(No Model.) 4 Sheets—Sheet 1.

S. J. JOHNSON.

DUMPING CAR.

No. 571,481. Patented Nov. 17, 1896.



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(No Model.) 4 Sheets—Sheet 2.

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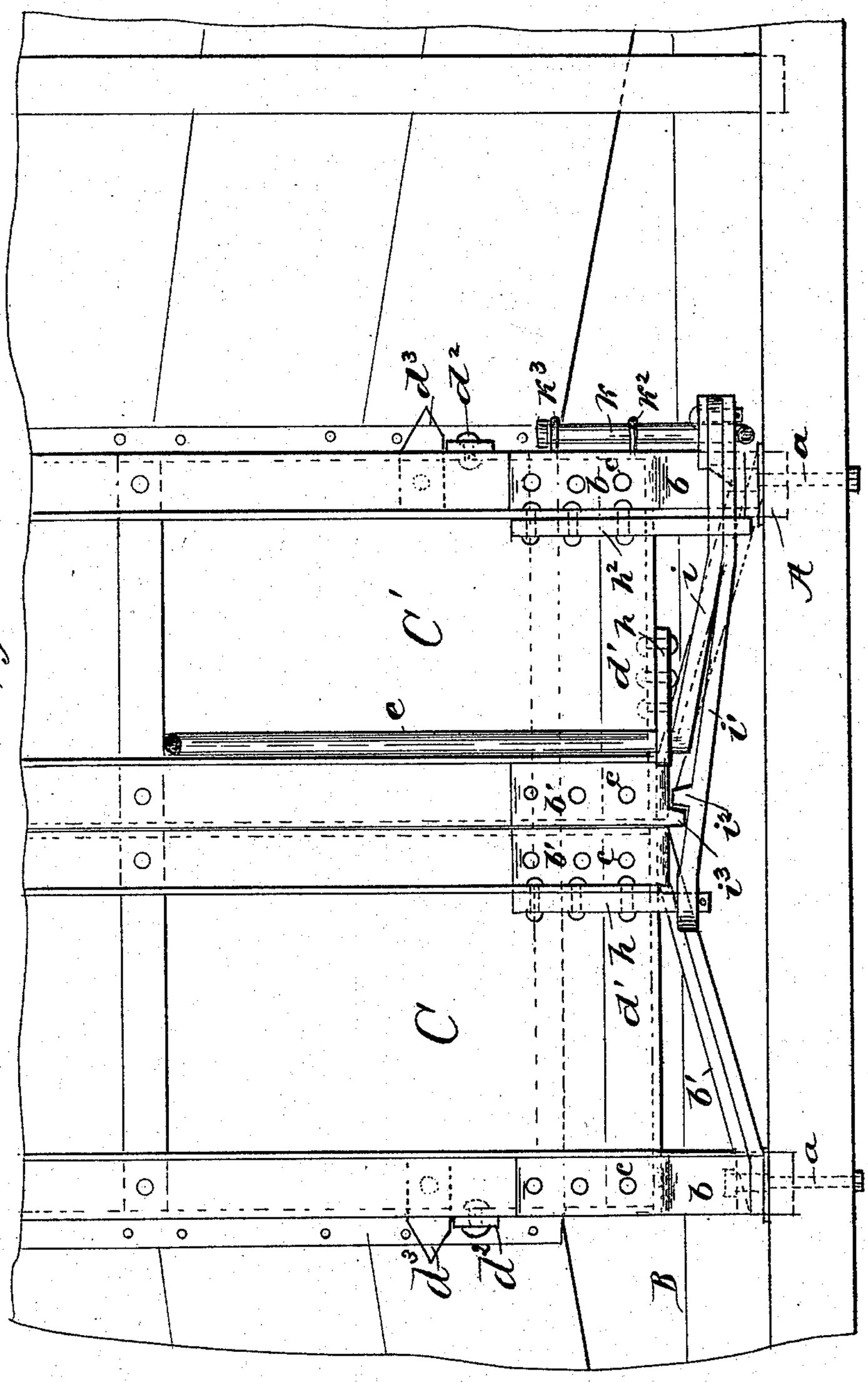
Fig. 3.



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4 Sheets—Sheet 3.

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DUMPING CAR.

No. 571,481. Patented Nov. 17, 1896.

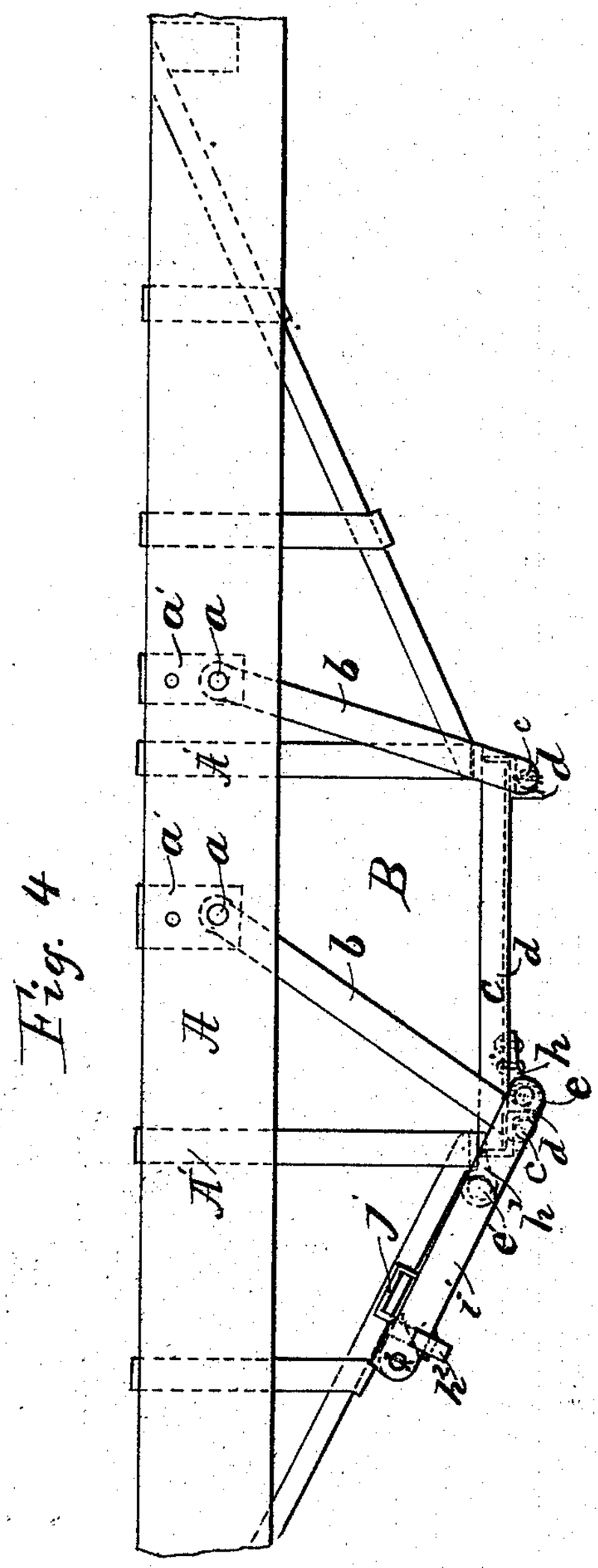

Fig. 4

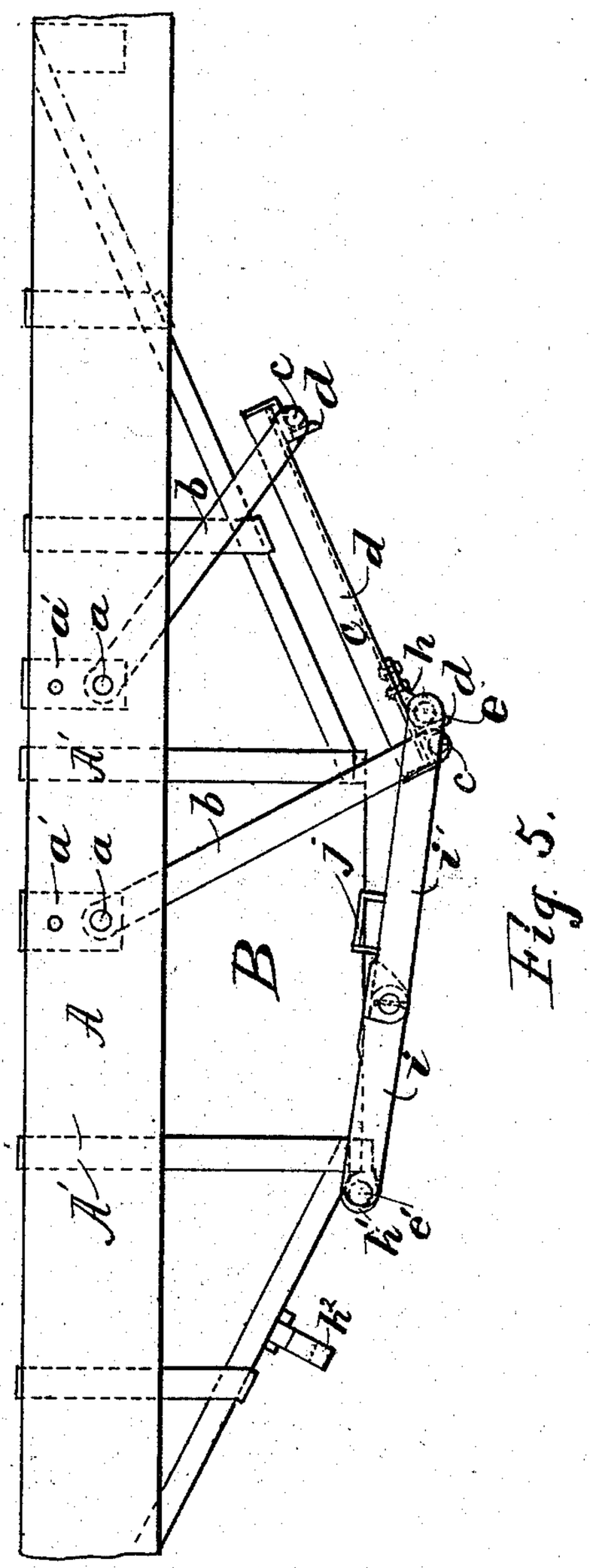

Fig. 5.

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4 Sheets—Sheet 4.

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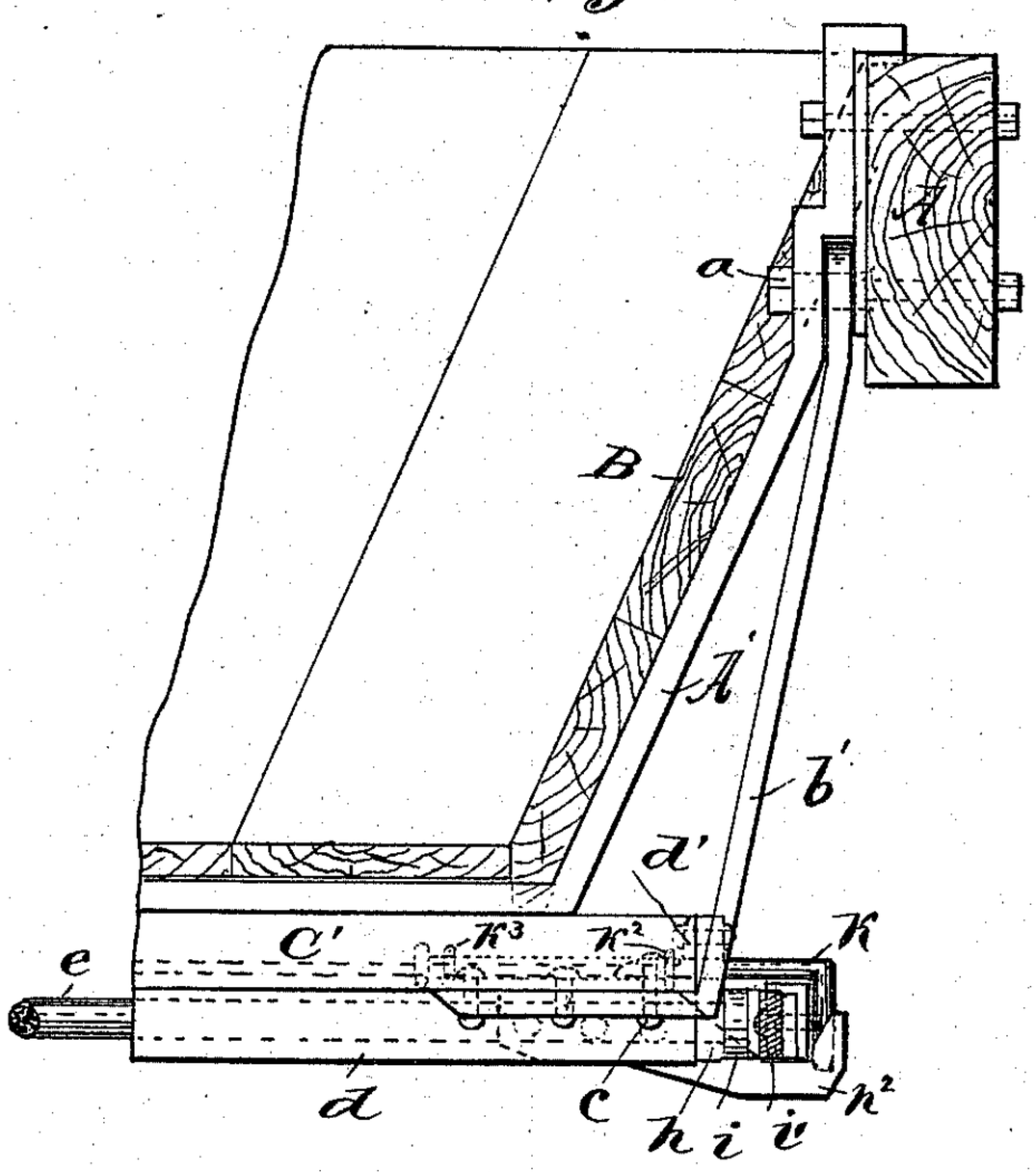
DUMPING CAR.

No. 571,481. Patented Nov. 17, 1896.

Fig 6.



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UNITED STATES PATENT OFFICE.

SINCLAIR J. JOHNSON, OF NEW YORK, N. Y.

DUMPING-CAR.

SPECIFICATION forming part of Letters Patent No. 571,481, dated November 17, 1896.

Application filed February 24, 1896. Serial No. 580,557. (No model.)

To all whom it may concern:

Be it known that I, SINCLAIR J. JOHNSON, a citizen of the United States, and a resident of the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Dumping-Cars, of which the following is such a full, clear, concise, and exact description as will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention is applicable for use upon hopper-bottom gondola cars, ore-cars, and some other styles of dumping-cars.

It has for its object the combination, with the gate or gates which close the exit for the load, of mechanism for opening and closing the same, so as to avoid some of the difficulties heretofore experienced and afford a more convenient means for holding the gate or gates open or closed; and the invention consists of the parts and combination hereinafter more fully described, and pointed out in the claims.

The drawings illustrate my invention as applied to a hopper-bottom gondola car provided with oscillating gates suspended from above, as more fully described and claimed in an application made by me on even date herewith, Serial No. 580,556, and in an application filed by me on July 25, 1896, Serial No. 600,480; but from a description of the same herein the applicability of the invention to other styles of gates will be sufficiently understood to meet all practical requirements regarding the construction and use of my present invention.

In the drawings, Figure 1 is a side view of the hopper of a gondola car, showing two gates, the hangers by which the same are suspended, and an end view of the levers and connections applied to the gates for opening and closing them, the gates being shown as closed. Fig. 2 is a similar view of the same, but showing the gates open; and Fig. 3 is a bottom plan thereof with the gates shown as closed. Fig. 4 is a side view of a portion of the same style of car having its hopper provided with a single gate suspended by two hangers pivotally connected at each end and levers and connections arranged for opening and closing the same, this gate being shown as closed. Fig. 5 is a similar view of the same, but showing the gate open. Fig. 6 is a detail sectional view of a portion of the hopper, gate, and connections as shown by Figs. 1, 2, and 3, looking at the same in the direction of the length of the car.

In the drawings, A represents the side sill of the car, and B the hopper of a hopper-bottom gondola car. In such a car the load passes out at the bottom of the hopper, which is either closed or opened by the gate, as the case may be. All dumping-cars are not, however, provided with a "hopper," technically so called, and hence this word is used in a broad sense for the purpose of designating thereby the part of the car which is provided with an exit for the load, and which exit is opened or closed by gates.

The gates C C′ are shown in the drawings as being suspended from the car, for which purpose they are secured by bolts or pivots *c c* to metallic hangers or straps *b b*, pivoted at their upper ends by bolts *a a*, which pass through the side sill A and through the hopper-iron A′, or through the side sill and plate *a′*. The hangers, as shown in Figs. 1, 2, and 3, each have one arm *b′ b′* extending downward at an angle from the pivot-bolts *a a*, and which arm is rigidly secured to the inner edge of the gate, while in Figs. 4 and 5 the single gate is suspended by two hangers *b b*, pivoted at each end.

The gates shown are preferably made of a frame of **Z**-iron *d* for the outer and inner edges and of angle-iron *d′* for each end, firmly riveted or bolted together, and which frame is floored with suitable plank. At the rear of each end of the gate a flat piece of iron d^2, as shown in Figs. 1 to 3, and of sufficient strength, is riveted on the **Z**-iron *d*, and extends up above the same, so as to catch against the hopper-iron A′ when such gates are closed, and this iron d^2 may be made to work against a guide, (not shown,) in order to prevent lateral or other motion.

The lever mechanism for opening and closing the gates is arranged to be operated by a shaft secured directly to a gate and made to swing with it. The shaft *e* (shown in the figures) is secured to the under side of one of the gates C or C′, just back of the **Z**-iron *d*, by means of a plate *h*, riveted or bolted to the angle-iron *d′* of the frame of the gate. This shaft is secured at both ends in the same

way. Each end of the shaft *e*, or, if desired, a separate piece at each end, form projections or bars *i* along or near the ends of the gate and crosswise thereof, and these bars are pivoted at their outer ends to another similar bar *i'*, a knuckle-joint being preferably formed at such union. The other end of the bar *i'* is also pivotally secured to the under side of the gate C (shown in Figs. 1 to 3) by means of a plate *h'*, riveted or bolted to the back of the Z-iron *d*. The bar *i'* is provided with a lug or catch i^2, which hooks over a projection i^3, made on the hanger-strap *b'* of the gate C', as shown in Fig. 3, so as to act as a secondary fastening for the purpose of holding the two gates together. The bars *i* and *i'*, by which these gates are coupled together, are prevented from swinging more than a short distance below the line of their dead-center, when the gates are closed, by means of a plate h^2, riveted or bolted to the rear Z-iron *d* of the gate C'. In order to secure the bars *i* and *i'* from rising by reason of a knock or otherwise, a hook-rod *k* is fastened to the rear of the Z-iron *d* of the gate C' by means of staples *k'* and k^2, so as to turn up and slide in or out, as desired.

The gates C and C' being closed, as shown in Figs. 1 and 3, are opened by raising the jointed lever rods or bars *i* and *i'*, which while the gates are closed lie folded together at the end of the gate C'. These bars can easily be raised by taking hold of one of them or a handle *j*, made thereon near the jointed end, and as they are lifted and moved the jointed ends will describe an upward and downward eccentric course, as indicated by the dotted line in Fig. 2. This movement, which separates the bars *i* and *i'*, will cause the gates to swing open, their final position being that shown in Fig. 2. When the gates are open, the bars will be separated, except at their joint, forming, as it were, a continuous bar, as shown by Fig. 2. To close the gates requires a reverse movement of the levers *i* and *i'*, causing them to fold together as before, and in folding the gates are drawn along with them to their former position.

In Figs. 4 and 5, which are practically the same as the illustrations of a divisional application hereof filed by me on July 25, 1896, Serial No. 600,479, the exit for the load is provided with only one gate C, which may be suspended by the hangers *b b*, as shown. The shaft *e* is in this application of the mechanism secured to the gate by an iron *h*, or otherwise, and provided with a bar *i*, which has a knuckle-joint at its end, with another bar *i'* projecting from another shaft or pivot *e'*, secured to the under side of the hopper or car by an iron or connection *h'*. I prefer also to provide a rest h^2 in such position on the hopper that the knuckle-joint when the gate is closed will be on or below the line of dead-center of the pivot-points of shafts *e* and *e'*, so as to make a secure fastening. These levers may also be provided with a safety-fastener, as *k*. (Shown in Figs. 1, 2, and 3.) The levers or bars are operated by taking hold of the handle *j* or one of the bars and spreading them, as shown in Fig. 5, where the gate is represented as open.

It is obvious that various applications of the mechanism for opening and closing the gates may be made to different styles of gates for dumping-cars, and that changes may be made in the details and arrangements of parts without departing either from the spirit or substance of my invention.

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

1. In a dumping-car, the combination of one or more gates for closing the exit for the load, a lever-arm pivotally secured to one gate, a second lever-arm jointed to the first and pivotally secured to form a brace at its other end, said lever-arms being adapted to be spread and open the gate or gates and to be folded and close the same.

2. In a dumping-car, the combination of two gates adapted to close the exit for the load, a shaft secured to one of said gates, a lever-arm projecting from said shaft, a second lever-arm jointed to the outer end of the first, and pivotally secured at its other end to the other gate, said lever-arms being adapted to be spread and open said gates, and to be folded and close the same.

3. In a dumping-car, the combination of two gates adapted to close the exit for the load, a shaft secured to one of said gates, a lever-arm at each end of said shaft and projecting therefrom, a second lever-arm at each end of said gates and jointed to those projecting from said shaft and having the other ends thereof pivotally secured to the other gate, said lever-arms being adapted to be spread and open said gates and to be folded and close the same.

4. In a dumping-car, the combination of two gates for closing the exit for the load, hangers by which said gates are suspended and adapted to oscillate, a shaft secured to one of said gates, a lever-arm projecting from said shaft, a second lever-arm jointed to the outer end of the first and pivotally secured at its other end to the other gate, said lever-arms being adapted to be spread and open said gates and to be folded and close the same.

5. In a dumping-car, the combination of one or more gates for closing the exit for the load, a lever-arm pivotally secured to one gate, a second lever-arm jointed to the first and pivotally secured to form a brace at its other end, and a rest for the jointed ends of said lever-arms when folded, said rest being at or below the line of dead-center of the pivot-points of said lever-arms substantially as and for the purposes set forth.

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