

(No Model.)

3 Sheets—Sheet 1.

C. ERDBRINK.

OIL PORT LID FOR RAILWAY CAR AXLE BOXES.

No. 574,026.

Patented Dec. 29, 1896.

Inventor.
Christian Endrunk
C By L. H. Böhm.
his att'y.

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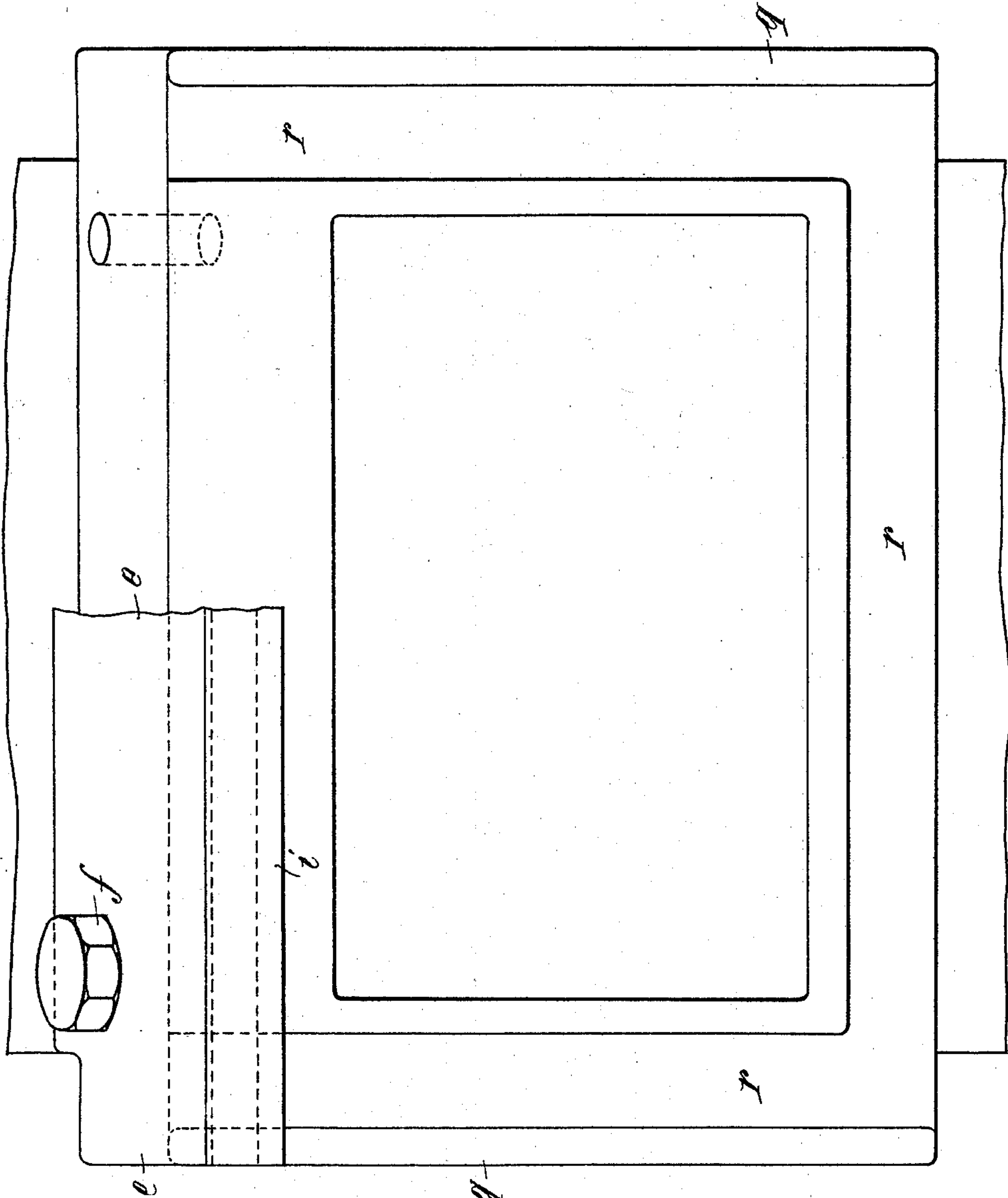


Fig. 5.

Witnesses:
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Carl Mannheim.

Inventor
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by
L. H. Böhm
his Attorney

(No Model.)

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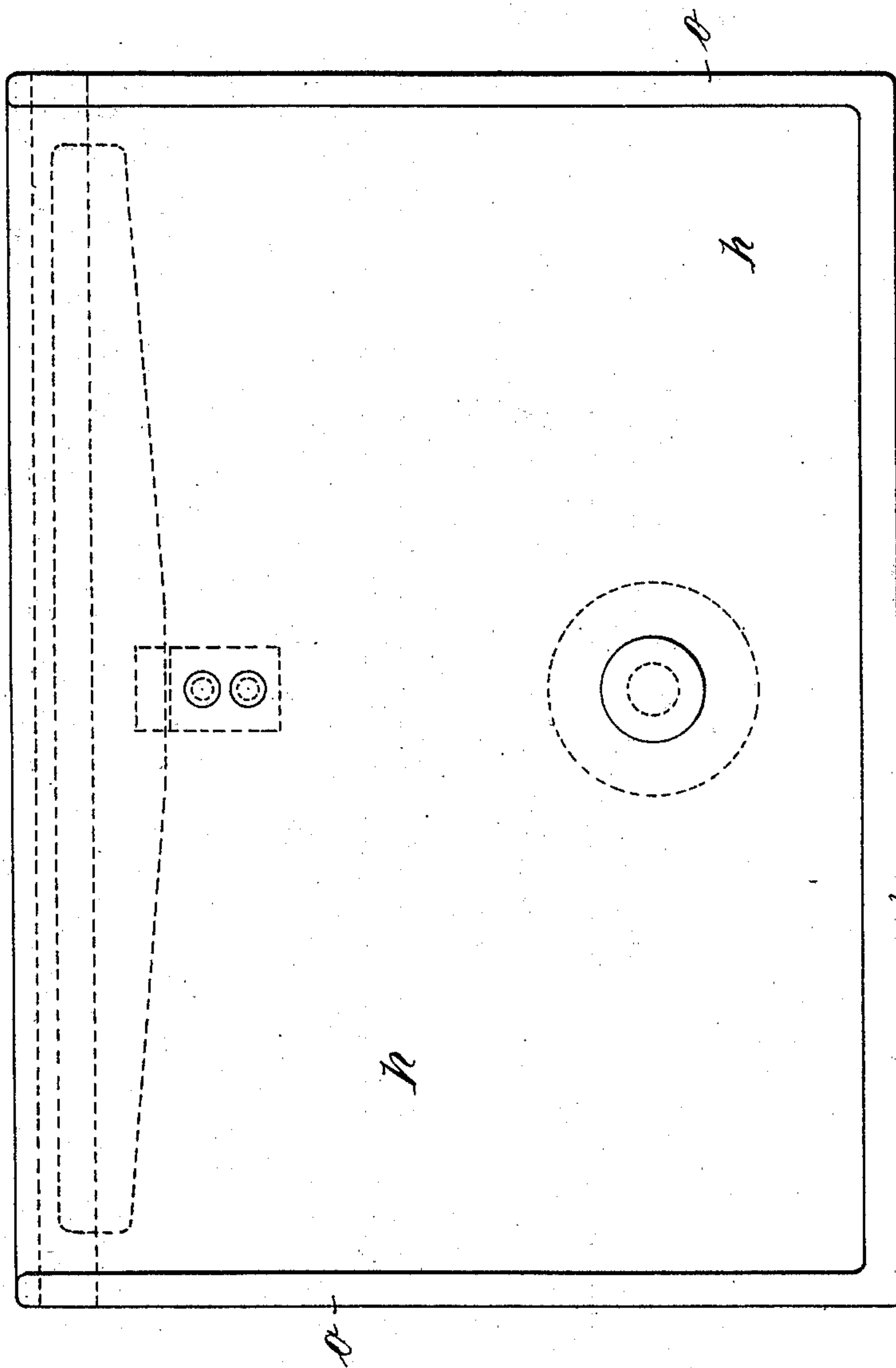
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Fig. 6.



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UNITED STATES PATENT OFFICE.

CHRISTIAN ERDBRINK, OF HANOVER, GERMANY.

OIL-PORT LID FOR RAILWAY-CAR AXLE-BOXES.

SPECIFICATION forming part of Letters Patent No. 574,026, dated December 29, 1896.

Application filed March 23, 1896. Serial No. 584,511. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN ERDBRINK, a subject of the King of Prussia, German Emperor, and a resident of Hanover, Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Oil-Port Lids for Railway-Car Axle-Boxes, of which the following is an exact specification.

The lids used for closing the oil-ports of car-axle boxes have up to now been secured to the latter either by means of hinges that were arranged at the top of the lid or by means of bolts that were arranged one at one side of the lid in a vertical position to the seat thereof. Experience has shown that the closure afforded by a lid hinged in either of said manners is not very tight, but permits still of the entrance of dust into the box. This is in lids having their hinges at the top due to the action of the locking-spring, which, although pressing the free end or side of the lid down upon its seat, tends at its place to raise the lid from its seat. This drawback, it is true, does not exist in a lid that has its hinge or bolt at the side, but there the lid is pressed upon its seat merely by its weight, which generally is not heavy enough to produce a tight closure. Moreover, the dust collecting upon the upper edge of the lid during the movement of the train falls easily into the oil-box on opening the latter.

The described deficiencies may all be overcome by, first, entirely dispensing with hinges and securing instead thereof to the top of the axle-box a horizontal plate that projects over the box, and the projecting portion of which is bent partly downward, and partly downward as well as rearward, so that said latter part is directed to the sloping front of the box, and by, second, providing the top of the lid with a projection that is bent partly forward, and partly forward as well as downward, in such a manner that the hook thus formed engages the hook formed by the projecting portion of the horizontal plate aforementioned.

The third point of my invention consists in furnishing the box at its sloping front with two ledges arranged at the two sides of the lid in such a manner that the lid fits exactly between said ledges. The dust carried by

the air is thus hindered from getting between the lid and its seat and passes away directly over the outer or upper surface of the lid.

In order to make my invention more clear, I refer to the accompanying drawings, in which similar letters denote similar parts throughout the different views, and in which—

Figure 1 is a vertical section through the front portions of the top of an axle-box and through the lid of the same, said lid being raised and a part of the same being broken off. Fig. 2 is a vertical section through the front portion of the same axle-box, (but drawn on a somewhat smaller scale,) the oil-port being closed by the lid. Fig. 3 is a vertical section through a slightly-modified form of construction, the section being taken on line C D of Fig. 4; and Fig. 4 is a section taken on line G H of Fig. 3. Fig. 5 is a front view of the box with the lid removed, and Fig. 6 is an under side perspective of the lid.

Referring to Figs. 1 and 2, *d* designates the axle-box, to the top of which is secured the plate *e* by means of the screws *f*, only one of which is shown in Figs. 1 and 3. The hook-like portion *i* of said plate takes below the correspondingly-shaped portion *g* of the lid *h*, and the latter is thus supported by the said plate or by the portion *i* of the same, respectively. Owing to the obliqueness of said portion and to the action of a flat spring *l*, which is arranged between the said portion and the lid, the latter is constantly held in intimate contact with its seat throughout the whole extent of the same. When the oil-port of the box is opened or the lid is raised, respectively, the portion *g* of the latter remains in every position supported by the portion *i* of the plate *e*, and the upward movement of the lid is finally stopped by the impact of the portion *g* upon the lower surface of the projecting part of the plate *e*. Owing to this limit of said upward movement and to the uninterrupted support afforded by the portion *i*, the lid is perfectly prevented from leaving the box and cannot lose its hold, respectively.

In the form of construction shown in Fig. 3 the same result (the secure hold of the lid in any position) is obtained by means of the studs *n*, which support the upper ledge *m* of

the lid when this latter has been raised up to its highest position.

If the parts *g* and *i* are shaped as shown, the flat spring *l* may well be employed for holding the lid fast in its highest position without making in the least the closing of the box difficult. This will become more clear from the following:

Supposing the line *F*, Fig. 1, designates the direction of the action of the spring *l*, there results a momentum F^a that tends to close the lid. To compensate said momentum F^a , the portion *i* of the plate *e* should exert upon the lid an equally great momentum P^b of an opposite direction. If the force *F* only (of the spring *l*) acts to close the lid, the pressure of the support *P* is but small, because the lever-arm *a* of said force *F* is but short; but if in a distance *c'* a downwardly-directed pressure *K* is exerted by hand upon the lid, then that force *K* requires in consequence of the length of the lever-arm *c* a far greater pressure of support P^3 . Apart from the slight friction on the points or surfaces of contact, which acts opposite to the direction of closing the lid, it will be clear that the latter can be closed when the said force *K* (exerted by hand upon the lid) becomes so great that on revolving the forces *P* and P^3 in the directions parallelly and normally to said points or surfaces of support the resulting components $S' + S_3$ (that act upward in an inclined direction) become greater than the components $S + S_2$ of the forces *F* and *K*, that act in a direction opposite to the said former one. If, however, the spring *l* only acts to close the lid, then the component *S* surpasses the component *S'*, and the lid remains in its opened position.

In order to fully hinder dust and rain from entering the box, I prefer to configurate the lid and its seat in the following manner: As shown in Figs. 2 and 4, the lid is furnished with ledges *o*, situated upon the lower surface of the lid at the two sides and at the lower edge of the same. The seat proper or surface of seat of the axle-box is reduced in breadth, so as to form recesses or grooves or spaces *r*. The lower of said spaces is formed by the remaining portion of the seat and the respective ledge *o*, whereas the lateral grooves or spaces are formed, besides, by lateral ledges *q* of the box, that extend upward so high as to lie flush with the outer surface of the lid. There is thus in either case formed a sort of rabbet which catches up all dust or moisture that otherwise would enter the box and soil the oil contained therein. The upper rim of the lid is also fully prevented against letting

rain or dust pass, because the part *i* of the plate *e* takes over said rim, as described.

Having thus fully described the nature of my invention, what I desire to secure by Letters Patent of the United States is—

1. In an axle-box for railway-cars, the combination with the box, of a plate *e* secured to the top thereof, and having a projecting portion bent downward as well as rearward so as to form a hook *i*; a hingeless lid *b* having its upper rim bent forward as well as downward so as to form a hook *g*, the latter taking into the hook *i* of the plate *e*; and a spring *l* secured to the lid, and adapted to press the latter upon its seat in the whole extent of the same and to hold said lid also in its raised position, for the purpose as described.

2. In an axle-box for railway-cars, the combination with the box, of a plate *e* secured to the top thereof, and having a projecting portion bent downward as well as rearward so as to form a hook *i*, a hingeless lid *b* having its upper rim bent forward as well as downward so as to form a hook *g*, the latter taking into the hook *i* of the plate *e*; projections *n* arranged upon the front of the box, and adapted to form stops for the upper edge *m* of the lid; and a spring *l* secured to the lid, and adapted to press the latter upon its seat in the whole extent of the same, and to hold said lid also in its raised position, for the purpose as described.

3. In an axle-box for railway-cars, the combination with the box, of a plate *e* secured to the top thereof, and having a projecting portion bent downward as well as rearward so as to form a hook, *i*; a hingeless lid *b* having its upper rim bent forward as well as downward so as to form a hook *g*, the latter taking into the hook *i* of the plate *e*; projections *n* arranged upon the front of the box, and adapted to form stops for the upper edge *m* of the lid; ledges *q* arranged at the sides of the box, and extending upward to the outer surface of the lid; ledges *o* arranged at the lower edge and the sides of the lid, and taking into recesses *r* formed within the seat of the lid, and between said ledges *q*; and a spring *l* secured to the lid, and adapted to press the latter upon its seat, in the whole extent of the same, and to hold said lid also in its raised position, for the purpose as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHRISTIAN ERDBRINK.

Witnesses:

P. KOTTHAUS,
STRÜVER.