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A. M. SCHERL NÉE SENDLER, WIDOW, HEIRESS OF ONE-FOURTH AND V. SCHERL, SON, HEIR OF THREE-FOURTHS.

TRANSFORMABLE VEHICLE.

APPLICATION FILED AUG. 30, 1921.

1,419,769.

Patented June 13, 1922.

4 SHEETS—SHEET 1.

Fig. 1

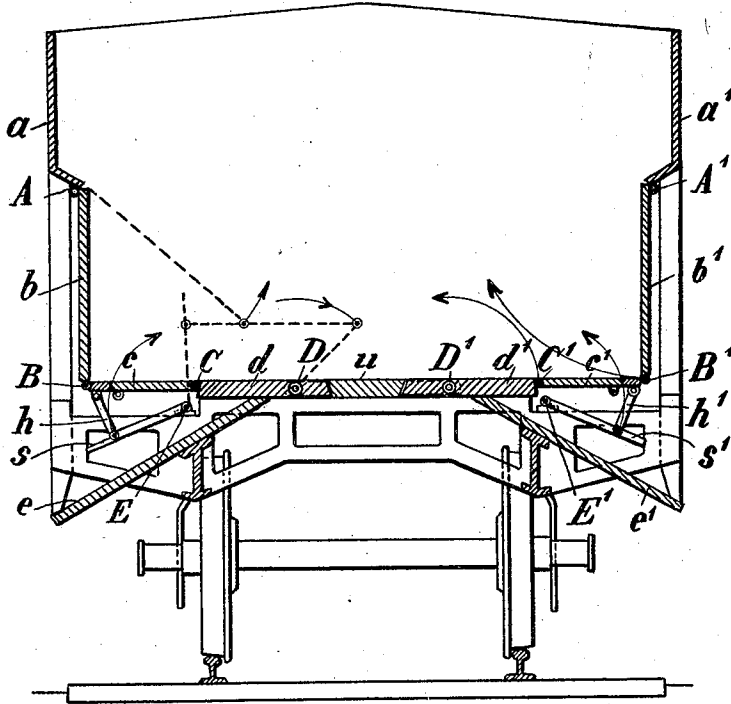
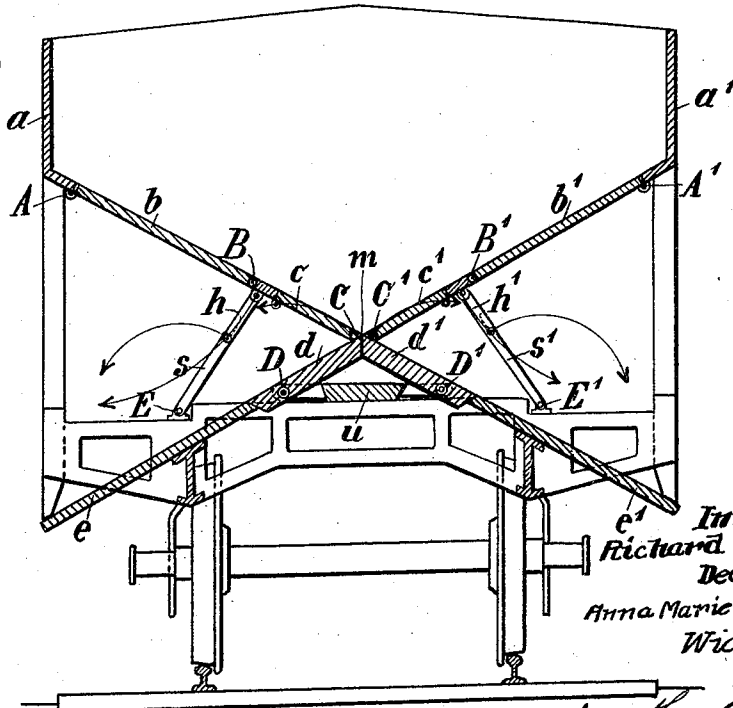


Fig. 2



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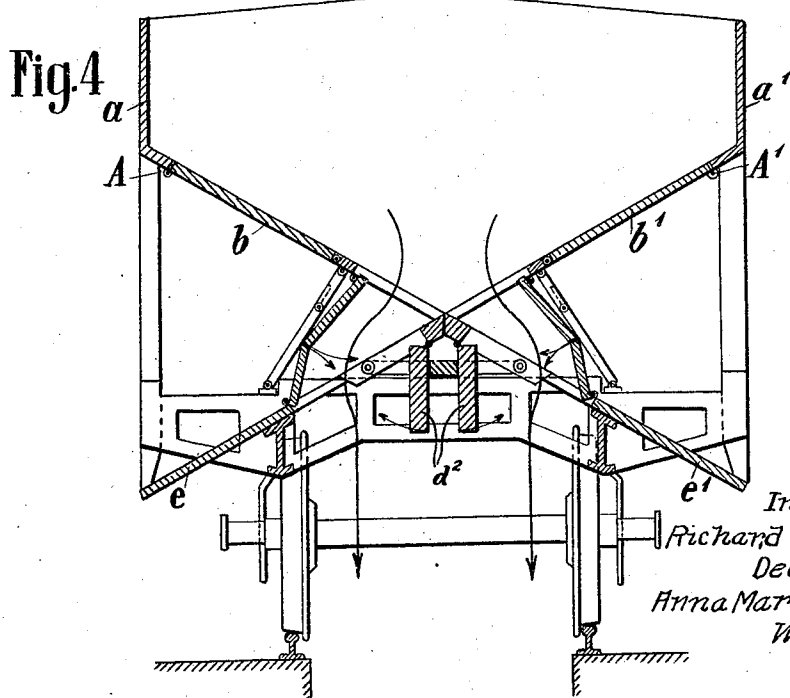
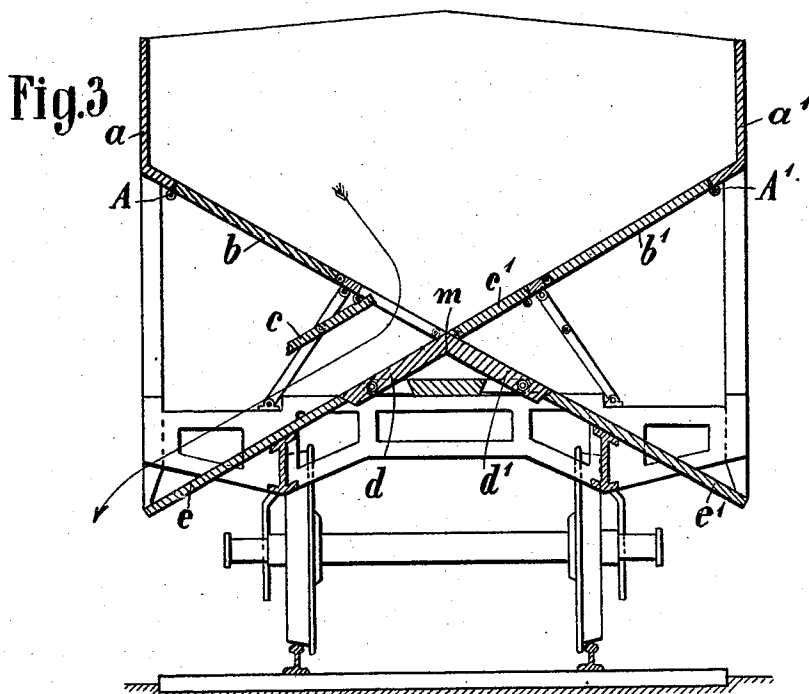
by *Harry M. Scherl* Att'y

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4 SHEETS—SHEET 3.

Fig. 5

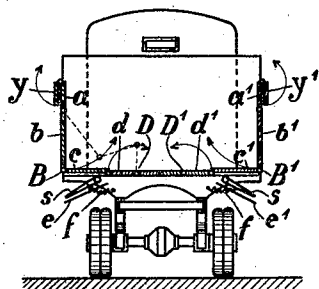


Fig. 6

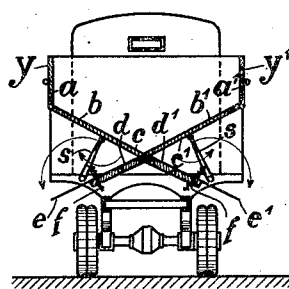


Fig. 7

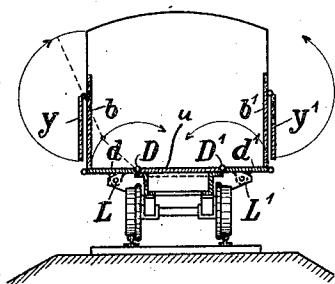


Fig. 8

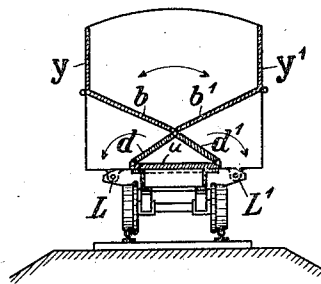
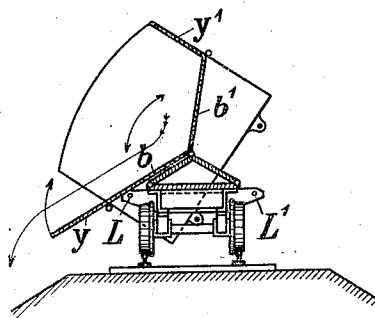


Fig. 9



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4 SHEETS—SHEET 4.

Fig.10

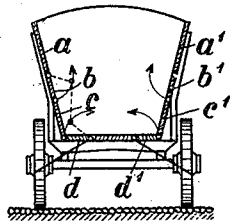


Fig.11

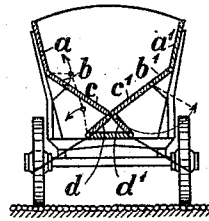


Fig.12

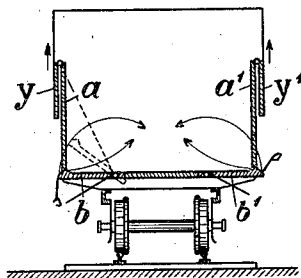


Fig.13

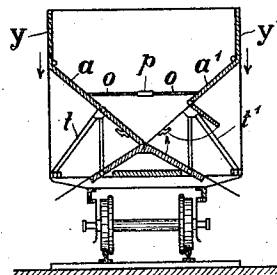


Fig.14

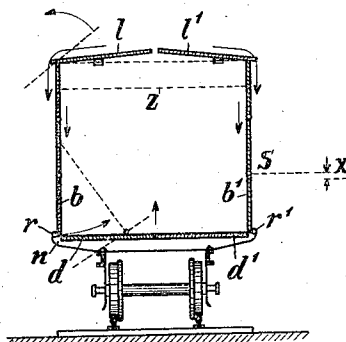
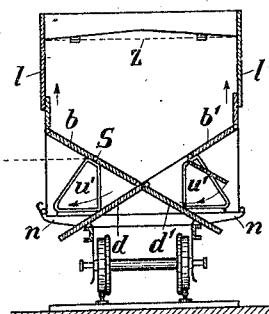


Fig.15



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UNITED STATES PATENT OFFICE.

RICHARD SCHERL, DECEASED, BY ANNA MARIE SCHERL, NÉE SENDLER, WIDOW, OF POTSDAM, GERMANY, HEIRESS OF ONE-FOURTH, AND VOLKHARD SCHERL, SON, OF POTSDAM, GERMANY, HEIR OF THREE-FOURTHS.

TRANSFORMABLE VEHICLE.

1,419,769.

Specification of Letters Patent. Patented June 13, 1922.

Application filed August 30, 1921. Serial No. 497,036.

To all whom it may concern:

Be it known that RICHARD SCHERL, deceased, did invent certain new and useful Improvements in Transformable Vehicles, and that I, ANNA MARIE SCHERL, née SENDLER, of Potsdam, Germany, his widow and heiress to one-fourth and guardian and legal representative of his non-aged son Volkhard, heir to three-fourths, do hereby declare the following to be a full, clear, and exact description of the invention, and for which applications have been filed in Germany, June 14th, 1920; Belgium, June 13th, 1921; Sweden, June 13th, 1921; Switzerland, June 13th, 1921; Italy, June 13th, 1921; Rumania, June 6th, 1921; England, June 13th, 1921; France, June 13th, 1921; Czechoslovakia, June 13th, 1921; Austria, June 13th, 1921; Hungary, June 13th, 1921; Netherlands, June 13th, 1921, and Poland, June 9th, 1921.

The invention relates to self-discharging wagons or cars of the hopper-bottom type that are converted to such type from flat bottomed wagons or cars.

The invention comprises a sub-divided flat bottom that can be converted into a hopper bottom, for example, a three part bottom whose lateral portions can be moved over a stationary middle portion to form the hopper bottom, or a two-part bottom whose abutting edges can be raised from such bottom.

The invention comprises a structure where the straight sides of a flat bottomed wagon body or car may be moved inward to the apex of the triangle formed by the bottom so that they are supported at such apex to form a hopper bottom or self-discharging vehicle.

In the drawings, in which like parts are similarly designated—

Figure 1 is a cross section of a car embodying the invention, with the bottom flat.

Fig. 2 is a like view of the car converted into a hopper-bottomed car.

Fig. 3 is a view similar to Fig. 2, showing the discharge door at one side open.

Fig. 4 is a cross-section of a modified arrangement for central discharge.

Figs. 5 and 6 are cross sections of a wagon whose bottom is composed of two parts.

Figs. 7 to 9 are cross sections showing the conversion of the flat-bottomed car into a side-dumping car.

Figs. 10 and 11 illustrate a wagon, showing a modification.

Figs. 12 and 13 illustrate a car in which the edges of the folding bottom are formed to be self-sustaining under load, and

Figs. 14 and 15 illustrate the invention in connection with a closed top car.

Referring to the construction shown in Figs. 1 to 3, the bottom of the car consists of three parts, a middle, stationary part *u* and two lateral parts *d* and *d'*, pivoted at *D* and *D'* and arranged to fold over the top of the middle section, in order to form inclined discharging sections, or a self-supporting prism. The portions *c c'* of the sides are hinged or pivotally connected to the edges of the bottom portions *d d'* at *C C'* respectively.

The opposite outer edges of the portions *c c'* are pivoted or hinged to the lower edges of side panels *b* and *b'* which side panels are hinged at their upper edges *A* and *A'* to the stationary side-wall portions *a* and *a'*.

The hinged portions *b c d* and *b' c' d'* may be moved inward to any desired point and form a co-operating unit. In order to move them to the position shown in Fig. 2 there is provided a strut in the form of a toggle, comprising lever arms *h* and *h'* pivoted near the hinge points *B* and *B'*. These arms are pivoted to arms *s* and *s'* pivoted at fixed points *E* and *E'* on the car frame.

Now, if the panels *b* and *b'* be moved inward, then the points *C* and *C'* move upward and toward the center till they abut, and the bottom portions *d* and *d'* are swung over the stationary part *u* so as to assume an inclined position, Fig. 2. The parts *b* and *c* and *b'* and *c'* then lie in a plane and the arms *s h* and *s' h'* of the toggle are in alinement.

In this manner the parts *a b c* and *a' b' c'* form a hopper shape. At the middle point *m* of the hopper the parts may be bolted together.

Various means may be provided for discharging the car.

In the form shown in Fig. 3, the bottom sections *c c'* are so connected to the side

panels b , b' that they may be swung outward, or they may be arranged to pivot about the point m . After opening these sections the contents of the car slide over the inclines d d' , and if desired also over stationary extension aprons e e' .

If the car is to be centrally discharged the portions d d' of the central triangular portion may be provided with drop doors d^2 , as shown in Fig. 4, and the contents be discharged between the tracks.

In Figs. 5 and 6 is shown a similar convertible truck or wagon. The triangular bottom portion is composed of but two parts d and d' swung about longitudinal axes D , D' , the axes lying nearer the inner edges of said parts d and d' than the outer edges, so that when these sections are swung over into the position shown in Fig. 6 they will be inclined.

If the hinge points B and B' are moved inward, the bottom portions c c' and d d' move upward and inward turning about their longitudinal axes until the outer edges of the portions d d' abut. The previously abutting edges of the parts d d' then lie toward the outside and abut against the aprons e e' , which in this instance may be shorter than those in Figures 1 to 4. The support of the side walls b b' and the outer bottom panels c c' is accomplished by pivoted struts or arms s that are held in their supporting positions by springs f Fig. 6.

In order to increase the capacity of the wagon there are provided drop-side panels, y y' hinged to the upper edges of the stationary body panels a a' , that may be raised to form upward continuations of the side panels a , a' .

While in the forms heretofore described the hopper is formed from a side portion and a bottom portion, in the following forms the hopper is formed from the sides of the body alone.

In Figs. 7 to 9 a car is shown for a narrow gauge railway, in which the entire width of the bottom is divided into three parts, the two lateral portions d and d' being hinged to the middle portion u and capable of being folded over to form the triangular bottom. The upper corners of the sides b , b' of the body are movable, so that during the initial part of their inward movement they may yield upwardly and thereafter move downwardly until the lower edges rest on the apex of the triangular central portion $d-u-d'$ to which they are bolted. The upper portion of the body may then be extended by the drop sides y , y' .

In order to permit this car to discharge at the side by tipping it, the front and rear ends are detachably secured to the transverse sills of the frame at L and L' . When these fastenings, which may be bolts or pins, are removed, the body may tip, as shown in Fig.

9, to one side or the other, the drop side y or y' being released to effect a full discharge and operating as a discharge apron.

In Figs. 10 and 11 is shown a wagon body having stationary side panels a and a' . Connected to each of these side panels by hinges or otherwise are the hinge-connected side portions b c and b' c' , of which the portions c and c' are connected to the outer edges of the lateral bottom portions d d' .

When the flat-bottomed wagon Fig. 10 is to be converted into a hopper bottom Fig. 11, the parts b b' are first turned upward, as shown in dotted lines, until the triangular bottom is formed. Fig. 11 and panels b c and b' c' lie in a plane, and are supported in such position by suitable struts.

For discharging, the parts c c' are constructed as hinged doors that swing outward.

In Figs. 12 and 13 the side panels a and a' are not hinged to the bottom sections b b' , so that the side panels a a' need not be lifted (raised bodily).

The two lateral bottom portions are provided with enlargements that act as abutments for the lower edges of the hinged side panels a , a' . When the two lateral bottom portions b , b' are swung over to form the triangular bottom, the sides a , a' are swung inward against the apex of the triangular bottom and at the contacting abutments struts t t' support the side panels a a' that transmit the load to the under frame. The side panels can be additionally supported by adjustable cross ties o p such as tension rods o and turnbuckles p or equivalent devices. The body may be extended by the drop sides y y' . For discharging, the side panels a a' may be provided with outwardly swinging discharge doors.

In Fig. 14 is shown a covered body whose cover or top is composed of two panels or sections l l' and the hopper bottom is formed by opening these sections l and l' to vertical position. The two adjoining edges of the bottom are moved upward to join at the apex and form the discharge aprons also, and the special aprons e e' in the previously referred to forms, are omitted.

The lower edges of the side walls are provided with rollers r that are guided on inclined ways, so that by loosening the bolts at n the weight of the side walls tends to move the side walls toward the apex of the triangular bottom. The center of gravity S of the side walls drops during this movement from the position Fig. 14 to the position Fig. 15 by a distance x .

The hopper thus formed is supported by sheet metal struts u' and the top sections l and l' serve to increase the height of the body, there being end drops z which are raised to hold the sections l l' in position, as shown in Fig. 15.

What is claimed is.

1. A transformable flat bottom and hopper bottom vehicle body having a subdivided flat bottom capable of being swung to form a bottom having sloping sides, in combination with hinged sides capable of swinging inward and whose lower edges rest on the apex of said sloping sides.
2. A transformable vehicle body having a laterally subdivided flat bottom, bottom divisions of which are capable of being inclined to form a triangular structure, in combination with side panels whose lower edges are hinged to bottom divisions.
3. A transformable vehicle body having a laterally sub-divided flat bottom, bottom divisions of which are capable of being swung to form a triangular structure, in combination with lateral bottom divisions hanged to the aforesaid divisions, and side panels hinged to the bottom divisions to form a hinged, foldable hopper bottom.
4. A transformable vehicle body having a laterally subdivided flat bottom, the bottom divisions of which are capable of being inclined to form a triangular structure, side panels hinged to the bottom divisions to form a hinged foldable hopper bottom, and struts for supporting the inclined bottom of the hopper.
5. A transformable vehicle body having a laterally subdivided flat bottom capable of being inclined to form a triangular structure, side panels hinged to the bottom divisions to form a hinged foldable hopper bottom, and means for connecting the triangular structure and side panels together.
6. A transformable vehicle body having a laterally subdivided flat bottom capable of being inclined to form a triangular structure, and side panels pivoted to swing at the apex of the inclined bottom divisions.

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