

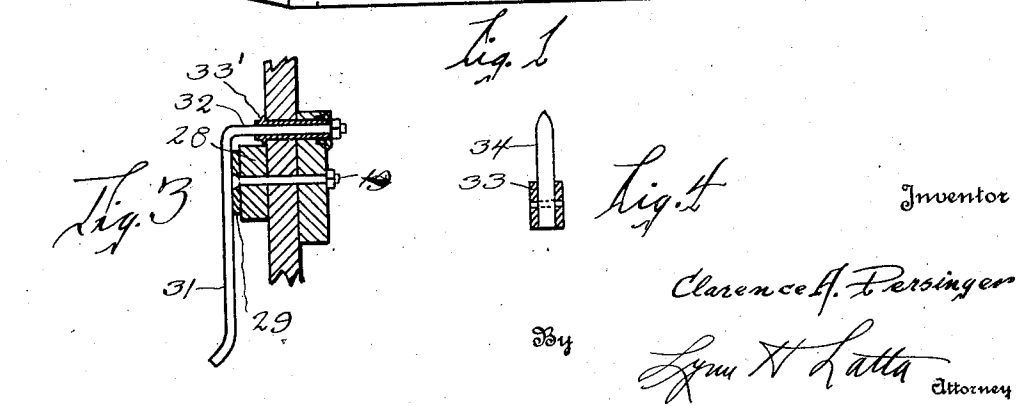
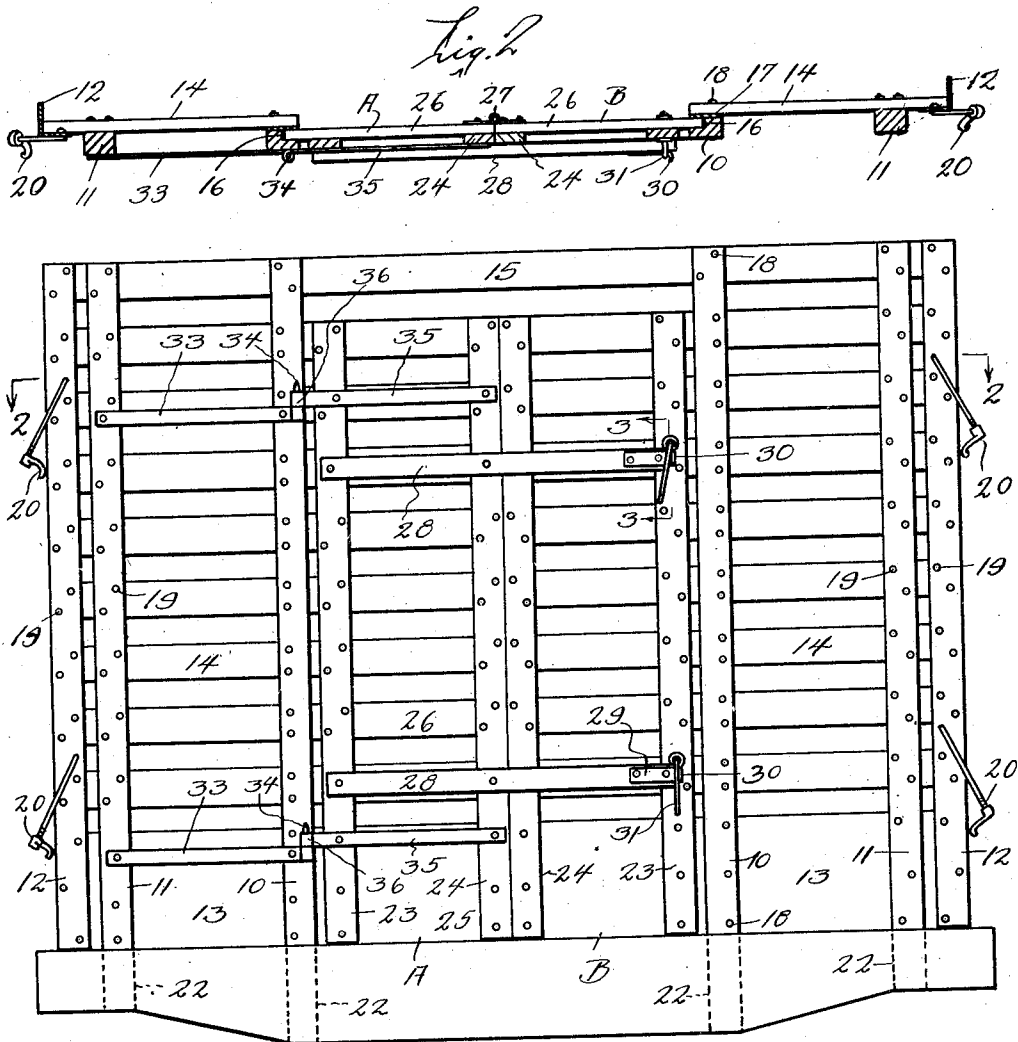
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END GATE

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END GATE

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My invention relates to end gates and has for its object to provide an end gate of the type having a central door adapted both to slide upwardly and to hinge in a lateral direction about a vertical axis.

I am aware that end gates of this type are not new, the old style comprising a door member which is adapted both to hinge and slide vertically on a rod extending from top to bottom of the end gate. An objection to this particular construction is that the rod is apt to become bent, thus interfering with the sliding of the door member upwardly.

My invention has for its object to provide an end gate which is not subject to this objection.

A further object of my invention is to provide an end gate of this type which is more sturdy in construction and has greater strength than the prior end gate mentioned.

Sturdiness in construction is obtained by employing a channeled slide construction for the sliding feature, the ends of the door being slidably mounted in a pair of guide channels. In order to combine with this feature of construction the adaptability of the door member to hinge around a vertical axis, I have provided a door member adapted to break centrally and so arranged that while breaking, one of its ends may be withdrawn from its coacting channel.

A further object is to provide in such a construction means for normally locking the two sections of the door member in rigid relation to each other.

A further object is to provide a structure having all the features above set out and which is, in addition, easy to operate and which is simple, durable and inexpensive in construction.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Fig. 1 is a rear elevation of the end gate,

together with a truck bed, to which the end gate is attached.

Fig. 2 is a detail, sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a detail, sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a detail, sectional view of the fixed hinge bracket and hinge pin.

The advantages of the end gate having a central door member adapted to both slide vertically and hinge about a vertical axis have been recognized and set forth in prior structures and disclosures. The advantages are briefly: universal adaptability to various conditions and ease of operation. For instance, there are two situations where a door member cannot be hinged, due to the nearness of the end gate to a building or the like, from which a load is being unloaded. On the other hand, it is undesirable to lift a heavy door member if the situation is such that the door can be swung about its hinges.

I have illustrated in Figs. 1 and 2 a conventional form of end gate, including the upright posts 10 and 11 and the corner posts 12, the latter being preferably of angle iron, as shown in Fig. 2, all connected together by bars 13, and 14 and a top bar 15, the latter extending the full width of the gate while the former extend only between the posts 10 and 12, respectively.

The inner posts 10 are provided with longitudinal grooves 16 and metallic plates 17, which form together with the post the channeled guide members in which the door member slides.

The plates 17 are secured to the posts 10, as by means of bolts 18, which also serve to secure the bars 13, 14 and 15 to the post. The bars 13, 14 and 15 are secured to the posts 11 and 12, as by means of bolts 19. The bar 15, although not illustrated in Fig. 2, is positioned in the same vertical plane as the bars 13 and 14 and the door member may slide upwardly past the bar 15, since the groove 16 is in a different plane.

A conventional form of fastening device 20 is illustrated, by means of which the end gate is secured to the side members of the truck, the latter being omitted from the

drawings since they form no part of the present invention.

The posts 10 and 11 are extended downwardly so as to be received in sockets in the rear end of the truck bed 21, as indicated in dotted lines at 22.

The door comprises a pair of door sections A and B, each comprising a pair of upright posts 23 and 24 and a plurality of cross bars 25 and 26, corresponding to the bars 13 and 14 in their width and position. It will be understood that this particular feature is not an essential part of my invention and that the door is constructed in this manner merely for the sake of looks.

The ends of the bars 25 and 26 project beyond the outer posts 23, as clearly shown in Fig. 2 and are received normally in the grooves 16 of the posts 10.

The door sections A and B are hinged together in the plane of their inner sides by hinges 27, thus being adapted to break outwardly.

It will be noted that the engagement of the adjacent edges of the posts 24 will prevent the door from breaking inwardly, limiting the hinging movement of the door in an inward direction to a position wherein the two door sections are in the same plane. I provide means for latching the door sections against breaking outwardly, thus making it possible for the door sections to be secured in rigid relation to each other.

The means for preventing outward breaking comprises a pair of latch bars 28, secured to the outer side of the section A and projecting substantially to the end of the section B. A pair of metallic keepers 29 are secured to the ends of the latch bars 28 and are provided with outwardly bent hooks 30 (see Fig. 2). Latching handles 31 are provided, which are constructed as shown in Fig. 3 and pivotally mounted in the door member B, just above the positions which the keepers 29 assume when the door is fully closed. The handles 31 are provided with shaft portions 32 for this purpose, which are bent at right angles to the handles 31 and extended through suitable bearing bushings 33', secured in the door member B in the position shown.

The handles may be swung upwardly from their engaging position shown in Fig. 1 until they clear the upper edges of the latch arms 28, thus allowing the latch arms 28 to swing outwardly away from the door section B. When in their engaging positions shown in Figs. 1 and 3, the handle members secure the latch arms 28 against the outer face of the door section B, thus latching the sections in rigid relation to each other. The supporting hinges for the door comprise a pair of fixed hinge elements 33, provided with upwardly extending hinge pins 34 and secured to the posts 10 and 11 at one end of the end gate. A pair of coacting hinge elements 35 is

secured to the door section A, each hinge element 35 extending to a position where its loop 36 may register with the pin 34. The hinge elements 33 and 35 are preferably made of strap iron, cold rolled to provide loops at their ends. The pin 34 is secured permanently in the loop of the hinge element 33 and is loosely received by the loop 36.

It will now be seen that the door may be raised by simply applying lifting pressure to it while it is in rigid position, as shown in Fig. 1, the loops 36 sliding outwardly and leaving the pins 34. The pins 34 are preferably pointed, as shown, so that as the door slides downwardly, the loops 36 may slide over the pins without difficulty.

When it is desired to hinge the door about its axis, the handles 31 are swung upwardly, releasing the latch arms 28 and one of the latter is then grasped and pulled rearwardly, causing the door section A to hinge about the axis of the pins 34 and the door section B to be released from the groove 16. In so doing, the door section B must hinge relative to the door section A around the axis of the hinges 27.

It will be understood that the separable hinge construction shown might be modified without changing the effect of a hinge structure, the elements of which are adapted to separate and re-engage as the door slides upwardly or downwardly. For instance, the pin 34 might be secured to the upper hinge element 35 and be projected downwardly into a loop formed on the lower hinge element 33. Such a structure would be merely an inversion of the structure shown and it has not been thought necessary to illustrate it for this reason.

The particular type of latch structure shown might be modified without departing from the essential function of the latch structure, which is to rigidify the door structure. With the particular arrangement shown, however, there is an added advantage. The projecting arm 28 serves not only as a latch arm but as a lever which may be grasped to pull the door rearwardly. It will be understood that in order to cause the door to break, rearward pressure must be applied at or near the axis of the hinges 27. The bar 28 is adapted to apply a pull to the door near its center for the reason that it is secured to the section A near the center of the door and is not secured at all to the section B. Furthermore, an additional function is imposed upon the latching structure, namely, that of strengthening the door to resist rearward pressure from within. By extending the latch bars 28 entirely across the rear face of the door covering both sections thereof, and secured thereto at both ends and the center, the full strength of the latch bar is given to the support of the central region of the door in resisting rearward pressure thereagainst.

Sufficient play is provided between the bars 26 and the sides of the channel guide member, comprising the post 10, and plates 17, so that the sections A and B may break rearwardly while the ends of the bars are still within the channels. It will be readily seen that as the central regions of the sections A and B move rearwardly that the distance between the opposite ends of the door sections will decrease, thereby allowing the section B to be withdrawn from its channel guide member. As soon as this has been done, the door may be swung to a completely open position.

An inspection of Fig. 2 will show that the axis of the hinge pins 34 is located directly rearwardly of the groove 16 in the post 10, whereby as the door section A hinges rearwardly, the ends of the bars 26 may be withdrawn from the groove 16 without binding. A slight amount of play is necessary here also in order to prevent binding.

It will be understood that end gates of the type including the channeled guides and the central door member having its ends slidably received in the guides are standard form of construction for an old type of end gate in which the door does not hinge. This type of structure is recognized as being very sturdy and durable and satisfactory in operation of the sliding feature.

By the combination and arrangement of the features of the door adapted to break rearwardly and the separable hinge elements 33 and 35, I have provided an end gate of the type wherein the door has both sliding and hinging action, which has all of the advantages of strength, durability and ease of operation inherent in the channeled guide type of structure.

Some changes may be made in the construction and arrangement of the parts of my invention without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. In an end gate for trucks, an end gate including vertical, central posts defining a doorway and provided with opposed channels, a door slidably received in said channels, said door comprising two door sections hinged together on a vertical axis, whereby the door may break intermediate its ends so as to allow its end portions to be withdrawn from the channels, and vertically separable coacting hinge elements secured to one door section and to the adjacent end gate structure, respectively, positioned to interengage when the door is in a lowered position, so as to support the door at one side of the doorway for hinging movement.

2. In an end gate for trucks, an end gate including vertical, central posts defining a

doorway and provided with opposed channels, a door slidably received in said channels, said door comprising two door sections hinged together on a vertical axis, whereby the door may break intermediate its ends so as to allow its end portions to be withdrawn from the channels, vertically separable coacting hinge elements secured to one door section and to the adjacent end gate structure, respectively, positioned to interengage when the door is in a lowered position, so as to support the door at one side of the doorway for hinging movement, and latch means to secure the door sections together to form a rigid door structure.

3. In an end gate for trucks, an end gate including vertical, central posts defining a doorway and provided with opposed channels, a door slidably received in said channels, said door comprising two door sections hinged together on a vertical axis, whereby the door may break intermediate its ends so as to allow its end portions to be withdrawn from the channels, vertically separable coacting hinge elements secured to one door section and to the adjacent end gate structure, respectively, positioned to interengage when the door is in a lowered position, so as to support the door at one side of the doorway for hinging movement, a latch arm secured to one of the door sections and adapted to overlap the other section, and means to latch the arm to said other section.

4. In an end gate for trucks, an end gate including vertical, central posts defining a doorway and provided with opposed channels, a door slidably received in said channels, said door comprising two door sections hinged together on a vertical axis, whereby the door may break intermediate its ends so as to allow its end portions to be withdrawn from the channels, vertically separable coacting hinge elements secured to one door section and to the adjacent end gate structure, respectively, positioned to interengage when the door is in a lowered position, so as to support the door at one side of the doorway for hinging movement, a latch arm secured to one of the door sections and adapted to overlap the other section, and a latch handle pivotally mounted in said other section and adapted to be swung to a position hooked across the latch arm.

5. In an end gate for trucks, an end gate including vertical, central posts defining a doorway and provided with opposed channels, a door slidably received in said channels, said door comprising two door sections hinged together on a vertical axis, whereby the door may break intermediate its ends so as to allow its end portions to be withdrawn from the channels, and vertically separable coacting hinge elements secured to one door section and to the adjacent end gate structure, respectively, positioned to interengage

when the door is in a lowered position, so as to support the door at one side of the doorway for hinging movement, one of said hinge elements including a vertically extending pin and the other having a loop adapted to receive said pin.

6. In an end gate for trucks, an end gate including vertical, central posts defining a doorway and provided with opposed channels, a door slidably received in said channels, said door comprising two door sections hinged together on a vertical axis, whereby the door may break intermediate its ends so as to allow its end portions to be withdrawn from the channels, and vertically separable coating hinge elements secured to one door section and to the adjacent end gate structure, respectively, positioned to interengage when the door is in a lowered position, so as to support the door at one side of the doorway for hinging movement, one of said hinge elements including a vertically extending pin and supporting means therefor, and the other including a loop adapted to receive said pin and to engage against said supporting means to carry the weight of the door from one hinge element to the other.

Signed this 28th day of September, 1929,
in the county of Woodbury and State of
Iowa.

CLARENCE A. PERSINGER.

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