

C. W. & J. E. CAMP.
PORTABLE ELEVATOR.
APPLICATION FILED MAY 12, 1908.

1,014,448.

Patented Jan. 9, 1912.

2 SHEETS—SHEET 1.

FIG. 7.

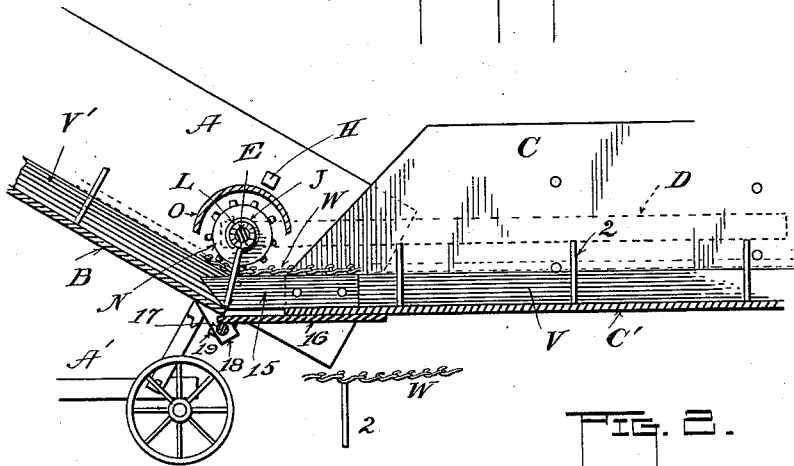


FIG. 8.

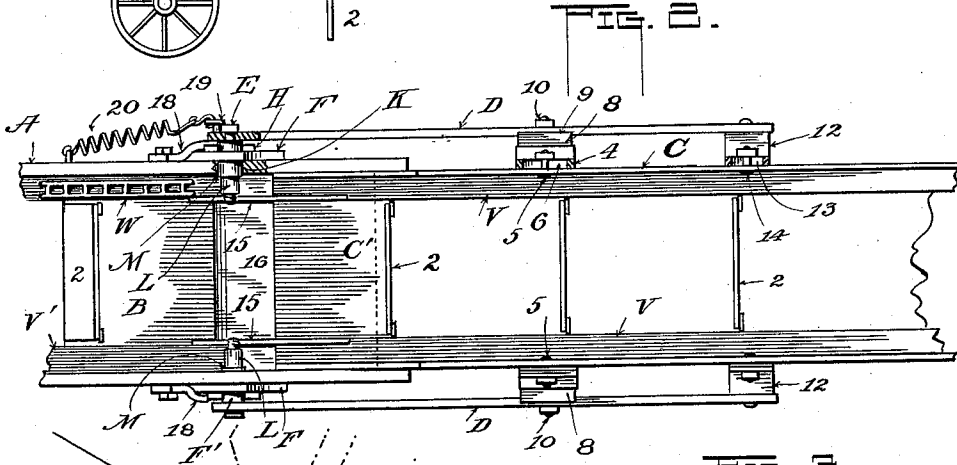


FIG. 9.

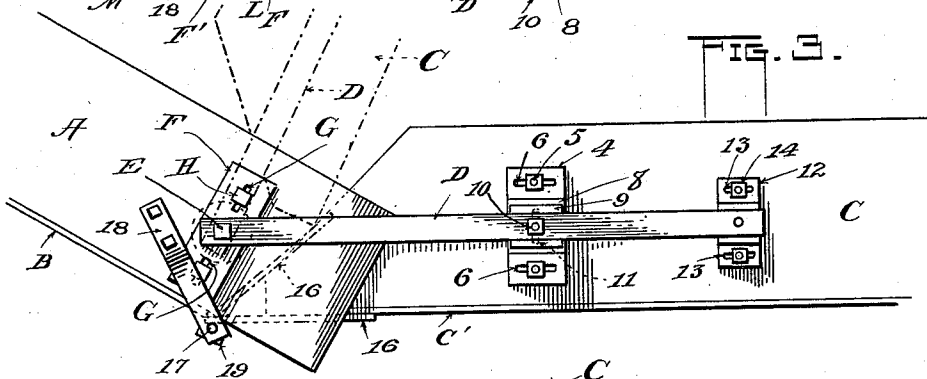


FIG. 4.

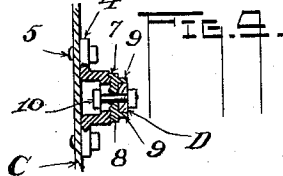
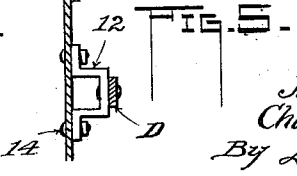


FIG. 5.



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2 SHEETS—SHEET 2.

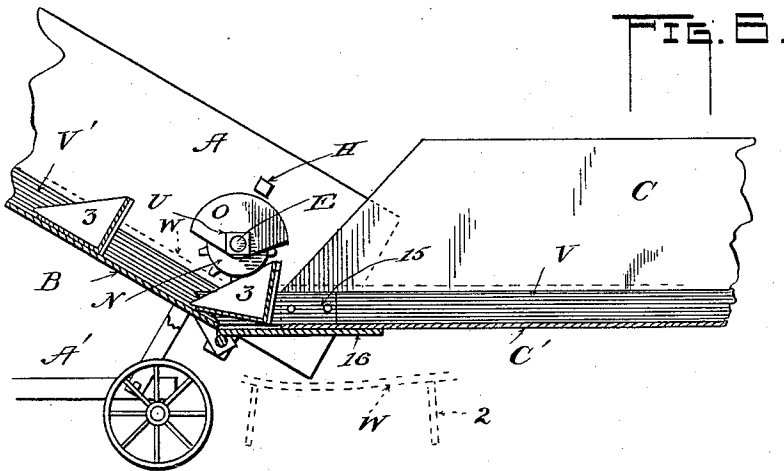


FIG. 7.

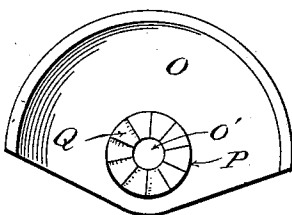
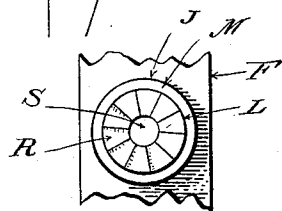


FIG. 8.

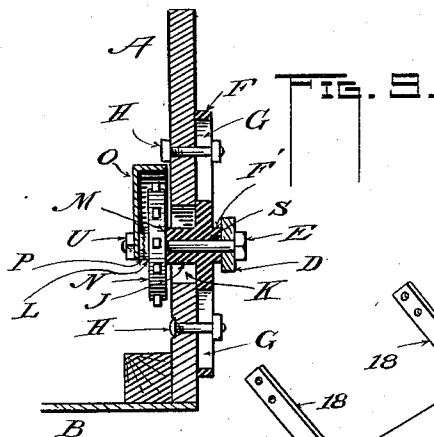


FIG. 9.

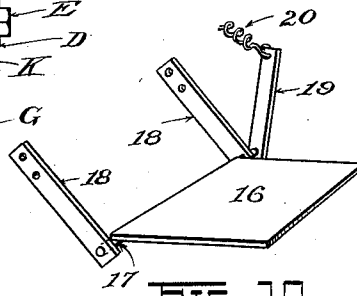


FIG. 10.

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PORTABLE ELEVATOR.

1,014,448.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed May 12, 1908. Serial No. 432,514.

To all whom it may concern:

Be it known that we, CHRISTIAN W. CAMP and JOSEPH E. CAMP, both citizens of the United States, residing, respectively, at Metamora, Woodford county, and Washington, Tazewell county, Illinois, have invented certain new and useful Improvements in Portable Elevators; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in portable elevators.

In the device about to be described the ordinary plate form of flight is provided for the conveyer chain with which, at times, a detachable bucket is used, and it is our purpose to provide a mechanism of simple form by which the idler sprocket wheels within the elevator, with which the chain is in connection, can be altered in position so that said chain can accommodate itself to the conditions that exist whether using the said flight or the bucket and this is one of the objects of the invention.

A further object is to make the conveyer or drag adjustable vertically and longitudinally by which it may be accommodated to the change in position of the said sprockets.

Another object of the invention is to provide a new arrangement at the place of meeting of the conveyer and the elevator which will automatically accommodate itself to the positions of and follow the tilting movements of the said conveyer and elevator relatively so as to prevent loss of grain at that point, all of which will be fully described hereinafter.

In the drawings presented herewith Figure 1 is a vertical longitudinal section of part of the elevator and conveyer mounted upon the usual wheeled frame. Fig. 2 is a plan of the same. Fig. 3 is a side elevation. Fig. 4 is a transverse section of one side of the conveyer and an arm adjusting device secured thereto. Fig. 5 is also a transverse section of one side of the conveyer showing a bracket secured thereto. Fig. 6 is a vertical longitudinal section of part of the elevator and conveyer showing buckets in connection with the flights ordi-

narily employed. Fig. 7 is a side elevation of a part of an adjustable casting. Fig. 8 is an elevation of a guard adapted for attachment to the casting shown in Fig. 7. Fig. 9 is a vertical transverse section of one side of the elevator showing an adjustable member carrying a sprocket wheel. Fig. 10 is a perspective view of a member used at the place of connection between the elevator and conveyer.

A indicates the lower end of the elevator suitably mounted upon a wheeled frame A', and B is the bottom thereof, preferably of sheet metal.

C is the conveyer or drag usually employed in connection with the elevator and which also has a sheet metal bottom C'. The said conveyer is usually pivoted to the elevator so as to be raised and lowered thereon but in this instance it is done through an arm D at each side of said conveyer the rear ends of which are adjustably secured to said conveyer by means to be described presently. The forward ends of said arms are pivoted to the elevator by means of bolts E held in a casting F secured to each side of the elevator. This casting is in the form of a plate slotted at each end at G as shown in Figs. 3 and 9. Bolts H extend through the sides of the elevator and extend through the said slots G, said bolts and slots providing for the adjustment of the plate at right angles to the path of the usual drag-chain to be described presently. Said plate is provided with a hub J which extends inwardly through a slot K in the side of the elevator as clearly shown in Fig. 9, said slot admitting of the adjustment just mentioned. Extending from the said hub J is a reduced portion L for receiving a sprocket wheel N which bears against a shoulder M between said reduced portion and the hub. A guard O overhangs the sprocket and prevents the grain from interfering therewith. This said guard, as shown in Fig. 8, is provided with a hole O' and an inwardly extending flange P whose face is provided with a series of teeth Q, while the ends of the portions L have corresponding teeth R as in Fig. 7, one set of teeth engaging the other as shown in Fig. 9. The purpose of this is that the guards may be tilted to any desired angle and then fixed in position.

Extending outward from the plates F are hubs F', Fig. 9, against which the arms D bear. A bore S extends through the said plates and their integral portions through which extends the bolts E above mentioned, said bolts extending also through the ends of the bars D, and receiving the nuts U at their inner ends which bear against the said guards and holds them and the sprockets in place.

In each corner of the elevator and conveyer are preferably placed strips V and V' respectively upon which the conveyer chains drag, a portion of one of which chains is indicated at W in Figs. 1 and 2. (See also broken lines in Fig. 6.) In Figs. 1 and 2 the ordinary flights are indicated by the numeral 2 which in the latter figure are not shown connected with the chains. In Fig. 6 the flights are also indicated to which are attached an elevator bucket 3. As in other devices of this class the idler sprockets N described, serve to hold the chains down to position so that the flights will drag upon the bottom. It is desirable to provide a vertical adjustment of said idler sprockets. Since in using the flights the wheels can be adjusted closer to the strips V' than when employing the buckets. When the latter are employed, by reason of the length of their bottoms they are caused to tilt on striking the inclined bottom of the elevator, as shown in Fig. 6. This cramps the chain and consequently tends to shorten its length and raises it against said wheel and would cause the entire device to run hard by placing this additional strain thereon, as a matter of course, more power would be needed than when running freely. To provide against this the sprocket is mounted on the movable plate F so that it can be raised whenever the buckets are to be employed and by the same rule when the buckets are removed the sprockets are lowered in order that the flights will be held upon the bottom as already stated. The adjustment of the arms D upon the elevator through the movement of the castings F will necessarily impart an adjustment to the conveyer to the required extent and position when said arms are fixed in position on the latter. It is preferable to have the arms pivoted opposite the axes of the sprockets in order that the pivot for the conveyer will be equidistant from all parts of the chain as they travel on the periphery of said sprockets so that when said conveyer is tilted on end the chains will not be tightened to too great an extent. Except for this the arms could be pivoted at other positions found most desirable. In order to permit the arms to shift and allow the conveyer to be held in proper position relative to the elevator some means must be provided for adjusting the arms relative to such con-

veyer. A casting 4 is bolted to the side of the conveyer by means of bolts 5 being provided with slots 6 to permit of horizontal adjustment thereof. The top portion of the casting is serrated as shown in Fig. 4 at 7 with which engages the serrated face of a second casting 8 provided preferably with flanges 9 at each side between which the arm D lies. A bolt 10 extends through a vertical slot 11 in the casting 4 and also through the casting 9 and the arm D and serves to clamp all of these members rigidly together. Secured also to the conveyer is a casting 12 slotted horizontally at 13 and secured to said conveyer by bolts 14, the end of the bar being attached thereto in suitable manner.

It will be seen that vertical adjustment of the arms can be made by loosening the bolts 10 and shifting the castings 8 upon the castings 4, the said bolts shifting through said slots 11. A horizontal adjustment of the arms relative to the conveyer is had through the bolts 5 and 14 and the slots 6 and 13 respectively. The means thus provided allows the operator any adjustment desired to suit the existing circumstances.

It is observed that the sides of the elevator extend downward beyond the end of the bottom B and the strips V' thereon and it will be further observed that the ends of the strips of both the elevator and conveyer as well as the bottom of these latter members are some distance apart, and in order that the flights 2 will properly pass from the conveyer to the elevator without catching upon the ends of the said strips V of the elevator the plates 15 are provided which are let into the strips of the conveyer flush with their side surfaces, being secured in place in any suitable manner as shown in Figs. 1 and 2, their free ends projecting across the space between the bottom to close the recesses between the strips V V' and extend between those of the elevator substantially as shown.

In order to provide against loss of grain at the juncture of the conveyer and elevator a member 16 is provided which, as shown, in Fig. 10, consists of a plate 16 secured in suitable manner upon a rod 17, the ends of the latter being pivotally held in a pair of arms 18 secured to the sides of the elevator. At one end of the rod 17 is secured an arm 19 to which is attached a spring 20 whose opposite end is connected to the side of the elevator in any suitable manner, as shown in Fig. 2. The said rod 17 lies immediately beneath the extremity of the bottom B of the elevator, and said plate 16, due to the tension of the spring 20 is held close to the bottom of the conveyer and follows the latter in all its movements. Fig. 3 shows how said plate follows the conveyer as it is raised to a substantially vertical position.

Since this plate fits snugly between the sides of the elevator there is no chance for grain to be lost. By using the plate a wide range of adjustment of the conveyer in the direction of its length is possible which is often an advantage.

The manner of attaching the buckets to the flights is not shown or described and is not important but it will be observed that in Fig. 6 the bucket which has a back wall and a bottom, is tipped as the forward edge of its said bottom meets the inclined bottom of the elevator and this tends to kink the chain and thus shorten its length as before stated since the flight to which the bucket is secured is tipped from its vertical position. An adjustment of the sprocket N is therefore provided in order that the chains may be loosened when the buckets are employed and to take up the slack therein when said buckets are removed. Although the end of the bottoms B presents an edge with which the flights may apparently interfere yet the metal is much thinner than represented in the drawing so that little trouble of this kind will be experienced.

Many changes may be made in the device described such as will fall within the spirit and intent of the invention.

Having thus described our invention, we claim:—

1. The combination of two pivotally related conveyer sections, a single drag chain extending through both sections and running upon their bottoms, a device to engage the chain and stationed in one of the sections at the point of its pivotal connection with the other of the sections, and means to carry the device and adapted for adjusting the same in a direction substantially perpendicular to the direction of travel of the said chain.

2. The combination of two pivotally related conveyer sections, a single drag-chain extending through both sections and running upon their bottoms, a wheel having its axis at the point of connection of the sections and having engagement with the chain, and means to adjust it in the direction of the chain.

3. The combination of two pivotally related conveyer sections, a single drag-chain extending through both sections and running upon their bottoms, a wheel having its axis of rotation substantially coincident with the pivots of the sections and having engagement with the chain, and means to adjust the wheel in the direction of the chain.

4. The combination of two conveyer sections, means for pivotally connecting them, a drag-chain extending through both sections and running upon their bottoms, a wheel having its axis of rotation substantially coincident with the pivoting point of

the sections, and means to adjust the wheel and said pivoting means in the direction of the chain.

5. The combination with two conveyer sections, means to connect them pivotally, a drag-chain extending through both sections, a bucket carried by said chain and having a portion forward of its point of support to travel upon one of the sections, a member carried at the point of pivotal connection of the sections and in control of the chain, and means to adjust the same in the direction of the chain.

6. In combination with an elevator, a drag-chain therefor, a member to hold the latter in its operative position, a guard to cover and protect said member, a device to carry the guard, means on the device and the guard to interengage, and means to assist in positively holding the latter in any adjustment through the first said means.

7. In combination with an elevator and its drag-chain, a wheel to bear upon and hold the chain in its operative position, a member carried by and adjustable on the elevator, means to fix it in position, there being an extension on the member to receive and carry the wheel, said extension having teeth thereon, a guard to cover the wheel and also having teeth to engage those of the extension, and means to hold the wheel upon the member and positively hold the guard in a desired adjustment through said teeth.

8. In combination with an elevator and its drag-chain, a wheel to hold the chain, a member to carry the wheel the same being secured to the elevator and adjustable thereon, there being an extension on the member provided with a toothed vertical face, a guard to cover the wheel and also having a toothed face to engage that of the member, and means to positively secure the guard to the latter.

9. In combination with an elevator and a drag-chain extending therethrough to drag upon the bottom thereof, a device to engage the chain and hold it upon said bottom, a member to carry the device and through which to adjust it in the direction of the chain, a guard to inclose the device and adjustable about the same, and a member extending through the guard and the first said member and adapted when tightened to secure the said guard in any adjustment.

10. In a device of the class described the combination of two conveyer sections joined end to end and adapted to pivot relatively, a single drag extending through both sections, a member connecting the sections and adjustable on each and adapted for permitting longitudinal adjustment of one of the sections relative to the other, and means on each of the sections to secure the member to them.

11. In a device of the class described the

combination of an elevator and conveyer having pivotal relation, and means connecting them to provide for their said pivotal relation, said means providing for a longitudinal and a transverse movement of one of the members relative to the other.

12. In a device of the class described the combination of an elevator and conveyer, means having pivotal connection with one of the members and rigidly secured to the other member, and means to adjust the first said means longitudinally and transversely of the last named member.

13. In a device of the class described the combination of an elevator and conveyer, means having pivotal connection at one end with one of the members, means on the latter to adjust its pivoted end transversely, its opposite extremity being rigidly secured to the other member, and means to adjust said opposite extremity.

14. In a device of the class described the combination of an elevator and conveyer, means having pivotal connection at one end with one of the members, means on the latter to adjust its pivoted end transversely, its opposite extremity being rigidly secured to the other member, and means to adjust said opposite extremity both longitudinally and transversely with respect to the member.

15. In a device of the class described the combination of an elevator and conveyer, means pivoted at one end to one of the members and adjustable at that end, and having its other end both rigidly and adjustably secured to the other member.

16. In a device of the class described the combination of an elevator and conveyer, means pivoted at one end to one of the members and adjustable perpendicularly with respect to the bottom of said member and having its other end secured to the other member and longitudinally and transversely adjustable with respect to said member.

17. In a device of the class described the combination of an elevator and conveyer, means pivoted to one of the members and adjustable relative thereto, a device pivoted to said means and adjustably secured to the other member, and a second device adjustably secured to the latter and having the said means adjustable relative thereto for the purposes set forth.

18. In a device of the class described the combination of an elevator and conveyer, means pivotally attached at one end to one of the members, a device pivoted to the opposite end of the said means and secured to and adjustable longitudinally of the other member, a device secured to the last named member and adjustable longitudinally thereof, means adjustable on said device, and having the first said means adjustable there-

on and a member to secure the device and the two said means in rigid relation.

19. In a device of the class described the combination of an elevator and conveyer having pivotal relation, a drag-chain extending through both members, means to hold the drag upon the bottoms of both said members, a device carried by one of the members to adjust said means, and an arm pivoted on the device and adjustably and rigidly secured to the other member.

20. In a device of the class described the combination of an elevator and conveyer having pivotal relation, a drag-chain extending through both members, means to hold the drag upon the bottoms of both said members, a device carried by one of the members to carry and adjust said means, an arm pivoted to one of the members and adjustably and rigidly secured to the opposite member.

21. In a device of the class described, an elevator and a conveyer, a drag extending through both, means for holding the drag in its operative position upon the bottoms of both the members, a device for adjusting said means toward and away from the juncture of the said members, and arms adjustably secured to the conveyer and having pivotal connection with the said devices substantially as set forth.

22. In a device of the class described, an elevator, a conveyer associated therewith, a drag extending through both of them, means for holding said drag in its operative position upon the bottom of the members and adapted for adjustment in a direction substantially at right angles to the plane of the bottom of the elevator, and means for adjusting the conveyer both vertically and longitudinally relative to the elevator for the purposes set forth.

23. In a device of the class described, an elevator, a conveyer associated therewith, a drag extending through both members, means to hold the drag in operative position upon the bottoms of said members, devices by which said means is adjusted in the direction of the drag, and members adjustably connected to the conveyer and pivotally connected to the elevator by which to adjust said conveyer relative to said elevator.

24. In a device of the class described, an elevator, a conveyer associated therewith, a drag extending through both members, means to engage the drag and hold it in operative position upon the bottom of the elevator, means adjustably secured to the sides of the elevator and extending thereinto to receive the first said means to support the same, and devices for securing said adjustable means in a desired position.

25. In a device of the class described, an elevator, a conveyer associated therewith, a

drag, means for holding it in operative position at the juncture of the members, adjustable means secured to the sides of the elevator for carrying the first said means and adjusting it for the purposes set forth, and members adjustably secured to the conveyer and having pivotal connection with the said adjustable means.

26. In a device of the class described, an elevator and a conveyer having pivotal relation and adapted to tilt relatively, a member pivoted at one end beneath the bottom of one of them and adapted at its other end to bear upward against the bottom of the other of them, and means to yieldingly hold said member in that relation.

27. In a device of the class described, two trough members having pivotal relation and adapted to tilt relatively, a device pivoted beneath the bottom of one of such members, and means connected with such device to hold it upward against the bottom of the other said member in yielding relation thereto.

28. In a device of the class described, an elevator and a conveyer having pivotal relation and adapted to tilt relatively, means to bridge the opening between the adjacent ends of the bottoms of the members, and means to yieldingly hold the first said means in position and close said opening.

29. In a device of the class described, an elevator and a conveyer having pivotal relation and adapted to tilt relatively, one of them extending within the other between its sides, means lying between the sides of the latter member and adapted to close the opening between the bottoms of the elevator and conveyer, and means to yieldingly hold said member in position to keep said opening closed.

30. In a device of the class described, an elevator, a conveyer pivoted to its sides, said elevator and conveyer adapted to tilt relatively, and means pivoted at the extremity of the bottom of one of the members between

the sides thereof and adapted to bear upward against the bottom of the other of them, and a device for yieldingly holding said means in that position.

31. In a device of the class described an elevator and conveyer having pivotal relation, and a member pivoted at and beneath the extremity of the bottom of one of them and adapted to yieldingly bear against the bottom of the other of them.

32. In a device of the class described the combination of an elevator and conveyer, a drag-chain therefor, a supporting guide for the chain at one side of both said elevator and conveyer and extending longitudinally thereof, and a member secured to one of the said supports and extending to and lying against the other of said supports.

33. In a device of the class described the combination of an elevator and conveyer, a drag-chain therefor, a guide at each side of both of the members and extending longitudinally thereof to support the drag, and members carried by two of the guides at the juncture of the elevator and conveyer and extending across said juncture and adapted to overlap the other two guides.

34. In a device of the class described the combination of an elevator and conveyer, a drag-chain therefor, a guide at each side of both the members the same extending longitudinally thereof, the guides of the members adapted to lie end to end to carry the drag, and a member carried by and let into one of the faces of each guide of one of the members flush therewith, and arranged to extend across the place of juncture of the members and lying adjacent to one of the faces of the guides of the other member.

In testimony whereof we affix our signatures, in presence of two witnesses.

CHRISTIAN W. CAMP.
JOSEPH E. CAMP.

Witnesses:

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