W. A. WEBSTER.

HINGE.

APPLICATION FILED APR. 18, 1912.

1,102,372.

Patented July 7, 1914.

2 SHEETS—SHEET 1.

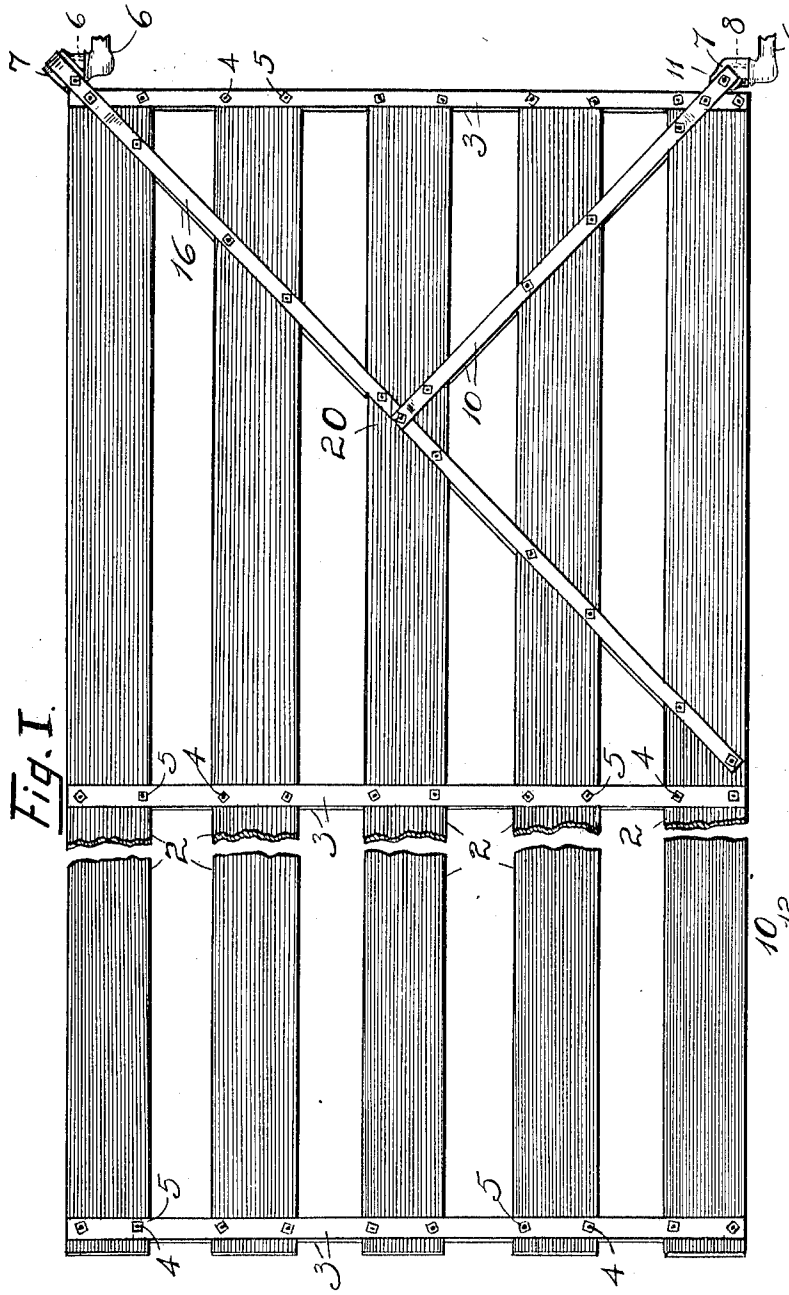


Fig. 1.

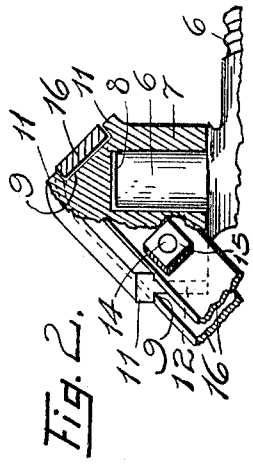


Fig. 2.

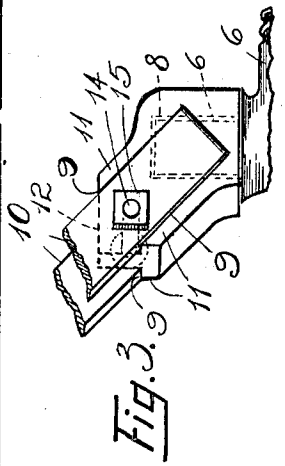


Fig. 3.

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2 SHEETS—SHEET 2.

Fig. 4.

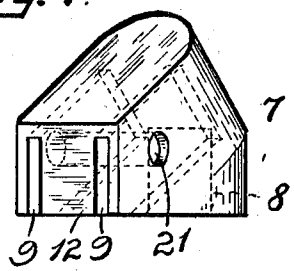


Fig. 5.

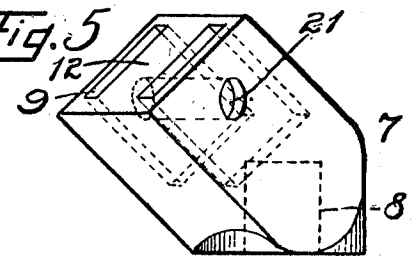


Fig. 6.

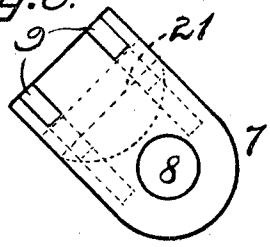


Fig. 7.

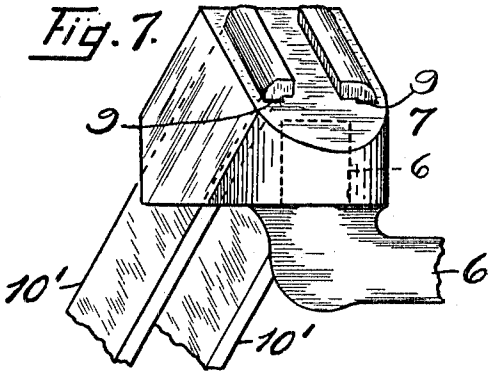


Fig. 8.

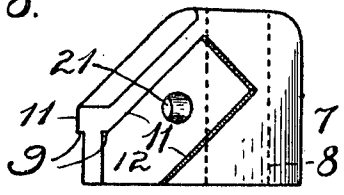


Fig. 9.

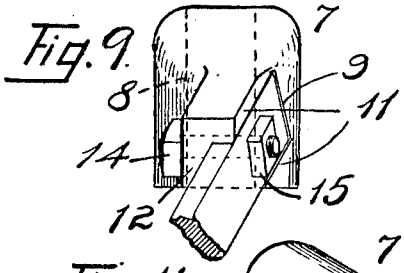


Fig. 10.

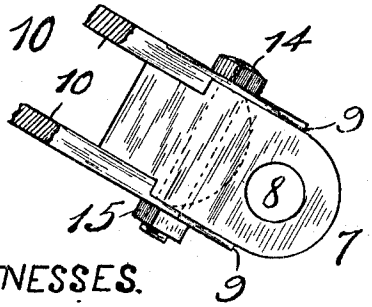
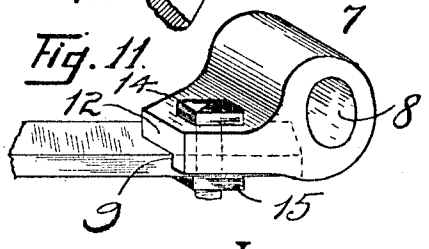


Fig. 11.



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UNITED STATES PATENT OFFICE.

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HINGE.

1,102,372. Specification of Letters Patent. Patented July 7, 1914.

Application filed April 18, 1912. Serial No. 691,597.

To all whom it may concern:

Be it known that I, WILLIAM A. WEBSTER, a citizen of the United States, and a resident of Galesburg, in the county of Knox and State of Illinois, have invented a new and useful Hinge, of which the following is a specification.

My invention relates to horizontally-swinging gates, and particularly to that type thereof known as truss gates, or nosag gates.

One of the objects of the invention is to provide a novel and generally improved hinge construction therefor.

Another object relates to improvements in the pintle-receiving members of the hinge; and still another to the relative arrangement of parts forming the hinges.

By means of the illustrated and herein described arrangement of the parts I provide not only a much more rigid gate structure than has heretofore been known, but attain thereby several subsidiary objects, part of which will be specifically pointed out and others of which will be obvious.

In order that the nature of the invention may be fully and thoroughly understood I have hereto appended drawings of the preferred and several modified forms of hinges and hinge members, two of which are shown as applied to a gate body.

Describing the several views of said drawings: Figure 1 is a perspective, showing a gate body, broken in two, having applied thereto my novel truss arrangement, and showing also two forms of my improved knuckles or pintle-receiving members; Fig. 2, a perspective, partly broken away and partly in section, of the upper hinge member shown in Fig. 1; Fig. 3, a perspective, partly broken away, of the lower hinge member shown at said Fig. 1; Fig. 4, a modification, a perspective of an upper knuckle; Fig. 5, a modification, a perspective of a lower knuckle; Fig. 6, a modification, a perspective of the knuckle shown in Fig. 4, seen from below; Fig. 7, a modification, a perspective of an upper hinge, partly broken away; Fig. 8, a modification, a perspective of an upper knuckle; Fig. 9, a modification, a perspective of a hinge; Fig. 10, a modification, a perspective, seen from the bottom, of the hinge shown in Fig. 8, with the truss straps in place; and Fig. 11, a modification, a perspective of a knuckle. Figs. 8–11 inclusive show reversible knuckles, or knuckles which are adapted for either the upper or lower hinge, and Figs. 2–11 are greatly enlarged with reference to Fig. 1.

In considering the several views in detail the same reference numeral will be employed in each to designate the same or a like part.

Referring now to Fig. 1, 2 represents each gate slat, and 3 each standard of an ordinary type of farm gate, the usual bolts 4 and nuts 5 being employed to unite them. 6 is a pintle, which also may be of selected structure. Now see Fig. 3. 7 designates a cast knuckle or pintle-receiving hinge member, preferably chilled, and is provided with a vertically arranged pocket or aperture 8 which receives the pintle. Its forward portion projects upwardly and is provided with channels 9 in which the truss-straps 10 have placement, the channels being afforded by ribs 11. The web 12 is transversely apertured at 21 for the reception of a bolt 14 which passes also through coinciding apertures in the straps 10 and is secured by a nut 15. In this knuckle and in all the others illustrated the truss-receiving aperture, whether it be a socket, a channel, a slot, or an opening extending entirely through the body of the knuckle, is disposed at an angle of approximately 45° to the pintle-receiving opening 8, in order that the draft on the upper and the pressure or resistance on the lower knuckles will be in a direct line and thus positive, and further in order to eliminate the strain or stress which is necessarily placed upon any bent portion—such as one paralleling a slat—which may be present, which bent portion, being bolted to said slat, causes the slat to split at that end—this because of the leverage and weight of the free end of the gate. In each knuckle shown in Figs. 1 to 7, inclusive, the pintle-receiving aperture is a pocket, the opening into which is downwardly directed, whereby the elements and dust are excluded therefrom, thus preventing friction. Also, the bearing may or may not thus be on the point of the vertical arm of the pintle—this being optional and depending upon its length, it will be observed that the knuckle is in the form of a knob or block, devoid of breakable extensions.

In Fig. 2 I have shown the same knuckle shown at the upper corner in Fig. 1, but greatly enlarged. The cross section of the forward portion of the knuckle is substantially the same as that of the lower one but the channel 9 is continuous, whereby the

band or fold of a continuous truss strap 16, which is an enlongated U-strap, may lie and be secured therein by a bolt 14 and nut 15, which uniting means I have illustrated as applicable to the several types of the species herein shown excepting in Fig. 7, but in which, it will be evident, the bolt and nut may be readily employed by a slight adaptation.

In the knuckle illustrated by Fig. 7 two straps which for the purposes hereof may be designated by the reference character 10'—they being duplicates of the lower pair 10—enter pockets which, inasmuch as they are to all intents and purposes the same as the channels 9, I shall designate by that numeral. This scheme of enumeration is carried out herethrough and in the several figures of the drawings.

Fig. 6 shows the knuckle shown in Fig. 4, but seen from below.

In Fig. 7 I have illustrated a knuckle provided with truss-receiving apertures 9 extending entirely through the body thereof. The ends of the straps project through and are bent over on the rear portion of the knuckle. One strap may be omitted if preferred.

Fig. 8 shows a knuckle provided with a pintle receiving aperture extending through, and shows also a pair of strap-receiving apertures or channels 9. This type, as also those shown in Figs. 9 and 11, may be used as either the upper or lower knuckle.

Fig. 9 shows a knuckle similar to that illustrated in Fig. 8, but adapted for a single strap.

Fig. 10 illustrates the application of the truss straps to the knuckle shown by Fig. 8.

Fig. 11 shows still another form of reversible, single-strap-engaging buckle.

The improvement in the truss construction, besides its direct or right line connection with the knuckles, resides in connecting the bottom board of the gate to the upper knuckle, and in connecting the lower knuckle to the median portion of the upper diagonal member or members. The lower end of the long truss member, which is a supporting or draft member, being connected quite a distance outward from its hinged end the leverage is consequently much less than if it were discontinued at the meeting point of the upper and lower members. Again, if so discontinued each acts on the end of the other as a lever, while in the structure shown there is no leverage, but the end of one bears on the midlength of the other and vice versa. Two right angled triangles having a common vertex at 20 are thus created, whereby a structure greatly intensifying the strength, durability and inflexibility of the gate is afforded. Both the knuckle and the several truss straps have been and shall hereinafter be considered as hinge members.

I am aware that the nut 15 might be omitted and that the head of the bolt 14 might be riveted to lock the knuckle and strap in engagement, but this I consider the equivalent and an evasion of the constructions illustrated in this application and my prior patent hereinbefore referred to.

Having thus set forth the construction and operation, the purposes and advantages of my invention, I claim as new and desire to secure by Letters Patent the following, to-wit:

A gate-hinge member consisting of a knob-like knuckle having in one of its sides a channel adapted to receive a diagonally arranged gate-supporting element, said knuckle provided with a transverse aperture whereby the gate-supporting member may be secured thereto.

In witness whereof I hereunto affix my signature this 23rd day of February, 1912.

WILLIAM A. WEBSTER.

In the presence of—

P. D. DUFF,

CARL A. APPLEGREN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."