

N. Gates, Hinge.

N^o 11,606.

Patented Aug. 29, 1854.

Fig. 5.

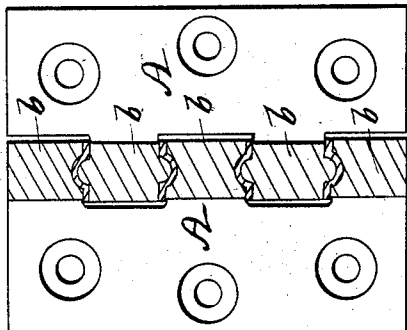


Fig. 4.

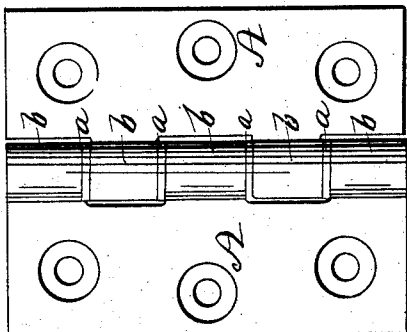


Fig. 2.

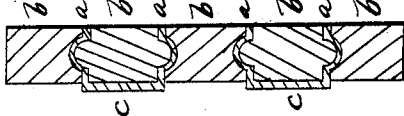
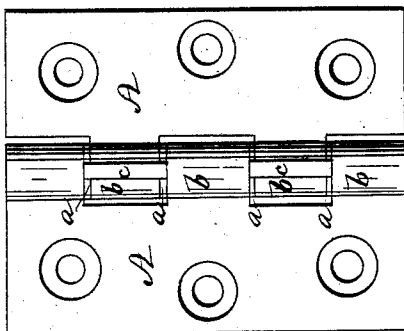


Fig. 1.



UNITED STATES PATENT OFFICE.

NELSON GATES, OF CINCINNATI, OHIO.

CAST HINGE.

Specification of Letters Patent No. 11,606, dated August 29, 1854.

To all whom it may concern:

Be it known that I, NELSON GATES, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful
5 Improvement in Washer-Hinges; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings forming part of this specification, in which—

10 Figure 1, is a face view. Fig. 2, a section through the center, and Fig. 3, an end view of one of my improved hinges, as it leaves the mold in which it is cast. Fig. 4, is a face view, and Fig. 5, a section of the finished hinge. Figs. 6, 7, and 8 are views showing the manner of constructing and applying the washers.

Similar letters of reference indicate corresponding parts in the several figures.

20 The object of this invention is to produce a complete hinge by one molding and one casting.

The invention consists chiefly in the employment, in every joint of the knuckle, of a washer of concavo-convex or other suitable form to enable it to form a pivot or to receive a portion of the knuckle which would form a pivot. A suitable number of
25 these washers are placed in the mold of the hinge at proper distances apart, and when the metal is poured they form a separation of the two parts of the hinge, and without any pin, serve as a pivot or center.

30 To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

35 *a, a,* are the washers which I make of sheet iron in a punching and stamping press, the outer part of each consisting of a flat flange whose external size is the same as the knuckle of the hinge, but the central part of concavo-convex form so that each enters into a concave recess in one of the
40 knuckle pieces *b, b,* of one part A, of the hinge, and receives a convex projection on one of the knuckle pieces of the other part A. The washers fit quite easily between the knuckle pieces and allow the hinge to work
45 freely while they confine the two parts securely together.

50 The method of molding and casting the hinge is as follows: In order to enable the washers to maintain their proper position in the mold, it is necessary that they should be provided with some means of securing

them in the sand. This may be accomplished either by making the washers each with a short tongue on one side as shown in Fig. 8, or by enlarging it all round and making suitable recesses in the mold to receive the tongue or enlargement, but I propose, as far superior to those two modes of securing them, to make the washers united in pairs, as shown in Fig. 7, first punching and stamping them out to the form shown in Fig. 6, and then bending them parallel with each other. The connecting piece *c,* then lays in a recess in the mold, and serves both to keep every pair at a proper distance apart, and to prevent them very effectually from getting into oblique positions; as one can not move without the other.

60 The pattern for molding the hinge is exactly like Figs. 1, 2, and 3, the joint being perfectly rigid, having prints representing the connecting pieces, *c, c.* A number of hinges are molded in the same flasks and in that part of the mold which has been imprinted by the prints of the connecting
65 pieces, the washers having been previously powdered with soap stone powder, are placed, with the connecting pieces *c, c,* in the recesses made by the prints, and then the washers being of the same size as the knuckle, may be just dropped in their places. The pouring is performed in the same way as in other molding. When the hinge is removed from the mold, it presents the appearance shown in Figs. 1, 2, and 3, and is then put in the cleaner to be cleaned, and afterwards the connecting pieces of the washers are filed or otherwise cut off, and the knuckle trimmed a little, when the joint will work freely.

75 Instead of making the washers of concavo-convex form in the center, they might be made with two convex or two concave faces; but it is cheaper to punch or stamp the washers from sheet iron than to make them in any other way, and in thus making
80 them, the concavo-convex form is easiest produced and is as good as any other form.

I am aware that hinges have been previously made with washers in all the joints of the knuckle pieces, and cast in one piece, but in that case the washers were all perforated and strung on a wire which was placed with them on the mold, and remained afterwards in the hinge. I am also aware that
85 hinges have been cast all at once without pins by placing in the mold, one or more

small blocks previously cast of the length
of one knuckle piece, but of less diameter,
and having a convex projection at each end,
and when the metal is poured, it runs
5 around the said blocks and incases them
immovably within the knuckle pieces of
one part of the hinge, and makes a concav-
ity in the faces of the next knuckle pieces
of the opposite part of the hinge; but in
10 both of the former modes there is great dif-
ficulty in keeping the washers or the blocks
in proper position in the mold.

Having thus described my invention, I
will proceed to state what I claim, and de-
15 sire to secure by Letters Patent. I do not
claim casting the hinge all at once without
a pin by inserting in the mold, blocks pass-
ing through certain of the sections of the
knuckle, and having concave recesses or con-

vex projections to receive corresponding re- 20
cesses or projections on the ends of the
knuckle pieces; neither do I claim the em-
ployment of washers between all the joints
of the knuckle when a pin is used in con-
nection with such washers. But 25

I claim—

The employment within any number of
joints in the knuckle of a hinge, of separate
metal washers which are of concavo-convex,
or other form, which renders them capable, 30
without any assistance, of serving as a pivot
or center of the hinge, substantially as
herein set forth.

NELSON GATES.

Witnesses:

O. D. MUNN,

J. W. HAMILTON.