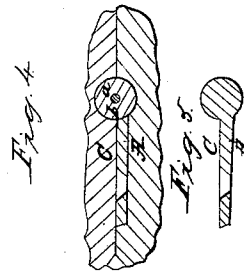
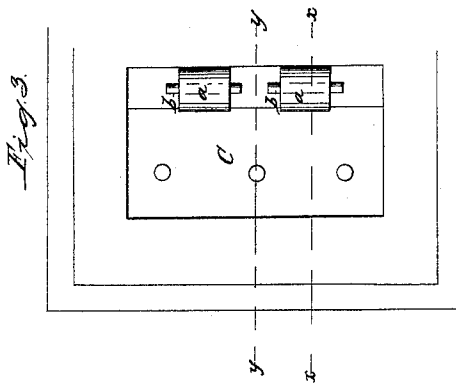
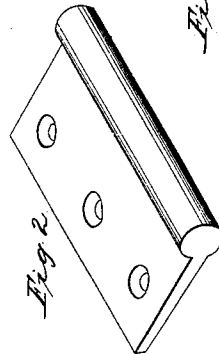
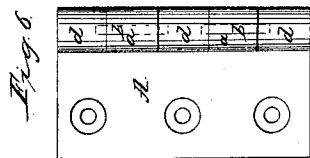
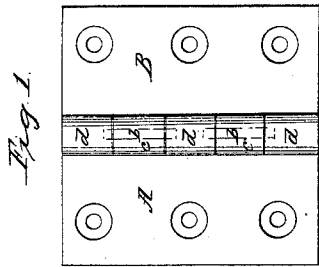
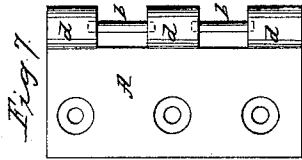


*N. A. Fenner,*

*Hinge.*

*N<sup>o</sup> 18,896.*

*Patented Dec. 22, 1857.*



# UNITED STATES PATENT OFFICE

NICHOLAS A. FENNER, OF PROVIDENCE, RHODE ISLAND.

## CASTING HINGES.

Specification of Letters Patent No. 18,896, dated December 22, 1857.

*To all whom it may concern:*

Be it known that I, NICHOLAS A. FENNER, of the city of Providence, in the county of Providence and State of Rhode Island, have  
5 invented a new and useful Improvement in Cast 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  
10 part of this specification, in which—

Figure 1, is a face view of a butt hinge constructed according to my invention. Fig. 2, is a perspective view of the pattern employed to mold one leaf of the hinge. Fig.  
15 3, is a face view of the mold containing the cores for casting the first leaf of the hinge. Figs. 4 and 5, are transverse sections taken respectively in the lines *x, x*, and *y, y*, of Fig. 3, showing the mold and casting within  
20 it. Fig. 6, represents the first leaf of the hinge after it is cast, but before the removal of the cores. Fig. 7, represents the same leaf of the hinge after the removal of the cores. Fig. 8, is a transverse section of  
25 the mold in condition for casting the second leaf of the hinge to the first.

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

This invention relates to the manufacture of cast hinges, and consists in the  
30 employment of a separate pin for each core; the latter being molded upon the pins, which are cast into or inclosed in one leaf of the hinge; said pins forming the pivots  
35 or centers upon which the knuckles of the other leafs turn.

I am aware that the employment of a single core pin upon which all the cores are strung, said pin being cast into one leaf of  
40 the hinge, and forming the pivot or center for the knuckles of the other leaf, is not new. This method forms the subject of a patent granted to Stewart & Lloyd, Jan. 20, 1843, and I therefore disclaim the same.  
45 In the application of the above mode, the cores must be first molded separately with a hole in the middle and then strung upon the pin. This method produces a defective hinge, because in order to effect the string-  
50 ing, the holes in the cores must be a little larger than the pin; consequently the pins, when placed for casting, sink below the exact center of the cores, and when the other leaf is cast, its knuckles are pivoted out of  
55 center, forming a bad hinge. The center holes of the cores are also enlarged by the

friction or rubbing occasioned in slipping or stringing them upon the pins; and this enlargement increases the distance to which the pins sink below the center of the cores, 60 when laid in place for casting. The center hole in the cores is also liable to be enlarged and roughened by the bur which always adheres more or less to the ends of wire when cut. Another objection to the  
65 stringing of all the cores upon one pin, in hinge casting, is the difficulty of rendering the wire exactly straight.

The foregoing practical difficulties connected with the employment of the single 70 core pin, and the stringing of the cores thereupon, are of such a serious nature as to render the manufacture of good hinges very difficult, and, as I believe, almost impossible. Indeed, up to the present time, 75 so far as I know, all the cast hinges sold in market are made in the old fashioned manner—the holes cast in the knuckles, the leaves cast separately, and afterward united by the insertion of a single pin or 80 pivot upon which all the knuckles swing.

In the application of my improvement, a short wire or pin is employed for each core, and the core is molded upon the pin, not strung. My plan renders it impossible 85 for the pin ever to sink below the exact center of the core, nor is there any enlargement of the center hole by rubbing or friction or burring, nor any difficulty in rendering the wire straight, as it is comparatively very 90 short. My cores, each provided with its pin, are readily and cheaply made, and require only the ordinary skill in their production and use. After the leaf is molded, it is only necessary to lay them in the 95 knuckled groove of the mold, where they remain, holding the pins in their exact centers, ready to receive the metal of the corresponding leaf. When the casting is done, a complete and perfect hinge is produced. 100

To enable others to construct hinges according to my invention, I will proceed to describe it, with reference to the drawings.

The pattern which is first employed shown in Fig. 2 is of the form of one leaf A, 105 of the hinge, with the joint or knuckles of the whole hinge. When this has been molded, I take one, two or more cylindrical cores *a, a*, Figs. 3, 4 and 6, of the diameter of the joint or knuckles of the hinge, said cores being of a length equal to the knuckle pieces  
110 *c, c*, Fig. 1, that are to be cast on the other

leaf B, of the hinge, and being formed upon pins *b, b*, composed of short pieces of iron wire which pass straight through their axes and protrude a short distance from their ends in the form of pivots; and I place these cores in one half of the mold C, in the proper positions to be occupied by the knuckle pieces *c, c*, when the hinge is complete, and then put the two parts of the mold together and pour the metal. When the mold is opened, the leaf A of the hinge that is now produced, is taken out in the condition shown in Fig. 6; sometimes, however, the cores *a, a*, are broken, but that is of no consequence as they have to be picked out to leave the wires *b, b*, exposed as shown in Fig. 7, before casting the other leaf of the hinge. The ends of the wires *b, b*, are now fast secured in the knuckle pieces *d, d*, of the leaf A, which is ready to have the other leaf B, cast to it.

The pattern for molding the leaf B, is a fac-simile of the complete hinge opened out flat, and after its imprint has been taken in the mold D, Fig. 8, the leaf A is placed in one half of the mold, the two parts of the mold put together, and the metal poured, to complete the hinge, which only requires to be dressed a little around the joint, when taken from the mold, by grinding. In this mode of constructing the hinges, if ordinary

care be used, the pins cannot fail to be in the center of the joint which will be sure to work freely, the knuckle pieces *c, c*, being always loose on the pins and the pins being held tightly between the knuckle pieces *d, d*, by the longitudinal shrinkage of the casting in cooling. It is obvious the pins *b, b*, can never draw or work out of the joint, and in this respect the hinge is better than the drilled and wired hinge, and it is in all other respects as good.

I do not claim, generally, the casting of a wire into the center of the joint of a hinge, as wires extending right through the joint have been inserted in the process of molding and casting. Neither do I claim the casting of pivots or teats on certain of the knuckle pieces to be received into recesses in others of the said pieces. But

What I claim as new in the manufacture of hinges and desire to secure by Letters Patent, is:—

The employment of a separate pin for each core, when the cores are molded upon the pins, and the latter inclosed within the hinge by the casting, all as herein described.

NICHOLAS A. FENNER.

Witnesses:

JAMES H. OLNEY,  
EDWARD S. RHODES, Jr.