

(No Model.)

A. SANFORD.
HOOK.

No. 411,968.

Patented Oct. 1, 1889.

Fig. 1.

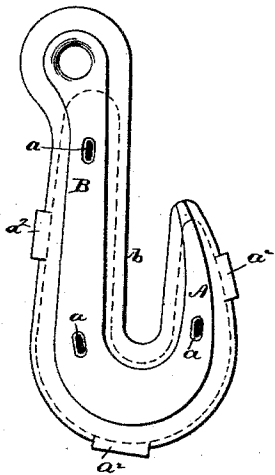


Fig. 2.

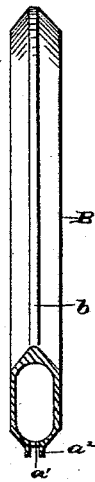


Fig. 7.

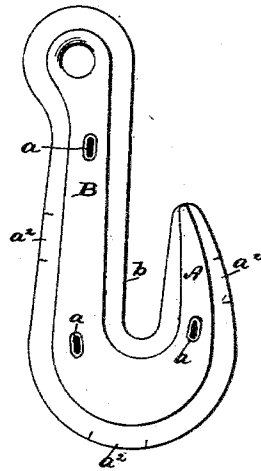


Fig. 8.

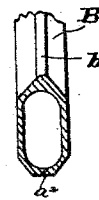


Fig. 3.

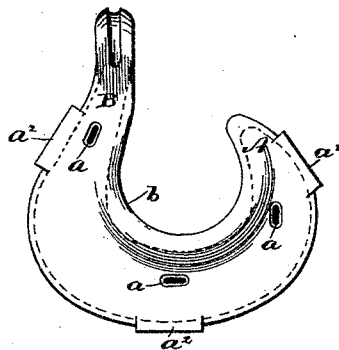


Fig. 4.

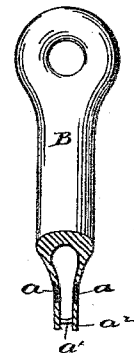


Fig. 5.

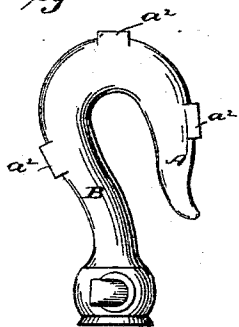
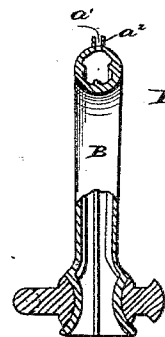


Fig. 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

ALBERT SANFORD, OF OSHKOSH, WISCONSIN.

HOOK.

SPECIFICATION forming part of Letters Patent No. 411,968, dated October 1, 1889.

Application filed July 21, 1888. Serial No. 280,627. (No model.)

To all whom it may concern:

Be it known that I, ALBERT SANFORD, of Oshkosh, in the county of Winnebago and State of Wisconsin, have invented certain
5 new and useful Improvements in Hooks; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and
10 to the figures and letters of reference marked thereon.

This invention relates to and constitutes an improvement upon the class of hollow hooks described in my prior application, Serial No.
15 240,081.

The said invention has for its object to simplify and cheapen the process of manufacture—hence the cost of the article—and at the same time maintain a high standard of
20 strength, symmetry, and durability; and to this end my said invention consists, primarily, in a hollow hook formed by casting the same upon or around a core supported at intervals along the sides and one edge, thereby producing a hollow hook perforated on the sides and
25 back—that is to say, in rear of the wearing-surface—all or a portion of said openings being closed after the casting operation.

It also consists in forming a blank with ears
30 or flanges adjacent the openings in the back of the hook for bending down into and closing said openings; and it further consists in certain minor features of construction, all as hereinafter more fully described, and pointed
35 out in the claims.

In the accompanying drawings, Figures 1 and 2 illustrate in side elevation and transverse section a blank from which a hook is formed, exhibiting my present invention.
40 Figs. 3 and 4 are similar side and sectional views, respectively, of another form of blank. Figs. 5 and 6 are side and sectional views, respectively, of still another modified form. Fig. 7 is a side elevation, and Fig. 8 a sectional
45 view, of a completed hook with the flanges turned in.

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

The hook with attaching eye or swivel may
50 be of any desired form in cross-section, and of any size, shape, or dimensions suitable to

adapt it to the particular kind of work in which it is to be employed.

The hook is made of metal cast in a mold and around a core which is connected to and
55 sustained in position within the mold by pins or projections located on the opposite sides, as at *a*, and by connections extended from the back of the hook and arranged at intervals in its length, as indicated at *a'*. Around
60 the connections *a'* recesses are made in the mold to form flanges or extensions *a''*. The blank thus formed is hollow throughout the length of the hook A and stem B, the recess
65 extending to or beyond the point at which the eye is attached to the stem or body B, as indicated in the drawings. The front wall or wearing-face *b* of the hook is thickened;
70 but the back instead of being made open throughout its length, as shown in my prior application, is closed except at the points *a'*, where the core-supports stand. To close the
75 openings *a'* in the back, and thus finish the hook, the flanges *a''* are bent inward and downward, and if necessary are afterward dressed
off even with the general surface of the back, thereby making the back substantially uniform on its surface.

The perforations *a* in the sides of the hook operate to facilitate the removal of the core
80 and assist during the annealing process in maintaining the metal at the proper uniform temperature, besides reducing the tendency to twist or distort the hook. These openings also permit of the ready escape of water
85 which might enter the cavity in the hook and freeze, without which provision it would be liable to rupture the hook itself, or at least force the flanges filling the opening at the rear
90 out, thus not only rendering the hook unfit for use by reason of the projections at the back, but also greatly impairing its strength. The openings, it will be seen, are located in the
sides of the hook, and as the hook normally
95 lies on its side free exit for the water will be permitted at all times, and even should the hook not be on its side so little water would remain in the same as would do no harm. The flanges *a''* are preferably driven down into
100 the openings *a'* far enough to make the surface of the back uniform and smooth, thus also by filling such openings compensating

for the weakening the hook at those points where the openings occur.

One of the most important advantages of the present form of hollow hook over that described in my prior application results from the formation of a practically solid back so far as appearances and strength are concerned, the perforations being relatively small and located at intervals instead of extending the full length of the back, and closed by bringing the edges together, for in thus forming the back integral not only is the strength of the hook as a whole increased, but injury and loss, such as arise in bending and finishing, are avoided. The openings a' are of comparatively small area, and the flanges a^2 can after the annealing be quickly pressed or driven down without danger of twisting or weakening the hook.

It is obvious that flanges or strengthening-ribs may be cast on the inside walls of the hook to afford additional strength when it is found desirable to have the extension smooth and finished.

A further advantage arising from the hollow in the hook is the ease with which the shank may be expanded or flanged out when the same is united with a block to form the

ordinary swivel-hook; and I do not wish to be understood as limiting myself to a hook formed with a single eye, as it may be adapted for application to the ordinary pulley-block or similar device, in which instance it would be necessary to form an eye on each end, as is ordinarily done with the solid hook.

Having thus described my invention, what I claim as new is—

1. A hollow chain-hook having the core-support holes in the back or edges closed or filled, substantially as set forth and described.

2. As an improved article of manufacture, a blank from which to form a hollow hook, having its walls integral at the back with openings therein, and flanges for closing said openings, substantially as described.

3. As an improved article of manufacture, a blank from which to form a hollow hook, having its walls integral at the back with openings in said back, flanges for closing the same, and openings in the side walls of the hook, substantially as described.

ALBERT SANFORD.

Witnesses:

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