



# UNITED STATES PATENT OFFICE.

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## HINGE.

No. 863,128.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES J. AEBI, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented new and  
5 useful Improvements in Hinges, of which the following is a specification.

My invention relates to improvements in hinges, particularly those adapted to carry heavy bodies into position, as the doors of safes, vaults and the like.

10 The object of the invention is two-fold, first to enable such bodies to be swung upon the hinges by the expenditure of a small amount of force, while providing an inexpensive, durable mechanism to that end; and second to secure adjustment, usually vertical, of  
15 the body in the direction of the length of the hinge pintle.

In the particular embodiment of my invention selected for illustration: Figure 1. is a front elevation of a vault, with the door closed, said door being swung  
20 upon the usual crane hinge, having four true hinges. Fig. 2. is an enlarged view of one of these hinges, in axial section.

Referring to the drawings, A represents the vault frame, B the swinging body or door, and C the hinge  
25 crane. Hinges 1 and 2 provide means of swinging the door B freely on the crane C, while hinges 3 and 4 attached to the frame in any suitable manner as by cap-screws  $a^1$ , provide means of swinging the crane C freely on the frame A. Freedom and ease of movement is  
30 therefore provided at all points, and adjustment of either pair of the hinges, 1 and 2 or 3 and 4, will raise or lower the door B.

As the hinges are similar in all essential particulars, I will describe one only, and have selected the one  
35 designated as 4. It will be seen that one leaf or plate  $a$  carrying the knuckle  $a^1$  is rigidly attached to the frame A, while the other leaf or plate  $c$ , carrying the knuckle  $c^1$  is a part of the crane C. Between the two knuckles  $a^1$  and  $c^1$  may be interposed a washer W, but  
40 it has no other use than to give a more pleasing finish to the hinge. Both knuckles  $a^1$  and  $c^1$  and the washer W are formed, or bored axially, to receive a pintle D, which extends a controlling distance into each knuckle and upon which the door swings. Pintle D is prefer-  
45 ably a solid cylinder, the planes of whose ends are at right angles to its axis, made of a tough untempered steel or the like. Plugs  $d$ ,  $d^1$  are cylindrical, with the plane of one end at right angles to the axis, which end seats upon the end of the pintle, and the other end  
50 rounded or otherwise shaped to minimize friction. Other plugs  $d^2$ ,  $d^3$  similar in shape, are placed with their rounded ends abutting and resting against the rounded ends of the plugs  $d^1$  and  $d$  respectively. All these plugs are made of tempered or hardened metal

to withstand wear. The outer end of each knuckle 55 bore is threaded to receive a set-screw  $d^4$ ,  $d^5$ , whose outer end is square or otherwise formed for wrench contact, and whose inner end is a plane at right angles with its axis and adapted to seat firmly against the similarly shaped ends of the plugs  $d^2$  and  $d^3$ , respec- 60 tively.

Oil holes may be provided in any convenient manner. An efficient form is the slanted holes  $a^2$ ,  $c^2$  stopped against the entrance of dust by the screw plugs,  $a^3$ ,  $c^3$ , respectively. 65

The operation is as follows: If it is desired to raise the body, as B, whose weight is being sustained, all the parts of the hinge being in the position shown in Fig. 2, tighten the set-screws  $d^4$  and  $d^5$  each one-half the required amount, the aim being to maintain the 70 pintle in such a position that it extends into each knuckle the same distance. When the door is too high, and is to be lowered, turn the set-screws the opposite way. The weight being carried on the rounded head of  $d^1$ , and that of the plug  $d^2$  where it contacts 75 with the rounded head of  $d^1$ , and that of the plug  $d$  where it contacts with  $d^3$ , friction will be minimized and very heavy bodies will be easily swung out of and into position. These hardened plugs being thoroughly lubricated, will be durable, and the wear may be taken 80 up with the set-screws in the manner described.

Various changes of parts, would lie within the scope of my invention, as for example, omitting the bearing plugs  $d$ ,  $d^1$ ,  $d^2$ , and  $d^3$ , making the ends of the pintle D, and the inner ends of the set-screws  $d^4$  and  $d^5$  round- 85 ed and the parts of hardened metal; also any shaping of the ends of plugs, pintle, set-screws or their equivalents, so as to make suitable bearing surfaces.

I claim as my invention and desire to secure by Letters Patent of the United States: 90

An improved hinge comprising co-acting members having knuckles with bores extending therethrough and adapted to register, a pintle of tough untempered metal extending across the joint between the knuckles when assembled, said pintle having its opposite ends squared, bearing blocks 95 at each end of the knuckles, said blocks being of tempered metal having one end squared to fit against the corresponding end of the pintle, and having the other end rounded, screws entering the outer ends of each knuckle and having flattened inner ends, and other bearing blocks 100 between the first named blocks and the inner ends of the screws, said other blocks having one end rounded and in contact with the rounded end of the first named blocks and having the other end flattened and engaged by the inner flattened end of the screws. 105

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES J. AEBI.

Witnesses:

W. D. COLEMAN,  
JOSEPH R. GARDNER.