

(No Model.)

C. BOYE.

SOCKET FOR BRIDGE AND OTHER PIVOTAL SHAFTS.

No. 304,694.

Patented Sept. 9, 1884.

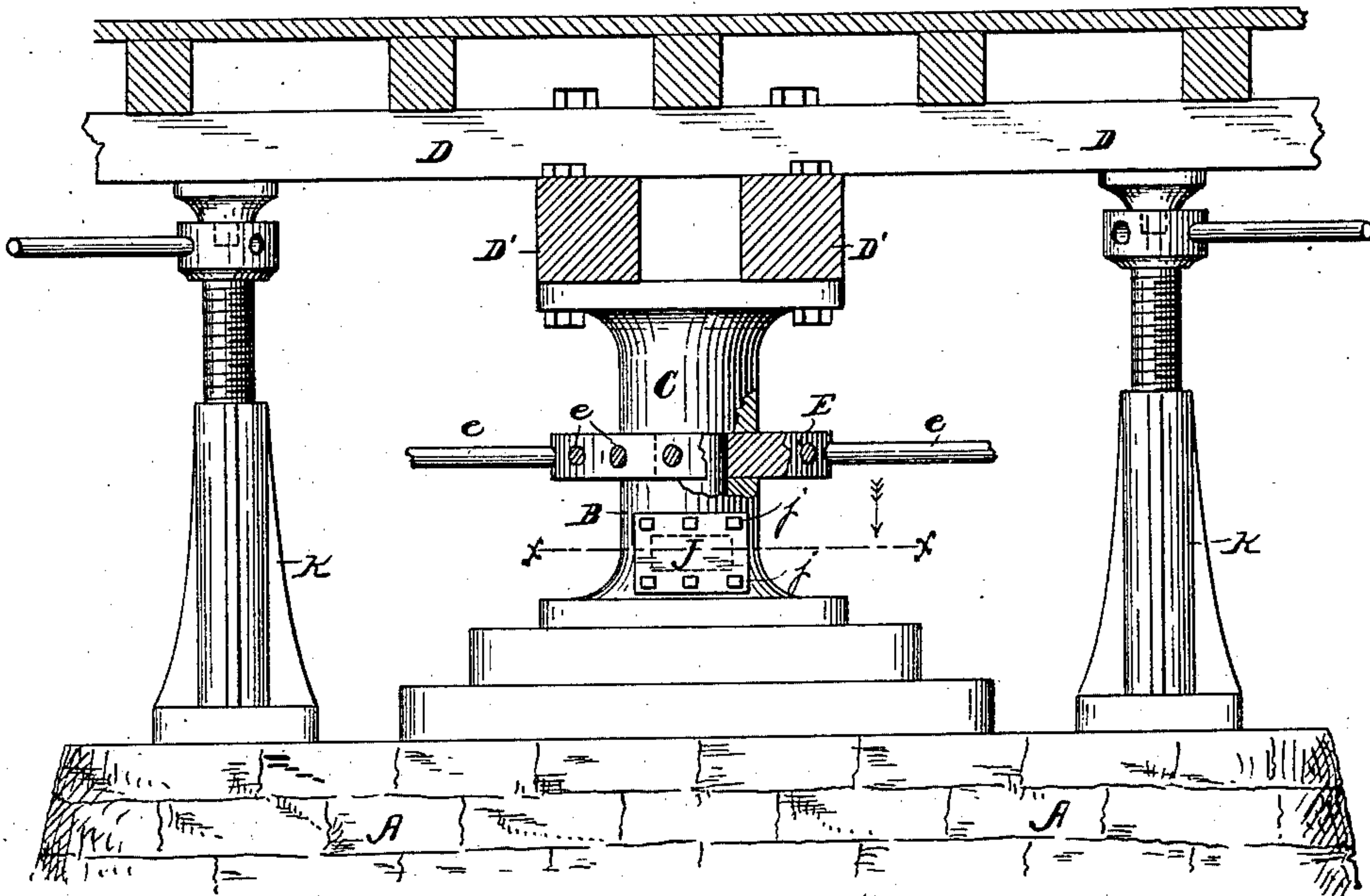


Fig. 1.

Fig. 2.

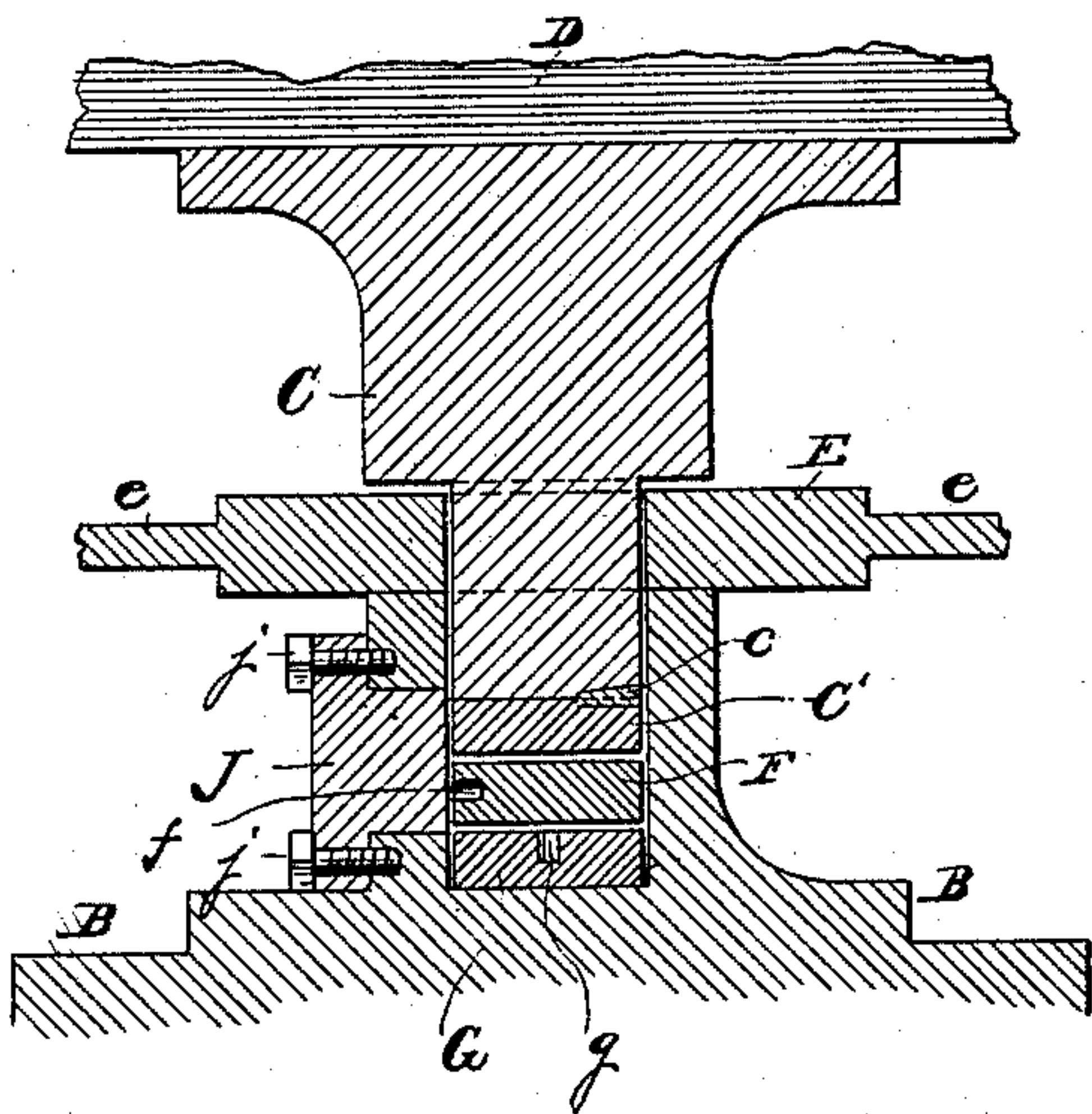


Fig. 3.

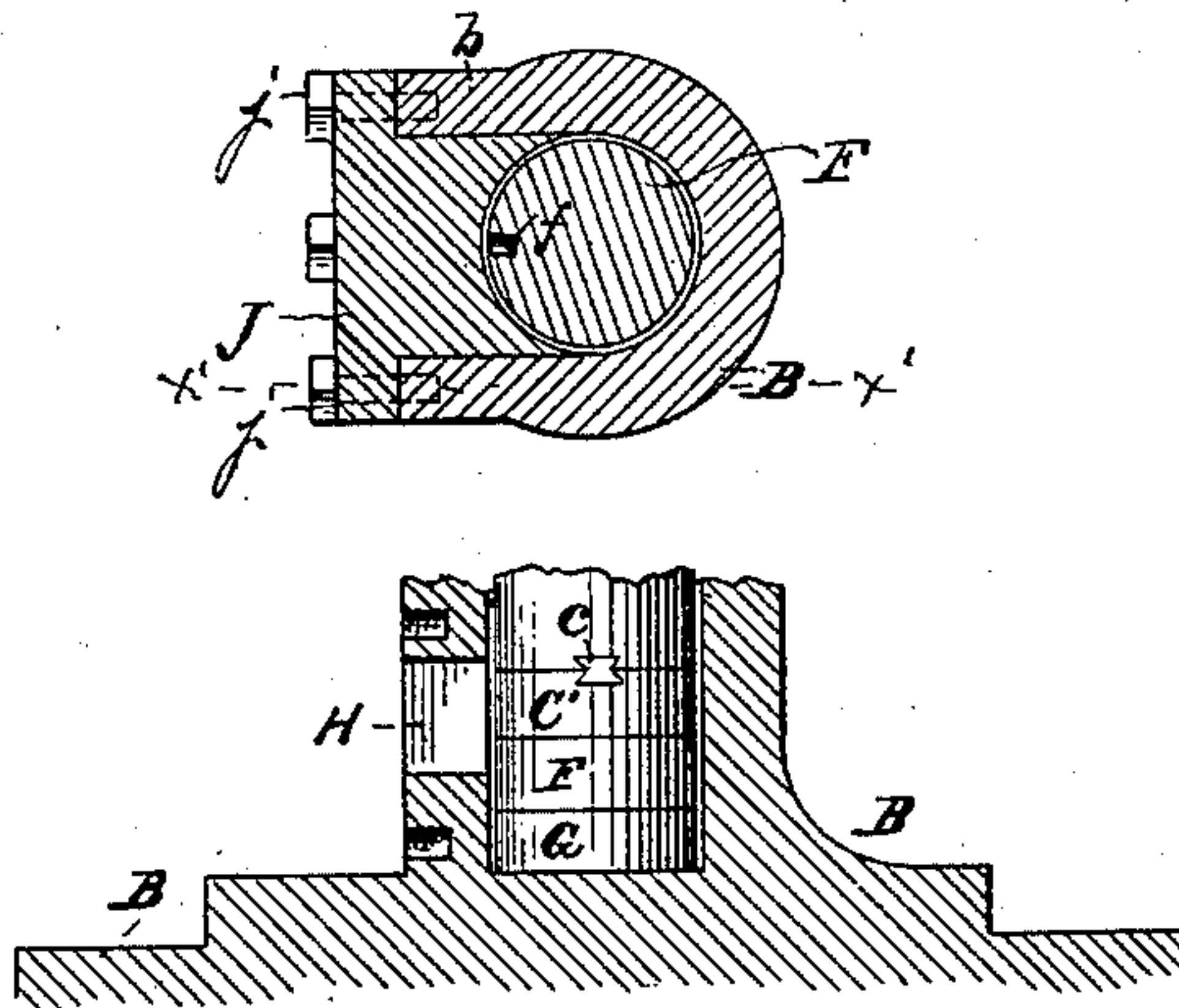


Fig. 4.

Witnesses.

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# UNITED STATES PATENT OFFICE.

CHARLES BOYE, OF CHICAGO, ILLINOIS.

## SOCKET FOR BRIDGE AND OTHER PIVOTAL SHAFTS.

SPECIFICATION forming part of Letters Patent No. 304,694, dated September 9, 1884.

Application filed February 12, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES BOYE, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Sockets for Bridge and other Pivotal Shafts, of which the following is a description, reference being had to the accompanying drawings, in which—

Figure 1 is a central longitudinal sectional view of a part of a pivot-bridge, the pivot and pier being in elevation. Fig. 2 is a central vertical section of said pivot. Fig. 3 is a horizontal sectional view of the same on the line *x x*, Fig. 1; and Fig. 4 is a modification of Fig. 2 on the line *x' x'*, Fig. 3.

Like letters of reference indicate like parts in the different figures.

It is a well-known fact that within the socket or step of all upright shafts of great weight, or pivots which are intended to support great weight, frictional plates of hardened steel are placed for the purpose of preventing wear and of enabling the shaft or pivot to be the more easily rotated. To prevent the same from "grinding," it is highly essential that they should be frequently oiled and thoroughly cleaned, and in order to do this it is necessary to lift said shaft or pivot entirely out of the socket, so that the plates may be made accessible. In the case of pivot-bridges this is especially difficult and expensive, as the entire bridge—weighing frequently several hundred tons—must be raised to a considerable height before access may be had to the plates. The operation requires, in moderate-sized bridges, the labor of about twelve men, consumes from one to two days' time, and necessitates the stoppage of all traffic thereon, while in large railroad-bridges it is proportionately more difficult and expensive, and involves a proportionate loss in the stoppage or delay of traffic. Moreover, it has heretofore been necessary, in order to regulate the pressure upon the pivot and to transfer the weight or the desired proportion thereof from the friction-wheels upon the usual circular track to the pivot, after the plates have been inserted under the latter, to insert a screw through the entire length of said pivotal shaft to bear upon said friction-plates, and by turning said screw to regulate said pressure.

The purpose of my invention is to overcome these difficulties and delays by providing a step or socket from which one or more of said plates may readily be removed by one or two men without necessitating the removal of said pivot from the step, or the use of said screw to regulate said pressure, and without interfering with or retarding the traffic upon said bridge, all of which will be hereinafter more fully described, and definitely pointed out in the claims.

In the drawings, A represents the central pier of the bridge, B the socket or step resting thereon, and secured thereto in the usual manner. C is the pivot, the lower end of which is inserted in said step, as shown in Fig. 2, while the bridge D, resting upon cross-timbers D' D', is supported thereon, as shown. A "spindle," E, Figs. 1 and 2, surrounds the axis of said pivot, and is connected by rods *e* to the usual friction-rollers on the circular track, to preserve said rollers concentric with said axis or pivot.

On the bottom of the pivot C, which is inserted within the socket B, is detachably secured, by means of dovetail keys *c*, Figs. 2 and 4, a hardened-steel plate, C', which is intended to revolve with said pivot and to prevent wear thereof, while below said plate C' are loosely inserted two other steel plates, F and G, respectively, which are of the same diameter as the pivot. Upon the side of said step or socket, which is made of cast-iron, I cast an extension or shoulder, *b*, (better shown in Figs. 3 and 4,) into which is made an orifice or opening, H, Fig. 4, extending to the cylindrical opening of the socket, and the width of which is of the same diameter as the latter, the bottom of said orifice being preferably on a line, or thereabout, with the top of the plate G, while the top corresponds substantially with that of the plate C'. Into said orifice H, I place a closely-fitting plug, J, which is made to fit the pivot C, and thus, when in position, preserve the contour of the cylindrical opening or socket. Said plug J is secured in position upon the flat shoulder *b* by means of bolts *j j j*, as clearly shown in the drawings.

The plates or "buttons" F G require frequent cleaning and oiling, and it is necessary to remove the same for that purpose, for al-



though oil may be poured into the socket the pressure upon the plates is so great that it will not remain long between them, and they are sure to "grind" and "cut" unless regularly removed. By unscrewing the bolts *j* and removing the plug *J* the plates *C*, *F*, and *G* may be readily withdrawn for this purpose, provided said plates are temporarily relieved from the pressure of the pivot *C*. This may be accomplished in the usual manner by placing jack-screws *K K*, Fig. 1, beneath said bridge, and by slightly turning the same remove said pressure without raising said bridge to any appreciable extent. It is obvious that this may be accomplished by one or two men while the bridge is in use, and in this manner said plates may be kept in perfect condition, or replaced by new ones at a nominal expense. It is obvious that the pressure upon said pivot may be regulated by the use of plates of slightly-varying thickness, according as the expansion or contraction of the friction-rollers causes the bridge to rise or fall, or other conditions produced by like changes may demand. Thus I am enabled to dispense with the usual vertical set-screw through the center of said pivot for regulating said pressure. The bottom of the orifice *H* may be somewhat above the bottom of the plate *F*, if desired, as shown in Fig. 4; but this construction would necessitate the raising of the bridge to a corresponding height. As it is believed that said plug *J* may hold said plates securely in position, I prefer to make the orifice as shown in Fig. 2. The plug *J* should be properly packed, in order to prevent a leakage of oil from said socket. In order to secure a hold upon said friction-plates for removal thereof, I prefer to place screw-holes therein, as follows: three or more of such holes, *f*, may be placed in the side of the plate *F*, as shown in Fig. 2, while

a single hole, *g*, is placed, as shown, in the plate *G*. By screwing a small rod therein either of said plates may be readily removed. It is obvious that said step may be of equal utility as applied to the shafts of water-wheels, elevators, and all upright shafts of great weight, in connection with which friction-plates are used in a corresponding manner.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A step or socket adapted for the reception of friction-plates as bearings for an upright pivot or shaft, the same being provided with an opening at the side opposite said friction-plates, and a plug having its inner end formed to fit said plates, and secured in said orifice by bolts or other equivalent means, whereby said plates may be withdrawn at will upon removing the pressure of the shaft or pivot therefrom, substantially as and for the purposes set forth.

2. The combination, with an upright shaft or pivot and friction-bearing plates, of a step or socket for the reception thereof, provided with an opening opposite said plates, and a plug fitted therein and secured to said step by bolts or screws, substantially in the manner and for the purposes set forth.

3. The step or socket *B*, provided with the orifice *H*, removable plug *J*, adapted to fit said orifice, and bolts *j* or other equivalent means for securing the same firmly in position, combined with removable friction-bearing plates and a shaft or pivot, *C*, substantially in the manner and for the purposes specified.

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Witnesses:

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