

(No Model.)

2 Sheets—Sheet 1.

A. H. RENSHAW & H. H. BURDEN.  
CAR COUPLING.

No. 496,956.

Patented May 9, 1893.

Fig. 1.

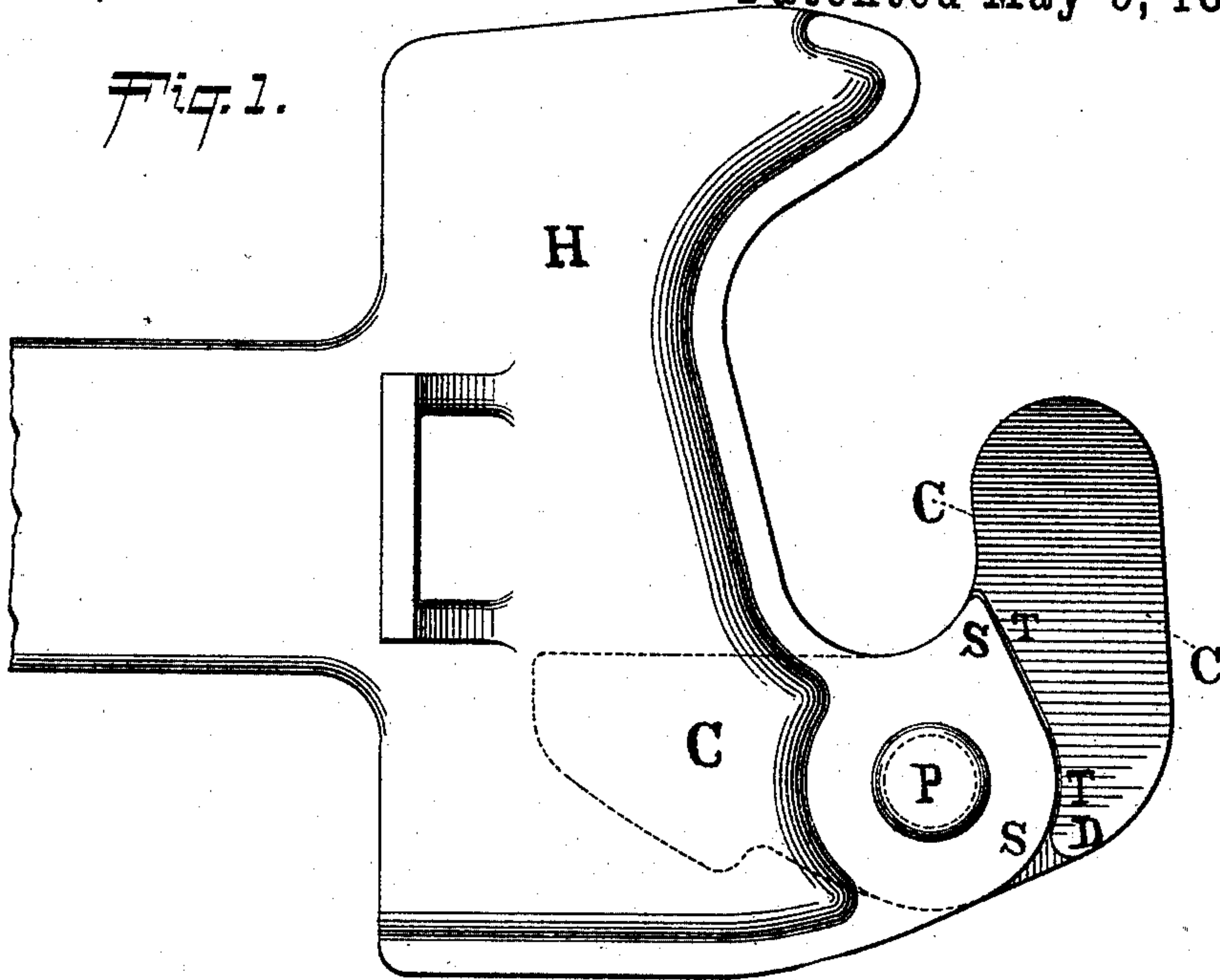
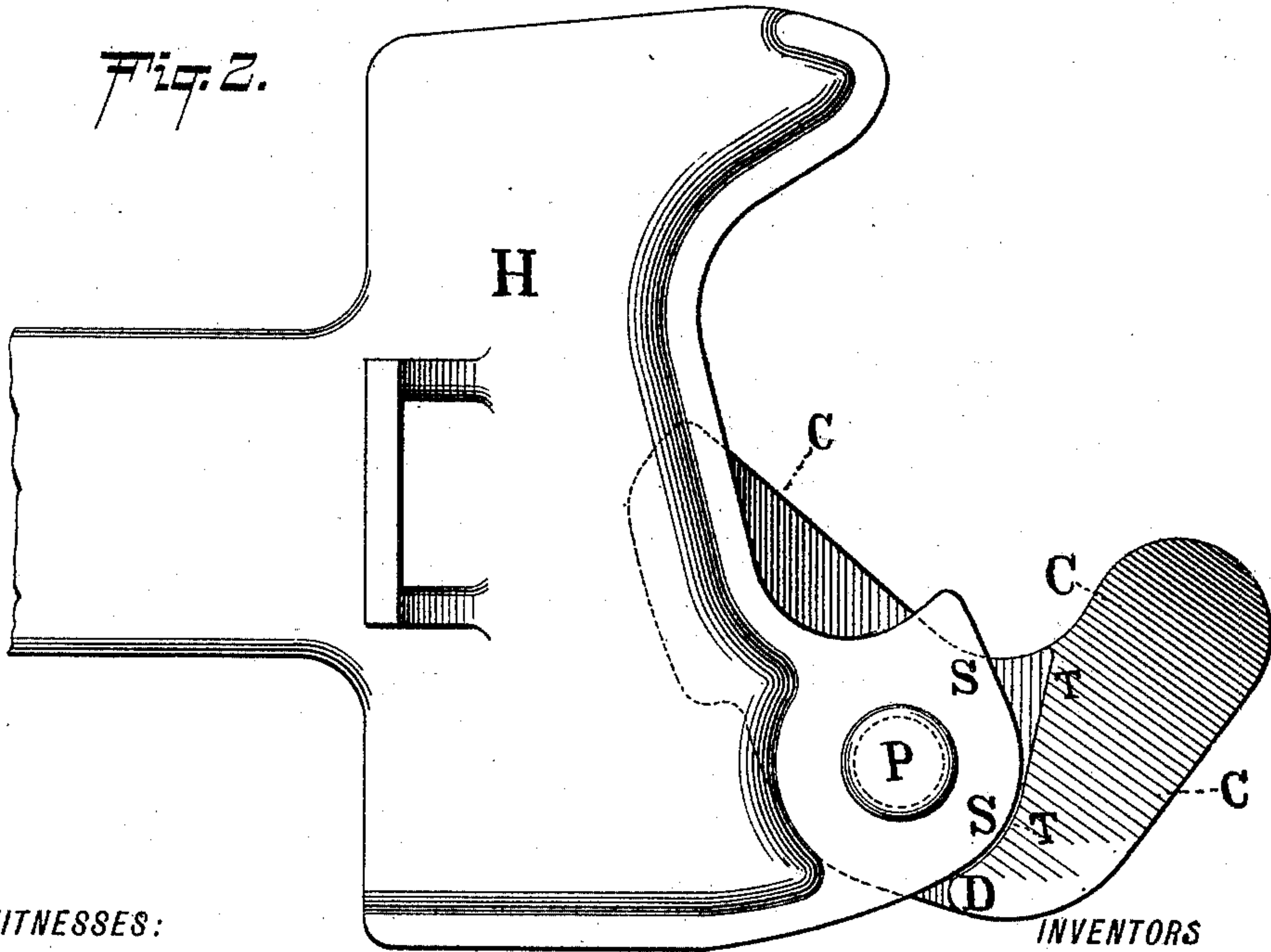


Fig. 2.



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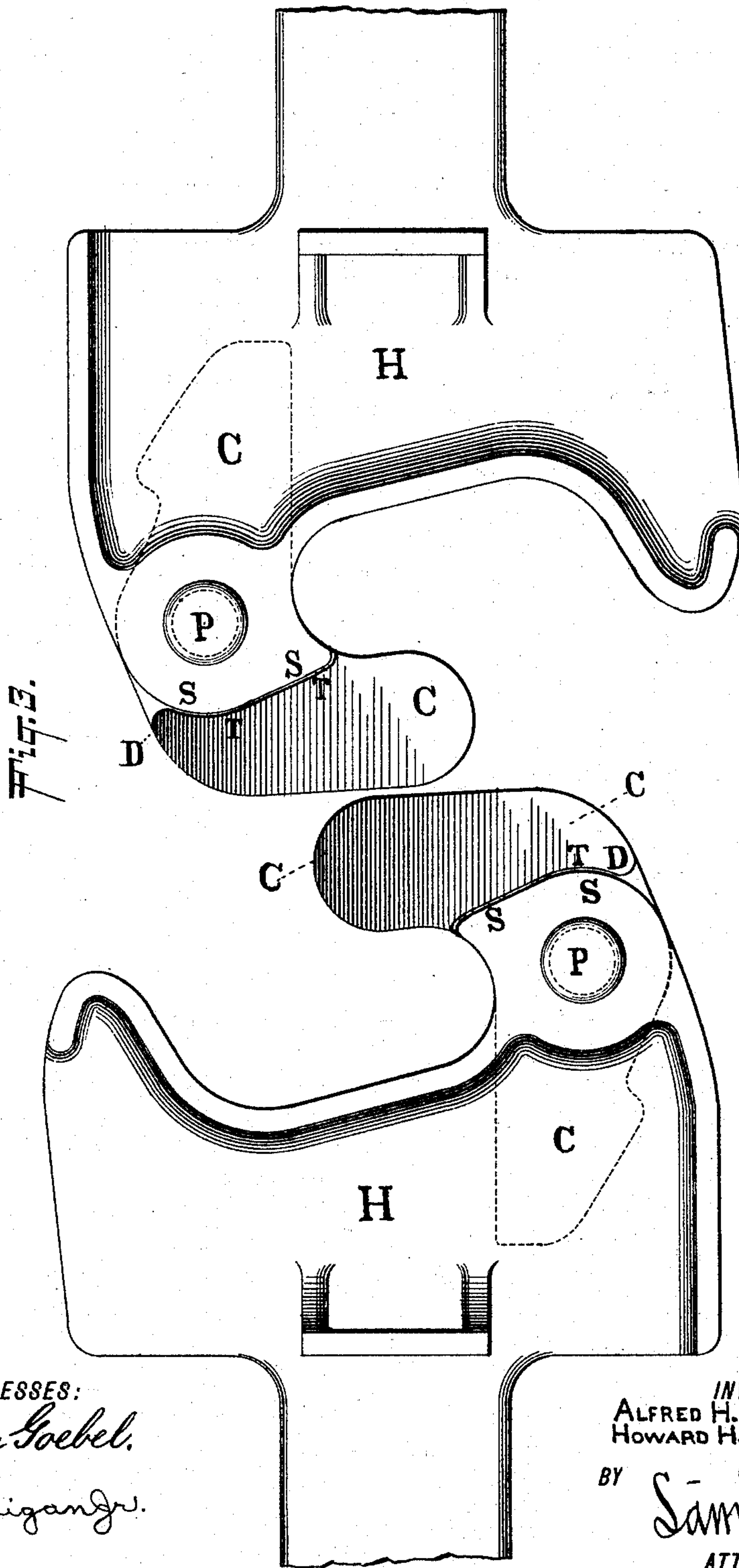
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# UNITED STATES PATENT OFFICE.

ALFRED H. RENSHAW AND HOWARD H. BURDEN, OF TROY, NEW YORK.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 496,956, dated May 9, 1893.

Application filed October 3, 1890. Serial No. 366,948. (No model.)

*To all whom it may concern:*

Be it known that we, ALFRED H. RENSHAW and HOWARD H. BURDEN, citizens of the United States, residing at Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Car-Couplings, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to improvements upon that class of car-couplers which are known as of the "knuckle-type." In this type, each of the coupler parts is the counter part of the other, and each is arranged to turn inwardly on a vertical axis in the draw head to interlock with the other coupler part; and swing out on the vertical axis to disconnect. This style of car-coupler is described in Letters-Patent granted to us dated July 1, 1890, No. 431,195. In service these couplers are subjected to heavy buffing blows from the coming together of the cars. Frequently these shocks or blows give a permanent set to the hook end of the knuckle toward the drawhead so as to prevent its counterpart from operating with it, and often the blow is sufficient to bend out of shape or break off and destroy the knuckle. The difficulty arises from the fact that the hook-end of the knuckle must be made to project considerably beyond the draw head in order to engage and couple with its counterpart so that when buffing occurs the force or pressure must act with a lever arm of greater or less length. This lever arm should be as small as possible and the object of our invention is to diminish this leverage and the tendency to bend the hook end of the knuckle consequent thereupon and to provide a support for the knuckle hook.

The principal feature of our invention consists in giving support to the hook end of the knuckle as near the line of draft and impact as possible, that is, near the point where the knuckle is exposed to the greatest stress. This is effected by forming the exterior surfaces of the lugs of the draw bar which come in contact with the knuckle so that instead of being curved, they are partly curved and partly plane, the curved part, which is the part farthest away from the line of impact, being sufficient to insure proper contact dur-

ing the rotation of the knuckle about the pin. While the straight portion, which extends from the edge of the curved part nearest the line of impact, toward the line of impact forms an extended plane buffing surface more or less normal to the line of impact. The surfaces of the knuckle flanges which come in contact with the lug surfaces just described are made to conform to them, that is, they also are partly curved and partly plane, and they extend from the heel of the knuckle to the inside of the hook part. Our location of the pivot pin on which the knuckle revolves and the shape given to the knuckle secure for us flanges as above described, and of the full depth and extent of the lugs of the drawhead. By this arrangement, when buffing takes place, the greater part of the force of the blow is communicated through the flat surfaces of the lugs and knuckle just described, to the lugs directly and thence to the draw head, instead of the force being borne by the locking arm of the knuckle only, as is the case in all the devices in which the exterior surfaces of the lugs are curved only and not straight. Also by this arrangement the lever arm of the hook part is so constructed that it extends to the smallest possible distance beyond the draw head and is directly supported by it.

Accompanying this specification and forming part of it, are two plates of drawings containing three figures.

Similar letters of reference indicate similar parts on the drawings.

In the drawings, Figure 1, is a top or plan view of a coupler part with our invention applied thereto, and with the knuckle part in the closed position. Fig. 2, is the same as Fig. 1, with the knuckle part in the open position. Fig. 3, shows a top view of two coupler-parts, embodying our invention, about to strike together as buffers.

The description of the several parts illustrated is as follows:

The letter H designates the head of the draw bar and C is the knuckle form coupler part.

The letter P, designates the pivot pin or axis in the draw head on which the knuckle form coupler part swings.

The letter S, designates the portion of the



draw head which forms supporting lugs or surfaces for the corresponding surfaces or flanges of the knuckle form coupler part the lugs projecting toward the central line of the draw head.

The letter T, designates the flanges of the knuckles.

The letter D, designates the end of the flange at the heel of the knuckle forming a stop when the coupler is open.

The pivot pin P or center of rotation of the knuckle joint is placed as shown so that when the knuckle is in position of engagement the entire surface S, may form a support for the knuckle in resistance to any blow received by the meeting of the two couplers used as buffers, as shown in Fig. 3. As the pivot pin of a knuckle form coupler marks its center of rotation, the tendency in former constructions, has been to make the surface of the lug of the drawhead a circular cylinder where the knuckle swings around and bears against the draw head. But this gives the least base of support for the knuckle and leaves the hook part without any sustaining brace against the lug. We construct the lugs with bearing and supporting surfaces partly curved and partly plane the plane surfaces being tangential or approximately so to the curved surfaces. We also construct the flanges of the knuckle which bear against the supporting surfaces of the draw head to correspond with these surfaces.

It will thus be seen that our improved knuckle is provided with flanges or lugs which extend from near the central line of the knuckle in a plane or right line toward the heel of the knuckle, and they are then curved inward to the heel, the ends of the flanges forming a stop for the knuckle when it is thrown open, and this knuckle is used in connection with a drawhead having a buffing or bearing surface extending from its inner projection toward the outside in a plane or right line, and is then curved practically concentric with

the pivot pin of the knuckle. We do this to obtain the longest possible line of support for the knuckle consistent with its being swung around the draw head. We prolong this plane surface toward the line of impact as far as possible so as to obtain the least extension of the knuckle hook beyond its supporting surface on the draw head. We also have the force of a buffing blow on the knuckle delivered almost in a direct line with the supporting surface of the draw head and near the line of its greatest strength instead of at the end of an extended and unsupported knuckle.

We claim this improvement embodies a correct scientific principle, and practical experiments have proved the enormous increase in strength which our construction gains beyond the other styles of knuckle form couplers in use.

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

A knuckle-form coupler part C, constructed to swing within a draw-head H, the draw-head being provided with a plane or right line bearing or buffing surface S extending substantially to the line of impact of the opposing coupler and having a curved surface substantially concentric with the pivot pin P extending from the plane surface to the outside, and the knuckle having flanges T extending substantially from the central line of the knuckle toward the heel in a plane or right line and curved inwardly to the heel, corresponding to the surface of the draw-head; substantially as described.

In testimony whereof we affix our signatures, in presence of two witnesses, this 26th day of September, 1890.

ALFRED H. RENSHAW.  
HOWARD H. BURDEN.

Witnesses:

S. S. BULHOUS,  
JOHN H. NEHER.