No. 721,345. PATENTED FEB. 24, 1903.

E. C. WASHBURN.

KNUCKLE FOR COUPLINGS.

APPLICATION FILED DEC. 2, 1901.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1

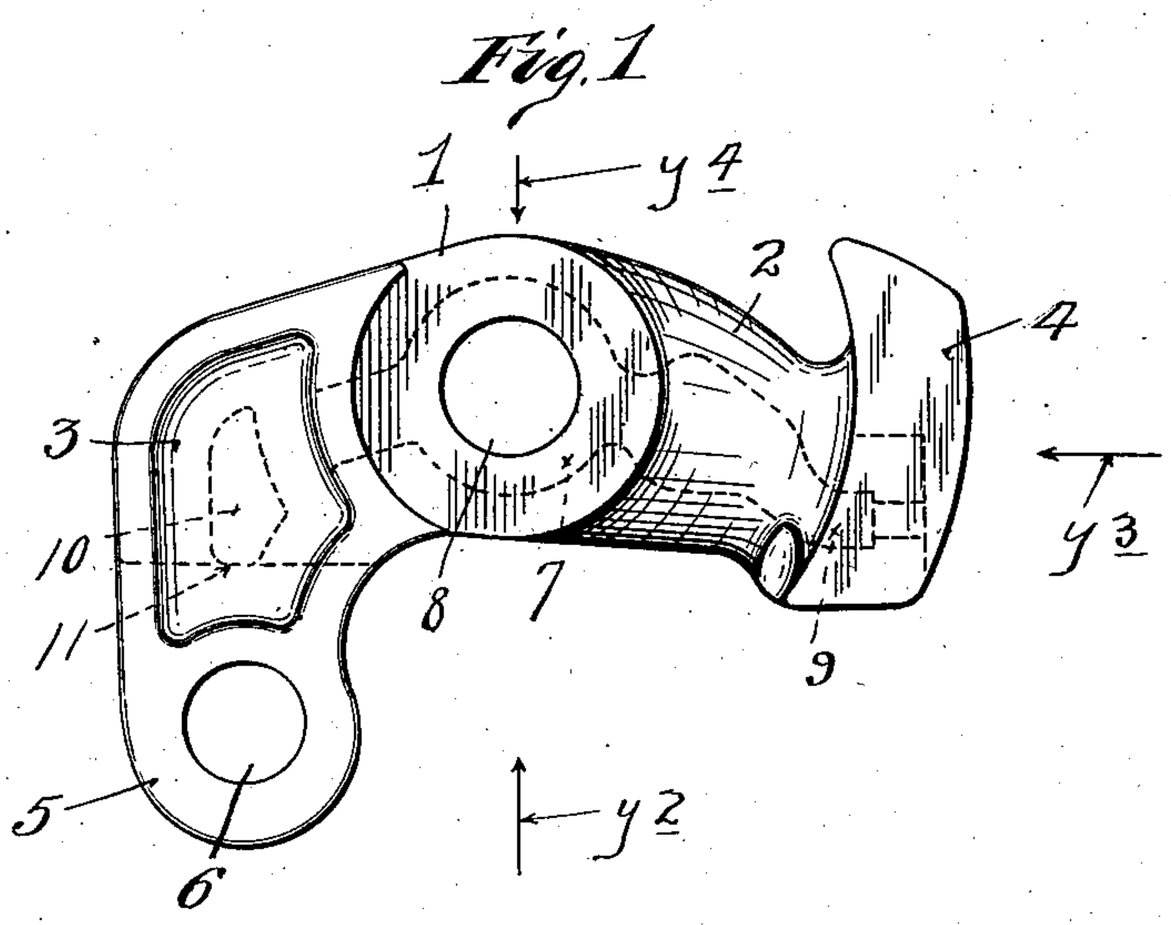
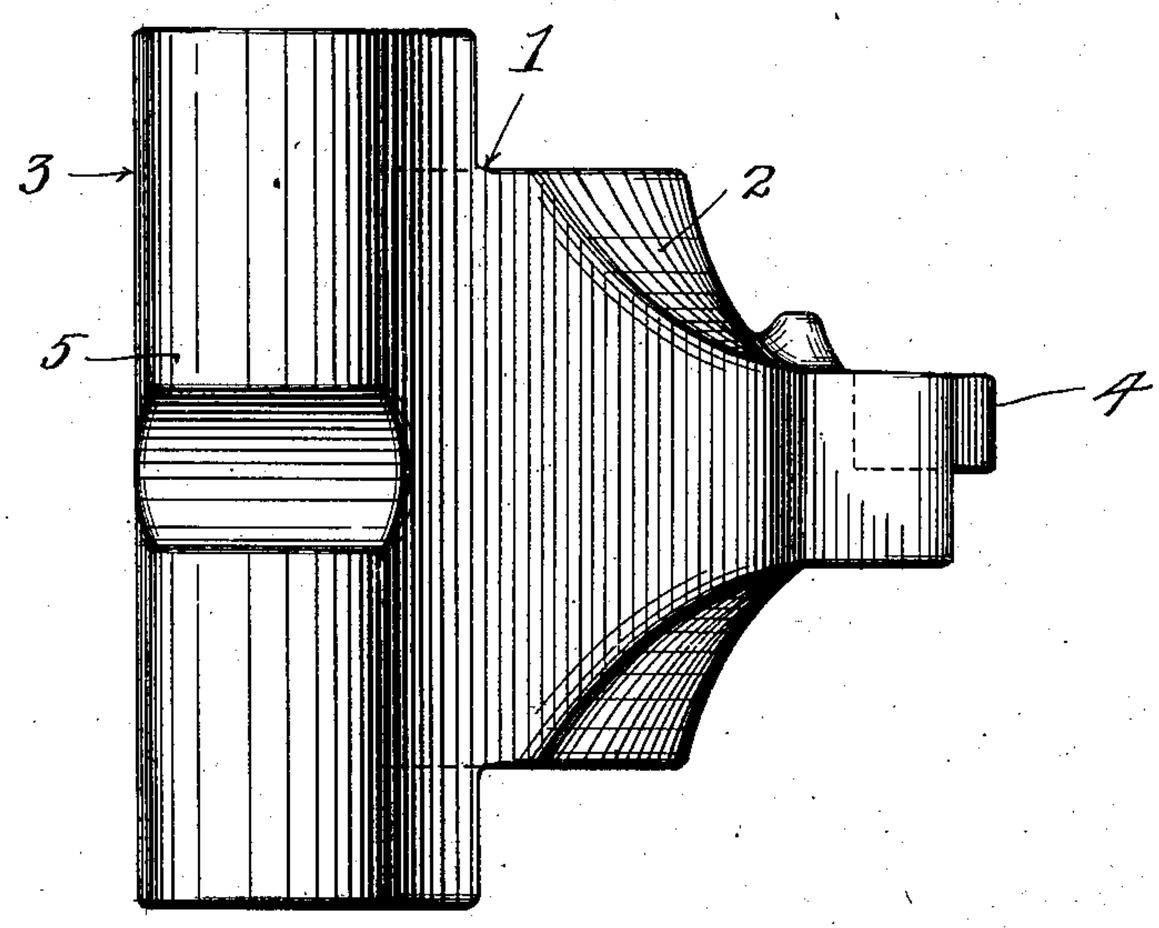


Fig. 2.



Witnesses.
N. D. Kilgore
A. H. Upsahl

Inventor;
Edwin C. Washburn.
By his Attorneys.
Williamson & Merchant

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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 3.

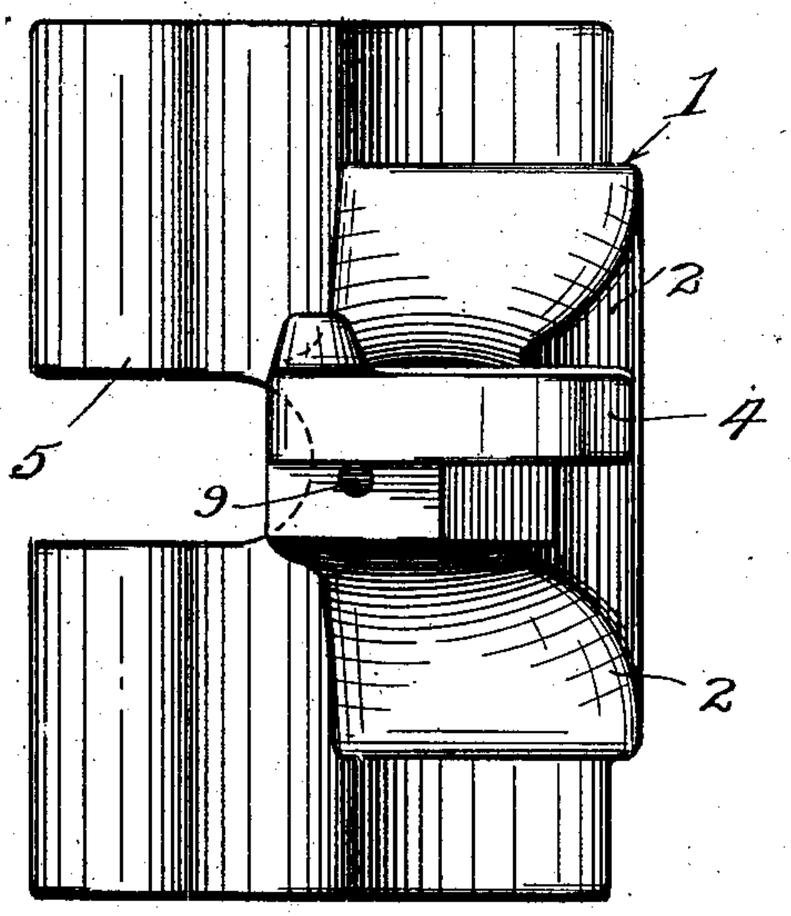
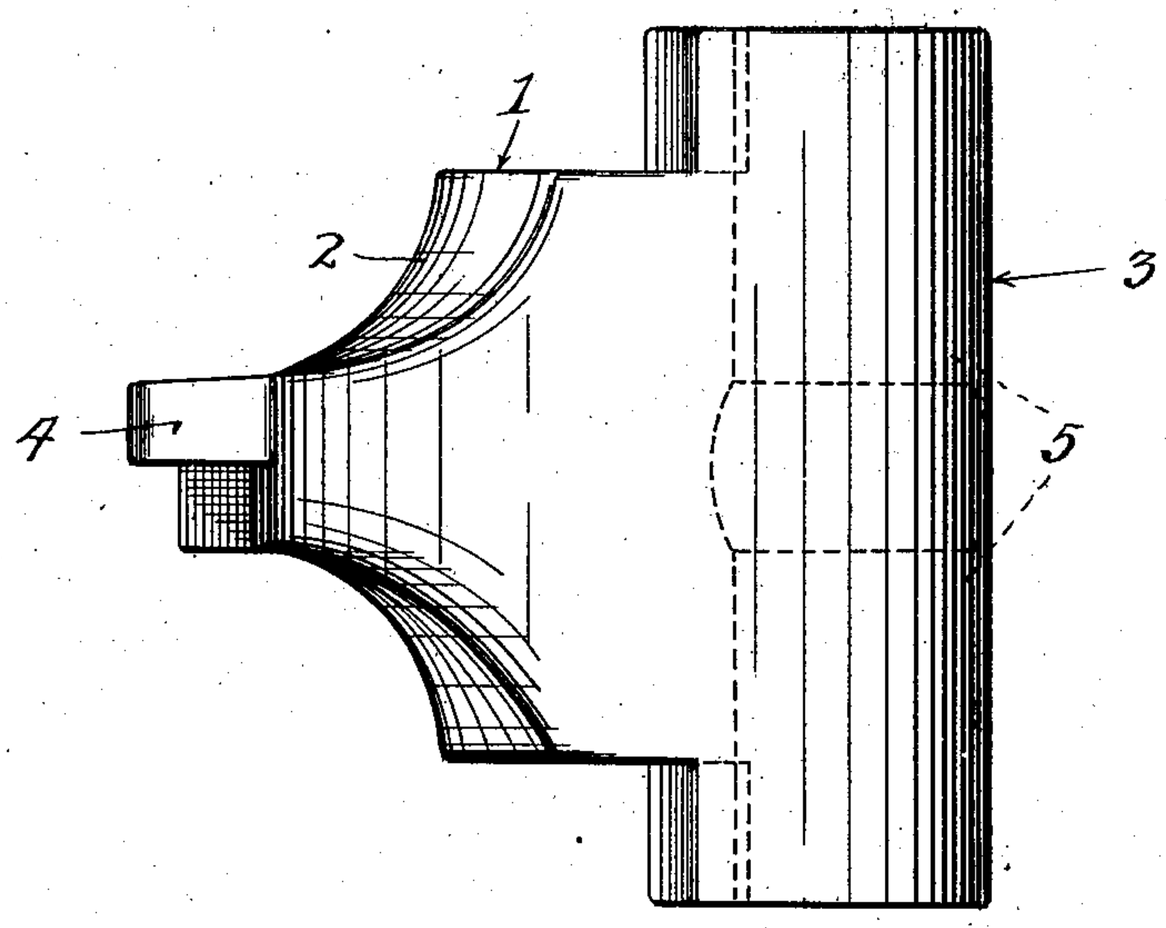


Fig. 4.



Witnesses.
H. S. Kilgore
A. H. Upsahl

Inventor.
Edwin C. Washburn.
By his Attorneys.
Williamson & Merchant

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APPLICATION FILED DEC. 2, 1901.

NO MODEL. 3 SHEETS—SHEET 3.

Fig. 5.

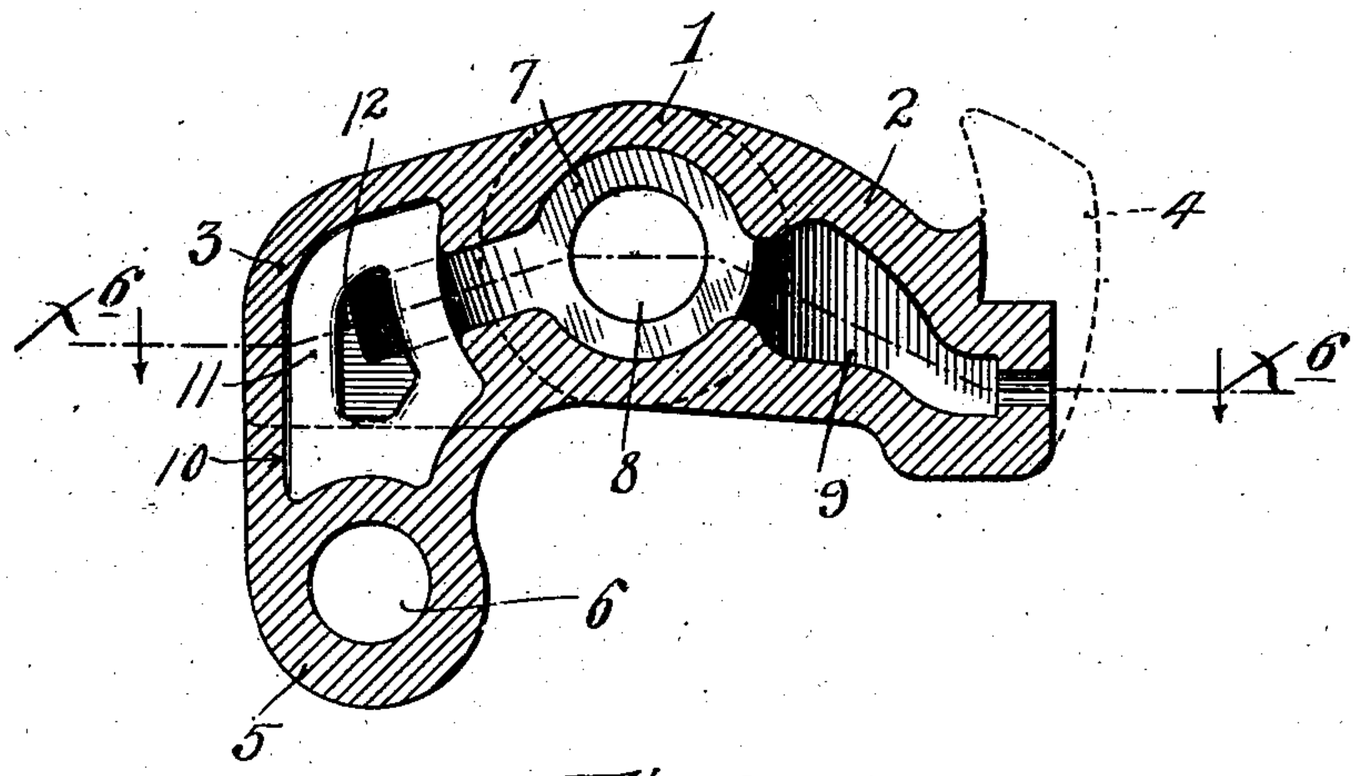
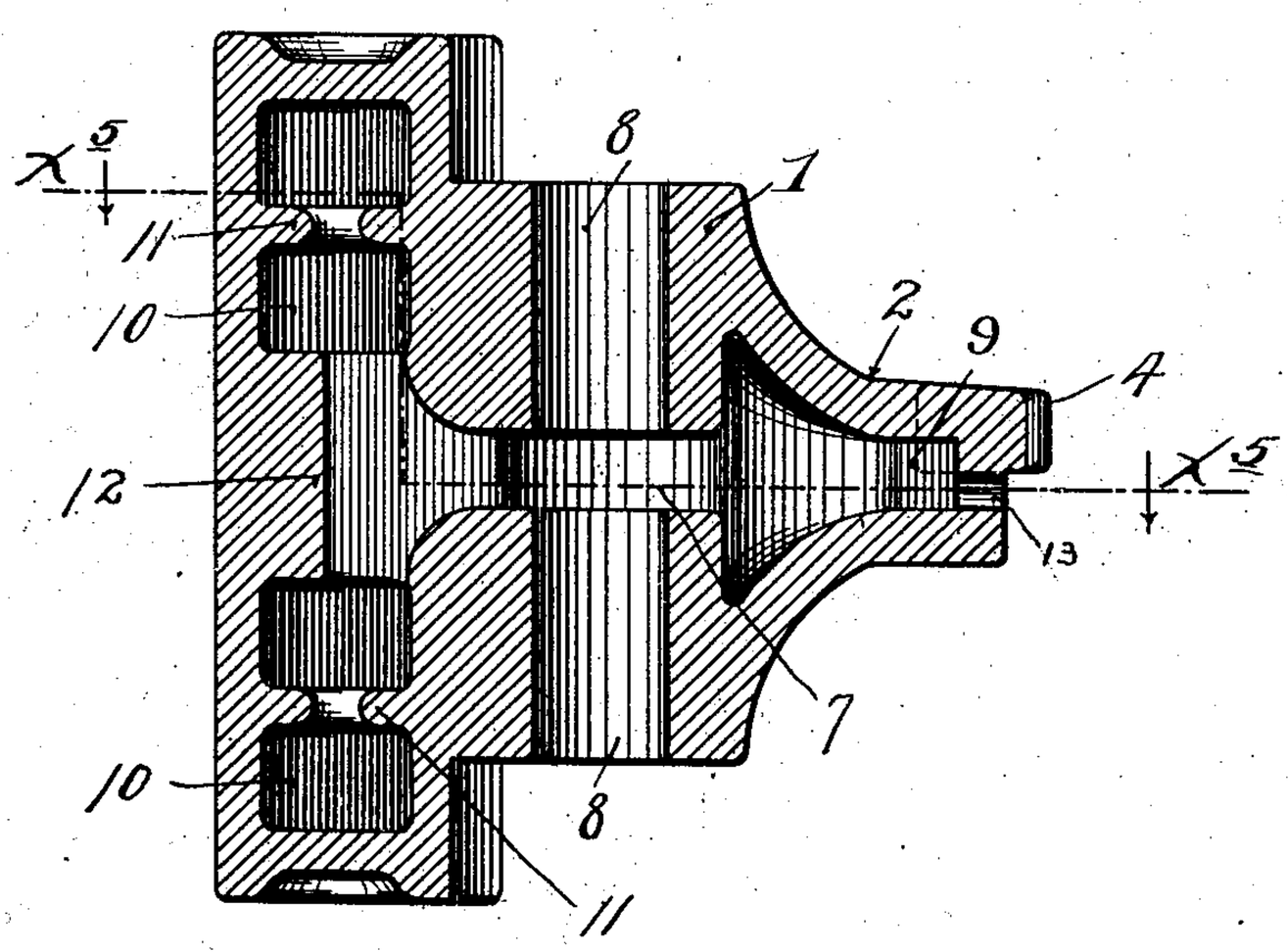


Fig. 6.



Witnesses.

N. D. Kilgore

A. H. Upsahl

Inventor:

Edwin C. Washburn.

By his Attorneys.

Williamson & Merchant

UNITED STATES PATENT OFFICE.

EDWIN C. WASHBURN, OF MINNEAPOLIS, MINNESOTA.

KNUCKLE FOR COUPLINGS.

SPECIFICATION forming part of Letters Patent No. 721,345, dated February 24, 1903.

Application filed December 2, 1901. Serial No. 84,391. (No model.)

To all whom it may concern:

Be it known that I, EDWIN C. WASHBURN, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Knuckles for Couplers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention has for its object to provide an improved knuckle for car-couplers of the Master Car-Builders' type; and it consists of the novel construction hereinafter described, and defined in the claims.

A knuckle constructed in accordance with my invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a plan view of the knuckle. Fig. 2 is an elevation of the same looking at the same in the direction indicated by the arrow y^2 on Fig. 1. Fig. 3 is an elevation looking at the knuckle in the direction indicated by the arrow y^3 on Fig. 1. Fig. 4 is an elevation looking at the knuckle in the direction by the arrow y^4 on Fig. 1. Fig. 5 is a horizontal section through the knuckle, taken on the irregular line $x^5\ x^5$ of Fig. 6; and Fig. 6 is a vertical section taken on the irregular line $x^6\ x^6$ of Fig. 5.

The knuckle is of course in the form of an integral casting, usually of steel. Of the parts of the knuckle the numeral 1 indicates the hub, the numeral 2 the tail or shank, and the numeral 3 the bumping-head or outer end portion. The tail 2 carries a segmental pin-supporting flange 4, and the projecting edge of the head 3 is, as is ordinary, divided or notched to form ears 5, with ordinary pin-seats 6. It is important to note that the tail or shank 2 tapers outward or, in other words, flares inward and blends or runs into the hub 1 without forming an abrupt shoulder therewith, as is usually the case. In fact, this shank tapers outward on all four sides, so that it is given somewhat the form of a truncated pyramid.

Another feature of my invention is directed to the manner of coring out the interior of the knuckle. The hub 1 is at its intermediate portion divided, so as to afford an expanded chamber 7, which is intersected by the pintle-seat 8, which extends vertically through the said hub. The tail or shank of the knuckle is cored out to form a tapered chamber 9, which follows as closely as possible the outline of the exterior of said tail or shank, and thereby forms the said tail with a shell of approximately equal thickness. By a vertically-extended core the bumping head or portion 3 and portions of the ears 5 are cored out to form a chamber 10. (Best shown in Figs. 5 and 6.) The said chambers 7, 9, and 10 are all in communication and may be formed by a single core. By this chamber 10 the outer bumping portion or head of the knuckle, as well as portions of the ears 5, are made of shell-like form in contradistinction to solid or block construction. To reinforce the walls of the bumping head or section 3, endless reinforcing-ribs 11 are run in horizontal planes within the chamber 10. Between the said ribs 11 the wall of the said section 3 is preferably thickened, as shown at 12. The ribs 11 and 12 greatly stiffen the face or front wall of the bumping-head 3 and prevent the same from being indented.

Experience has shown that steel and malleable castings when cast hollow and properly ribbed are stronger than when cast solid. This is probably due to the fact that they are more elastic and to the further fact that the strongest part of the casting is the skin or scale thereof. Hence I believe the knuckle described to have increased strength and decreased weight.

A single core or a core the parts of which are rigidly connected may be used to core out all of the cavities or recesses of the knuckle, including the pintle-seat 8. That portion of the core which forms the pintle-seat will, as is usual, project at its ends and be suitably anchored in the sand. It therefore serves to keep all the portions of the core in proper alinement and relative position. At the extreme end of the knuckle-tail is shown a perforation 13, through which a portion of the core may project to assist in anchoring the core in proper position in the sand.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. A coupler-knuckle having its bumping

head or end formed with vertically-spaced and perforated ears, and with said head and portions of said ears cored out by a cavity which extends into the body of the knuckle and is reinforced by an endless internal flange extending in a horizontal plane, substantially as described.

2. A coupler-knuckle of the character described cast hollow by a cavity extending throughout its tail or shank, bumping head or end and intermediate portion, and a pintle-seat intersecting the intermediate portion of said cored cavity, whereby a single or rigid core may be employed, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN C. WASHBURN.

Witnesses:
ELIZABETH KELIHER,
F. D. MERCHANT.