

be necessary to distinguish one from the other, since from the results of the trial either will be adopted as an M. C. B. standard. They are designated types A and B experimental standard M. C. B. coupler. When the trial or experimental period is completed, the word "experimental" will be dropped, leaving the coupler finally selected or adopted as the standard M. C. B. coupler.

KNUCKLE CONTOURS.—While the patterns were being completed it was brought out that the contour back of the pivot pin of the A and B knuckles in either the no. 5 or no. 10 contour was different, as in fig. 3. The contour of the knuckle of any coupler at this point is determined largely by the distance of the locking surface of the knuckle from the horizontal centre line of the coupler, or rather the thickness and relative location of the locking block. The contour of a knuckle at this point, which is the line connecting its locking surface with the main contour of the coupler head near the ears of the bar, directly affects the operations of coupling and uncoupling and hence is very important. Both manufacturers had good arguments in favor of their particular knuckle contours.

It was demonstrated that the A knuckle of no. 5 contour at the higher angles of centre line divergents or curving gave a condition of binding or hooking in uncoupling which was not present in the B knuckle of no. 5 contour, but the A knuckle on a straight track keeps contact slightly longer between its nose and the tail of the mating coupler in coupling than the B knuckle of no. 5 contour. It was agreed that the A knuckle of no. 5 contour is slightly more desirable for coupling operations and the B knuckle of no. 5 contour is somewhat better for uncoupling operations, but since the effect of these differences in the steel specimens are slight, the manufacturers shall continue to furnish the knuckle-tail contours as at present, with the final shape to be determined by the service trials.

A AND B COUPLERS ON SERVICE.—testing machine, to try the knuckle contours for coupling and uncoupling, but particularly

ignored. The machine consists of two carriages on an inclined track, each having one coupler mounted level thereon, similar to a freight car, and being electrically driven. The top coupler always remains locked, the lower coupler starts up the incline with knuckle completely open, couples to top coupler, continues upward about 1 ft., dur-

other couplers, knuckle pushed to closed position by a lever, then knuckle thrown completely open by uncoupling rod. Assuming a freight car coupler in service will average daily (365 days to a year) the operations here listed as one cycle, these tests each represent 82 years' wear, disregarding effects on operating parts due to strains re-

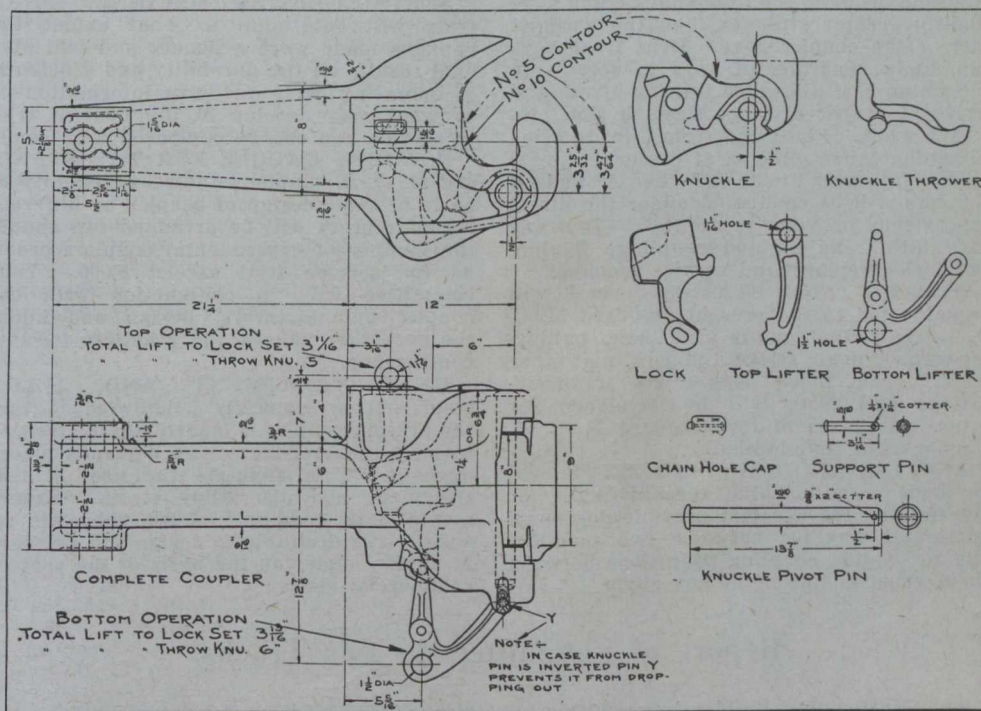


Fig. 2.—Experimental Standard M.C.B. Coupler B.

ing which it is lock-set; the lower car about that time is released by the chain drive, recedes from the top car, which is restricted by a cable, starts down the incline, during which the knuckle is thrown closed and then thrown open before the car is stopped by a buffer. This constitutes one operation or cycle as registered on the stroke counter

ceived in regular service. Each operating coupler tested was, beforehand, laid off, measured, and notes taken on various parts, dimensions and features that were liable to be affected during the tests and very moderately oiled only at this time. Daily logs were taken and the couplers were very carefully and minutely examined after every 10,000 cycles, recording the results and conditions then found by comparing with the various measurements and notes originally made. The machine was out of doors under a shed and severe cold weather obtained.

The results of the tests were very satisfactory and favorable to both couplers. The operating parts naturally were considerably worn, but after each test the couplers were operative in all features with scarcely any impairment of efficiency. New parts were substituted for the worn parts, trying all combinations, and it was found that the couplers were fully operative. Some minor changes were shown to be desirable and these have been made. This was a very severe test and your committee is firm in the belief that not any of the present standard couplers in general use today would meet it.

To date, 2,204 couplers of the A and B type have been ordered by 21 railways, in nearly equal numbers of each type and contour.

BUTT END AND KEY SLOT FOR 6 BY 8 in. shank to accommodate various draft attachments.—The following recommendations or suggestions were received from manufacturers: Not to increase width of butt end over present standard of 5 ins., nor present width, 5 ins. of key. Key slot to be located 5 ins. from rear of coupler butt instead of 4 ins., as at present, and to be made sufficiently large for 7 by 1 1/4 in. key. Rivet holes for securing ordinary yoke to coupler be increased to three to compensate for increased strength of drawbar. Increase length of coupler, measured from striking

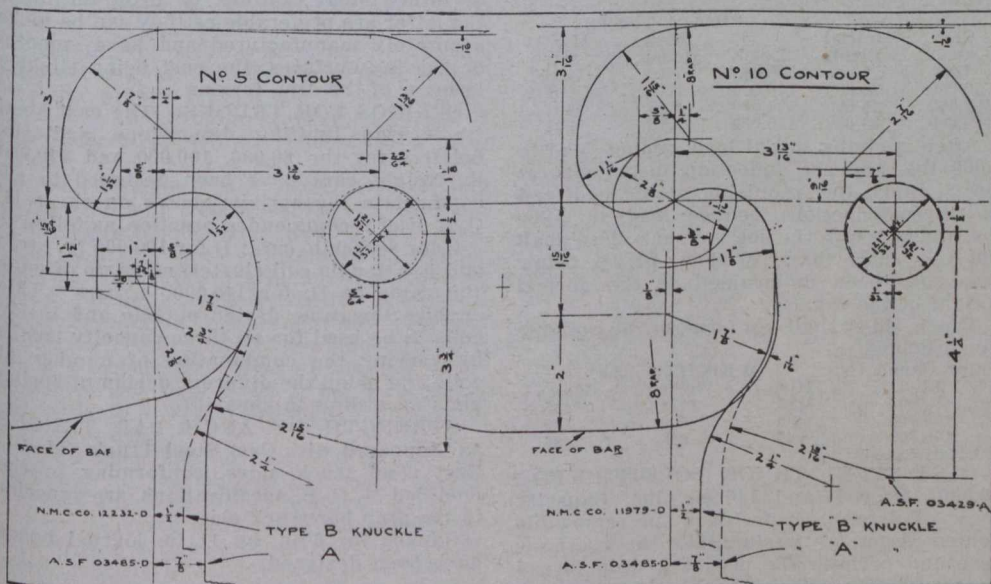


Fig. 3.—Comparison of Knuckle Contours on Couplers A and B.

to test the lasting qualities and efficiency of the operating parts, learn the location, extent and effect of wear of same and ascertain if any changes, however slight, are necessary or desirable in the couplers. While this machine does not administer shocks, it brings out conditions of wear in a week's time that would take several years' service on the road to produce if shocks were

and the normal speed is five to six operations per minute.

Two A couplers no. 5 contour were tested together and two B couplers no. 5 contour. Each of these tests were run through 30,000 cycles, each of which, as described above, consisted of the following operations for the lower or operating coupler: coupling, lock-setting, uncoupling by withdrawing from