May 26, 1931. E. H. SCHMIDT 1,807,345

DRAFT KEY FOR CAR COUPLERS

Original Filed Oct. 6, 1927

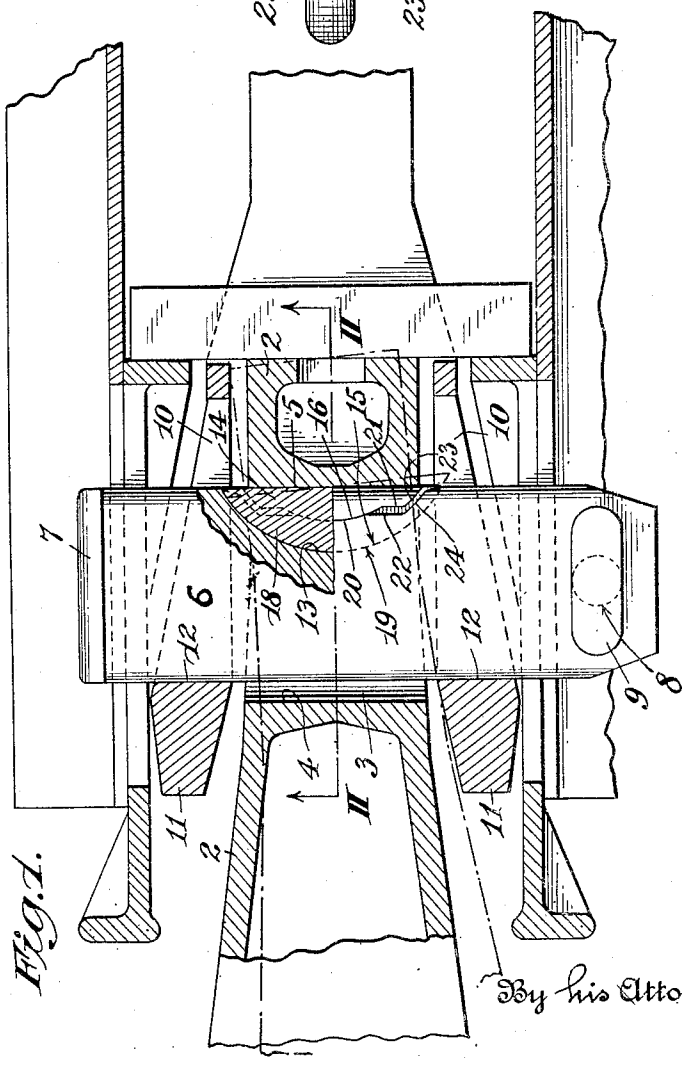


Fig. 1.

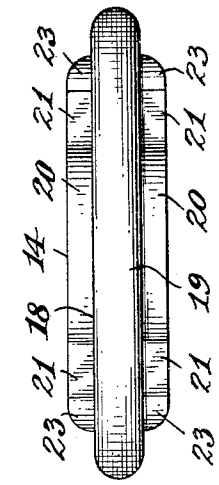


Fig. 4.

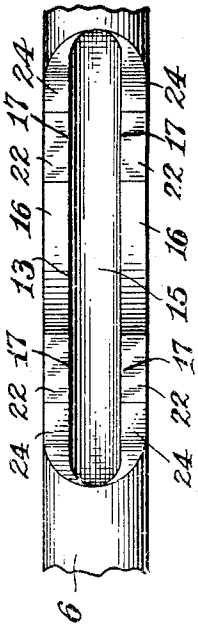


Fig. 3.

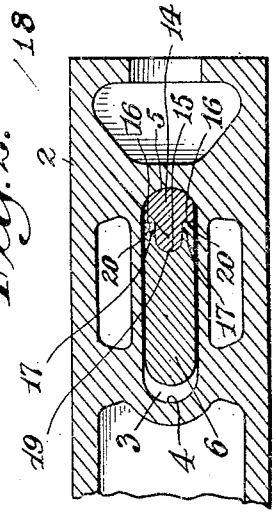


Fig. 2.

Inventor:
Ernest H. Schmidt

By his Attorney
Clarence Kerr

Patented May 26, 1931

1,807,345

# UNITED STATES PATENT OFFICE

ERNEST H. SCHMIDT, OF CLEVELAND HEIGHTS, OHIO, ASSIGNOR TO NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO

## DRAFT KEY FOR CAR COUPLERS

Application filed October 6, 1927, Serial No. 224,316. Renewed April 16, 1929.

My invention relates to draft keys for car couplers. The draft keys now employed make no provision for lateral angling or radial movement of the coupler relative to the yoke except such as is incidentally provided by the clearance between the parts. This results, however, when the coupler is angled relative to the yoke, in an unequal bearing of the draft key on the yoke arms, frequently all of the draft strains being transmitted from the coupler to the yoke through only one of the yoke arms, or one side of the yoke, because the key is angled in such a way as to have a bearing upon only one of the yoke arms. This, obviously, transmits an unbalanced application of force through the walls of the coupler key slot to the key, and the resulting transmission of the draft stresses through one side or arm of the yoke imposes 100% more load on that arm than it would bear if the load were equalized. This is a prolific cause of yoke, coupler shank and draft key failures.

My invention is directed to eliminating such difficulties and to providing an equal bearing on both yoke arms regardless of the angularity of coupler and yoke. I accomplish this by so constructing the draft key that it is capable of radial movement relative to the coupler, and at the same time provides a firm and equal bearing on both arms or sides of the yoke. My invention also comprises various features which I shall hereinafter describe and claim.

In the accompanying drawings, Fig. 1 is a horizontal section of a coupler shank and yoke connected by a radial draft key embodying my invention; Fig. 2 is a longitudinal vertical section on line II—II of Fig. 1; Fig. 3 is a rear elevation of a portion of the main key part showing the recess therein; and Fig. 4 is a front elevation of the equalizer bearing portion of the key.

Referring more specifically to the drawings, I have shown my invention applied to the coupler shank 2 of a standard D-coupler which has the usual key slot 3 extending transversely therethrough with the usual front and rear concave bearing walls 4 and 5, and with the usual amount of clearance between the draft key, the main part of which is numbered 6, and the walls 4 and 5. The main key part 6 is shown provided on one end with the usual head 7 and on the other with a hole 8 for the retainer 9. The main key part 6 is intended to extend through apertures 10 in the yoke arms 11 and to have a pulling bearing against the surfaces 12 at the forward ends of the apertures 10. The main key part, hereinafter referred to as the key 6, has on its rear side a central radial recess 13 intended to receive the other key part, which is in the form of an equalizing bearing 14. The recess 13 has a central concave radial surface 15 and upper and lower concave surfaces 16, concentric to, but struck on shorter radii than, the surface 15, and connected therewith by the horizontal walls 17.

The equalizer 14 has a central forward projection 18 with a forward convex radial surface 19 cooperating with the key surface 15, and also convex radial surfaces 20 cooperating with surfaces 16 on the key. As the radial distance between the surfaces 19 and 20 on the equalizer is substantially greater than the normal clearance between the forward face of the key 6 and the forward face 4 of the key slot 3, it will be seen that the key and the equalizer when they have been applied properly to the coupler shank will always be maintained in operative relationship and a full bearing between the key and its equalizer will be assured. Thus, when the coupler moves rearwardly under buff the key and equalizer may separate to the extent permitted by the key slot 3 in the coupler shank, but the projection 18 of the equalizer 14 will still be engaged by the upper and lower walls 17 of the recess and the parts will thus be kept in the proper assembled relation.

The base of the equalizer extends laterally in the form of shoulders 21 on either side of the equalizer surfaces 20 and above and below the surface 19 to give an adequate bearing against the rear end of the key slot 3. To provide for lateral angling to the extent permitted by standard practice, as indicated by the broken line position of the coupler shank in Fig. 1, so that the key will main-

tain an equalized bearing against both arms of the yoke, it is necessary to provide clearance between the equalizer 14 and the key 6. Hence, I have shown the key cut back at 22 on either side of the surfaces 16 and opposite the shoulders 21 on the equalizer, so as to give such clearance and prevent interference to angling. If desired, the surfaces 23 and 24 which extend either side the shoulders 21 and 22 respectively may be made so as to come into contact just when the coupler is angled laterally to its maximum position so as to afford an additional area of contact between the key and equalizer when the coupler is in such angled position.

If desired to provide a key of additional strength it may be made of "Naco" or other special steel particularly intended to resist shear and bending stresses.

It will be seen that my improved mechanism is of particular value because of the simplicity of its construction, the fewness of its parts, and because it is adapted especially to be applied to connect the shanks of standard D-couplers with well-known yoke constructions without any change of any part except the key.

The terms and expressions which I have employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described, or portions thereof, but recognize that various modifications are possible within the scope of the invention claimed.

What I claim is:

1. In a coupler attachment, a coupler shank having a horizontal slot therein; a pair of slotted yoke arms; a radial draft key seated in said slot and forming a draft connection between the shank and yoke arms, said key having a recess therein; and an equalizing member seating in said recess and having a radial bearing on the key in the said recess to permit the key to angle relative to the equalizer member and equalize the draft stresses transmitted through the key to said yoke arms.

2. In a coupler attachment, a coupler shank having a horizontal slot therein; a pair of yoke arms; and a radial draft key seated in said slot and forming the connection in draft between the shank and yoke arms: an equalizer member having a bearing in the slot in the coupler and having a slot and projection engagement with said key and being capable of radial movement relative thereto to permit the arms of the yoke to angle relatively to the coupler while maintaining a full bearing on the coupler.

3. In a coupler attachment, a coupler shank having a horizontal slot therein; a pair of yoke arms; and a radial draft key seated in said slot and forming the connection in draft between the shank and yoke arms, said draft key being formed of two parts, one of which has a bearing on the yoke arms and the other on the coupler shank, the parts having cooperating arc-shaped bearing faces to permit the parts to revolve about each other to maintain full bearings on the coupler shank and yoke arms during lateral angling.

4. In a coupler attachment, a coupler shank having a horizontal slot therein; a pair of yoke arms; a radial draft key seated in said slot and forming the connection in draft between the shank and yoke arms; and an equalizer member having a bearing on the coupler shank and also having arc-shaped forward faces struck on different radii engaging corresponding faces on the key to permit radial movement of the said parts during lateral angling of the coupler relative to the yoke.

5. In a coupler attachment, a coupler shank having a horizontal slot therein; a pair of yoke arms; and a two-part radial draft key capable of insertion as one part through the said key slot and securing the shank and yoke arms together; the said parts being capable of rotating one upon the other to permit the equalized bearing of the key on the yoke arms when the coupler is under draft and angled laterally relative to the yoke.

6. In railway draft rigging, a coupler having a horizontal slot therethrough, said slot having projecting therein a forwardly facing convex protuberance movable with the coupler shank on draft, a yoke having arms with slots therein registering with said first named slot, a draft key passing through all of said slots to connect said shank and yoke, the slot in the shank providing sufficient clearance for said key to enable the same to angle therein, said key having a rearwardly facing concave notch therein seating against and having radial bearing on said protuberance for permitting horizontal angling therebetween.

7. In a railway draft rigging, the combination with a coupler having the shank thereof provided with a transverse key receiving opening; of a yoke member having aligned coupler key receiver openings; a coupler key extending through the opening of the shank and the openings of the yoke; a pivot member mounted in the coupler shank, said pivot member and the rear edge of the coupler key having interengaging pivotal bearing surfaces; and means for preventing accidental removal of the pivot member.

ERNEST H. SCHMIDT.