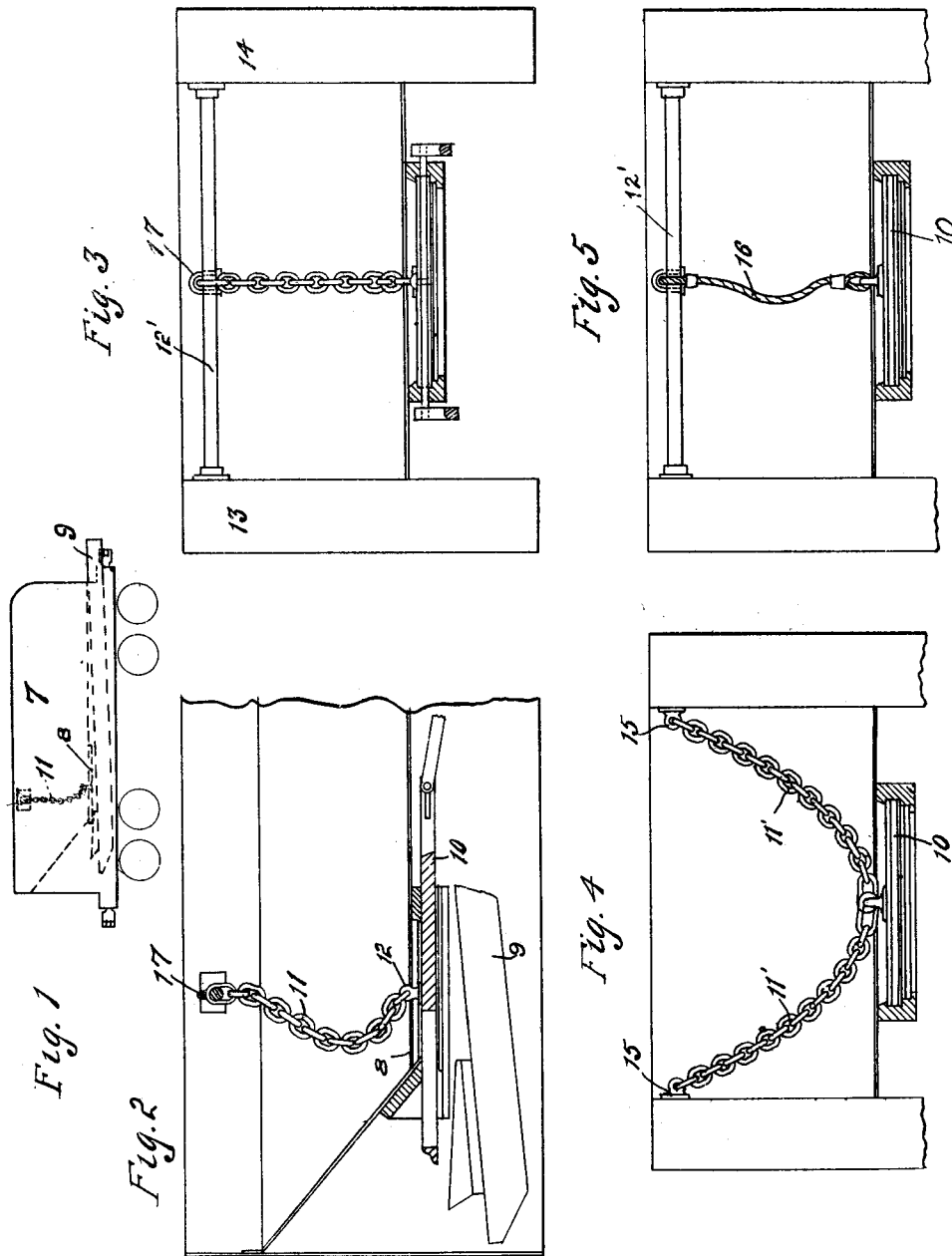


D. F. CRAWFORD.
STOKER MECHANISM.
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Patented June 3, 1913.



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STOKER MECHANISM.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DAVID F. CRAWFORD, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Stoker Mechanism, of which the following is a specification.

This invention has relation to an agitator or disturber for loosening and breaking up the coal to be fed to stoker mechanisms and the like, and it is designed particularly for use on under-feed stokers for locomotives. Among the objects of my invention are the provision of improved means for agitating or disturbing the coal contained in the hopper or in the tender, as the case may be, while it is being discharged therefrom; and the provision of an improved disturber for under-feed stoking mechanism so arranged as to designate the location of the discharge orifice and thus serve as a safety or warning device to the operator. This, together with such other objects as may hereinafter appear I attain by means of a construction illustrated in preferred form in the accompanying drawings wherein Figure 1 is a diagrammatic view of a locomotive tender showing the application of my disturber; Fig. 2 is a longitudinal section through a portion of the tender on an enlarged section showing the disturbing device in detail; Fig. 3 is an end view of Fig. 2 partly in section; Figs. 4 and 5 illustrate modifications of the invention.

While my invention may be applied to various different kinds of feed mechanism, it is particularly well adapted for use in connection with the under-feed stoking mechanisms for locomotives, such, for example, as the type shown in my pending application, Serial No. 626,377, filed May 10, 1911, and is shown in the drawings in such application.

Referring to Fig. 1, 7 is the locomotive tender of the usual construction which is provided with a discharge orifice 8 communicating with the conveyer 9 which is adapted to carry the coal to the engine. The discharge of the coal into the conveyer is controlled by the reciprocating feed and crushing plunger 10 which is operated from the locomotive in the general manner illustrated in the pending application above referred to. Agitating and disturbing devices have been used in connection with apparatus of this character, but they have usu-

ally been upright pins and equivalent devices rigidly fastened in the feed plunger. This arrangement is defective in that while it may agitate or disturb a portion of the coal, it undermines the coal and leaves an arch of coal located above the discharge orifice and the fireman or other operator has no indication of the precise location of the said orifice and might be seriously injured by the feed plunger in case the arch would give way under his weight. One of the chief objects of my invention is to prevent this undermining and provide a warning to the fireman as to the precise location of the discharge orifice and thereby avoid possible injury. I accomplish this by providing a disturber 11 which is preferably a chain or other flexible device, one end of which is securely anchored to the feed plunger as at 12 and the other end supported from the sides of the tender, in such manner that it is free to rotate but will not move longitudinally with the balance of the chain.

In Figs. 2, 3, and 5, the chain or cable is supported by means of the bar 12' secured to the water legs 13 and 14 of the tender. The device agitates and disturbs the coal substantially the entire length of the chain and the level of the coal will gradually sink uniformly so that there will be no undermining action. The location of the discharge orifice will thus be definitely indicated. It will be observed that the links of the chain are approximately circular, the object of which is to provide as short a pitch as possible in order to avoid the shortening up of the chain by the turning of the links, which occurs when the plunger 10 is being reciprocated.

In Fig. 4 I have shown a modification of my invention, the departure consisting in providing two chains 11' which are fastened at one end to the feed plunger 10 and at their upper ends to the legs of the tender as at 15.

In Fig. 5 I have shown a slack steel cable 16 which is secured substantially in the same manner as the chain 11 of Fig. 2. With this latter arrangement there is not quite as much friction and resistance to the cable passing to and fro in the coal as is the case in the construction of Fig. 2.

The advantages of the device not only as a disturber but as a safety arrangement will be obvious.

In the construction of Figs. 2, 3, and 5

5 the upper end of the chain or cable is prevented from lateral movement on the supporting bar 12 by means of a clip 17 or equivalent device. This is a detail of importance for the reason that the chain would
5 be broken by the movement of the feed plunger when the slack portion would be taken up by such lateral movement or displacement.

10 Having thus described by invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is the following:—

1. In apparatus of the character described,
15 the combination of a hopper or containing receptacle, a discharge orifice therefor, a movable member for controlling the discharge of the coal from the hopper through the discharge orifice, and an agitator located
20 above said orifice, one end of which is secured to the movable member and the other end supported in the hopper against movement of translation.

2. In stoking mechanism, the combination
25 with a hopper or containing receptacle, of a conveyer located therebeneath, a movable plunger for feeding the contents of the hopper into the conveyer, and an agitator located in the hopper, one end of which is secured to the movable plunger and the other
30 end fastened in the hopper against movement of translation.

3. In stoking mechanism, the combination with a hopper or receiving receptacle, of a

conveyer located therebeneath, a movable feed
35 plunger for discharging the contents of the hopper into the conveyer, and a flexible agitator, one end of which is secured to the reciprocating plunger and the other end supported in the upper portion of the hopper
40 against movement of translation.

4. In underfeed stoking mechanism for locomotives, the combination of a conveyer located beneath the locomotive tender, a reciprocating feed plunger for feeding the
45 contents of the tender into the conveyer, and a flexible agitator, one end of which is secured to the reciprocating plunger and the other end supported from the side of the tender against movement of translation.
50

5. In underfeed stoking mechanism for locomotives, the combination of a conveyer located beneath the locomotive tender, a reciprocating feed plunger for feeding the
55 contents of the tender into the conveyer, and a flexible agitator comprising a chain secured at one end to the reciprocating plunger and supported at the other end from the side of the tender against movement of translation.
60

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

DAVID F. CRAWFORD.

Witnesses:

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E. A. SEARIGHT