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ECCENTRIC CRANK SETTING DEVICE

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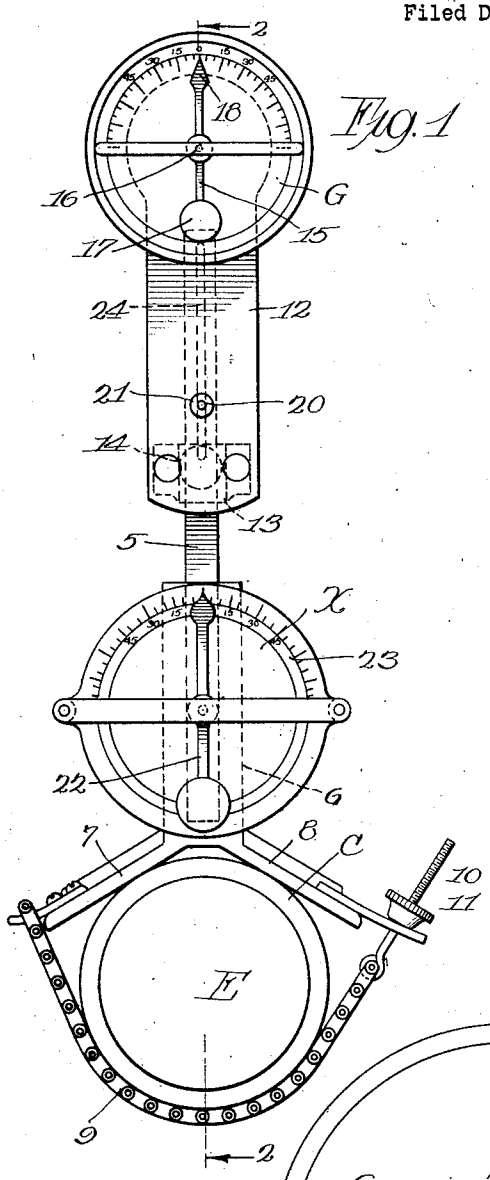


Fig. 1

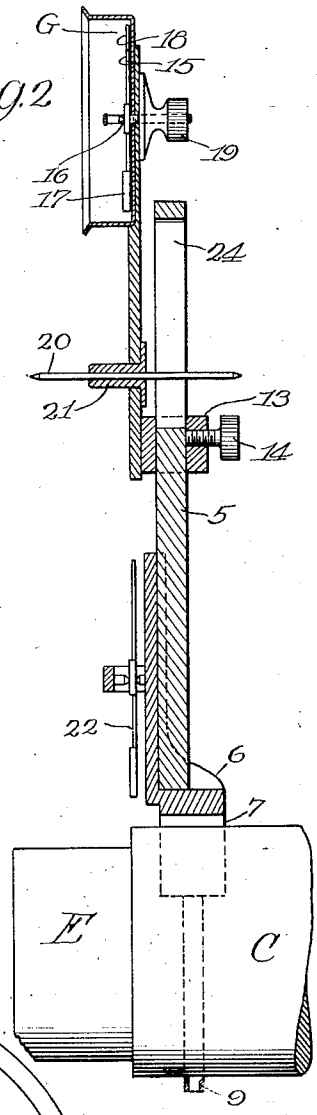


Fig. 2

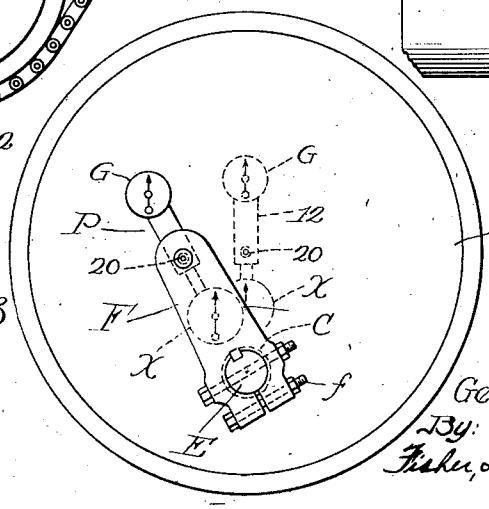


Fig. 3

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ECCENTRIC-CRANK-SETTING DEVICE.

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This invention relates to devices for setting eccentric crank arms for Walschaert valve gear on the main crank pin of a locomotive driving wheel.

One object of this invention is to provide such a device which will eliminate the necessity of mathematical computation, and will be adjustable so as to be usable with the various sizes of driving wheels and crank arms used.

Another object is to provide such a device which may be easily and quickly clamped into position on the main crank pin of a driving wheel and which may be quickly adjusted to the necessary positions thereon.

Still another object is to provide independent means on the device for checking the result obtained by its use. Other objects and advantages will appear by reference to the following specification when considered in connection with the accompanying drawing wherein I have illustrated a selected embodiment of my invention and in which:—

Fig. 1 is a front elevation.

Fig. 2 is a sectional view on the line 2—2 of Fig. 1, and

Fig. 3 is a diagrammatic illustration of the method of using the device.

Referring now to the drawings, my improved device comprises a supporting member 5 provided at its lower end with a foot member 6 having a forked lower end formed by the arms 7 and 8 which are adapted to be seated against the main crank pin "C" of a locomotive driving wheel. A suitable chain or strap 9 is secured at one end to the fork arm 7 as clearly shown in Fig. 1, and is provided at its other end with a screw threaded end bolt 10 and nut 11 whereby the said chain or strap may be drawn tightly around the crank pin "C" to hold the supporting member 5 in the desired position.

On the upper end of the supporting member 5 is mounted a head frame 12. This head frame is adjustably mounted on the said member 5 by means of a bearing block 13 secured to the frame 12 in any suitable manner and apertured to slide over the supporting bar as most clearly shown in Fig. 2. A set screw 14 is provided in the bearing block to hold it in the desired position on the supporting member. At the upper end of the head frame a gauge G is provided which is adapted to indicate in degrees the angularity of the eccentric crank arm, as will be hereinafter explained. This gauge comprises a weighted indicator hand 15 pivoted intermediate its ends as at 16, and weighted at 17 whereby the hand is maintained in substantially vertical position, a suitable point being provided as indicated at 18 to render reading more accurate. The dial or scale used in connection with the above described hand is preferably marked in degrees from zero to 45 degrees both ways from the zero mark as shown in Fig. 1, and this dial is rotatably mounted on the said head frame 12, and may be clamped into the desired position by means of a thumb nut 19 in a well known manner.

A locating pin 20 is adjustably mounted in the head frame 12 by being passed through a bushing 21 secured to the head frame in any suitable manner. The aperture in the bushing 21 through which the pin 20 is passed, is of such a size that the pin may be slid therethrough but will be held in any desired position by the tightness of the fit. A suitable slot 24 is provided in the supporting member 5 through which the locating pin 20 may be passed so that a single pin as illustrated may serve on opposite sides of the device whereby the provision of two separate pins is avoided. The purpose of this pin will be more fully set forth in the explanation of the use of the device following.

Another gauge X similar in construction to the gauge G above described is provided at the lower end of the supporting bar and is for the purpose of checking the seating obtained by use of the gauge G. This gauge X comprises a similar weighted indicator hand 22 and a similar dial 23 marked off in degrees as above described in connection with gauge G.

Referring now more particularly to Fig. 3, the use of this device is as follows:

D indicates a locomotive driving wheel, C indicates the main crank pin thereon and E is the eccentric crank pin which is an extension of the main crank pin and on which the eccentric crank for the Walschaert valve gear, as used in connection with a locomotive, is to be mounted. Such a crank arm is indicated at F and this arm is to be mounted on the eccentric crank pin E at a certain angle with respect to a line between the center of the driving wheel and the center of the crank pin. The first operation in finding this angle, is to set the device on the crank pin C as illustrated in Fig. 1 and diagrammatically in dotted lines in Fig. 3,

then to adjust the head frame 12 until the locating pin 20 coincides with the center of the driving wheel in which position it may be secured by means of the set screw 14. The device may then be fastened in this position by means of the clamping chain 9 and thumb nut 11. With the device in this position the gauge G is rotated until the point 18 of the indicator hand 15 indicates zero degrees and in which position it may be secured by the thumb nut 19.

The next operation is to loosen the set screw 14 and to adjust the head frame 12 on the supporting member 5 until the other end of the locating pin 20 coincides with the center at the free end of the eccentric crank arm F in which position it is again secured by tightening the set screw 14. At this point the dial of gauge G is reset so that the hand 15 will indicate the required number of degrees, the direction of rotation in setting of the dial being governed by the side of the drive wheel center to which the crank arm is to be set. The clamping member 9 is next loosened so that the device may be swung on the crank pin C until the reading of the gauge G is again zero as indicated at P in which position the device is secured by tightening the clamping member 9. The crank arm F is now adjusted on the eccentric crank pin E until the center at the free end coincides with the locating pin 20 in which position the arm may be secured by tightening the clamping bolt *f* at the lower end thereof. To check the setting, the gauge X is consulted and the reading thereof should be the required number of degrees from its reading in the initial position. With the eccentric crank arm thus located the crank pin is ready for laying off, drilling, reaming, and chipping of key-way.

It will be readily seen that I have provided a device for setting eccentric crank arms for Walschaert valve gear which is of simple and rigid construction and which eliminates the necessity of mathematical computation.

By placing the gauge G on the outer end of the device I prevent the crank arm from covering it and thereby secure easy reading thereof regardless of the position of the driving wheel. It should be noted that this device may be used in the manner above described regardless of the position of the crank pin on the driving wheel, that is, it is not necessary that the crank pin be directly below or above the center of the wheel. This device makes it possible to set the crank arm before the wheel is put under a locomotive whereby it is possible to use power driven machinery in the drilling and key-way cutting, whereas if the arm is to be positioned after the wheel is applied it has in the past been necessary to do nearly all hand work. These features are obviously of great advantage and effect large economies in manufacturing cost.

I am aware that changes in construction as well as in mode of use may be effected without departing from the essence of the invention and I reserve the right to make all such changes as fall within the scope of the following claims.

I claim as my invention:

1. In a device of the class described, a member having a foot end adapted to be seated against a shaft, a locating pin mounted on said member and a gauge also mounted on said member, said gauge comprising a rotatably mounted dial member and a weighted indicator hand.

2. In a device of the class described, a member having a foot at one end thereof adapted to be seated against a shaft, a locating pin mounted on said member, a weighted element pivotally mounted on said member and adapted to assume a substantially vertical position and a rotatable member also mounted on said first named member and arranged to coact with said weighted element to indicate the angularity of the device.

3. In a device of the class described, an elongated member having a foot portion adapted to be seated on the crank pin of a locomotive driving wheel, a gauge on the other end of said member for determining the angular position of the device relative to the center of the driving wheel and locating means operative on opposite sides of said member respectively for facilitating positioning of the device relative to the center of the driving wheel and the center of the free end of a crank arm mounted on said crank pin, said locating means being mounted on the member so as to be adjustable lengthwise thereof intermediate the foot and gauge ends thereof.

4. In a device of the class described, a member having a foot end adapted to be seated against a shaft, a gauge also mounted on said member and comprising an indicator hand pivotally mounted intermediate its ends and weighted at one end so as to assume a substantially vertical position in all operating positions of the device and an adjustably mounted scale arranged to coact with said hand to indicate changes in position of the device.

5. In a device of the class described, a member having a foot at one end adapted to engage a shaft, a gauge having a weighted indicator hand mounted on said member, another gauge having a weighted indicator hand and an adjustable scale mounted on said member at the other end thereof, and a locating pin adjustably mounted on said member intermediate its ends.

6. In a device of the class described, a member having a foot at one end adapted

to be seated against a crank pin on a locomotive drive wheel, a gauge mounted on said member and a double ended locating pin mounted on said member so as to be adjustable longitudinally thereof, and also transversely therethrough for the purpose set forth.

7. In a device of the class described, the combination of a member having means for positioning the member on a locomotive drive wheel crank pin, means carried by said member for selectively positioning the device relative to the center of the drive wheel and the center of the free end of a crank arm carried by said crank pin, and a gauge carried by said member for determining the angle defined by said drive wheel and crank arm centers and the center of said crank pin as the vertex of the angle.

8. In a device of the class described, the combination of a main body member, means adjacent one end of said member for seating that end on the crank pin of a locomotive driving wheel intermediate the wheel and the outer end of the crank pin, means carried by said member for facilitating selective positioning of the device relative to the center of the driving wheel and relative to the center of the free end of a crank arm mounted on the outer end of the crank pin, and a gauge carried by said member for indicating the angular position of the device when positioned according to the crank arm, relative to the position of the device when positioned according to the center of the driving wheel.

9. In a device of the class described, the combination of a main body member, means adjacent one end of said member for seating that end on the crank pin of a locomotive driving wheel intermediate the wheel and the outer end of the crank pin, means carried by said member for facilitating selective positioning of the device relative to the center of the driving wheel and relative to the center of the free end of a crank arm mounted on the outer end of the crank pin, a gauge carried by said member for indicating the angular position of the device when positioned according to the crank arm, relative to the position of the device when positioned according to the center of the driving wheel, and means for locking the device in the desired position on the crank pin.

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