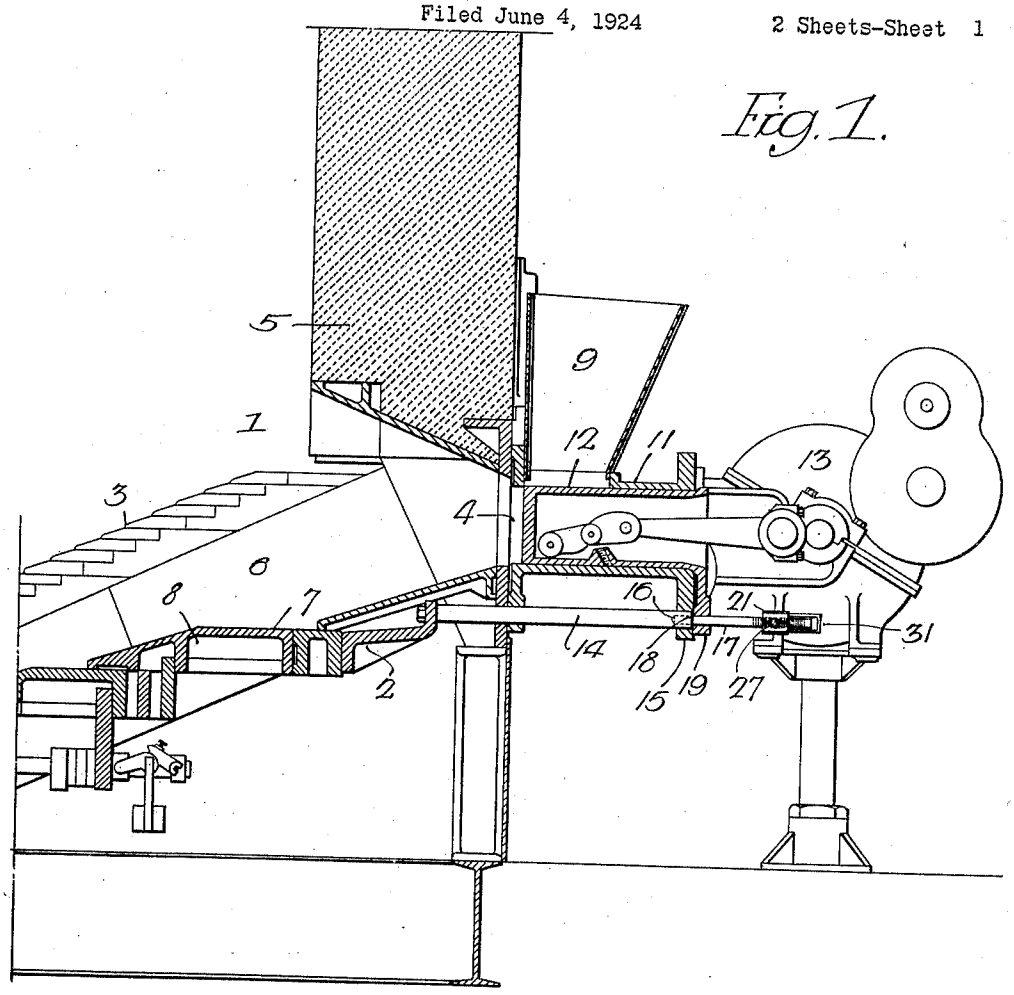
Dec. 3, 1929. A. E. WEINGARTNER 1,738,409

QUICK ACTING SAFETY ABUTMENT

Filed June 4, 1924 2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

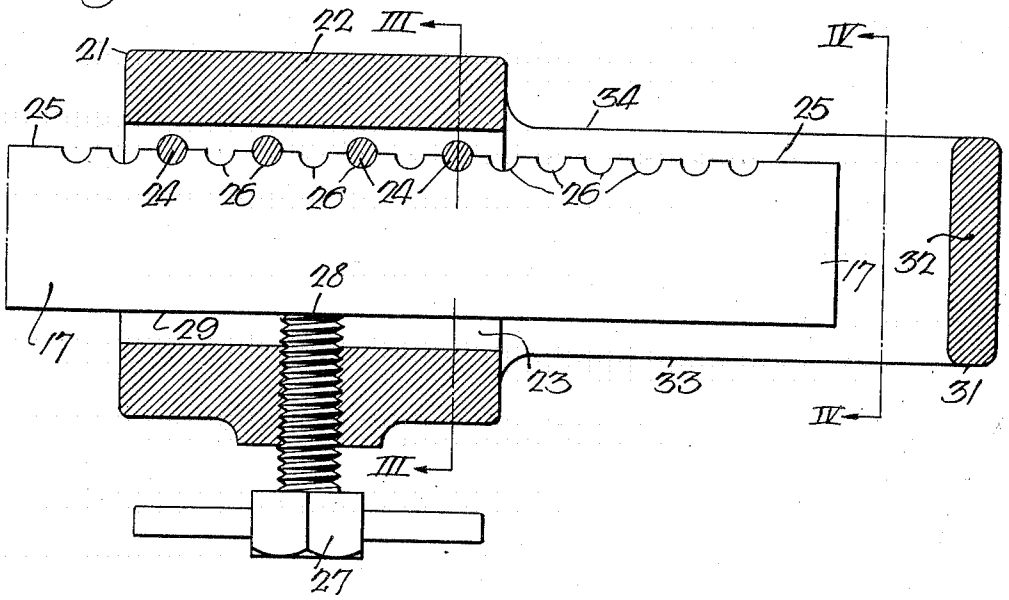


Fig. 3.

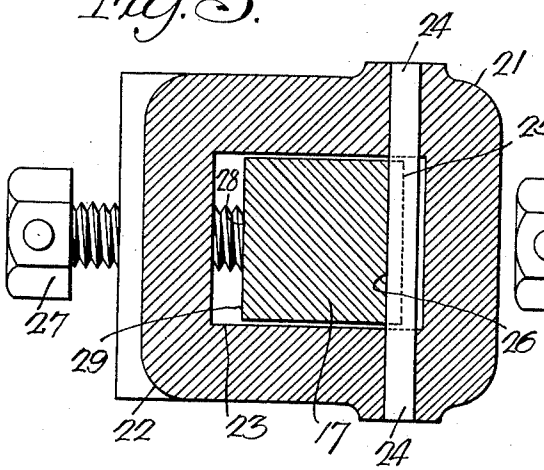
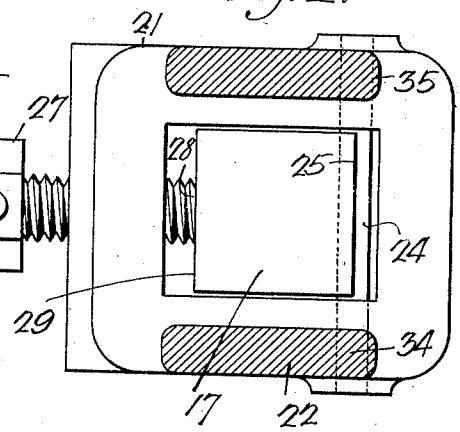


Fig. 4.



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UNITED STATES PATENT OFFICE

ANTHONY E. WEINGARTNER, OF BETHLEHEM, PENNSYLVANIA, ASSIGNOR TO AMERICAN ENGINEERING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

QUICK-ACTING SAFETY ABUTMENT

Application filed June 4, 1924. Serial No. 717,908.

My invention relates to devices applicable to mechanically moving parts, which are subject to variable stroke, and it is an important object of my invention to provide such form of device which is particularly adapted to effect quick and easy adjustments of considerable length. Such desired results are not characteristic of the usual form of stroke adjusting means involving the use of a nut on a threaded shaft.

Another object of my invention is the provision of a safety abutment, the resisting force of which is carried by replaceable locking elements under shear.

A further object of my invention is to provide an abutment which embodies safety means permitting a yielding in the event of excessive loads.

Other objects and applications of my invention, as well as details of construction and operation, whereby my invention may be practiced, will be apparent more fully hereinafter, when taken in connection with the accompanying description, claims and drawing, wherein:

Fig. 1 is a vertical sectional view of the front end of an inclined underfed stoker embodying my invention;

Fig. 2 is a horizontal sectional view of the quick-acting safety abutment embodying my invention;

Fig. 3 is a transverse sectional view taken on the line III—III of Fig. 2; and

Fig. 4 is a view similar to Fig. 3 taken on the line IV—IV of Fig. 2.

In order to illustrate more completely and fully the application of my invention as well as the details of construction and operation thereof, I have shown the same as applied to an automatic stoker 1 of the underfeed type having adjustable-stroke pusher mechanism 2. The stoker 1 may comprise a plurality of series of inclined tuyères 3, each series of which extend from a fuel opening 4 in a furnace front wall 5. A plurality of series of retorts 6, alternating with the series of tuyères 3, are provided with a common inclined base section 7 comprising a plurality of pushers 8.

The stoker 1 may be supplied with material to be burned, say green coal, from a hopper 9 which opens into a cylinder 11 having an operative connection with the stoker inlet opening 4 in the front wall 5 of the furnace. The continuous passage of the green coal from the hopper 9 in through the furnace opening 4 and down into the retorts 6 may be effected by means of a piston 12 which is slidably mounted in the cylinder 11. The piston 12 may be reciprocated by means of power apparatus 13 forming no part of the present invention.

The green coal may be intermittently moved out of the retorts 6 up into the tuyères 3 by reciprocating the inclined floor section 7 of the several retorts 6 through the pusher mechanism 2. The latter includes an operating member, one part of which comprises a pusher rod 14 which has an inner end secured to the movable floor section 7 and an outer end slidably mounted in a depending shoulder portion 15 of the cylinder 11. The outer end of the pusher rod 14 is provided with a threaded boring 16 for the reception of a threaded end portion of an extension rod 17 constituting another part of the operating member. The rod 17 is of reduced diameter with respect to the pusher rod or member 14 to provide a shoulder 18.

The piston 12 is provided with a depending shoulder 19 forming a driving member, the shoulder being perforated to receive slidably the extension rod 17. On the outer end portion of the extension rod 17, is mounted an adjustable head or abutment 21 embodying my present invention. The abutment or block 21 is designed to change quickly and easily the stroke of the pusher rod 14 from a maximum value, when the abutment 21 is positioned immediately adjacent to the cylinder shoulder portion 15, to a minimum value, when the abutment 21 is positioned near the outer end of the extension rod 17, thereby effecting corresponding changes in the stroke of the several pushers 8 constituting the inclined floor 7.

Referring more particularly to Figs. 2, 3 and 4, which are enlarged detail views of the safety abutment 21 shown in Fig. 1, a body member 22, which may be of block-like form,

is provided with an axial perforation 23 of such dimensions as to receive loosely the extension rod 17. The body or collar member 22 may be provided with a plurality of spaced horizontal pins or locking elements 24 which are positioned adjacent to one side of the perforation 23 so as to extend laterally thereof. An adjacent side 25 of the extension rod 17 is provided with a plurality of slots or recesses 26 which are adapted to receive the pins 24, as shown, for instance, in Fig. 2, each slot engaging approximately one-half the circumference of the pin. It is also noted that each pin 24 is positioned in the slot 26 to a depth of substantially one-half the diameter of the pin. The rack-like surface formed by the several slots 26 extends over such portion of the rear side 25 of the extension member 17 as is necessary to provide for the desired range of stroke. The pins 24 may be rigidly secured in engagement with the recesses 26 adjacent to the desired axial position of the abutment 21 by clamping means 27 which has been shown in the form of a set-screw having an end 28 thereof adapted to engage a side 29 of the extension member 17 opposite to the side 25 carrying the several slots 26.

When it is desired to change the stroke of the pusher rod 14, the set-screw 27 is moved an amount sufficient to allow the pins 24 to be disengaged from the recesses 26, whereupon the abutment 21 may be quickly moved over the notched extension rod 17 to the position giving the desired stroke, the subsequent tightening of the set-screw 27 causing the interlocking recesses 26 and pins 24 to be rigidly secured together.

Attention is directed to the fact that when the abutment 21 is in the locked position shown in the drawings, the resisting force thereof is carried by the several pins 24 under shear. Since the pins or shearable elements 24 may be made of reliable material, as, for instance, rolled steel, the safe load on the abutment 21 may be greatly increased.

A further advantage resulting from the use of the pins 24 resides in the fact that they may be utilized as safety means, permitting the yielding of the abutment 21 under excessive strains.

Should it be desirable to limit the maximum movement of the abutment 21 toward the cylinder shoulder portion 15, and hence the stroke of the pusher rod 14, an end abutment 31 may be positioned in axial alignment with the extension rod 17 so as to engage the outer end of the rod 17 when the abutment 21 has been moved inwardly the desired amount. The end abutment 31 may be illustrated as an end portion 32 of a strap 33, opposite sides 34 and 35 of which are secured to the main body 22.

While I have described certain forms of embodiment of my invention in detail and while I have pointed out certain of the most obvious applications thereof, I do not intend that the language employed in the following claims shall be limited to the precise features described, but I intend that the claims shall be construed to cover all combinations which are fairly included in the language thereof when read in connection with the prior art regardless of the details and functions mentioned in the description or illustrated in the drawing.

I claim:

1. In combination, means having a rack-like surface, an abutment for said means, and safety means for operatively associating said abutment and said means including a plurality of shearable pins carried by said abutment and adapted to cooperate with said rack-like surface.

2. In a stoker, a rod having an adjustable head, and a safety pin for operatively associating said rod and said head in such manner that said pin carries the thrust incident to the operation of said rod and head, said rod having a rack-like surface in operative relation to said pin.

3. In combination, a rod provided with a rack-like surface, a block constituting an abutment mounted on said rod and provided with safety means for engaging said rack-like surface, said surface and said means being disengageable and clamping means for securing said safety means in engagement with said surface.

4. An abutment comprising a body provided with a longitudinally extending perforation, at least one locking pin positioned in said perforation substantially transversely thereof, clamping means also extending into said perforation, and an end abutment spaced from said perforation but in axial alignment therewith and carried by said body.

5. Means provided with a recess, a separate head for said means, a pin mounted on said head, said pin being positioned in said recess so that substantially one-half of the circumference thereof is engaged by said means, and an abutment spaced from said pin.

6. A body member having a recess, an operating member movable in said recess, and having a rack-like surface, a plurality of shearable locking elements extending from said body member into said recess, and clamping means carried by one of said members also extending into said recess, whereby the said rack-like surface of said operating member may be held against said locking elements.

7. In combination, pusher means for stoker apparatus provided with a plurality of slots forming a rack-like surface, and an abutment for said pusher means loosely mounted thereon, said abutment being pro-

vided with a plurality of safety pins spaced to engage certain of said slots depending upon the position of said abutment on said surface.

8. The combination with an operating member, of an adjustable abutment therefor, and means for operatively associating said member and said adjustable abutment, whereby a relative movement therebetween may occur when a predetermined force is exerted on said abutment, said means including a plurality of shearable locking pins.

9. In combination, an operating member, an abutment therefor, a relatively movable driving member in operative relation to said abutment, and means including a plurality of locking elements for operatively associating said abutment and said operating member whereby a relative movement therebetween may occur when the load on said abutment exceeds a desired value.

ANTHONY E. WEINGARTNER.