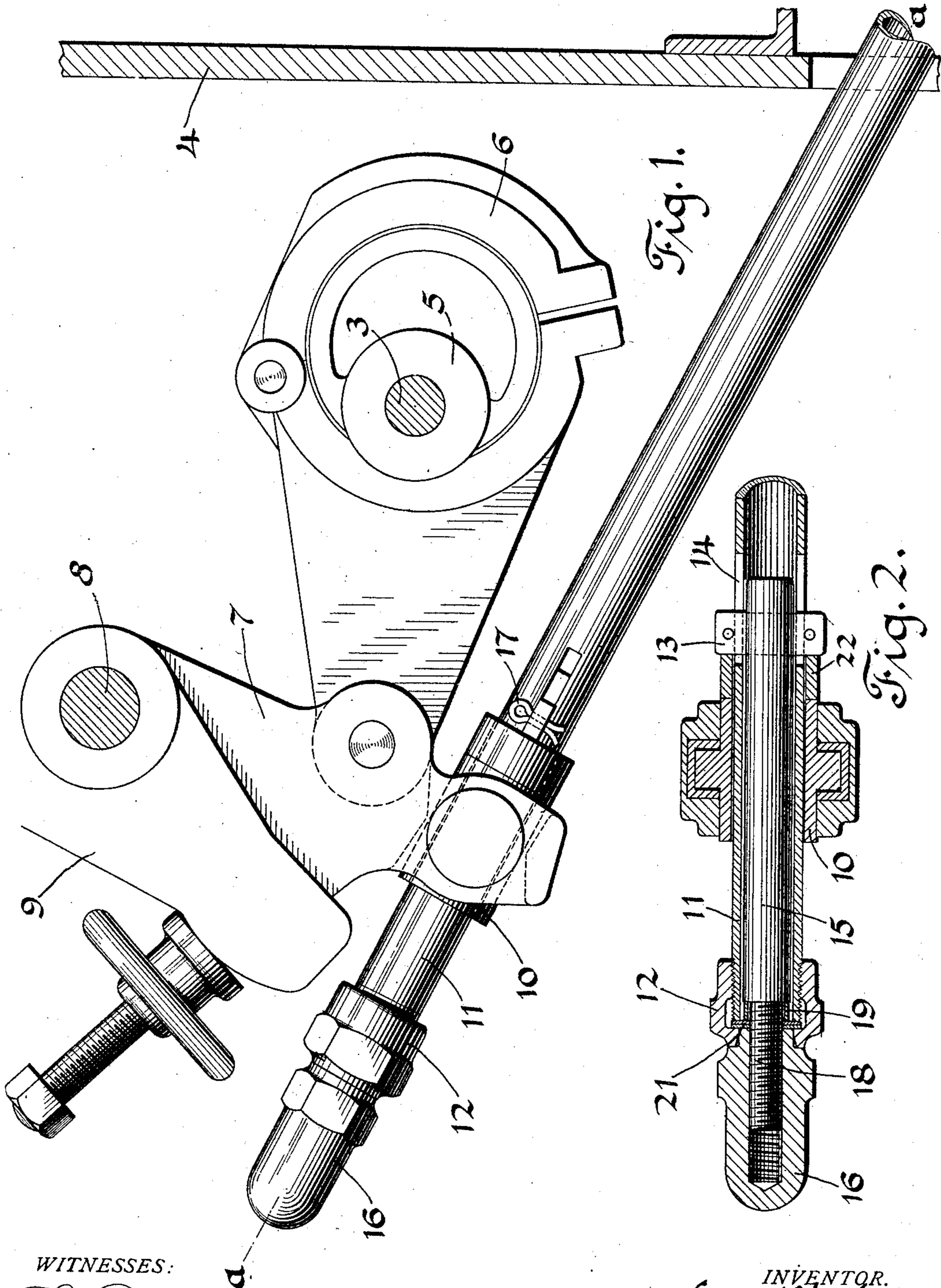


E. D. NEWKIRK.
MECHANICAL STOKER.

APPLICATION FILED MAY 7, 1906. RENEWED SEPT. 16, 1907.

983,305.

Patented Feb. 7, 1911.



WITNESSES:

B. O. Perry
E. M. Ballister

BY

INVENTOR.

Edgar H. Newkirk
Geo. S. Green
ATTORNEY.

UNITED STATES PATENT OFFICE.

EDGAR D. NEWKIRK, OF CANASTOTA, NEW YORK, ASSIGNOR TO THE WESTINGHOUSE MACHINE COMPANY, A CORPORATION OF PENNSYLVANIA.

MECHANICAL STOKER.

983,305.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed May 7, 1906, Serial No. 315,643. Renewed September 16, 1907. Serial No. 393,116.

To all whom it may concern:

Be it known that I, EDGAR D. NEWKIRK, a citizen of the United States, and a resident of Canastota, in the county of Madison and State of New York, have made a new and useful Invention in Mechanical Stokers, of which the following is a specification.

This invention relates to mechanical stokers and more particularly to improvements of a specific detail of such apparatus.

An object of this invention is the production of simple means for adjusting the operating mechanisms and for controlling the operation of the stoker.

The stoker embodying my invention consists of an organized apparatus in combination with a furnace and comprises a fuel-feeding device which is adapted to automatically feed regulable amounts of fuel onto laterally-extending grate bars of the furnace in which means are utilized for causing the grate bars to rock assuming alternately a stepped and inclined position. The moving parts of the mechanical stoker are actuated by an eccentric mounted on a shaft, the journals of which are supported by the front portion of the furnace. The grate bars are actuated by the eccentric through the agency of a connecting rod which is provided with adjusting means so arranged that the amount of reciprocation of the bars may be controlled at the will of the operator.

A second and specific object of this invention is the production of a connecting rod in which means are utilized for placing the adjusting means most frequently utilized in the most convenient position and thereby preventing an inexperienced operator from inadvertently making a wrong and harmful adjustment.

In the operation of the stoker, the grate bars move from a horizontal, or open-motion position to an inclined or closed-motion position and the amount of motion is preferably varied by varying the amount or extent of the open motion of the bars and by keeping the closed motion the same.

In the drawings accompanying this application, Figure 1 is a side elevation of a portion of a stoker gear; and Fig. 2 is a partial section along the line A—A of Fig. 1.

A shaft 3 is journaled in suitable bear-

ings (not shown), which are supported by the front portion 4 of the furnace. An eccentric 5 is mounted on the shaft and is provided with an eccentric strap 6 which operates an agitator lever 7, mounted on a shaft 8. The agitator lever actuates an agitator sector 9 which operates the fuel-feeding device (not shown) through a lost-motion connection. The end of the agitator lever 7 is provided with an opening in which a sleeve 10 is pivotally mounted. A connecting rod 11 extends through the sleeve 10, which reciprocates the rod and thereby actuates the grate bars by contacting with an adjustable nut 12 on the end of the rod and a loose sleeve 22, which rests against a key 13, which is carried by the rod and located on the opposite side of the sleeve 10.

The rod 11 consists of a pipe which is connected at one end to a rocker bar, (not shown) and at the other end is provided with a longitudinally-extending slot 14 through which the key 13 extends. The key 13 is carried by a short bar 15, located within the rod 11, and is adjustable by means of a sheath nut 16. The key 13 is held in place by cotter-pins 17 extending through the key at either side of the rod 11.

The amount of motion transmitted to the grate bars by the agitator lever 7 is controlled by varying the amount of lost motion between the rod 11 and the lever 7, which is accomplished by varying the position of the key 13 or nut 12. The position of the nut 12 controls the ultimate inclined or closed-motion position of the bars, and since it is advisable that an inexperienced operator shall not vary the closed-motion position, the adjusting nut 12 is so arranged that the adjustment, while easily made, is not the first that suggests itself to an inexperienced operator.

The bar 15 is provided with a portion 18 of reduced diameter which extends through a central opening in the nut 12 beyond the rod 11 and is provided with a threaded end on which the sheath nut 16 is screwed.

In assembling the parts of the rod 11, the bar 15 is inserted into the rod 11, the key 13 is driven into place and secured by the cotter-pins 17 and the sleeve 22 is slipped along the rod 11 in contact with the key; a loosely fitting sleeve 19 is placed around the portion 18 and rests against the shoulder formed by

the reduction of diameter. A suitable number of washers 21, which are about the diameter of the pipe 11 are then placed on the bar, the nut 12 is screwed into place against the washers 21 and finally the sheath nut 16 is screwed onto the portion 18. The sheath nut is provided with a portion of reduced diameter which extends into the central opening through the nut 12 and contacts with the washers 21. The position of the nut 12 is limited by the washers 21 and the position of the sheath nut 16 is limited by the washers 21 and the sleeve 19. The maximum movement of the rod is, therefore, limited, since by screwing the sheath nut onto the extension 18, the key 13 is moved to such a position that it limits the lost-motion between the agitator lever 7 and the rod and by screwing the nut 12 onto the rod 11 the lost-motion is still further decreased.

It is advisable that during the periodical reciprocations of the grate bars they shall always be moved to an extreme closed-motion or inclined position and that any variation in the amount of reciprocation of the bars shall be accomplished by varying the ultimate position of the grates at the open or stepped position. The nut 16 is, therefore, placed in the most convenient position and the adjustment of the open-motion position of the bars is accomplished by simply raising or lowering the key 13 and thereby decreasing or increasing the throw of the grate bars. The sleeve 19 is inserted merely to limit the extreme open-motion position and may be varied in length to suit the ad-

justment required. To adjust the closed-motion position, it is necessary to remove the sheath nut 16, the nut 12 and to vary the number of washers 21.

It is apparent that various modifications may be made and still fall within the spirit and scope of this invention; and

What I claim is:

1. In an apparatus of the class described, a hollow rod, a reciprocable agent, a lost-motion connection between said rod and said agent comprising a nut at one end of said rod, a bar extending partially through said rod and provided with a key at one end and an adjustable nut at the other end.

2. In an apparatus of the class described, a reciprocable agent, a rod actuated thereby, an adjusting nut located at one end of said rod and adapted to contact with said agent and control the throw of said rod in one direction, a bar which extends into said rod, a pin carried by said bar and adapted to contact with said agent, and a sheath nut inclosing the end of said bar and located adjacent to said adjusting nut adapted to vary the position of said pin along said rod and to thereby control the throw of the rod in the other direction.

In testimony whereof, I have hereunto subscribed my name this 27th day of April, 1906.

EDGAR D. NEWKIRK.

Witnesses:

DAVID WILLIAMS,
E. W. McCALLISTER.