No. 689,185. Patented Dec. 17, 1901.

# A. HAZELTON.

## FURNACE DOOR OPENING DEVICE.

(Application filed Jan. 24, 1901.)

(No Model.)

Fig. 1.

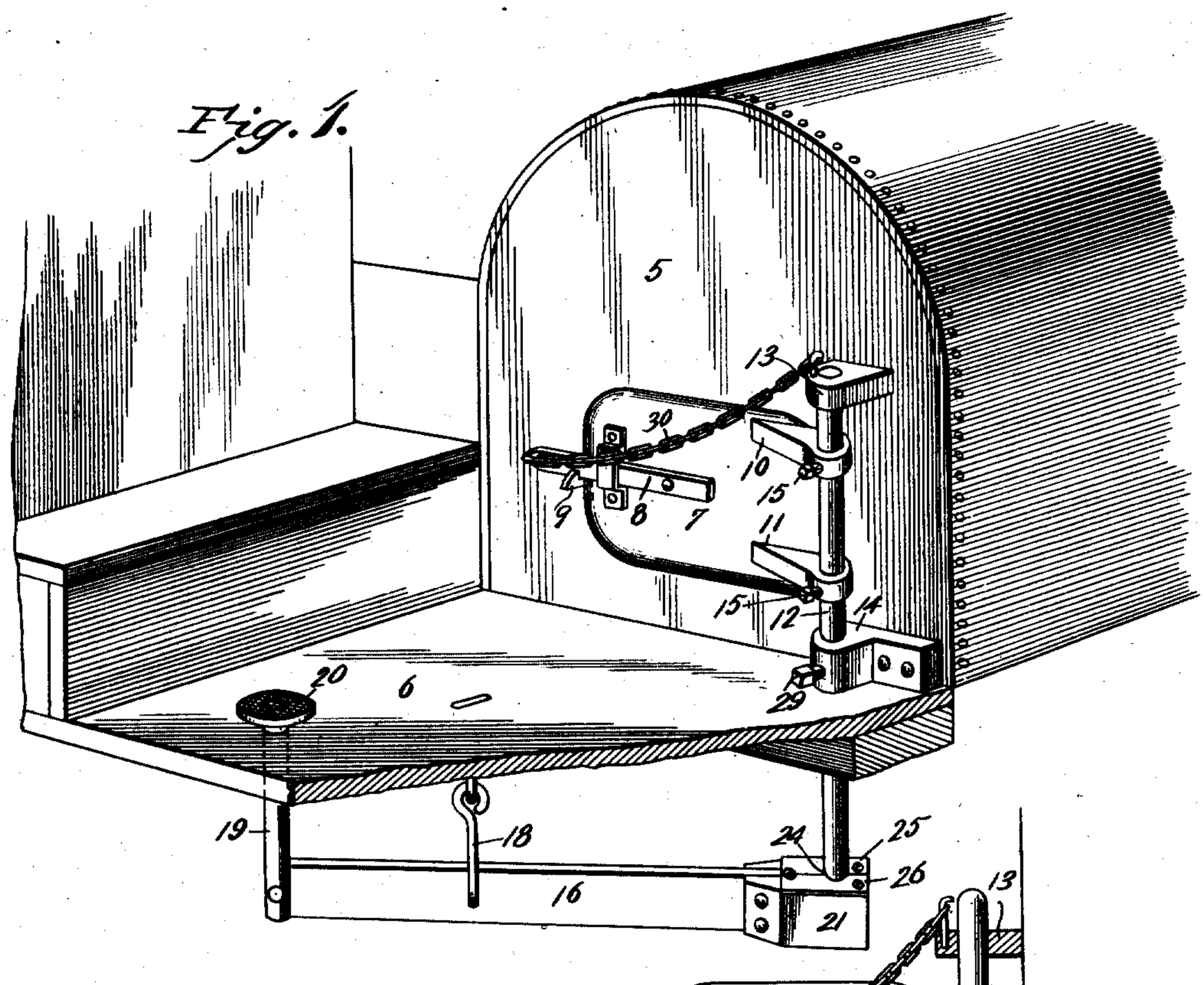
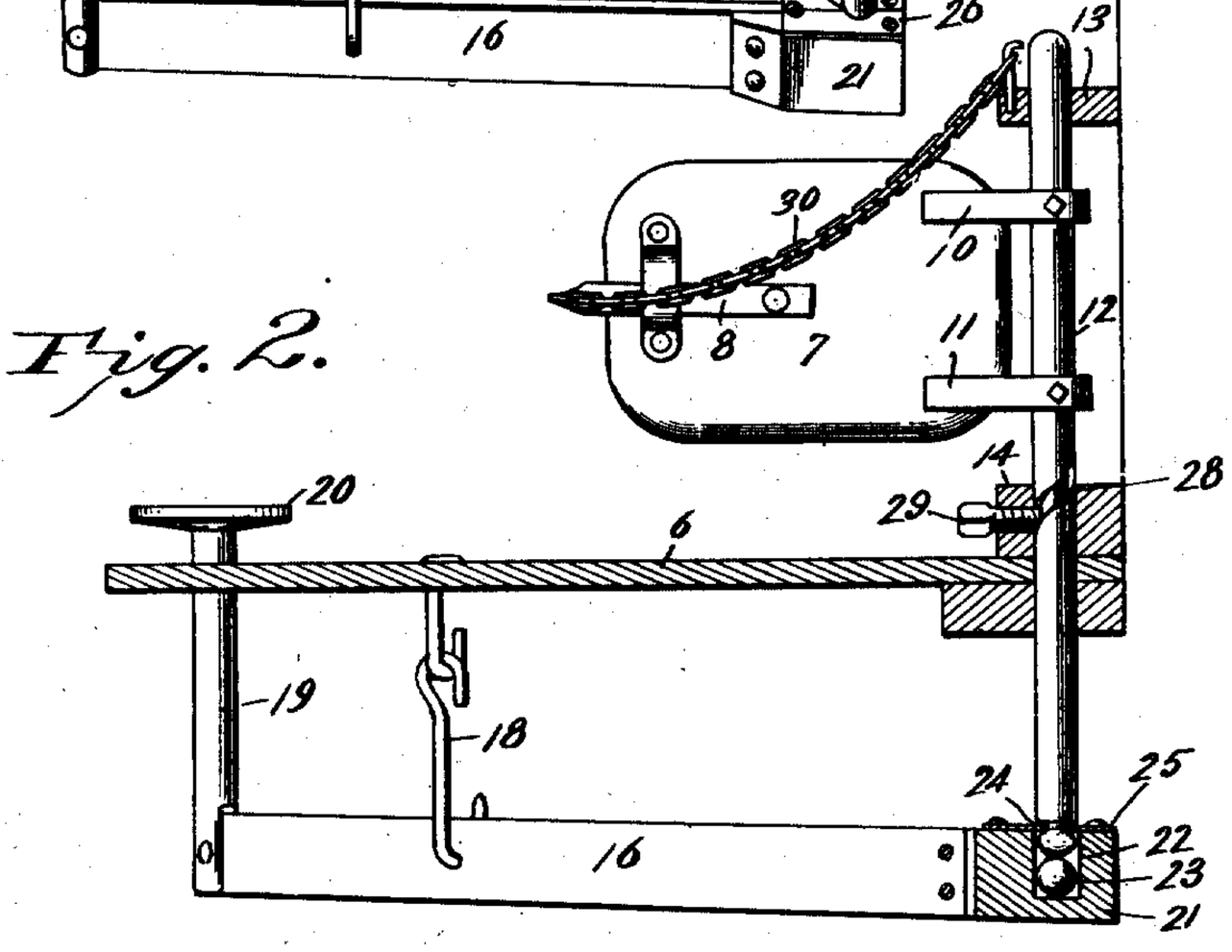



Fig. 2.




Witnesses
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# UNITED STATES PATENT OFFICE.

ASA HAZELTON, OF VANDALIA, MISSOURI, ASSIGNOR OF ONE-HALF TO WILLIAM S. BOYD, OF VANDALIA, MISSOURI.

## FURNACE-DOOR-OPENING DEVICE.

SPECIFICATION forming part of Letters Patent No. 689,185, dated December 17, 1901.

Application filed January 24, 1901. Serial No. 44,583. (No model.)

*To all whom it may concern:*

Be it known that I, ASA HAZELTON, a citizen of the United States, residing at Vandalia, in the county of Audrain and State of Missouri, have invented a new and useful Furnace-Door-Opening Device, of which the following is a specification.

This invention relates to furnace-door-operating devices; and it has for its object to provide a construction wherein by depression of a foot-lever the furnace-door will be raised bodily at the same time that it is rotated, so that the latch carried by the door will be lifted from the keeper on the furnace to permit of rotation of the door to its open position.

A further object of the invention is to provide a construction with a minimum of parts for accomplishing this purpose, further objects and advantages of the invention being evident from the following description.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in both views, Figure 1 is a perspective view showing a portion of a locomotive boiler and cab and illustrating the application of the invention to the furnace-door. Fig. 2 is a vertical sectional view taken through the floor of the cab, parts of the mechanism being shown in elevation and the furnace-door being illustrated as open.

Referring now to the drawings, 5 represents the rear end portion of a locomotive-boiler, and 6 a portion of the floor of the locomotive-cab. The furnace of the boiler has the usual doorway for feeding fuel, and this doorway has a door 7, provided with a pivoted latch 8, which when lowered engages a keeper 9 on the end of the boiler. The door 7 is provided with two hinge elements 10 and 11 in the form of eyes, and engaged with these eyes is a vertical pintle 12, the upper end of which is rotatably mounted in an eye 13, which is secured to and projects rearwardly from the end of the boiler. The pintle below its connection with the door is passed through an eye in a block 14, which is secured to the end of the boiler, preferably adjacent to the floor of the cab, and the pintle is continued downwardly to a point below the floor of the cab, as illustrated in the drawings. The door is held rigidly to the pintle through the medium of set-screws 15, as illustrated, so that when the pintle is raised to slide through its bearings the door will be likewise raised and the latch 8 will be lifted therewith from the keeper. When the door is lifted to disengage the latch, the pintle is rotated to swing the door open.

To lift the pintle 12, a lever 16 is suspended from the under side of the cab-floor by means of links 18, and at one end of this lever is pivoted a plunger 19, which is passed upwardly through the floor of the cab and is provided at its upper end with a footpiece 20, which when depressed acts to move the lever pivotally and raise its opposite end. This opposite end of the lever 16 is provided with a head comprising a bifurcated block 21, which receives the end of the lever proper in its slot and which lever is held in the slot by bolts or otherwise. In the upper face of the head is a recess 22, against the bottom of which rests a ball 23, and against the upper face of this ball rests the lower rounded end of the pintle 12, so that the pintle may turn freely and with little friction. To hold the pintle against movement from the contact with the ball, a groove 24 is formed in the pintle on a line with the upper face of the head of the lever, and in this groove are engaged the edges of arcuate slots in plates 25 and 26, which are bolted or otherwise secured to the upper face of the head.

When the pintle 12 is raised, it must be turned to swing the door open, and for this purpose a helical groove 28 is formed in the pintle, and in this groove is engaged a screw 29, which is engaged with the block 14, and when the pintle is raised the side wall of the groove presses against the screw with a wedging action, and as a result the pintle is rotated. When the lever is released, the weight of the door, the pintle, and the work end of the lever cause the lever to move to its opposite position and the door to move downwardly, at which time the screw 29 engages the opposite side of the groove 28 and effects an opposite rotation of the pintle to close the door.

The door may be also provided with the common opening-chain 30, attached at one

end to the door-latch and at the opposite end to the boiler or other convenient support.

In practice modifications of the specific construction shown may be made, and any suitable materials and proportions may be used for the various parts without departing from the spirit of the invention.

What is claimed is—

1. The combination with a pivoted door of a latch mechanism for the door adapted for disengagement by upward movement of the door, means for raising the door, and cam connections with the door operable by upward movement of the door for moving the door pivotally.

2. The combination with a door having a pivoted pintle to which the door is rigidly connected, of a latch mechanism for the door adapted for disengagement by upward movement of the door, said pintle having a helical groove progressing longitudinally thereof, means for raising the pintle to raise the door, and means engaged with the groove for contact with the sides thereof to swing the pintle and therewith the door as the pintle is raised and lowered.

3. The combination with a door having a pintle fixed thereto and provided with a helical slot progressing longitudinally of the pintle, of a latch mechanism for the door comprising a fixed keeper and a latch pivoted to the door for movement into and out of engagement with the keeper independently of the door, and for movement also with the door into and out of engagement with the keeper, means for raising the pintle to raise the door to disengage the latch from the keeper, and means engaged with said slot for contact with the sides thereof to move the pintle rotatably as it is raised and lowered.

4. The combination with a door having latch mechanism adapted for disengagement by upward movement of the door, of a pintle fixed to the door and having a helical groove progressing longitudinally thereof, means engaged with the slot for contact with the sides thereof to rotate the pintle as it is raised and lowered, and a foot-lever for raising the pintle.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ASA HAZELTON.

Witnesses:
S. E. KENDALL,
V. L. BESHEARS.