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PATENTED NOV. 7, 1905.

J. S. HOOD.

DEVICE FOR OPERATING FURNACE DOORS, GATES, &c.

APPLICATION FILED MAR. 16, 1905.

2 SHEETS—SHEET 1.

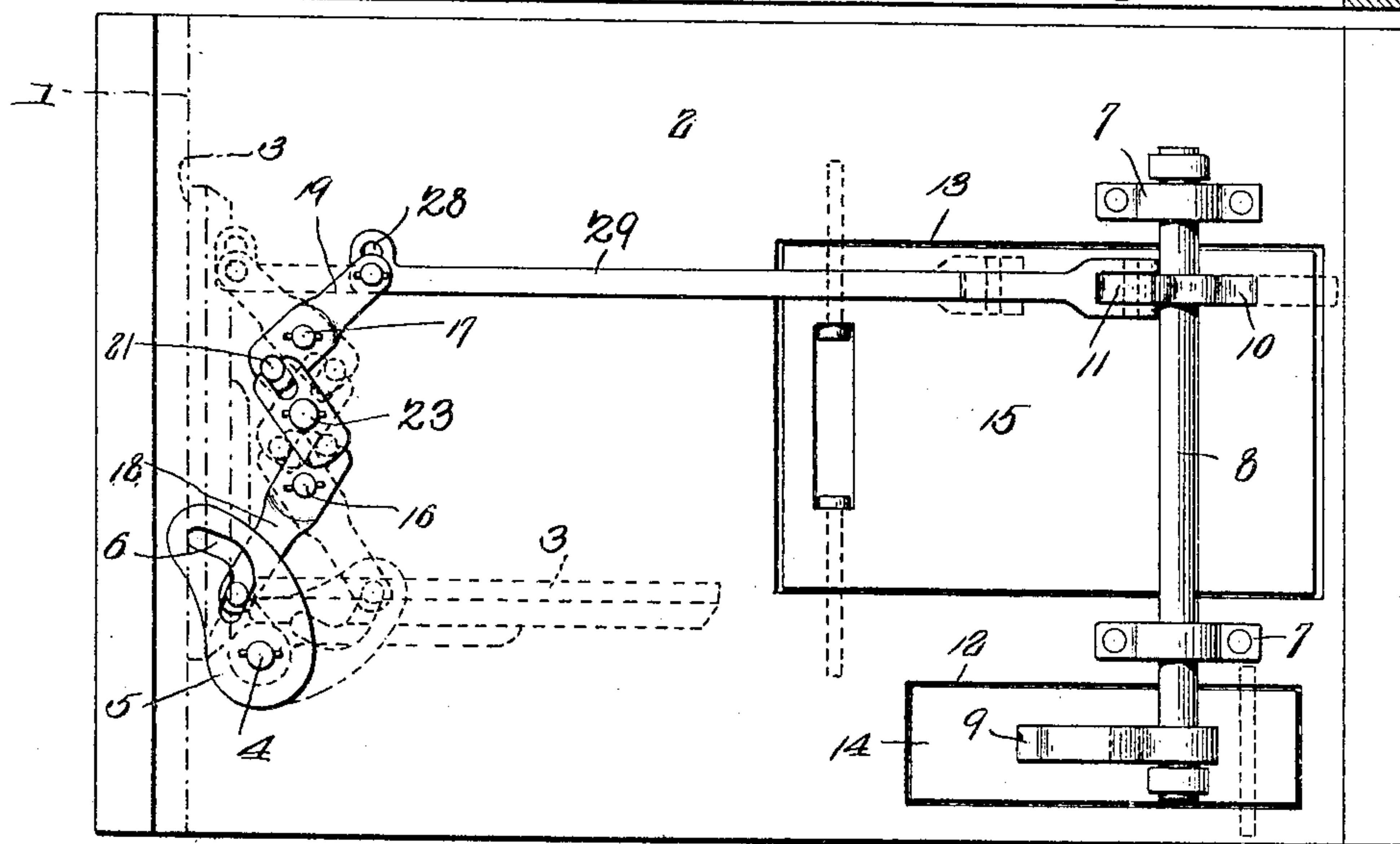
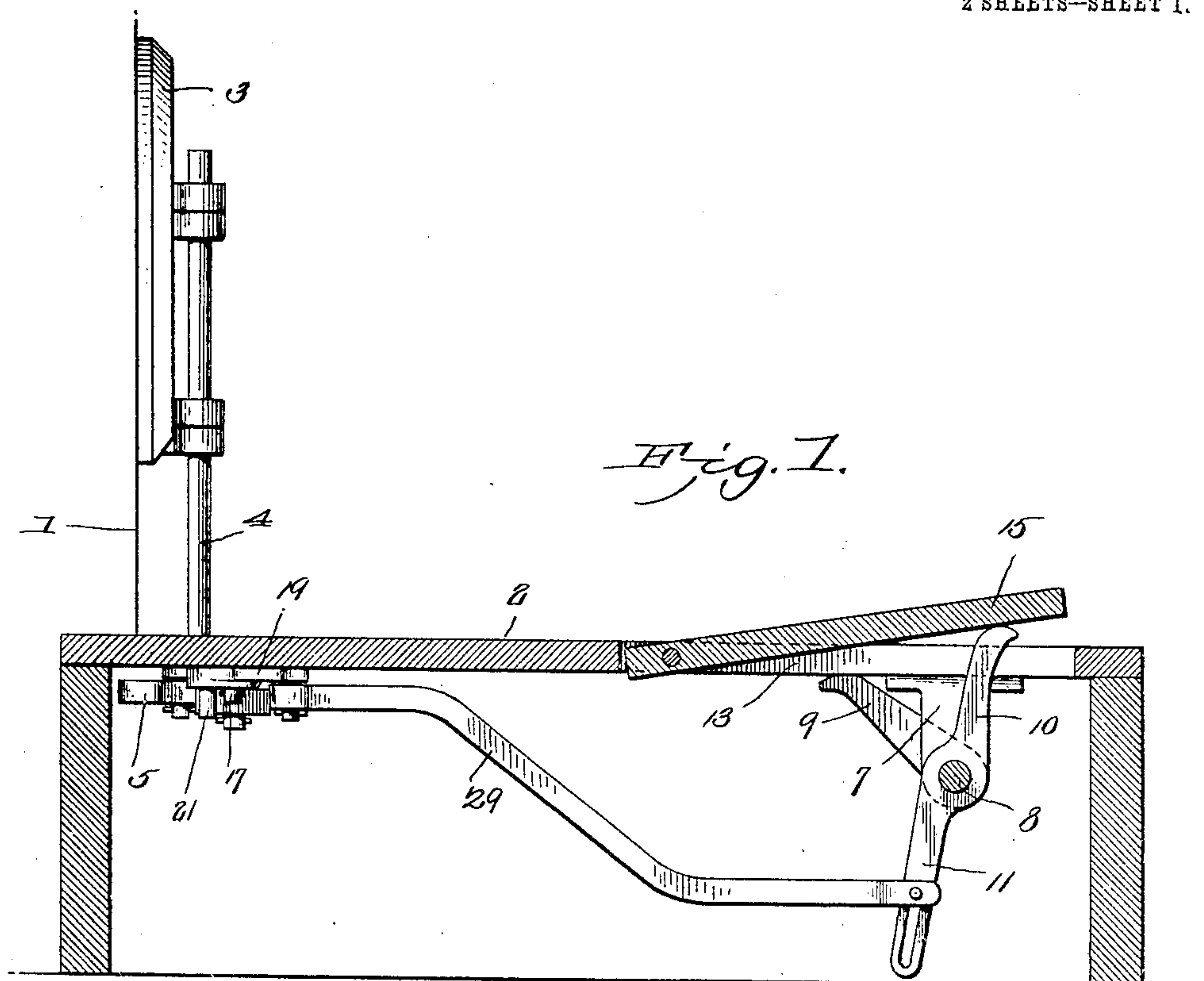


Fig. 2.

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by

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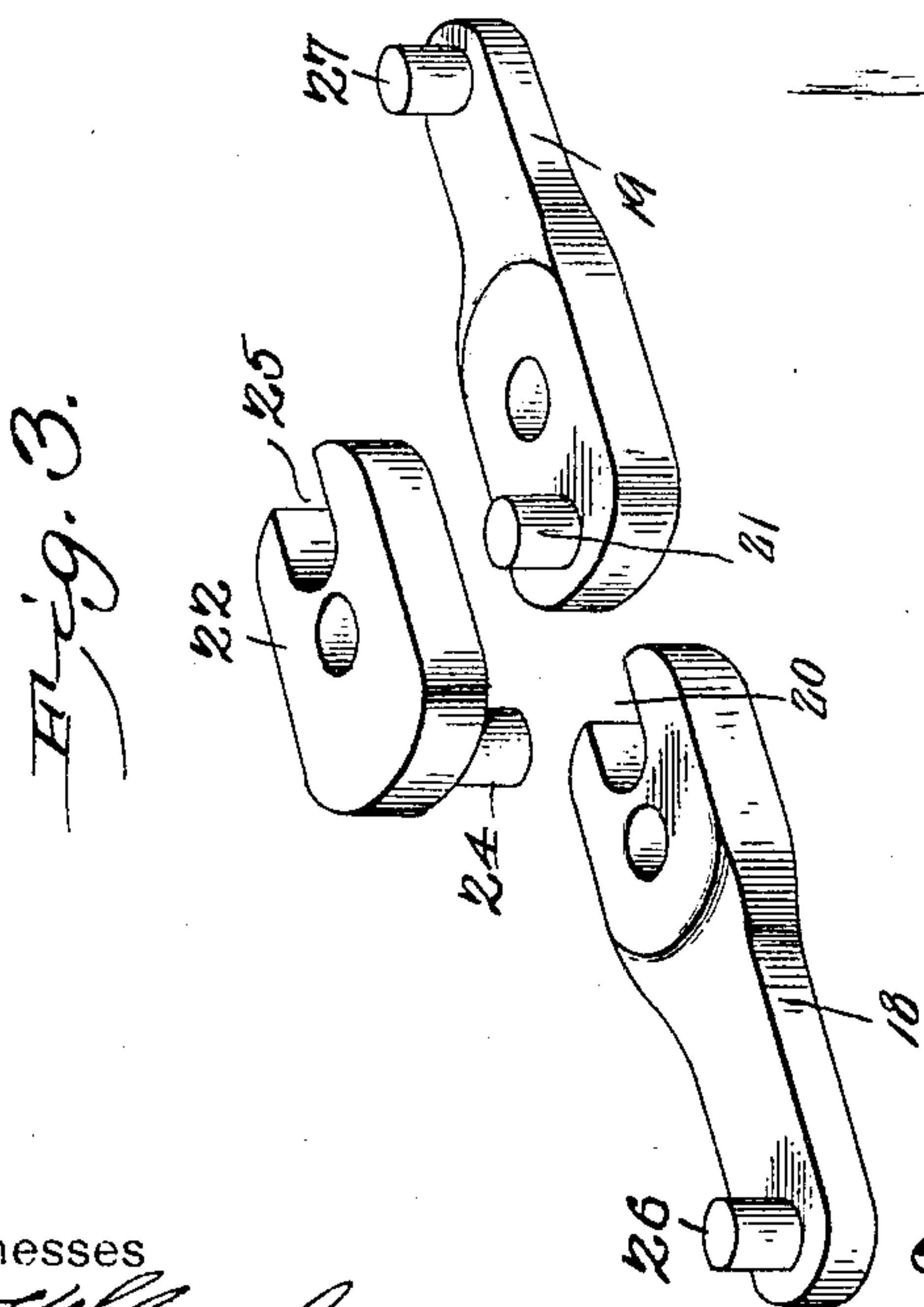
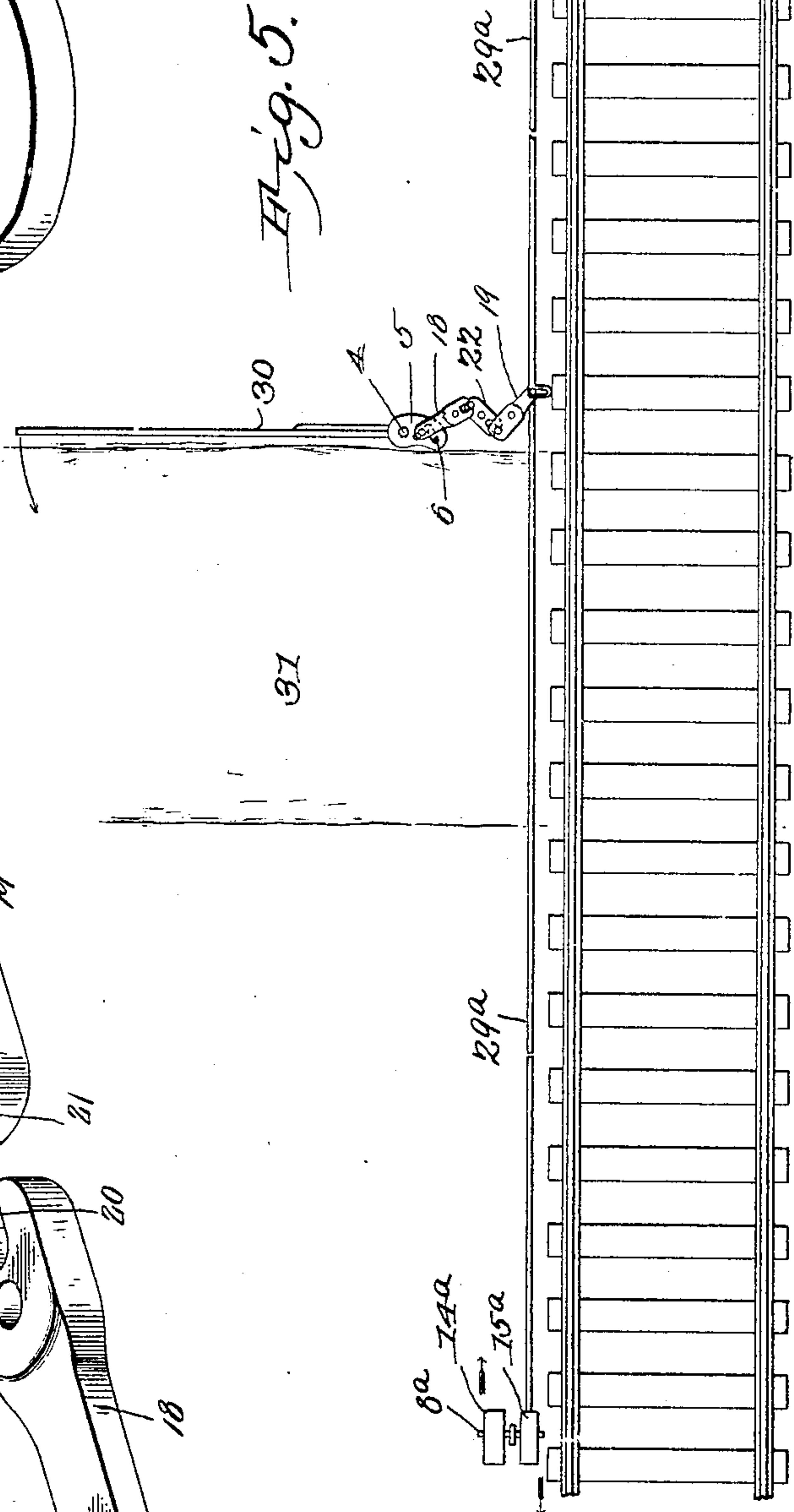
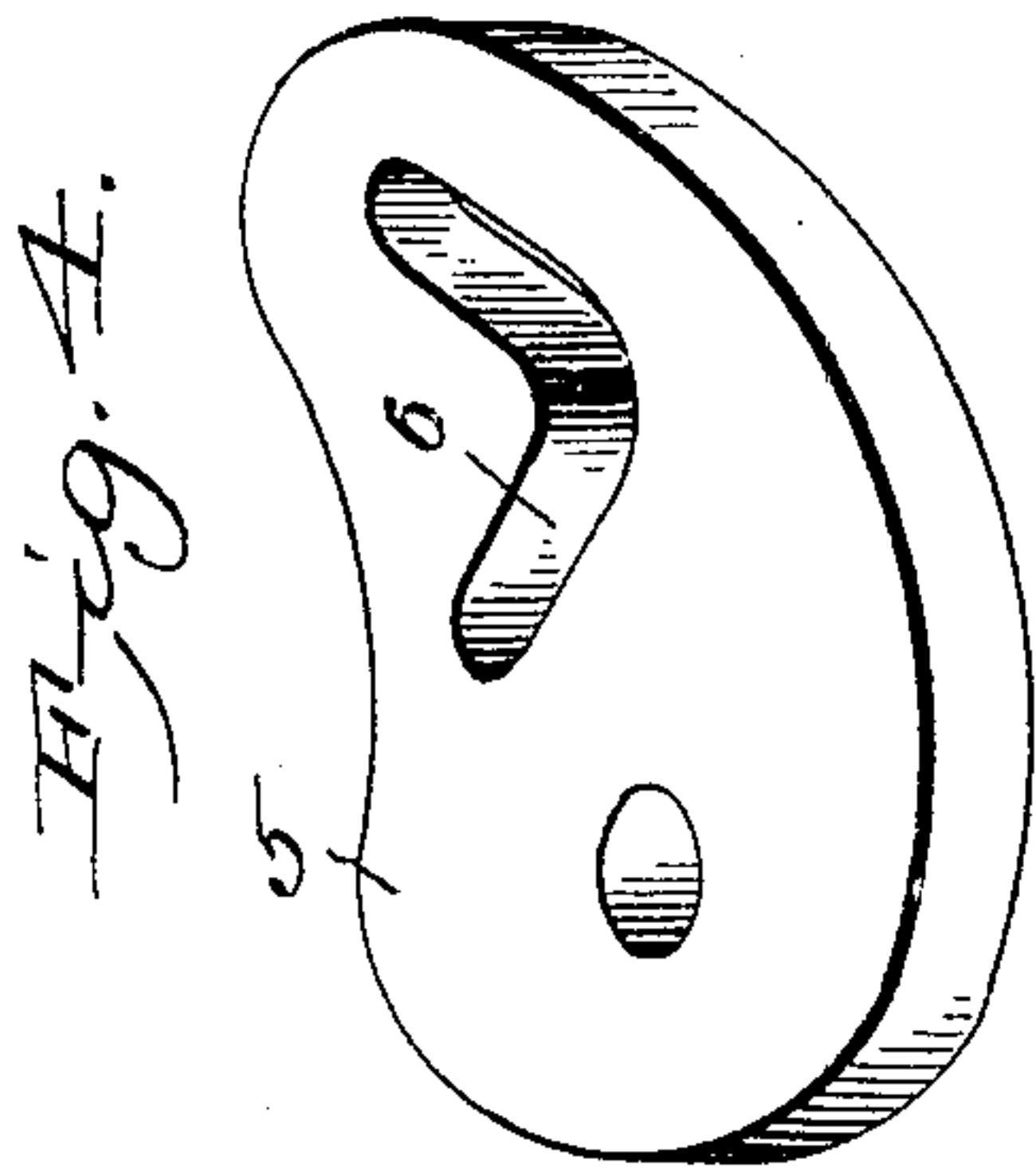
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2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH S. HOOD, OF STAHLSTOWN, PENNSYLVANIA.

DEVICE FOR OPERATING FURNACE-DOORS, GATES, &c.

No. 803,597.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Application filed March 16, 1905. Serial No. 250,496.

To all whom it may concern:

Be it known that I, JOSEPH S. HOOD, a citizen of the United States, residing at Stahlstown, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Device for Operating Furnace-Doors, Gates, &c, of which the following is a specification.

This invention relates to devices for operating furnace-doors, gates, and the like; and the objects of the invention are to simplify and improve the construction and operation of this class of devices.

With these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of embodiment of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that the right is reserved to any changes, alterations, and modifications to which recourse may be had within the scope of the invention and without departing from the spirit or sacrificing the efficiency of the same.

In said drawings, Figure 1 is a longitudinal vertical sectional view illustrating the invention as applied to a furnace-door. Fig. 2 is a bottom plan view of the same. Fig. 3 is a perspective detail view showing in inverted position and disassembled the link members for transmitting motion between the main operating-rod and the hinge-post lever. Fig. 4 is a perspective detail view of the hinge-post lever. Fig. 5 is a diagrammatic plan view illustrating the invention as applied to the operation of a railroad-gate.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

In the figures of the drawings where the invention has been shown applied to a furnace-door, 1 designates the front wall of the furnace, and 2 the floor in front of said furnace.

3 is the furnace-door, and 4 the hinge-post supporting said door, said hinge-post being extended through the floor and beneath the latter. Upon said hinge-post is securely mounted a lever 5, having a V-shaped opening or cam-slot 6.

In brackets or bearings 7 beneath the floor 2 is supported a rock-shaft 8, which is disposed transversely to and a suitable distance in front of the furnace. Said rock-shaft is provided with two upwardly-extending trip-arms 9 and 10 and with a downwardly-extending arm 11, which latter, if desired, may be integral with the trip-arm 10, as shown, the arms 9 and 10 being disposed at an angle to each other, as clearly seen in Fig. 1, and spaced apart from each other, as clearly seen in Fig. 2. The floor 2 is provided with openings 12 13, in which are hingedly mounted treadles 14 15, which are normally supported upon the trip-arms 9 and 10, respectively.

Upon studs 16 17, depending from the floor 2, are fulcrumed a pair of levers 18 19, provided at their inner ends, respectively, with a notch or recess 20 and with a lug 21. A third lever or link 22 is fulcrumed upon a stud 23, depending from the floor 2 between the studs 16 17, and said link or lever is provided at the ends thereof with a lug 24 and a notch or recess 25, engaging, respectively, the notch 20 of the lever 18 and the lug 21 of the lever 19. The intermediate link 22 thus serves to transmit motion between the levers 18 and 19. Said levers are provided near their outer ends with lugs 26 and 27, the lug 26 of the lever 18 being in engagement with the cam-slot 6 in the hinge-post lever 5 and the lug 27 of the lever 19 engaging a slot 28 in one end of a connecting-rod 29, the opposite end of which is pivotally connected with the arm 11 of the rock-shaft 8.

It will be seen that under the construction described when the furnace-door is closed the rock-shaft 8 will occupy a position in which one of its arms—in the present instance the arm 10—supports one of the treadles—in this case the treadle 15—in such a position that the free end of said treadle will be elevated slightly above the floor 2, while the treadle 14, supported upon the arm 9, is practically flush with the floor. The extremities of the arms 9 and 10 are beveled so as to slidingly engage the under sides of the treadles. The operator by stepping upon the elevated treadle 15 will cause the rock-shaft to oscillate in its bearings, causing the arm 9 to elevate the treadle 14, while the arm 11, through the connecting-rod 29, rocks upon its fulcrum the lever 19, from which a similar rocking motion is imparted through the link 22 to the lever 18, the lug 26 of which engaging the cam-groove in the lever 5 serves to swing

the latter and the hinge-post 4, thus opening the door 3. By stepping upon the treadle 14 the operation will be reversed and the door will swing shut.

5 It is obvious that with such slight modifications as will involve merely mechanical skill the present invention may be applied to the operation of doors, gates, and swinging structures of all descriptions. In Fig. 5 of
10 the drawings the invention has been shown applied to a gate 30 at a railroad-crossing 31. Under this modification the treadles 14 and 15 will be actuated by engaging means connected with the locomotives of passing trains,
15 and it will become necessary to provide an extension 29^a of the connecting-rod 29, the said extension having connection with the arm of a rock-shaft 8^a, actuated by an auxiliary set of treadles 14^a and 15^a, to be operated by engaging members connected with
20 trains passing in an opposite direction. Of this modification merely a diagram has been shown, the general construction and operation being readily understood by any skilled
25 mechanic.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood by those
30 skilled in the art to which it appertains. The construction is simple and inexpensive, and the device will be found to be thoroughly efficient in the practical application thereof.

As will be best seen in Fig. 2 of the drawings, the treadles 14 and 15 are to be supported hingedly upon opposite sides of the
35 rock-shaft 8, the arms 9 and 10 of which are beveled in opposite directions, thus facilitating the practical operation of the device.

40 Having thus described the invention, what is claimed is—

1. In a device of the class described, a hinge-post having a lever provided with a cam-slot, a rock-shaft having upwardly-extending
45 treadle-supporting arms and a downwardly-

extending arm, a lever having a lug engaging the cam-slot in the lever connected with the hinge-post, a secondary lever, an intermediate pivotally-supported link transmitting motion between the cam-slot-engaging lever and
50 the secondary lever, and a connecting-rod provided at one end with a slot engaging a lug near the free end of the secondary lever and having its opposite end connected with the downwardly-extending arm of the rock-shaft. 55

2. In a device of the class described, a rock-shaft, oppositely-beveled upwardly-extending arms connected with said rock-shaft at an angle to each other, treadles supported hingedly at opposite sides of the rock-shaft and having
60 their free ends supported upon the beveled arms, a hinge-post carrying a door or gate, and means for transmitting motion from the rock-shaft to said hinge-post.

3. In a device of the class described, a rock-shaft, oppositely-beveled upwardly-extending arms connected with said rock-shaft at an angle to each other, treadles supported hingedly at opposite sides of the rock-shaft and having
70 their free ends supported upon the beveled arms, a hinge-post carrying a door or gate, a lever upon said hinge-post having a cam-slot formed therein, and means for transmitting motion to said lever from the rock-shaft; said means including a connecting-rod having one
75 end connected with an arm extending downwardly from the rock-shaft and provided with a slot at the other end, a pair of suitably-supported levers having lugs engaging the slots in the connecting-rod and in the hinge-post
80 lever respectively, and an intermediate link operatively engaging and connecting said levers.

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

JOSEPH S. HOOD.

Witnesses:

J. E. BEISTEL,

P. A. McELHOE.