

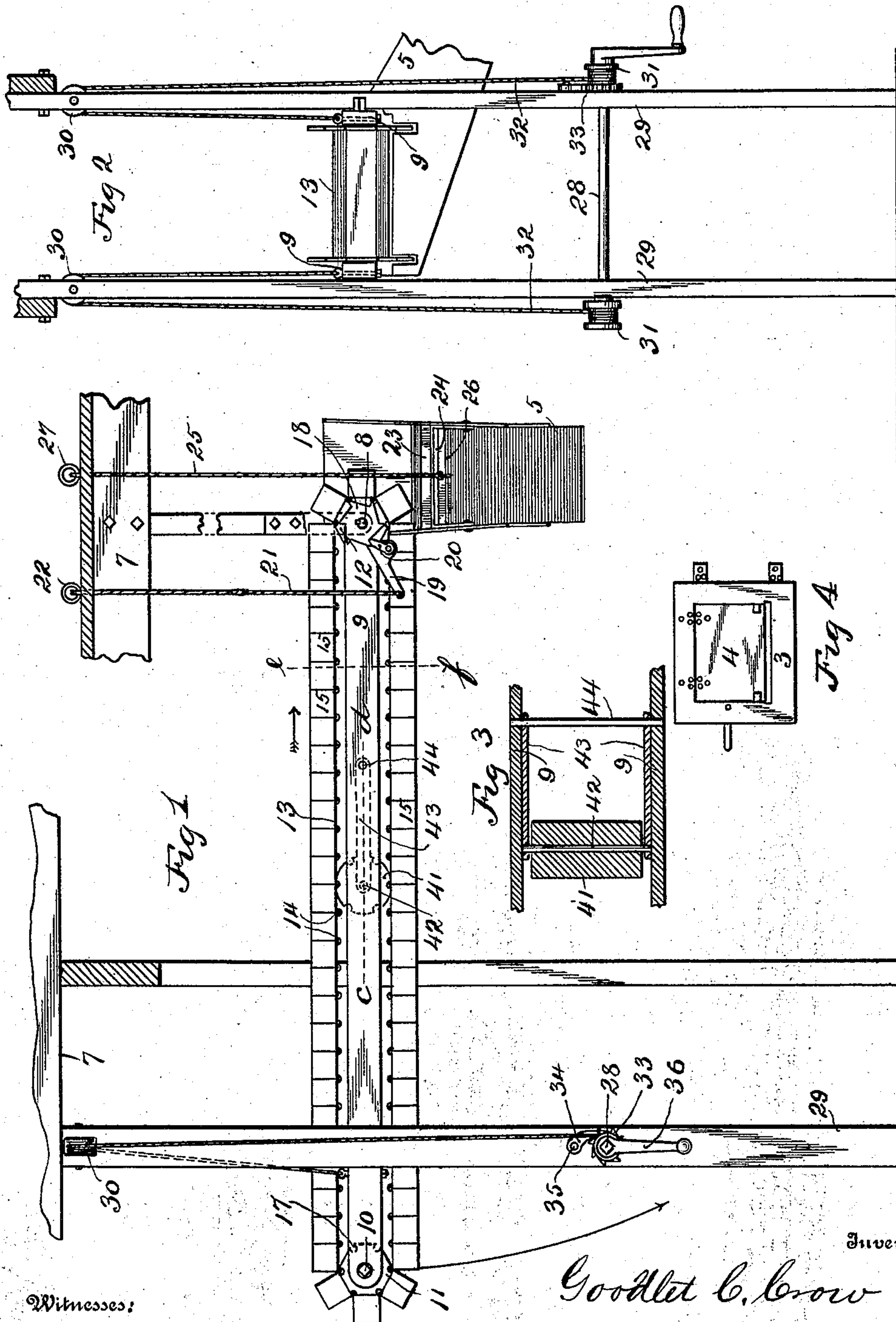
No. 854,875.

PATENTED MAY 28, 1907.

G. C. CROW.  
FURNACE FEED.

APPLICATION FILED OCT. 18, 1905.

2 SHEETS—SHEET 1.



Witnesses:

R. Hamilton.  
W. W. Singler.

Inventor

Goodlet C. Crow

By

Warren D. House,

His, Attorney

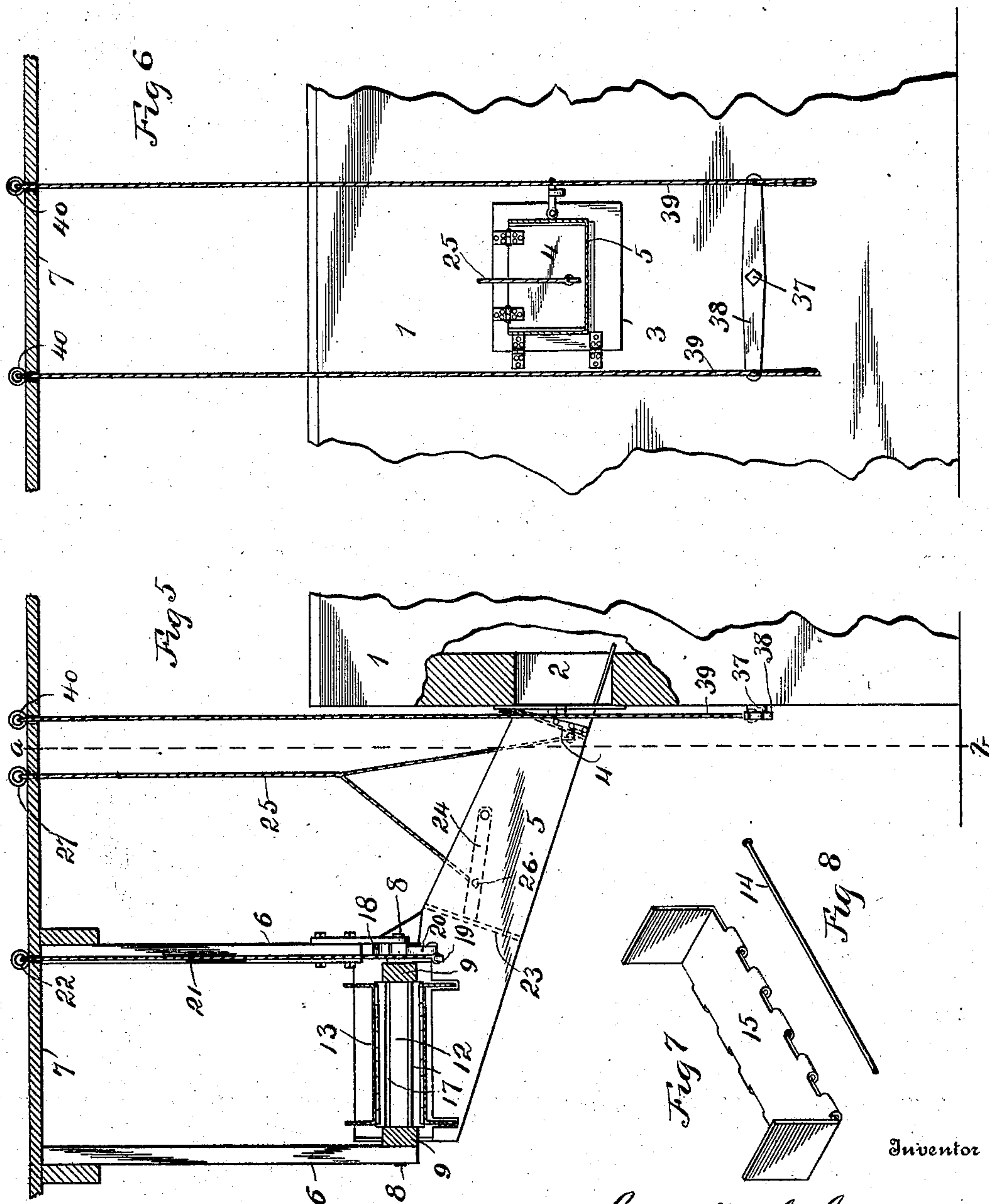
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# UNITED STATES PATENT OFFICE.

GOODLET C. CROW, OF KANSAS CITY, MISSOURI.

## FURNACE-FEED.

No. 854,875.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed October 18, 1905. Serial No. 283,263.

*To all whom it may concern:*

Be it known that I, GOODLET C. CROW, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented new and useful Improvements in Furnace-Feeds, of which the following is a specification.

My invention relates to improvements in furnace feeds.

10 The object of my invention is to provide a fuel feed for furnaces which may be operated to feed the fuel by a person located at a point distant from the furnace.

15 My invention provides a construction in which the fuel to be fed is, at any convenient time, placed upon an endless belt conveyer so disposed that when driven the conveyer will discharge fuel into an inclined chute which discharges into the feed opening of 20 the furnace, means being provided by which a person located at a point distant from the feeding mechanism may cause the belt to be driven.

25 My invention provides further, a closure for the feed opening and means by which the operator at a distant point may open and close said feed opening by a proper movement of the closure.

30 My invention provides further, a gate interposed between said closure and the place where the fuel is deposited in the chute for preventing fuel which falls from the endless belt into the chute from sliding in the chute against the closure, thus obviating danger of 35 fire which might occur in case the fuel banked up against the closure in the chute.

40 My invention provides further, means by which the operator at a distant point may simultaneously move the gate and closure to and from the open position.

45 My invention provides further, means by which the endless belt conveyer may be swung vertically to different positions for the purpose of enabling the attendant to readily deposit the fuel upon the endless belt conveyer, and for the further purpose of swinging the loaded conveyer to a position in which the weight of the fuel carried thereby will assist in driving the belt.

50 My invention provides further, means by which, prior to the feeding operation, the attendant at a point distant from the furnace may shake the grate.

55 My invention provides still further, a novel form of belt conveyer comprising a series of sections hinged to each other to form a belt,

each section having outwardly turned ends disposed in alinement with the corresponding ends of the adjacent sections, thus forming upon the upper side of the belt, a channel for 60 containing the fuel.

Other novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawings illustrative of my invention—Figure 1 is a side elevation 65 view of the apparatus looking at the side adjacent the furnace. Fig. 2 is an end elevation view, a portion of the chute being broken away. Fig. 3 is a horizontal section taken on the dotted line *c—d* of Fig. 1. Fig. 4 is an 70 inner elevation view of the ordinary furnace door provided with a feed opening and a closure for said opening. Fig. 5 is a vertical sectional view taken on the dotted line *e—f* of Fig. 1, a portion of the furnace being shown 75 in vertical section, disclosing the feed opening. Fig. 6 is a vertical sectional view taken on the dotted line *a—b* of Fig. 5. Fig. 7 is a perspective view of one of the conveyer sections. Fig. 8 is a perspective view of one 80 of the pintles which connect adjacent sections of the endless belt conveyer.

Similar characters of reference denote similar parts.

1 denotes the casing of an ordinary furnace, 85 2 the feed opening therefor normally closed by the ordinary hinged door 3, which is provided with a feed opening registering with the feed opening 2. Hinged at its upper edge to the door 3 is a closure 4, vertically 90 movable to and from a position closing the feed opening 2.

5 denotes an inclined chute the lower end of which discharges into the feed opening 2 and the upper end of which is supported by 95 and secured to the lower ends of two vertical bars 6, the upper ends of which are secured to the floor 7 above the furnace. In the lower ends of the bars 6 are rotatively mounted the respective ends of a horizontal 100 shaft 8, upon which are pivotally mounted the ends of two parallel bars 9 the opposite ends of which are provided respectively with transverse openings in which are rotatively mounted the ends of a horizontal shaft 10 105 having mounted upon and rotatable with it a longitudinally peripherally grooved rotary member 11. Similarly mounted upon the shaft 8 is a similarly constructed rotary member 12. Mounted on and driven by said 110 rotary members 11 and 12 is an endless belt conveyer 13 comprising a series of U-shaped



sections each hinged, by means of pins 14, at the two longitudinal edges of its transverse portion, to corresponding portions of the adjacent sections. Each section, denoted by 5 15, is of a width such that the two hinged joints connecting it with the adjacent sections, will fit into the longitudinal grooves 17 provided in the peripheries of the rotary members 11 and 12. The outwardly extending arms of the sections 15 are disposed so as to form channels upon the outer side of the parallel portions of the belt, so that when the belt is positioned as shown in Fig. 1, the channel upon the upper part of the belt is adapted to contain a supply of fuel. Upon 15 one end of the shaft 8 is rigidly secured a ratchet wheel 18. A lever 19 has one end pivotally mounted upon the shaft 8 between the ratchet wheel 18 and the adjacent bar 9. 20 Pivotaly mounted upon the lever 19 is a pawl 20, adapted when the lever 19 is vertically oscillated, to successively engage the teeth of the ratchet wheel 18 and cause a step by step rotation thereof, thus, through 25 the intermediacy of the shaft 8 and rotary member 12, driving the belt 13 step by step. For swinging the lever 19 upwardly the free end has secured to it the lower end of a cord, chain, or similar instrumentality 21, the upper 30 end of which extends through the floor 7 and has secured to it a ring 22. By alternately raising and lowering the cord 21, the lever 19 is oscillated, thus driving the belt 13 step by step. The discharge end of the belt conveyer 13, is so disposed that when the belt 13 35 is driven in the direction indicated by the arrow in Fig. 1, the fuel carried upon the upper part of the belt will be deposited in a series of charges into the upper end of the 40 chute 5.

To prevent fuel from falling off the conveyer belt into the chute, and becoming banked up against the closure 4, in which position the heat from the furnace might ignite the fuel, I provide in the chute a transverse gate 23, to which is secured the transverse portion of a U-shaped bracket 24 pivoted to the vertical sides respectively of the chute 5. For simultaneously swinging the 45 closure 4 and gate 23 vertically to the open position, I provide a cord or similar instrumentality 25, the lower end of which is bifurcated and connected respectively to the closure 4 and to a transverse rod 26, the ends 55 of which are secured respectively to the two arms of the U-shaped bracket 24. The cord 25 extends vertically through a hole provided in the floor 7, and has secured to its upper end above the floor a ring by means of which 60 the cord 25 may be vertically pulled.

For vertically swinging the supporting bars 9, the following described mechanism is employed:—Below the bars 9 is a horizontal shaft 28, the ends of which are rotatively 65 mounted respectively in two vertical paral-

lel posts 29, the lower ends of which are supported upon the floor upon which the furnace rests and the upper ends of which are secured to the floor 7 above. The posts 29 are disposed one at each side of the belt 13 and upon 70 the outer sides respectively of the bars 9. Two pulleys 30 are rotatively mounted respectively in the posts 29. Rigidly secured to opposite ends of the shaft 28 are two drums 31. Two cords 32 are supported re- 75 spectively upon the pulleys 30 and have their ends secured respectively to the bars 9 and to the peripheries of the drums 31 respectively. Upon one end of the shaft 28, outside the adjacent post 29, is a ratchet 80 wheel 33 in the teeth of which is adapted to engage a pawl 34 pivotally mounted upon a pin 35 secured in the adjacent post 29. The end of the shaft 28 adjacent the ratchet 33 is squared and adapted to have fitted thereon 85 one end of a removable crank 36, by means of which the shaft 28 is rotated in a direction such that the cords 32 will be wound upon the drums 31, thus upwardly swinging the conveyer belt 13 and its support. One end 90 of the shaft 10 is squared and fitted to the square opening in the removable crank 36 so that the said crank may be removed from the shaft 28 and applied to the squared portion of the shaft 10 for the purpose of rotating the 95 member 11 and driving the belt 13. This may be done when the operator desires to drive the belt from a local position instead of from upstairs or at some other distant point.

In order that the attendant may shake the 100 grate from a distant point prior to the feeding of fuel to the furnace, the horizontal rock shaft 37 of an ordinary rocking grate has centrally secured to its outer end a horizontal 105 bar 38, to the ends of which are secured respectively the lower ends of two cords 39, the upper ends of which extend through openings provided in the floor 7 and have secured thereto respectively two rings 40. By alternately upwardly pulling the cords 39 the 110 grate shaft 37 may be rocked.

Referring to Figs. 3 and 1, 41 denotes a horizontal roller disposed between the upper and lower parts of the conveyer belt 13, and which serves to retain the upper and lower 115 parts of the belt apart. The roller 41 is rotatively mounted on a horizontal transverse rod 42 having its ends secured in the free ends of two bars 43, the other ends of which are pivoted to a transverse rod 44 the ends of 120 which are respectively secured in holes provided therefor in the bars 9.

In operating my invention the pawl 34 is swung so as to clear the ratchet 33, thus permitting the shaft 28 to rotate and permitting 125 the conveyer belt 13 and its support to swing downwardly by gravity to a position in which it is convenient for the operator to deposit the fuel upon the upper side of the conveyer belt. When the channel upon the up- 130



per side of said belt has been filled with fuel the pawl 34 is again swung to a position engaging the ratchet wheel 33 after which the crank 36 is rotated so as to wind upon the drums 31 the cords 32 respectively and swinging the conveyer belt and its support vertically to the proper position. Thereafter the operator may feed fuel in the furnace from a distant point, in this instance from a room directly above the furnace. To accomplish this the operator first draws upward the cord 25 thus swinging upward the gate 23 and the closure 4. The operator then pulls the cord 21 thus driving the belt 13 in the direction indicated by the arrow in Fig. 1 in the manner hereinbefore described. After the belt 13 has been driven so as to have discharged therefrom all the fuel contained thereon, the belt may be reloaded with a fresh supply in the manner already described. After the furnace has been fed with a charge of fuel the cord 25 is released thus permitting the gate 23 and closure 4 to fall by gravity to the closed position. When the cord 21 is released the lever 19 will swing downward by gravity to the position shown in Fig. 1, in which position the pawl 20 will engage the next succeeding tooth of the ratchet wheel 18.

Various modifications of my invention may be made without departing from its spirit.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:—

1. In a furnace feed, the combination with a furnace having a feed opening, of a closure for said feed opening, means operated from a distant point for controlling the opening and closing movement of said closure, an inclined chute discharging into said feed opening, an endless belt conveyer discharging into said chute, a support for the said conveyer pivotally supported at the end adjacent the chute so that the opposite end may be swung vertically, means for vertically adjusting the free end of said support, means for driving said belt conveyer, means leading to a distant point for actuating said belt driving means, and local means by which the conveyer may be driven.

2. In a furnace feed, the combination with an inclined chute for discharging fuel into the furnace, of a support pivoted at one end adjacent said chute so as to be swung vertically, a rotary drum, a pulley located above said support, a cord or similar instrumentality passing over said pulley and connected at its ends to said support and to said drum respectively, means for rotating said drum in one direction, releasable means for prevent-

ing rotation of the drum in the opposite direction, two rotatable members mounted on said support adjacent its ends respectively, local means for rotating one of said members step by step, an endless belt conveyer mounted on and driven by said rotary members and discharging into said chute, and means leading to a distant point for actuating the said local means.

3. In a furnace feed, the combination with the furnace having a feed opening, of a closure for said opening, an inclined chute discharging into said opening, a gate in said chute above said closure, a cord or similar instrumentality connected to said gate and closure and by the proper moving of which said gate and closure may be simultaneously opened or closed, a vertically swinging support having its pivoted end disposed adjacent said chute, two rotary members mounted on said support, means for imparting step by step rotation to one of said rotary members, said means having a cord or similar instrumentality leading to a distant point and by the proper moving of which said means is actuated, an endless belt conveyer mounted on and driven by said rotary members and discharging into said chute above said gate, and means for vertically adjusting the free end of said support.

4. In a furnace feed, the combination with the furnace having a feed opening, of an inclined chute discharging into said opening, a vertically swinging closure for said opening, a vertically swinging gate in said chute above said closure, means leading to a distant point for simultaneously swinging said gate and closure to and from the closed positions, an endless belt conveyer discharging into said chute above said gate, a vertically swinging support upon which said endless belt is mounted, means mounted on said support for carrying and driving said endless belt conveyer, means leading to a distant point for actuating said driving means, a rotary drum, means for rotating said drum in one direction, a pulley disposed above said support, a cord or similar instrumentality passing over said pulley and supported thereby and having its ends connected respectively to said support and to the periphery of said drum, and releasable means for preventing rotation of the drum in the opposite direction.

In testimony whereof I affix my signature, in presence of two subscribing witnesses.

GOODLET C. CROW.

Witnesses:

WARREN D. HOUSE,  
HENRY F. ROSE.