

No. 782,213.

PATENTED FEB. 14, 1905.

J. P. BARNES.
MOVABLE ENDLESS GRATE.
APPLICATION FILED OCT. 6, 1903.

3 SHEETS—SHEET 1.

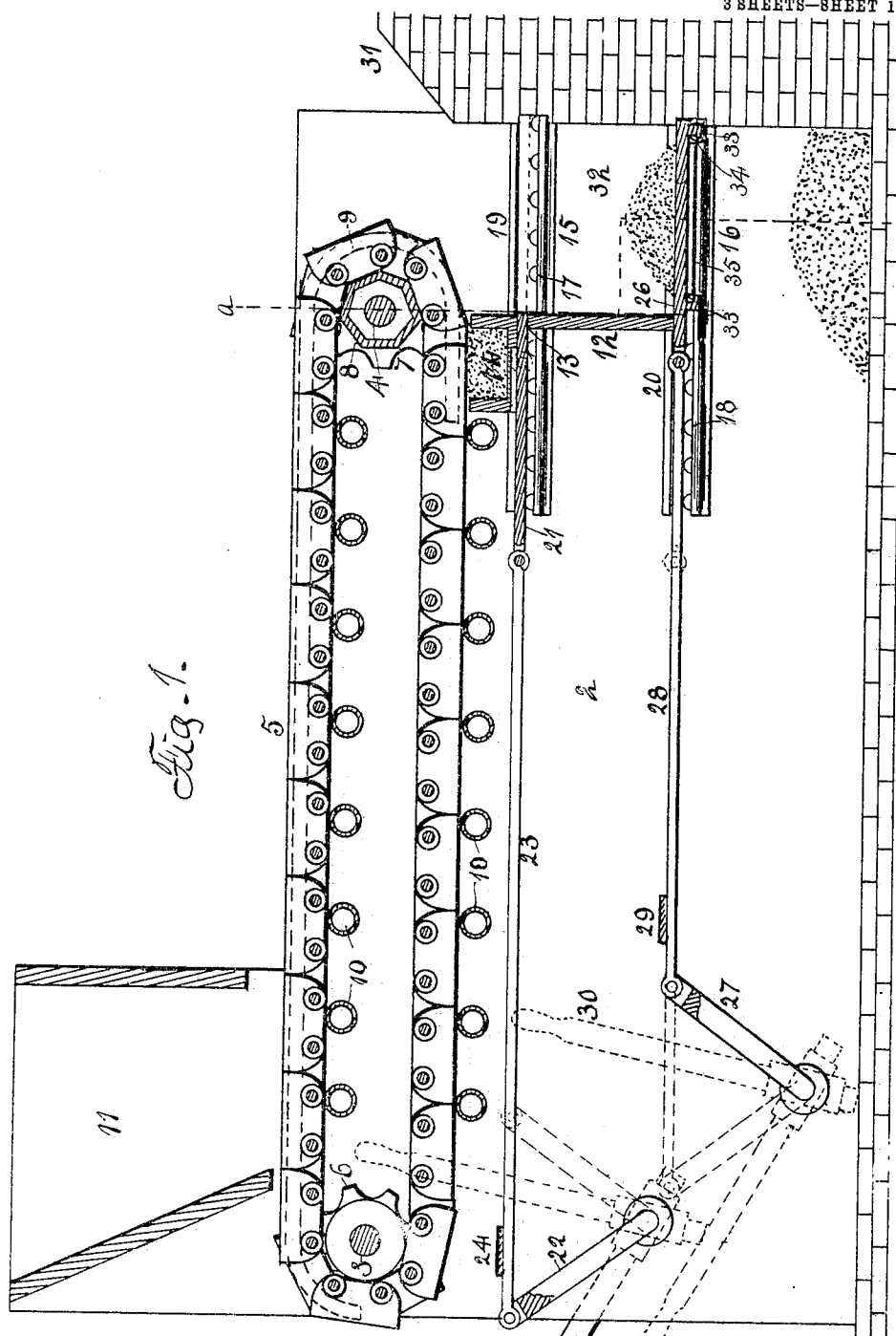


Fig. 1.

Witnesses:
W. E. Eniggy
C. Rehel.

Inventor:
Joseph P. Barnes
By A. O. Rehel
Attor

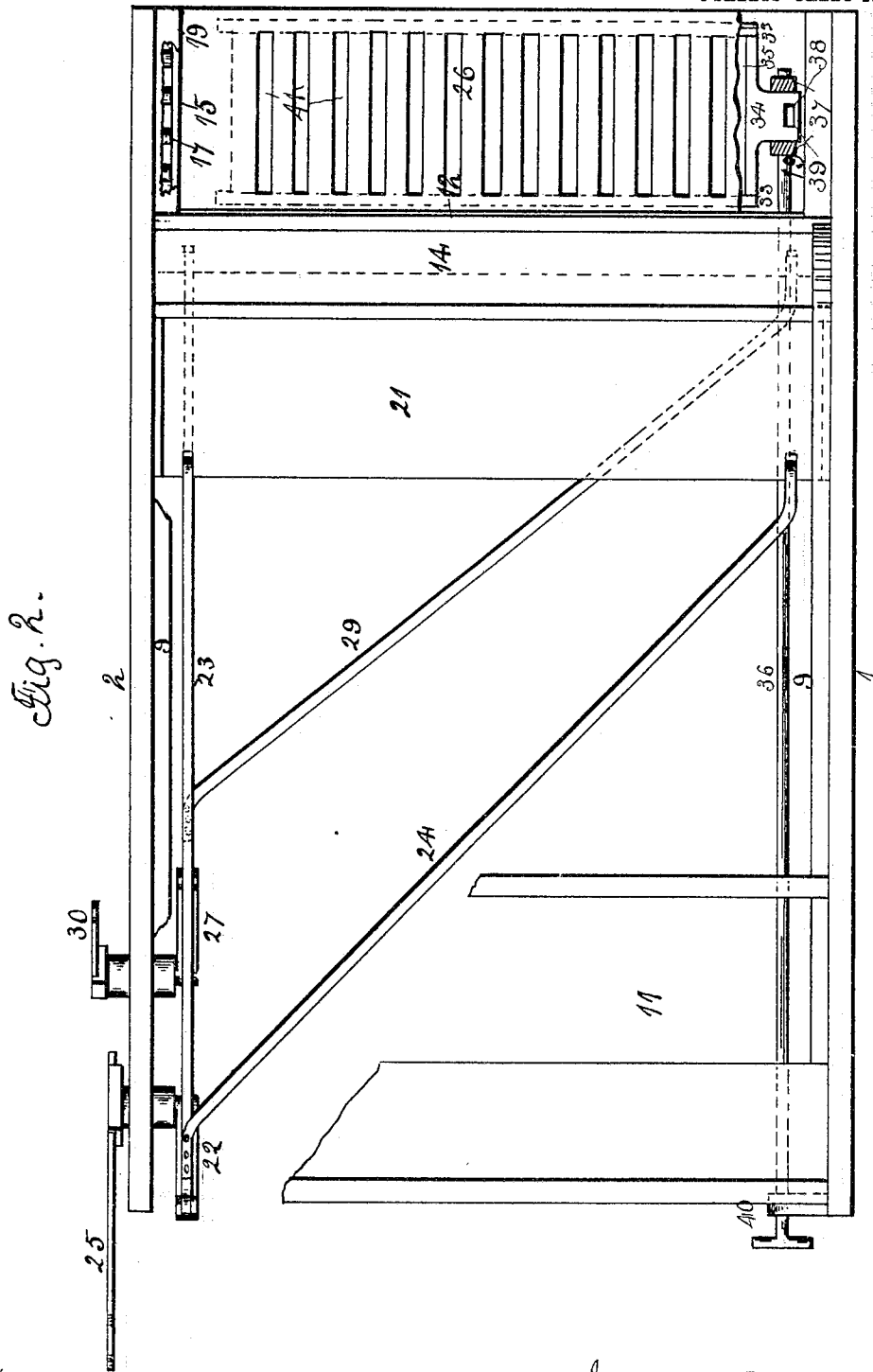
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3 SHEETS--SHEET 2.



Witnesses:
Wm E Grigg
E. Behel

Inventor:
Joseph P. Barnes
By A. D. Bebel
att'y.

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3 SHEETS—SHEET 3.

Fig. 3.

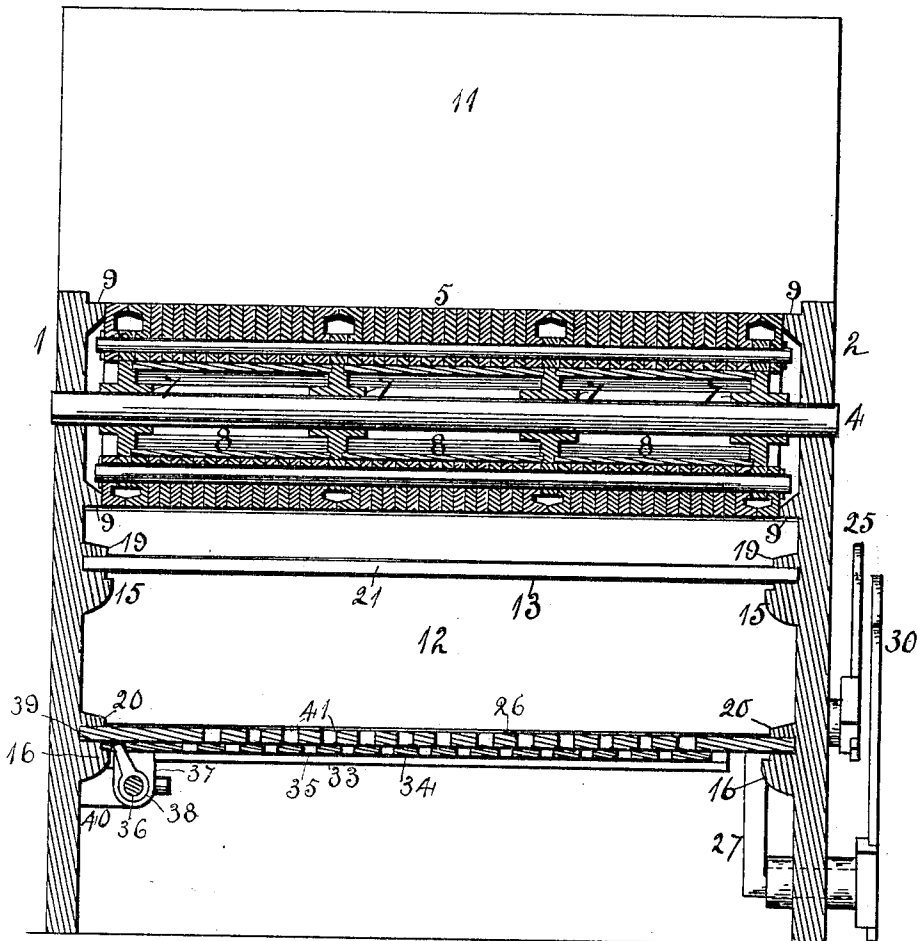
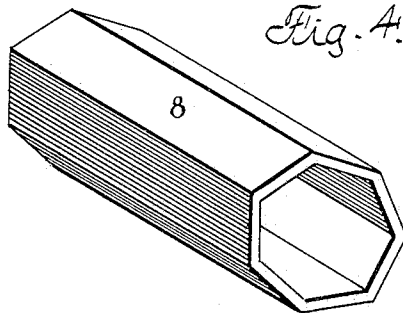


Fig. 4.



Witnesses:
Wm E. Griggs
E. Bebel.

Inventor:
Joseph P. Barnes
By A. Bebel atty.

UNITED STATES PATENT OFFICE.

JOSEPH P. BARNES, OF ROCKFORD, ILLINOIS, ASSIGNOR TO W. F. & JOHN BARNES COMPANY, OF ROCKFORD, ILLINOIS, A CORPORATION OF ILLINOIS.

MOVABLE ENDLESS GRATE.

SPECIFICATION forming part of Letters Patent No. 782,213, dated February 14, 1905.

Application filed October 6, 1903. Serial No. 176,013.

To all whom it may concern:

Be it known that I, JOSEPH P. BARNES, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Movable Endless Grates, of which the following is a specification.

The object of this invention is to form a seal between the fire-chamber and ash-pit at the time the ashes are being transferred from the fire-chamber to the ash-pit in order that air from the ash-pit may be excluded from gaining access to the fire-chamber except through the grate or such other openings as are employed for required draft.

In the accompanying drawings, Figure 1 is a vertical lengthwise section. Fig. 2 is a plan view in which the grate and its supports are removed. Fig. 3 is a vertical transverse section on dotted line *a*, Fig. 1. Fig. 4 is an isometrical representation of the drum around the shaft at the discharge end of the grate.

The side plates 1 and 2 support two shafts 3 and 4, and between the plates is located a grate 5, composed of links pivotally connected. The drive-shaft 3 supports sprocket-wheels 6, which engage the links of the chain. The shaft supporting the discharge end of the grate in this instance supports four sprocket-wheels 7, which engage the links of the chain, and between the sprocket-wheels are located drums 8, having sides corresponding in number to the number of teeth in the sprocket-wheels. The links of the chain rest in contact with the sides of the drums in rounding the discharge end of the grate. Along the inside of each side plate extends a projection 9, closely fitting the outside links of the chain in order that all air must pass through the grate. The grate is supported between the shafts by the cross-tubes 10. A hopper 11 is located over the grate at one end. At the discharge end of the grate is located a vertical partition 12, having a slot 13 near its upper end. Above the slot 13 is located a receptacle 14. From the inner face of each of the side plates extend two supports 15 and 16 for rollers 17 and 18 and two projections 19 and 20, overhanging the rollers, leaving a space be-

tween the rollers and projections. A plate 21 is supported by the upper rollers of each side plate and movable thereon from the position shown in solid lines into the position shown in dotted lines. An arm 22 is supported by the side plate 2, and a rod 23 forms a connection between one end of the plate 21 and the arm. A brace-rod 24 forms a connection between the rod 23 and the other end of the plate. A handle 25 has a connection with the arm 22 outside of the side plate. By means of this handle 25 and its connection with the plate 21 the plate can be moved on its roller-support through the slot 13. A plate 26 is supported by the lower rollers of each side plate and movable thereon from the position shown in solid lines into the position shown in dotted lines. An arm 27 is supported by the side plate 2, and a rod 28 forms a connection between one end of the plate and the arm. A brace-rod 29 forms a connection between the rod and other end of the plate. A handle 30 has a connection with the arm 27 outside of the side plate. By means of this handle 30 and its connection with the plate 26 the plate can be moved on its roller-support. The brickwork 31 in connection with the vertical partition 12 forms a passage-way 32 between the fire-chamber and the ash-pit through which the ashes discharged from the grate fall.

In use the plate 26 is moved across the passage-way, as shown in solid lines, Fig. 1, of the drawings, and the plate 21 is drawn back free of the passage-way.

It will be noticed that air can only gain access to the fire-chamber through the grate, as the drums 8 close the openings in the grate at the discharge end thereof, and ashes placed in the receptacle 14, over which the chain drags, close the openings in the grate as it rounds the end.

When ashes have accumulated on the plate 26, the plate 21 is moved across the passage-way 32 above the plate 26. The plate 26 is then withdrawn and the ashes allowed to fall into the ash-pit, when it is again moved across the passage-way and the plate 21 retracted ready to receive ashes on the plate 26. The

object in moving the plate 21 across the passage-way before the plate 26 is withdrawn is to prevent air from the ash-pit gaining access to the fire-chamber while the ashes are being
 5 dumped into the ash-pit. The under face of the plate 26 has two lengthwise guideways 33 supporting a slide 34, provided with openings 35. A rock-shaft 36 is supported in
 10 bearings 37, depending from the under face of the plate 26, and supports an arm 36, its free end located in a notch 39 in the end of the slide. The free end of this rock-shaft is guided by the support 40 near the feed end
 15 of the grate. The plate 26 is provided with openings 41. It is found in practice in the operation of chain-grates that unburned portions of the coal are discharged with the ashes by the grate and go into the ash-pit, and so far
 20 as known to me no device has been devised for burning of the unburned portions.

By the employment of the slide 34 the openings therein can be brought into register with the openings 41 in the plate 26 in order that
 25 air may be admitted to the ashes and unburned portions of the fuel supported by the plate, thereby completely consuming the unburned portions of the fuel before the ashes are dumped into the ash-pit. By turning the rod 36 the slide can be moved lengthwise, so
 30 that the proper amount of air can be admitted through the openings 41, and as the slide is supported by the plate it will move with it when it is being withdrawn to dump the ashes.

I claim as my invention—

35 1. The combination of a movable grate, a vertical partition located near the discharge end of the grate forming in conjunction with the end wall, a vertical passage-way, two plates spaced apart and movable across the
 40 passage-way, and supports for the plates, each plate adapted to close the vertical passage-way while the other is withdrawn.

2. The combination of a movable grate, a vertical partition located near the discharge
 45 end of the grate forming in conjunction with

the end wall, a vertical passage-way, two plates spaced apart and movable across the passage-way, and roller-supports for the plates, each plate adapted to close the vertical
 50 passage-way while the other is withdrawn.

3. The combination of a movable grate, a vertical partition located near the discharge end of the grate forming in conjunction with the end wall, a vertical passage-way, two
 55 plates spaced apart and movable across the passage-way, supports for the plates, each plate adapted to close the vertical passage-way while the other is withdrawn, a lever for each, plate and a link connecting each plate with the corresponding lever. 60

4. The combination of a movable endless grate, a movable support receiving ashes from the grate, and provided with openings, a slide movable in connection with the support for
 65 closing or partially closing the openings.

5. The combination of a movable endless grate, a movable support receiving ashes from the grate and provided with openings, a slide movable in connection with the support for
 70 closing or partially closing the openings, and means for cutting off air communication between the fire-chamber and ash-pit at the discharge end of the grate while the ashes are being dumped.

6. The combination of a movable endless grate, a stationary receptacle located beneath
 75 the grate for holding ashes in contact with the grate, an imperforate drum located at the discharge end of the grate over which the grate passes, means for receiving ashes from
 80 the grate and dumping them into the ash-pit, and means for cutting off air communication between the fire-chamber and ash-pit at the discharge end of the grate while the ashes are being dumped.

JOSEPH P. BARNES.

Witnesses:

JOHN BARNES,
 A. O. BEHEL.