

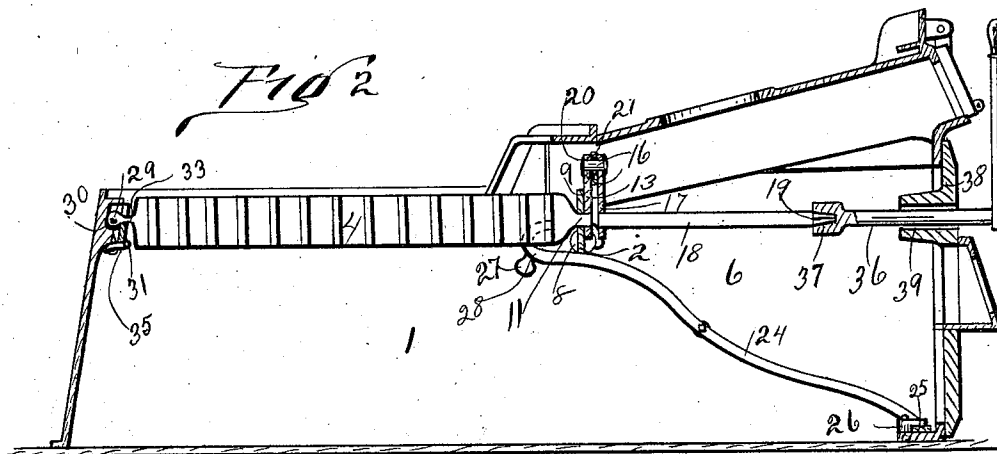
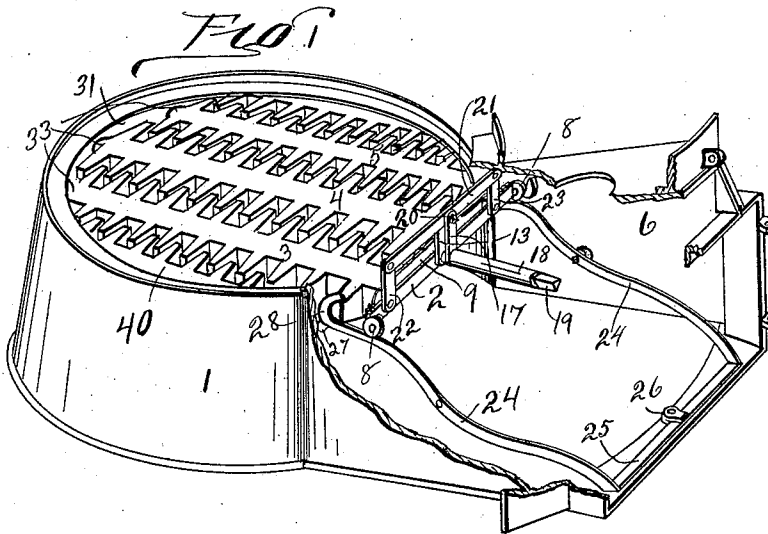
(No Model.)

3 Sheets—Sheet 1.

R. A. MAY.
GRATE.

No. 575,487.

Patented Jan. 19, 1897.



WITNESSES:
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Bertha Finch

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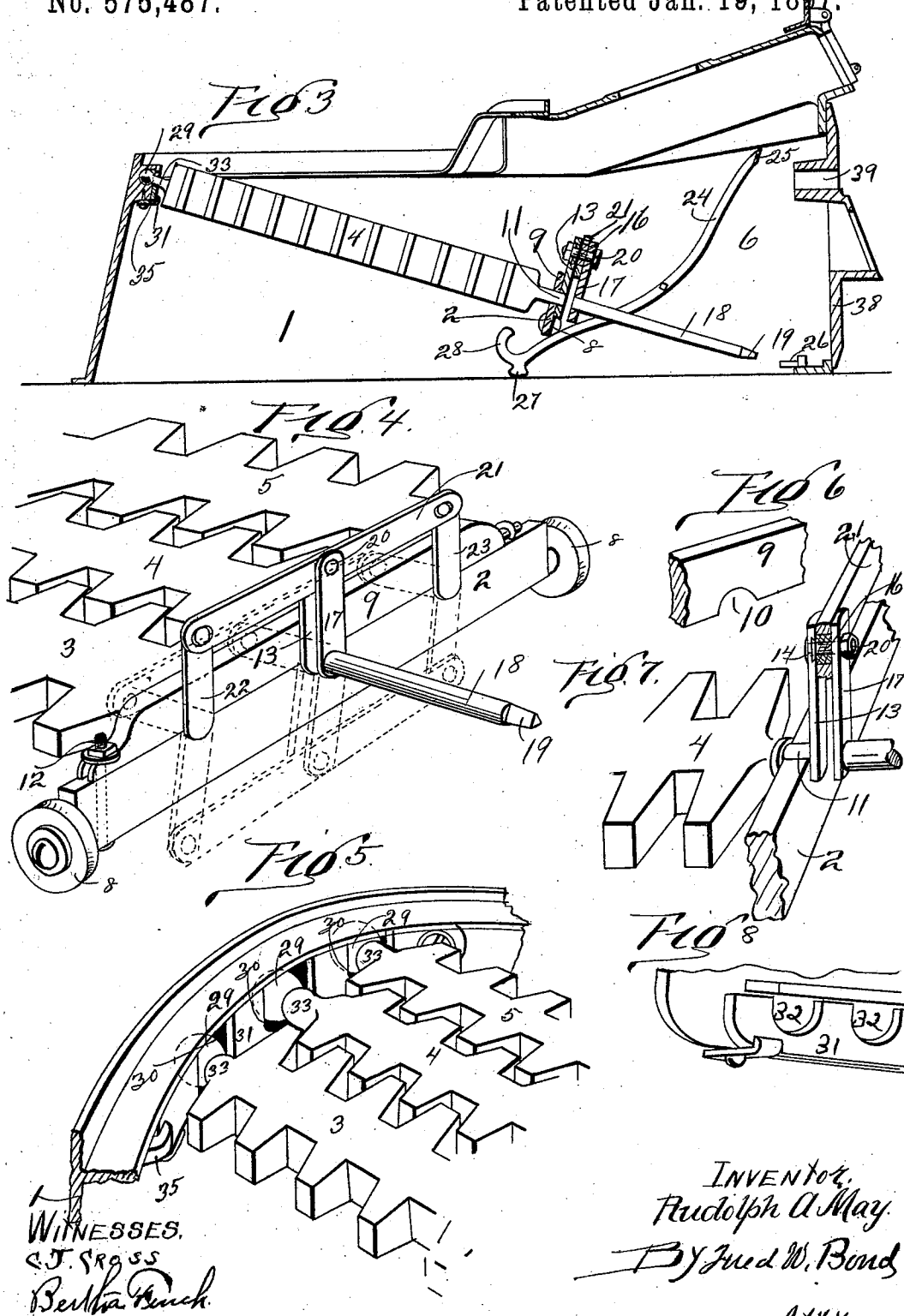
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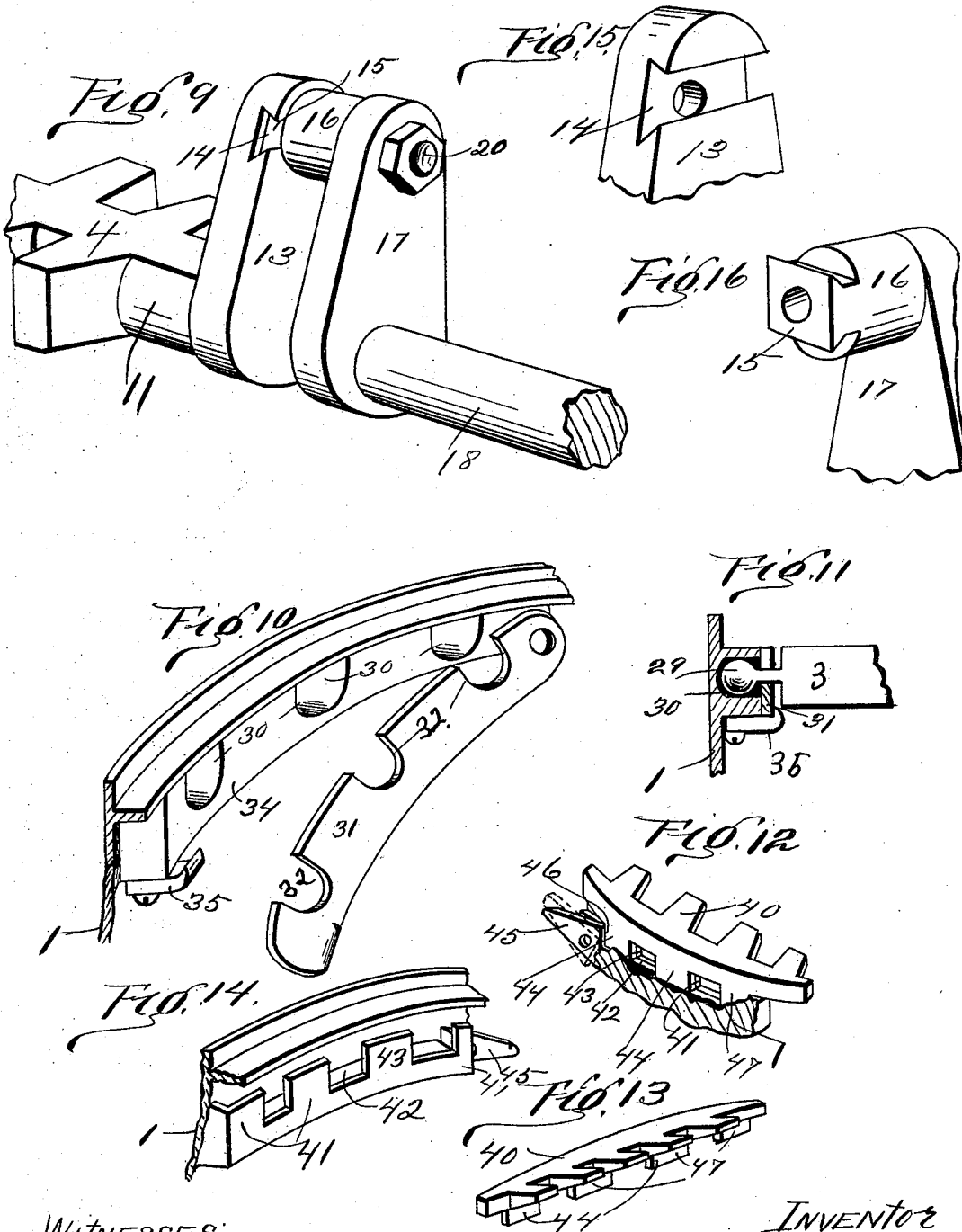
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3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

RUDOLPH A. MAY, OF AKRON, OHIO.

GRATE.

SPECIFICATION forming part of Letters Patent No. 575,487, dated January 19, 1897.

Application filed May 8, 1896. Serial No. 590,757. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH A. MAY, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Grates; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the figures of reference marked thereon, in which—

Figure 1 is a view showing a portion of the base and illustrating the grate-bars in their normal positions, also showing the devices for rocking or rotating the grate-bars and also tilting them. Fig. 2 is a vertical section. Fig. 3 is a vertical section showing the position assumed by the grate-bars when the same are lowered at their front or forward ends. Fig. 4 is a perspective view of the grate-bars, showing the same properly connected at their front or forward ends. Fig. 5 is a perspective view showing the rear portions of the grate-bars. Fig. 6 is a view showing a portion of the cap-bar. Fig. 7 is a perspective view of the front or forward end of the center grate-bar. Fig. 8 is a perspective view showing a portion of the rear part of the base. Fig. 9 is a perspective view of the grate-bar rocking and rotating crank. Fig. 10 is a perspective view of the rear portion of the base, showing the retaining-plate lowered. Fig. 11 is a section of one of the grate-bar sockets, showing a grate-bar properly connected thereto. Fig. 12 is a perspective view of one of the side or stationary grate-bars. Fig. 13 is a detached perspective view of one of the side or stationary grate-bars. Fig. 14 is a perspective view showing a portion of the side of the base. Fig. 15 is a view showing a portion of the grate-bar crank. Fig. 16 is a perspective view of the thimble for connecting the outer ends of the crank members together, also showing a portion of the outer member of the crank.

The present invention has relation to heater-grates; and it consists in the different parts and combination of parts hereinafter described, and particularly pointed out in the claims.

Similar figures of reference indicate corre-

sponding parts in all the figures of the drawings.

In the accompanying drawings, 1 represents the base or ash-pit, which is constructed in the usual form, reference being had to properly attaching and arranging the different parts belonging thereto. The base or ash-pit 1 is extended forward, as illustrated in Figs. 1, 2, and 3, which forward extension is preferably formed integral with the base and forming part of the base proper; but if desired the extension may be made separate and attached in any convenient and well-known manner.

The bar 2, that carries and supports the front ends of the grate-bars 3, 4, and 5, is formed of a length to correspond substantially with the inside width of the base extension 6, and the ends thereof may be provided with the antifriction-rollers 8, said rollers being properly journaled at the ends of the bar 2 in any convenient and well-known manner. For the purpose of preventing any accidental displacement of the grate-bars during the time they are rocked, rotated, or tilted the cap-bar 9 is provided, which cap-bar is provided with semicircular recesses 10, said recesses coming over the rounded portions 11, formed upon the grate-bar, said cap-bar being securely connected by means of suitable clamping-bolts, such as 12, or their equivalents. To the front end of the grate-bar 4 is securely attached or formed integral therewith the crank member 13, which crank member is provided with the dovetailed recess 14, which recess receives the correspondingly-shaped head 15, formed upon the thimble 16, said thimble being located between the crank member 13 and the member 17, said construction being best illustrated in Fig. 9. To the crank member 17 is securely attached or formed integral therewith the shaft 18, which shaft is provided at its front or forward end with the angular extension 19, said angular extension being formed pointed for the purpose hereinafter described. The crank members 13 and 17 are connected together by means of the clamping-bolt 20, which clamping-bolt passes through the thimble 16, said thimble being for the purpose of properly spacing the crank members 13 and 17 and at the same time pro-

viding a means for connecting the bar 21 to said crank members. The bar 21 is formed of such a length that it will connect with the cranks 22 and 23, said cranks being formed integral with the grate-bars 3 and 5 or securely
 5 attached to said grate-bars in any convenient and well-known manner. The bar 21, when placed in an elevated position, as illustrated in Figs. 1, 2, 3, and 4, will be brought above
 10 the top or upper sides of the grate-bars, thereby forming a guard rail or bar and preventing the fuel from becoming accidentally displaced during the time it is being agitated for the purpose of increasing combustion.

15 When it is desired to lower the bar 21, so as to bring it out of the way for any purpose, and especially for the purpose of removing the unconsumed particles, such as cinders, ashes, and other material liable to accumu-
 20 late upon the grate-bar, the shaft 18 is rotated in either direction, which brings the bar 21 into the position illustrated by the dotted lines, Fig. 4.

For the purpose of bringing the grate-bars 25 3, 4, and 5 into an inclined position, such as illustrated in Fig. 3, the levers 24 are provided, which levers are fulcrumed to the sides of the extension 6, or its equivalent, at suitable points between the outer ends and the
 30 inner ends of said levers 24. The inner ends or portions of the levers 24 are located beneath the bar 2, and preferably in contact with antifriction-rollers, such as 8; but it will be understood that various ways may be pro-
 35 vided for making proper operative connections between the bar 2 and the levers 24, as the only object to be accomplished is that as the inner ends of the levers 24 are rotated the bar 2 will follow the downward movement
 40 of said levers 24, which downward movement of the bar 2 allows all of the grate-bars connected thereto to be tilted into an inclined position with their front or forward ends lowest, which movement brings the grate proper into
 45 such a position that the material located upon the grate-bars can be easily removed.

For the purpose of operating the grate-bars, so as to lower or elevate their front or forward ends, the levers 24 are connected together at
 50 their front or forward ends by means of a suitable cross-bar 25, which cross-bar is held in its normal position by means of a suitable button 26, which is connected to the bottom of the extension 6, and in such a position that when
 55 turned, as illustrated in Figs. 1 and 2, said button will overlap the bar 25, and thereby hold said bar and levers 24, together with the grate-bars and their different attachments, in their normal positions.

60 When it is desired to tilt the grate-bars, so as to bring them in the position illustrated in Fig. 3, the button 26 is turned so as to release the bar 25, at which time the levers 24 are free to turn upon their pivotal points, thereby
 65 allowing the bar 2 to move downward and tilt the grate-bars, said downward movement being limited by reason of the inner ends of the

levers 24 striking or coming in contact with the bottom of the base. If desired, the inner ends of the levers may be provided with the
 70 the lugs 27 and the curved portions 28, but this construction is not absolutely necessary, inasmuch as the same objects can be accomplished by providing plain ends upon the levers 24. The curved portions 28 are for the
 75 purpose of preventing any accidental displacement of the bar 2. The levers 24 are formed of such length that their outer ends will bring the bar 25 against the top of the extension 6, as illustrated in Fig. 3. For the
 80 purpose of providing an easy movement for the levers 24 as they are turned upon their pivotal points the inner ends or portions of said levers are curved as illustrated, thereby allowing the bar 2 to more easily travel in the
 85 are described as it is lowered or elevated.

For the purpose of preventing the rear ends of the grate-bars 3, 4, and 5 from becoming detached when they are tilted they are each provided with the balls 29, which balls are
 90 located in the sockets 30, said balls being held in proper position within their sockets at all times and under all circumstances by means of the plate 31, which plate is pro-
 95 vided with the recesses 32, said recesses receiving the necks 33, formed upon the grate-bars 3, 4, and 5. For the purpose of providing a means for easily detaching any or all of the grate-bars the plate 31 is so connected
 100 that it can be removed, after which the grate-bars can be lifted from their bearings, it being understood that the cap-bar 9 is to be removed, which releases the grate-bars at each end. It will also be understood that by
 105 providing the balls 29 universal joints will be provided, thereby allowing the grate-bars to rotate upon their axes and at the same time to turn radially, said balls forming centers for the radial movements of the grate-bars.
 110 If desired, the sockets 30 may be formed in a separate block, such as 34, which block is securely attached to the base 1, or said sockets may be formed in the base, if desired. The hooked plate 35 is provided and is for the purpose of holding one end of the plate 31 in such
 115 a position that said plate will hold the grate-bars 3, 4, and 5 in proper position.

When it is desired to simply rock or rotate the grate-bars 2, 3, and 5, the socketed crank 36 is placed upon the angular portion 19, as
 120 illustrated in Fig. 2, and for the purpose of easily entering the angular portion 19 into the socket 37 said angular portion 19 is formed tapering or pointed. For the purpose of providing a means for rocking or rotating the
 125 grate-bars without the necessity of opening the door 38 the opening 39 is provided, which opening is formed of sufficient size to allow the socket end of a wrench to be inserted through said opening, and the opening forming
 130 a proper bearing and support for the wrench or crank, it being understood that the grate-bars are to be rocked or rotated only when they are in their normal position,

said rocking and rotating movement being for the purpose of sifting the finer material located upon the grate-bars. For the purpose of closing the upper end or portion of the base at the place where the grate-bars are located the side grate-bars 40 are provided, and for the purpose of providing a means for quickly and easily placing said grate-bars in position or removing the same the flanges 41 are provided, which flanges are properly connected to the sides of the base 1 or formed integral therewith, and, as shown in Fig. 14, said flanges are provided with the notches or recesses 42, said notches or recesses being formed between the teeth 43. The grate-bars 40 are each provided with the notched flange 44, which notched flange is set back of the flange 41, after which the grate-bars are free to be moved endwise until they come in contact with the ends of the flanges 41, at which time the dogs 45 engage the shoulders 46, thereby preventing any displacement of the grate-bars 40.

When it is desired to remove one or both of the grate-bars 40, the dog or dogs 45 are tilted upward, allowing the grate bar or bars 40 to be moved longitudinally, so as to allow the teeth 47 to come in proper alinement with the notches 42, at which time the fixed grate-bars can be moved laterally and detached from the base, it being understood that when the teeth 47 are moved so as to come back of the teeth 43 the grate-bars 40 will be held in proper position.

The object and purpose of providing the dovetailed groove 14 and the corresponding-shaped head 15 is to provide a rigid connection between the members 13 and 17, thereby providing a crank that will allow the bar 21 to pass below the shaft 18, and at the same time making a rigid connection between the shaft 18 and the grate-bar 4.

In the drawings the button 26 is shown located at the central portion of the extension 6 of the ash-pit or base; but it will be understood that said button may be located at any other desired point without departing from the nature of my invention, inasmuch as the only object of said button is to hold the grate-bars in an elevated position by means of the levers.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the base 1, grate-bars provided with balls or heads upon their rear ends, sockets to receive the balls or heads, the bar 2, carrying the free ends of the grate-bars, levers located below the bar 2, means for holding the grate-bars in an elevated position, and means for rotating the grate-bars in unison, substantially as and for the purpose specified.

2. The combination of grate-bars journaled at one end to the base and their opposite ends journaled to a bar supporting the grate-bars, the shaft 18, provided with the crank member 17, the thimble 16, the crank member 13, provided with the recess 14, the head 15, located upon the thimble 16, the cranks 22, and 23, and the connecting-bar 21, substantially as and for the purpose specified.

3. The combination of a base provided with the side grate-bars 40, provided with notched flanges 44, and notched flanges secured to the base, and dogs 45, substantially as and for the purpose specified.

4. The combination of a number of grate-bars having their rear ends journaled to a base, the bar 2, carrying the front ends of the grate-bars and provided with antifriction-rollers, levers 24, provided with inner curved portions and means for holding the levers 24, in a position to elevate the grate-bars, substantially as and for the purpose specified.

5. The combination of the base 1, grate-bars provided with balls or heads upon their rear ends, sockets to receive the balls or heads, a plate provided with recesses and secured adjacent to the sockets, the bar 2, provided with antifriction-rollers and carrying the free ends of the grate-bars, the levers located below the bar 2, and means for holding the grate-bars in an elevated position, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

RUDOLPH A. MAY.

Witnesses:

F. B. THEISS,
H. C. THEISS.