

1,430,397.

W. E. MOORE.
FURNACE CHARGING DEVICE.
APPLICATION FILED AUG. 2, 1920.

Patented Sept. 26, 1922.
3 SHEETS—SHEET 1.

Fig. 1.

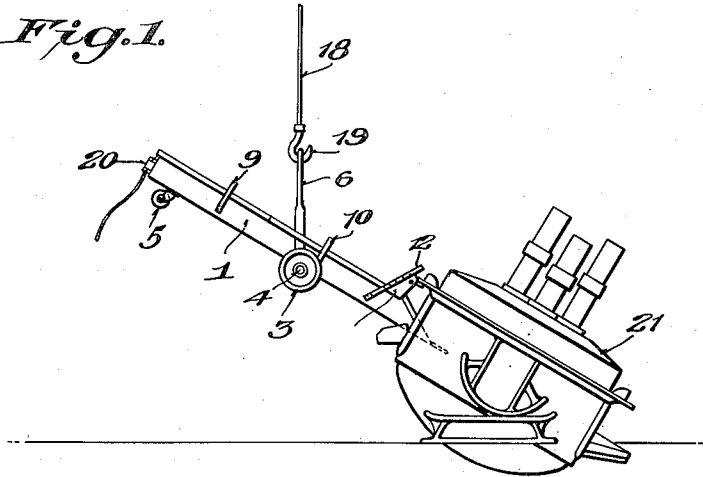
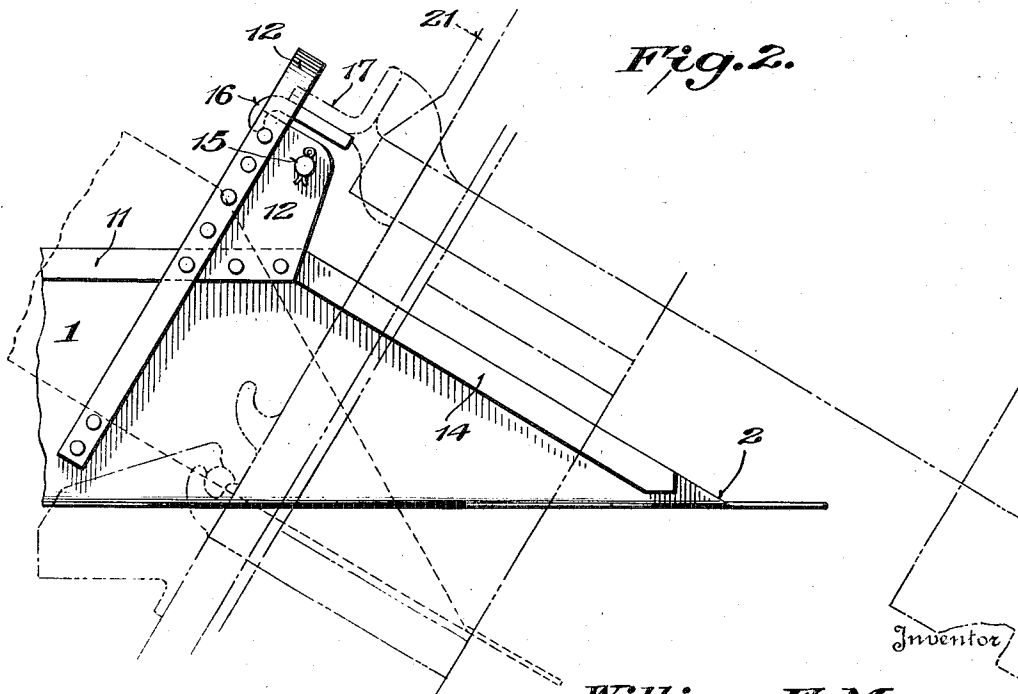


Fig. 2.



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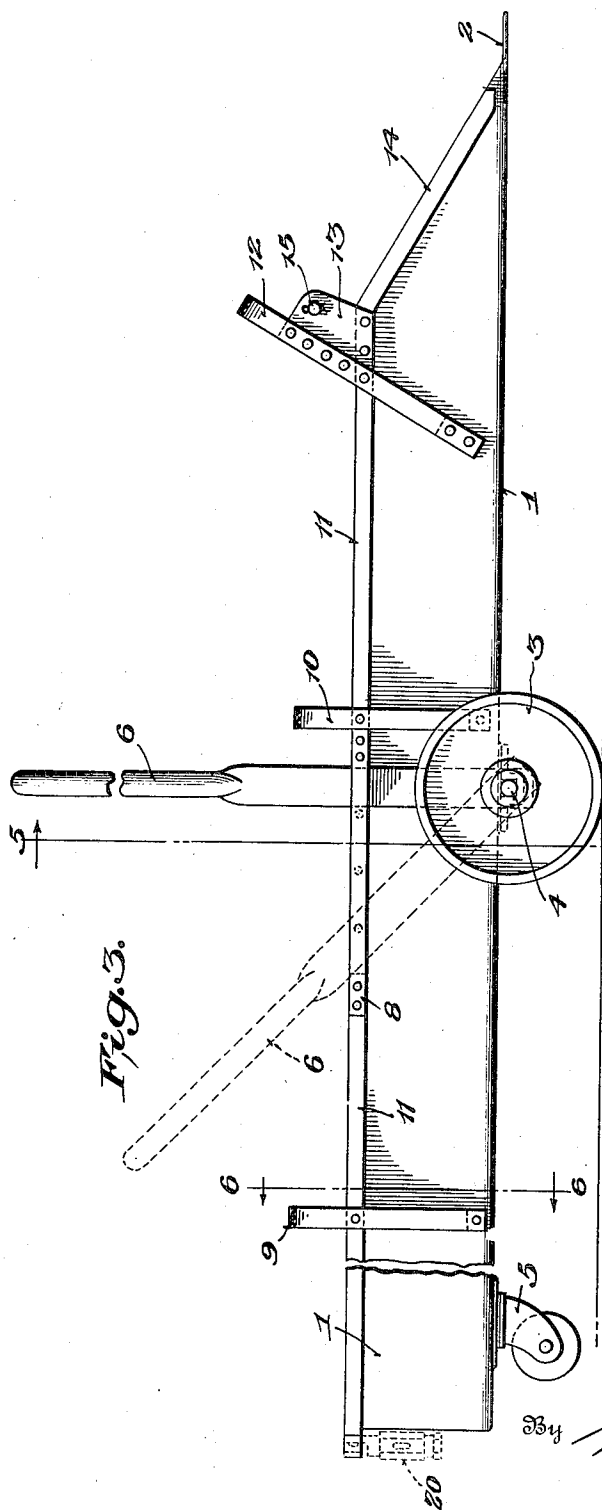


Fig. 3.

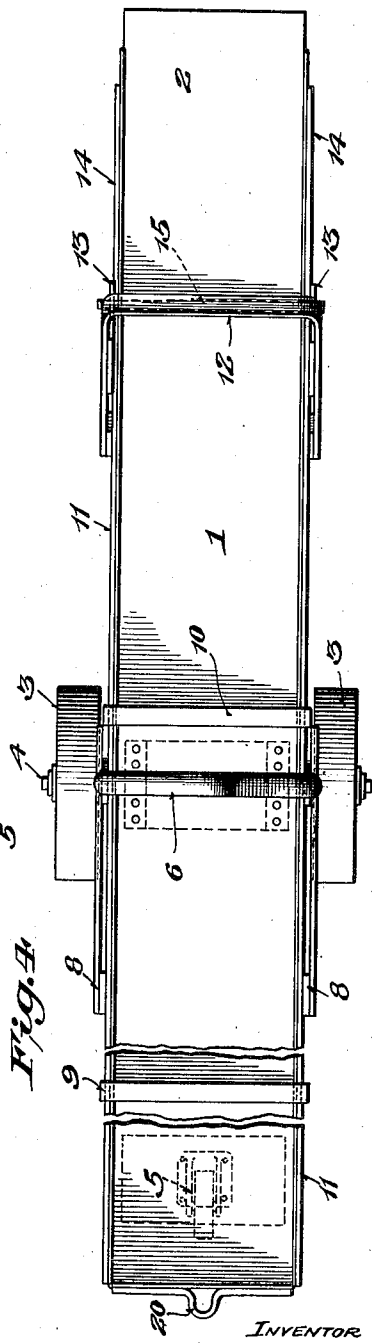


Fig. 4.

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3 SHEETS—SHEET 3.

Fig. 5.

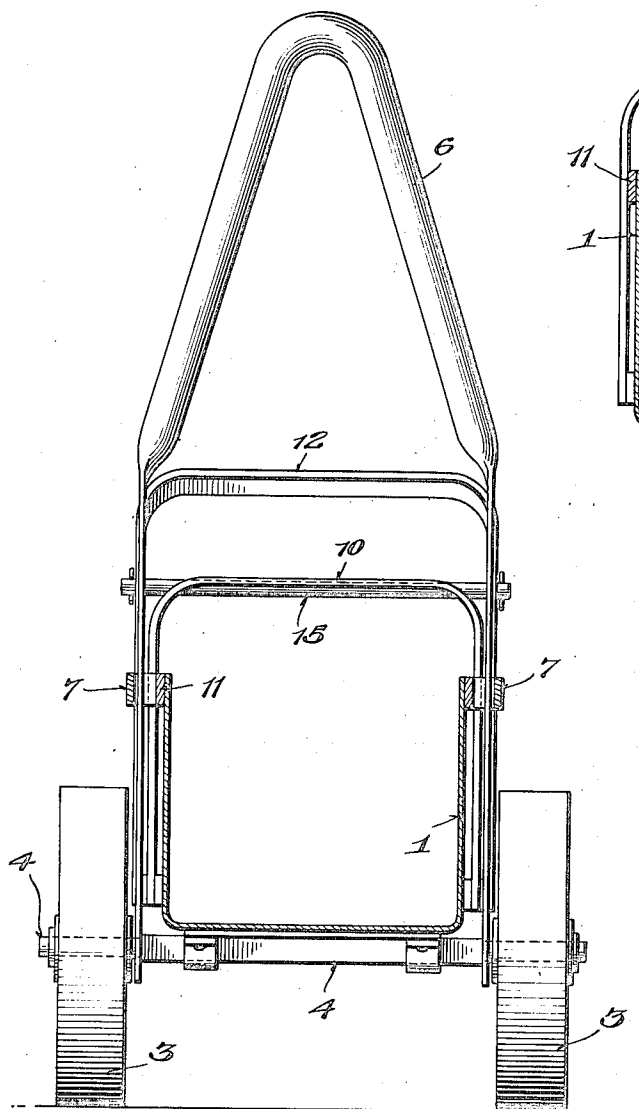
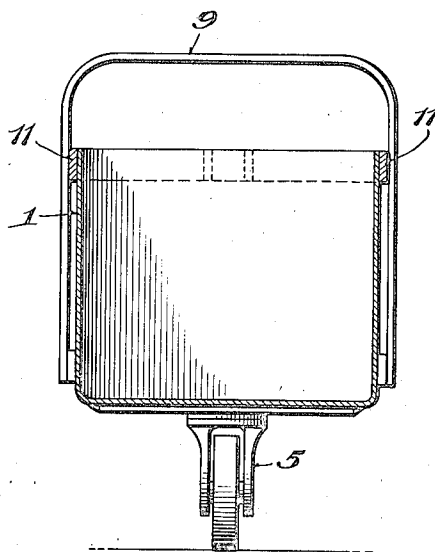


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM E. MOORE, OF BEAVER FALLS, PENNSYLVANIA.

FURNACE-CHARGING DEVICE.

Application filed August 2, 1920. Serial No. 400,790.

To all whom it may concern:

Be it known that I, WILLIAM E. MOORE, a citizen of the United States of America, residing at Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Furnace-Charging Devices, of which the following is a specification.

My invention relates to improvements in furnace charging devices and consists generally of a receptacle having means rendering it mobile, means to elevate it when the furnace is charged, means in combination with the furnace to tilt it at the proper angle, and to cause the charge to move readily from the receptacle into the furnace.

An object of my invention is to provide a device which may be advantageously moved on the surface of the ground or on rails.

Another object is the provision of means to lift the charging device so that the contents of the device will not be spilled, but will be emptied into the furnace in an advantageous and economical manner.

A further object of my invention is the provision of means to vibrate the device in order to cause the charge to leave the device and enter the furnace.

Still further objects and advantages of my invention will appear in the accompanying description and will be pointed out in the claims.

One form of my invention is illustrated in the accompanying drawings, forming part of this application, in which,

Figure 1 is a side elevation of a furnace and the charging device both in operative position;

Figure 2 is a fragmentary view showing the construction of the door of a furnace and a part of the charging device in operative relation;

Figure 3 is a side elevation of the complete device;

Figure 4 is a plan view thereof;

Figure 5 is a section on the line 5—5 of Figure 3; and

Figure 6 is a section on the line 6—6 of Figure 3.

A rectangular receptacle 1 having an open end 2 is mounted on wheels 3 carried by axles 4 rigidly secured to the body portion of the receptacle nearer the open than the closed end, in order that when the re-

ceptacle is filled the open end will not tilt down. A castor 5 is attached to the closed end of the receptacle to support the device, as shown in the drawings. The receptacle is raised and lowered by a bail 6, which is attached to the axle 4. This bail is prevented from moving beyond the vertical toward the open or spout end of the receptacle by lugs 7. The bail may be swung about 45 degrees from the vertical toward the closed end of the receptacle, where it is stopped by lugs 8. Straps 9 and 10 are attached to the sides of the receptacle, and reinforcing strips 11 extend around the upper part of the receptacle. Attached to the open end of the receptacle is a hook 12 which is adapted to be placed over the abutment over the furnace door. This hook is placed at an angle, as shown, and is strengthened by plates 13. The sides of the receptacle 1 are cut away as shown at 14 to produce an end of the receptacle suitable to enter the furnace mouth. Extending across the receptacle and secured under a hook 16 on the abutment 17 above the furnace door shown in Figure 2.

The device is raised and lowered by means of a crane, not shown, to which is attached suitable means, such as a rope 18, having on the end thereof a hook 19 which engages with the bail 6.

Attached to the closed end of the device is a vibrator 20 which may be electrically or pneumatically operated for the purpose of causing the material contained in the receptacle to enter readily into the furnace.

A conventional furnace 21 is shown in Figure 1 tilted in the position to receive the charge from the charging device.

The description given will enable the operation of the device to be easily understood. The receptacle after having been filled may be moved to the furnace in any suitable manner. It is then hoisted by means of the rope 18 until the bail fits over the abutment over the furnace door, the furnace having been tilted to receive the spout of the charging device. The rod 15 is then brought into operative relation with the hook 16, and the receptacle is then further raised if necessary and emptied by force of gravity and the action of the vibrator which tends to eliminate the friction between the charge and the sides and bottom of the receptacle. When the charge

has been emptied into the furnace, the receptacle may be lowered by disengaging it from the abutment and the hook.

While the receptacle as shown is of uniform width, it may be constructed expanding toward the open end.

What I claim is:—

1. In a furnace charging device, a receptacle mounted on wheels, a vibrator attached to one end of said receptacle, the vibrator end of said receptacle being closed and the other end of said receptacle being open, the part of said receptacle extending from the wheels to the vibrator being of greater length than the other part of said receptacle, whereby the vibrator end of said receptacle will be heavier than the opposite end and therefore prevent the chute end from swinging downward.

2. In a furnace charging device, a receptacle mounted of wheels, one end of said receptacle being closed and the other end of said receptacle being open, said wheels placed nearer the open end of said receptacle than the closed end thereof, whereby the closed end is rendered heavier than the open end, a vibrator mounted on the closed end of said receptacle, a lifting bail attached to said receptacle nearer the open end than the closed end thereof, and means to prevent said bail from swinging beyond the vertical toward the open end of said receptacle.

3. In a furnace charging device, a receptacle mounted on wheels, one end of said receptacle being open, said wheels placed nearer the open end of said receptacle than the closed end thereof, whereby the closed end is rendered heavier than the open end, a vibrator mounted on the closed end of said receptacle, a lifting bail attached to said receptacle nearer the open end than the closed end thereof, means to prevent said bail from swinging beyond the vertical toward the open end of said receptacle, and means to

prevent said bail from swinging more than approximately forty-five degrees from the vertical toward the closed end of said receptacle.

4. The combination with a furnace having an abutment above the furnace door, of a receptacle having one end open, said receptacle mounted on wheels, a lifting bail attached to said receptacle, a vibrator, said vibrator attached to the closed end of said receptacle, and means carried by said receptacle and arranged to engage said abutment to cause the tilting of said receptacle when said receptacle is raised.

5. The combination with a furnace having an abutment above the furnace door, said abutment having a downwardly turned hook thereon, of a receptacle having one end open, said receptacle mounted on wheels, a lifting bail attached to said receptacle, a vibrator, said vibrator attached to the closed end of said receptacle, and means carried by said receptacle and arranged to engage said hook to cause the tilting of said receptacle when said receptacle is raised.

6. The combination with a tilting furnace having an abutment, of a receptacle having means to engage said abutment, means to raise said receptacle to cause engagement between said receptacle and said abutment whereby the receptacle is tilted, and a vibrator carried by said receptacle.

7. The combination with a tilting furnace having an abutment with a hook on said abutment, of a receptacle having means to engage said hook, means to raise said receptacle to cause engagement between said receptacle and said hook, said means to raise said receptacle placed so that one end of said receptacle is heavier than the other end, and a vibrator carried by the heavier end of said receptacle.

In testimony whereof I affix my signature.

WM. E. MOORE.