H. A. CARPENTER & A. W. WARNER.

EMERGENCY MECHANISM FOR MOTORS.

APPLICATION FILED JULY 6, 1914.

1,174,388.

Patented Mar. 7, 1916.

2 SHEETS—SHEET 1.

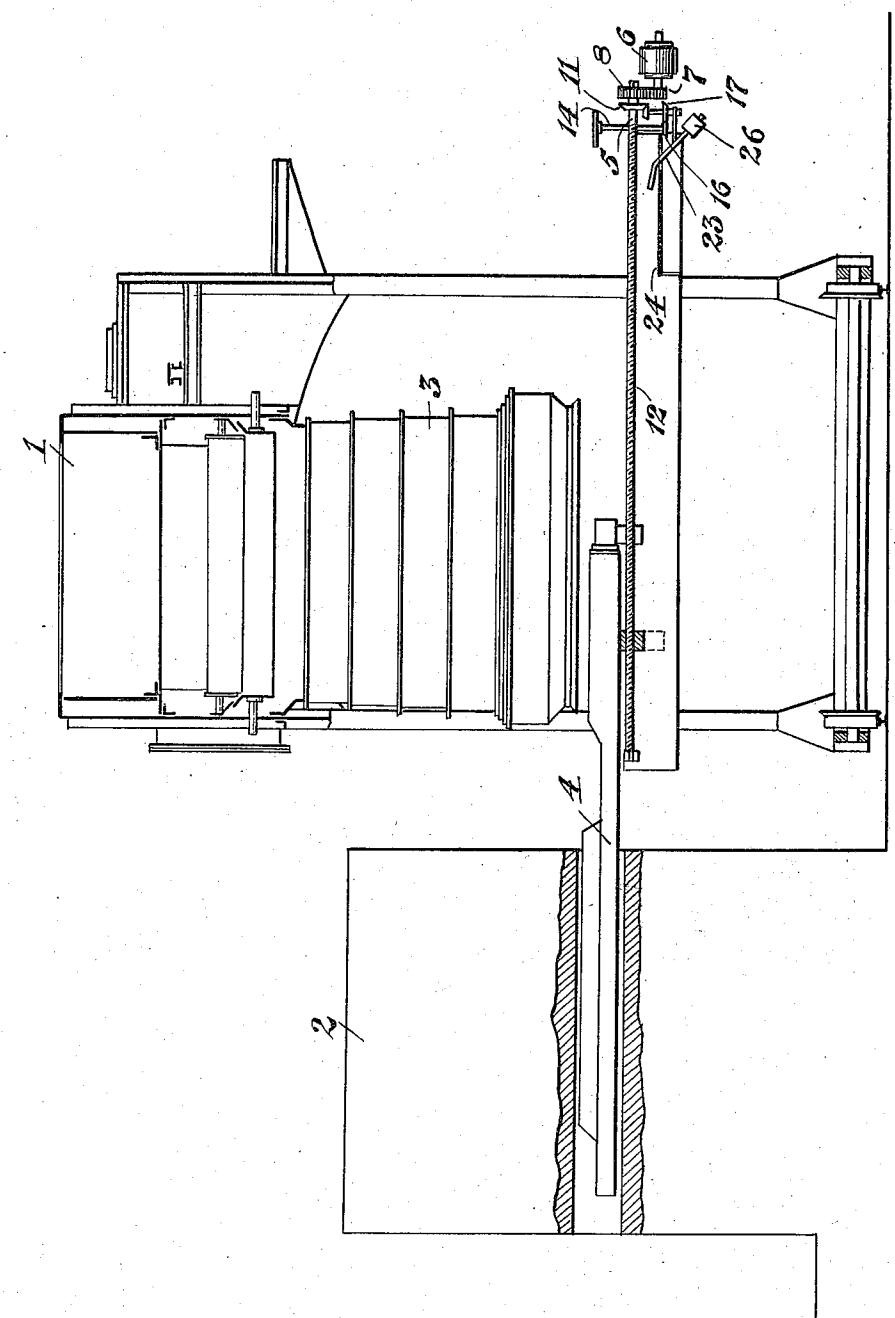


FIG. 1.

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2 SHEETS—SHEET 2.

FIG.2.

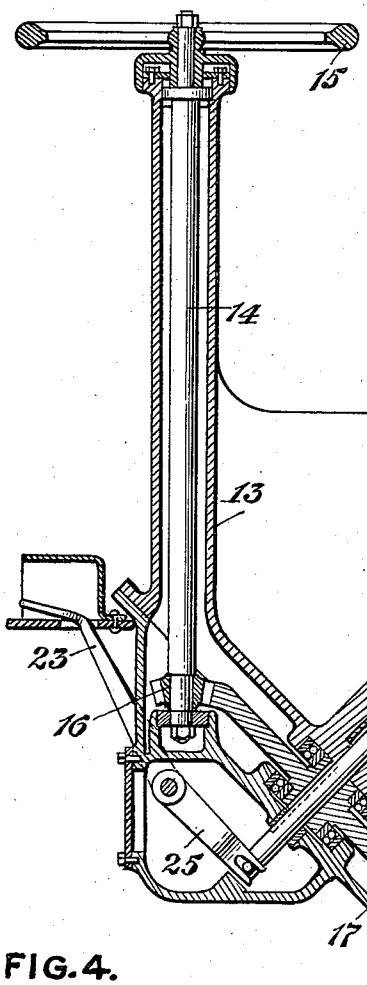


FIG.3.

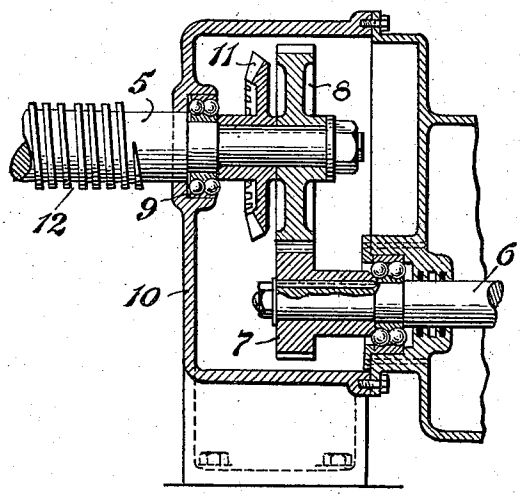
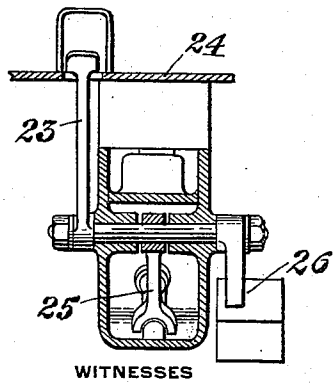


FIG.4.



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UNITED STATES PATENT OFFICE.

HENRY A. CARPENTER AND ARTHUR W. WARNER, OF SEWICKLEY, PENNSYLVANIA, ASSIGNORS TO RITER-CONLEY MANUFACTURING COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

EMERGENCY MECHANISM FOR MOTORS.

1,174,388. Specification of Letters Patent. Patented Mar. 7, 1916.

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To all whom it may concern:

Be it known that we, HENRY A. CARPENTER and ARTHUR W. WARNER, citizens of the United States, residing at Sewickley, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Emergency Mechanism for Motors, &c., of which the following is a specification.

The prime object of our invention is to provide simple and efficient emergency mechanism designed to coöperate with a motor or a motor actuated member, for operating the motor or the motor actuated member under abnormal conditions. The motor actuated member may, for example, be a revoluble shaft adapted to be employed for imparting a forward and back movement to a carrying element, said shaft being normally driven by the motor.

Our invention is particularly applicable for use in connection with gas retort charging and discharging machines employing a motor driven screw shaft for advancing and withdrawing a charger or material containing member into the retorts of a gas bench, but it is evident that our invention may be employed in connection with mechanism other than a charging and discharging machine.

In the accompanying drawings, which illustrate an application of our invention, Figure 1 is a diagrammatic view showing a charging and discharging machine with our invention applied thereto, and a portion of a gas-bench having a retort therein; Fig. 2 is a vertical sectional view particularly showing the emergency mechanism and the manner of connecting same with the motor driven shaft; Fig. 3 is a sectional view taken on line III—III of Fig. 2; and Fig. 4 is a detail view of a shifting shaft operating means.

Referring to the drawings, 1 designates a charging and discharging machine designed to move along the front face of a stack of benches of a carbonization plant. A portion of the stack of benches is indicated by the numeral 2. In a machine of the character illustrated, coal to be charged into the respective retorts is carried at the upper portion of the machine and is fed downwardly from the coal carrying bin through a telescopic chute 3 into, as illustrated, a combined charger and discharger 4, whereby the coal is introduced to the retorts and the coke discharged therefrom.

As illustrated and as preferred, the combined charger and discharger member 4 is moved into and out of the retorts by means of a motor driven screw shaft 5, having its motor 6 coupled up therewith by a pinion 7 and a gear wheel 8, the latter mounted on an end of the shaft 5. As shown, 6 designates an electric motor, and this is the form of motor we preferably employ for normally actuating the shaft 5. The gear mentioned, as well as a bearing 9 for shaft 5, are located in a casing or housing 10 secured to the housing of the motor, as particularly shown by Fig. 3.

As illustrated, shaft 5 is provided with engaging means in the form of a gear 11, the function of which is to engage a coacting element of the emergency mechanism.

In the form of our application as illustrated, the shaft 5 is screw threaded as indicated at 12, and is designed to cause a forward and backward travel on said shaft of the fuel containing member 4, which member 4 is designed to contain a charge of fuel to be introduced into a retort of the gas bench.

The emergency mechanism, as illustrated and as preferred, is inclosed in a casing or housing 13 designed to be carried upon the charging and discharging machine in close proximity to the electric motor 6 and its housing. As shown, the emergency mechanism includes a vertically disposed shaft 14 designed to be manually operated by a hand wheel 15 located at one end of the shaft 14. The opposite end of the shaft 14 is provided with a bevel pinion 16 designed to articulate with a bevel gear wheel 17.

Gear wheel 17 is mounted on an inclined shiftable shaft 18 and keyed thereto in a manner permitting axial motion of shaft 18 with respect to the gear 17. Inclined shaft 18 is provided at its upper end with a clutch member 19 designed to coöperate with a clutch member 20 disposed on one end of a shaft 21, said shaft 21 at its opposite end is provided with a pinion 22 adapted to coact with the gear 11 on the motor driven shaft 5.

For the purpose of moving shaft 18 and its clutch member 19, we provide a foot operated lever 23 located on a platform 24 of the charging machine, said lever 23 being con-

nected with the lower end of shaft 18 by means of a link connection 25. It will be evident that by bearing down upon the pedal of lever 23, the operator will cause shaft 18 to be moved upwardly and its clutch member 19 to engage with member 20. When in this shifted position, the shaft 14 is operated by hand wheel 15, and this movement will revolve the shafts 18, 21 and pinion 22, which in turn will revolve the motor driven shaft 5, either to the right or to the left as desired.

The actuating mechanism for shifting the shaft 18 and the clutch members into and out of engagement is provided with a weight 26 to assure the return movement of shaft 18 after pressure on the pedal of lever 23 is removed.

As will be seen, that portion of the emergency mechanism located in advance of the coupling 20 is normally inactive, in addition to which, the gearing and mechanism intermediate the wheel 15 and shaft 5 is so arranged as to provide a reduction of speed toward the shaft with a corresponding increase in power when wheel 15 is moved manually; also, that the operating parts liable to have their operation affected by clogging through deposit of dust, etc., is entirely inclosed. These features are of especial advantage in connection with an installation in charging and discharging apparatus such as hereinbefore referred to, in the operation of which it is desirable that the length of time within which the fuel carrier may remain in the retort be limited by reason of the high temperature of the retort. Should the normal movements of the fuel carrier, under the action of the motor, be affected in any manner, the operator has at his command an arrangement of parts so connected up to the shaft as will permit him to provide movement to the shaft sufficient to overcome the abnormal conditions which caused the stoppage, the length of time of operation of the emergency mechanism being dependent upon the character of the abnormal condition, the connection at the coupling 20 being entirely under control of the operator so that in cases where the abnormal condition is overcome and the parts are free to be operated solely by the motor, the clutch will be disengaged and the shaft operated by the motor alone.

What we claim is:—

1. In combination, a work-performing shaft, a motor, operative connections between the motor and shaft for driving the latter, coöperating gears permanently movable with the shaft, said gears being independent of said connections, a casing for said gears and connections, and a normally inactive manually-operated emergency mechanism movable into and out of operative connection with said gears at will for revolving said shaft.

2. In combination, a work-performing shaft, a motor, operative connections between the motor and shaft for driving the latter, coöperating speed-changing gears permanently movable with the shaft, said gears being independent of said connections, a casing for said gears and connections, and a normally inactive manually-operated emergency mechanism movable into and out of operative connection with said gears at will for revolving said shaft.

3. In combination, a work-performing shaft, a motor, operative connections between the motor and shaft for driving the latter, coöperating speed-changing gears permanently movable with the shaft, said gears being independent of said connections, a casing for said gears and connections, and a normally-inactive manually-operated emergency mechanism movable into and out of operative connection with said gears at will for revolving said shaft, said mechanism including permanently engaged speed-changing elements.

4. In combination, a work-performing shaft, a motor, operative connections between the motor and shaft for driving the latter, coöperating gears permanently movable with the shaft, said gears being independent of said connections, and a normally-inactive emergency mechanism movable into and out of operative connection with said gears at will for revolving the shaft, said mechanism including meshing gears, a manually-operated shaft fixedly connected to said meshing gears, a shaft shiftable relative to both sets of gears, and means for clutching said latter shaft to the first set of gears.

5. In combination, a work-performing shaft, a motor, operative connections between the motor and shaft for driving the latter, coöperating gears permanently movable with the shaft, said gears being independent of said connections, and a normally inactive emergency mechanism movable into and out of operative connection with said gears at will for revolving the shaft, said mechanism including meshing gears, a manually-operated shaft fixedly connected to said meshing gears, a shaft shiftable relative to both sets of gears, operable mechanism for moving said latter shaft in the direction of its length, and clutching means rendered active by the movements of said latter shaft in one direction.

6. In combination, a work-performing shaft, a motor, operative connections between the motor and shaft for driving the latter, coöperating gears permanently movable with the shaft, said gears being independent of said connections, and a normally-inactive emergency mechanism movable into and out of operative connection with said gears at will for revolving the shaft, said

mechanism including meshing gears, a manually-operated shaft fixedly connected to said meshing gears, a shaft shiftable relative to both sets of gears, and means for clutching said latter shaft to the first set of gears, and casing structures for inclosing said gears, emergency mechanism shafts, and motor connections.

7. In combination, a work-performing shaft, a motor, operative connections between the motor and shaft for driving the latter, coöperating gears permanently movable with the shaft, said gears being independent of said connections, and a normally-inactive emergency mechanism movable into and out of operative connection with said gears at will for revolving the shaft, said mechanism including meshing gears, a manually-operated shaft fixedly connected to said meshing gears, a shaft shiftable relative to both sets of gears, and means for clutching said latter shaft to the first set of gears, a casing structure for said first set of gears and motor connections, and a casing structure for said emergency mechanism, shafts and connecting gears.

8. In combination, a work-performing shaft, a motor, operative connections between the motor and shaft for driving the latter, coöperating gears permanently movable with the shaft, said gears being independent of said connections, a casing for said gears and connections, and a normally inactive manually-operated emergency mechanism movable into and out of operative connection with said gears at will for revolving said shaft, the members of said gears and mechanism having a speed reduction relation toward the shaft.

In testimony whereof we affix our signatures in presence of two witnesses.

HENRY A. CARPENTER.
ARTHUR W. WARNER.

Witnesses:
W. G. Doolittle,
F. E. Gaither.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."