

(No Model.)

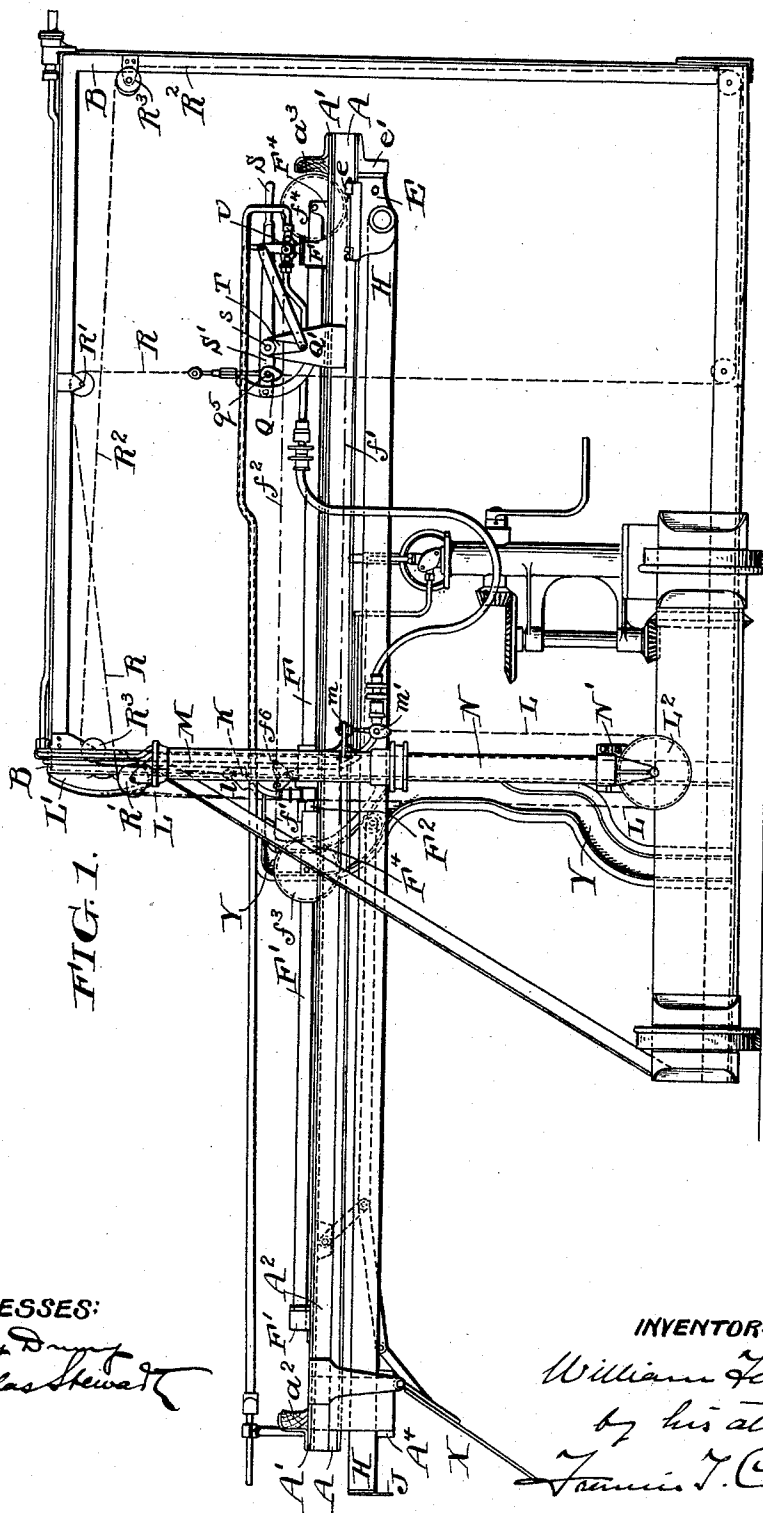
3 Sheets—Sheet 1.

W. FOULIS.

APPARATUS FOR STIRRING AND DRAWING GAS RETORTS.

No. 498,779.

Patented June 6, 1893.



WITNESSES:

Henry Dwyer
Douglas Stewart

INVENTOR:

William Foulis
by his atty.

Francis T. Chambers

(No Model.)

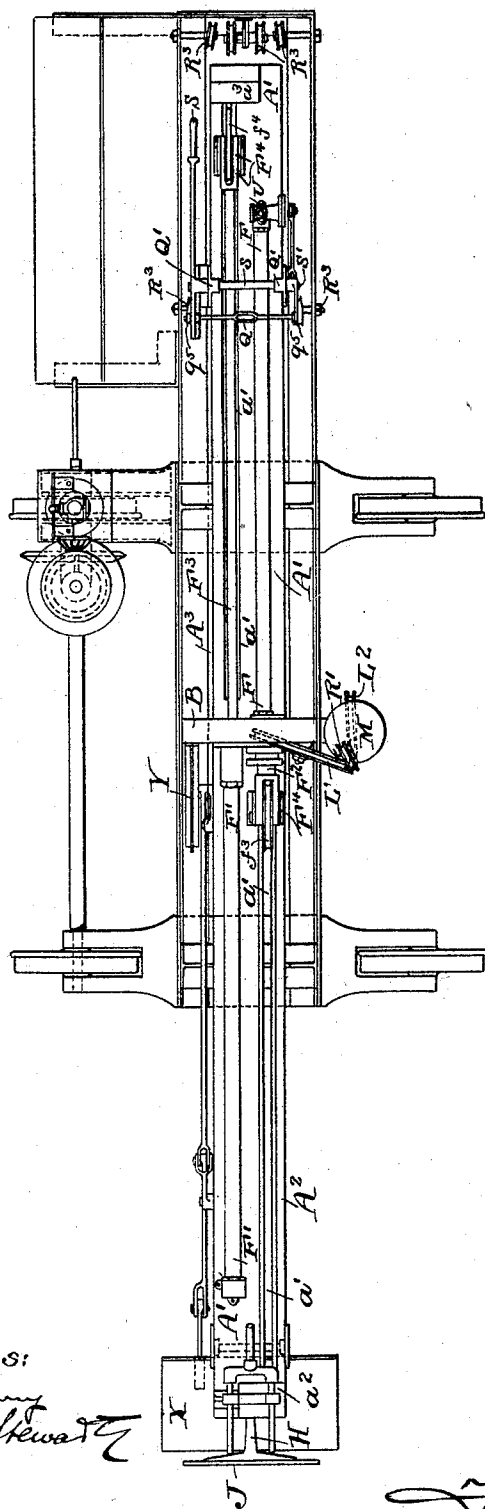
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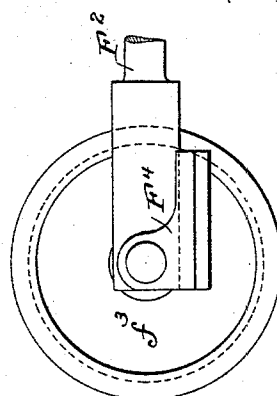
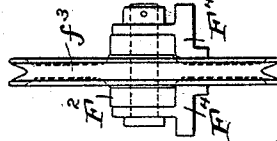
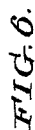
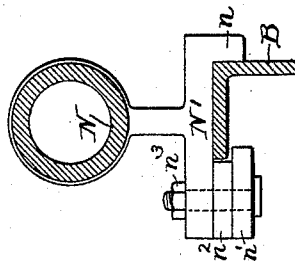
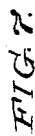
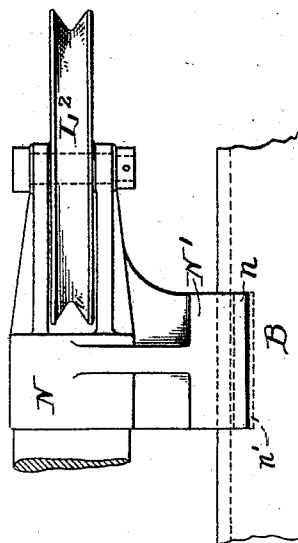
Patented June 6, 1893.



WITNESSES:

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(No Model.)

3 Sheets—Sheet 3.

W. FOULIS.

APPARATUS FOR STIRRING AND DRAWING GAS RETORTS.

No. 498,779.

Patented June 6, 1893.

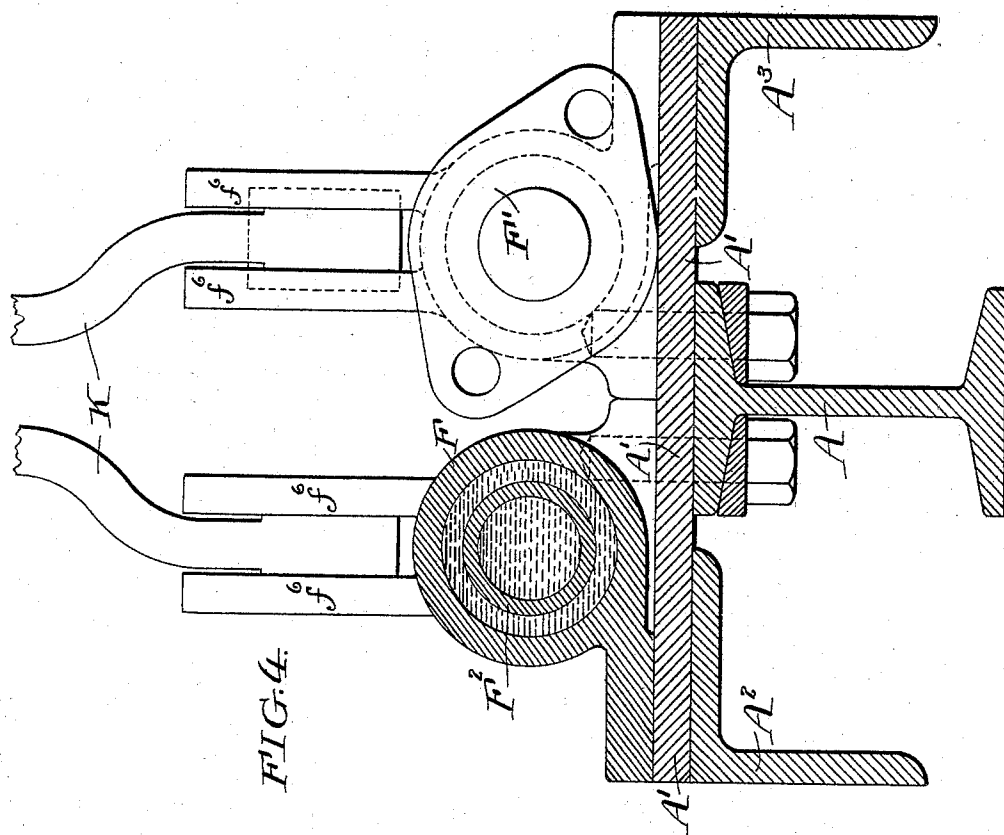


FIG. 4.

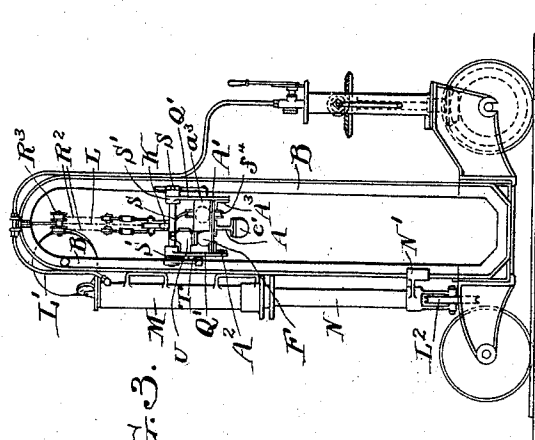


FIG. 3.

WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM FOULIS, OF GLASGOW, SCOTLAND.

APPARATUS FOR STIRRING AND DRAWING GAS-RETORTS.

SPECIFICATION forming part of Letters Patent No. 498,779, dated June 6, 1893.

Application filed January 18, 1893. Serial No. 458,777. (No model.) Patented in England July 4, 1892, No. 12,385.

To all whom it may concern:

Be it known that I, WILLIAM FOULIS, a subject of the Queen of England, residing at Glasgow, in the county of Lanark, Scotland, have invented a new and useful Improvement in Apparatus for Stirring and Drawing the Charge of Gas and other Retorts, (for which I have obtained a patent in Great Britain, No. 12,385, bearing date July 4, 1892,) of which the following is a specification.

This invention relates to improvements in apparatus for stirring and drawing the charge of gas and other retorts and particularly to improvements in apparatus such as are described in the specification of British Letters Patent No. 12,016, of July 31, 1890, granted to me.

The present invention has for its object to so arrange and construct the apparatus or machine that it is more rigid and also (owing to the larger bearing surfaces of its moving parts) more effective in its action. The arrangement also enables the working parts to be easily got at when required for oiling, repairing, and such like.

In carrying out my said invention I mount on the top side of the **I**ron or steel bar, an iron or steel plate, which has also mounted at its under side two stiffening angle iron or steel bars which may extend the whole length of the plate or not as desired. The said **I**ron or steel bar has the slipper or carriage mounted on its lower side in such a manner as to enable it to be reciprocated backward and forward by the two horizontal acting hydraulic cylinders and rams as hitherto, but which, in this case, are mounted on the top side of the plate which is formed with two longitudinal slots or openings, through which the pulleys on the ends of the rams work. The said slots also act as guides for the front ends of the said rams which are formed with suitably shaped guide or slipper blocks. Also in accordance with the present invention I provide the front end of the raising and lowering cylinder's ram with a guide or slipper block which works on the upright standard of the apparatus, which as well as the plate has wooden or other buffers attached so as to terminate the strokes of the rams and slipper or carriage. Near the front end of the **I** or steel bar I mount preferably a hardened steel block in such a

manner as to guide the rake rod or it may be stirrer rod or rods, during their backward and forward movements. I also so shape the race of the automatic drop plate, that when the apparatus is not in use the plate will be nearly in a horizontal plane and so permit of vehicles and such like passing underneath the front end of the apparatus.

In order that my invention may be more readily understood and easily carried into effect I will proceed to describe the same with reference to the accompanying drawings in which I have shown an apparatus for drawing the charge of a retort, it being understood that when the apparatus is for stirring the charge the rod or rods which act as the stirrers are substituted for the rake and rake rod as hereinafter explained.

Figure 1 is a side elevation, Fig. 2 a plan and Fig. 3 an end elevation of my apparatus or machine. Fig. 4 is a sectional detail drawn to a large scale and Figs. 5, 6, 7 and 8 are detail views of parts of my said apparatus.

Referring to the said drawings (throughout which the same reference letters denote similar parts) I bolt or otherwise secure to the top side of the **I**ron or steel bar **A**, an iron or steel plate **A'** (shown more particularly in Figs. 3 and 4). The said plate **A'** is also provided with two stiffening bars of angle iron or steel **A²**, **A³**, preferably extending about half the length of the plate, as shown in Figs. 1 and 2, though if desired they may extend the full length on each side.

The slipper or carriage **E** to which is attached the rear end of the rake rod **H**, is mounted on the lower side of the bar **A**, in such a manner that it can be reciprocated backward by means of the two hydraulic cylinders **F**, **F'**, which in this case are mounted on the top side of the plate **A'**, as shown; the front ends of the rams **F²**, **F³**, of which are provided with slipper or guide blocks **F⁴** (shown more particularly in elevations at right angles to each other in Figs. 5 and 6) which work in two longitudinal slots or openings **a'** formed in the plate **A'**; the said slots **a'** also permit of the pulleys **f³**, **f⁴** working through so as to enable the cylinders to actuate the carriage **E** by means of the chains or ropes **f'**, **f²** which are connected at one of their ends to snugs **f⁶** provided on the front

ends of the cylinders $F F'$, and at the other of their ends to snugs e formed on the carriage E . The rear end of said carriage E , when it reaches the end of its backward stroke, comes against the wooden, rubber or other buffer e' and the same is the case with regard to the pulleys $f^3 f^4$, against the buffers $a^2 a^3$ on reaching the end of their outward stroke, thus preventing said parts going too far; the said buffers e' a^2 and a^3 being suitably secured to the bar A and plate A' . The said bar A , plate A' and their connections are suspended near their centers by means of a raising and lowering chain or rope L whose one end is secured to the top end of a saddle bracket K which in this case is attached to the snugs f^6 on the cylinders. The said chain or rope L after passing around the guide pulley L' mounted on the upright framing B of the apparatus, and around the guide pulley L^2 of the raising and lowering cylinder M is adjustably attached by means of the screw m' to the snug m of the cylinder. The front end of the ram N of the said cylinder M is also provided with a slipper or guide block arrangement N' (as shown more particularly in sectional elevation at right angles to each other in Figs. 7 and 8) consisting of the projection n and plate n' with filling-in piece n^2 and bolts n^3 the said parts all working against the upright framing B of the apparatus which is preferably composed of angle iron or steel. The said bar A and plate A' are supported near their rear ends by means of a carrier Q and rope or chain R which is adjustably connected to the carrier Q and after passing around the guide pulleys R' is spliced or otherwise attached to the main raising and lowering chain L (as at l Fig. 1). The said carrier Q is composed of a cross stay q the two ends of which are provided with dead eyes q^5 to which the ends of two balancing chains or ropes R^2 are attached and which after passing around the guide pulleys R^3 are adjustably connected at their other ends to the saddle bracket K , as shown in Fig. 3. The said cross stay q of the carrier Q is also attached, at either end, to the ends of two crank levers S' which are mounted on the rocking shaft s and carried by the two upright links or brackets Q' whose lower ends are secured to the plate A' . The said rocking shaft s is also provided with an operating handle S , and valve regulating lever T as hitherto, so that the operator on actuating the handle S opens or reverses the valve U , actuates the rake J , and depresses or raises the front end of the bar A as desired.

In order to guide the rake rod H more effectually I mount near the front end of the bar A a guide block A^4 , preferably made of hardened steel, so as to take up the strain of the rod H . The drop plate X is also mounted in such a manner and its face Y is so shaped that when the machine is out of action and the bar A , and plate A' , raised to their high-

est positions, the said drop plate X will lie up in a horizontal plane and so be out of the way. The whole arrangement thus forms a very effective, smooth working and strong apparatus for withdrawing the charge of retorts.

When my apparatus is constructed as a stirrer I substitute a rod or rods for the rake and rake rod, and I dispense with the means for raising and lowering the front end of the bar A , and connections. The stirring operation is effected by means of the raising and lowering cylinder M as hitherto.

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

1. In an apparatus for drawing the charge from and stirring gas retorts, the combination with a frame and a bar pivoted thereon, of a rod as H supported thereby through the medium of carriage E and guide block A^4 and a motor for reciprocating the rod.

2. In an apparatus of the character described the combination with an I bar of a plate thereon having slots, hydraulic rams supported on said plate having pulleys working in said slots and a rod H supported on the I bar A and adapted to be reciprocated by said rams.

3. In an apparatus of the character described the combination with an I bar of a plate thereon having slots, hydraulic rams supported on said plate having pulleys working in said slots, stops to limit the movement of said rams, and a rod H supported on the I bar A and adapted to be reciprocated by said rams.

4. In an apparatus of the character described the combination with a main supporting frame having a reciprocating rod, a guide block N' on said rod and means as the angle bar B for engaging with said guide block.

5. In an apparatus of the character described the combination with a frame and means for raising and lowering it, of a drop plate as X and a bar operated by the frame as it is raised for raising the plate X against the frame, substantially as and for the purpose specified.

6. In an apparatus of the character described the combination with a frame and means for raising and lowering it, a drop plate as X a cam groove in the main supporting frame of the apparatus, a lever connected to the plate at one end and engaging with the cam groove at the other, all operating to cause the plate to be raised against the frame as the frame is raised.

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