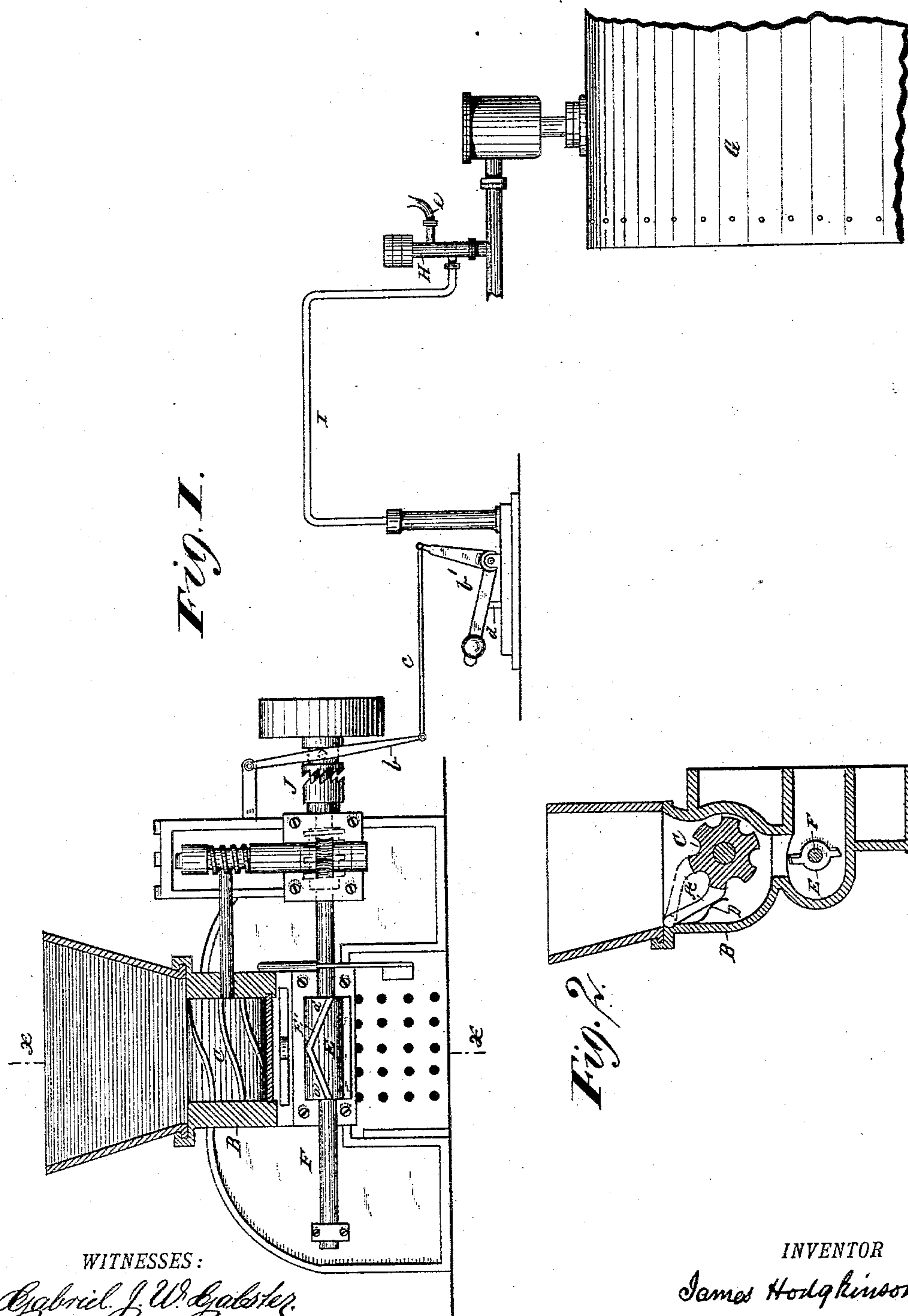


(No Model.)

J. HODGKINSON.
MECHANICAL STOKER.

No. 359,676.

Patented Mar. 22, 1887.



WITNESSES:

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JAMES HODGKINSON, OF SALFORD, COUNTY OF MANCHESTER, ENGLAND.

MECHANICAL STOKER.

SPECIFICATION forming part of Letters Patent No. 359,676, dated March 22, 1887.

Application filed December 21, 1886. Serial No. 222,190. (No model.) Patented in Canada August 19, 1886, No. 24,762.

To all whom it may concern:

Be it known that I, JAMES HODGKINSON, of the firm of Hodgkinson & Co., (Limited,) Ordsall Machine Works, Woden street, Salford, Manchester, England, engineer, have invented new and useful Improvements in Mechanical Stokers, of which the following is a full, clear, and exact description.

This invention consists of improvements upon the apparatus for which Letters Patent No. 322,605 were granted me on the 21st day of July, 1885, and relates to the device for crushing and measuring the fuel, to the device for distributing the fuel, and to the mode of regulating the supply of fuel to the furnace.

In the drawings which accompany this specification and form a part thereof, Figure 1 is a longitudinal section of the stoker, with a view of the fixed regulator attachment. Fig. 2 is a cross-section of the stoker on the line *x*, Fig. 1.

The same letters of reference refer to like parts in both figures.

The crushing and measuring plate A is in this invention made reversible, as shown in Fig. 2. When the plate is used in connection with the pocket B of crusher C as a measuring and crushing plate, a spring, D, is employed, which keeps the plate in position, but allows it to yield to any unusual strain and prevent the breakage of the apparatus. The use of a spring-plate as described in my former invention has been found objectionable, and this device has been substituted. When it is desired to use this plate for simply measuring the fuel in connection with the pockets B, it is reversed, as shown in dotted lines, Fig. 2. This plate may be of any form and material adapted for the purpose.

The boss E on shaft F is in this invention provided with the two or more blades E', as shown in Fig. 1, for distributing the fuel evenly on the grate-surface. The even distribution of the fuel depends upon the form and direction of these blades. They may vary somewhat to adapt them to furnaces of different forms and sizes; but I have, after a long series of experiments, found that this form gives a more satisfactory result in ordinary furnaces.

The failure of the mechanical stokers heretofore invented has arisen chiefly from their failure to distribute the fuel evenly in the furnace. The direction of the blades E' should be from the central line of the boss to the outside line, the angle formed by the two wings *a a'* varying according to the dimensions of the boss, and these dimensions may advantageously be varied somewhat with the dimensions of the grate-surface.

The supply of the fuel is automatically regulated in this invention by the device shown in Fig. 1, so as to keep any desired and uniform pressure of steam in the boiler G. This attachment to a mechanical stoker averts the danger of undue pressure in the boiler, the waste of fuel, and the labor of an attendant. The fuel is supplied to the furnace as required to maintain the uniform pressure of steam.

The device for regulating the feed has a safety-valve, H, suitably connected with the boiler G. This valve is weighted to any desired pressure, and when the pressure in the boiler becomes greater the valve is forced open and steam escapes into the pipe I and disengages the clutch J through the levers *b b'* and rod *c*, (shown in Fig. 1,) the lever *b* being operated by pin *d*, and entirely stops the feeding device, and no fuel will be thrown into the furnace until the pressure returns to its normal state. The steam escapes from the pipe when the valve closes through pipe *e*. The connection of the valve H with the clutch J may be of any suitable description, and fast and loose pulleys may be substituted for the clutch, the essential feature of this regulating device being a valve which permits the steam to escape at a given pressure and stops the feeding of the fuel, the feeding commencing again as soon as the pressure in the boiler allows the valve to close.

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

1. In a mechanical stoker, a reversible crusher-plate, A, supported by a spring, D, in combination with a crusher, C, arranged for the purpose and substantially in the manner set forth.

2. In a mechanical stoker, a fuel-distrib-
uter consisting of a boss, E, on the shaft F,
said boss being provided with blades E', con-
structed and arranged substantially as set
5 forth.

3. In a mechanical stoker, a device for con-
necting distributor-shaft F with a steam-boiler
for automatically regulating the supply of

fuel to the furnace, consisting of clutch J, valve
H, and lever b, with connections for operating to
said device, substantially as set forth.

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Witnesses:

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