

(No Model.)

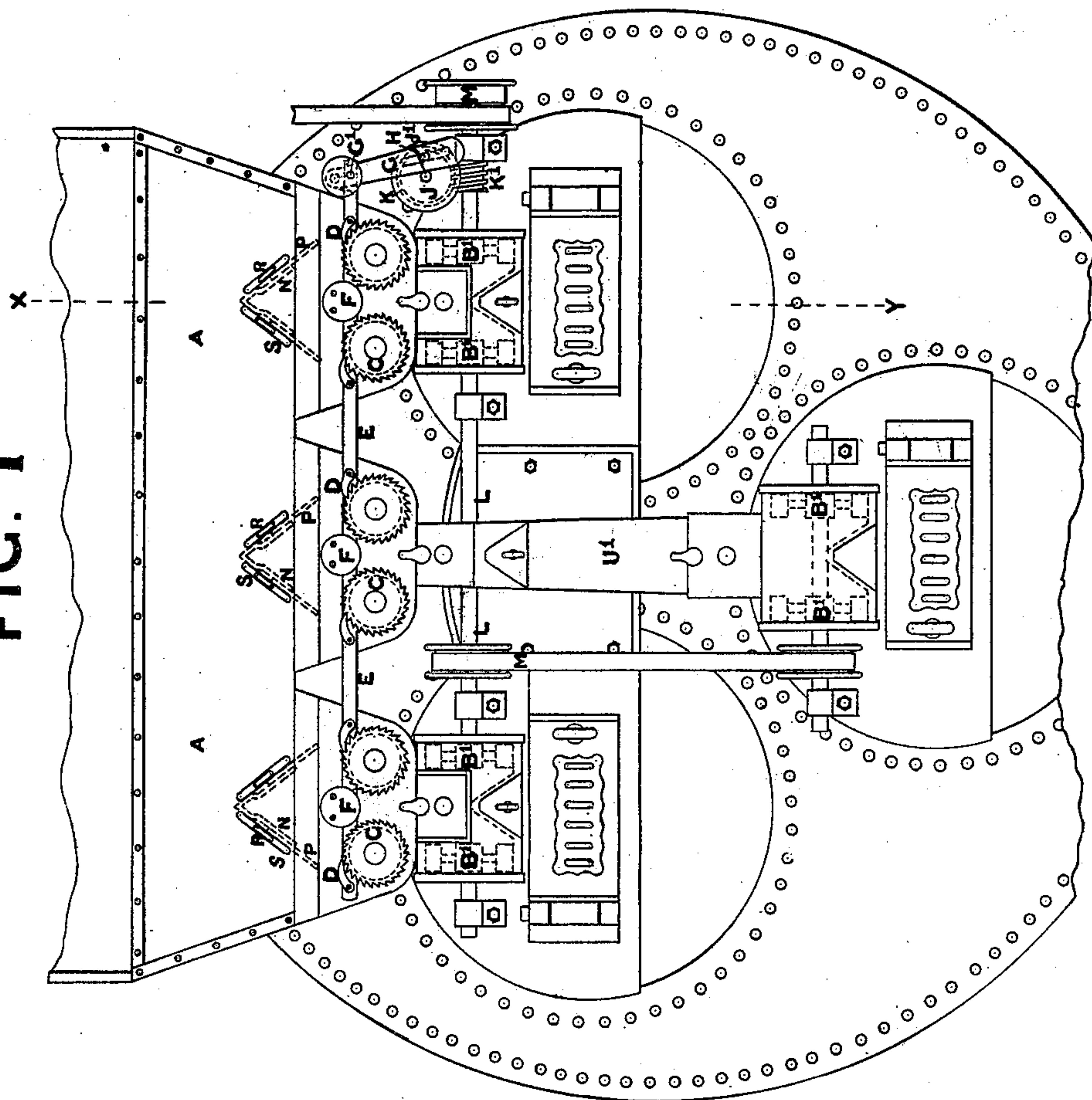
2 Sheets—Sheet 1.

W. WHITTAKER.
MECHANICAL STOKER.

No. 384,486.

Patented June 12, 1888.

FIG. 1



Witnesses.
John E. Walsh.
Arthur H. Hall

Inventor
William Whittaker.

(No Model.)

2 Sheets—Sheet 2.

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FIG. 3

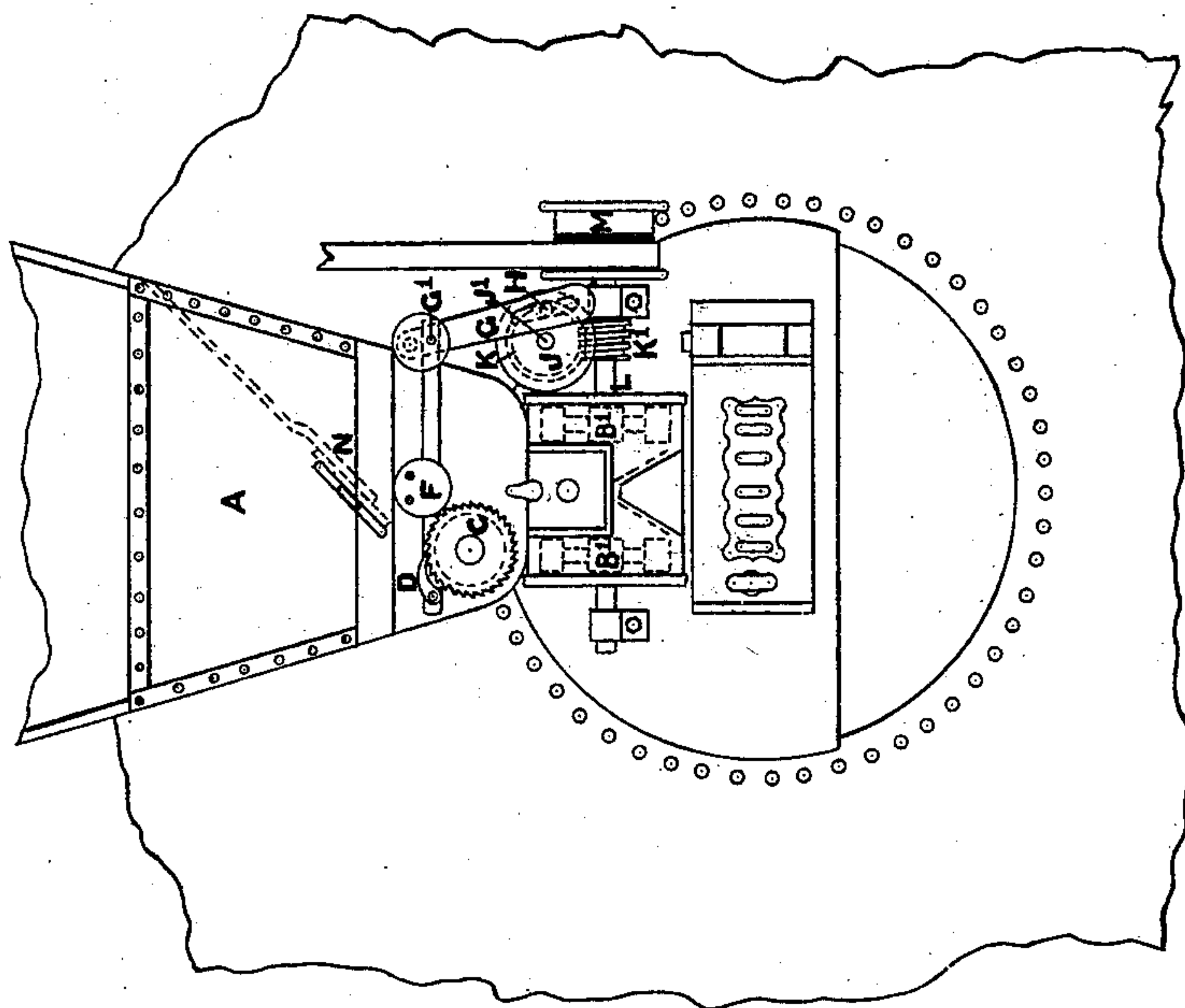
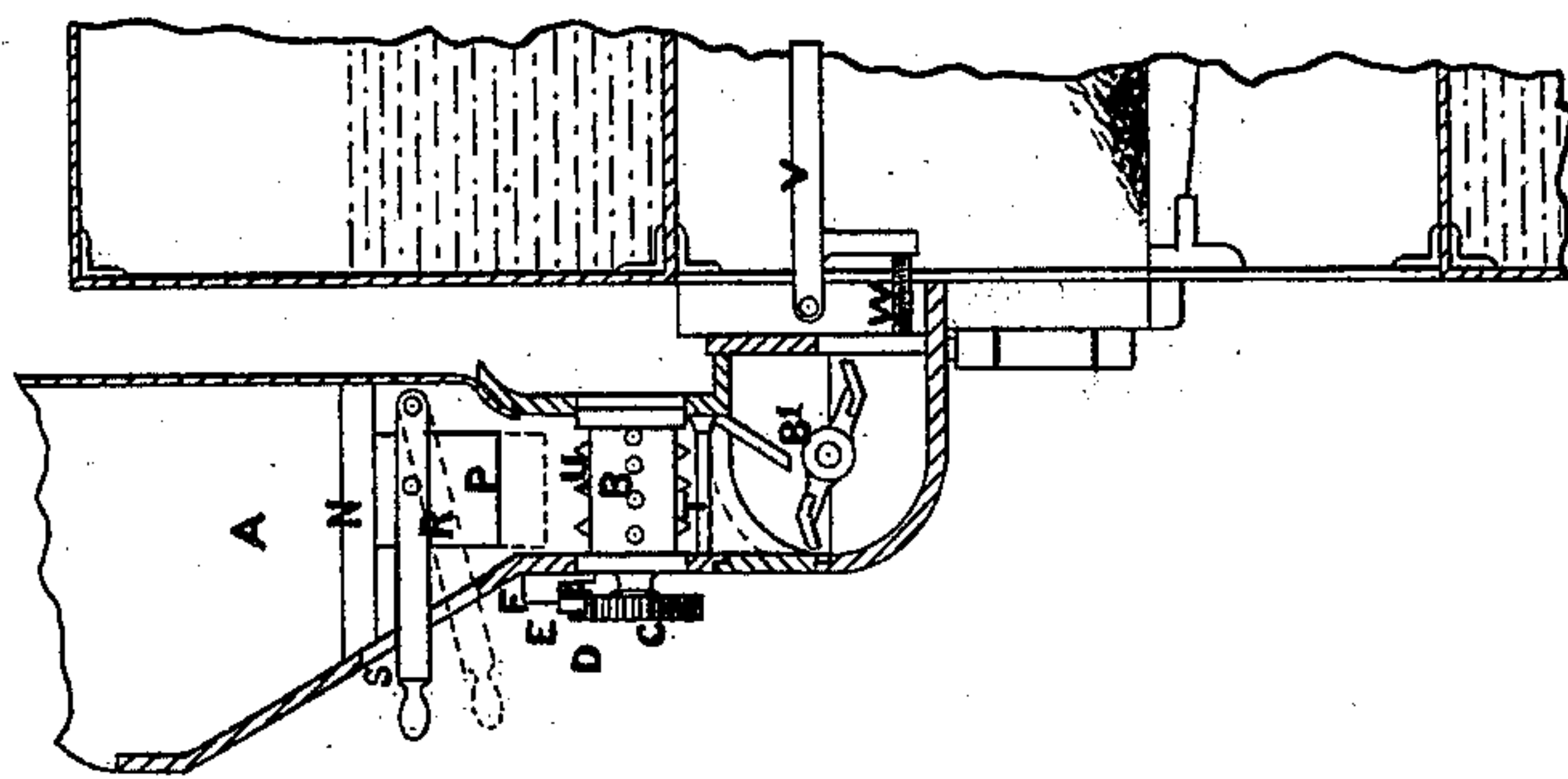


FIG. 2



Witnesses,
John S. Walsh.
Atticus Hall.

Inventor.
William Whittaker.

UNITED STATES PATENT OFFICE.

WILLIAM WHITTAKER, OF BURNLEY, COUNTY OF LANCASTER, ENGLAND.

MECHANICAL STOKER.

SPECIFICATION forming part of Letters Patent No. 384,486, dated June 12, 1888.

Application filed October 18, 1887. Serial No. 252,726. (No model.) Patented in England January 13, 1887, No. 560.

To all whom it may concern:

Be it known that I, WILLIAM WHITTAKER, a subject of the Queen of Great Britain, residing at Burnley, in the county of Lancaster, England, have invented new and useful Improvements in Mechanical Stokers for Supplying Fuel to the Furnaces of Steam-Boilers, (for which I have obtained patent in Great Britain, No. 560, dated January 13, 1887,) of which the following is a specification.

My stoker is constructed as follows: I employ the ordinary hoppers, one or more, for the reception of coal. In each hopper is a Λ -incline or mid-feather, and below the incline are preferably two cylindrical feed-rollers (or one feed-roller may be used) to feed the fuel to the shovel below. Between each wing of the incline is a slide-regulator, which increases or decreases the space between each of the feed-rollers and the bottom of each incline, and so regulates the supply of fuel to the feed-rollers. The rotary shovel-box is formed with a central Λ -shaped mid-feather or incline for guiding the coal to the shovels.

The rotary shovel or shovels are preferably upon one driving-shaft, upon which is a worm operating a worm-wheel upon a stud or shaft, on which shaft is a disk with a stud working in a slot on a pivoted arm. This pivoted arm carries a stud, to which is attached a horizontal bar, rod, or slide, to which it gives a backward and forward movement. This bar passes, preferably, across the front of the hoppers, and has a number of pawls or catches, which engage with catch-wheels on the shaft of the feed-rollers, arranged so that they work the feed-rollers alternately, and impart to them a rotary or partial rotary motion, and by turning back the catches the feed-rollers are stopped, as required. One side of the flue can be fed at once. This arrangement is applicable to one, two, three, or other number of flued boilers. One feed-roller only to each flue may be used.

In the drawings, Figure 1 is a front elevation of my improved stoker applied to a three-flued boiler. Fig. 2 is a sectional elevation of Fig. 1, showing shovel-box and feed-roller. Fig. 3 is a front elevation of my improved stoker applied to a single-flued boiler, but with only one feed-roller to each shovel.

A are the hoppers for the reception of the coal,

(in the hoppers are suitable Λ -inclines, N,) below which are the feed-rollers B, which also act as measuring-rollers to feed or measure the fuel to the rotary shovel or shovels B' below. On each feed-roller is a ratchet-wheel, C, operated by ratchet D and bar or rod E. The circular brackets F keep the rod in position.

G is a lever pivoted on a suitable bracket, and attached by a stud or pin, G', to the rod E, and by a second stud or pin, H, to the disk or plate J upon the shaft J', operated by the worm-wheel K, and worm K' upon the driving-shaft L, which is driven by a strap and fast and loose pulleys M from any going part of the mill. A backward and forward motion is imparted to the bar or rod E, which operates the feed-rollers B alternately, by means of the ratchets D and ratchet-wheels C, and imparts to the feed-rollers a partial rotary movement. By turning back any one of the catches or ratchets its corresponding feed-roller is stopped without interfering with the working of the other feed-rollers, so that one flue can be stopped for cleaning purposes while the other or others are working.

On each side or wing of the Λ -inclines N are regulating-slides P, each attached to levers R. By moving the levers R upward or downward in their slots S they increase or decrease the opening leading to the feed-rolls, and so allow a smaller or larger quantity of coal to pass to the feed roller or rollers which supply the rotary shovel or shovels with fuel. The feed-rollers are formed with a space, T, between their peripheries and the case or box in which they revolve, and upon their peripheries are preferably formed projections or recesses U, which insure the feed being more positive than if the rollers are plain upon their peripheries; or, in lieu of having two feed-rollers to each flue, one feed-roller may be used, (see Fig. 3,) either to single, double, or other number of flued boilers. The pivoted plate V may also be used in combination with my improved stoker for regulating the throw and distribution of the fuel over the surface of the furnace by means of the screw W, which raises or lowers the plate V, and so regulates the throw and distribution of the fuel.

The above arrangement can be equally applied to one or to any number of flued boilers.

When applied to a three-flued boiler, (see Fig. 1,) a suitable trough or trunk, U', is employed to connect the feed-rollers with the box of the rotary shovel, which is driven by a strap from the driving-shaft of the top flues.

What I claim as the invention, and desire to secure by Letters Patent, is—

1. The combination, with a boiler-furnace having a suitable hopper leading to said furnace, of one or more feed-rolls located in the said hopper, reciprocating pawl-carriers having pawls which engage with ratchets on the shafts of said rolls, and one or more rotary shovels arranged in said hopper below said feed-rolls, substantially as described.

2. The combination, with a boiler-furnace having a hopper leading thereto, of one or more feed rolls located within the hopper, a reciprocating bar having pawls engaging with ratchets on the feed-rolls, one or more rotary shovels arranged in the hopper below the feed roll

or rolls, and a lever pivotally connected to said bar and to a rotating disk having a crank-pin engaging with said lever, substantially as described.

3. The combination, with a boiler-furnace having hoppers leading from the exterior thereto, of feed-rolls arranged in said hoppers, inclines arranged in the hoppers above said feed-rolls, and regulating-slides mounted on said inclines, to decrease or increase the opening leading to the feed-rolls, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM WHITTAKER.

Witnesses:

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Manchester, England.