(No Model.) 2 Sheets—Sheet 1.

T. T. SCOTT & J. J. SHEAFOR.

SAWDUST BURNING AND AIR BLAST APPARATUS.

No. 477,387. Patented June 21, 1892.

Fig. 1

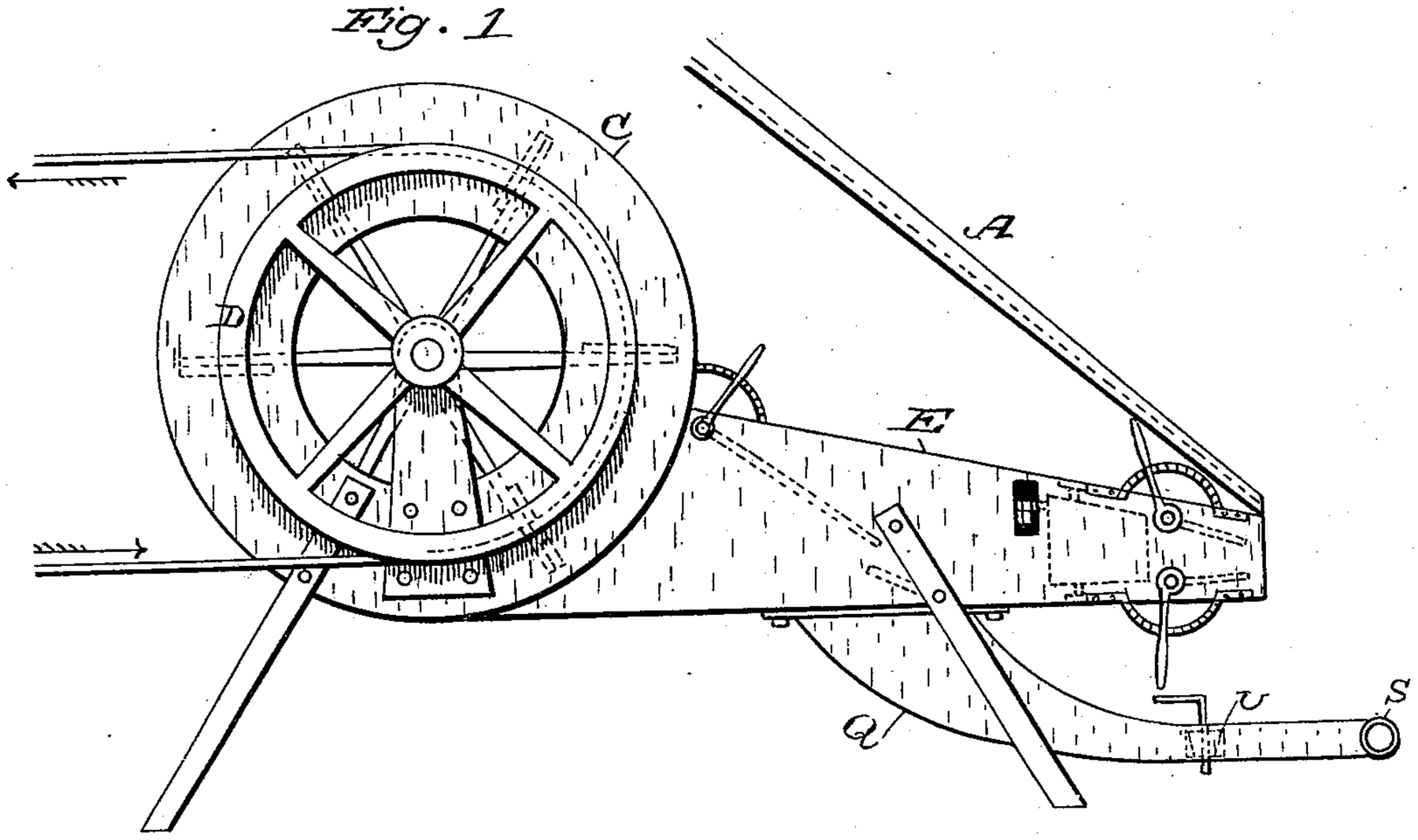
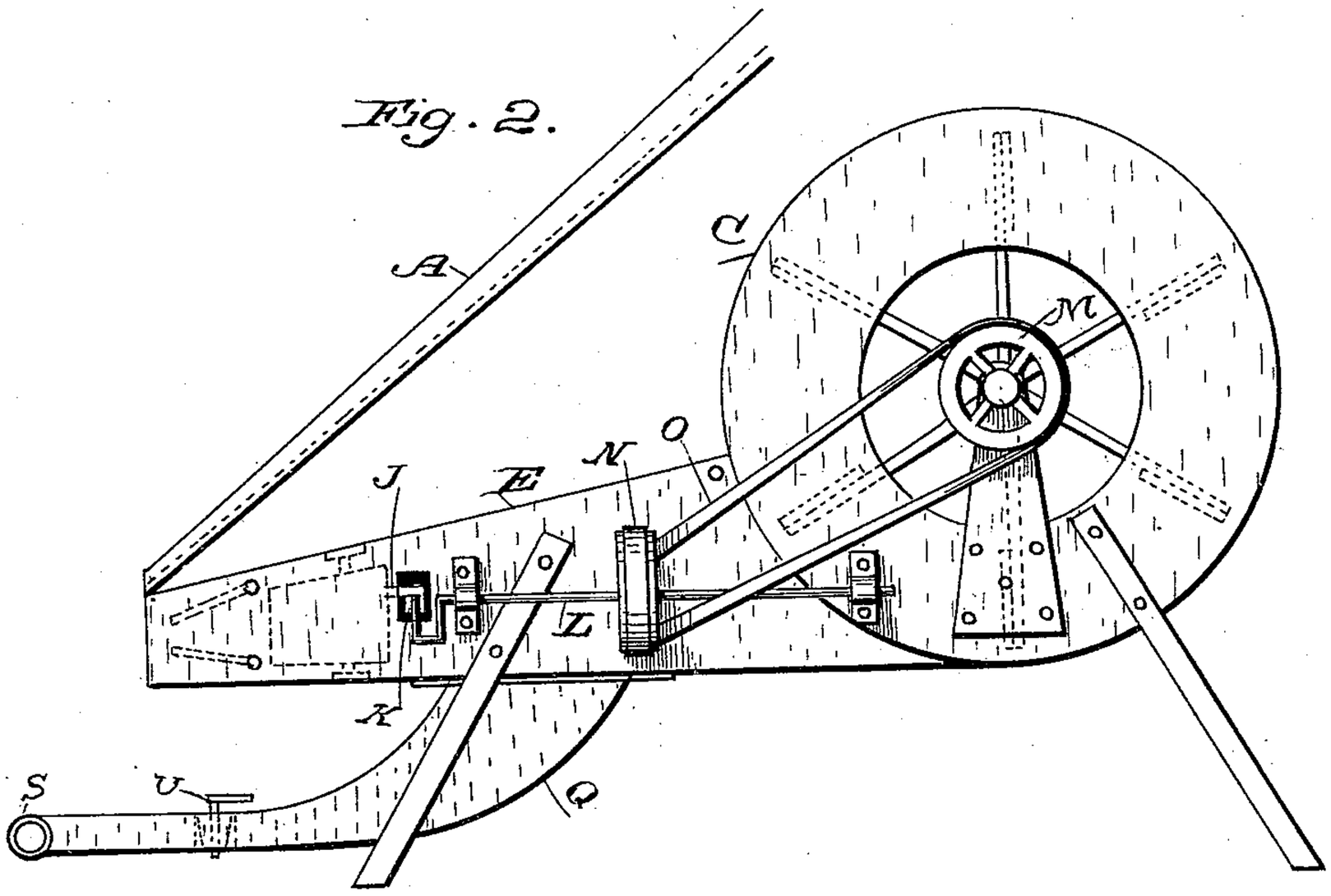


Fig. 2.



Witnesses,
J. B. Stuse
J. A. Bayless

Inventors,
Thomas J. Scott
Jacob J. Sheafor.
By Dewey & Co. Attys.

(No Model.) 2 Sheets—Sheet 2.

T. T. SCOTT & J. J. SHEAFOR.

SAWDUST BURNING AND AIR BLAST APPARATUS.

No. 477,387. Patented June 21, 1892.

Fig. 3.

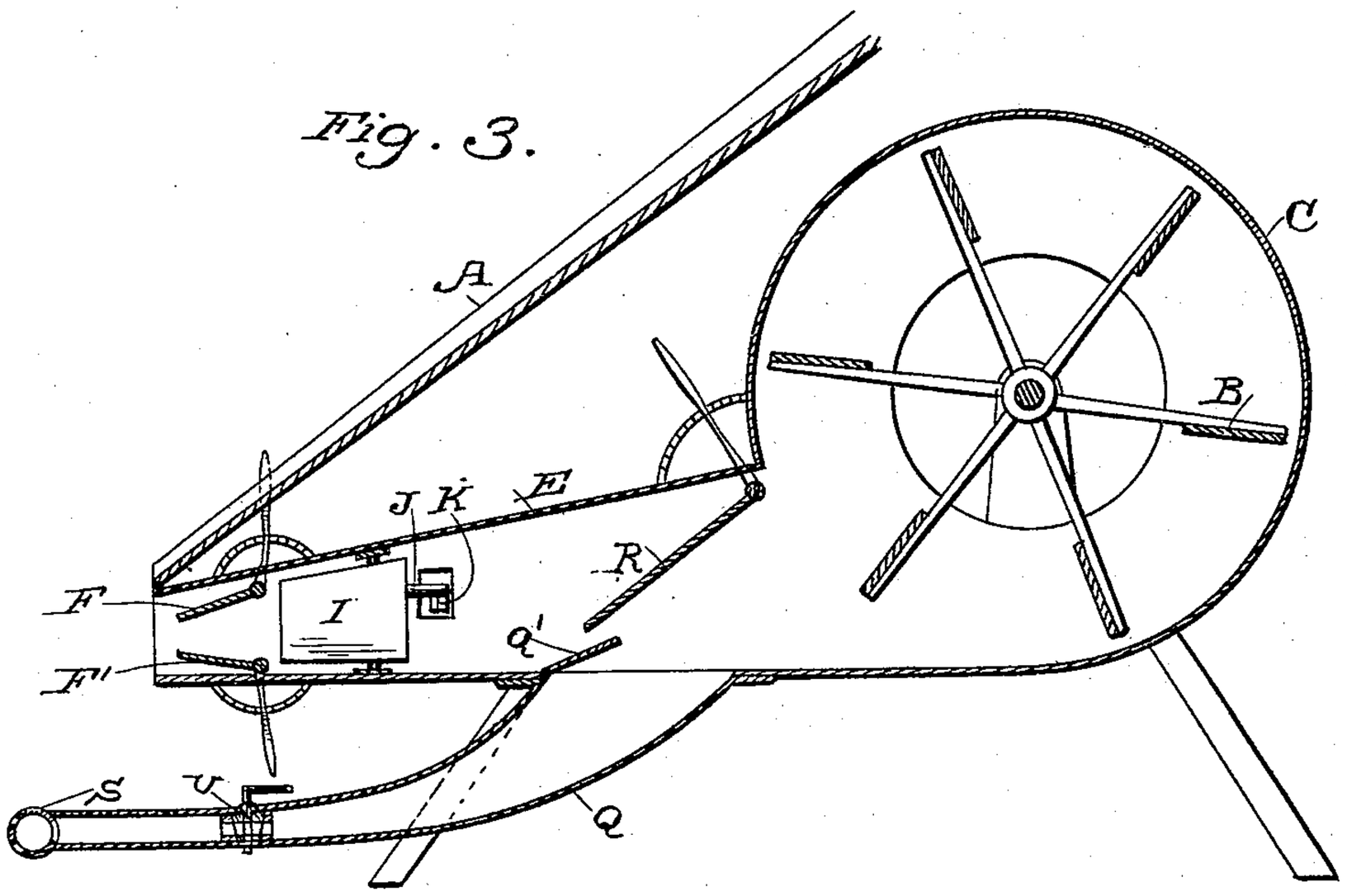
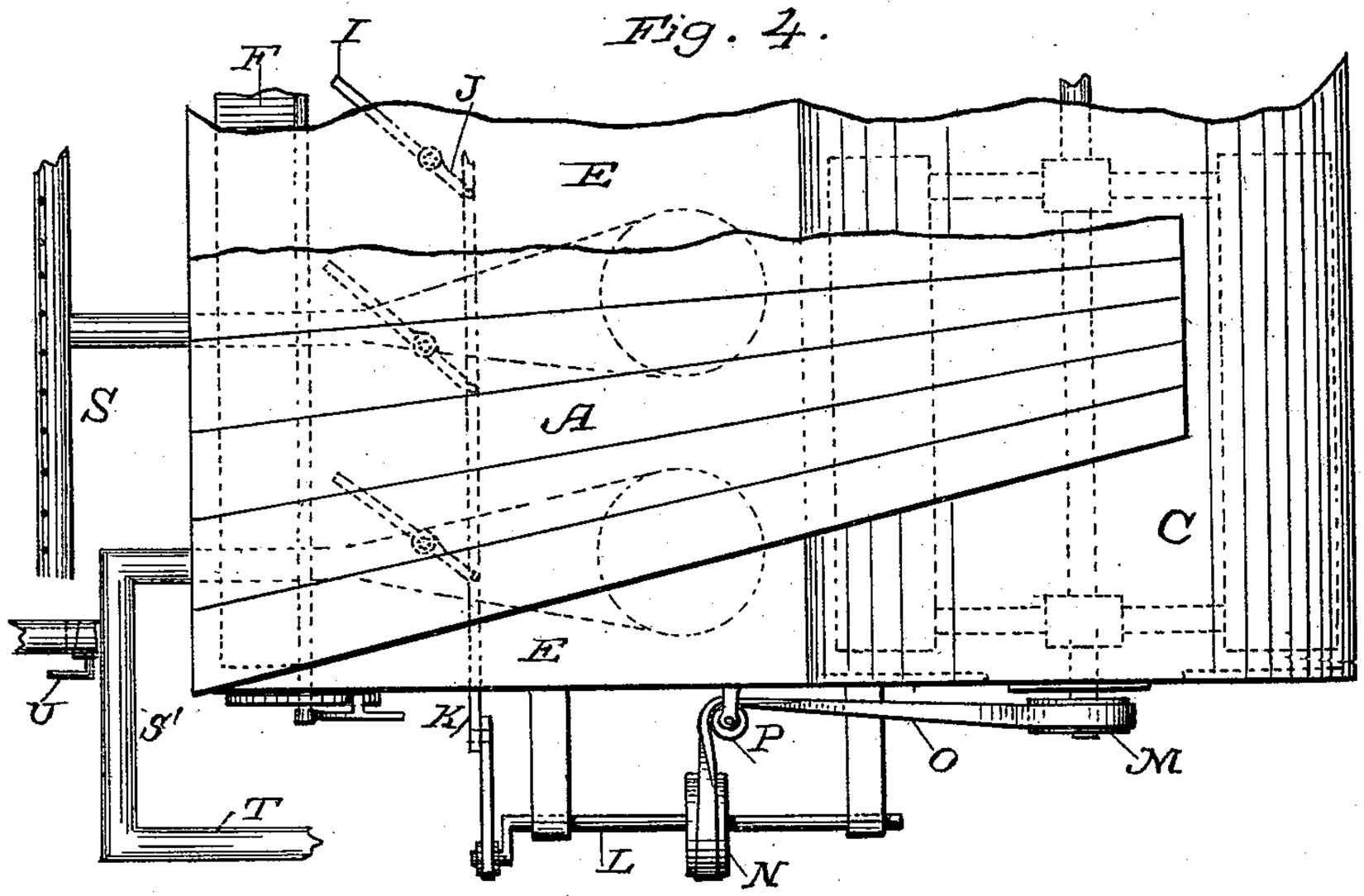


Fig. 4.



Witnesses;
L. A. Towse
J. A Bayless

Inventors,
Thomas J. Scott.
Jacob J. Sheafor.
By Dewey & Co. attys

UNITED STATES PATENT OFFICE.

THOMAS T. SCOTT AND JACOB J. SHEAFOR, OF MOTT, CALIFORNIA.

SAWDUST-BURNING AND AIR-BLAST APPARATUS.

SPECIFICATION forming part of Letters Patent No. 477,387, dated June 21, 1892.

Application filed February 19, 1892. Serial No. 422,133. (No model.)

To all whom it may concern:

Be it known that we, THOMAS T. SCOTT and JACOB J. SHEAFOR, citizens of the United States, residing at Mott, Siskiyou county, State of California, have invented an Improvement in Sawdust-Burning and Air-Blast Apparatus; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to an apparatus for feeding sawdust, shavings, and other offal of wood-working machinery to furnaces where it can be disposed of, and a means for supplying an air-blast to said furnace; means for regulating the blast and distributing it, and also for supplying it to steam-boilers, reduction, smelting, and other furnaces.

It is an improvement on our former patent, No. 460,729, dated October 6, 1891; and it consists in certain details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a side elevation showing one end of the fan-case. Fig. 2 is a side elevation showing the opposite end and crank-shaft driver. Fig. 3 is a vertical section through the apparatus. Fig. 4 is a top view.

For the purpose of disposing of the large quantities of shavings and sawdust which are produced in wood-working mills it is necessary to employ a furnace wherein it can be burned in large quantities, as the supply is greater than can be profitably used to generate steam in the boiler-furnaces. For this purpose we construct a furnace of any suitable shape and dimensions, and the material is delivered to this furnace by means of an inclined chute A, the floor of which we have shown in the present case as corrugated or divided into diverging channels and convex in transverse section, so that the material which is supplied at the upper end of the chute will be carried by gravitation down the incline, and at the same time spread to any desired width, preferably a width about equal to the length of the furnace. In order to properly distribute this material within the furnace, which may be of considerable width, and to supply air for its combustion, we have shown a blast-fan B, revolving within the case C, the shaft having a pulley D upon the outer end adapted to receive a belt through which power is conveyed to rotate the fan. From the front of the fan-case a wind-box E projects, having a neck through which air is delivered into the furnace just below the discharge end of the inclined chute. This neck may have an open slot or perforations, as desired, and within it, at a point just behind the discharge-opening, the direction-boards F F′ are mounted, one near the top of the box and the other near the bottom. These boards have their rear ends journaled, and their front ends are movable up and down and independently of each other. Upon the end of the journal-shafts, which project out through the sides of the case, are fixed arms or levers with suitable holding-racks by which the position of the boards may be regulated from time to time, as may be needed. The object of this device is to throw the material to be burned either to the rear or to the front of the furnace, wherever the most intense combustion is going on. By raising the upper board to lie parallel with the top of the wind-box and raising the point of the lower board so that the blast of air will be thrown upward, the tendency will be to lift the sawdust or material which is delivered from the end of the chute and throw it to the rear of the furnace.

If it be found that the combustion is more rapid and intense at the front of the furnace after a time, the front of the lower board is depressed to lie on the bottom of the box and the edge of the upper board is correspondingly depressed so as to to throw the blast of air downward, and this allows the material to fall nearer to the front of the furnace. By this construction we are enabled to regulate at all times the discharge, so far as its falling to the front or rear is concerned.

In order to make a perfect lateral distribution, we have shown a series of vertically-placed direction-boards I, having shafts journaled in the top and bottom of the wind-box, and arms J projecting from the rear ends of the boards for the attachment of a connecting-rod K, which extends through the side of the case and is united with a crank-shaft L, by which the rod is reciprocated. The reciprocation of this rod turns these boards alternately to one side and the other, and as a

blast of air is constantly passing between them it will be seen that it will be diverted from side to side, and the material which is falling over the front and discharge of the wind-box will be correspondingly spread from side to side, independent of the direction from front to rear, which is given to it by the wind-boards F F′, previously described.

In order to operate the crank-shaft, we have shown a pulley M upon the end of the fan-shaft and a pulley N upon the crank-shaft standing at right angles with the pulley upon the fan-shaft. A belt O passes around these two pulleys and around intermediate direction-pulleys P, which enable it to change its direction, as necessary, between these two pulleys, and power is thus derived to oscillate the direction-boards I. If the combustion is more intense at one side and it is desired to deliver the material continuously to that side, the belt is thrown off the pulleys and the crank-shaft turned by hand until the boards stand at the desired angle.

From the lower part of the wind-box in the rear of the vertical direction-boards I an opening is made, and from it a series of wind-trunks Q extend downward and forward beneath the wind-box E, previously described. Above this opening in the bottom of the wind-box is hinged a direction-board R, with means for raising or lowering its front end, and this board may be moved so as to divert any desired proportion of the air which would normally pass through the wind-box and direct it into the trunks below the wind-box. This is materially assisted by the lips Q′, which project inwardly from the front edges of the wind-trunks Q, as shown. One or more of these trunks has a nozzle extending forward and connecting with a horizontal distributing-pipe S, just within or in rear of the wall of the furnace and having perforations or nozzles through which air is delivered to the lower part of the furnace to assist in the combustion of the material fed thereto, while the exterior pipes connect in the same manner with perforated pipes S′ at the sides of the furnace. A portion of the wind from these pipes is delivered into branch pipes T, leading to the boiler-furnaces or other points where a wind-blast may be desirable, and each of the pipes is provided with a valve U, by which the amount of air delivered through it may be regulated to suit the requirements of the different furnaces.

The wind-boxes E and trunks Q are made of any desired length to allow the blast apparatus to be placed in convenient relation with the driving machinery and the discharge-passages in proper relation to the furnaces.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an air-blast and sawdust-burning apparatus, the inclined delivery and distributing chute, in combination with an air-blast apparatus, a wind-box and neck through which the air is delivered from the blast apparatus to the furnace, in combination with the horizontally-adjustable directing-boards F F′, fitted in the mouth of the discharge, substantially as and for the purpose herein described.

2. In a sawdust-burning and air-blast apparatus, the inclined diverging channeled chute through which the material is delivered to the furnace, an air-blast apparatus and a wind-box through which the air is led from the apparatus to a point beneath the discharge end of the chute, direction-boards F F′, having their rear ends hinged, respectively, at the top and bottom of the mouth of the air-discharge, and lever-arms and holding-racks, whereby the outer edges of the direction-boards may be raised or depressed, so as to change the direction of the air-blast, substantially as herein described.

3. In a sawdust-burning and air blast apparatus, the inclined chute through which the material is delivered to the furnace, an air-blast apparatus, a wind-box through which the air is delivered from the air-blast apparatus to the furnace beneath the discharge end of the chute, horizontal and vertically-journaled direction-boards situated within the wind-box, through which the air is delivered, in combination with supplemental wind passages or trunks Q, having the curved lips Q′, projecting into the wind-box, and the vertically-adjustable swinging direction-boards R, whereby a portion of the air is diverted from the wind-box into the supplemental trunk beneath, substantially as herein described.

4. In a sawdust-burning and air-blast apparatus, the inclined delivery-chute through which material is discharged into the furnace, an air-blast apparatus with a wind-box and discharge-neck delivering into the furnace below the feed-chute, vertical and horizontal direction-boards whereby the current of air is delivered so as to discharge the material into any portion of the furnace, in combination with supplemental wind-trunks opening from the bottom of the main wind-box, perforated pipes extending around the front and sides of the furnace, through which air is delivered thereto, supplemental pipes extending from the wind-trunk connecting-pipes, and valves whereby the direction of the current may be wholly or partially changed within said pipes, substantially as herein described.

5. In a sawdust-burning and air-blast apparatus, the inclined delivery-chute discharging into the furnace, a horizontal rotary fan journaled within a fan-case beneath and behind the chute, having a wind-box and discharge-neck through which the air is conveyed and delivered into the furnace beneath the mouth of the discharge-chute, direction-boards I, having vertically-journaled shafts about

which they turn, connecting-rods uniting with the rear ends of the direction-boards, extending through the sides of the wind-box, a crank-shaft with which said rods connect and through which an oscillating motion is given the direction-boards from side to side, the pulley M upon the fan-shaft at right angles with the pulley N of the crank-shaft, a belt passing around said pulleys, and the direction-pulleys P, whereby said belt may be thrown off and the movement of the direction-boards stopped, substantially as herein described.

In witness whereof we have hereunto set our hands.

THOMAS T. SCOTT.
JACOB J. SHEAFOR.

Witnesses:
W. M. LEE,
W. G. FIELD.