(No Model.)

C. C. BARBOUR.

SAFETY GATE FOR FURNACE FEED PIPES.

No. 396,020. Patented Jan. 8, 1889.

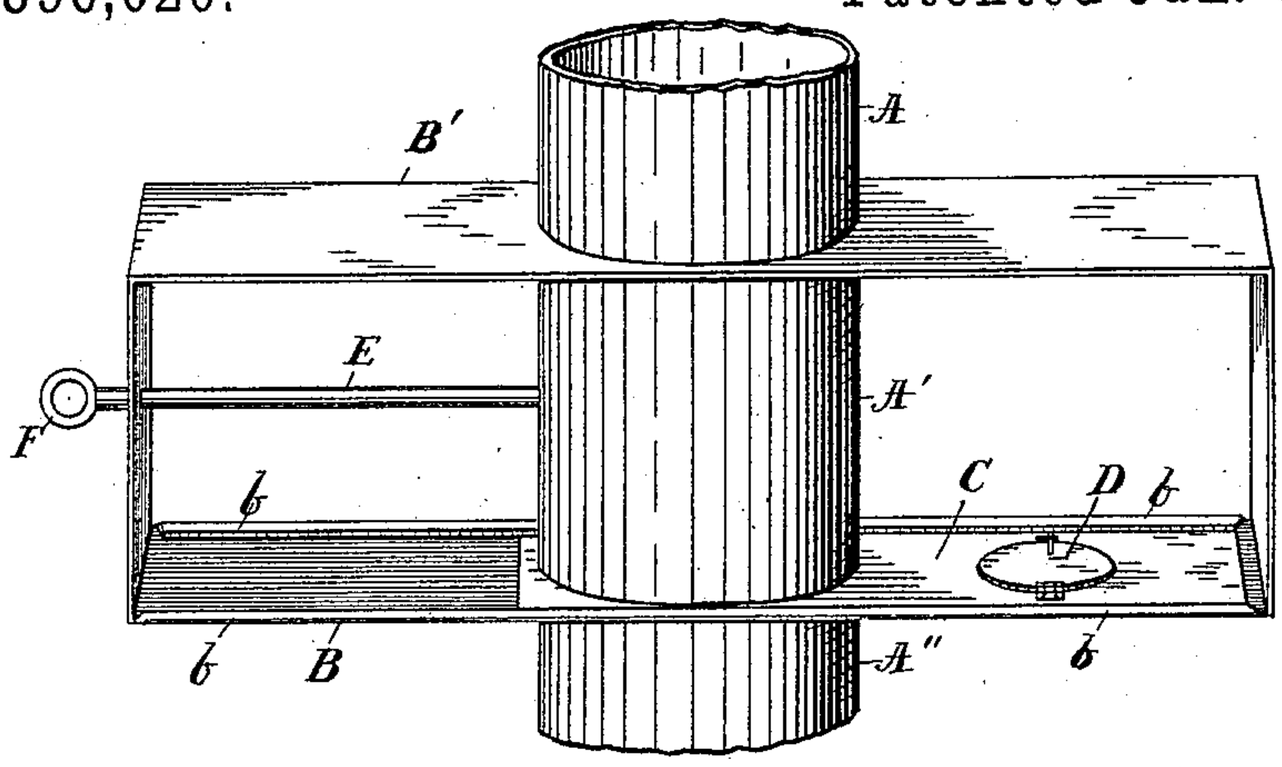

FIG. 1.

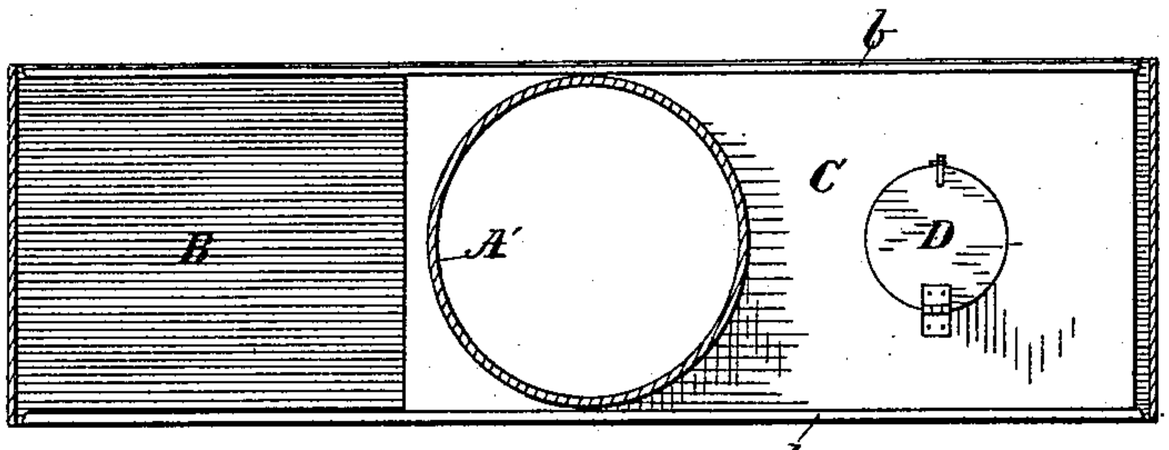

FIG. 2.

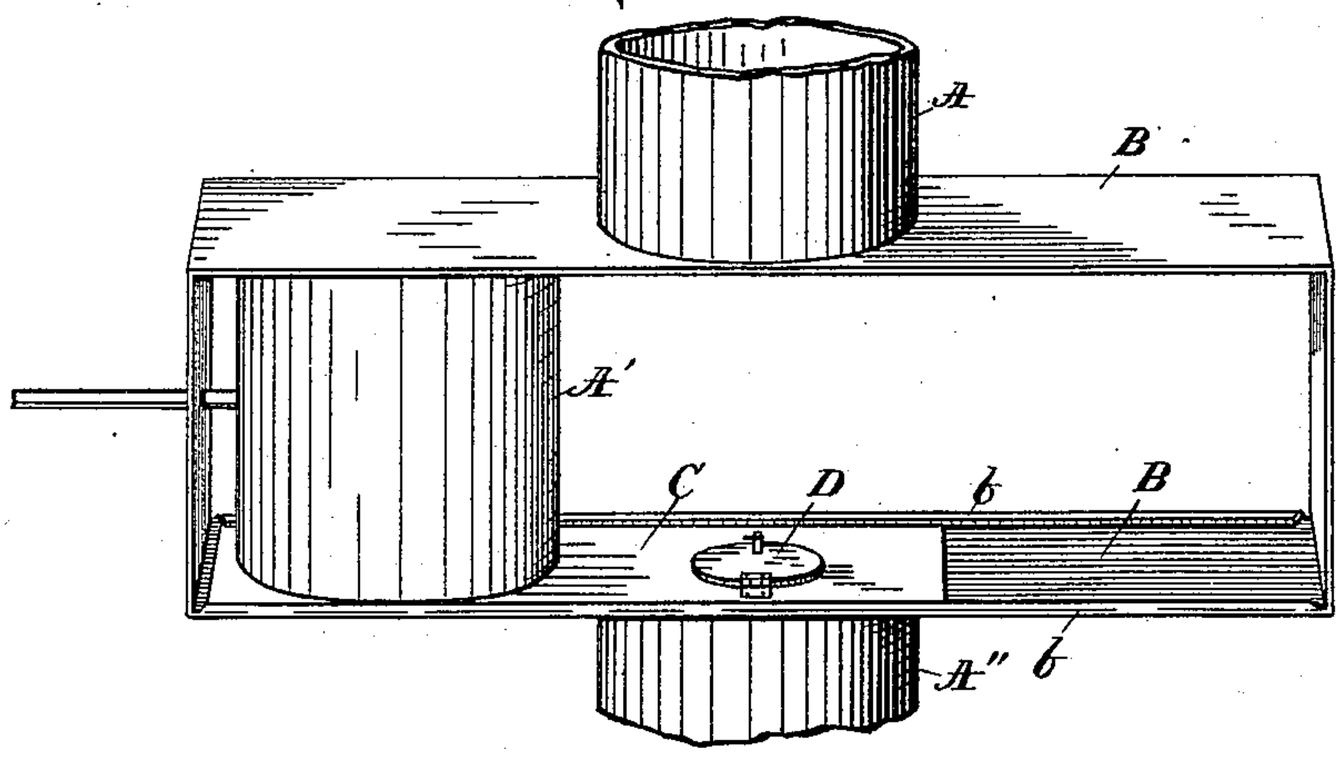

FIG. 3.

Witnesses.

Arthur C. Dennison.

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UNITED STATES PATENT OFFICE.

CHARLES C. BARBOUR, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR OF ONE-HALF TO FOSTER, STEVENS & CO., OF SAME PLACE.

SAFETY-GATE FOR FURNACE FEED-PIPES.

SPECIFICATION forming part of Letters Patent No. 396,020, dated January 8, 1889.

Application filed October 18, 1888. Serial No. 288,472. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. BARBOUR, a citizen of the United States, residing at the city of Grand Rapids, in the county of Kent and State of Michigan, have invented a certain new and useful Safety-Gate for Furnace Feed-Pipes, of which the following is a specification.

My invention relates to a safety-gate for blow-pipes in wood-working factories, and is particularly designed to be used in the pipe leading from the dust-arrester to the arch under the boiler, which pipe is known as the "furnace-feed," and the object of my invention is to provide a gate such that when the exhaust-fan is stopped and the draft through the furnace feed-pipe ceases, a section of the pipe can be removed and the openings closed, so as to prevent the fire or heat from passing back up the chimney. This object I accomplish by means of the mechanism shown in the accompanying drawings, in which—

Figure 1 is a perspective view of that portion of the feed-pipe containing the gate. Fig. 2 is a top plan view of the lower plate shown in Fig. 1, and Fig. 3 is a perspective view of the gate open.

Similar letters refer to similar parts in the several views.

My device is used in connection with various forms of dust-arresters now in common use in wood-working factories. In all these the dust and shavings are drawn from various parts of the building by the exhaust-fan through pipes to the dust arrester or separator. From the bottom of this, dust and shavings are precipitated through a pipe, accompanied by some portion of the air driven by the fan, this being sufficient usually, in connection with the furnace-draft, to create a draft down through the discharge-pipe. This discharge-pipe is shown in the drawings by A, A′, and A″, and is carried down and introduced through the brick-work supporting the boilers into the fire-space beneath them. At some point in the pipe, not far from the boilers and within easy reach of the attendant, I cut out a section of the pipe shown in the drawings by A′. Into the space thus left I insert the rectangular frame formed of the upper and lower plates, B′ B, suitably connected at the ends in the form shown in Fig. 1. This frame is rigidly attached to the upper and lower sections of the feed-pipe, and each plate is provided with circular openings, which, when the device is in the position shown in Fig. 1, register with the ends of the pipe, and the pipe is left continuous and unobstructed. Each of the upper and lower plates is made in the same way, and has its edges turned over to make ways *b b* for the slides C. These slides are a little narrower than the plates, so as to work in the ways, and are of a length at least twice as great as the diameter of the pipe. Between the two slides, and near one end, that section A′ which was cut out of the pipe is inserted and rigidly fastened, the inclosed portions of the slides being cut away so as to make no obstruction in the pipe. These slides also have doors D, which register with the pipe when the gate is open.

E is a rod with the handle F attached to the central section of the pipe and extending through the end of the rectangular frame for operating the gate.

The operation of my device is as follows: At the close of the working-day in wood-working factories the engine is stopped, and the action of the fan creating a current throughout the pipes also ceases. The fire, however, in the furnace is necessarily very hot, and the heat, after this current has stopped, and also to some extent the fire, will have a tendency to work back up the pipe. The passage of the fire back up the pipe can be prevented by an ordinary single gate situated in any usual manner; but as this gate is always situated near the fire it will become overheated, and the dust and shavings, which are liable to drop and accumulate somewhat upon the top of the gate, are in danger of becoming ignited. With my device, however, when the engine is shut down the engineer takes the rod E by its handle and draws out that section of pipe. As it is drawn out the slides C are drawn over and close the openings left in the pipe, thus leaving the two ends of the pipe fully exposed to the air and also tightly closed, so that no fire can pass through and so that the heat, which might otherwise work back up the pipe, will be dissipated by the open-air space. The doors D give access to the upper

and lower parts of the pipe when the gate is shut, and are useful in cleaning out the pipe, if ever necessary. This door in the lower gate will also serve as a check-draft for the fire when opened.

I am aware that double safety-gates have heretofore been constructed in furnace feed-pipes and with an opening in the pipe between the gates for exposure to the air, but I do not know of any such gate that operates by the entire removal of a section of the pipe, having upon the interior of the pipe no obstructions whatever.

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

1. In a furnace feed-pipe, the safety-gate, which consists of a section of said pipe severed from the main part and adapted to be removed from its position, leaving a space exposed to the air between the adjacent parts of the pipe, substantially as described.

2. In a furnace feed-pipe, the safety-gate, which consists of a section of the pipe severed from the main part and adapted to be removed from its position, in combination with the slides adapted to close the apertures left in the pipe by the removal of said section, substantially as described.

3. In a safety-gate for furnace feed-pipes, the combination, with the pipe having a section severed and adapted to be removed, of the upper and lower plates attached, respectively, to the upper and lower remaining parts of the pipe, said plates having guides or ways and the slides moving in such ways or guides, the severed sections of the pipe being fastened between said slides, and said plates and slides provided with perforations registering with the openings in the pipes, substantially as described.

4. In a safety-gate for furnace feed-pipes, the severed section of the pipe adapted to be removed, the slides to which it is attached, the ways for such slides, and the doors in the slides to give access to the pipes when the gate is closed, substantially as described.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

CHARLES C. BARBOUR. [L. S.]

Witnesses:

ARTHUR C. DENISON,

HUGH E. WILSON.