

W. F. WATERHOUSE.

Hop Drier.

No. 80,578.

Patented Aug. 4, 1868.

Fig. 2

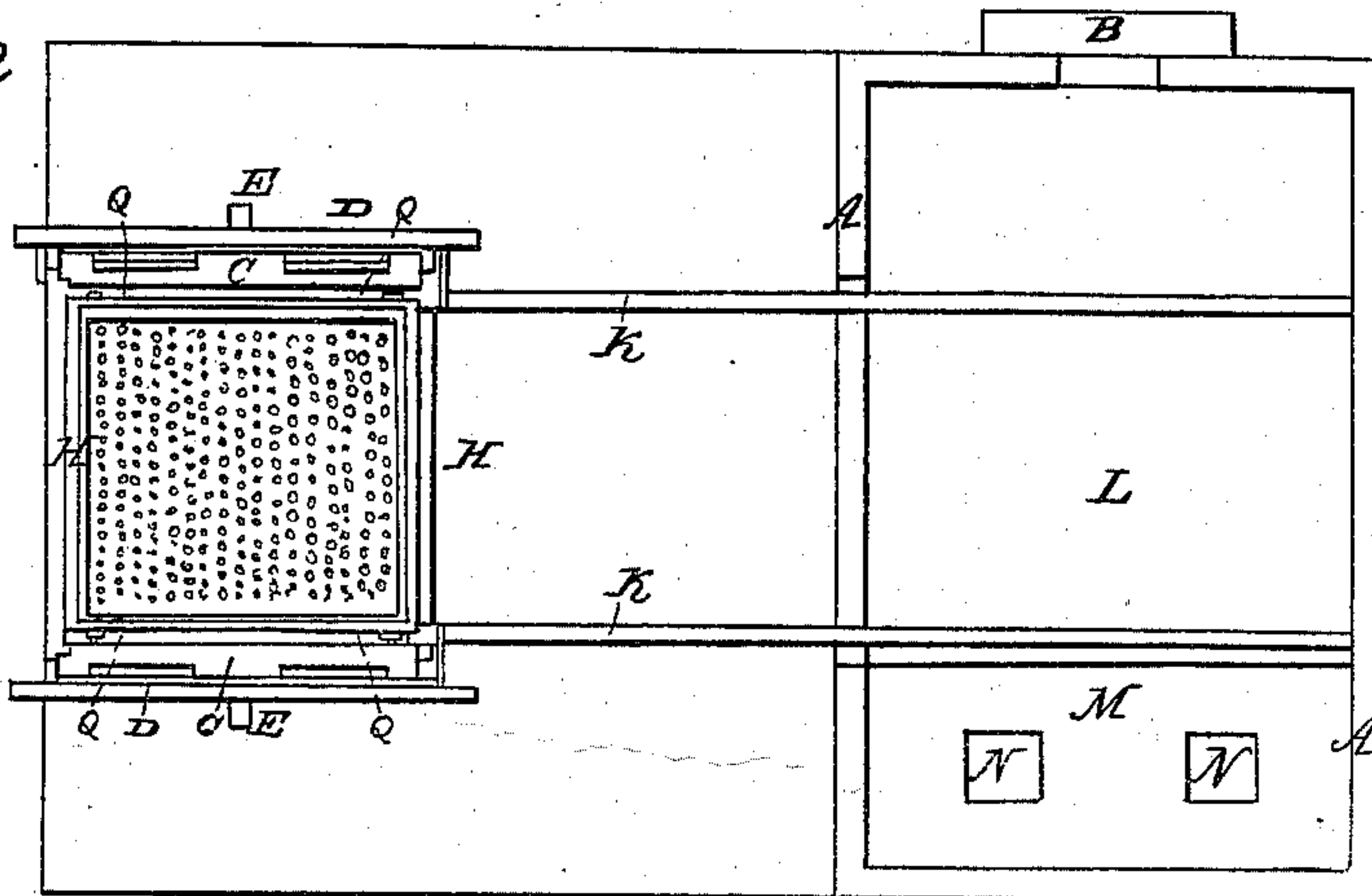


Fig. 1

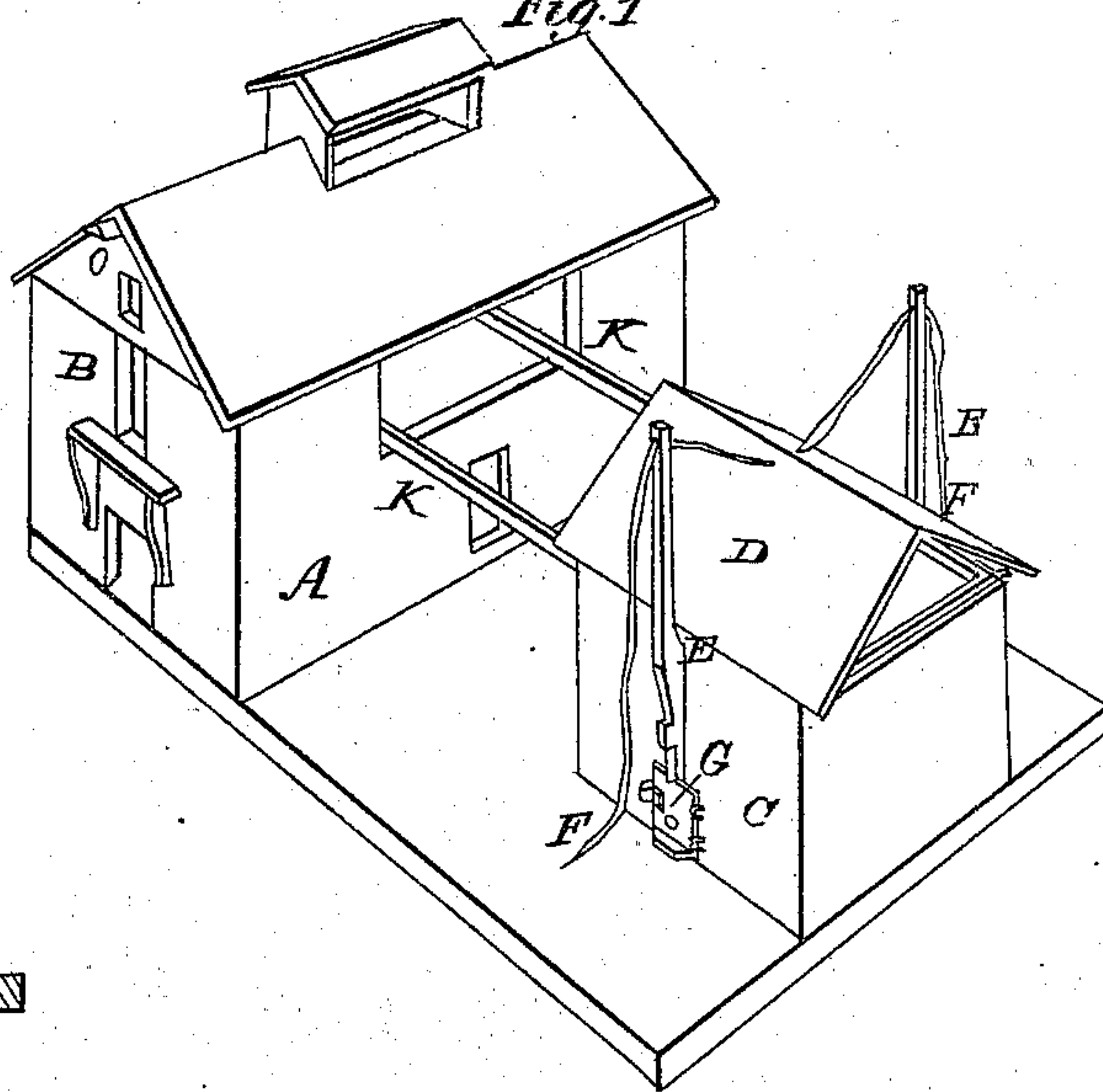
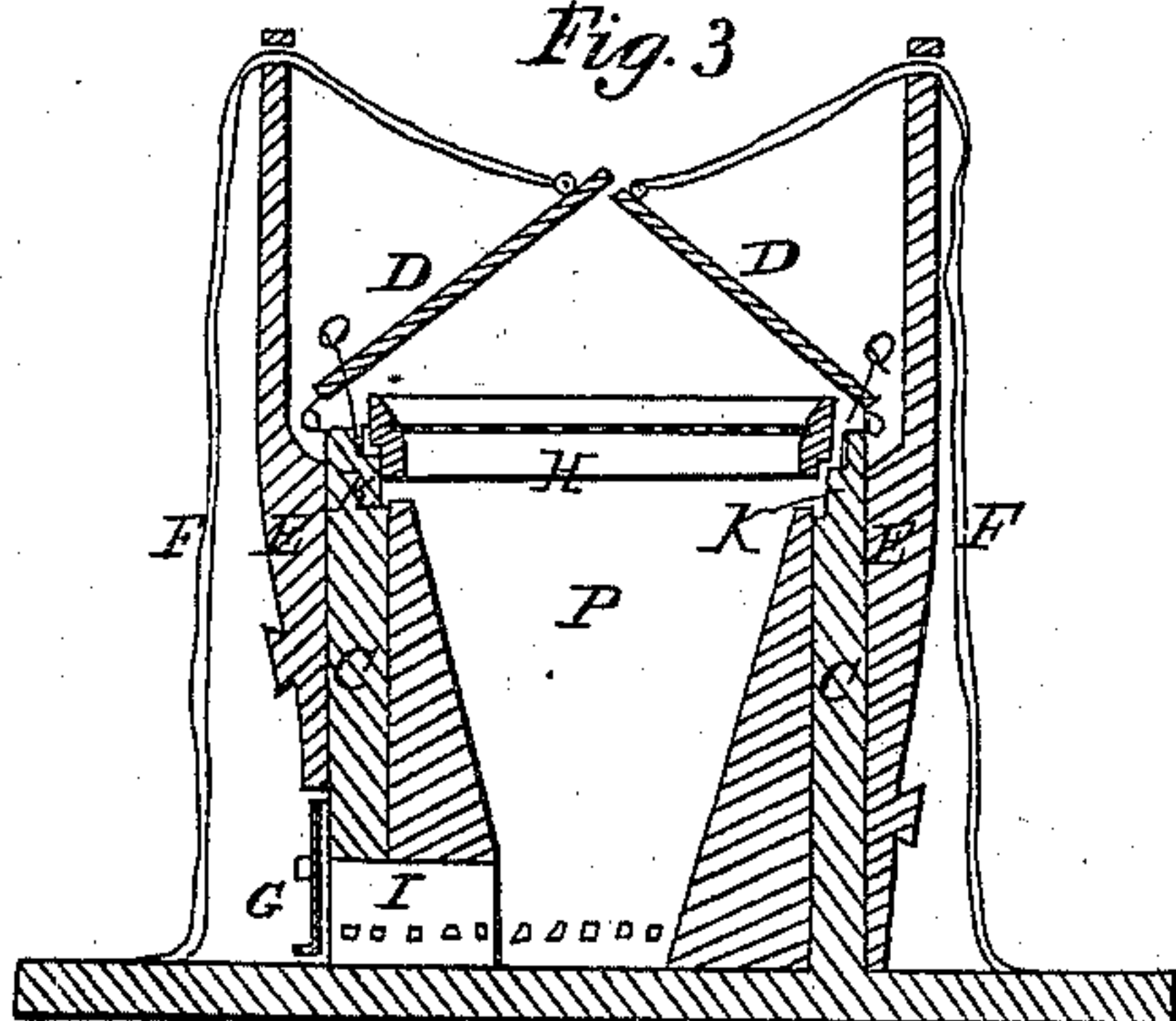


Fig. 3



Witnesses  
Percy B. Smith  
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# United States Patent Office.

W. F. WATERHOUSE, OF WEYAUWEGA, WISCONSIN.

*Letters Patent No. 80,578, dated August 4, 1868.*

## IMPROVEMENT IN HOP-DRIERS.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, W. F. WATERHOUSE, of the town of Weyauwega, county of Waupacca, and State of Wisconsin, have invented a new and useful Improvement for Curing Hops; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a perspective view of the receiving and packing-house and dry-kiln.

Figure 2, plan view of same with the roofs removed.

Figure 3, transverse sectional view of the dry-kiln.

Similar letters of reference in each of the figures indicate corresponding parts.

The nature of my invention consists in a kiln constructed in such a manner as to force a current of heated air through the mass of hops, placed on a movable platform with a reflecting roof, over the hops, open at its ends, to allow the vapor expelled free escape into the open air, and, in connection with this kiln, a receiving and packing-house, sufficiently contiguous for an elevated railway from one to the other, over which a car moves, to convey the hops to and from the kiln, and yet distant enough to be safe from fire.

I construct my kiln of stone or brick, about fourteen feet square, thick at the bottom, and hopper-shaped on the inside, with grates at the bottom, on which to build a fire, with a furnace-door, and suitable openings for the admission of air, with proper means of governing the same. The walls of the kiln I carry up about twelve feet high, straight on the outside, and with a true slope on the inside from bottom to top, the walls at the top about sixteen inches thick. The roof of the kiln is made of thin lumber, and sheathed on the inside with tin, its edges, at the eaves, secured by hinges, so that, by means of ropes, the two parts of the roof may be separated at the ridge, and elevated to an upright position, or may be dropped down flat on the kiln, one part of the roof overlapping the other, and in this way form a tight cover over the kiln, to keep in the heat, when desired.

My receiving and packing-house I make about twenty feet wide by thirty feet long.

A, the walls of the hop-receiving and packing house.

B, platform, level with the second floor, on which the hops are landed, when raised from the load to be taken into the house.

C, walls of the kiln.

D, roof of the kiln.

E E, posts on each side of the kiln, with pulleys on their tops.

F, ropes with which to raise and lower the roof.

G, furnace-door.

H, car, with gauze or perforated-metal top. This car is made square, of wood at the sides, the size of the kiln, about twenty inches high, one side made so as to be lowered, to facilitate removing the hops. This car is mounted on small wheels.

I, furnace-grates.

K K, rails from receiving-house to kiln, on which the car H is moved.

L, main second floor of receiving-house.

M, the floor at one end of the receiving-house, lower than floor L, on to which the hops are thrown when returned from the kiln cured.

N N, openings in floor M, through which the cured hops are thrown to the packing-room below.

O, hoisting-beam at the peak of the gable-end of the receiving-house, over platform B, to attach a tackle to for hoisting the hops from the load.

P, hopper-shaped opening in the kiln.

Q, wheel to car H.

### *Operation.*

Build a fire in the kiln, on grates I, and keep it in operation till the walls of the kiln are well heated, then rake out the ashes and wood, and put upon the grates a small quantity of charcoal and set fire to it. Open the



draught sufficient to produce such heat as required. The hops to be cured we will suppose on a load at the end of the receiving-house, under platform B. They are then raised in a basket or sack to the platform, and taken into the house, and transferred to the car, which will be standing on the railway K, in the house. When the car is filled, it is run over on to the kiln, on the railway K, the roof of the kiln being raised, to let it come to position. This car, when over the kiln, fits tight, so that the heated air must pass through the interstices in the car-cover and through the hops. The roof D is lowered to that position which will best reflect the escaping heat back on the mass of hops, or reflect the solar heat on the hops. The draught is opened to the furnace, to let in air to be heated and pass through the hops. In this way the hops are cured by heated air and in the open air, and their flavor and purity all retained. When the hops are dry enough, the car is moved over the railway K to the packing-house, and the hops are thrown on to the floor M, and when the car is unloaded, it is loaded up again with uncured hops, and returned again to the kiln. As soon as the car is removed from the kiln, the roof D is lowered down flat on the kiln, to keep in the heat.

Hops cured in this way are far superior to those cured in any other way known.

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

1. A furnace, with hopper-shaped interior, in combination with movable roof D, substantially as described.
2. The roof D, hung by hinges at the eaves, so as to perform the threefold purpose of roof, for protection against the weather, as shown in fig. 1, reflectors, to reflect artificial and solar heat, and to cover the kiln, to retain the heat when the hops are off, substantially as described.

W. F. WATERHOUSE.

Witnesses:

JAS. E. DEVENS,  
WM. W. BARNES.