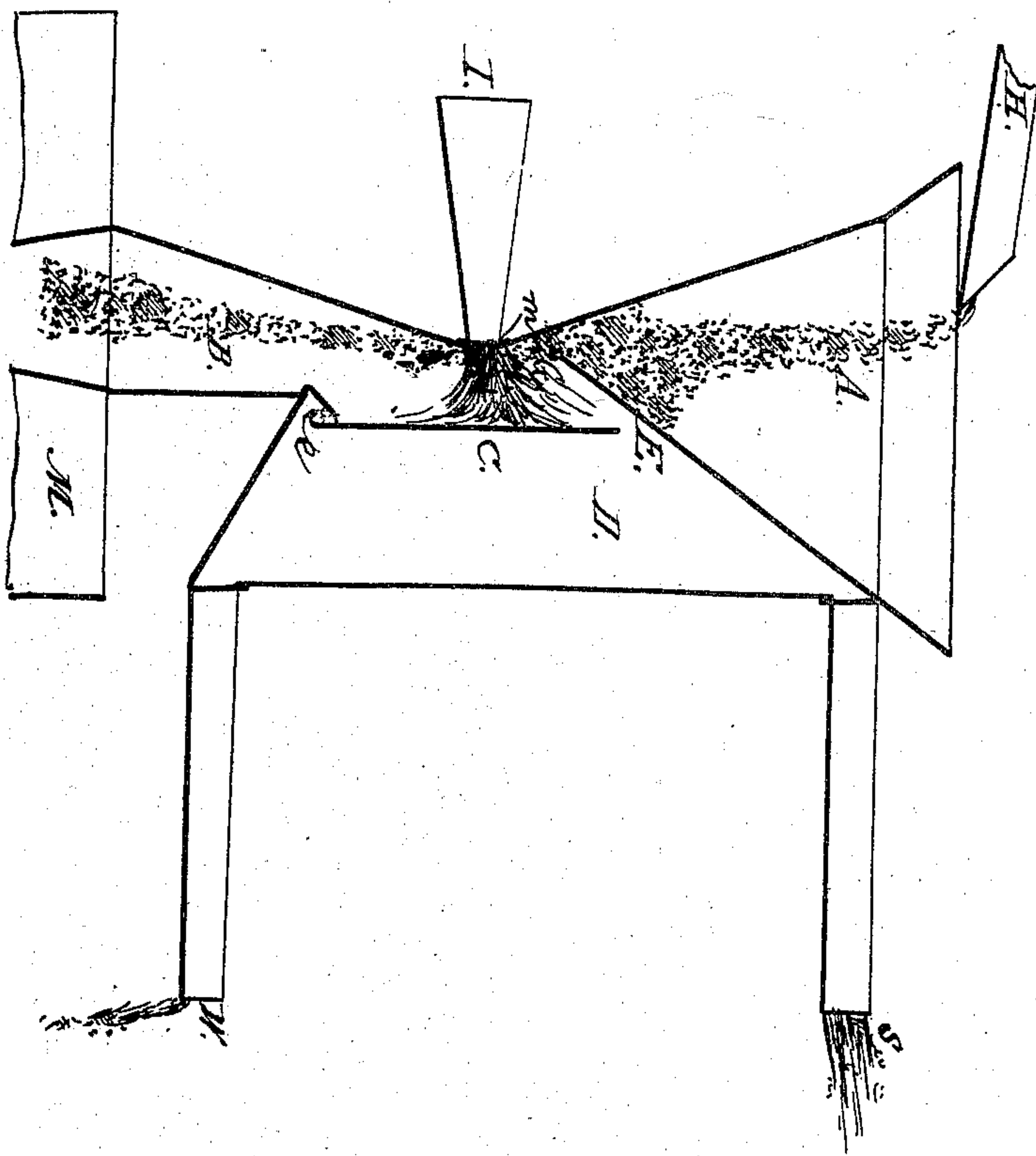


*B.F. Broomell.*

*Preparing Grain.*

*N<sup>o</sup> 7,358*

*Patented May 14, 1850.*





# UNITED STATES PATENT OFFICE.

BENJAMIN F. BROOMELL, OF LONDON GROVE, PENNSYLVANIA, ASSIGNOR TO ISRAEL JACKSON.

## STEAMING GRAIN PREPARATORY TO GRINDING.

Specification of Letters Patent No. 7,358, dated May 14, 1850.

*To all whom it may concern:*

Be it known that I, BENJAMIN F. BROOMELL, of London Grove, county of Chester and State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Flour from Wheat and other Grain, and that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, which makes part of this specification.

The nature of my improvement consists in causing the grain as it passes from the shoe of the hopper to the eye of the millstone, to traverse for a short space a highly heated current of steam, whereby the skin of the grain is at once softened and toughened without disturbing the texture of the body of the kernel. The consequence of this sudden superficial scalding is, that as the grain passes immediately between the millstones, the hull is at once rubbed by the stones clear from the body of the kernel, the bran remains in large flakes and is easily sifted out, the flour is completely detached from the bran, and the yield in true flour is materially increased. I find the average increase to be about five pounds of flour to the bushel of grain.

The manner in which I carry into effect my said invention is to interpose between the shoe of the mill hopper and the eye of the upper mill stone a funnel shaped or other suitable conductor to convey the grain downward toward the mouth of a steam pipe from which is issuing a current of highly heated steam. Below the mouth of said pipe is a conducting passage to deliver the grain into the eye of the stone without coming in contact with the open air. Opposite to the mouth of the steam pipe which conveys steam to the falling grain is a partition within an enlargement of the conducting passage, against which partition the current of steam impinges and is deflected upward so as to pass through the outer compartment of the enlarged passage, and escape thence by a suitable conductor.

While I preserve the main features of my invention I shall give it such form and arrangement of parts as shall be found most suitable for that purpose. The accompanying drawing represents one of the forms which I have found well adapted to this purpose.

A, is a funnel shaped receptacle for the grain as it falls from the shoe H.

I, is a steam pipe conveying steam from any suitable boiler or from the exhaust pipe of a high pressure steam engine to the interior of the passage B, through which a current of grain is represented to be descending into the eye of the millstone indicated at M.

C, is a partition dividing the space B from the space D. E is a passage between a sloping side of the funnel A and the upper edge of the partition C, and e is another passage leading into the lower part of the compartment D. This latter passage is for conveying away any water which might be condensed on the surface of the partition C. The steam from the pipe I makes its entrance into the passage B through the flattened tube-mouth *m*, the length of the aperture being the same as the breadth of the passage (B) in which it is formed. This form makes the current of steam to occupy the whole breadth of the passage, and compels every kernel of the descending grain G, to pass directly through the current of steam.

The purpose of the partition C is to prevent the grain from being thrown away from its course by the jet of steam from *m*, and the object of the space D is to conduct away the waste steam and to keep the partition C from being cooled so low as to condense the steam on its surface. The waste steam may be allowed to escape by the tube S and any water condensed within the apparatus will pass out by the pipe W which may likewise conduct the waste steam and then the tube S will be dispensed with.

My improvement is applicable to mills constructed in other forms and of other materials than ordinary mill stones running one above another. Its important feature is to cause the grain at the moment of passing between the grinding surfaces to traverse a current of hot steam to scald and start the skin by mere superficial action which is not sufficiently intense or long continued to overheat and soften the internal body of the kernel.

The arrangements of the apparatus are designed to effect the above purpose and to convey away the steam and water without allowing condensation within the mill

whereby the action of grinding might be impeded.

I claim—

In combination with a steam pipe (I) and grain passage (B) the deflecting partition (C) for directing the steam upward and the grain downward, whereby the current of grain is steamed by direct contact

with the current of steam at the moment before entering the mill, substantially as 10 herein set forth.

BENJAMIN F. BROOMELL.

Witnesses:

MOSES STARE,  
ISRAEL JACKSON.