

G. DESBROUGH.  
Wind-Mill.

No. 164,271.

Patented June 8, 1875.

Fig. 1.

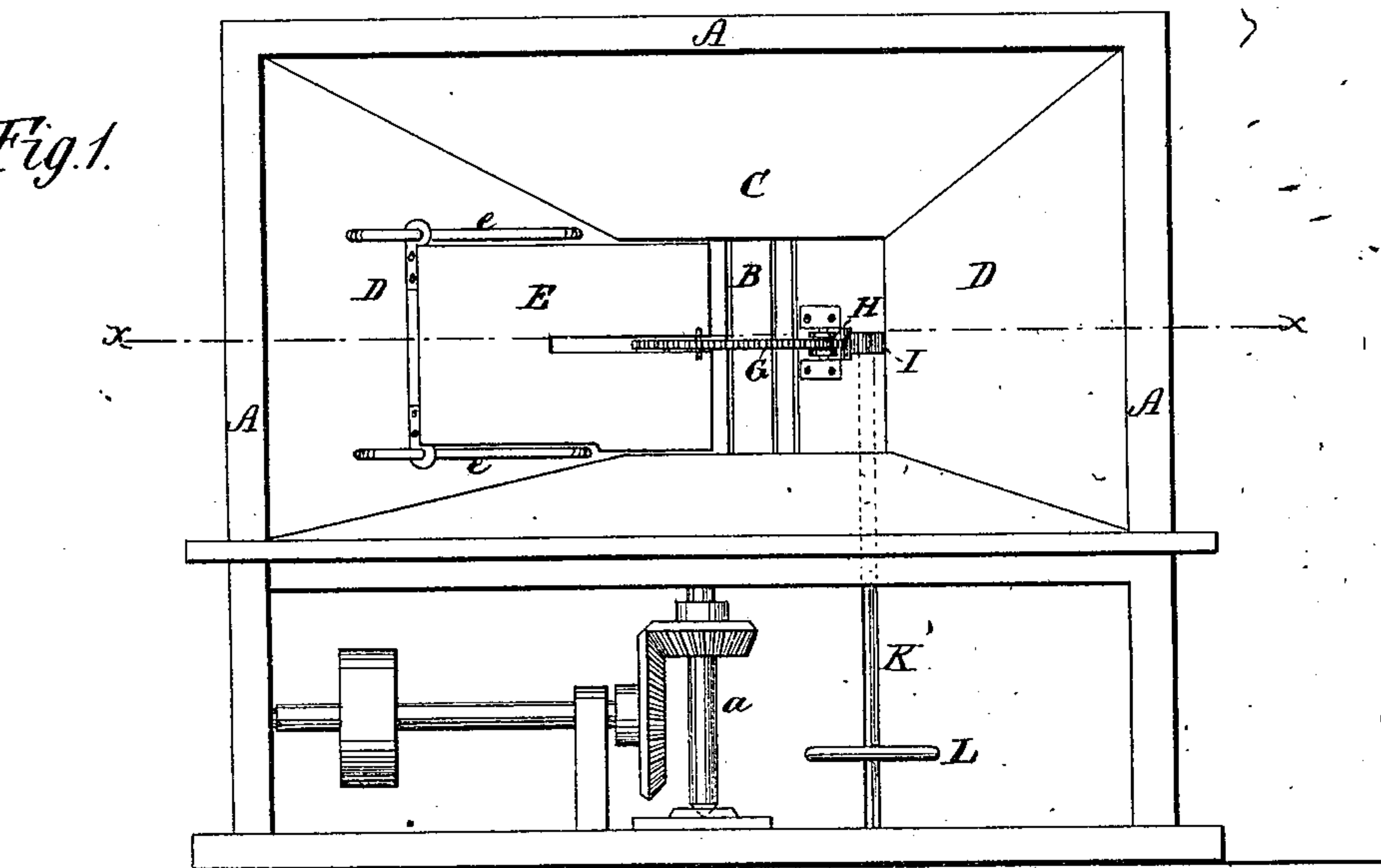
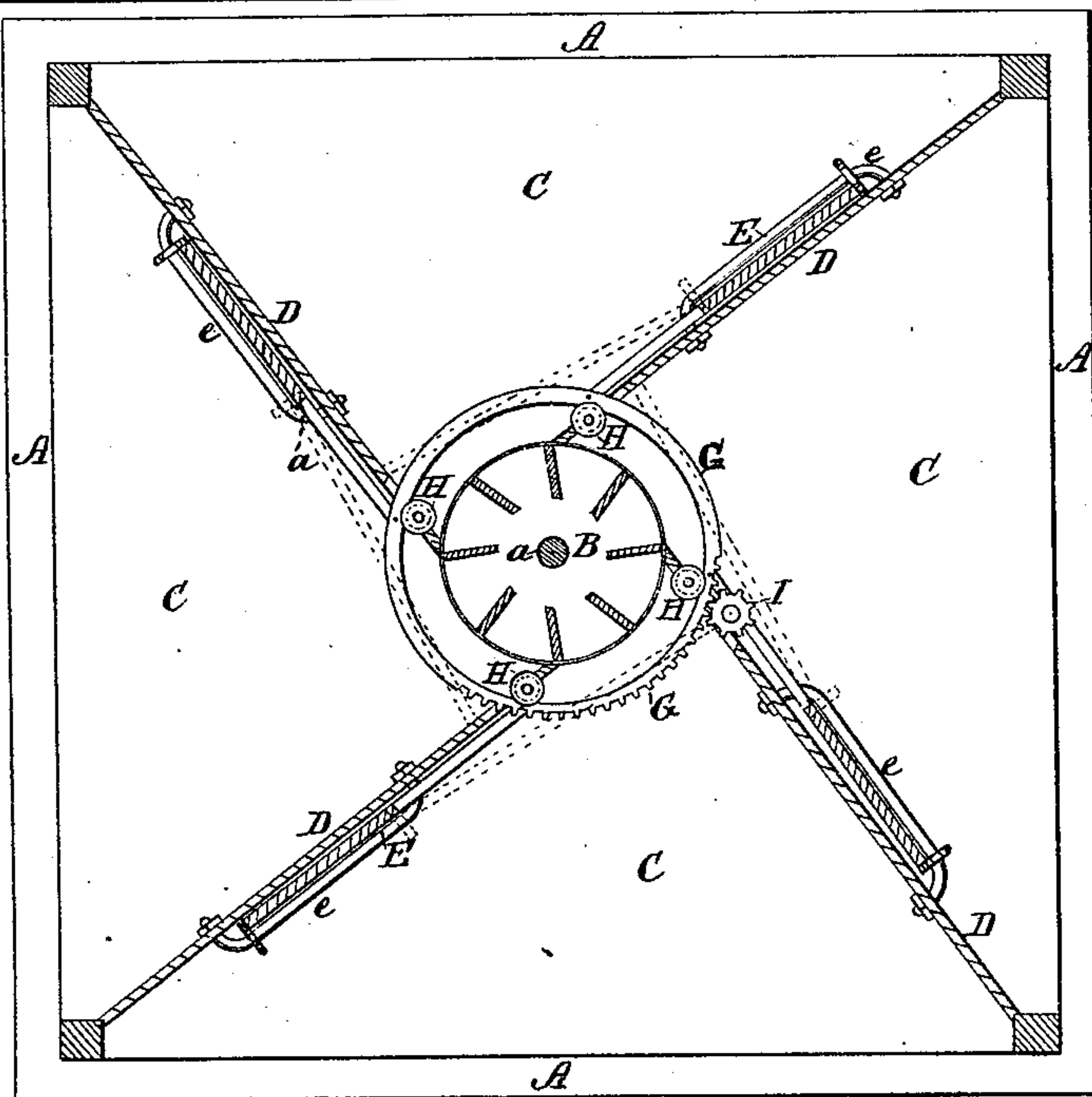


Fig. 2.



WITNESSES:

W. W. Hollingsworth  
Amos W. Hart

INVENTOR:

Geo. Desbrough  
BY

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

GEORGE DESBROUGH, OF UTICA, NEW YORK, ASSIGNOR TO ALEXANDER  
H. CHAPIN, OF SAME PLACE.

## IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. 164,271, dated June 8, 1875; application filed  
May 14, 1874.

*To all whom it may concern:*

Be it known that I, GEORGE DESBROUGH, of Utica, in the county of Oneida and State of New York, have invented a new and Improved Windmill; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a side elevation of the machine, and Fig. 2 a horizontal section on the line  $xx$  of Fig. 1.

My invention is an improvement in the class of windmills in which the wheel is arranged in the center of a fixed frame, and the access of the wind or blast thereto is controlled by slides or gates. The improvement relates to the arrangement of an annular rack or toothed ring, adapted to reciprocate circularly, and flanged friction-rollers for supporting and guiding the same; also slotted gates, which are pivoted to said rack or ring and partake of its movement, so as to be simultaneously opened or closed, in the manner hereinafter described.

In the drawing, A indicates the rectangular frame of the machine, and B the vertical wheel mounted on a vertical shaft,  $a$ . The wheel may be of any desired and suitable construction. The wind is guided, and, as it were, concentrated, upon the wheel by pyramidal side passages C, (to which I make no claim.) The openings in the wheel-case between the vertical partitions D are provided with the sliding gates E, which are supported and guided at their outer ends by parallel rods  $e$ , attached to the partitions D. They are pivoted to and supported by the annular rack G at their inner ends, and slotted thereat, lengthwise, along their middle, to accommodate said rack when it is moved to open or close them.

The dotted lines, Fig. 2, represent the gates closed and the rack projecting through the slots. The rack is supported and guided by

double-flanged friction-rollers H, which are pivoted on studs or journals fixed in the wheel-case. The rack is reciprocated circularly by a pinion, I, meshing therewith, as shown, and mounted on a vertical shaft, K, provided with hand-wheel L. By turning said hand-wheel in one direction or the other the pinion I will cause the rack G to slide over the rollers H, carrying the gates with it, and thus opening or closing them, as the case may be.

Owing to the circular form of the rack-bar, the gates do not move in straight lines, but their inner ends necessarily move a little outward and then inward relatively to the wheel B. This movement is facilitated by the free attachment of their outer ends to the guide-rods  $e$ .

The extent to which the gates are opened of course determines the freedom of access of the blast to the wheel, and, correspondingly, the rapidity of revolution of the latter. When moved inward till their inner ends abut the partitions D, as shown in Fig. 2, the openings in the wheel-case are completely closed, and the revolution of the wheel is impossible.

The arrangement and connection of the rack and slotted gates is such as to admit of their operation with the least possible friction.

I do not claim the combination of a rack and pinion and sliding gate with a wheel for opening or closing ports in the case thereof; but

I claim—

The slotted gates, supported at their outer ends on rods  $e$ , the circular reciprocating rack G, the flanged friction-rollers H, the pinion I, and shaft K, in combination with the partitions D, arranged with relation to the wheel B, as shown and described.

Utica, New York, April 28, 1874.

GEORGE DESBROUGH.

Witnesses:

ABEL B. BUELL,  
ALEX. H. CHAPIN.