

R. G. Hatfield,

Door Hanger.

N^o 43,205.

Patented June 21, 1864.

Fig. 1.

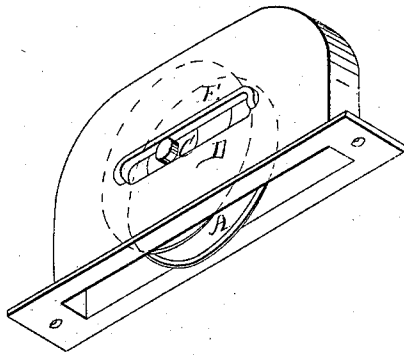


Fig. 2.

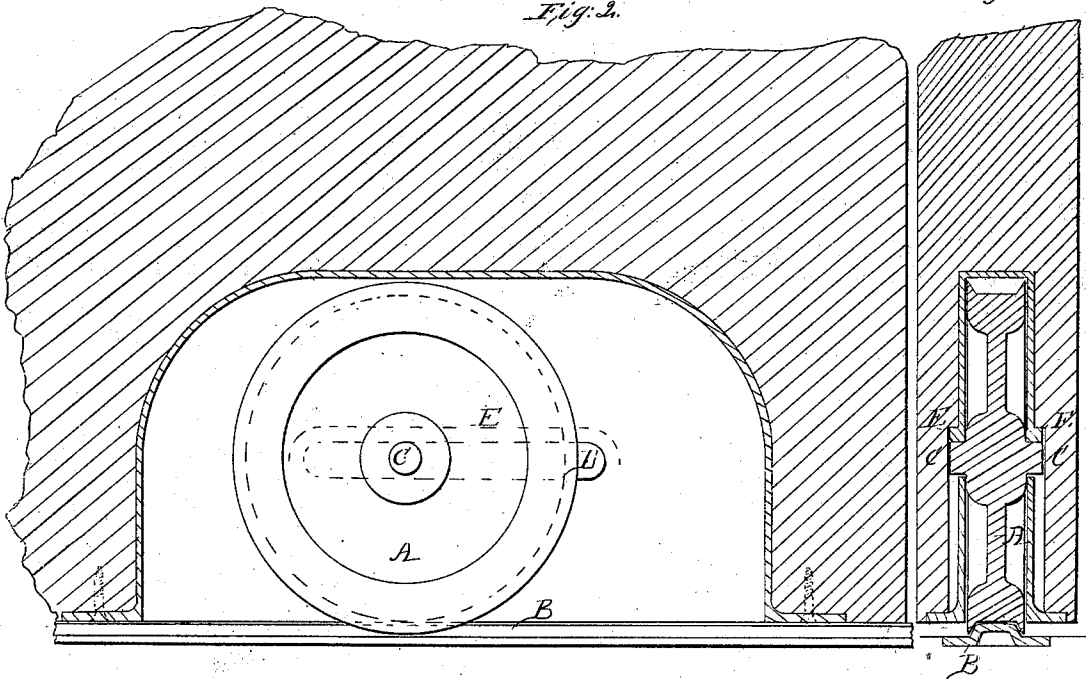
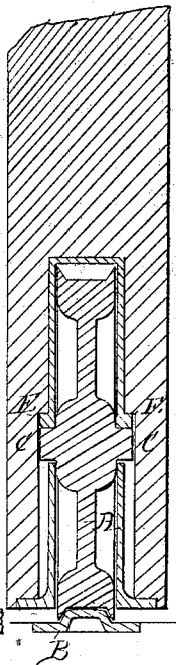


Fig. 3.



Witnesses:

Joseph S. S. S. S.
James E. Ware

Inventor:

R. G. Hatfield

UNITED STATES PATENT OFFICE.

ROBERT G. HATFIELD, OF NEW YORK, N. Y.

IMPROVEMENT IN DOOR-SHEAVES.

Specification forming part of Letters Patent No. 43,205, dated June 21, 1864.

To all whom it may concern:

Be it known that I, ROBERT G. HATFIELD, of the city of New York, in the county and State of New York, have invented a new and Improved Sliding-Door Roller-Sheave; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in providing a sheave-wheel with a movable axis or axle, rolling upon an extended bearing in a slot or otherwise, in such a manner as to be entirely devoid of friction, the operation of the same being like that of an ordinary roller, with this important difference and advantage—namely, that in consequence of one of the bearings being upon a less diameter than the other, the advance of the wheel or roller is a great deal less than that of the door to which the sheave is attached, thus enabling the wheel to be placed within a case or sheave of practicable size.

It is well known that in moving a weight upon an ordinary roller the latter changes place in reference to the object carried a distance equal to one-half the distance traversed by the load, so that if the object carried is moved four feet the roller will move two feet. This fact makes the application of the ordinary roller to the purposes of a sliding sheave altogether impracticable, for where a door is required to move four feet the roller, being started at the edge of the door, would travel two feet, and thus leave the door without support in one-half its width, making it liable to tilt over. In this invention this difficulty is entirely overcome, by making the roller travel a very small fraction of the distance traveled by the door.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, Figure 1 is a perspective view of the sheave; Fig. 2, a longitudinal section, and Fig. 3 a transverse section, and the letters of reference refer to the same parts in each figure.

I provide a wheel, A, running upon a way or rail, B, in the usual manner, or upon a smooth surface, as the case may be; but instead of having the axle C of the wheel to revolve in a fixed socket, I provide a slot, D, and a continuous bearing, E, against and upon

which the axle C revolves, thus acting upon the principle of a roller, and not of a wheel, and thus avoiding friction.

To determine the length of the slot D in any particular case, it is only necessary to observe that it is evident that the distance traveled by the door in one revolution of the wheel is equal to the circumference of the wheel added to the circumference of the axle. The distance that the door has to move, therefore, divided by the sum of these two circumferences, will determine the number of revolutions of the wheel, and consequently of the axle, which number of revolutions, multiplied by the circumference of the axle, determines the distance that the center of the axle travels. To this must be added the diameter of the axle for the two curves at the end of the slot, and the sum will be the length of the slot at the center of the same. From these premises the following, more concise, rule has been deduced, namely: Multiply the distance that the door has to travel into the diameter of the axle, divide the product by the sum of the diameter both of the wheel and axle, and add to the quotient the diameter of the axle. The result will be the length of the slot at the center thereof. By this rule it will be seen that the slot shown in the drawings, three and three-fourths inches in length, is sufficient for a door traveling more than three feet, whereas in the case of an ordinary roller the door would not move more than seven and one-half inches.

I propose to apply this roller in all cases of reciprocal action in which wheels or the ordinary rollers have been or may be applied. In addition to the case of sliding doors, shutters, sashes, &c., I instance those of printing-presses, marine railways, and revolving derricks.

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

The construction and arrangement of a sheave and roller in such manner that when in use the axis of the latter will have imparted to it a translatory as well as a revolving movement upon the bearings formed in the body of the sheave, substantially as described.

R. G. HATFIELD.

Witnesses:

JOSEPH IRELAND,
JAMES E. WARE.