(No Model.)

N. CLARK.

ROLLER FOR SLIDING DOORS.

No. 405,202. Patented June 11, 1889.

Fig. 1.

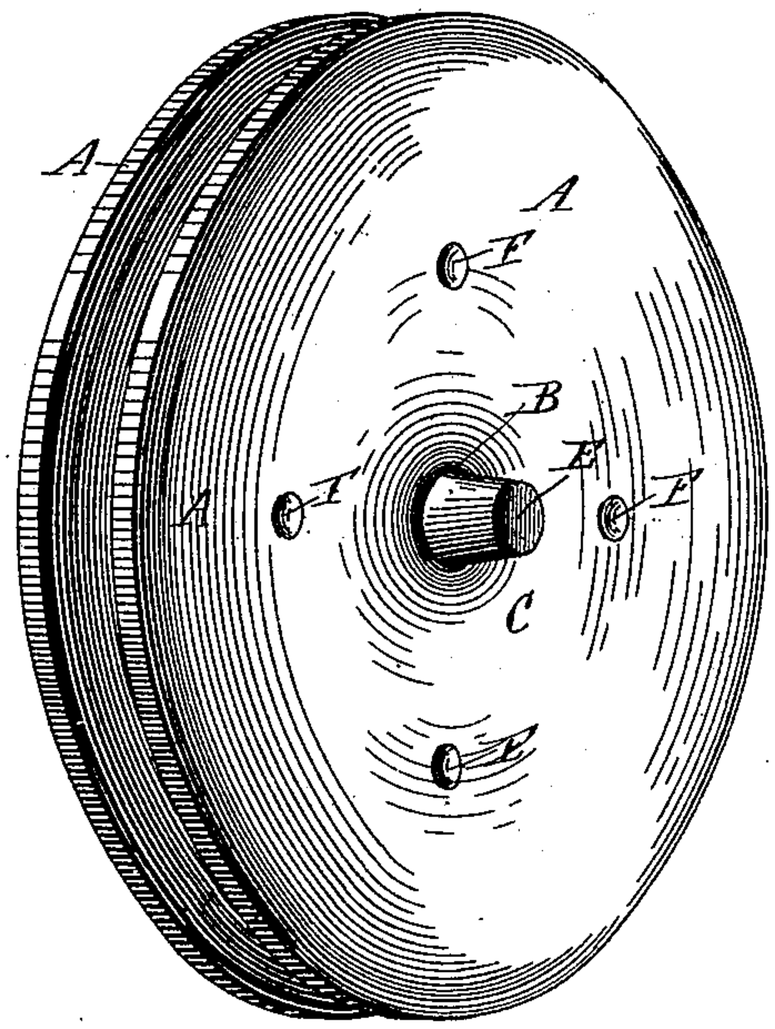
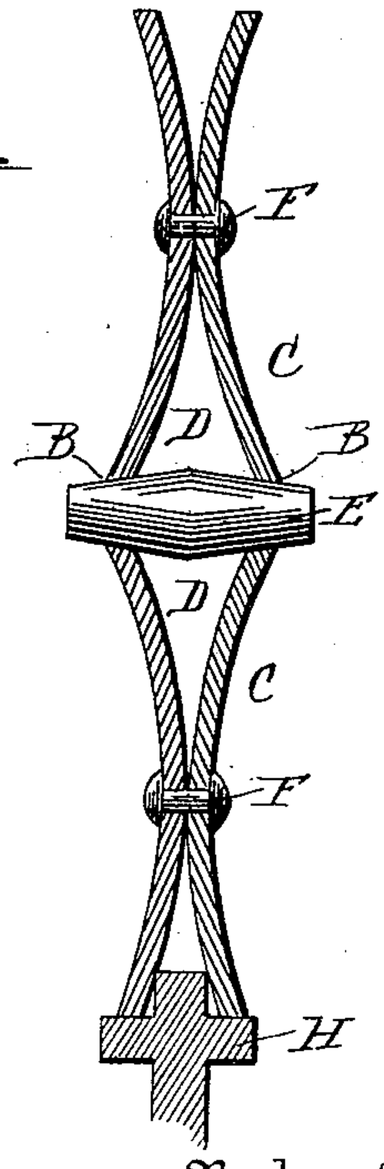


Fig. 2.



Witnesses
Wm. T. Roberts
E. H. Bond.

Inventor
Norman Clark
By his Attorney
John G. Manahan

UNITED STATES PATENT OFFICE.

NORMAN CLARK, OF STERLING, ILLINOIS, ASSIGNOR TO JOHN H. LAWRENCE AND EDWIN F. LAWRENCE, OF SAME PLACE.

ROLLER FOR SLIDING DOORS.

SPECIFICATION forming part of Letters Patent No. 405,202, dated June 11, 1889.

Application filed March 19, 1889. Serial No. 303,850. (No model.)

To all whom it may concern:

Be it known that I, NORMAN CLARK, a citizen of the United States, residing at Sterling, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Rollers for Sliding Doors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention has reference to improvements in sliding-door rollers; and it consists, essentially, in the conformation and interconnection of the two plates constituting the rollers, the object being to simplify the construction and attain the maximum strength and resisting-power of the material used.

As my invention pertains alone to the roller, and the mode of connecting and using the same is well known, I do not deem it necessary to show or describe in this application any of the residue of the hanger.

In the drawings, Figure 1 is a perspective of a roller embodying my invention. Fig. 2 is a central cross-section thereof, exhibiting also the cross-section of a supporting-track.

The aforesaid roller belongs to that class in which there is a double tread, the roller being adapted to bestride an upwardly-projecting tongue or flange H, which serves as a guide therefor, each of the two disks constituting the roller having its tread on one side of said guiding-flange upon a suitable supporting-track.

In the use of barn-door hangers the size and weight of the door and the consequent leverage exerted at times by the door upon the hangers, and the strain, torsional or otherwise, to which the hangers are subjected from the action of the wind and other causes, render it essential that the parts shall be of sufficient strength not only to perform their functions under normal conditions, but also to resist the excessive strain and wrenching to which they are frequently subjected.

A A are circular steel plates of any desired diameter, and are each provided with the central transverse opening B. When the plates A are first cut from the bar, their sides are in straight parallel lines. They are then subjected to the operation of a die, by which a portion of their surface between the opening B and their periphery is formed into the annular concavity C, resulting in the formation of a like annular convexity D on the opposite face thereof, and their centers are thrown out slightly beyond the plane of their outer edges. Each of the wheels A is pressed into the same conformation, which consists in said annular depression or concavity surrounding the walls of the opening B and intermediate the latter and periphery of the plate A upon one side of the latter, and the said annular bulge or convexity on the opposite side thereof corresponding in reverse as to shape and extension with the concavity aforesaid. The plates A are then passed, respectively, over the ends of a transverse pin or axle E, which latter is formed with its greatest transverse diameter at its longitudinal center and tapered from the said center toward each end. The ends of the axle E are inserted in the respective openings B of the plates A, the latter being placed upon said axle with their convexities D inward. The opening B and the outward taper and cross-diameter of the axle E are so proportioned that when said plates are pushed, respectively, toward the longitudinal center of said axle and the convexities D reach mutual contact the axle E will snugly fit the opening B, and the enlarged diameter of said axle intermediate said plates will hold the centers of the latter from any nearer mutual approach. After the convexities D of the respective plates C are brought into mutual contact, as aforesaid, cross rivets or bolts F are fastened through both of said plates in the circle of said contact. These transverse fastenings can be as frequent as may be desired; but four of such equally distributed around and in the circle of said convexities will be found sufficient. The axle E is of course of such length as to project sufficiently beyond the outer walls of the plates A to furnish journals for said roller when placed in any of the usual hangers.

It will be noticed in Fig. 2 that the effect of "dishing" the area of the plate A inter-

mediate the opening B and the periphery is to diverge the respective plates A, when placed in contact, radially from the crest of the convexities D toward both the periphery of the roller and the openings B, so that the latter openings in each of the said plates A, when the latter are mutually fastened, are slightly outside the plane of the periphery of the same plate, and that the plates A, when in such contact, mutually diverge from the point of said contact both toward the opening B and the periphery of said plates. This construction affords the advantage of forming the plates A substantially integral, and at the same time gives them a breadth of bearing on the axle E and a sufficient width of tread upon the track.

Another advantage of my invention, as will be seen by referring to the cross-section thereof in Fig. 2, is that each of the plates A serves as a brace for the other from the point of their mutual contact both toward the axle E and toward the periphery of said plates. As the strain, whether torsional or otherwise, is always between the axle E and the periphery of the roller, the importance of this last advantage can hardly be overestimated.

A further advantage of my construction is that the periphery of the plates A stand in a mutually diverging relation, which renders them less liable to engage with the edge of or ride over the intervening flange or guide H. The axle E, instead of having a tapering periphery each way from its longitudinal center, might be formed with annular shoulders to abut against the inside of the opening B in each plate A; or peripheral threads might be formed centrally upon said axle and the plates A respectively screwed thereon from each end toward the center until they reach the point of mutual contact, as aforesaid. The mode of attaching the centers of the plates A to the axle E is not in itself so important as that of interconnecting said plates between their bearing centers and peripheries.

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

1. The combination of the plates A A, provided, respectively, with concavities C and convexities D and the fastenings F, whereby said plates form mutual braces from their point of contact outward and inward, substantially as shown, and for the purpose described.

2. The combination of the plates A, mutually attached at two or more points intermediate their bearing-centers and their peripheries, and the axle E, provided with peripheral enlargements between the bearing-surfaces of said plates on said axle, substantially as shown, and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

NORMAN CLARK.

Witnesses:
JOHN G. MANAHAN,
EDGAR G. BAUM.