E. F. FRIEND.

Hub.

No. 165,225. Patented July 6, 1875.

Fig. 1

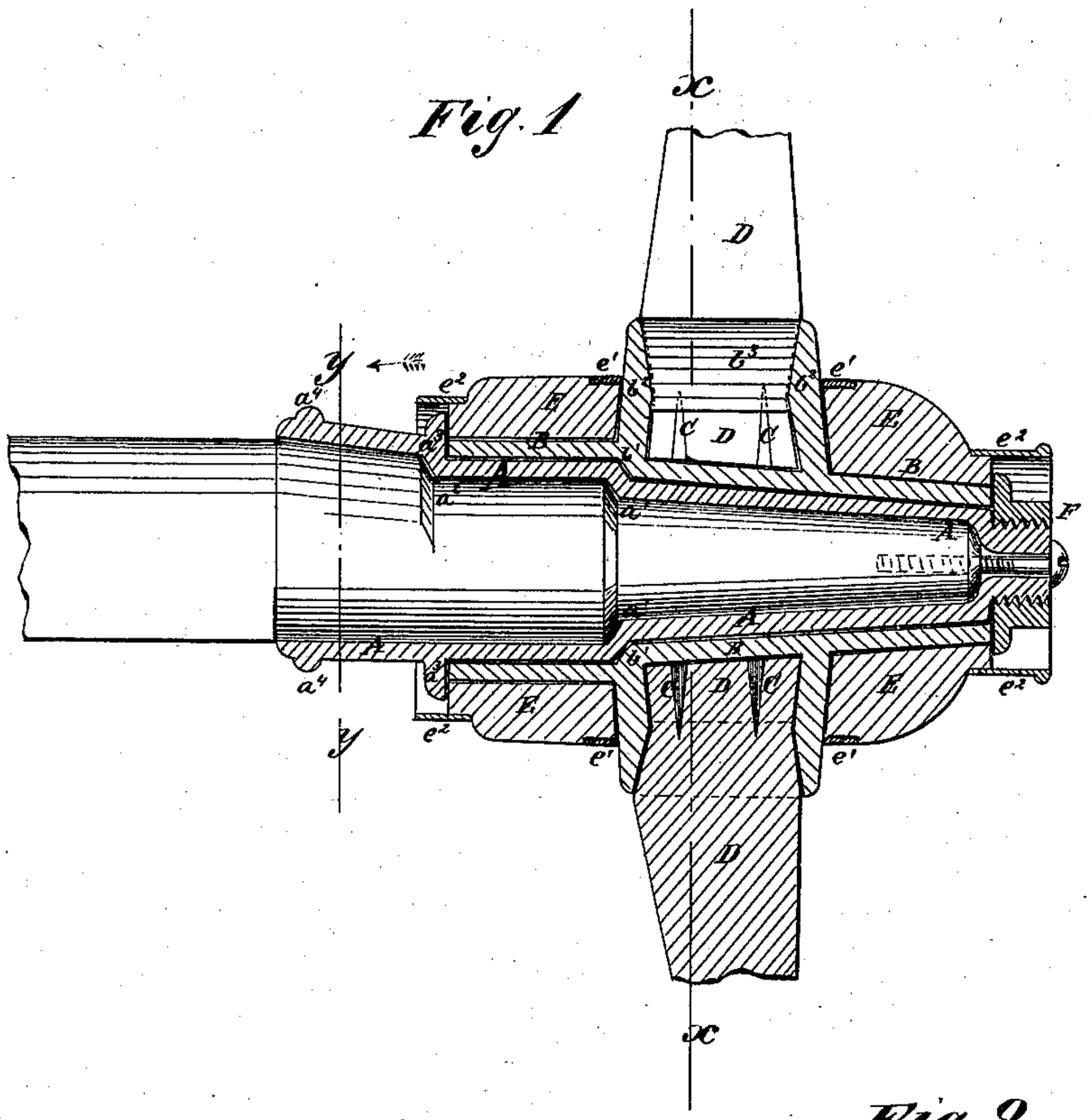


Fig. 3

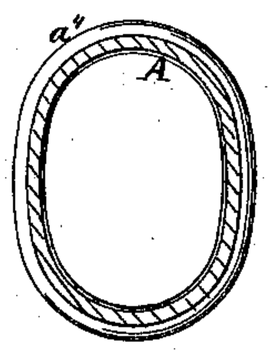
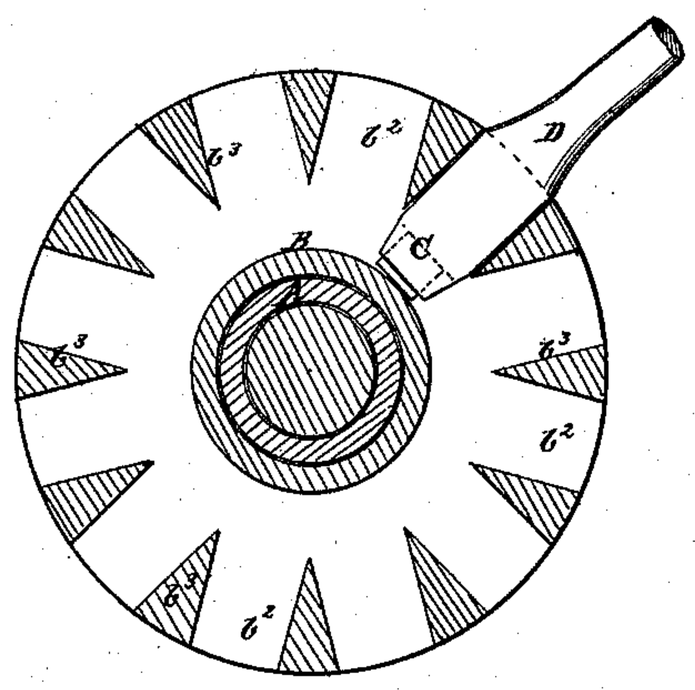


Fig. 2



WITNESSES:

A. W. Almqvist

A. F. Terry

INVENTOR:

E. F. Friend

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDWARD F. FRIEND, OF MARIANNA, ARKANSAS.

IMPROVEMENT IN HUBS.

Specification forming part of Letters Patent No. **165,225**, dated July 6, 1875; application filed April 3, 1875.

To all whom it may concern:

Be it known that I, EDWARD F. FRIEND, of Marianna, in the county of Lee and State of Arkansas, have invented a new and useful Improvement in Axle-Box and Skein for Wagons, of which the following is a specification:

Figure 1 is a longitudinal section of my improved axle-box and skein. Fig. 2 is a cross-section of the same, taken through the line *x x*, Fig. 1. Fig. 3 is a cross-section of the same, taken through the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The invention will first be fully described in connection with the drawing, and then pointed out in the claims.

A is the skein, which is made with a shoulder, a^1, at or near the plane of the inner edges of the spokes, to allow the inner part of the axle-arm to be made larger, and consequently stronger. The skein A is made with a second shoulder, a^1, in its upper part, at the inner end of the hub, to allow the axle-arm to have a farther enlargement upon its upper side. Upon the outer side of the skein A, and at or near the line of the shoulder a^2, is formed a ring-flange, a^3, which serves as a shoulder or stationary washer for the inner end of the hub to bear against. The part of the skein A that projects beyond the inner end of the hub is strengthened by a ring flange or rib, a^4. The forward end of the skein A has a hole formed through it for the passage of a screw to secure it to the axle-arm, upon which it is placed. B is the axle-box, which is made with a shoulder, b^1, to fit against the shoulder a^1 of the thimble-skein A. Upon the axle-box B are formed two ring-flanges, b^2, at sufficient distance apart to receive the inner ends of the spokes between them. b^3 are wedge-shaped partitions cast solid with the flanges b^2, and of such a size as to fill the space between the spokes, and thus form sockets for said spokes. The inner surface of the flanges b^2, between the partitions b^3, is flared a little, as shown in Fig. 1. The inner parts of the inner surfaces of the flanges b^2 are flared or dovetailed, as shown in Fig. 1. C are wedges, which are inserted in the inner ends of the spokes D, so as to be forced into said spokes when they are driven into the sockets to expand the said ends of the spokes into the dovetail of the flanges b^2, and thus tighten them in their places. The spokes D, when first inserted, are not driven quite to the bottom of their sockets, so that should they work loose they may be forced farther in and again tightened by shortening the tire. E is the wooden part of the hub, which is made in two parts, and is driven upon the axle-box B from each end, so that the inner edges of said parts may rest against the outer surfaces of the flanges b^2. e^1 are bands which are driven upon the inner edges of the parts E of the hub to prevent them from splitting. The outer ends of the parts E of the hub are kept from splitting by the mud-bands e^2, which are driven upon their outer ends. F is a nut which is screwed upon the outer end of the thimble-skein B, and the flange of which rests against the outer end of the axle-box B and of the outer wooden part E of the hub.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The axle-skein A, having shoulders a^1 a^2 and ring-flanges a^3 a^4, substantially as and for the purpose set forth.

2. The axle-box B, having shoulders b^1 and ring-flanges b^2, flaring upon the outer part and dovetailed upon the inner part of their inner surfaces, and connected by wedge-shaped partitions b^3, substantially as set forth.

EDWARD FLEMMING FRIEND.

Witnesses:

J. M. HEWITT,

JOHN M. THOMAS.