

No. 633,553.

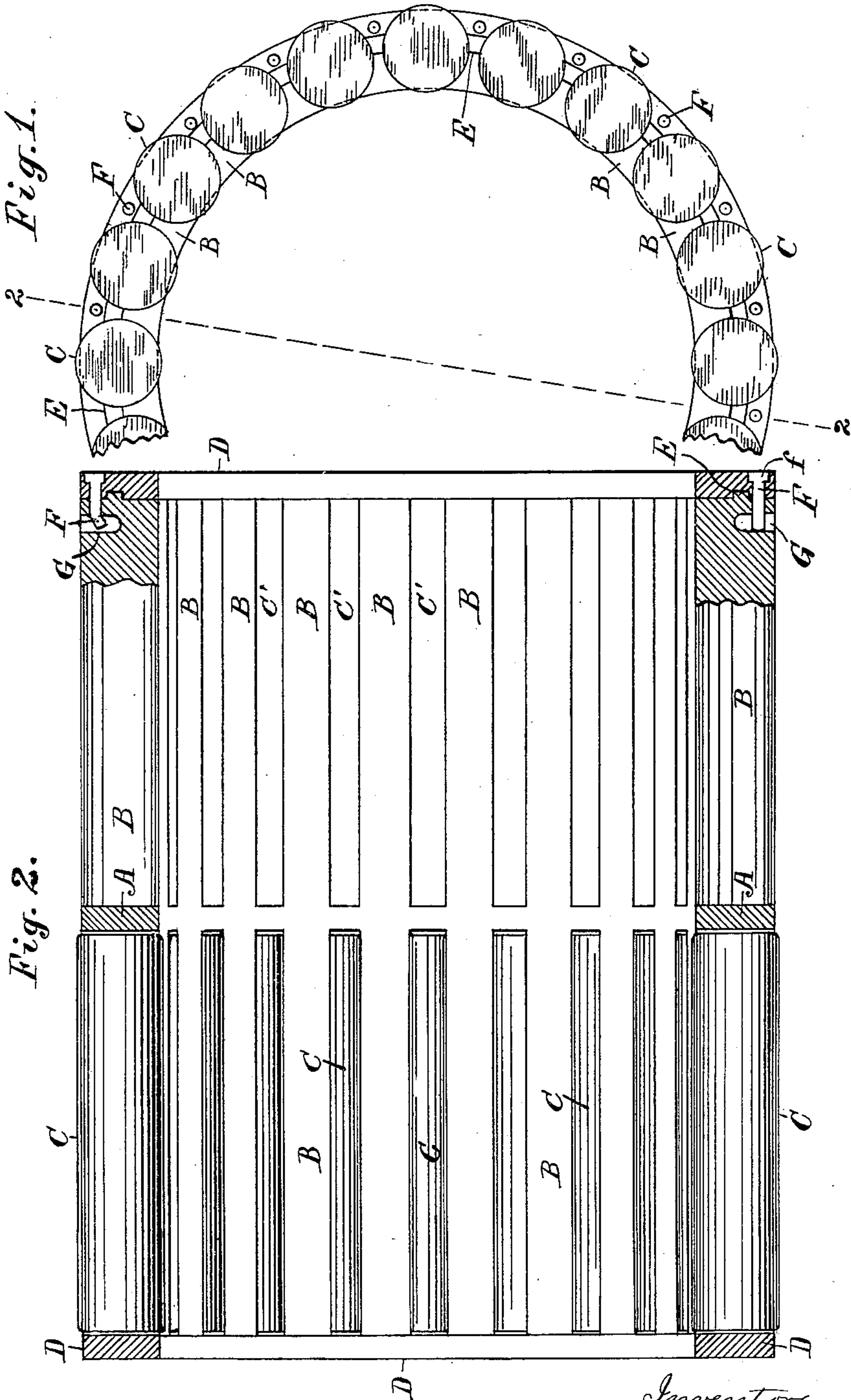
Patented Sept. 19, 1899.

C. S. LOCKWOOD & T. J. TELLEFSEN.
GUIDE FRAME FOR ROLLS IN ROLLER BEARINGS.

(Application filed Apr. 22, 1898. Renewed Feb. 6, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Attest:
Edw. F. Kinsey.
Jacob Marx.

Inventors.
Charles S. Lockwood
Theodore J. Tellefsen, per
Thos. S. Crane, Atty

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Fig. 7.



Fig. 8.

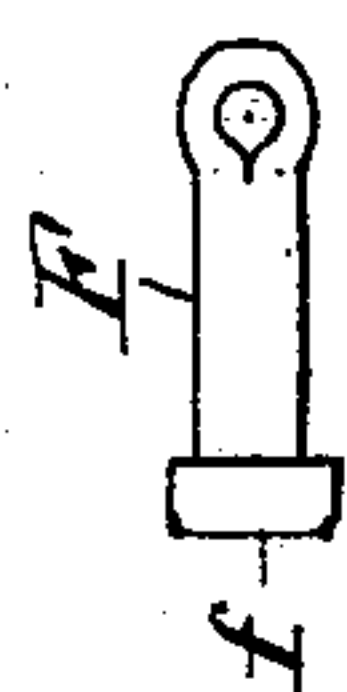
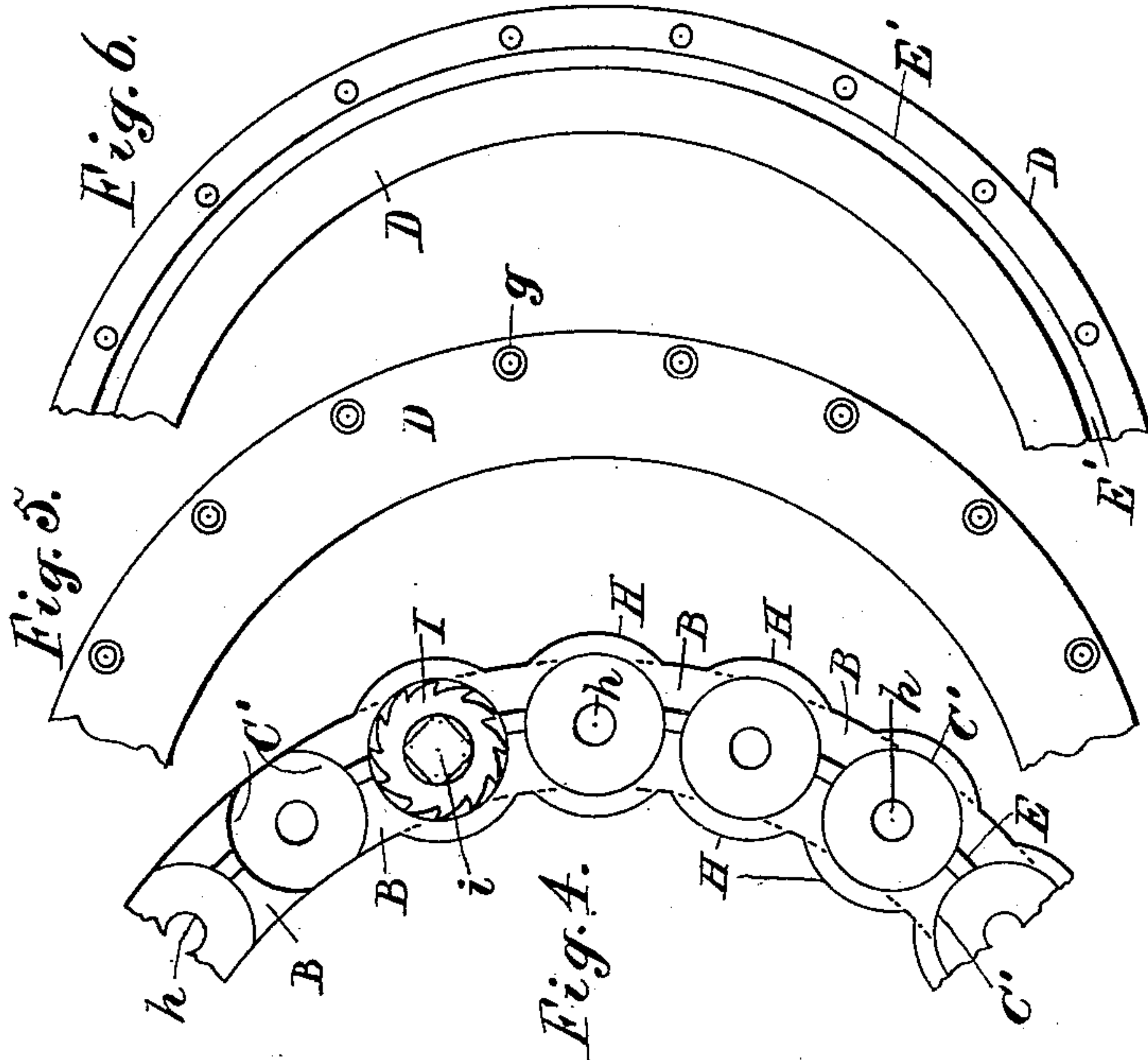
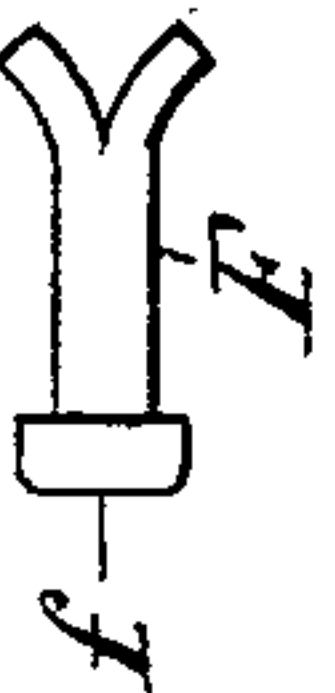


Fig. 10.

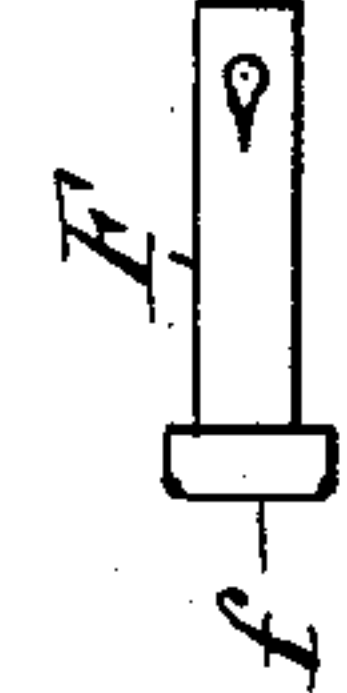
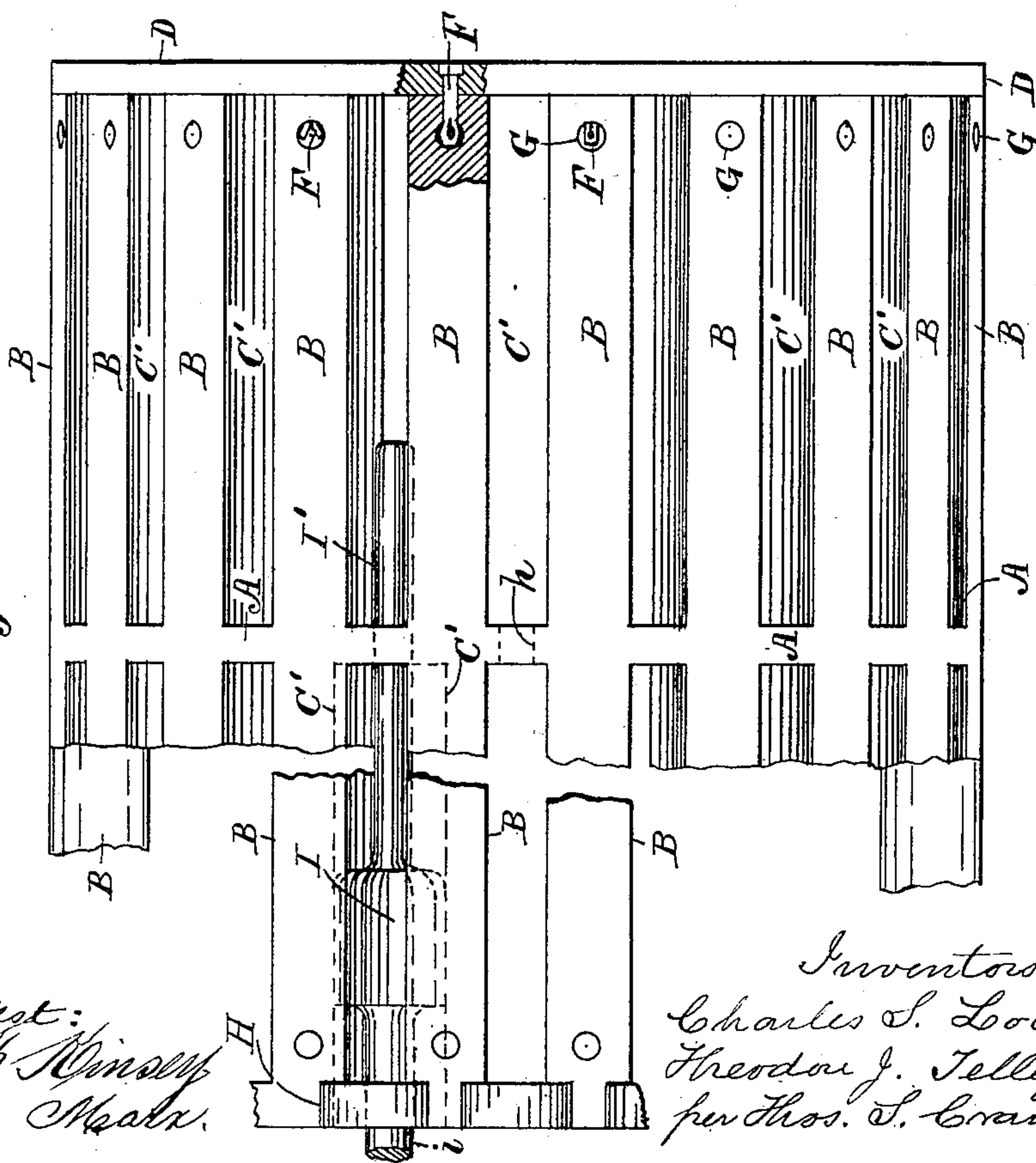


Fig. 9.

Fig. 3.



Attest:
Edw. H. Winslow
Jacob Meade.

Inventors
Charles S. Lockwood
Theodore J. Tellefsen
per Thos. L. Crane, Atty

UNITED STATES PATENT OFFICE.

CHARLES S. LOCKWOOD AND THEODORE J. TELLEFSEN, OF NEWARK,
NEW JERSEY.

GUIDE-FRAME FOR ROLLS IN ROLLER-BEARINGS.

SPECIFICATION forming part of Letters Patent No. 633,553, dated September 19, 1899.

Application filed April 22, 1898. Renewed February 6, 1899. Serial No. 704,738. (No model.)

To all whom it may concern:

Be it known that we, CHARLES S. LOCKWOOD and THEODORE J. TELLEFSEN, citizens of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Guide-Frames for Rolls in Roller-Bearings, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present invention relates to that class of roller-bearings in which the rolls are sustained within a cage or guide-frame adapted to hold them in the required relations before they are applied to the journal. Such cage or frame is of annular skeleton form and retains the rolls in the required positions by means of recesses adapted to retain the rolls separately in place, while exposing the inner and outer sides of the rolls, so as to bear, respectively, upon the axle and upon the casing of the roller-bearing when in use.

The object of the present invention is partly to furnish an improved construction for the guide-frame whereby its strength may be increased and it may be constructed rapidly and economically.

Another object of the invention is to furnish a means of attaching to the end of the guide-frame the ring which is commonly used to retain the rolls within the recesses.

The guide-frame is preferably made with a ring at the center and guide-bars projected outwardly from the same in both directions, forming recesses to receive two sets of rolls. With such construction a ring is secured at each end of the frame to hold the rolls within the recesses; but the means for securing the ring are adapted for use in a guide-frame having only one set of rolls.

These improvements will be understood by reference to the annexed drawings, in which—

Figure 1 is an end view of the guide-frame with the rolls in the recesses and one side of the frame broken away for want of space upon the drawings. Fig. 2 is a longitudinal section of the guide-frame through the centers of the opposite rolls, with the rolls shown in place at one end of the frame and at the other end of the frame the rolls omitted and

the opposite guide-bars broken away upon the line 2 2 in Fig. 1. Fig. 3 is a side view of the guide-frame without the rolls with one end partly broken away for want of space upon the drawing and a portion of the periphery at the other end broken away (where hatched) to the center of one of the bolts. Fig. 4 is an end view of part of the frame-casting, showing the means for boring the recesses. Fig. 5 is an exterior view of part of the end ring, and Fig. 6 an interior view of the same. Fig. 7 is a side view of one of the bolts with split end, and Fig. 8 a view of the same bolt with the ends spread apart. Fig. 9 is a side view of a perforated bolt, and Fig. 10 a view of the same bolt with the end expanded.

The guide-frame is shown with central ring A, having the guide-bars B formed integral therewith, as by casting, the adjacent sides of the guide-bars being bored out to form cylindrical recesses C' for retaining the rolls C.

D designates an end ring applied to the outer ends of the guide-bars and centered thereon by an annular sectional tongue E, formed upon the ends of the bars to fit an annular groove E' upon the inner side of the ring, as shown in Fig. 6. The sections of the tongue extend only across the ends of the guide-bars, and the tongue is not, therefore, continuous; but the groove E' is for convenience made continuous upon the inner side of the ring D. The ring is secured upon the ends of the guide-bars by bolts F, which are extended through the ring and through the outer ends of the guide-bars into radial sockets G, formed upon the outer side of each bar. The end of the bolt may be locked in the socket by various means, as by bending laterally, as shown in Fig. 2, by splitting the end of the bolt, as shown in Fig. 7, and spreading the end of the bolt apart, as shown in Fig. 8, or by perforating the end of the bolt, as shown in Fig. 9, and expanding the end within the socket G, as shown in Figs. 3 and 10. It will be observed that no detachable fastening, as a nut, pin, or cotter, is applied to the end of the bolt, as all such features would be liable to detachment, but the end of the bolt is distorted or altered in form sufficiently to hold it securely in its place and is incapable

of displacement until such end is absolutely cut off or carefully bent to its former shape.

Where screws have been used to secure a ring upon the end of a guide-frame, it has been found that the motion of the guide-frame when traveling about the journal with the rolls tends to jar the screws loose until they interfere with the movement. The bolts shown herein are firmly secured without any separable attachment, as they are furnished each with a head *f* at the outer end, which is sunk into a counterbore *g* in the outside of the ring, (shown in Fig. 5,) and their inner ends are locked to the guide-bar by any of the means shown in Figs. 2, 8, and 10. The tongue-and-groove engagement prevents the ring from shifting upon the ends of the guide-bars, and thus avoids lateral strain upon the bolts, so that they are able to hold the ring securely and permanently in place. In practice the sockets *G* are formed by holes drilled to a suitable depth in the outer sides of the bars *B*, and the bolt-holes are then drilled through each ring and end of each bar into such socket. The inner end of each bolt is bent or expanded to lock it in the socket after the rolls *C* are placed in their sockets and while the ring is clamped firmly upon the ends of the bars. The ring, with the aid of the tongue *E* and the bolts *F*, serves to greatly strengthen the guide-frame, and it can be detached from the same to remove the rolls, when necessary, by driving a suitable punch into each of the round sockets *G* and cutting off the end of the bolt thereby.

The guide-frame, as shown in Fig. 1, forms a skeleton ring of less thickness than the diameter of each roll, so that the recesses in the ring are open upon the inner and outer sides to expose the rolls for contact with the journal and the casing of its bearing.

The invention includes means for boring out the recesses *C'* between the guide-bars *B* without making the rim primarily of greater thickness than the rolls, and such means consists of short arch-pieces *H*, (shown in Figs. 3 and 4,) connecting the guide-bars at the outer ends of the recesses. The arch-pieces *H* are shown in Fig. 4 connecting five of the guide-bars, the guide-frame being in practice cast with the ring *A* and the bars *B* in one piece, with the recesses open upon the inner and outer sides, as shown in Figs. 2 and 3, excepting at the ends, where all the guide-bars would be yoked together by the arch-pieces *H*. A drill-guide is then inserted within the bottom of each recess and holes *h* are drilled through the central ring *A* to guide the stem of a reamer *I* for boring out the recess.

Three of the guide-bars (with two of the recesses) are shown at the left end of the guide-frame in Fig. 3, while the remainder of the frame at the left end is omitted for want of space upon the drawing, and the reamer *I* is shown in one of the recesses with a guide-stem *I'* extended therefrom through the hole

h, while the shank *i* of the reamer extends outward between the arch-pieces *H*. The shank is shown broken for want of room upon the drawing and smaller than the head of the reamer; but the whole reamer may, if desired, be made with parallel sides, by which it would be held straight while boring the recess. The shank of the reamer is drawn small in Fig. 4 to exhibit the cutting edges of the tool.

Where the guide-frame is formed with a central ring *A* and recesses at opposite sides of the same, the recesses *C'* are bored inwardly from the opposite ends of the guide-bars, and the arch-pieces *H* are then filed or cut away, as shown at the recess *C'* at the upper end of Fig. 4 and upon the entire guide-frame shown in Figs. 1 and 2, by which the rolls are exposed throughout the entire length of the recess. The arch-pieces *H* serve to connect the bars *B* at both ends of the guide-frame during the smoothing of its ends and the formation of the tongue *E* in a turning-lathe, and the arch-pieces thus serve an additional function besides the supporting of the guide-bars and the guiding of the reamer in boring the recesses.

The ring *D* may be termed a "clamp-ring," as it serves to clamp the rolls movably in the recesses *C'* and also operates to clamp the ends of the bars *B* firmly together, and thus holds the entire set of antifriction-rolls securely in the desired relation within the casing of the roller-bearing.

By making a ring *A* at the middle of the frame the bars *B* are stiffened materially. The frame may be divided longitudinally when it is required to apply the same to a shaft or journal from the side.

We have observed above that the tongue and groove and the locking-bolts, which form the means for securing the clamp-ring *D* upon the outer ends of the guide-bars, are equally applicable to a guide-frame whether the guide-bars project from both sides or from one side only of the integral ring *A*, and we have therefore claimed such means of securing the clamp-ring upon the guide-bars with either construction.

The bars *B* are projected from the opposite sides of the ring *A* merely by placing the ring intermediate to the ends of the bars instead at one end of the same, it being understood that the length of the bars is arbitrarily governed by the length of the bearing within which the roller-frame is to be used.

Having thus set forth the nature of the invention, what is claimed herein is—

1. The guide-frame for an annular set of antifriction-rolls, comprising the ring *A*, the guide-bars *B* provided each near the outer end with the socket *G* and integrally connected together by the said ring, the clamp-ring *D* fitted to the outer ends of the guide-bars, and the bolts *F* extended through the ring into the sockets, and locked therein, as and for the purpose set forth.

2. The guide-frame for an annular set of
antifriction-rolls, comprising the ring A, the
guide-bars B integrally connected by the said
ring and provided at the outer ends with the
5 annular tongue E and upon the outer side
with the series of sockets G, the ring D hav-
ing the groove E' fitted to the tongue, and the
bolts F having heads *f* sunk in the ring and
their ends extended into the sockets G and
10 locked therein, substantially as herein set
forth.

3. The combination, with a double set of
antifriction-rolls, of a guide-frame compris-
ing the ring A with two sets of integral guide-
15 bars B extended outwardly therefrom in op-
posite directions, and provided each upon the
outer side with the socket G, and having the
cylindrical recesses C' (equal in number to
the double set of rolls) upon the opposite sides
20 of the ring A, the clamp-rings D fitted to the
outer ends of the guide-bars, and the bolts F
extended through the rings into the sockets
and locked therein, as and for the purpose
set forth.

25 4. A casting for a guide-frame for an an-
nular set of antifriction-rolls, comprising the
guide-bars B connected at one end with the

integral ring A, and at the opposite end by the
arch-pieces H, the guide-bars forming the cy-
lindrical recesses C' with openings upon their 30
inner and outer sides, as and for the purpose
set forth.

5. The casting for a guide-frame for an an-
nular set of antifriction-rolls, comprising the
guide-bars B connected at one end with the 35
integral ring A, and at the opposite end by
the arch-pieces H, the guide-bars forming the
cylindrical recesses C' with openings upon
their inner and outer sides, and the ring A be-
ing provided in the center of each recess with 40
the hole *h* to guide a boring-tool, substantially
as herein set forth.

In testimony whereof we have hereunto set
our hands in the presence of two subscribing
witnesses.

CHARLES S. LOCKWOOD.
THEODORE J. TELLEFSEN.

Witness as to both subscribers:

THOMAS S. CRANE.

Witness as to T. J. Tellefsen:

EDWARD F. KINSEY.

Witness as to C. S. Lockwood:

LEAVITT MERSEREAU.