

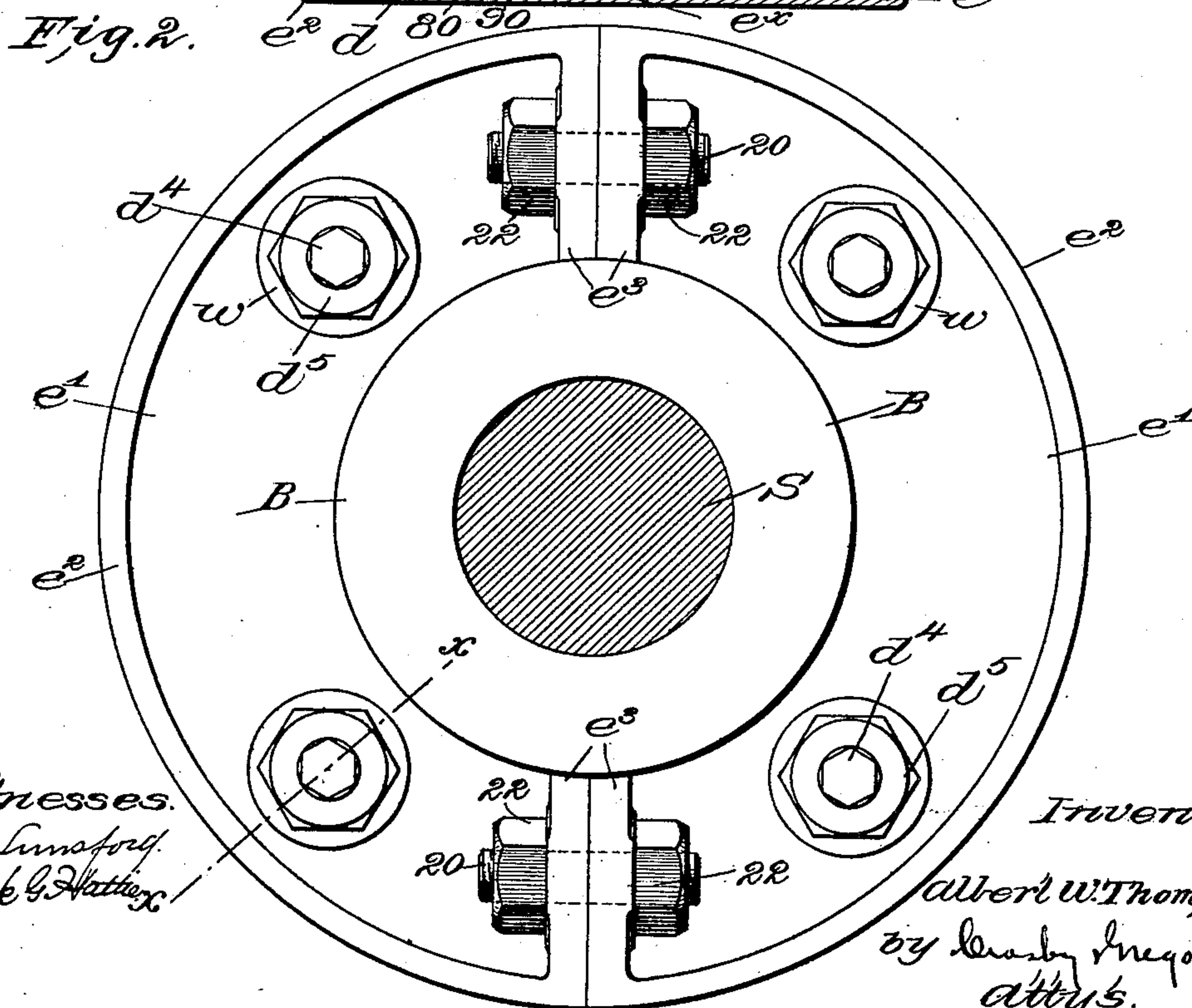
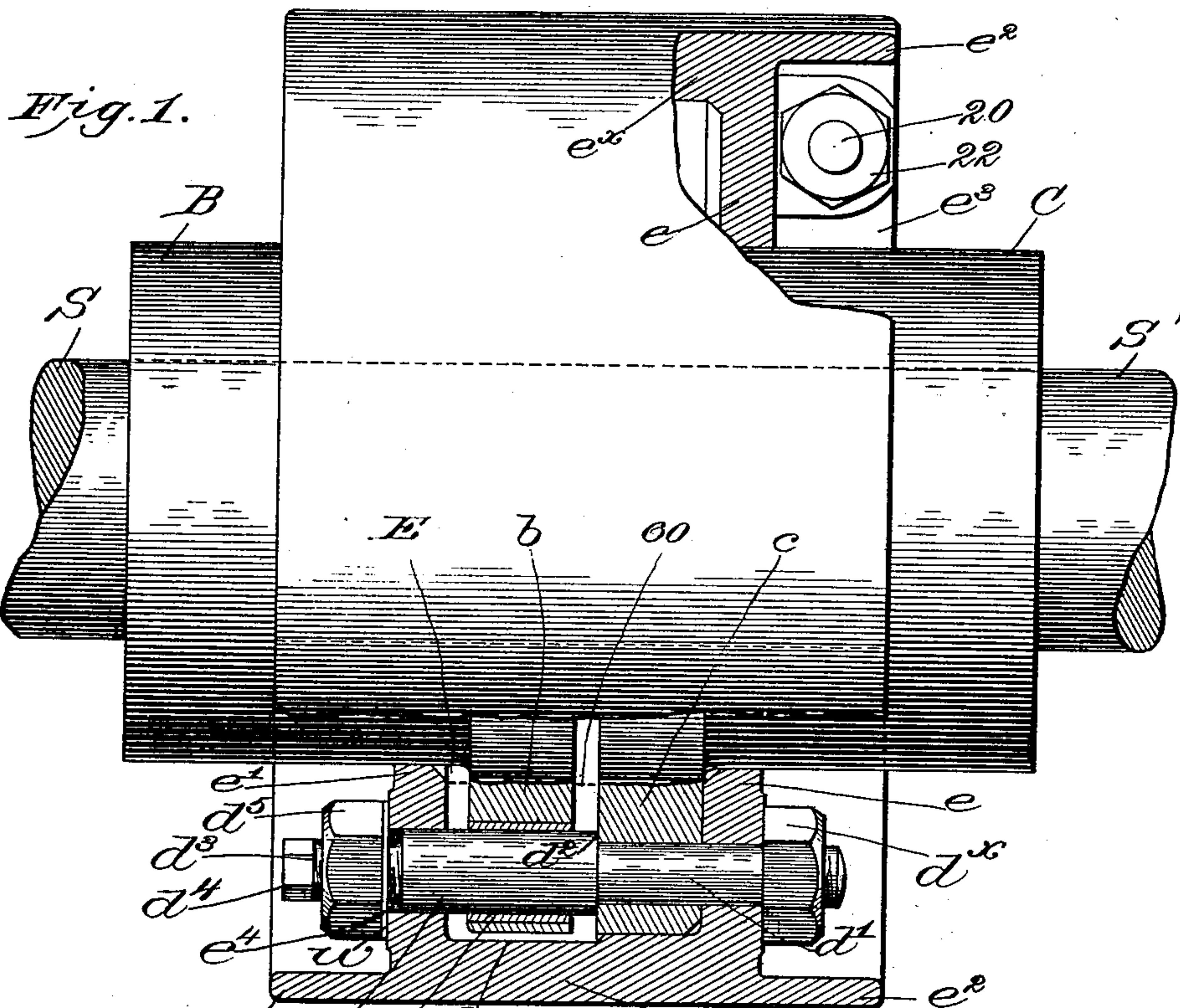
No. 665,812.

Patented Jan. 8, 1901.

A. W. THOMPSON.
EXPANSION COUPLING FOR SHAFTING.

(Application filed June 9, 1900.)

(No Model.)



Witnesses.
A. C. Sinsford.
Frank G. Hatten.

Inventor
Albert W. Thompson,
by Leasby Gregory,
attys.

UNITED STATES PATENT OFFICE.

ALBERT W. THOMPSON, OF MANCHESTER, NEW HAMPSHIRE.

EXPANSION-COUPLING FOR SHAFTING.

SPECIFICATION forming part of Letters Patent No. 665,812, dated January 8, 1901.

Application filed June 9, 1900. Serial No. 19,673. (No model.)

To all whom it may concern:

Be it known that I, ALBERT W. THOMPSON, a citizen of the United States, and a resident of Manchester, county of Hillsborough, State of New Hampshire, have invented an Improvement in Expansion-Couplings for Shafting, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to expansion-couplings more particularly designed for heavy shafting; and one of the objects of my present invention is to provide means for supporting the ends of the connecting-bolts to maintain them in parallelism with each other and with the shafting and prevent twisting of such bolts.

Another object of my invention is to provide convenient means for lubricating the portions of the connecting-bolts which are in sliding engagement with one of the coupling members.

The various novel features of my invention will be hereinafter fully described, and particularly pointed out in the following claims.

Figure 1, in side elevation and partly in section, represents a shaft-coupling showing one embodiment of my invention, the section at the lower portion of the figure being taken on the line $x-x$, Fig. 2; and Fig. 2 is a left-hand side elevation of the coupling with the shaft in section.

Referring to Fig. 1, the adjacent ends of the shaft-sections $S-S'$ to be coupled together are provided with coupling members $B-C$, respectively, rigidly secured to the sections in any suitable manner, the inner ends of said members having lateral annular flanges $b-c$. These coupling members are connected by stud-bolts d , rigidly secured to the flange of one member and passing through the flange of the other member with a sliding fit to provide for expansion and contraction of the line of shafting. Such portion of the coupling is not of my invention, broadly; but it has been found that with heavy shafting the connecting-bolts tend to twist out of parallelism with the shafting, being supported at only one end, causing binding in the member of the coupling in which said bolts have a sliding fit and interfering with the proper and free

operation of the coupling. So, too, such twisting tends to fracture or break the bolts, and one of the objects of my invention is to obviate this defect and also to strengthen the coupling as a whole. To this end I provide an annular cover or case made in two parts, preferably divided diametrically, each part comprising parallel semicircular webs $e-e'$, connected at their outer peripheries by a flange e^x , the edges of the flange being preferably extended beyond the webs, as at e^2 . The ends of the extensions e^2 of the flange are inturned radially, as at e^3 , along the dividing-line of each part of the cover for a purpose to be described.

Referring to Fig. 2, the radial portions e^3 of the flange of each cover member are faced and drawn tightly against each other by suitable bolts 20, fitted with nuts 22, to rigidly connect the halves of the cover, which presents an annular chamber E , embracing the flanges of the coupling members.

The inner circumference of the web e is herein shown as tightly fitting the coupling member C , and its inner face is butted against the side of the flange c , the reduced ends d' of the connecting-bolts also passing through the web, nuts d^x drawing the flange c and web e together, with the flange bearing on the bolt-shoulder d^2 . The web e' embraces the coupling member B with a sliding fit, and the adjacent ends of the stud-bolts pass through holes e^4 in said web, (see Fig. 1,) so that the bolts are supported at both ends by the webs, the latter in turn being centered and sustained by the coupling members, and as the two webs are rigidly connected by the flange e^x the bolts cannot be twisted. The end of each bolt extended through the web e' is threaded at d^3 and preferably provided with a square or other polygonal end d^4 , and a retaining-nut d^5 is screwed onto the threaded end outside of the web to hold the bolt in place, a suitable washer w being interposed between the bottom of the nut and the web to close the opening through which the bolt passes and maintain the cover oil-tight.

Oil or other lubricant is introduced into the chambered interior E of the cover up to, say, the dotted line 60, Fig. 1, and as the cover rotates with the shafting the centrifugal force will act to spread the oil and maintain it in

a substantially annular body against the circular wall of the chamber E while the shafting is in motion, the lubrication having access to the bearings in the flanges *b*, in which
 5 the connecting-bolts slide, such lubrication of the parts greatly reducing the friction and wear.

I prefer to introduce a bushing 80, of phosphor-bronze or other suitable material, into
 10 the holes in the flange *b*, through which the stud-bolts pass, to provide better wearing-surfaces for the bolts.

Referring to Fig. 1, it will be seen that the circular wall of the chamber E in the cover
 15 is of such diameter that it will snugly fit the periphery of the flange *c* of one of the coupling members, the wall of the chamber, however, being cored out or enlarged, as at 90, to prevent any contact with the flange of the
 20 other coupling member. The polygonal head *d*⁴ on the stud-bolt provides for holding the bolt from rotation when removing the retaining-nuts, the latter sometimes sticking, and were it not for the head *d*⁴ it would be
 25 difficult to prevent rotative movement of the bolt when one or the other of the nuts was turned.

My invention is not restricted to the precise construction and arrangement herein
 30 shown, as I have illustrated one practical embodiment of my invention without attempting to illustrate or describe changes or modifications which might be made by those skilled in the art without departing from the spirit
 35 and scope of my invention.

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

1. An expansion shaft-coupling comprising
 40 ing coupling members secured to adjacent shaft ends, connecting-bolts rigidly secured to one of said members and in sliding engagement with the other, and means to support the ends of the bolts beyond the portions of the
 45 coupling members engaged thereby.

2. An expansion shaft-coupling comprising coupling members secured to adjacent shaft ends, connecting-bolts parallel to the shaft, rigidly secured to one and in sliding engagement with the other of said members, and
 50 a closed annular cover embracing said members and secured to one of them.

3. An expansion shaft-coupling comprising coupling members secured to adjacent
 55 shaft ends, and having annular flanges at their inner ends, connecting-bolts extended through said flanges and rigidly secured to

one of them, and an annular closed cover embracing the flanges and providing supports for the connecting-bolts beyond each
 60 flange.

4. An expansion shaft-coupling comprising coupling members secured to adjacent shaft ends, connecting-bolts parallel to the shaft, rigidly secured to one and in sliding
 65 engagement with the other of said members, and an oil-tight annular cover secured to one and in sliding engagement with the other member, the sides of the cover providing supports for both ends of the connecting-bolts
 70 and maintaining them parallel to the shaft-axis.

5. An expansion shaft-coupling comprising coupling members secured to adjacent shaft ends, connecting-bolts parallel to the
 75 shaft, rigidly secured to one and in sliding engagement with the other of said members, a two-part annular cover embracing said members, diametral flanges on the parts of the cover, and bolts extended through the flanges
 80 to hold the parts of the cover together.

6. An expansion shaft-coupling comprising annularly-flanged coupling members secured to adjacent shaft ends, connecting-bolts
 85 rigidly secured to the flange of one member and in sliding engagement with bushings in the flange of the other member, and an oil-tight annular cover surrounding said flanges and providing a reservoir for lubricant.

7. An expansion shaft-coupling comprising
 90 ing annularly-flanged coupling members secured to adjacent shaft ends, connecting-bolts rigidly secured to the flange of one member and in sliding engagement with the flange of the other member, the ends of said bolts projecting beyond the flanges, and an annular
 95 cover surrounding the flanges and having openings in its sides to receive and support the projecting ends of said bolts.

8. An expansion coupling comprising coupling
 100 ling members rigidly secured to adjacent shaft ends, connections between them, and an annular oil-reservoir surrounding the adjacent ends of the coupling members and their connections, said cover being secured
 105 to one member and in sliding engagement with the other.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALBERT W. THOMPSON.

Witnesses:

ROBERT L. MANNING,
 HENRY E. BURNHAM.