No. 676,194. Patented June 11, 1901.

I. LEHMAN.

SHAFT COUPLING.

(No Model.) (Application filed Apr. 15, 1901.)

FIG. I.

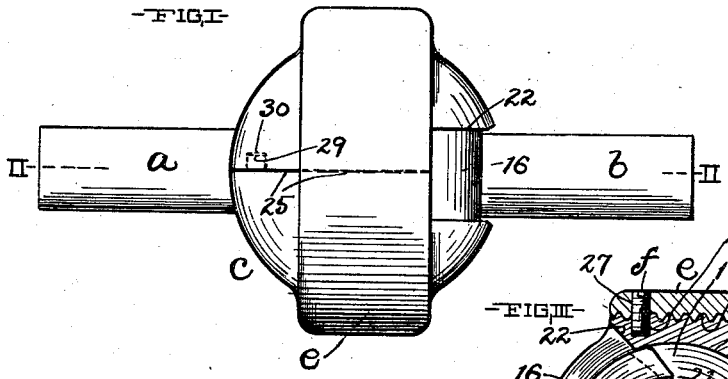


FIG. III.

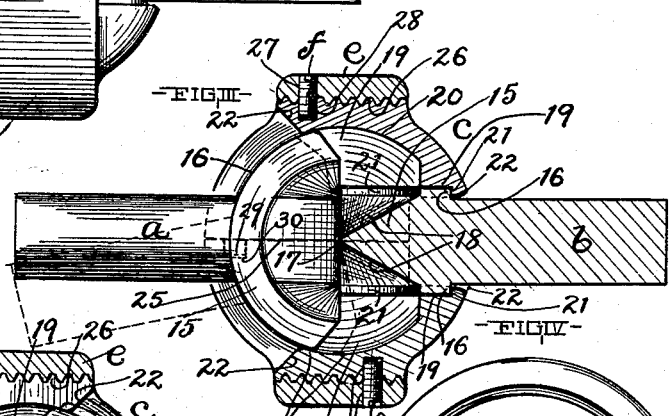


FIG. IV.

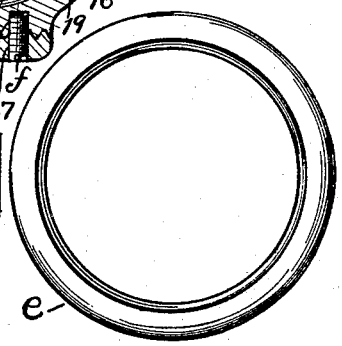


FIG. II.

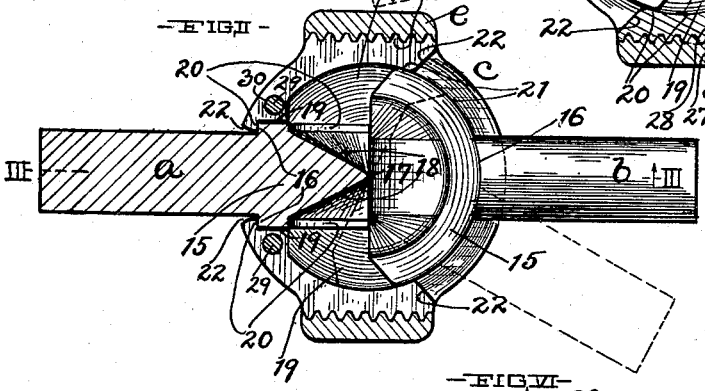


FIG. V.

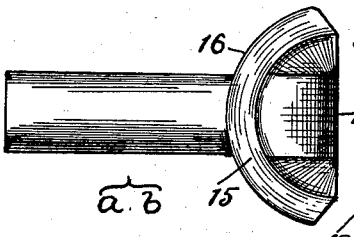


FIG. VI.

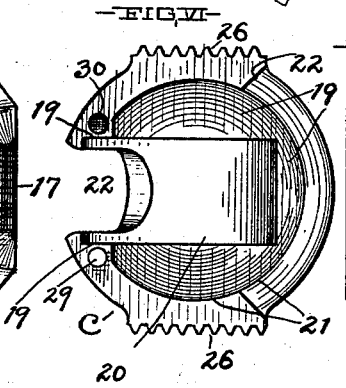
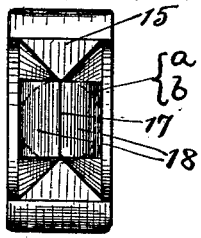


FIG. VII.



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his ATTORNEYS

UNITED STATES PATENT OFFICE.

ISADOR LEHMAN, OF CLEVELAND, OHIO.

SHAFT-COUPLING.

SPECIFICATION forming part of Letters Patent No. 676,194, dated June 11, 1901.

Application filed April 15, 1901. Serial No. 55,953. (No model.)

To all whom it may concern:

Be it known that I, ISADOR LEHMAN, a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Shaft-Couplings; 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 pertains to make and use the same.

My invention relates to improvements in shaft-couplings suitable for use in coupling together two shaft-sections without interfering with the rotation of the said shaft-sections in unison and accommodating their arrangement at an angle to each other.

The object of this invention is to provide a shaft-coupling of the character indicated which is simple, compact, and durable in construction and reliable in its operation, and whose parts are conveniently assembled and separated.

With this object in view and to the end of realizing other advantages hereinafter appearing the invention consists in certain features of construction and combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure I is a side elevation of a shaft-coupling embodying my invention. Fig. II is a view relative to Fig. I, mainly in horizontal section on line II II, Fig. I. Fig. III is a view relative to Fig. II, mainly in horizontal section on line III III, Fig. II. Fig. IV is an end elevation of a ring or sleeve instrumental in holding together the halves or sections of the casing or shell into which extend the adjacent ends of the two shaft-sections coupled together by my improved coupling. Fig. V is a side view of either one of the shaft-sections participating in the formation of the coupling. Fig. VI is an inner side view of one of the halves or sections of the casing or shell containing the adjacent ends of the two shaft-sections. Fig. VII is an end elevation of either one of the shaft-sections looking at the head-forming end, which participates in the formation of the coupling.

Referring to the drawings, *a* and *b* designate two shaft-sections coupled together by a shaft-coupling embodying my invention. The shaft-sections *a* and *b* are provided at their adjacent ends, respectively, with a head 15, which participates in the formation of the coupling.

My improved coupling comprises a shell or casing *c*, into which extend the adjacent or head-forming ends of the two shaft-sections. The casing or shell *c* is suitably chambered to receive the said heads 15 of the shaft-sections, and the chamber of the shell *c* has two walls 20 and 21, arranged in planes at right angles to each other and extending concentrically of the center of the said shell. The shell *c* is slotted, as at 22, longitudinally of each of the said walls 20 and 21 centrally between the ends of the walls. The shaft-section *a* extends through the slot 22 in the wall 20 and the shaft-section *b* extends through the slot 22 in the wall 21, and each of the shaft-sections has its head 15 provided with a shoulder 16, engaging the slotted wall through which the said shaft-section extends, which shoulder 16 extends widthwise of the said wall the full width of the wall, and the slot 22 in the said wall is narrower than and formed centrally widthwise of the wall, and consequently the shell *c* has bearing upon the shoulders 16 of the heads 15 of the shaft-sections at opposite sides of the slots 22. The head 15 of each shaft-section, contiguous to the head 15 of the other shaft-section, has an edge 17 arranged at right angles to the axial line of the shaft-section and arranged, consequently, radially of the shell *c*, and the sides of the said head converge, as at 18, toward the said edge. The head of each shaft-section has, therefore, a bearing at its edge 17 against the edge 17 of the head of the other shaft-section, and the said edges are at right angles to each other when the two shaft-sections are arranged in line.

The shoulder 16 of the head of each shaft-section extends, preferably, somewhat less than half-way around the center of the shell *c*, and the slot 22, through which the said shaft-section extends, extends a distance circumferentially of the shell *c* somewhat less than the said shoulder 16, whereas the slotted wall (20 or 21, as the case may be) engaged by the said shoulder extends about three-fourths of the distance around the center of the shell *c*, and, in fact, each of the slotted walls 20 and

21 extends from a point near one side of the other slotted wall concentrically of the center of the shell *c* to near the opposite side of the last-mentioned slotted wall. The portions of the walls 20 and 21 at the sides of the slots 22 have adequate bearing at all times upon the shoulders 16 of the heads 15 of the shaft-sections and are instrumental in preventing displacement of the parts.

The shell *c* is provided internally at each side of each slotted wall of the said shell with a shoulder 19, extending along the said wall, and the two shoulders 19 and 19, extending along the said wall, are of course arranged at and a short distance from opposite sides, respectively, of the slot 22 in the said wall at and contiguous to opposite sides, respectively, of the head 15 of the shaft-section extending through the said slot and prevent displacement of the said shaft-section laterally of the said wall, and consequently establishing operative connection between the shell *c* and the said shaft-section.

Obviously by the construction hereinbefore described the two shaft-sections and the shaft-connecting shell or casing *c* will rotate in unison upon applying power to one of the said shaft-sections, and each shaft-section can be arranged at an angle to the other shaft-section, as shown in dotted lines, Figs. II and III, and that when the said shaft-sections are arranged at an angle to each other the shell *c* will during the operation of the parts not only rotate, but rock or oscillate upon the shoulders 16 of the heads 15 of the shaft-sections.

The convergence of the sides of the head 15 of each shaft-section toward the edge 17 of the said head is, obviously, essential to accommodate an angular arrangement of the two shaft-sections relative to each other.

The shell *c* is preferably divided, as at 25, into halves or sections centrally and longitudinally of one of the slots 22 of the said shell to accommodate the assemblage of the parts, and the said halves or sections are each provided externally with screw-threads 26, engaged by the corresponding threads of an internally-screw-threaded ring or sleeve *e*, embracing the said halves or sections and securing the latter in their assembled position, and the ring *e* is prevented from unscrewing from the halves or sections of the shell *c* by screws *f*, which extend through correspondingly-threaded holes 27, formed in the ring *e*, into holes 28, formed in the said halves or sections.

Mutually-engaging pins or projections 29 and holes or recesses 30, with which the opposing surfaces of the different halves or sections of the shell *c* are provided, respectively, retain the said halves or sections in position preparatory to and during the application of the ring *e*.

It will be observed also that in addition to the advantages already hereinbefore mentioned my improved construction is instrumental in effecting a distribution of the oil or lubricant supplied to the chamber of the shell *c* to the different parts of the coupling, especially when the shaft-sections are arranged at an angle to each other, so as to result in an oscillation as well as rotation of the said shell upon the heads of the shaft-section.

What I claim is—

1. The combination, of a casing or shell *c* made in sections and having two internal walls 20 and 21 arranged in different planes, respectively, at right angles to each other and extending partially around the center of the said shell, which shell is provided, in each of the said walls, with a slot 22 extending along the wall; means for holding the sections of the shell or casing together, and two shaft-sections extending through the slot 22 in the different aforesaid walls, respectively, and provided, respectively, with a head 15 contained within the aforesaid shell, and shoulder 16 extending along and affording bearing for the wall through which the respective shaft-section extends, and the head of each shaft-section having an edge engaging and affording bearing to the corresponding edge of the other shaft-section, substantially as set forth.

2. The combination, of a casing or shell *c* having two internal walls 20 and 21 arranged in different planes, respectively, at right angles to each other and extending partially around the center of the said shell, which shell is provided, in each of the said walls, with a slot 22 extending along the wall centrally between the ends of the wall; means for holding the sections of the shell or casing together, and two shaft-sections extending through the slot 22 in the different aforesaid walls, respectively, and provided, respectively, with a head 15 contained within the aforesaid shell, and a shoulder 16 extending along and affording bearing for the wall through which the respective shaft-section extends, and the head of each shaft-section having an edge 17 arranged radially of the shell and engaging and affording bearing to the corresponding edge of the other shaft-section, and the head of each shaft-section having its sides converging, as at 18, toward its said edge, substantially as shown, for the purpose specified.

3. The combination, of a casing or shell having two internal walls 20 and 21 arranged in different planes, respectively, at right angles to each other and extending partially around the center of the said shell, which shell is provided, in each of the said walls, with a slot 22 extending along the wall, and has two internal shoulders 19 and 19 extending along each of the said walls at opposite sides, respectively, of the slot in the wall; means for holding the sections of the shell or casing together, and two shaft-sections extending through the slot 22 in the different aforesaid walls, respectively, and provided, respectively, with a head 15 contained within the aforesaid

shell between the shoulders at the sides of the wall through which the respective shaft-section extends, and a shoulder 16 extending along and affording bearing for the said last-mentioned wall, and the head of each shaft-section having an edge engaging and affording bearing to the corresponding edge of the other shaft-section, substantially as set forth.

4. The combination, of a casing or shell having two internal walls 20 and 21 arranged in different planes, respectively, at right angles to each other and extending partially around the center of the said shell, which shell is provided, centrally widthwise of each of the said walls, with a slot 22 extending along the wall centrally between the ends of the wall, and has two internal shoulders 19 and 19 extending along each of the said walls at opposite sides, respectively, of the slot in the wall; means for holding the sections of the shell or casing together, and two shaft-sections extending through the slot 22 in the different aforesaid walls, respectively, and provided, respectively, with a head 15 contained within the aforesaid shell between the shoulders at the sides of the wall through which the respective shaft-section extends, and a shoulder 16 extending along and affording bearing for the last-mentioned wall, substantially as and for the purpose set forth.

5. The combination, of a casing or shell having two internal walls 20 and 21 arranged in different planes, respectively, at right angles to each other and extending partially around the center of the said shell, which shell is provided, centrally widthwise of each of the said walls, with a slot 22 extending along the wall centrally between the ends of the wall, and has internal shoulders 19 and 19 extending along each of the said walls at opposite sides, respectively, of the slot in the wall; means for holding the sections of the shell or casing together; two shaft-sections extending through the slot 22 in the different aforesaid walls, respectively, and provided, respectively, with a head 15 contained within the aforesaid shell between the shoulders 19 and 19 at the sides of the wall through which the respective shaft-section extends, and a shoulder 16 extending along and affording bearing for the said last-mentioned wall, and the head of each shaft-section having an edge 17 arranged at right angles to the axial line of the shaft-section and radially of the aforesaid shell and engaging and affording bearing to the corresponding edge of the other shaft-section, and the head of each shaft-section also having its sides converging, as at 18, toward its aforesaid edge 17, substantially as shown, for the purpose specified.

6. The combination, with two shaft-sections *a* and *b* having their adjacent ends provided with heads 15, of a casing or shell *c* embracing and having bearing upon the said heads and establishing operative connection between the said shaft-sections and composed of two externally-screw-threaded halves or sections, and a correspondingly internally threaded ring or sleeve *e* screwed onto the aforesaid shell-sections, substantially as and for the purpose set forth.

7. The combination, with two shaft-sections *a* and *b* having their adjacent ends provided with heads, of a casing or shell embracing and having bearing upon the said heads and establishing operative connection between the said shaft-sections and composed of two externally-screw-threaded halves or sections provided, respectively, with a mutually-engaging pin or projection 29 and a hole or recess 30, a correspondingly internally threaded ring or sleeve *e* screwed onto the aforesaid shell-sections, and a screw *f* extending through the said sleeve into the aforesaid shell, substantially as and for the purpose set forth.

Signed by me at Cleveland, Ohio, this 13th day of April, 1901.

ISADOR LEHMAN.

Witnesses:
C. H. DORER,
A. H. PARRATT.