

(No Model.)

O. E. WINGER.

JOINT COUPLING.

No. 265,550.

Patented Oct. 3, 1882.

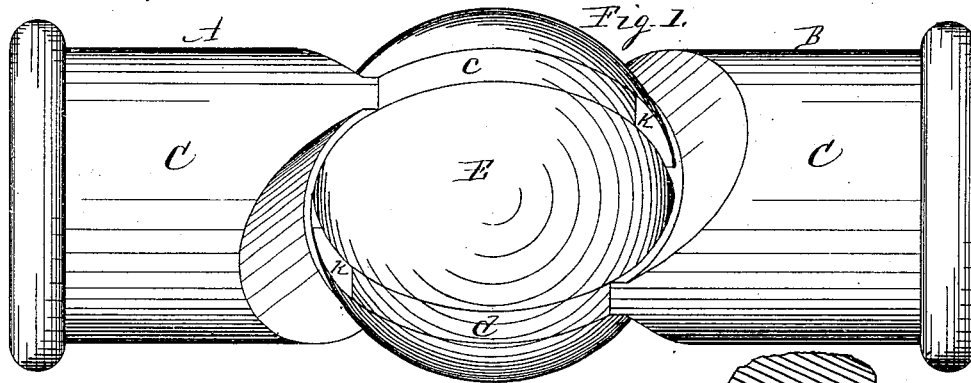


Fig. 5.

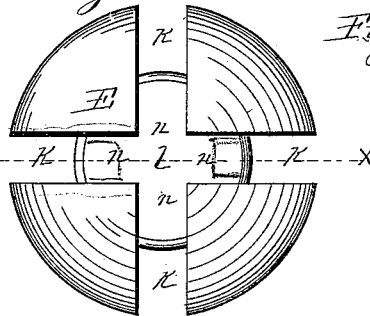


Fig. 4.

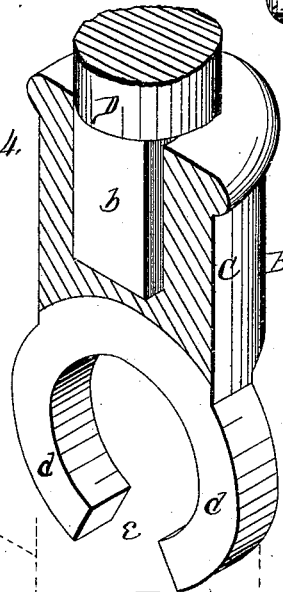


Fig. 6.

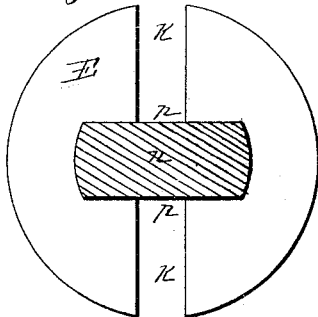


Fig. 2.

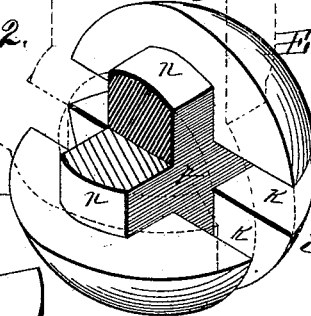
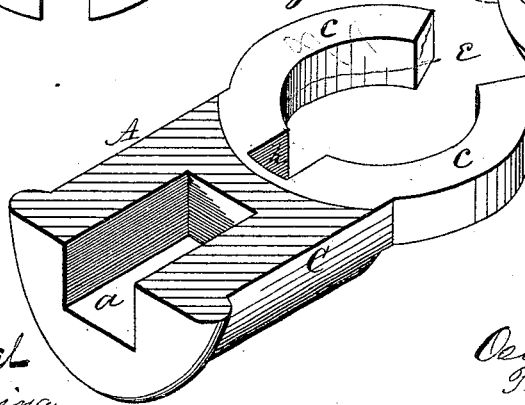


Fig. 3.



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# UNITED STATES PATENT OFFICE.

OSWALD E. WINGER, OF FREEPORT, ILLINOIS.

## JOINT-COUPLING.

SPECIFICATION forming part of Letters Patent No. 265,550, dated October 3, 1882.

Application filed August 24, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, OSWALD E. WINGER, a citizen of the United States, residing in the city of Freeport, in the county of Stephenson and State of Illinois, have invented a new and useful Universal Joint-Coupling, of which the following is a specification.

My invention relates to universal joint-couplings of that class known as "safety-couplings;" and the object of my invention is to produce at a small cost a safety universal joint-coupling made detachable and self-locking, capable of use for, perhaps, all the purposes for which such couplings are employed, and its construction and application will be hereinafter more fully described.

In the drawings, Figure 1 is a side view of my improved universal coupling complete. Fig. 2 is an isometrical representation of a slotted sphere having a quarter portion cut therefrom. Figs. 3 and 4 are isometrical representations of the coupling-heads, partly in section, and placed in position to enter the sphere. Fig. 5 is a polar end view of the slotted sphere, and Fig. 6 is a central section of the sphere on dotted line X.

In the figures, A and B represent that portion of the apparatus known as "coupling-heads," and are those portions which are fitted to receive the end portions of the shafts to be coupled. These coupling-heads consist of the wrist portion C, produced in cylindrical form, provided with an axial opening, *a*, which in this instance is rectangular in section, fitted to receive the rectangular portion *b* of the shaft D. That portion of these heads represented at *c* and *d*, which project from the end portion of the heads and are employed in the joint-connection, are of plate form, having parallel sides, and in face outline are of annular disk form, having a portion of their annular rims *e* and *f* in sector form, as at *e*, cut from their outer ends. This cut-away portion in this instance is about one-fourth of the annular rim, but may be more or less. This annular disk portion *e* of the shaft-head A is provided with a slot, *h*, extending from the central opening thereof a distance fully equal to the width of the annular rim, and in the direction of the axial center of the coupling-head. The width of this slot is slightly greater than the thickness of

the annular rim, or such as to receive the annular rim *d* of the shaft-head B to permit it to pass through the slot freely.

At E is represented a sphere having a diameter equal to the diameter of the annular disk-rings *c* and *d* of the shaft-heads. This sphere is provided with grooves *k*, produced on meridian lines on each quarter of the sphere, crossing each other at right angles at *l* on the poles thereof. The width of these grooves is such as to receive the annular disk-rings *c* and *d* in a manner known in mechanics as a "loose fit." The depth of these grooves is slightly greater than the width of the annular disk-rings *c* and *d*, leaving a cylindrical center, *n*, in the sphere slightly less in diameter than the inner diameter of the annular disk-rings *c* and *d*. These central cylindrical portions, *n*, in each groove are reduced on their polar sides, as represented at *p*, to a width slightly less than the inner portion of the sector-opening *e* in the annular disk-rings.

With these several portions of my improved universal joint-couplings constructed as shown and described, the parts are then placed together by passing the disk portion of the head A into the meridian groove of the sphere on its equatorial plane in such a manner that its open end will pass the flattened polar side of the center portion, *n*, until it is received within the center opening of the annular disk, when the head is turned into the position shown in the dotted lines, in which position the axial center will coincide with the polar axis of the sphere, and the slot *h* therein will coincide with the other meridian groove. The annular disk of the head B is then passed into this other meridian groove on its equatorial plane through the slot *h* of the head A, and past the flattened polar sides of the center *n* until it is received within the center opening of the disk, as in the dotted lines. This head is then turned in the sphere to the side thereof opposite the head A until its axial center will coincide with the polar axis of the sphere, when the several parts will be joined, and in the position represented in Fig. 1—a complete universal joint capable of use for all the purposes requiring such joints.

In the foregoing I have shown and described a sphere provided with meridian grooves having parallel sides to receive the annular disks

having parallel sides; but it is evident that the side walls of these grooves may be produced on radial lines, and that the side surfaces of the annular disk-rings may be produced in the same manner, having lines crossing each other in the center of the disk and fitted to enter the grooves of the sphere and still be within the scope of my invention.

I do not desire to limit myself to the exact construction and proportionments of the several parts of my improved coupling, as these may be varied without departing from the gist of my invention. As instances, the polar reductions of the central portion of the sphere may be more or less, and the sector-formed opening in the end portion of the annular disk-rings may be larger or smaller to snugly pass over the flattened polar sides of the central portion of the sphere; and when the joint is designed for use in situations where the parts can be held together by other means than the hooking action of the annular disk-arms overlapping the central portion of the sphere, the polar flattening of the center of the sphere may be omitted, and the end opening of the annular disk-rings may be produced on parallel lines separated a sufficient distance to receive the cylindrical center of the sphere, or they may be cut at right angles to the axial line of the heads through the center of their central opening.

I claim as my invention—

1. A universal joint employing a spherical center provided with meridian grooves crossing on its polar centers, substantially as and for the purpose set forth. 35

2. The combination, with a spherical center provided with meridian grooves crossing on its polar centers of the sphere, of coupling-heads provided with annular disk-rings to engage the meridian grooves of the sphere, substantially as and for the purpose set forth. 40

3. The combination, with a spherical center provided with meridian grooves crossing on its polar centers, and having a cylindrical center with flattened polar surfaces, of coupling-heads provided with annular disk-rings adapted to enter the grooves in the sphere, and having openings to pass the flattened polar surfaces of the cylindrical centers of the grooves, substantially as and for the purpose set forth. 45 50

4. Coupling-heads provided with annular disk-rings to enter the meridian grooves of the sphere, said annular disk-rings, one or both, provided with an axial slot, substantially as and for the purpose set forth. 55

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