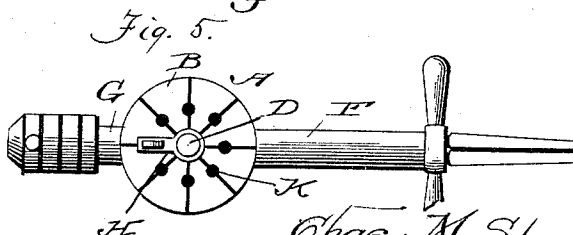
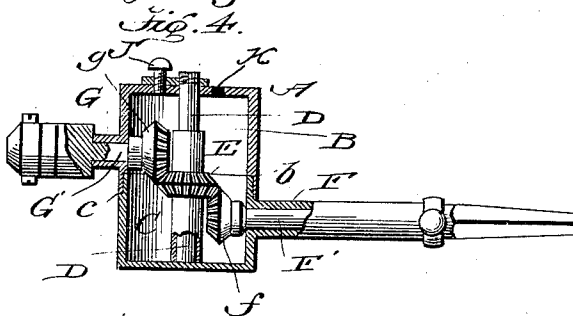
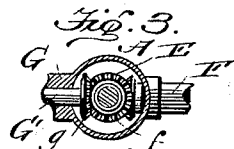
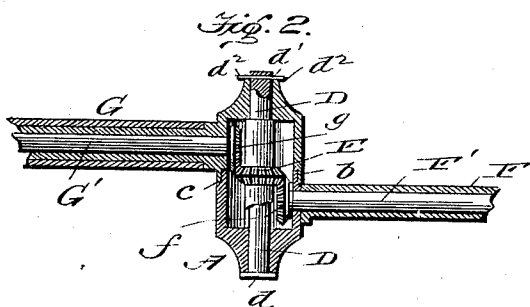
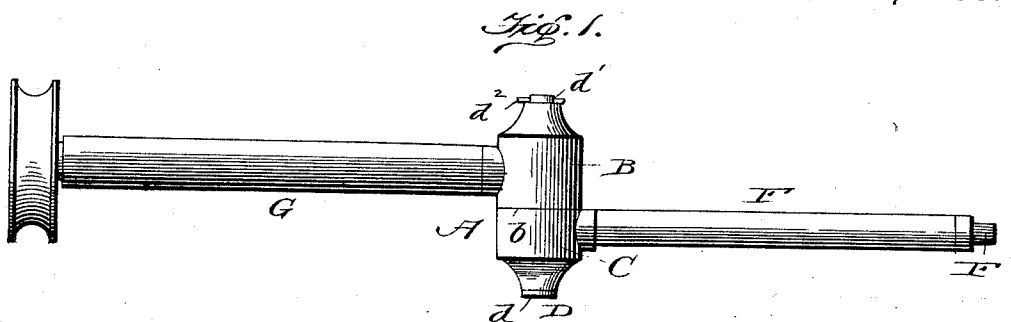


(No Model.)

C. M. STONE.
UNIVERSAL JOINT.

No. 509,404.

Patented Nov. 28, 1893.



witnesses:

Wm. E. Moore
Wm. E. Moore

Chas. M. Stone
Inventor:

By *Wm. E. Moore*
Att'y.

UNITED STATES PATENT OFFICE.

CHARLES M. STONE, OF NASHVILLE, TENNESSEE, ASSIGNOR OF ONE-THIRD
TO PERCY E. CLEVELAND, OF SAME PLACE.

UNIVERSAL JOINT.

SPECIFICATION forming part of Letters Patent No. 509,404, dated November 28, 1893.

Application filed February 11, 1893. Serial No. 461,850. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. STONE, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in Universal Joints; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention is an improved device for transmitting the power or rotation of one revolving shaft to another, and the object of the invention is to provide a connection between two revolving shafts of such a nature that the said shafts may be adjusted to any inclination or angle in relation to each other without in any manner interfering with the connection between them.

To this end the invention consists broadly of a casing composed of two sections pivotally connected to each other and carrying each a hollow arm or sleeve with a shaft journaled therein with a double faced bevel gear wheel loosely mounted within the casing engaging with bevel gear wheels rigidly mounted upon the ends of the shafts within the casing.

The invention further consists in the construction hereinafter described and particularly pointed out in the claims and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of an embodiment of my invention. Fig. 2 is a central longitudinal section through the cylinder and showing part of the shafts. Fig. 3 is a detail plan view. Fig. 4 is an illustration of a slightly modified form in side-elevation, partly in section. Fig. 5 is a view a quarter turn from Fig. 4.

In the drawings A represents a tubular or cylindrical casing which is formed in two sections or parts B, and C, overlapping each other at the point of connection as at *b*, and *c*, to provide a firm bearing and adapt them to have movement one upon the other. These

two parts or sections have solid outer ends in which are supported the ends of a pin or rod D, which serve to hold the two sections of the casing together. This is accomplished by having the pin or rod headed at one end as at *d*, and provided with a transverse hole *d'* at the other end through which passes a pin *d²*, or any similar means may be employed. Upon this pin or rod is loosely journaled a double faced bevel gear wheel E, of the form shown. Centrally located upon the side of each section respectively are the sleeves F, and G, in the form of hollow arms communicating with the interior of the casing, and in these arms or sleeves are journaled the two shafts, one F', communicating with the source of power, and the other G' leading to the point at which the power is to be applied. These two shafts carry upon their ends within the casing bevel gear wheels *f*, and *g*, respectively which engage with the opposite faces of the double faced gear wheel, and it will be seen that as the shaft F' revolves the motion will be communicated through its bevel gear and the double faced gear to the gear upon the shaft G' thus revolving the shaft G' in the same direction with the shaft F'. It will be readily seen that as the loose pulley is arranged in a plane parallel with the planes in which the two shafts swing in relation to each other the shaft G' may be swung around upon the casing as a center and be placed at any inclination to the shaft F' without in any wise interfering with the connection between the two, and consequently the rotation of one shaft will at all times be communicated to the other without regard to the inclination of said shafts relative to each other.

From the above description it will be apparent that I have provided a simple and effective device for transmitting power from one shaft to another, and it will be apparent that the invention may be applied to all classes of machinery where power or motion is to be transmitted from one shaft to another. The invention is, however, especially valuable in the construction of that class of machines or tools where it is necessary to frequently change or adjust the angle of inclination between the revolving tool and the

driving shaft, such for instance as dental engines and instruments, rock drills, rock dressing machines, and in the first three figures I have shown the invention as embodied in a form adapted to be applied to such machines or instruments.

The invention is also equally applicable to wrenches, braces, and the like, and in Figs. 4, and 5, I have shown the invention embodied in a form adapted to be applied to a brace, the construction and arrangement of the parts being in each case substantially the same. In this form I employ the arm H, having the inner end secured to shaft D and carrying at the outer end the thumb screw J which engages any one of the threaded openings K, as shown.

Having thus described my invention, what I claim is—

1. In combination, the two cylindrical sections provided with solid outer ends, the rods connecting said sections and permitting rotary movement thereof, the hollow arms carried by

the sections, the shafts journaled in said arms, the bevel gear wheels mounted upon said shafts, and the double faced bevel gear wheel mounted upon the rod and engaging the gears carried by the shafts, substantially as described.

2. In combination with the two cylindrical sections having their meeting edges overlapping each other and provided with solid outer ends, a rod connecting said ends and permitting the rotation of said sections relative to each other, a double faced bevel gear loosely mounted upon said rod, a hollow arm carried by each section, with a shaft journaled in each arm, and a bevel gear secured to each of said shafts and engaging the double gear, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES M. STONE.

Witnesses:

PAUL W. TREANOR,
JNO. TRIMBLE.