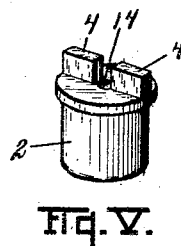
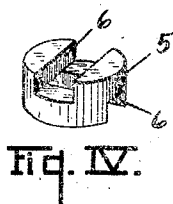
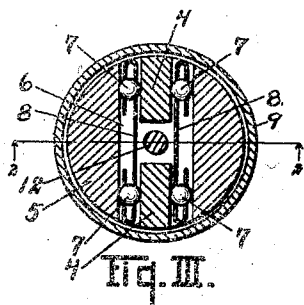
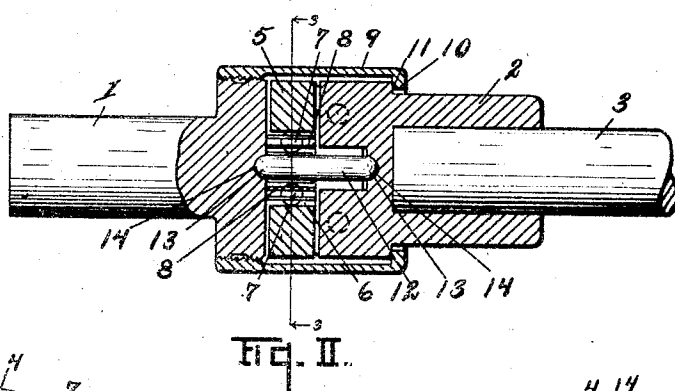
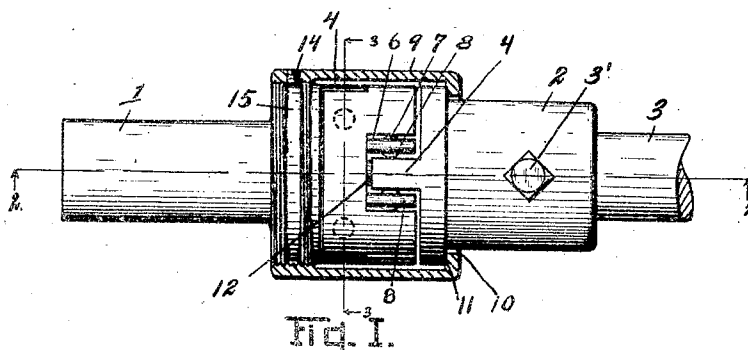


C. C. BLOOD.
 FLOATING REAMER SUPPORT.
 APPLICATION FILED JULY 26, 1911.

1,027,520.

Patented May 28, 1912.



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UNITED STATES PATENT OFFICE.

CLARENCE C. BLOOD, OF KALAMAZOO, MICHIGAN.

FLOATING-REAMER SUPPORT.

1,027,520.

Specification of Letters Patent.

Patented May 28, 1912.

Application filed July 26, 1911. Serial No. 640,594.

To all whom it may concern:

Be it known that I, CLARENCE C. BLOOD, a citizen of the United States, residing at the city of Kalamazoo, county of Kalamazoo, and State of Michigan, have invented certain new and useful Improvements in Floating-Reamer Supports, of which the following is a specification.

* This invention relates to improvements in floating reamer holders.

The main objects of this invention are, first, to provide an improved floating reamer holder in which the floating movement is free and smooth. Second, to provide an improved floating reamer which is simple and economical in its parts, and the parts are easily assembled.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this invention, in which,

Figure I is a side view of a structure embodying the features of my invention, the shell 9 being shown in longitudinal central section to better disclose the arrangement of the parts within. Fig. II is a detail central longitudinal section taken on a line corresponding to line 2-2 of Fig. III, the reamer shank and the shank of the holder being shown in full lines. Fig. III is a detail sectional view taken on a line corresponding to line 3-3 of Fig. II. Fig. IV is a perspective view of the coupling member 5. Fig. V is a perspective view of the driven member 2.

In the drawing, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the driving member 1 is provided with a suitable chuck shank. The driven member 2 is provided

with a socket for the shank as 3 of a reamer.

A suitable set screw 3' is provided for securing the reamer in the socket. The driving and driven members are provided with tongue like jaws 4. The coupling member 5 is provided with two pairs of jaws 6, adapted to receive the jaws 4 of the driving and driven members. The pairs of jaws 6 are disposed transversely relative to each other so that the jaws 4 of the driving and driven members are supported in a transverse relation to each other. Bearing balls 7 are interposed between the jaws of the driving and driven members and the coupling members, the balls being supported by ball holders 8. These ball holders are, in the structure illustrated, formed of strips of metal having their ends folded inwardly, the strip and the infolded ends being perforated to receive the balls. (See Fig. 2.) These ball holders are loosely arranged in the jaws, that is, they are not secured to the jaws. The shell 9 is threaded upon the chuck or driven member 1 and is provided with an inturned flange 10 at its outer end which coacts with the annular shoulder 11 on the driven member. By adjustment of the shell, the driving and driven members are adjusted upon the thrust bearing pin 12. This thrust pin has spherical, curved bearings 13 at its ends which engage bearing seats 14 in the driving and driven members. These bearing seats are disposed centrally of the driving and driven members, the central portion of the jaws 4 being cut away to receive the pin. The coupling member 5 is provided with a central opening through which the thrust bearing pin is arranged, the coupling member and pin being movable independently of each other. The shell 9 is secured in its adjusted position by means of the set screw 14, the member 1 having an unthreaded portion 15, with which the inner end of the screw coacts. With the parts thus arranged, my improved tool holder has a free smooth movement, the movement being in effect, a limited universal joint movement between the driving or chuck member, and the driven or tool holder member.

The parts of my improved floating tool

holder are simple, are economically produced; and easily assembled.

I have illustrated and described my invention in detail in the form in which I have embodied the same in practice. I am aware, however, that considerable variation in structural details is possible without departing from my invention, and I desire to be understood as claiming the same specifically as illustrated, as well as broadly, within the scope of the appended claims.

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

1. In a floating tool holder, the combination of the driving and driven members, having tongue-like jaws thereon; a coupling member having two pairs of transversely disposed jaws receiving the jaws of said driving and driven members respectively; bearing balls for said jaws; ball holders loosely arranged in said coupling member jaws at each side of the driving and driven member jaws; a thrust pin having spherically curved bearings at its ends, said driving and driven members being provided with curved bearing seats therefor disposed centrally, said coupling member having a central opening through which said pin is arranged; and a shell having an inwardly projecting flange at its outer end threaded upon said driven member, said driven member having a shoulder coacting with said flange.

2. In a floating tool holder, the combination of the driving and driven members having tongue-like jaws thereon; a coupling member having two pairs of transversely disposed jaws receiving the jaws of said driving and driven members respectively; bearing balls for said jaws; ball holders loosely arranged in said coupling member jaws at each side of the driving and driven member jaws; a thrust pin having spherically curved bearings at its ends, said driving and driven members being provided with curved bearing seats therefor disposed centrally, said coupling member having a central opening through which said pin is arranged; and a shell mounted on said driven member.

3. In a floating tool holder, the combination of the driving and driven members, having jaws thereon; a coupling member having jaws disposed transversely of each other receiving the jaws of said driving and driven members; ball bearings arranged in said coupling member jaws at each side of the driving and driven member jaws; a thrust pin having curved bearings at its ends, said driving and driven members being provided with curved bearing seats therefor disposed centrally, said coupling member having a central opening through which said pin is arranged; and a shell having an inwardly projecting flange at its

outer end threaded upon said driven member, said driven member having a shoulder coacting with said flange.

4. In a floating tool holder, the combination of the driving and driven members, having jaws thereon; a coupling member having jaws disposed transversely of each other receiving the jaws of said driving and driven members; ball bearings arranged in said coupling member jaws at each side of the driving and driven member jaws; a thrust pin having curved bearings at its ends, said driving and driven members being provided with curved bearing seats therefor disposed centrally, said coupling member having a central opening through which said pin is arranged; and a shell mounted on said driven member.

5. In a floating tool holder, the combination of the driving and driven members, having jaws thereon; a coupling member having jaws disposed transversely of each other and adapted to coact with the jaws of said driving and driven members; a thrust pin having curved bearing at its ends, said driving and driven members being provided with curved bearing seats therefor disposed centrally, said coupling member having a central opening through which said pin is arranged; and a shell having an inwardly projecting flange at its outer end threaded upon said driven member, said driven member having a shoulder coacting with said flange.

6. In a floating tool holder, the combination of the driving and driven members, having jaws thereon; a coupling member having jaws disposed transversely of each other and adapted to coact with the jaws of said driving and driven members; and a thrust pin having curved bearings at its ends, said driving and driven members being provided with curved bearing seats therefor disposed centrally, said coupling member having a central opening through which said pin is arranged.

7. In a floating tool holder, the combination of the driving and driven members, having jaws thereon; a coupling member having jaws disposed transversely of each other and adapted to coact with the jaws of said driving and driven members, there being ball bearings disposed between said jaws of said driving and coupling members to permit lateral movement thereof; a thrust bearing member interposed between said driving and driven members, said thrust bearing member being independent of said coupling member; and a shell having an inwardly projecting flange at its outer end threaded upon said driven member, said driven member having a shoulder coacting with said flange.

8. In a floating tool holder, the combination of the driving and driven members,

having jaws thereon; a coupling member
having jaws disposed transversely of each
other and adapted to coact with the jaws of
said driving and driven members; and a
5 thrust bearing member interposed between
said driving and driven members, said thrust
bearing member being independent of said
coupling member.

In witness whereof, I have hereunto set
my hand and seal in the presence of two 10
witnesses.

CLARENCE C. BLOOD. [L.S.]

Witnesses:

LUELLA G. GREENFIELD;
M. PHINA WOODRUFF.