

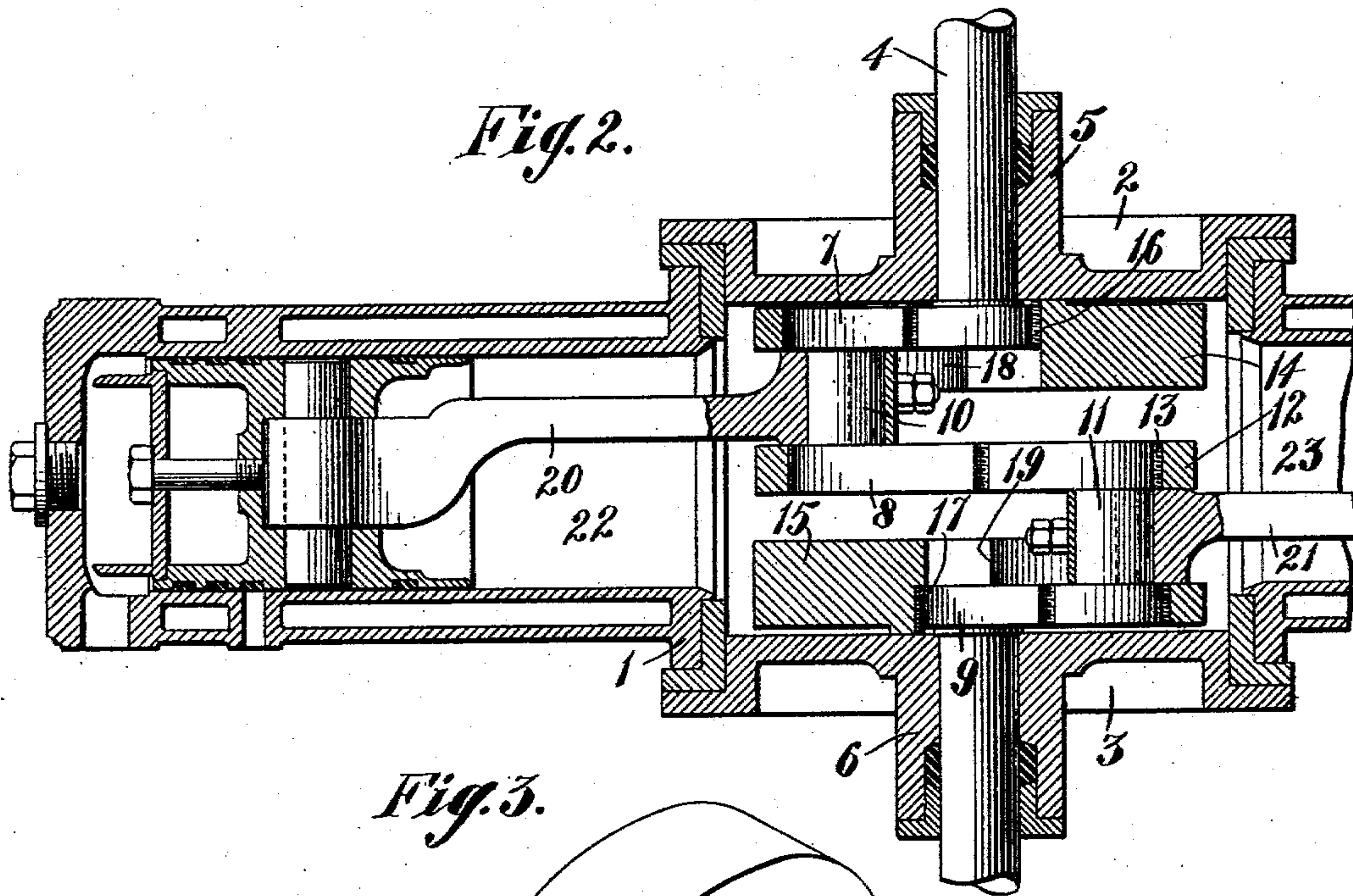
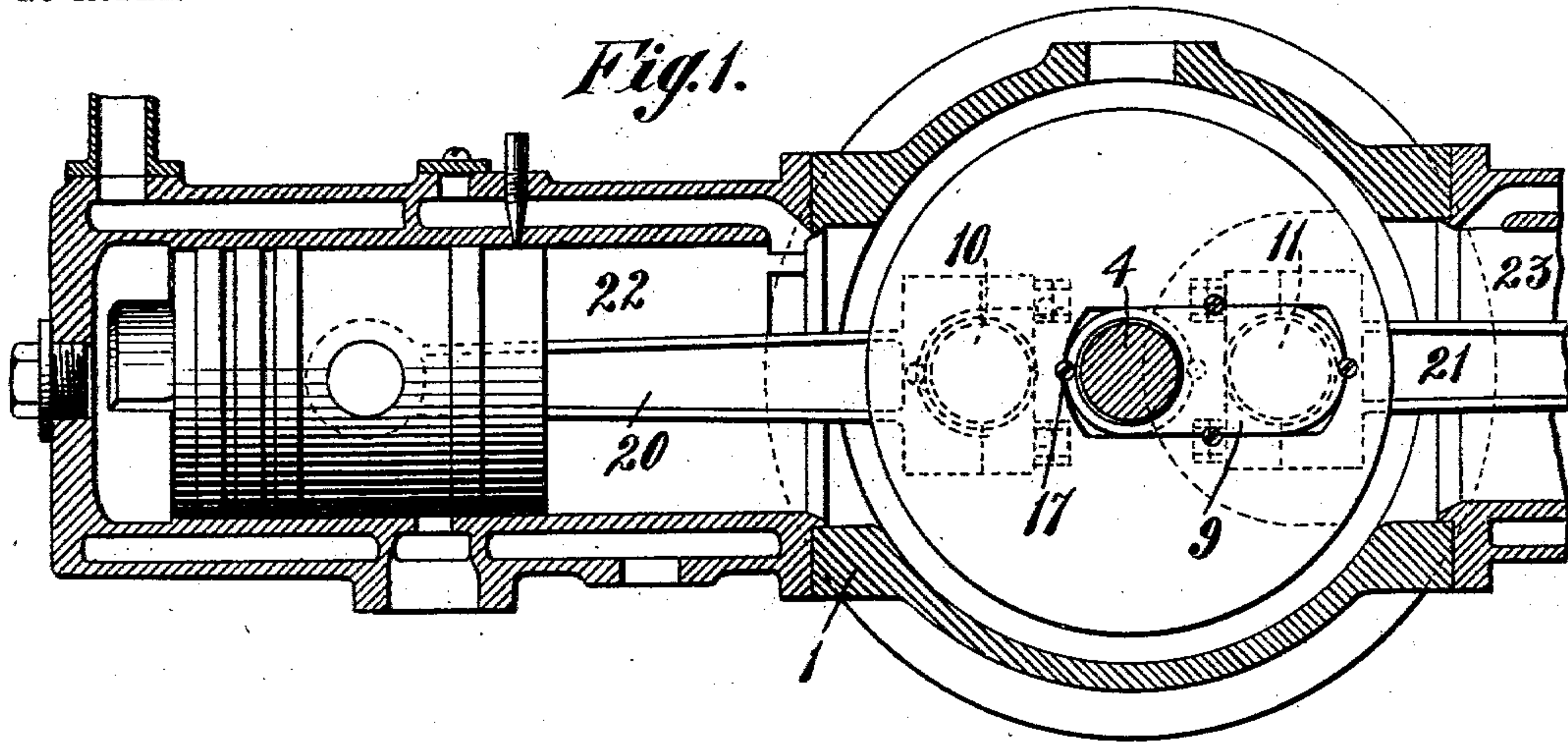
No. 741,057.

PATENTED OCT. 13, 1903.

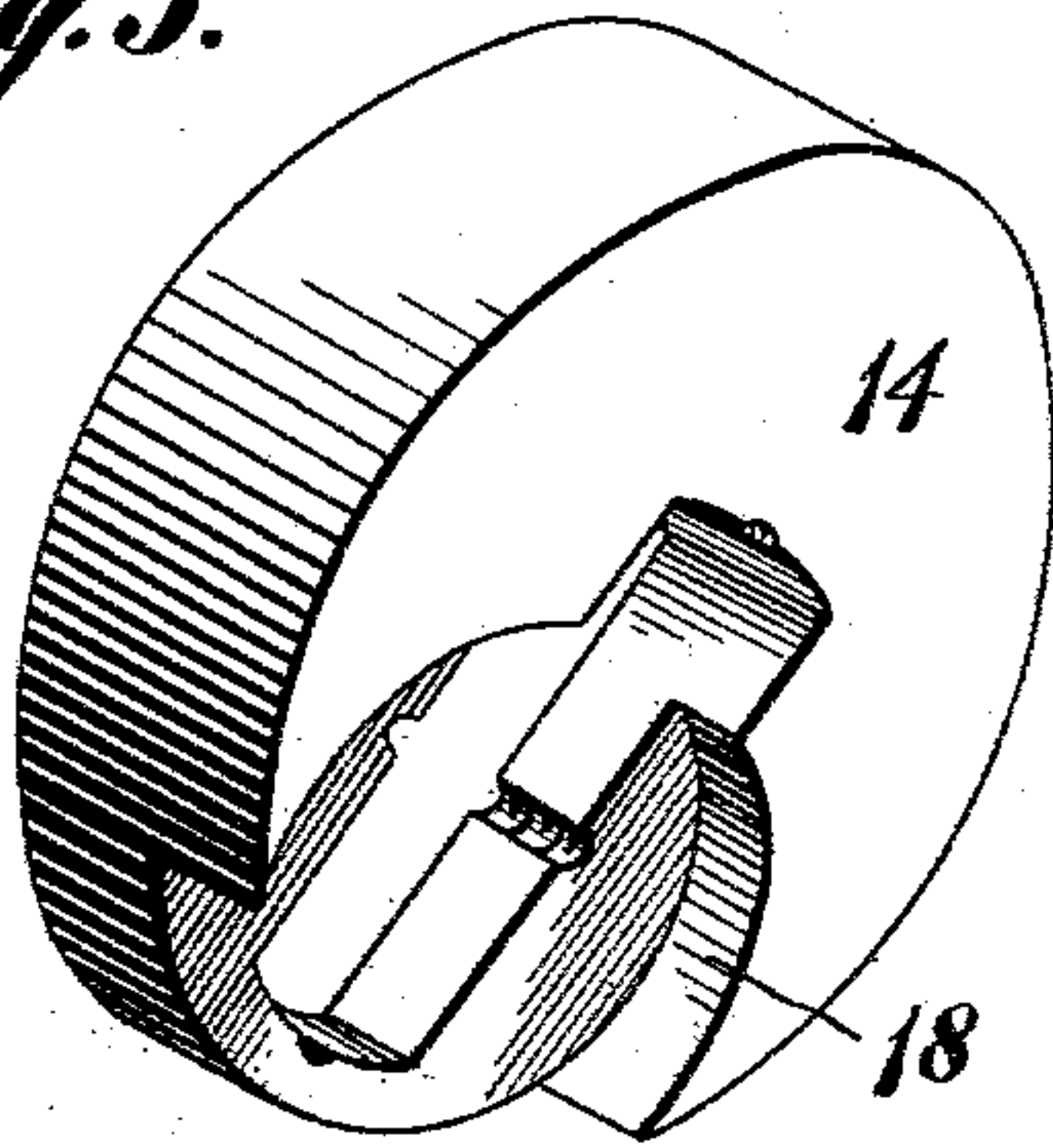
A. R. MOSLER.  
COUNTERBALANCED CRANK SHAFT.

APPLICATION FILED OCT. 24, 1901.

NO MODEL.



*Fig. 3.*



*Witnesses.*

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# UNITED STATES PATENT OFFICE.

ARTHUR R. MOSLER, OF NEW YORK, N. Y.

## COUNTERBALANCED CRANK-SHAFT.

SPECIFICATION forming part of Letters Patent No. 741,057, dated October 13, 1903.

Application filed October 24, 1901. Serial No. 79,752. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR R. MOSLER, a citizen of the United States, and a resident of the borough of Manhattan, in the city and State of New York, have invented new and useful Improvements in Counterbalanced Crank-Shafts for Explosive Hydrocarbon-Engines, of which the following is a specification.

My invention relates to an improvement in counterbalanced crank-shafts for explosive hydrocarbon-engines, and has for its object to provide a device of the above character in which the efficiency of the engine is increased by insuring an even rotary movement of the crank-shaft irrespective of the speed of the same.

A further object is to provide an improvement of the above character which is more particularly adapted to use in connection with the crank-shafts of hydrocarbon-engines having their pistons and cylinders arranged upon opposite sides of the shaft.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 is a partial central vertical section through an engine having my improved counterbalanced crank-shaft. Fig. 2 is a partial central horizontal section through the same, and Fig. 3 is a view in perspective of one of the counterbalance-disks which are secured to the crank-shaft.

The crank-shaft casing comprises a cylindrical body portion 1, having its ends closed by end plates or heads 2 and 3.

The crank-shaft is denoted by 4, and it is mounted in bearings in centrally-arranged hubs 5 and 6, carried by the plates or heads 2 and 3 of the crank-shaft casing. The crank-shaft 4 is provided within the casing with three crank-arms 7, 8, and 9, the arms 7 and 8 projecting in opposite directions and the ends of the central arm 8 being connected by suitable crank-pins 10 and 11 with the outer ends of the crank-arms 7 and 9, respectively.

A central counterbalance-disk 12 is secured to the middle arm 8 of the crank-shaft in the following manner: The disk 12 is fitted to the periphery of the double crank-arm 8 and is

secured thereto by means of a plurality of screws 13, which engage adjacent half-sockets in the inner wall of the disk 12 and the periphery of the crank-arm. Counterbalance-disks 14 and 15 of considerable thickness are secured to the crank-arms 7 and 9 of the crank-shaft in the following manner: The disk 14 is fitted to the periphery of the crank-arm 7 and is secured thereon by means of a plurality of screws 16, which engage adjacent half-sockets in the inner wall of the disk 14 and the periphery of the crank-arm 7. The counterbalance-disk 15 is similarly secured to the crank-arm 9 on the shaft 4 by means of screws 17, which engage opposite half-sockets in the inner wall of the disk and the periphery of the crank-arm 9. These disks 14 and 15 are cut away on their inner faces, as shown at 18 and 19, for permitting the free attachment and also free running of the piston-rods 20 and 21, the inner ends of which are connected to the crank-pins 10 and 11, respectively, of the engine-shaft 4. These counterbalance-disks serve to materially aid in the smooth and even running of the engine-shaft and also fill up a large portion of the interior of the crank-shaft casing.

The engine herein represented is of the straight-line duplex type, and the cylinders are denoted by 22 23, respectively.

What I claim is—

1. A crank-shaft having two oppositely-projected arms and an intermediate double arm, a counterbalance-disk embracing and fitted to the periphery of the intermediate arm and screws for removably securing the disk to the arm, said screws engaging adjacent half-sockets in the inner wall of the disk and the periphery of the arm.

2. A crank-shaft having two oppositely-projected arms and an intermediate double arm, counterbalance-disks embracing and fitted to the periphery of the oppositely-projected arms and screws for removably securing the disks to the arms engaging adjacent half-sockets in the inner walls of the disks and the peripheries of the arms.

3. A crank-shaft having two oppositely-projected arms and an intermediate double arm, crank-pins connecting the arms, piston-rods

connected to the crank-pins and counterbal-  
ance-disks removably secured to the said op-  
positely-projected arms, the said disks being  
cut away on their inner faces for permitting  
5 the free attachment and running of the said  
piston-rods.

In testimony that I claim the foregoing as

my invention I have signed my name, in  
presence of two witnesses, this 17th day of Oc-  
tober, 1901.

ARTHUR R. MOSLER.

Witnesses:

FREDK. HAYNES,  
C. S. SUNDGREN.