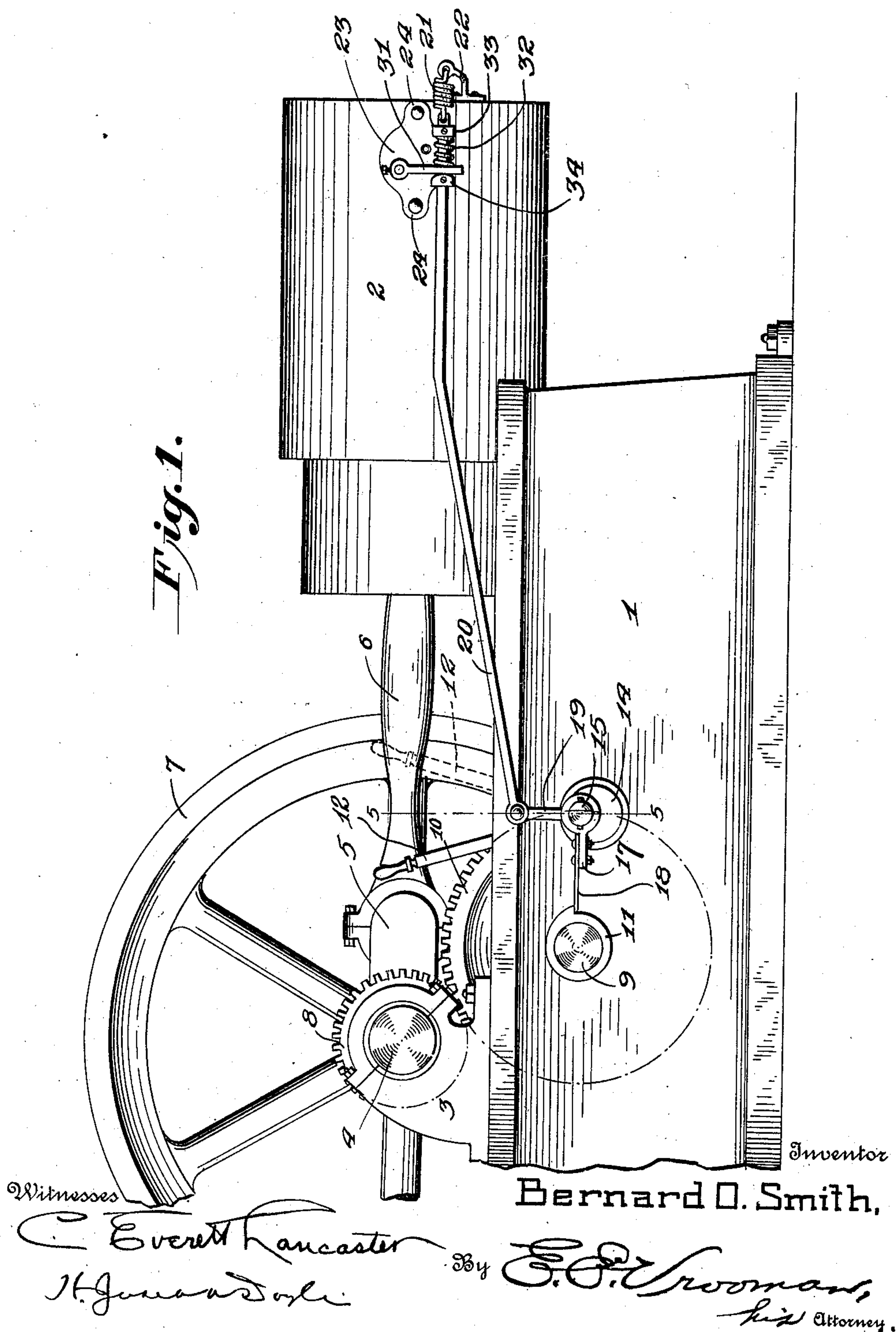


B. O. SMITH.
IGNITER FOR GASOLENE ENGINES.
APPLICATION FILED JAN. 3, 1910.

978,788.

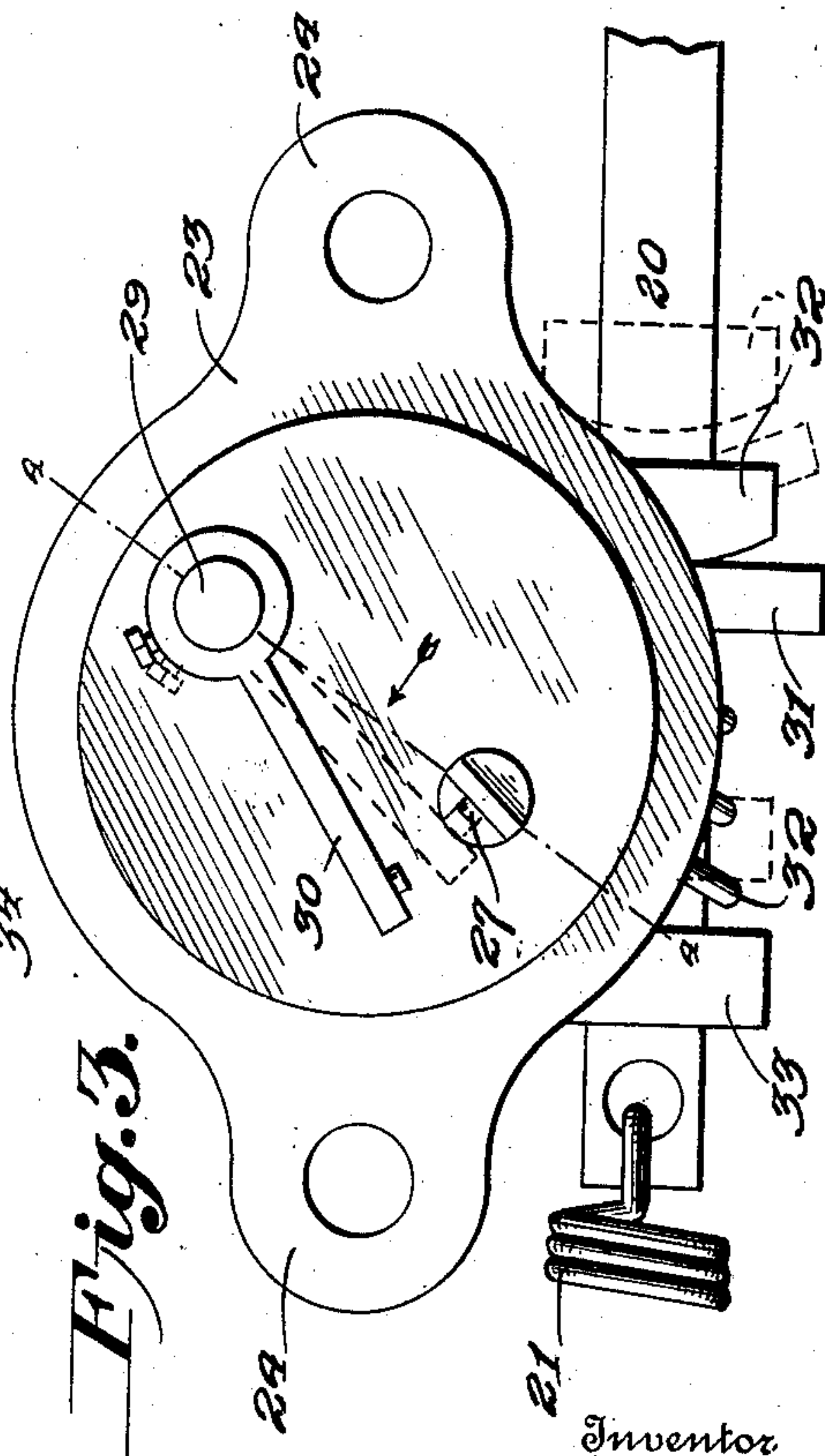
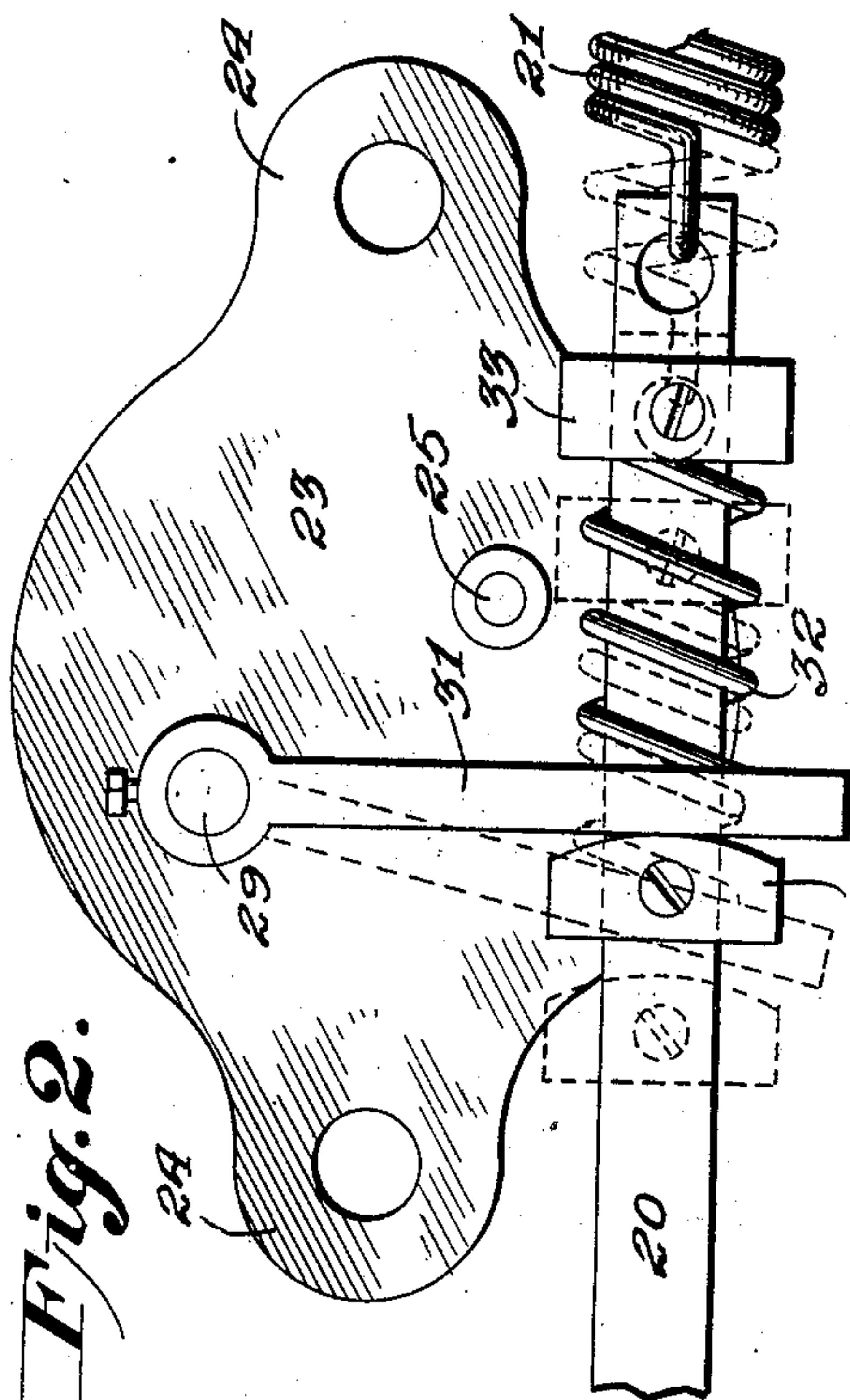
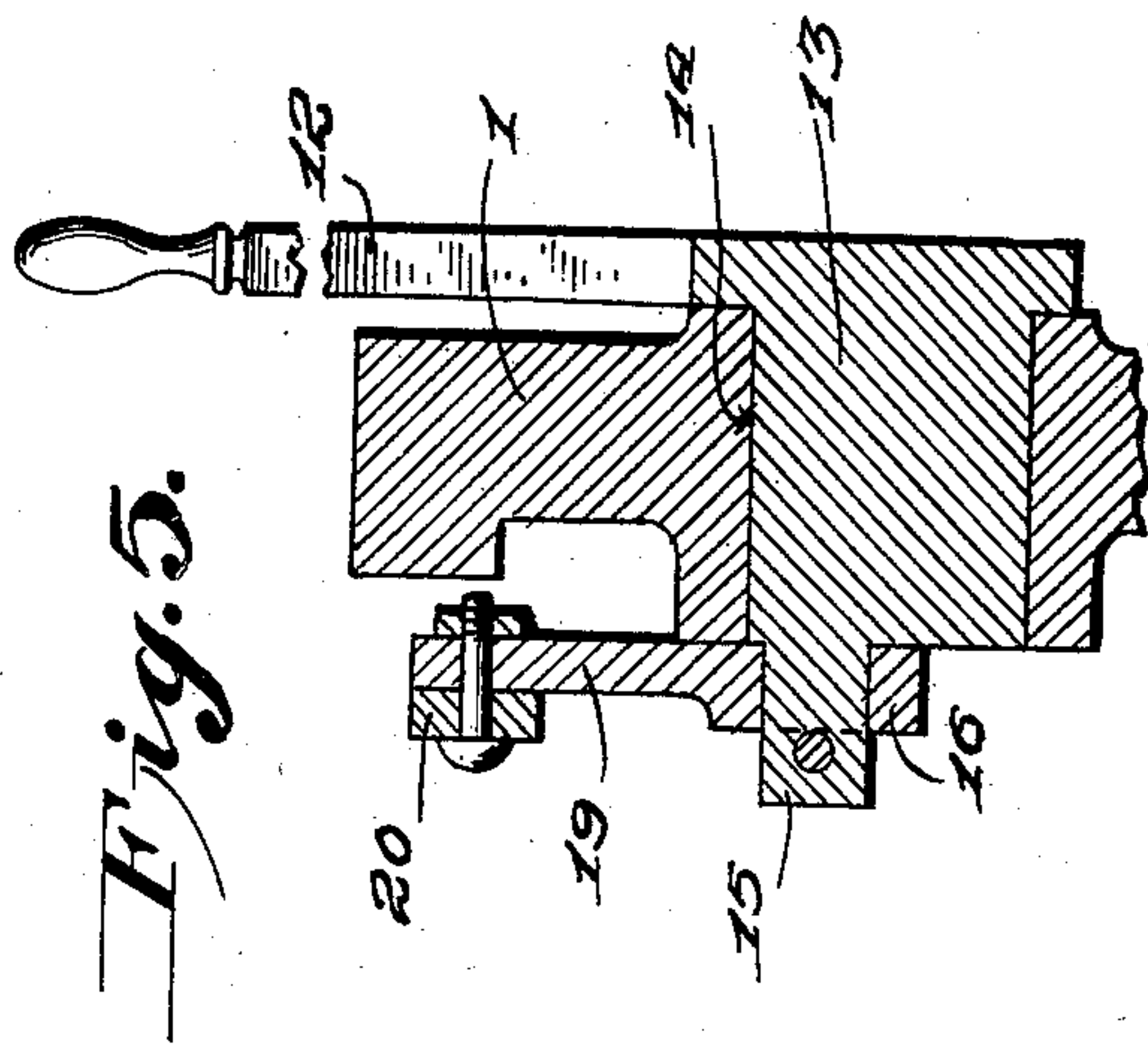
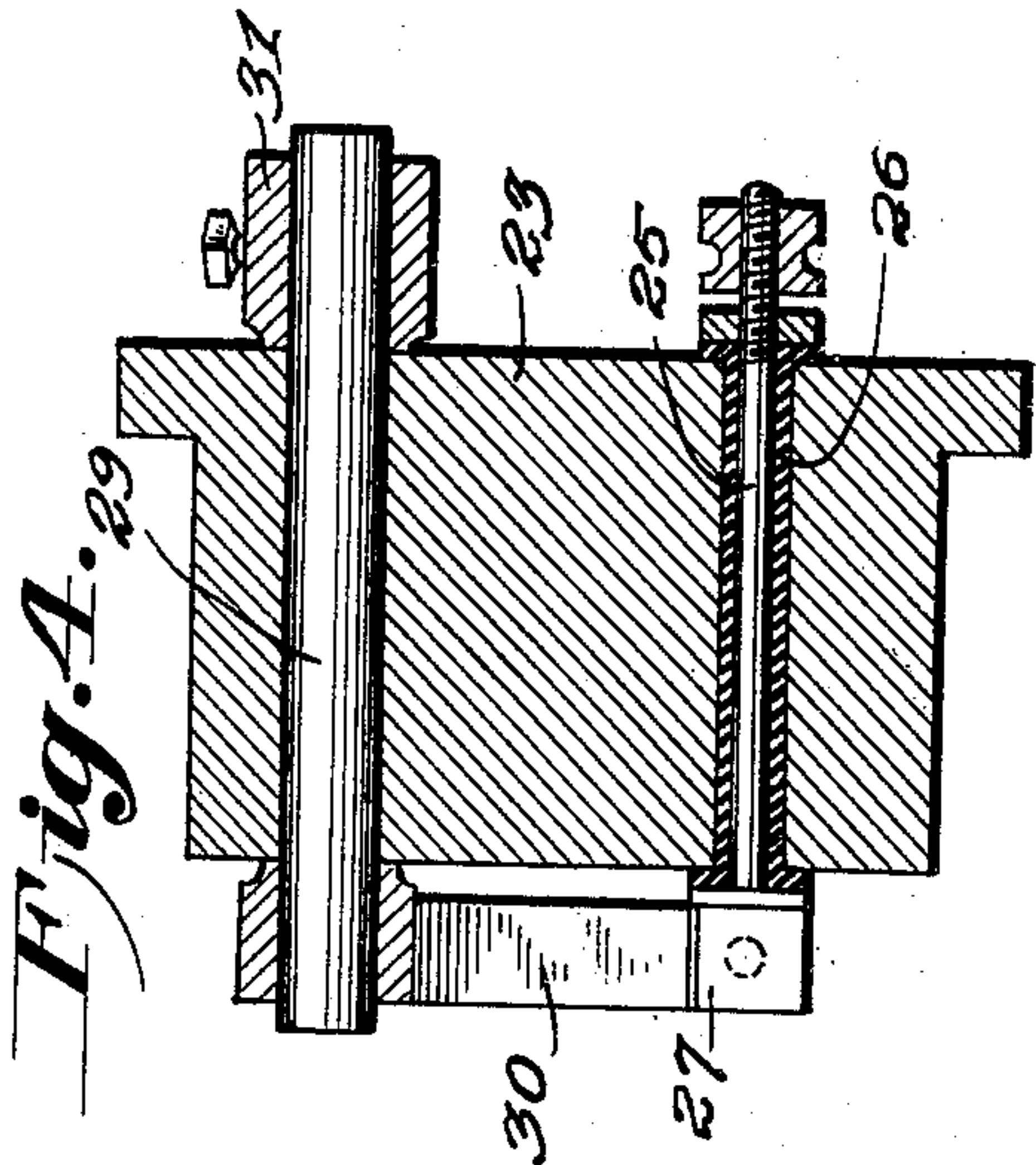
Patented Dec. 13, 1910.

2 SHEETS—SHEET 1.



978,788.

2 SHEETS--SHEET 2.



Witnesses

Everett Lancaster,
St John's A.D. 1871

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UNITED STATES PATENT OFFICE.

BERNARD O. SMITH, OF STANLEY, IOWA, ASSIGNOR OF ONE-HALF TO S. C. IRVINE,
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IGNITER FOR GASOLENE-ENGINES.

978,788.

Specification of Letters Patent.

Patented Dec. 13, 1910.

Application filed January 3, 1910. Serial No. 535,952.

To all whom it may concern:

Be it known that I, BERNARD O. SMITH, a citizen of the United States of America, residing at Stanley, in the county of Buchanan and State of Iowa, have invented certain new and useful Improvements in Igniters for Gasolene-Engines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to igniters or sparkers for explosive engines, and the principal object of the same is to provide simple means for causing the fixed and the movable sparking points to be brought into contact intermittently by the operation of the engine.

In carrying out the objects of the invention generally stated above it will be understood, of course, that the essential features thereof are necessarily susceptible of changes in details and structural arrangements, one preferred and practical embodiment of which is shown in the accompanying drawings, wherein:—

Figure 1 is a view in side elevation of an explosive engine equipped with the improved igniter. Fig. 2 is a view in elevation of the outer surface of the igniter block that is carried by the cylinder. Fig. 3 is a similar view of the inner surface of the igniter block. Fig. 4 is a vertical sectional view taken on the line 4—4, Fig. 3. Fig. 5 is a detail sectional view taken on the line 5—5, Fig. 1.

In the accompanying drawings the improved sparking device has been shown applied to a horizontal engine, and referring to said drawings by numerals; 1 designates the usual bed of the engine which supports the cylinder 2 at one end. The top edge of the vertical sides of said bed carries upstanding bearings 3 for the main shaft 4 which has a crank connection 5 with the piston rod 6 of cylinder 2. The usual fly wheel 7 is mounted upon said shaft 4 between the sides of the bed 1 and adjacent said fly wheel a small gear wheel 8 is mounted on shaft 4. A shaft 9 extends horizontally through the bed 1 below and slightly in advance of shaft 4, said shaft 9 having a larger gear 10 fast thereon that is in mesh with gear 8 of shaft 4. One end of shaft 9 projects beyond one side of bed 1 and has a cam 11 fast thereon. A hand lever 12 has a shaft 13 at its lower end, said shaft projecting laterally from the lower end of said lever and being extend-

ed through bearing opening 14 in one side of bed 1 to retain lever 12 within the bed. The outer end of shaft 13 carries an outwardly projecting reduced portion 15 that is eccentric to the outer end of said shaft and projects beyond the outer surface of the side of the bed in which it is mounted. A collar 16 is detachably mounted on said projection 15 and carries an arm 17 that normally projects toward cam 11, and has a tripping finger 18 fastened thereto whose outer end is in the path of movement of cam 11 so that rotation of said cam will trip said finger to rock collar 16. A connecting arm 19 projects from collar 16 at substantially right angles to arm 17 and has its upper end connected to an elongated sparker operating rod 20 whose outer end portion projects along one side of cylinder 2 and at its extreme end has a spring connection 21 with a bracket arm 22 projecting from the head of cylinder 2.

An opening is formed through the side of cylinder 2 adjacent its outer end for the reception of an igniter block 23 having end flanges 24 adapted to be detachably fastened to said cylinder. A stationary electrode 25 projects through igniter block 23 and is insulated therefrom by the insulating bushing 26. The inner end of said electrode projects beyond the inner surface of said block and is provided with an angular sparking point 27. A movable electrode 29 also passes transversely through said block 23 and is suitably spaced from fixed electrode 25. The inner end of said electrode 29 carries an angular sparking arm 30 adapted to contact with sparking point 27 to produce a spark in a manner well understood. As will be understood electrode 29 is rotatably mounted in block 23 and to actuate the same its outer end has a rocking arm 31 detachably fastened thereon that normally hangs in a pendent position across the outer end portion of rod 20, and has one end of a spring 32 bearing against it, said spring being coiled about rod 20 and having its other end bearing against an adjustable abutment block 33 mounted on said rod 20. Said spring 32 normally holds arm 31 in contact with a block 34 adjustably mounted on rod 20 as is shown more clearly in Fig. 1.

As is clearly shown in Fig. 1 gears 8 and 10, fly wheel 7 and hand lever 12 are practically inclosed by the sides or walls of bed

1 so that danger of accident from contact
with the same is obviated.

In operation, the rotation of gear 8 will
actuate gear 10 which carries with it cam 11
5 so that on each revolution of cam 11 finger
18 will rock arm 19 and cause rod 20 to
actuate rocker arm 31 to make and break the
circuit between sparking points 30—27. It
will thus be seen that hand lever 12 may be
10 normally rocked to withdraw tripping
finger 18 out of the path of movement of
cam 19 and simultaneously force the rod 20
rectilinearly so that the movable electrode
30 is held from the stationary electrode 27.
15 It will also be understood that by means of
the adjustable abutments carried by rod 20,
the spring pressure upon rocker arm 31 may
be regulated.

As will be obvious the pressure of spring
20 32 retains rocker arm in position so that
when the engine is at rest the sparking
points will be held separated.

What I claim as my invention is:—

1. A device of the character described
25 comprising an igniter block, a stationary
electrode and a movable electrode project-
ing therethrough, a rocker arm carried by
said movable electrode, a sparking rod,
spaced apart adjustable abutment blocks on
30 said rod, a spring interposed between said

abutments and bearing against said rocker
arm to hold the same in contact with one of
said abutments, and means for simulta-
neously throwing said rocker arm rectilin- 35
early and holding the movable electrode
separated from the stationary electrode.

2. In a device of the character described,
the combination with an engine and its bed,
of a cam shaft carried by said bed and oper-
ated by the engine, a cam on said shaft, a 40
second shaft extending through said bed
having a reduced eccentric projection on its
outer terminal, a collar detachably mounted
on said projection and having an arm, the
latter carrying a tripping finger which is 45
arranged in the path of movement of said
cam, a sparking rod actuated by said finger,
a stationary electrode, and a movable elec-
trode, and means for simultaneously throw- 50
ing said finger out of the path of move-
ment of said cam and holding said movable
electrode away from said stationary elec-
trode.

In testimony whereof I hereunto affix
my signature in presence of two witnesses. 55

BERNARD O. SMITH.

Witnesses:

F. M. IRVINE,
JEFF ALLEN.