

No. 625,420.

Patented May 23, 1899.

A. SCHÄRFL.
COMBINED PUNCHING AND SHEARING MACHINE.

(Application filed Dec. 28, 1897.)

(No Model.)

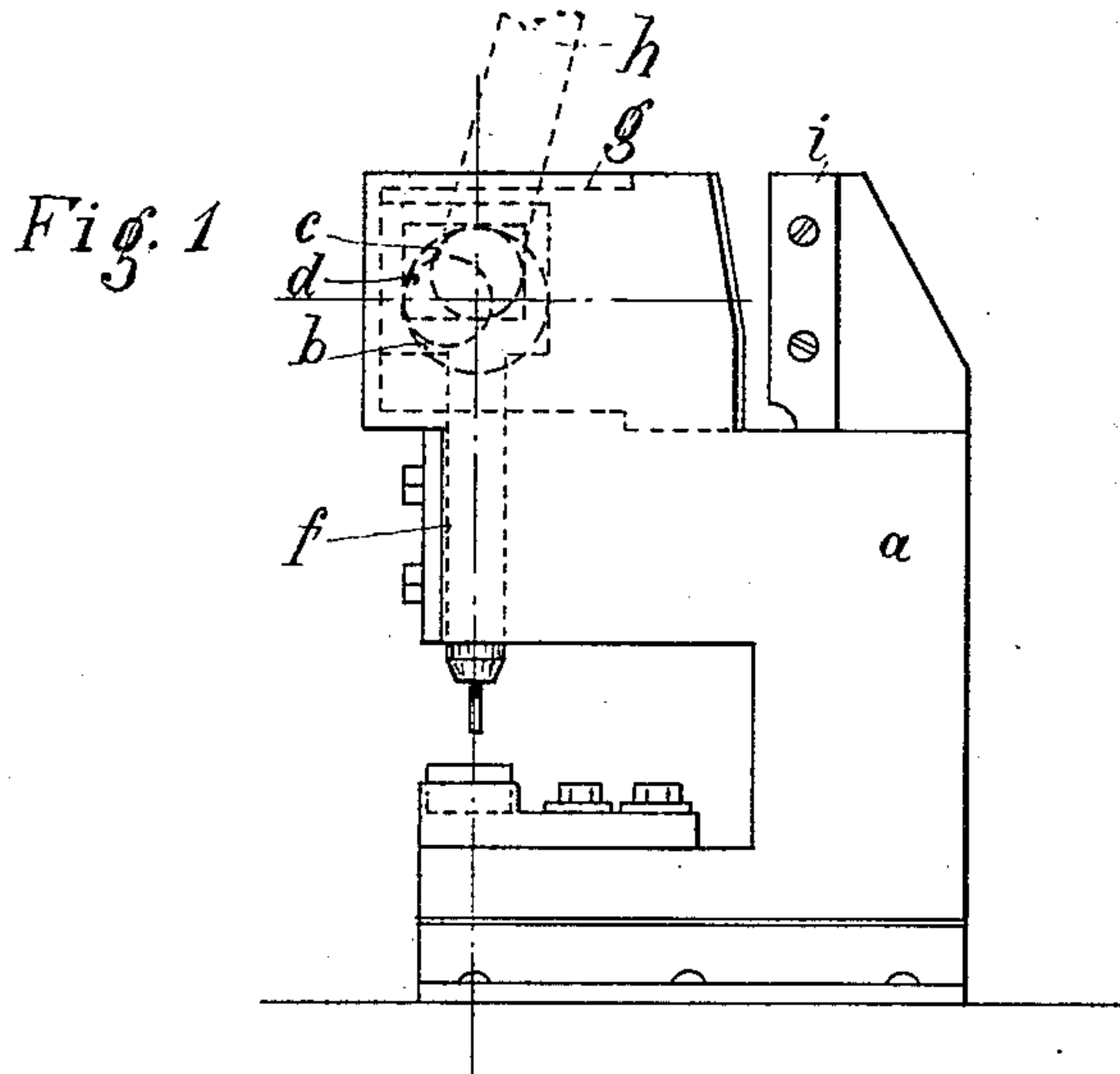


Fig. 3

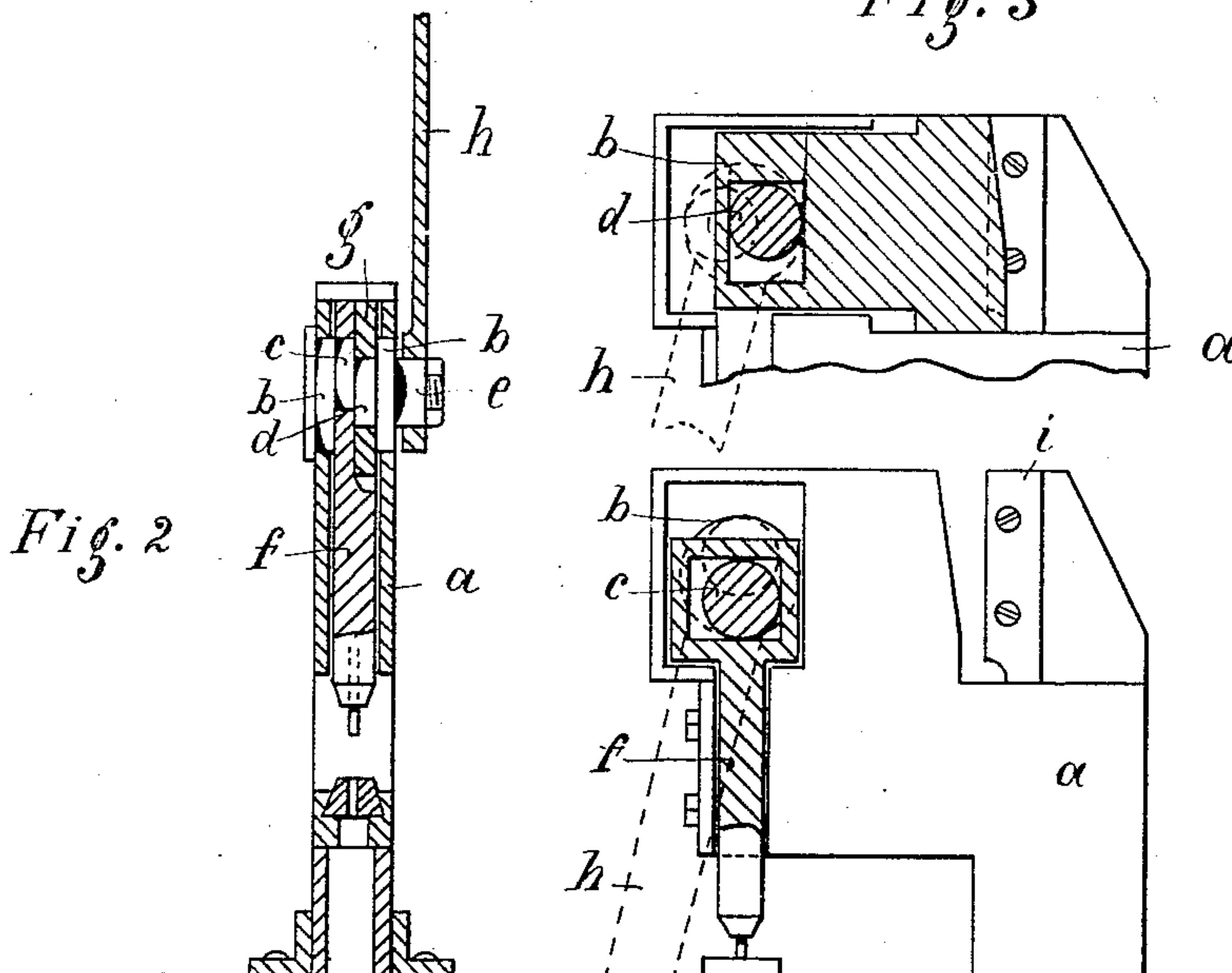
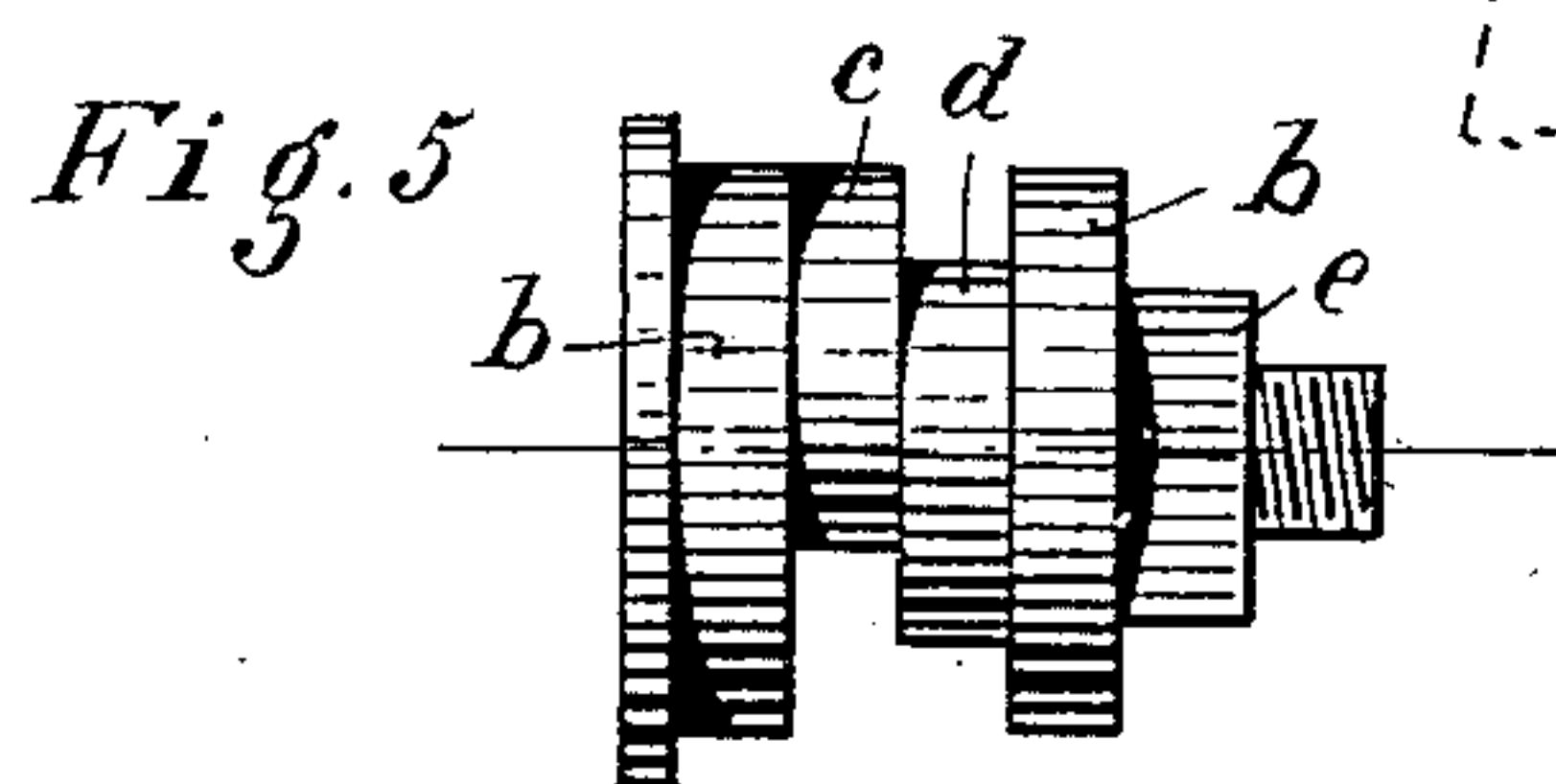


Fig. 4



Witnesses:

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UNITED STATES PATENT OFFICE.

ANDREAS SCHÄRFL, OF MUNICH, GERMANY, ASSIGNOR TO WERKZEUG-MASCHINENFABRIK A. SCHÄRFL'S NACHFOLGER, OF SAME PLACE.

COMBINED PUNCHING AND SHEARING MACHINE.

SPECIFICATION forming part of Letters Patent No. 625,420, dated May 23, 1899.

Application filed December 28, 1897. Serial No. 663,834. (No model.)

To all whom it may concern:

Be it known that I, ANDREAS SCHÄRFL, a subject of the King of Bavaria, and a resident of Munich, Kingdom of Bavaria, Germany, have invented certain new and useful Improvements in a Combined Punching and Shearing Machine, of which the following is a full, clear, and exact description.

The present invention consists of a combined boring or punching and plate-shearing machine.

In order to render the present specification more easily intelligible, reference is had to the accompanying drawings, in which similar letters of reference denote similar parts throughout the several views.

Figure 1 is a side elevation of the machine; Fig. 2, a transverse vertical section; Fig. 3, a sectional elevation of the upper part of the machine; Fig. 4, a sectional elevation of the punching device; Fig. 5, a detail elevation of the driving-shaft.

In the upper part of the frame *a*, which is formed of a series of plates fixed together, the shaft *b* is mounted, having the eccentrics which drive the tools. The punching-tool *f* is vertically guided in the frame and is thinned at its upper end to the width of the eccentric *c*, around which it engages, as shown at Fig. 4. The other eccentric *d* reciprocates the movable cutter *g* of the plate-shears, said cutter being horizontally guided in the upper part of the machine-frame and cooperating with the stationary cutter *i*. This cutter *g* is also cut away on one side to correspond to the thickness of the eccentric *d*. By cutting away the vertically-reciprocating punch and the horizontally-reciprocating cutter at the sides, as shown, the one is permitted to be partially overlapped by the other, which reduces the distance between the plates that constitute the supporting-frame. Besides, this construction enables a much shorter actuating-shaft to be used, all of which lends greater strength and effectiveness to the machine. The shaft *b* is provided with a square *e*, to which is fitted the hand-lever *h* by means of a nut in the usual manner.

In Fig. 1 the hand-lever is shown in its

highest position and in Fig. 4 in its lowest position, the punch and shears having been operated by lowering the same.

The advantage of the arrangement above described is that both the tools may be operated independently.

By composing the frame *a* of a series of plates fixed together great strength and lightness are attained, since wrought-iron or steel plates may be employed instead of the cast-iron heavy frames hitherto in vogue.

I claim as my invention—

1. A combined punching and shearing machine comprising a punching-tool, and shearing-tool, each cut away at the side, and the thinner portions thereof overlapping, means for operating said tools independently, and a single actuating-shaft for said means.

2. A combined punching and shearing machine comprising a punching-tool, and a shearing-tool, each cut away at the side, and the thinner portions thereof overlapping, a single actuating-shaft having two eccentrics thereon, and means connecting one eccentric with the punching-tool and the other with the shearing-tool.

3. A combined punching and shearing machine, having a vertically-guided punching-tool and a horizontally-guided plate-shearing tool, a single shaft having two eccentrics and means for connecting one eccentric to the punching and the other to the shearing tool and means for operating said shaft substantially as described.

4. A combined punching and plate-shearing machine having a frame of a series of plates fixed together, a shaft mounted in said frame, a vertically-guided punching and horizontally-guided shearing tool, two eccentrics on said shaft attached to said tools as specified and means for reciprocating said shaft substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ANDREAS SCHÄRFL.

Witnesses:

G. OBERNDORF,
EMIL HENZEL.