

No. 875,443.

E. LELONG.
APPARATUS FOR FORGING IN DIES.

APPLICATION FILED JULY 17, 1906.

PATENTED DEC. 31, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

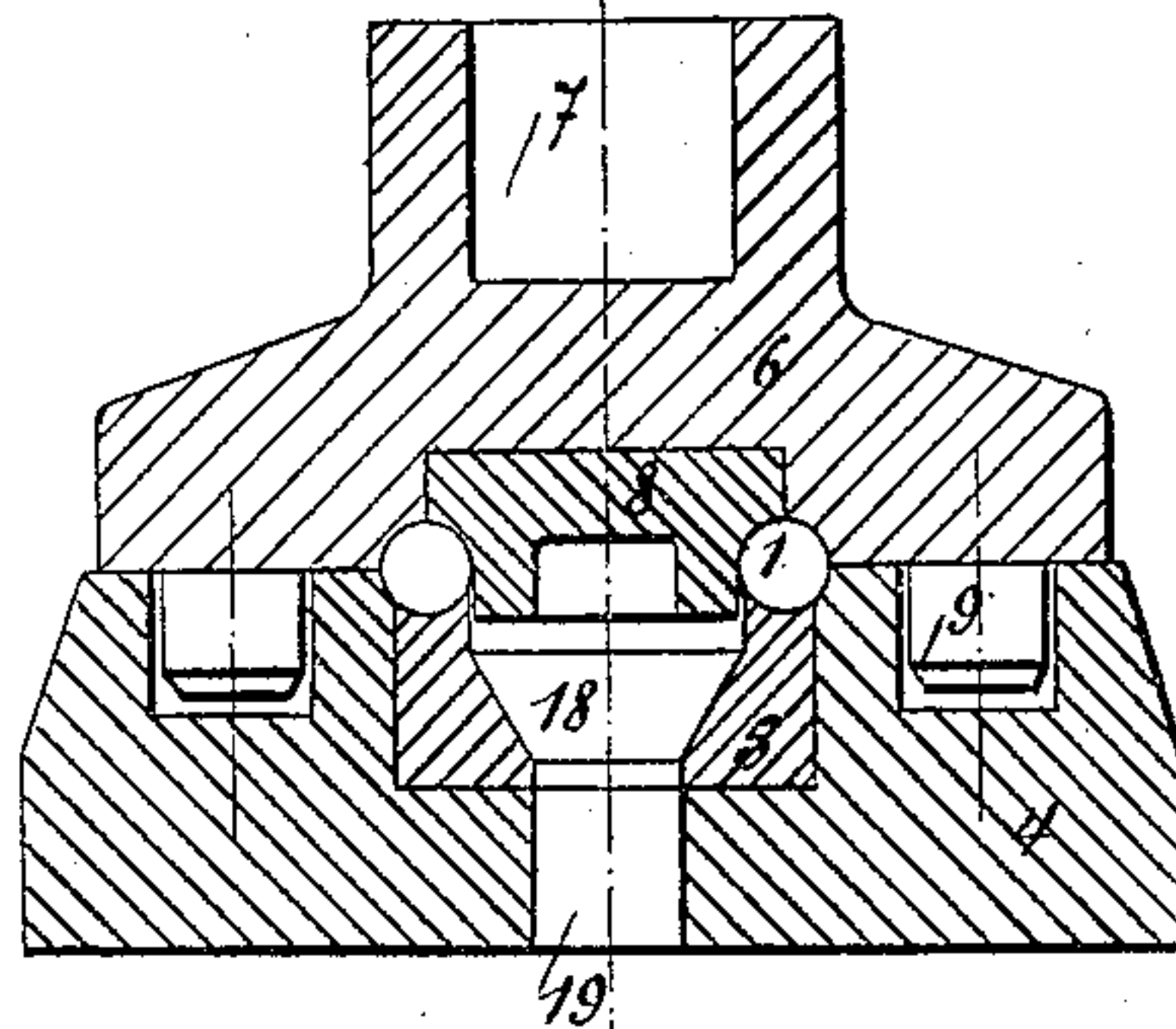


Fig. 2.

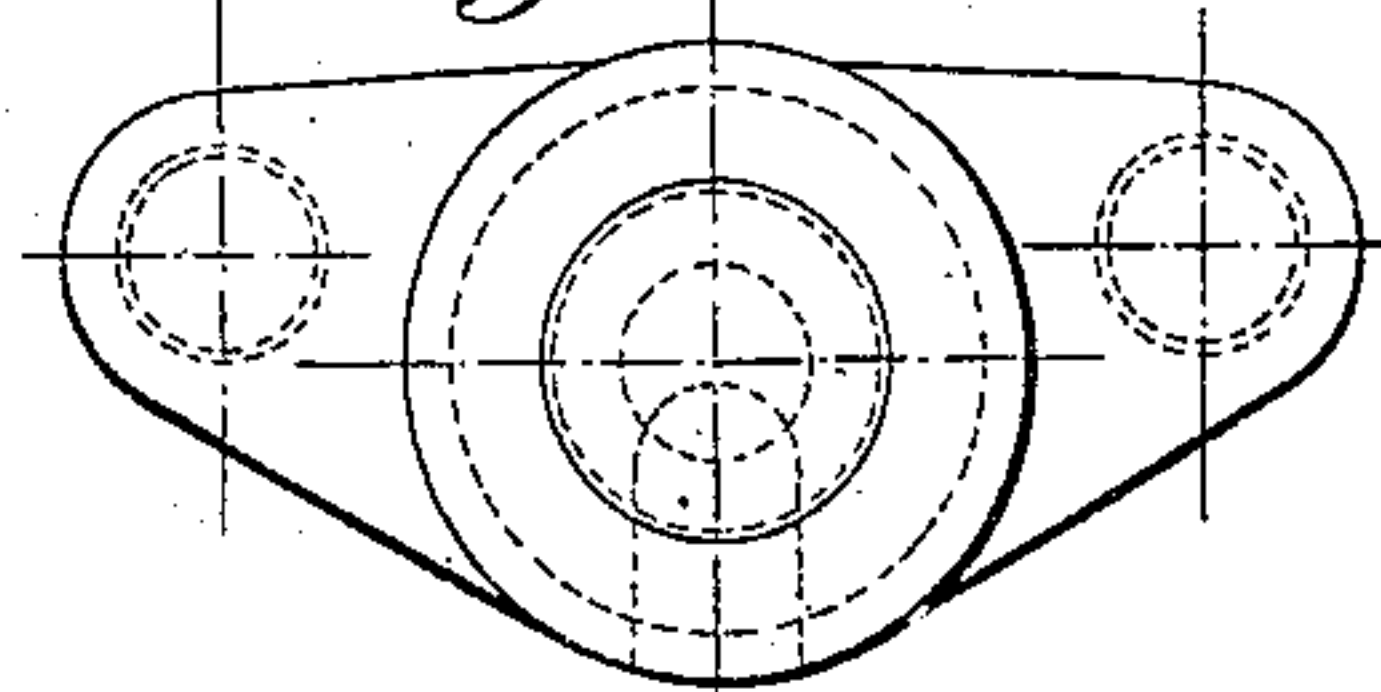


Fig. 3.

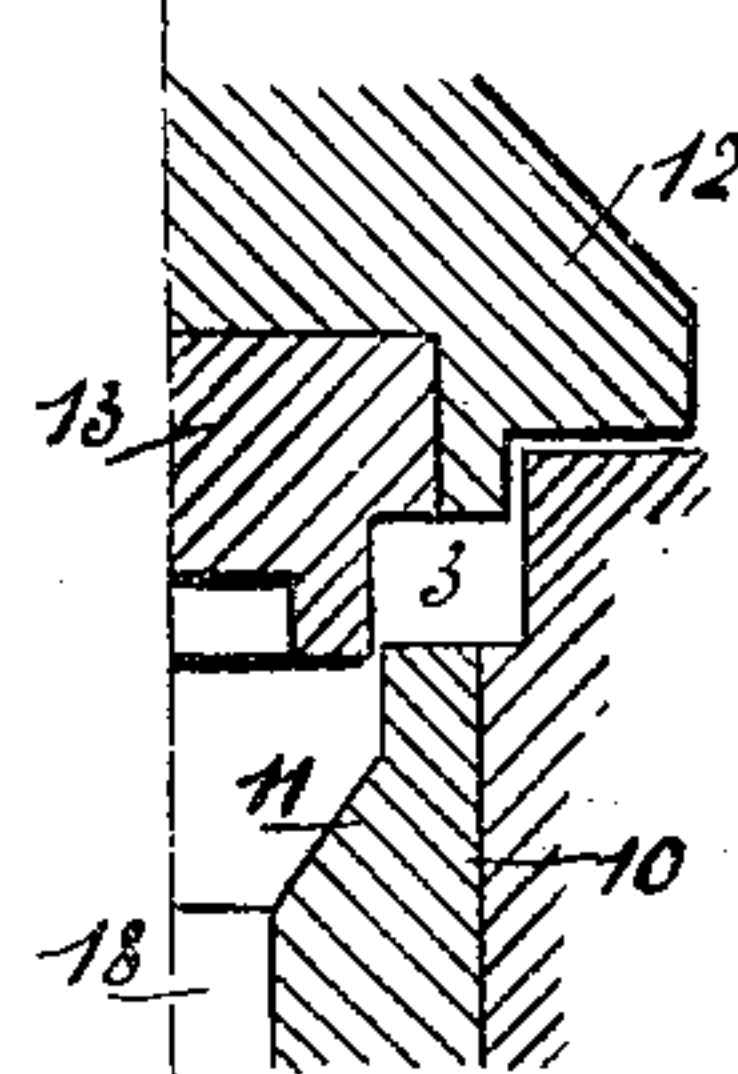


Fig. 4.

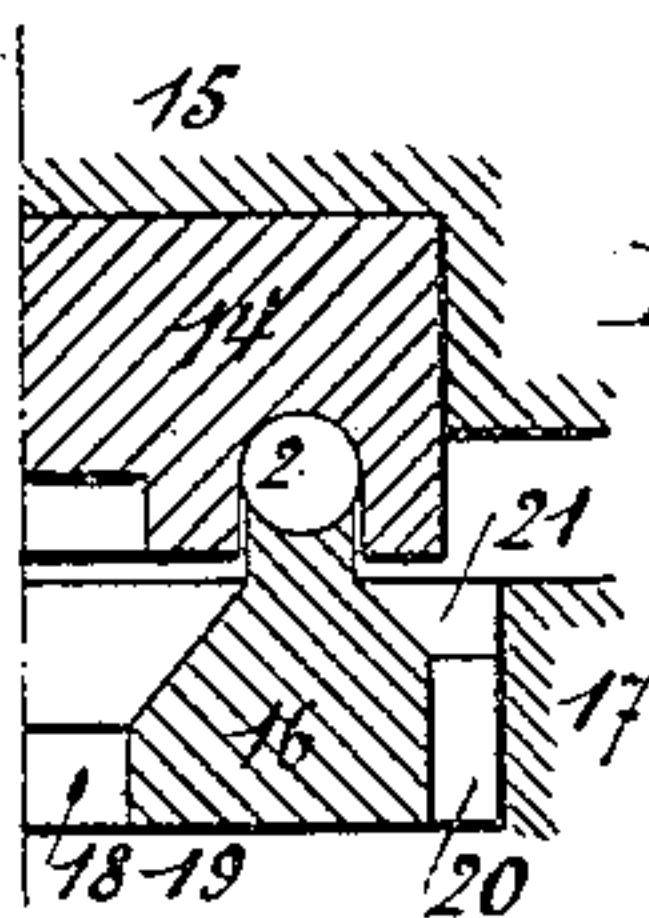


Fig. 5.

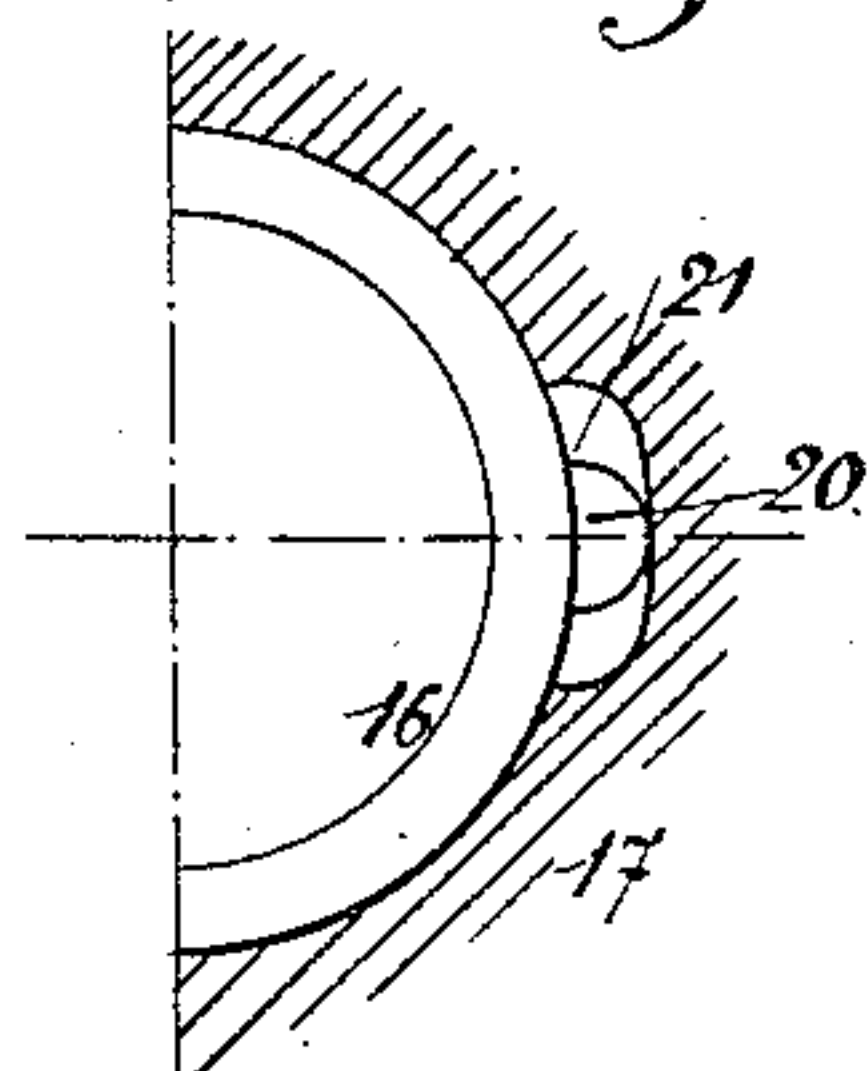
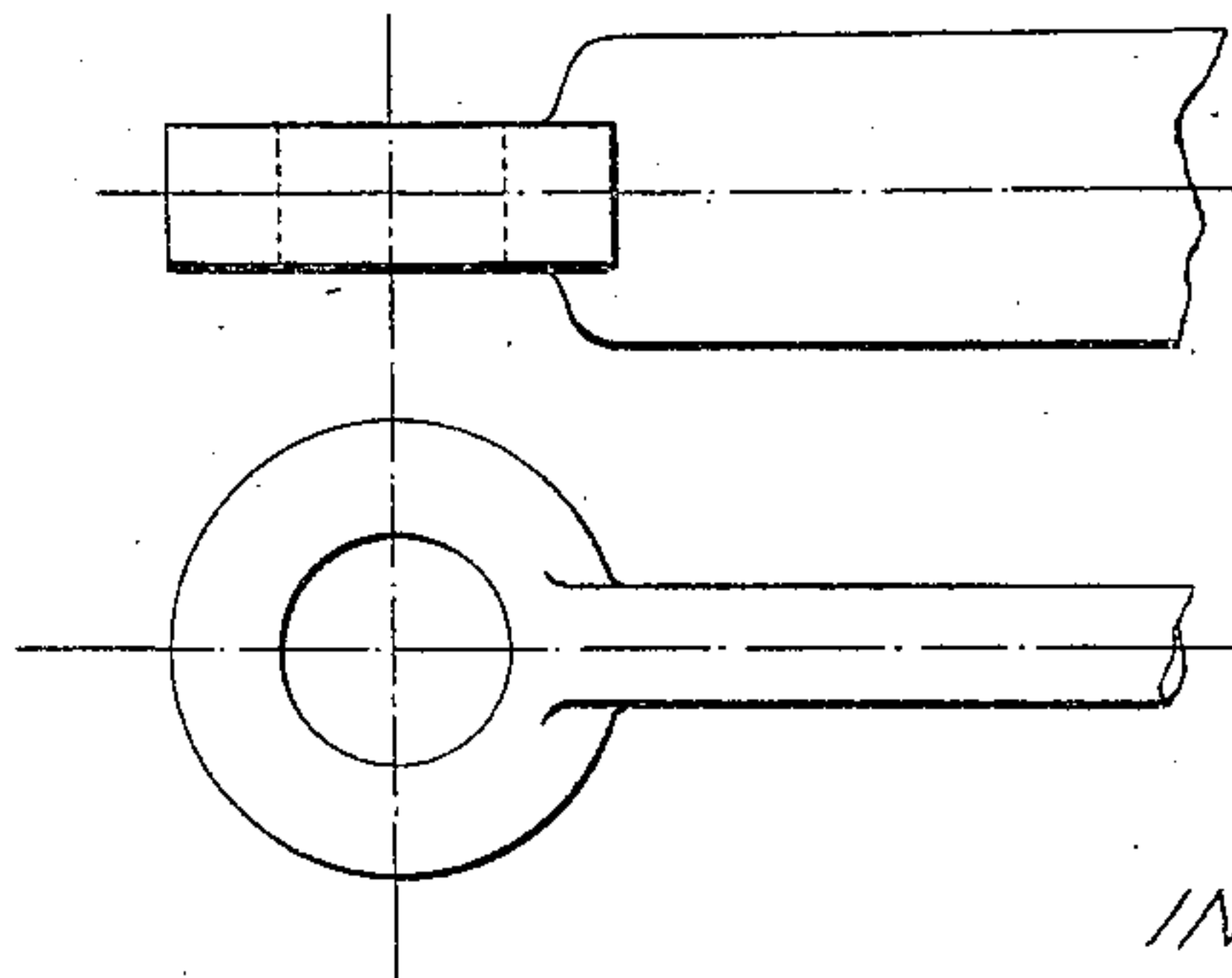


Fig. 6.



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2 SHEETS—SHEET 2.

Fig. 10.

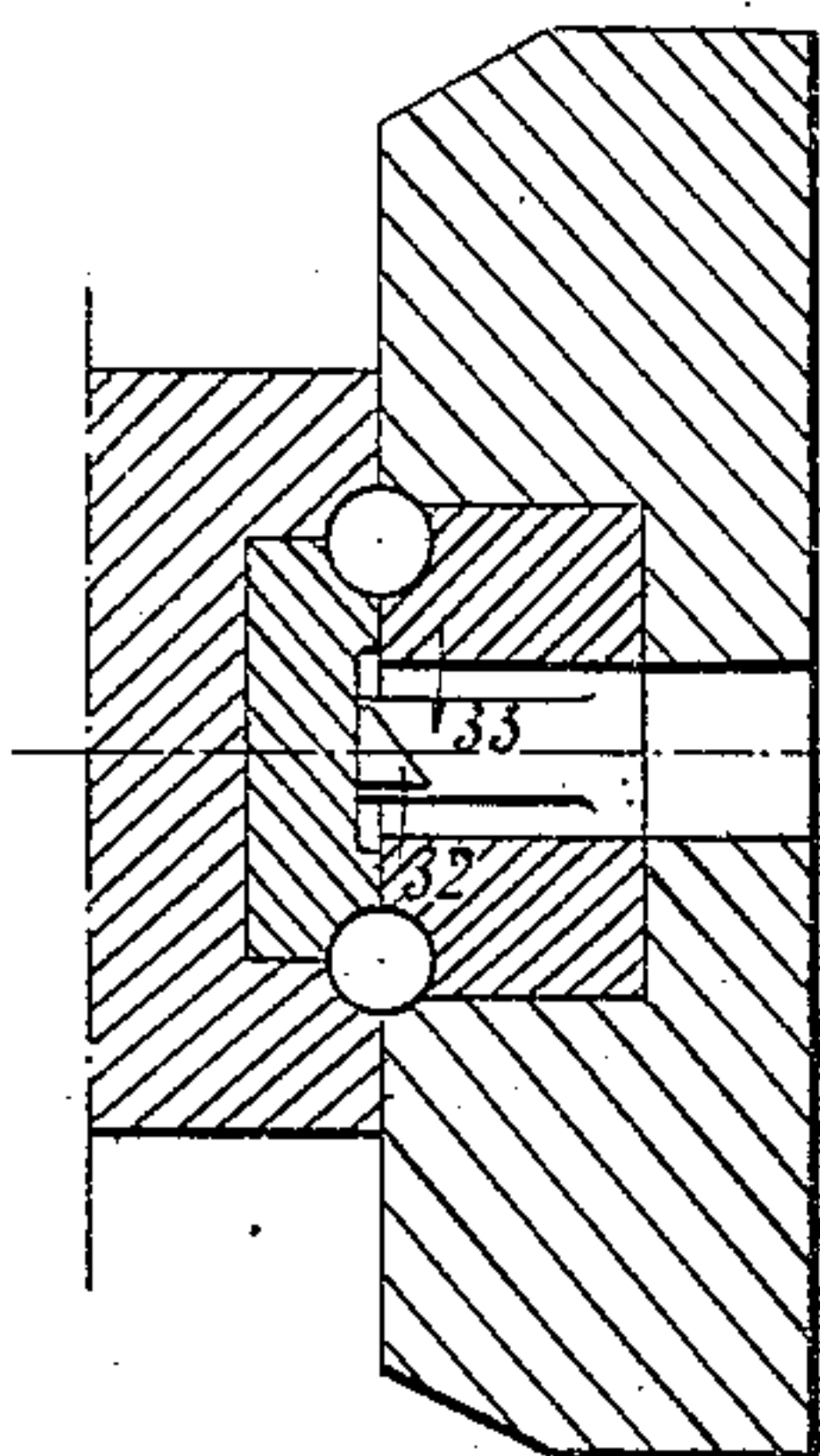


Fig. 9.

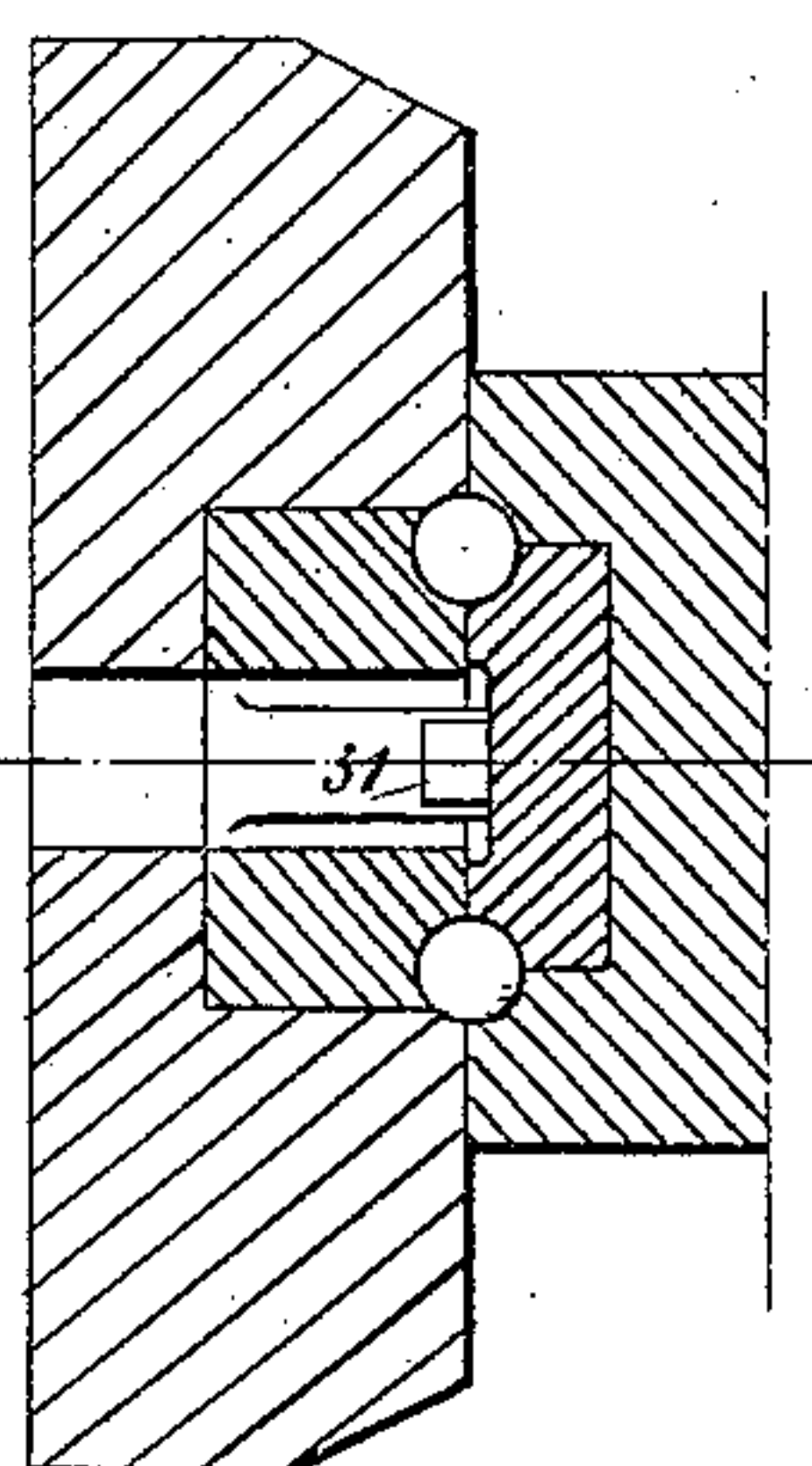


Fig. 7.

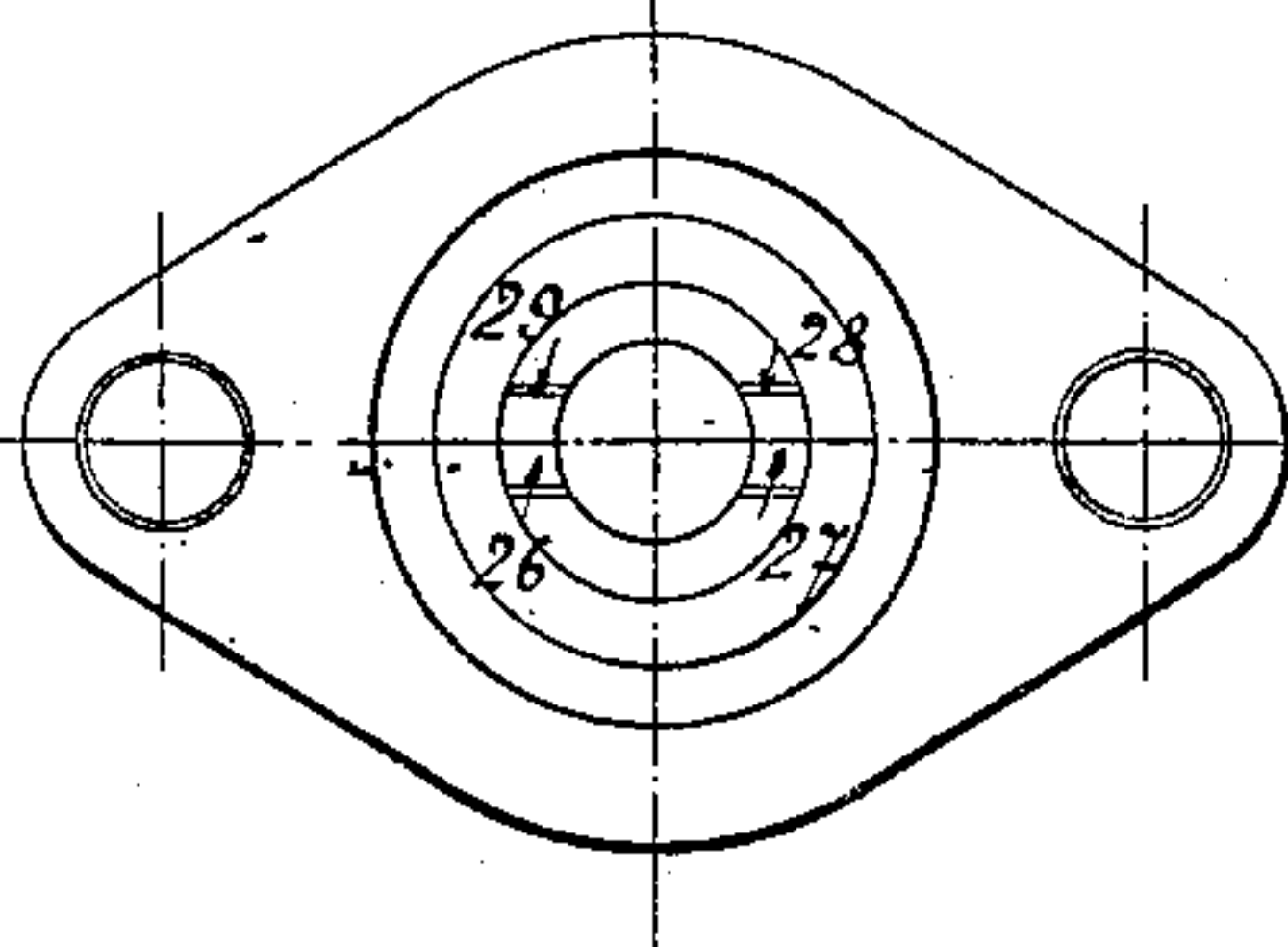
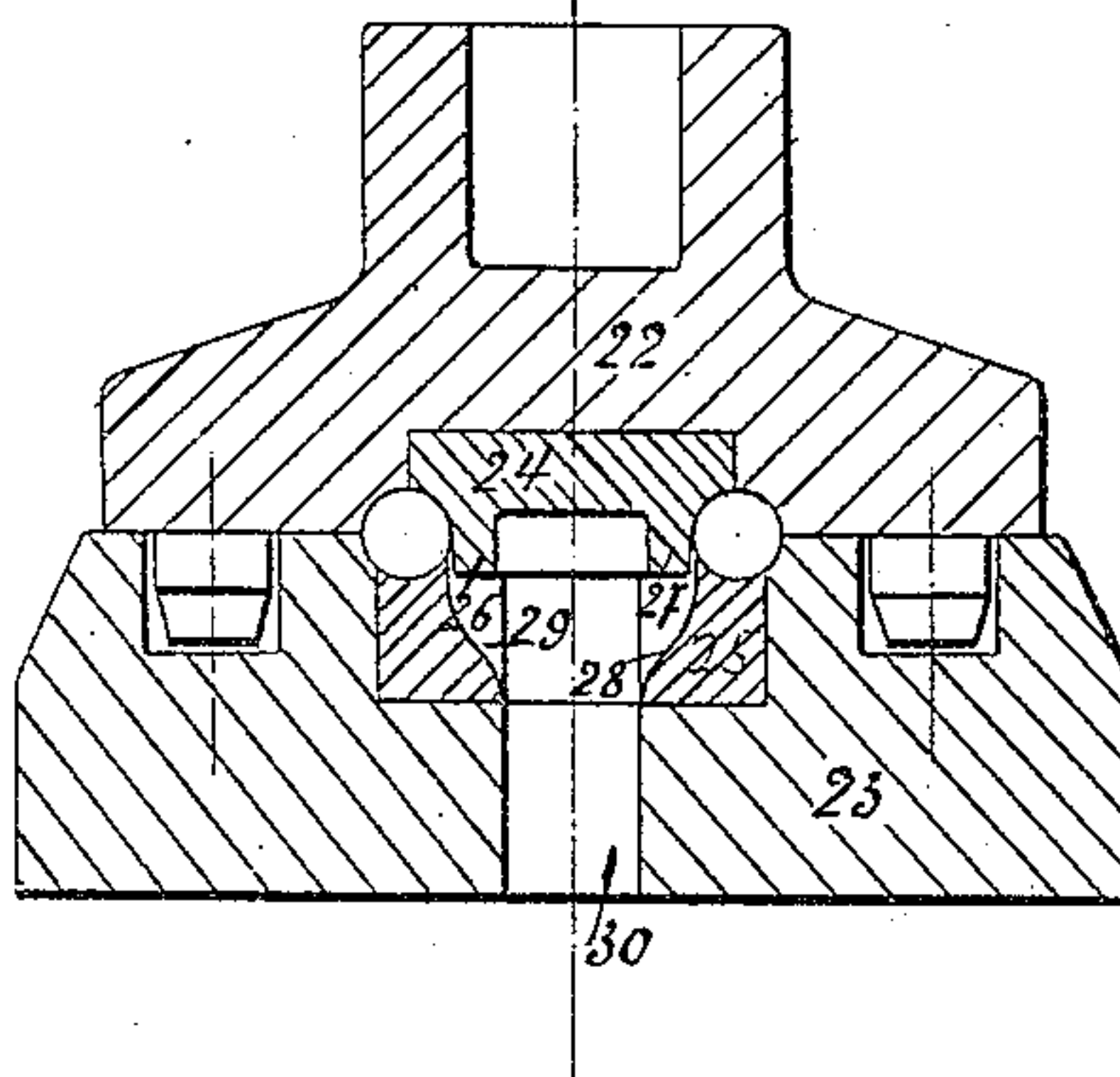


Fig. 8.



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APPARATUS FOR FORGING IN DIES.

No. 875,443.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed July 17, 1905. Serial No. 269,884.

To all whom it may concern:

Be it known that I, EMILE LELONG, engineer, at Conillet, Belgium, have invented Improved Apparatus for Forging in Dies and the Like, of which the following is a specification.

The object of this invention is to provide an improved apparatus by which the fins formed in the process of forging in dies and the like may be readily removed and disposed of.

In the accompanying drawings:—Figure 1 is a cross section of a hammer and anvil in which my invention is incorporated; Fig. 2 is a plan view of the same; Fig. 3 is a partial half cross section of the apparatus adapted to another form of die; Fig. 4 is a partial half cross section of the apparatus in another form; Fig. 5 is a plan view of the same; Fig. 6 is a plan view and side elevation of an integral ring and rod; Fig. 7 is a plan of another modification of my invention; Fig. 8 is a cross section of the same; Figs. 9 and 10 are further modifications of the apparatus shown in Fig. 8.

In order that the invention may be readily understood, I will consider a ring of any size having either a circular cross section as shown at 1 in Fig. 1, or a square cross section as shown at 3 in Fig. 3.

I will first of all presume that it is desired to forge in dies the link or ring 1 of circular cross section and to remove while the forging operation is proceeding the fins that may form inside the ring or link. With this object in view, I insert in the anvil 4 (Fig. 1) a die 5 having the dimensions required to resist the stresses to which it will be subjected. Likewise the hammer head 6 provided with a recess 7 engaging with the hammer rod of the steam hammer or forging machine, carries a block or die 8, the lower part of which has the shape of circular punch and enters the said ring die 5 as shown in the drawing, thereby acting like the punch of a punching machine at and below the horizontal plane of symmetry of the ring.

It is known that in order to secure a proper register of the dies during the forging of the article, the proper contact of the hammer with the anvil is insured by tenons 9 arranged either on the hammer head or on the anvil face.

If instead of a ring of circular cross section, a shrinkage hoop or ring of square cross section has to be forged in dies and the inner fin

removed at the same time, an apparatus of a similar construction shown in Fig. 3, is used. This arrangement consists of a cutting ring 11 located in the anvil 10, and of another ring 13 in the hammer head 12, this ring 13 forming with the ring 11 a circular punch. It will be noticed that when a square cross section is dealt with, the cutting ring located in the anvil forms the bottom of the die and that the outer fins are avoided by suitable proportions of the length of cutting portion of the ring 13 and of the part of the hammer head 12 that enters the recess formed in anvil 10.

If in the case of a circular cross section, it is wished to remove not only the inner fin but also the outer fin, a ring 14 having a double cutting edge is adapted as shown in Figs. 4 and 5, to the hammer head 15 while a ring 16 likewise provided with a double cutting edge is arranged in the anvil 17.

It should be observed that in all cases (Figs. 1, 3, 4 and 5), the rings 5 and 11—16 as well as the anvils 4 and 10—17 are provided with central holes 18—19 for removing the detached fins from the machine. In the arrangement shown in Figs. 4 and 5, however, there are left on the outer periphery of the ring 16 and in the anvil 17 a number of passages 20 with upper funnel-shaped ends 21 facilitating the removal of the fins detached from the outer periphery of the forged article.

If it be, for example, desired to forge a head or a ring integral with a rod or other body as shown in Fig. 6, or a ring engaging another, the cutting rings are interrupted at the required places and corresponding recesses, provided as usual in the anvil and hammer.

In the arrangements illustrated in Figs. 1 to 5, it will be noticed that the removal of the fins is effected simultaneously in the whole of the periphery of the die-forged object, but it may be necessary to effect the removal of the fin only successively on certain parts by the use of two or more punches integral with the die or the operating part of the anvil, or of the hammer. For this purpose, I arrange in the anvil 23 and hammer 22 dies 24 and 25, Fig. 8, but instead of giving to the lower part of the die 24 the shape of a circular punch, I provide on this lower part two or more punches 26—27 which are capable of entering recesses of suitable shape 28 and 29 formed in the die 25, these recesses being so

arranged as to facilitate the removal of the detached fins from the forging device through a passage 30.

5 The punches 26 and 27 may, as shown at 31 Fig. 9, have their lower face parallel to the face operated on, or as a modification this lower face may be inclined thereto as shown at 32 Fig. 10, if it be supposed that the ring be shifted in any manner on the anvil in the
10 direction of the arrow 33.

I claim as my invention:—

Means for forging rings in dies, comprising a die adapted to be located on the anvil of a forging device and having the shape required
15 for forging the ring, in combination with a

die adapted to be fixed on the hammer of the forging device and having the shape for forging the ring, and provided with a part entering recesses of corresponding shape in the anvil die, to remove the inner fins during the forging operation and a central passage to carry off the detached fins. 20

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

EMILE LELONG.

Witnesses:

GUSTAVE PIERRY,
EMILE NUYTS.