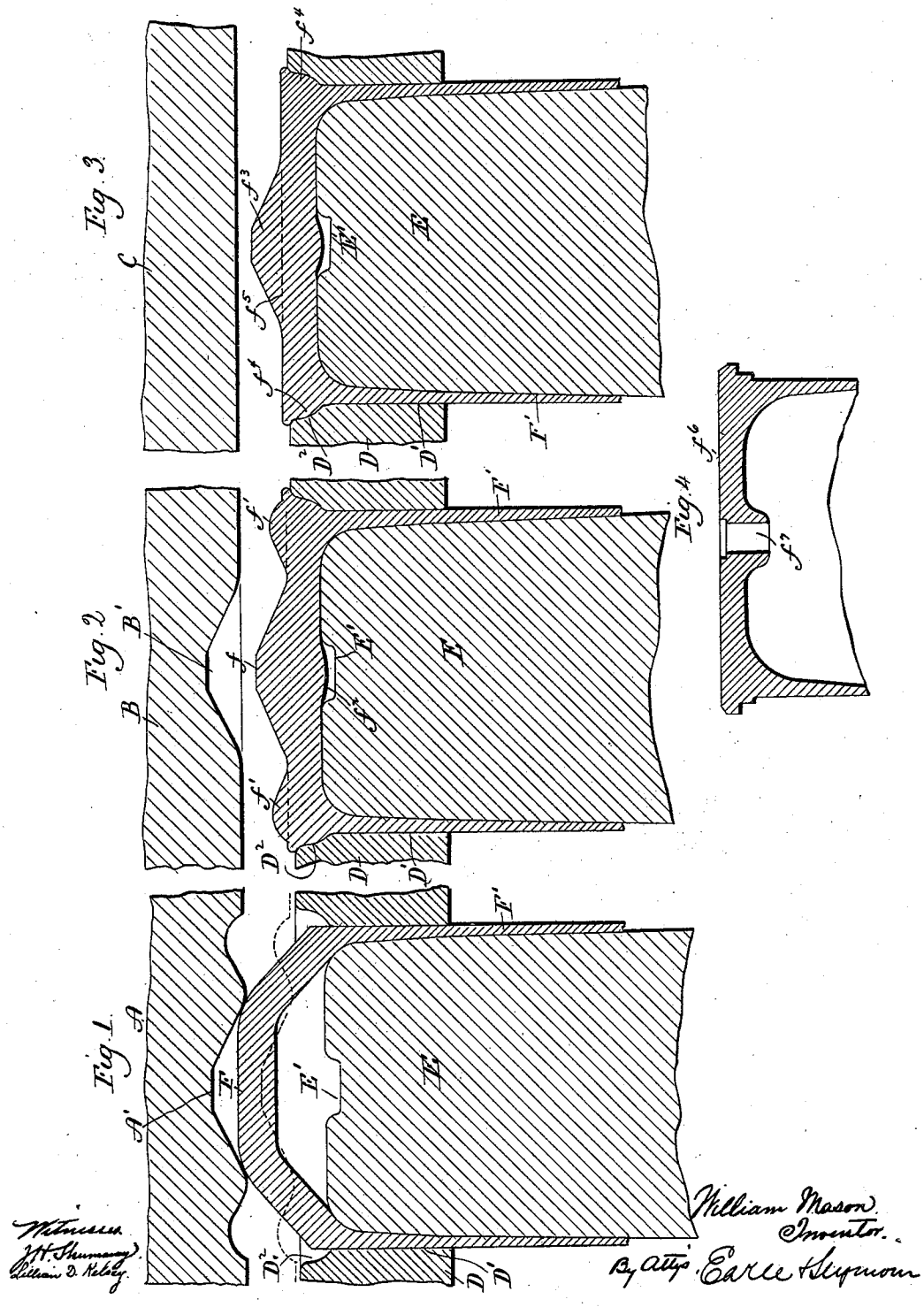
(No Model.)

W. MASON.

DIE FOR MAKING CARTRIDGE CASES.

No. 592,095. Patented Oct. 19, 1897.



THE NORRIS-PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM MASON, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE WINCHESTER REPEATING ARMS COMPANY, OF SAME PLACE.

DIE FOR MAKING CARTRIDGE-CASES.

SPECIFICATION forming part of Letters Patent No. 592,095, dated October 19, 1897.

Application filed June 28, 1897. Serial No. 642,604. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MASON, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Series of Dies for Heading Cartridge-Cases; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figures 1, 2, and 3, broken views in vertical section showing the primary, secondary, and finishing dies, respectively, and all showing the stationary die and the punch-like core; Fig. 4, a broken sectional view of a completed cartridge-case head.

My invention relates to an improved series of dies for heading that class of cartridge-cases having integral heads, the object being to economically produce very large cartridge-cases of the character described, by reducing the pressure required for the formation of their heads, whereby an economy of power is not only secured, but also a reduction in the strain and wear upon the press employed is effected.

With these ends in view my invention consists in a series of dies, the respective members of which have certain forms, as will be hereinafter described, and pointed out in the claim.

In carrying out my invention I employ three plate-like dies—*i. e.*, a primary die A, a secondary die B, and a finishing-die C, all of which coact with an annular receiving-die D, and a punch E, the said dies and punch being arranged in a suitable press, designed to withstand enormous pressures. The cartridge-case blank, as it comes to the press, has a crowning closed end F and a body portion F′, gradually thickening toward the said end, which is made thick enough to provide the required amount of metal for the finished head. Such a blank, having been set down into the receiving-die D over the punch E, is first subjected to the action of the primary die A, the lower face of which is formed with a very shallow, wide-spreading, frusto-conical, or flaring recess A' and a concentric annular recess A^2 of cup-like form in cross-section. The receiving-die D is formed with a circular central opening D′, very slightly contracted from its upper end downward, and having its upper end formed with a shallow annular recess D^2, approximately corresponding in its largest diameter to the largest diameter of the recess A^2 before mentioned, and having cross-sectionally-curved walls. The said punch E is formed with a slight taper at its upper end, in exact conformity with the internal taper of the body portion F′ of the blank, its extreme end having a small centrally-arranged shallow pocket E′. When the said primary die A acts in conjunction with the receiving-die D and the punch E upon the crowning closed end F of the cartridge-case blank F′, the metal in the said end of the blank is caused, as it were, to flow, and be rearranged in the form of a central frusto-conical boss f and a rudimentary bead-like flange or rim f', the lower portion of which fills the annular recess D^2 of the receiving-die D. The center of the inner face of the blank is also forced inward into the recess E′ of the punch, so as to form a slight protuberance f^2. Without being removed from the receiving-die D of the punch E, the partially-developed cartridge-case is now subjected to the action of the secondary die B, which has a centrally-arranged, shallow, frusto-conical, or flaring recess B′, corresponding to the recess A' of the primary die A, but otherwise this die has a flat face, having no annular recess corresponding to the annular recess A^2 of the primary die A. Now when the partially-developed cartridge-case is subjected to the action of the secondary die B, the rudimentary flange or rim is flattened down nearly to the plane of the receiving-die D, leaving it in the form shown in Fig. 3, which represents the cartridge-case blank as having a central frusto-conical boss f^3 and a flattened rim or flange f^4. Without removing it from the punch E, or the receiving-die D, the cartridge-case blank is then subjected to the action of the finishing-die C, which has a perfectly flat operating-face, which, when it acts upon the blank, obliterates, so to speak, the boss f^3, the metal of which is forced inward to the dotted line f^5.

The cartridge-case blank has now become a cartridge-case, and is finished by some suitable turning and boring operations, which bring its flange f^6 into final shape, and provide it with a primer-chamber f^7, as shown in Fig. 4.

It will be readily understood that by developing the head of the cartridge-case by a series of operations, rather than at one operation, I am enabled to do it under lower pressures, and with less strain upon the parts and the press in which they are set. If desired, the boss formed during the operation might be broken down and eliminated before the bead-like rudimentary flange or rim is broken down, by a suitable conformation of the dies B and C.

By means of my improved dies, I am enabled to economically produce the largest-sized cartridge-case heads without requiring a pressure which would be liable to upset the sustaining-punch or its supports.

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

A series of dies for forming the heads of that class of cartridge-cases in which the heads thereof are made integral with the body portions thereof, the said series consisting of a primary die having its lower face formed with a centrally arranged, shallow, frusto-conical or flaring recess, and an annular recess concentric therewith, a secondary die, having its lower face formed flat with the exception of a centrally-arranged, shallow, frusto-conical or flaring recess, and a finishing-die having a plain or flat operating-face, the said primary, secondary and finishing dies coacting with a die having a slightly-tapering opening, and a shallow annular recess, and also with a punch which rises into the said opening of the die last mentioned, and the said primary die acting upon the crowning closed end of the cartridge-case blank to form a central frusto-conical boss and a rudimentary bead-like flange, and the said secondary die acting upon the blank-case to flatten down the said flange and the said finishing-die acting upon the blank to flatten down the central frusto-conical boss formed by the primary die, and one or more of the said dies also operating to force the metal of the blank inward into the recess formed in the punch.

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

WILLIAM MASON.

Witnesses:
THOMAS C. JOHNSON,
D. H. VEADER.