

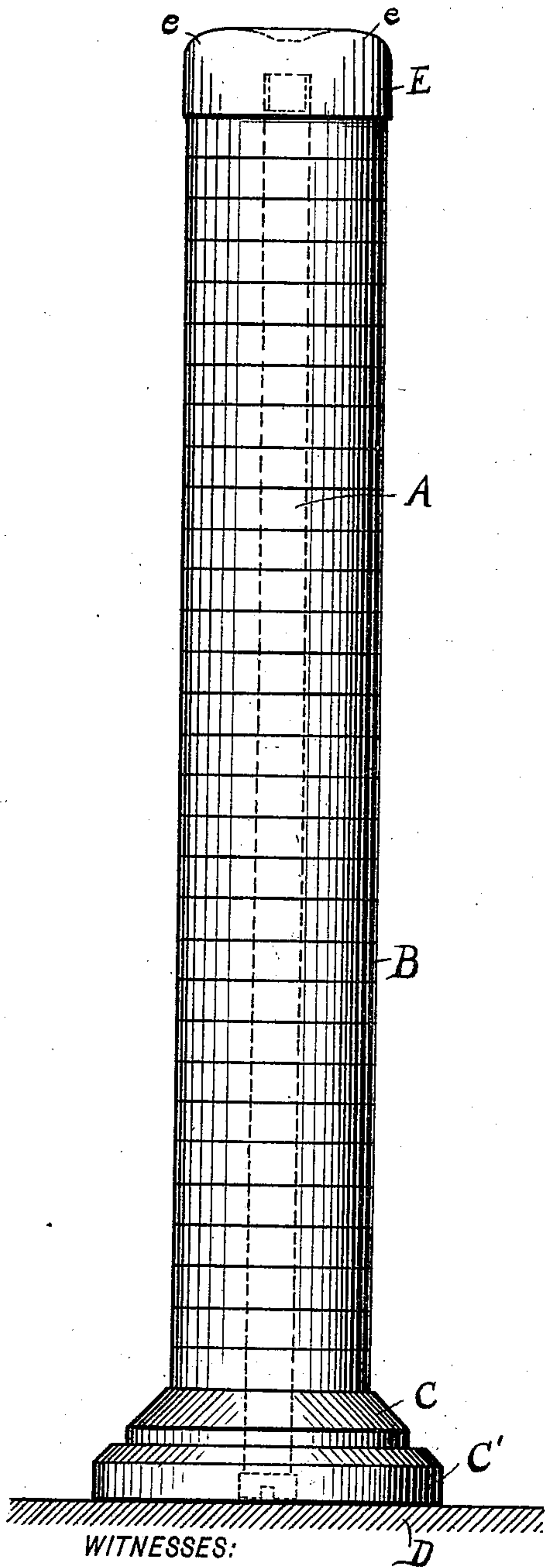
(No Model.)

W. MASON.
PUNCH.

No. 560,515.

Patented May 19, 1896.

Fig. 1.



WITNESSES:

F. Philip Farnsworth.
Samuel Ayer Jr.

Fig. 2.

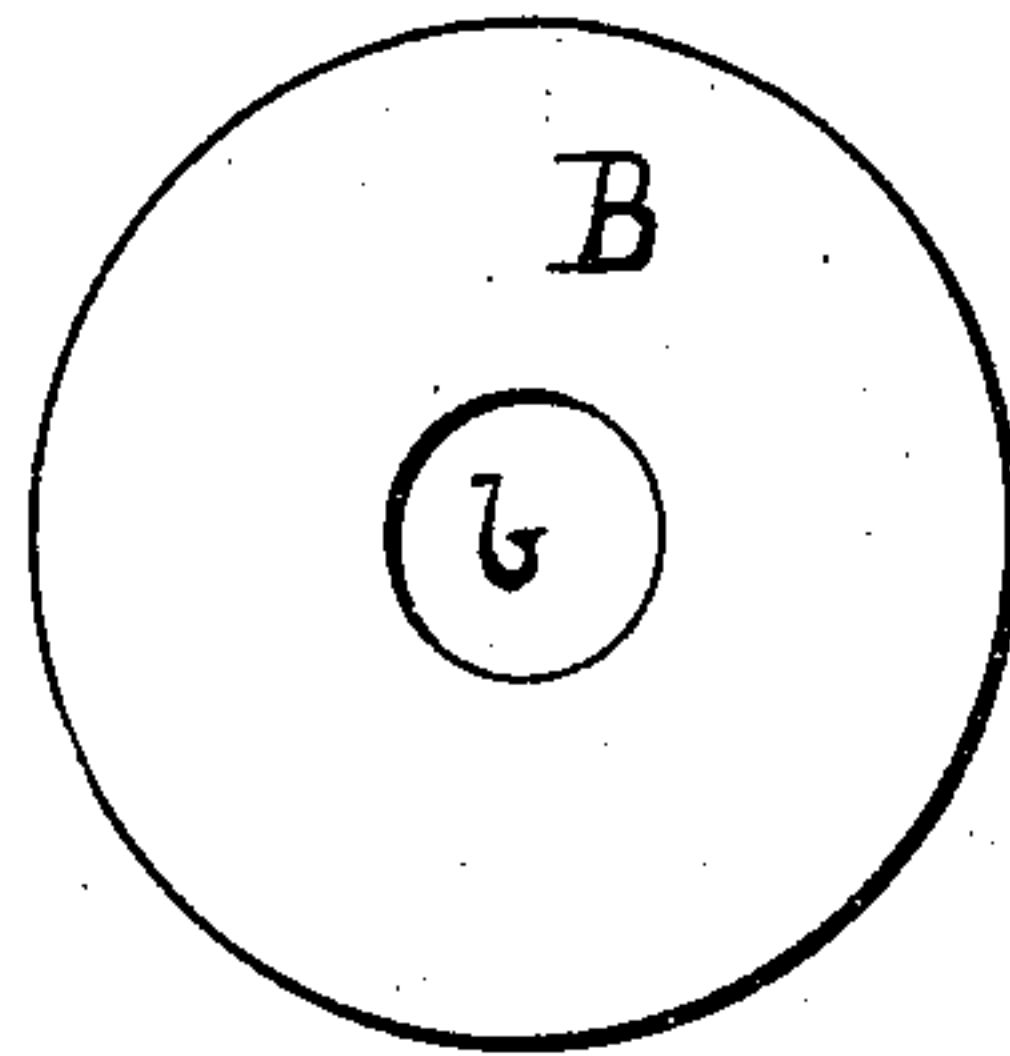


Fig. 3.

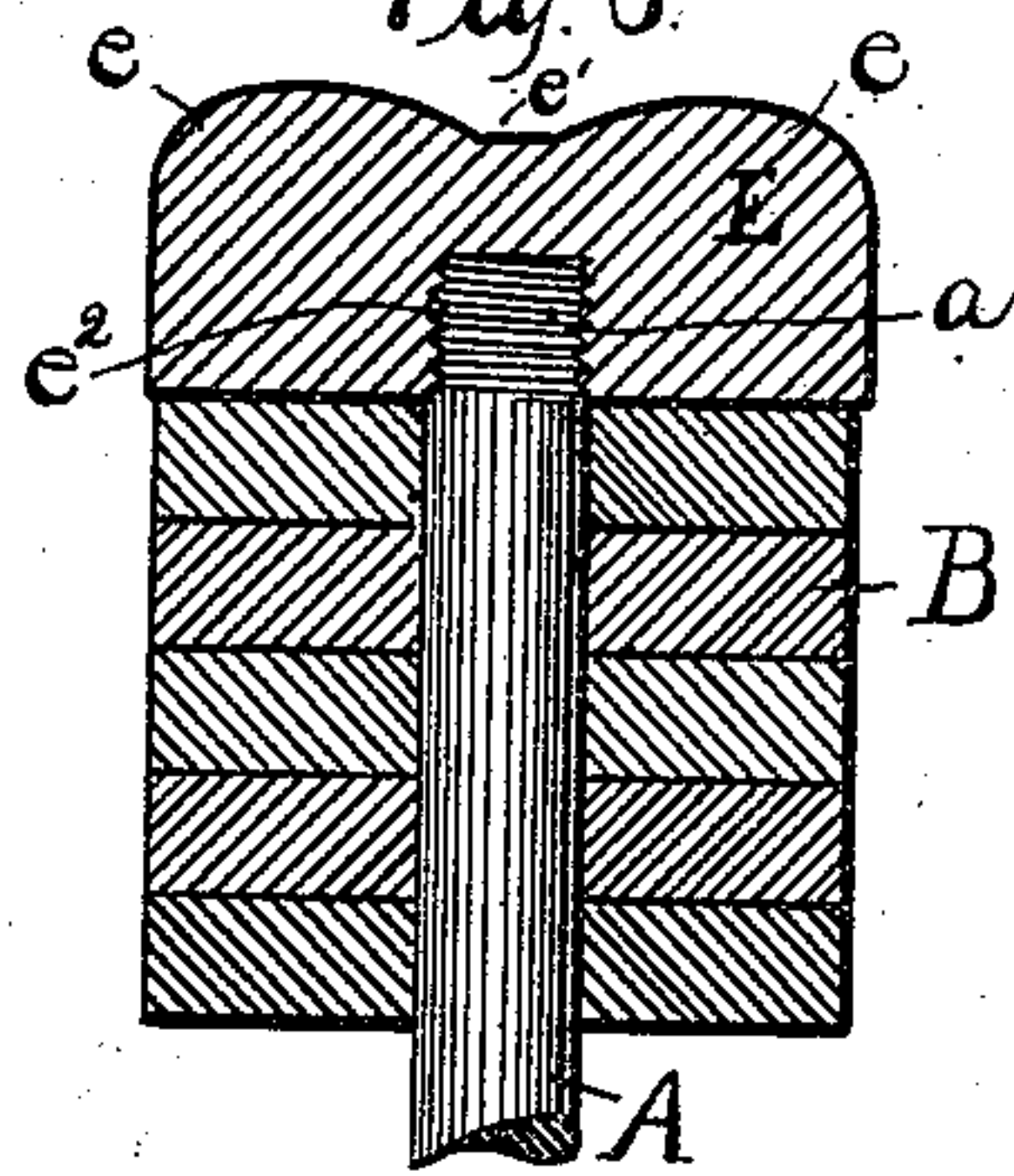
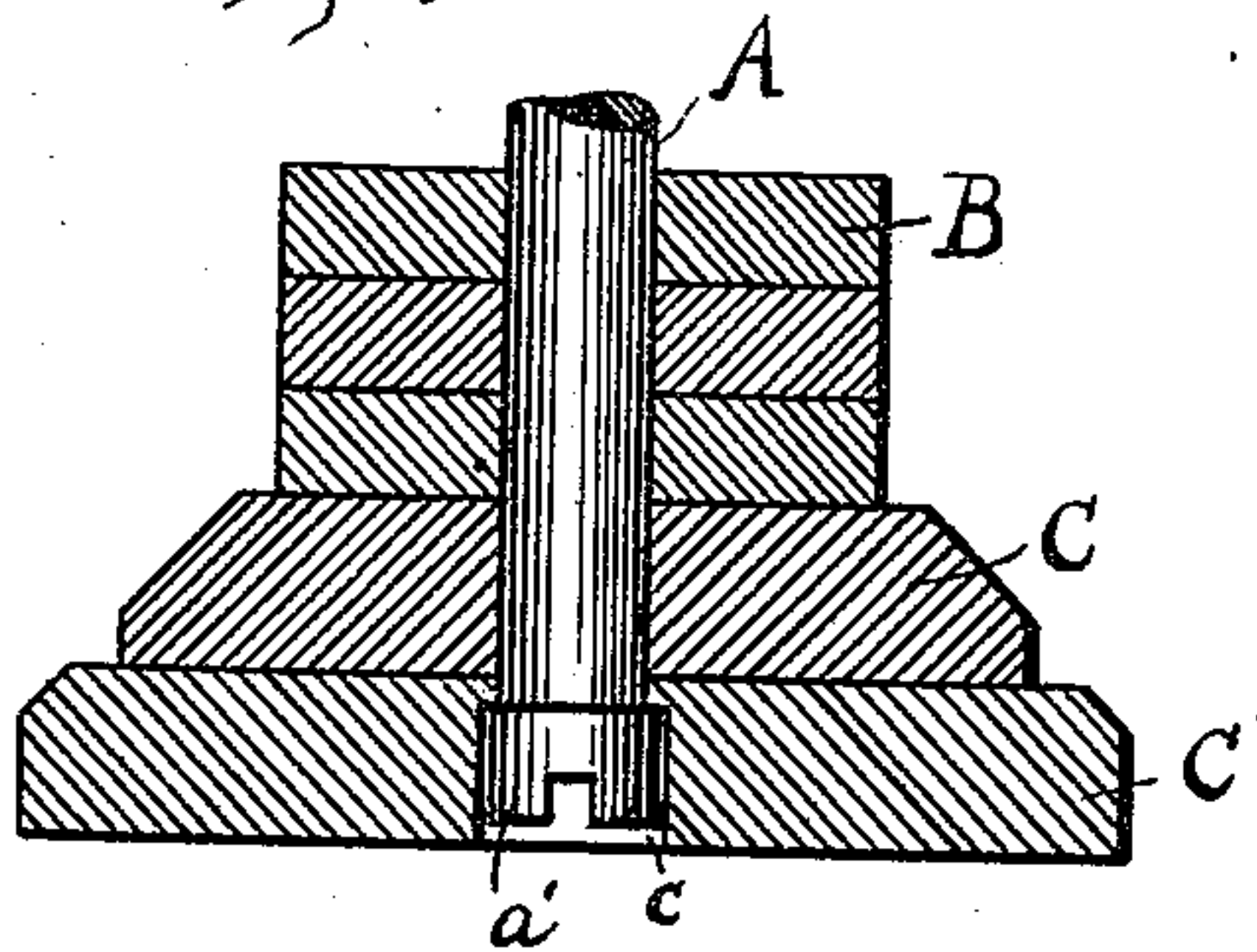


Fig. 4.



INVENTOR

William Mason

BY

Robinson & Fisher
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UNITED STATES PATENT OFFICE.

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

PUNCH.

SPECIFICATION forming part of Letters Patent No. 560,515, dated May 19, 1896.

Application filed January 8, 1896. Serial No. 574,762. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MASON, a citizen of the United States, and a resident of the city and county of New Haven, State of Connecticut, have invented a new and useful Improvement in Punches, fully described and set forth in the following specification, taken in connection with the drawings, which form a part thereof, and in which—

Figure 1 represents a punch in elevation embodying this invention. Fig. 2 is a top view of one of the disks thereof. Fig. 3 is a vertical central section of the upper end of the punch. Fig. 4 is a vertical central section of the base of the punch.

In all figures similar letters of reference represent like parts.

This invention relates to a punch or tool intended to withstand heavy end pressure. In certain classes of work, such as the heading of large cartridge-cases, an ordinary punch made of one piece of steel cannot be so hardened as to withstand the pressure to which it is necessary to submit the case in order to form the head. The size of the piece of steel required for the punch for this work is such that by tempering the requisite hardness cannot by known processes be had.

The object of this invention is to overcome this difficulty; and it consists in the construction of a punch formed of a series of thin disks of such thickness that they may be separately tempered to withstand the greatest pressure of which the steel is capable. The punch is built up of these disks, and a central core or bolt is used to hold them together and in place. When these disks, properly tempered, are put together, a whole punch is obtained, evenly hardened, which can resist a longitudinal pressure greater than that which is possible to put upon a punch made of a single piece and of the same exterior dimensions.

Referring to the drawings, wherein the invention is shown applied to a punch for heading large cartridge-cases, although the invention is in no way limited thereto, A represents a core or rod of iron, the upper end *a* being screw-threaded a short distance and the lower end being provided with a screw-head *a'* and slot, Fig. 4. About this core are built up a

series of circular steel disks B of practically uniform diameter, placed one on top of another. These disks are of such thinness that each when hardened (previous to the assembly of the parts) will be hardened throughout and tempered to the highest point. The surfaces are ground to obtain a perfect fit when the parts are placed in position, and each disk is provided with a central circular hole *b* to fit snugly around the core A.

The lowest disks C and C', which form the plates of the base, resting on the support D, supporting the whole, are made larger in diameter than the disks B, the lower plate C' having an increased diameter over that of the upper plate C. By this increased diameter of the base-plates over the disks the punch is prevented from being driven into the support when enormous pressure, such as that of a hydraulic press, is exerted thereon. Both plates C and C' are provided with central perforations similar to those in the disks B for the core A, and the lower plate C' has in its under side a socket *c* for the head *a'* of the core, which has a slight longitudinal play therein.

The cylindrical head E of the punch, of hardened steel, is shown slightly tapered, so that the lower surface is greater than that of the disks, and the upper edge *e* is rounded, as shown in Figs. 1 and 3. A socket *e'* in the under side of the head E is internally screw-threaded for the upper end of the core A. When the parts are assembled, as shown in Fig. 1, a few turns of the core A by the slotted head *a'* will bind the parts securely together. Each steel part of the punch may be hardened separately to the highest point before assembling, and thereby the whole thoroughly and evenly hardened to resist pressure necessary to head large cartridge-cases.

The invention is not confined to a single central core, bolt, or rod, as two or more could be used, around which to build up the disks; nor is it limited to any particular means for securing the disks together.

Having now described my invention, (the details of construction of which may vary without departing from the spirit thereof,) what I claim, and desire to secure by Letters Patent, is—

1. A compound punch formed of a series of thin hardened-steel disks, secured together, substantially as described.

2. A punch formed of a series of thin hardened-steel disks built up around a central core, substantially as described.

3. A punch formed of a core or rod, a series of thin hardened-steel disks built up around said core or rod, the lower disks forming the base of the punch being of increased diameter over the remaining disks, substantially as described.

4. A punch formed of a central core; a head

secured to one end of said core; a base to which the other end of said core is secured; and a series of thin hardened-steel disks between said head and base through which said core passes, substantially as described.

In witness whereof I have hereunto set my hand, at New Haven, in the county of New Haven, State of Connecticut, this 6th day of January, 1896.

WILLIAM MASON.

Witnesses:

DANIEL H. VEADER,
W. S. BALDWIN.