

No. 789,520.

PATENTED MAY 9, 1905.

J. A. ADELL & J. L. BALTZER.

AUTOMATIC PRICK PUNCH.

APPLICATION FILED MAR. 23, 1905.

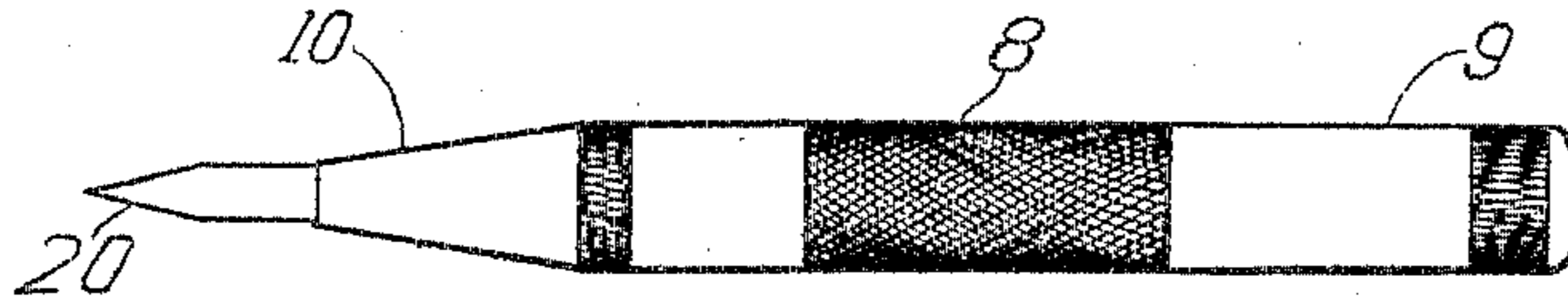


FIG. 1.

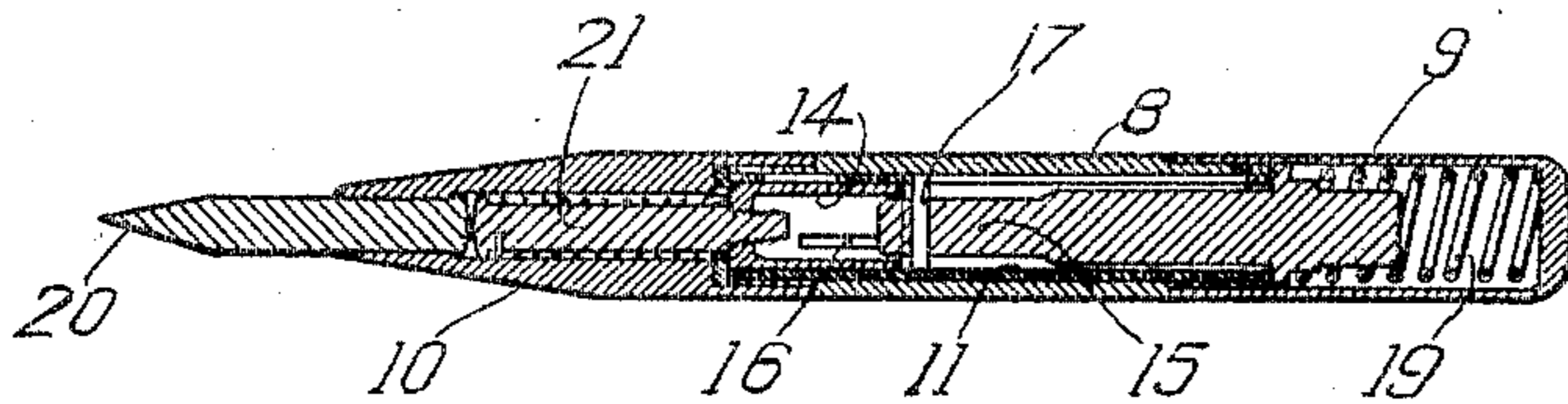


FIG. 2.

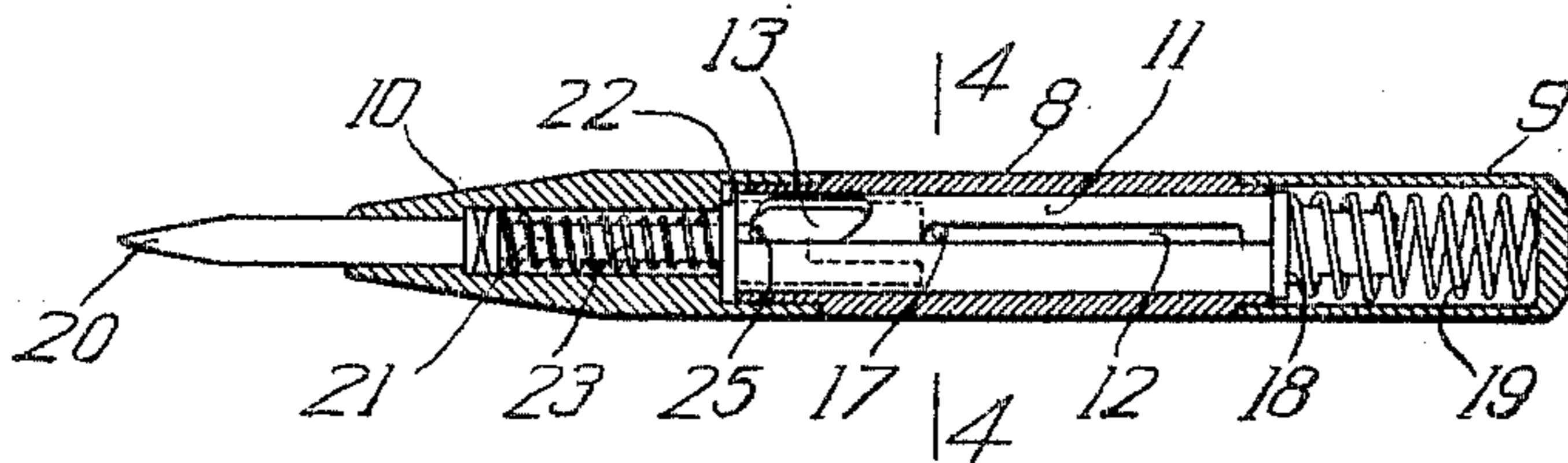


FIG. 3.

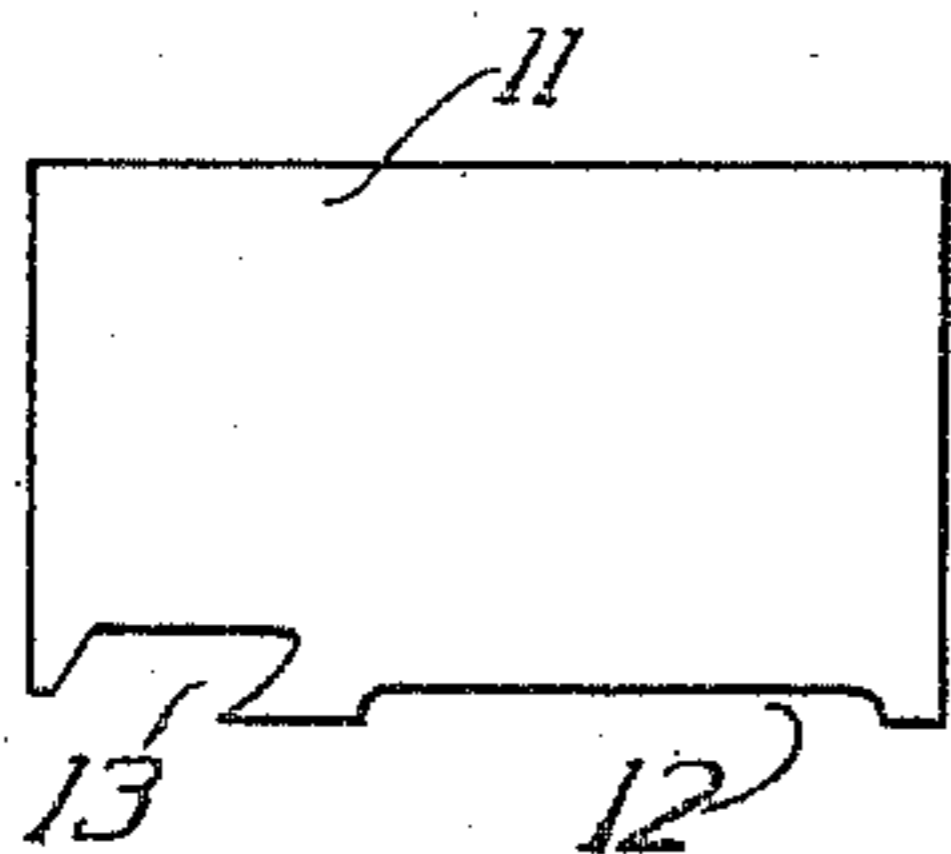


FIG. 4.

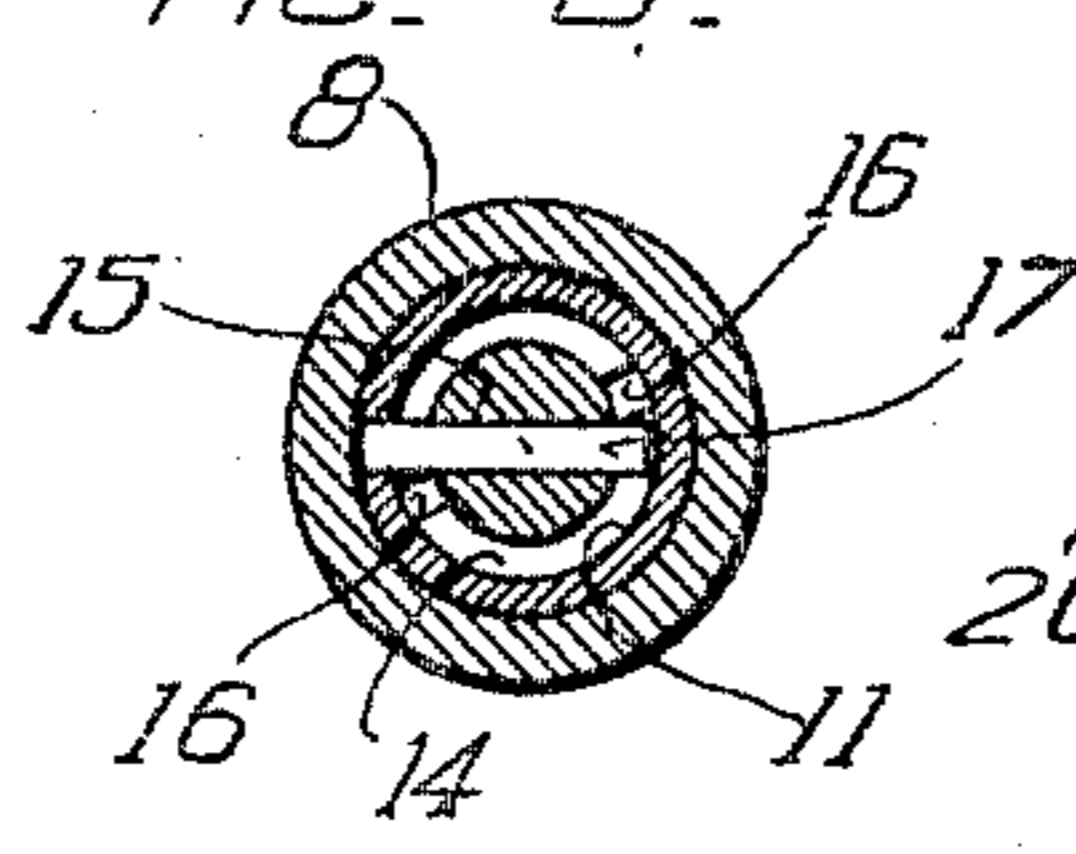


FIG. 5.

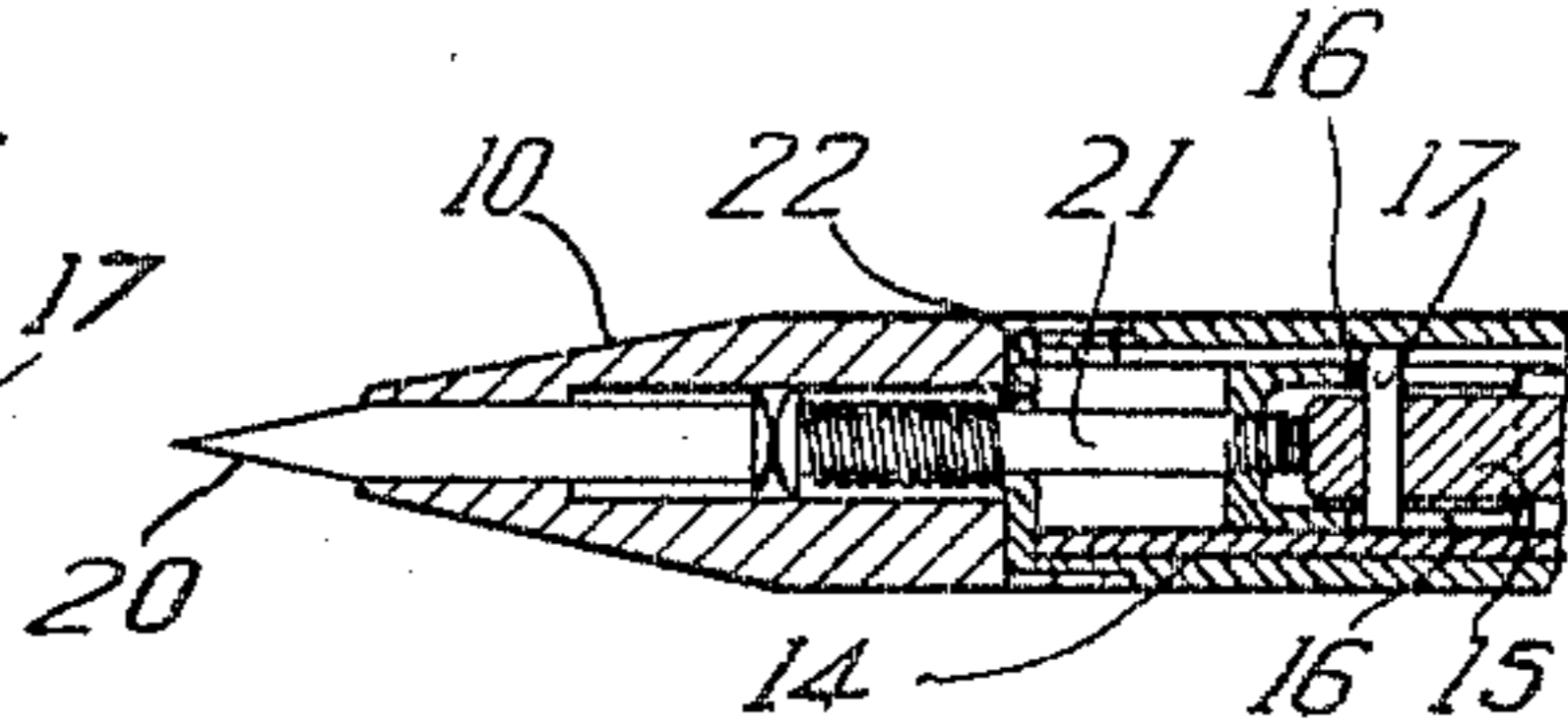


FIG. 6.

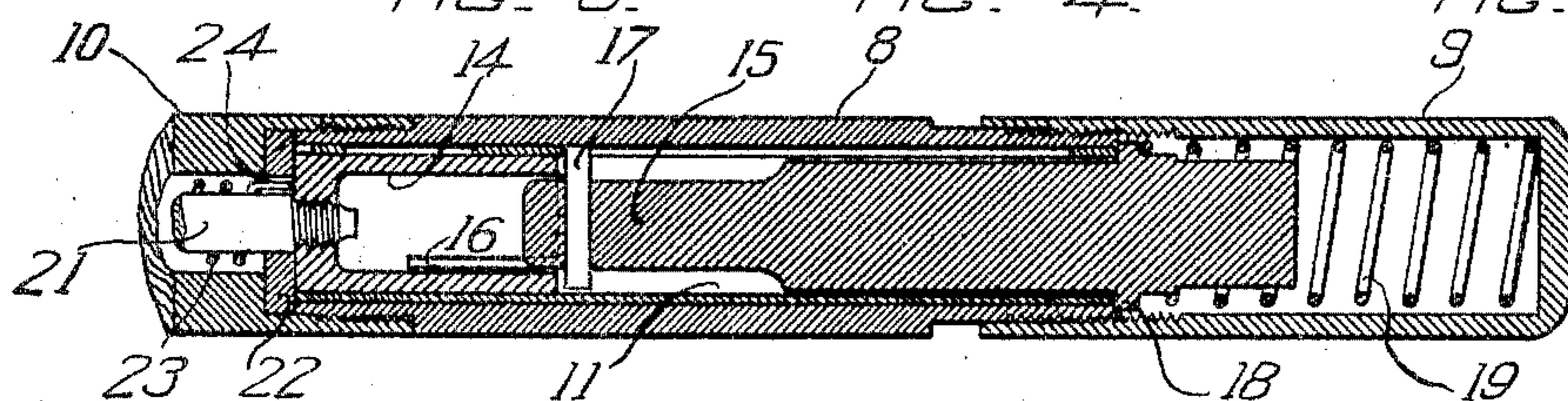


FIG. 7.

WITNESSES

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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC PRICK-PUNCH.

SPECIFICATION forming part of Letters Patent No. 789,520, dated May 9, 1905.

Application filed March 23, 1905. Serial No. 251,567.

*To all whom it may concern:*

Be it known that we, JOHN A. ADELL and JOHN L. BALTZER, of Athol, in the county of Worcester and State of Massachusetts, have jointly invented certain new and useful Improvements in Automatic Prick-Punches, of which the following is a specification.

The object of this invention is to provide an automatic prick-punch of improved construction, compact, self-contained, and adjustable to strike a heavier or lighter blow by the spring-actuated hammer, the tool being finely finished and not much larger than the ordinary solid punch.

The body of our improved punch is formed hollow in three sections-connected terminally, the middle section having fixed within it a slotted lining-shell having a cam-like aperture and inclosing a short movable shell with twin slots, these parts, together with two springs, serving to operate the hammer and through an interposed reciprocating piece drive the punch-point.

In the drawings, Figure 1 is a plan of the tool complete, and Fig. 2 an axial section thereof. Fig. 3 is a longitudinal section through the three-part outer shell, the inclosed parts, including the lining-shell, being in elevation and the movable inner shell indicated by dotted lines. Fig. 4 is a transverse section on line 4-4 of Fig. 3, double size. Fig. 5 is a longitudinal section, similarly enlarged, showing the adjustable shell-cap. Fig. 6 is a plan of the lining-shell blank, and Fig. 7 a sectional detail showing positions at the instant the hammer-blow is struck.

The body or external shell of the tool consists of the knurled cylindrical middle section 8, externally threaded at each end, and the cap or head 9 and tapering tip-section 10 screwed thereon, all having the appearance of being formed in a single piece. The middle section 8 has a thin steel lining 11 forced into it and permanently secured in place therein. This lining-shell 11 is formed, preferably, from a sheet-metal blank, as illustrated in Fig. 6, with a longitudinal slot 12 and a cam-

shaped recess 13, as shown in Fig. 3, the function of which will be explained presently.

Within the recessed end of the lining-shell 11 is a movable actuating-shell 14, open at one end to admit the reduced stem of the reciprocating hammer 15 and having through its opposite sides open slots 16, to be traversed at the proper time by the projecting ends of a transverse pin 17, extending through the hammer-stem. (See Figs. 2, 4, and 5.) The body of the hammer fits loosely within the lining-shell 11 and has a projecting shoulder 18, to which is applied the pressure of the driving-spring 19, located within cap 9. Such pressure may be varied in its force by partially unscrewing said cap, as illustrated in Fig. 5.

The tip-section 10 has an axial perforation, from which the punch 20 protrudes, its head engaging an internal shoulder, as in Figs. 2 and 3, to prevent it from dropping out and to form a proper stop. Adjacent to the punch-head is a headed reciprocating extension-piece 21, which passes freely through a fixed washer 22 and is screwed at tip into the outer end of actuating-shell 14 and secured permanently thereto. The washer 22 is forced into the enlarged end of tip-section 10 and held fast between it and the end of body 8. A coiled spring 23 surrounds the reciprocating piece 21 and is secured at one end in said piece and at the opposite end in a recess 24 in washer 22. (See Figs. 2 and 5.) This spring serves to untwist or restore to place the actuating-shell 14 when the hammer-blow is struck.

The operation is as follows: When the operator presses the tip of punch 20 against the material to be indented, the pressure is communicated by piece 21 to the actuating-shell 14, the inner end of which bears against the end portions of the hammer-lifting pin 17, thus compressing the two springs 19 and 23 preparatory to the driving blow. The actuating-shell 14 has a short projecting stud 25, which extends into the cam-shaped aperture 13 of lining-shell 11 and bears against the edge wall thereof. Hence when punch 20 and

shell 14 are pushed rearwardly the cam-wall at the inner end of said aperture deflects the stud 25 from a straight course, imparts a torsional strain to spring 23, and gives to the actuating-shell 14 a partial oscillation sufficient to bring the open ends of the slots 16 in said shell into the plane of the transverse pin 17, whereupon the projecting ends of said pin enter these slots, the pin no longer supports the hammer, and the compressed springs 19 and 23 force the hammer forward, and its reduced end strikes the inner end of the reciprocating piece 21, which transmits the blow to punch 20. (See Fig. 7.) The recoil of spring 23 permits it to somewhat untwist, such action being also promoted by the oblique outer end wall of recess 13, against which stud 25 impinges. Shell 14 is thus restored to its normal position, as seen in Fig. 4, the punch 20 protrudes, and the operation is repeated indefinitely.

We claim as our joint invention—

1. In an automatic prick-punch, the three-part hollow body, comprising the tip-section, the main body and the end cap, united terminally, the middle section having a rigid inner wall or lining longitudinally grooved or slotted and an oblique-ended recess or aperture, and provided with a movable, inner actuating-shell having a stud extending into said recess, in combination with the punch-point and its extension-piece reciprocating within the tip-section, the driving-spring inclosed within the end cap, and the reciprocating hammer, driven by said spring retracted by pressure against said point and otherwise actuated by the movable shell, substantially as set forth.

2. In an automatic prick-punch, the external body composed of three tubular sections connected terminally, the middle section being provided with a fixed metallic lining-shell, slotted longitudinally and formed with an

elongated recess having oblique ends, such middle section being also furnished with a movable actuating-shell, open at its inner end, longitudinally slotted through its side and having a short radial stud extending into said recess, in combination with the driving-spring, the reciprocating hammer reduced at tip to enter the actuating-shell and provided with a transverse stud or pin adapted to bear against the end of said shell and also to traverse the slot therein when the hammer-blow is struck, and with the punch-point and its reciprocating extension-piece secured axially to the outer end of the actuating-shell, substantially as set forth.

3. The described self-contained automatic prick-punch having a sectional hollow external shell, a driving-spring 19 inclosed within the end cap, a longitudinally-slotted lining 11, fixed within the central part of the outer shell, such lining formed with an oblique-ended recess 13, and an axial reciprocating hammer 15 having a transverse lifting-pin 17 projecting endwise into the slots of the actuating-shell and the longitudinal slot in said lining, in combination with the tapering tip-section 10 internally shouldered, the reciprocating punch 20 and the sliding and oscillating piece 21 therein, said piece extending through a fixed washer 22 and a torsion-spring 23 connected terminally to said piece and washer, and with the actuating-shell 14 slotted in its sides, secured axially to piece 21, provided with a radial stud 25, and serving, when the punch is retracted, to compress and then release the driving-spring, substantially as set forth.

In testimony whereof we have affixed our signatures in presence of two witnesses.

JOHN A. ADELL.  
JOHN L. BALTZER.

Witnesses:

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FRANK E. WING.