No. 733,319. PATENTED JULY 7, 1903.

T. E. GRAY.

PUNCH.

APPLICATION FILED FEB. 24, 1903.

NO MODEL.

Fig. 1.

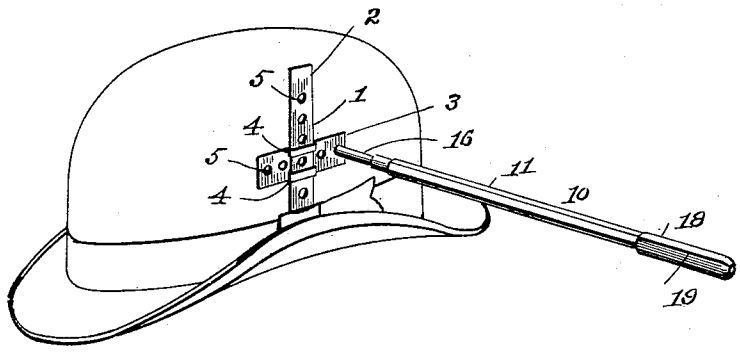


Fig. 2.

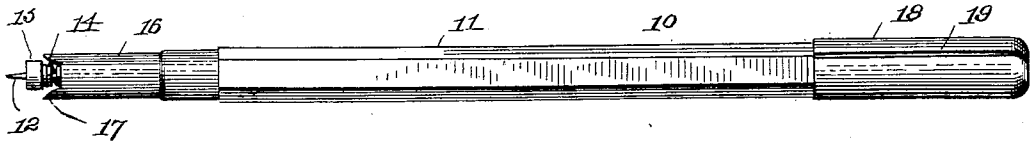
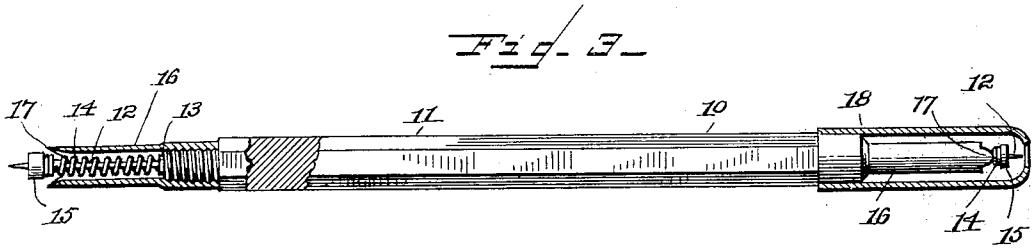


Fig. 3.



WITNESSES

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No. 733,319. Patented July 7, 1903.

UNITED STATES PATENT OFFICE.

THOMAS E. GRAY, OF CHICAGO, ILLINOIS.

PUNCH.

SPECIFICATION forming part of Letters Patent No. 733,319, dated July 7, 1903.

Application filed February 24, 1903. Serial No. 144,724. (No model.)

To all whom it may concern:

Be it known that I, THOMAS E. GRAY, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Punches, of which the following is such a full, clear, and exact description as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming a part hereof.

The object of this invention is to provide simple and efficient means for forming ventilating openings or perforations in felt or other hats. This object is attained by the use of the devices illustrated in the accompanying drawings; and the invention consists in certain novel features of the same, as will be hereinafter first fully described and then particularly pointed out in the claim.

In the drawings, Figure 1 is a perspective view showing the manner of using my improved apparatus. Fig. 2 is a side view of the punch on a larger scale, and Fig. 3 is a longitudinal sectional view of the punch.

The device comprises a guide or gage 1 and a punch 10. The guide or gage consists of a narrow strip 2 of light stiff and flexible material, such as sheet metal, and a plate 3 of the same or similar material having loops 4, through which the strip 2 passes. The strip fits in these loops snugly enough to prevent the plate from slipping accidentally thereon, but at the same time it permits the plate to be readily adjusted as desired. The plate and the strip are provided with series of perforations 5, so that the adjustment of the plate may be accurate and the ventilating-openings located at the same height and at the same distance apart on both sides of the hat.

The punch comprises a body 11, to the ends of which are fixedly secured needles 12, and around the bases of the needles are formed annular shoulders 13, to which are secured the inner ends of coiled springs 14. These springs surround the needles and extend very nearly to the points thereof, their outer ends being free and carrying ejector-rings 15, as shown. Secured on the shoulders 13 are cylindrical cutters or punches proper, 16, which inclose the springs and the needles and extend very nearly to the ejector-rings, the bits 17, formed on the ends of the punches, lying just in the rear of the ejectors when the parts are in their normal positions at rest. The cutters at the opposite ends of the tool are of different diameters, whereby a larger or smaller opening may be formed in the hat, as desired by the customer, and a cap 18 is provided to fit over the cutter not in use and furnish a shoulder to which pressure may be applied to force the punch through the hat-body. This cap is slitted longitudinally, as shown at 19, so that it will be resilient and fit closely around either punch.

The apparatus is not cumbersome and is designed to be used by the retail salesman when a hat is sold, so that the hat may be ventilated according to the taste or opinion of the wearer. The end of the strip 2 of the gage is slipped under the hat-band, and the plate 3 is adjusted to the proper point therein, as will be readily understood from Fig. 1, after which the punch is inserted through the openings of the plate and pressed through the hat with a slight rotary motion. The pressing of the punch against the hat-body forces the ejector backward within the cutter against the tension of the spring, and as soon as the cutter passes entirely through the fabric the spring forcibly expands, so that the ejector throws the wad off the needle. The needle serves to guide the bit accurately to the point where the perforation is desired and also acts as the pivot for the same during its rotation. After the openings have been formed in one side of the hat the gage is shifted to the opposite side thereof without changing its adjustment, and the former operation is repeated.

It will be noticed that the punch or cutter incloses the spring, the ejector, and the needle, so that none of these parts can mutilate or enlarge the hole formed by the punch. The needle is simply a center point and performs no part of the cutting or ejecting operations. The ejector is not attached to either the punch or the needle, but is carried by the spring, which is secured to the shoulder of the body or stock. This construction provides a punch which possesses the required lightness, simplicity, and compactness without in any way affecting its efficiency.

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

A punch comprising a stock or body, a centering-point or needle projecting from the end of the same, a spring secured to the end of the body and coiled around said centering-point, an ejector secured to the free end of the said spring and otherwise unsupported, and a cutter secured to the end of the body and surrounding the spring, the ejector and the centering-point.

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

THOMAS E. GRAY.

Witnesses:
PATRICK S. O'RYAN,
ROYAL E. DEWEY.