B. F. Young,

Gage for Boring Machine.

No. 55,945. Patented June 26, 1866.

Fig. 2

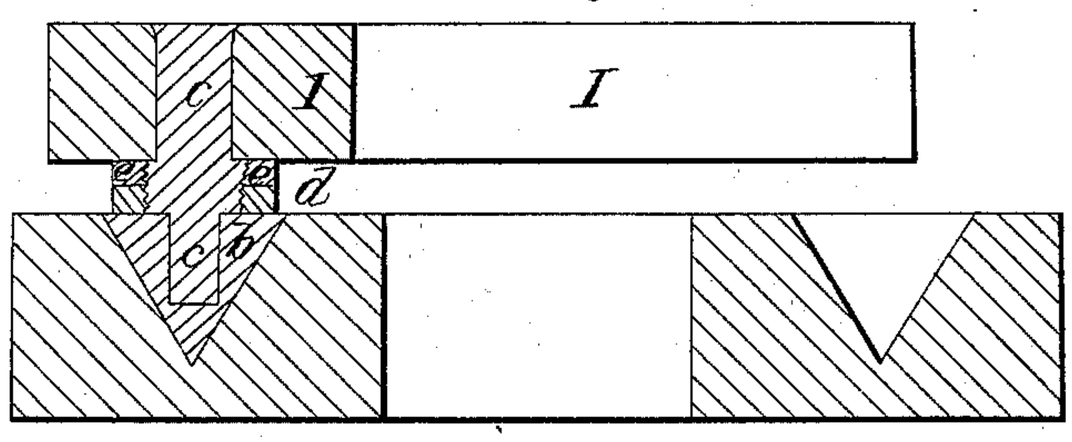
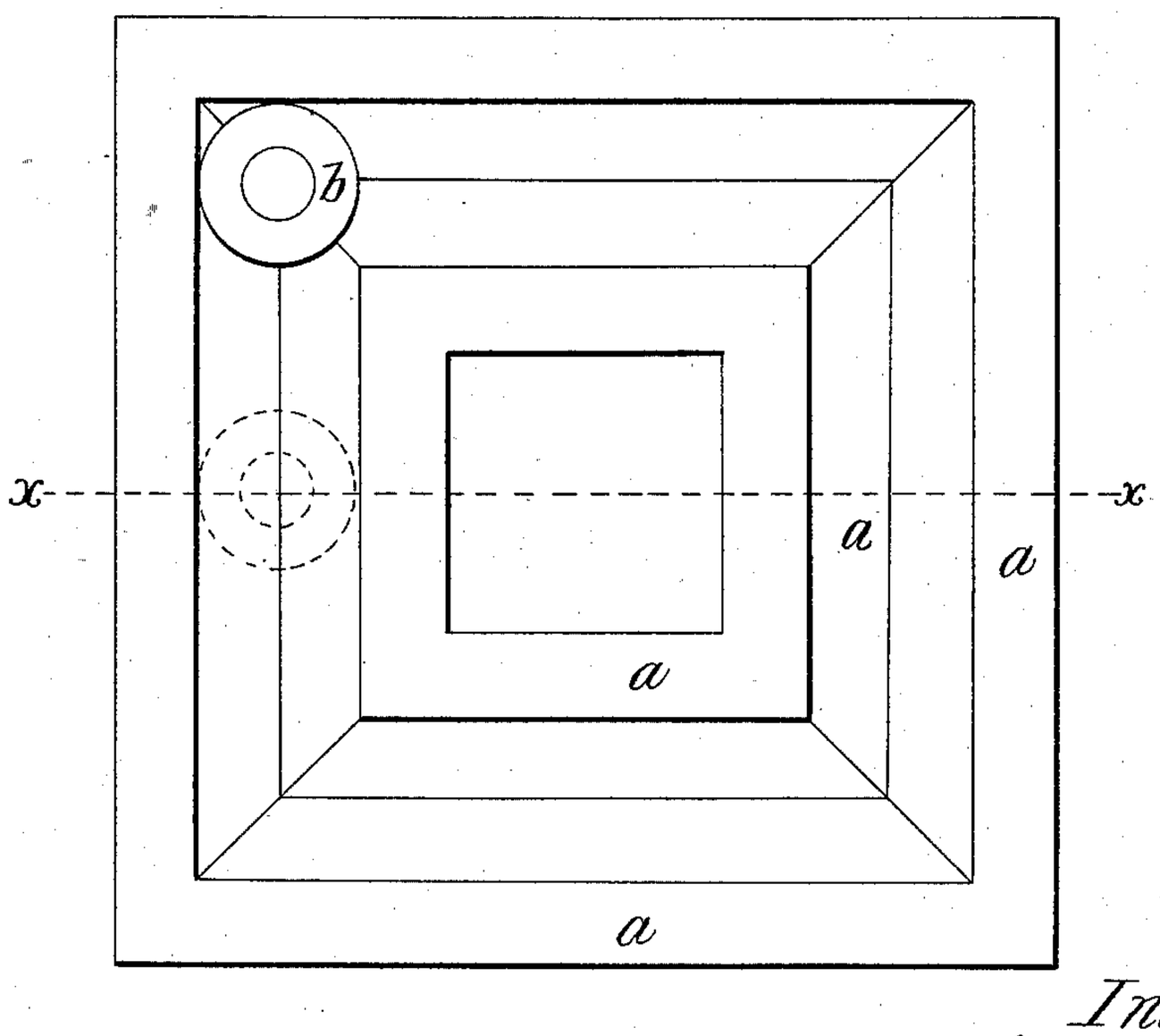


Fig. 1



Witnesses:

C. Warren Brown.

G. A. C. Smith.

Inventor:

Benj. F. Young

By his Attys.

Crosby & Gould

UNITED STATES PATENT OFFICE.

BENJAMIN F. YOUNG, OF CHARLESTOWN, MASSACHUSETTS.

IMPROVEMENT IN BORING-MACHINES.

Specification forming part of Letters Patent No. **55,945,** dated June 26, 1866.

To all whom it may concern:

Be it known that I, BENJAMIN F. YOUNG, of Charlestown, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Cam-Grooves and the Travelers therein; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

This invention has been made with reference to the machine for forming or boring angular holes patented to Benjamin Merritt, Jr., May 24, 1864, under the number 42,863; but it is generally applicable elsewhere wherever an angle instead of a curve is needed in the path of a grooved cam to impart a quick change of direction of motion to any part or piece of a mechanism or apparatus; and, furthermore, the invention, having provision to take up the wear between the cam-groove and its traveler, may be advantageously employed for cam-grooves of general curvilinear form as well as for those in which angles exist.

My invention consists in giving to any cam-groove the form of a re-entering angle in cross-section, with the sides thereof inclining equally from the axis of the cone-traveler intended to move therein or about which the piece containing the groove may be moved; also, in combination with such a cam-groove and traveler, provision for adjusting both or either of said parts to each other as a means for preventing a play or looseness of the parts consequent upon wear.

In the drawings, Figure 1 shows a cam-groove which in plan is of a rectangular form of path, such as is adapted for the purposes described in said Merritt's patent, the conical traveler being shown at one of the right angles of the cam-groove. Fig. 2 is a cross section taken on the line *x x*, Fig. 1, through the piece containing the cam-groove, and showing the conical traveler in section, and the piece with which it is connected as in section and in elevation beyond, in this view the cone-traveler being shown in the position indicated by the dotted circle in Fig. 1.

The piece to which the traveler is shown as connected corresponds to the piece termed the "rack," I, in the said Merritt's patent, this being the part which is controlled in its movements by the cam-groove.

In the drawings, the piece containing the cam-groove is marked *a*. The cone-traveler is marked *b*, and is shown as mounted on the stud *c*, on which it can freely turn. On the stud *c*, between the traveler *b* and the piece I, in which the stud *c* is fastened, a screw-thread is cut, on which are a nut, *d*, and a check-nut, *e*. When any sensible wear takes place between the traveler and the cam-groove, the traveler can be adjusted so as to prevent looseness of fit in the cam-groove by screwing down the nut *d*, and securing it from accidental movement by the check-nut *e*.

Under some circumstances it may be preferable to adjust the cam-groove toward the traveler instead. In the ordinary form of cam-grooves, they having parallel sides, there can be no adjustment to compensate for wear, and when the parts become so loose that they no longer perform their functions tolerably a new traveler has to be fitted to the cam-groove. The apex of the cone-traveler being always in the angle formed throughout the path of the cam-groove by the juncture of its inclined boundaries is supported and guided at and in passing the corners of the cam-path where any cylindrical traveler would be left loose in a cam having a similar path, but made with parallel sides.

I claim—

A grooved cam constructed with inclined sides, in combination with a cone-traveler.

In witness whereof I have hereunto set my hand this 7th day of February, A. D. 1866.

B. F. YOUNG.

Witnesses:

J. B. CROSBY,

W. A. C. SMITH.