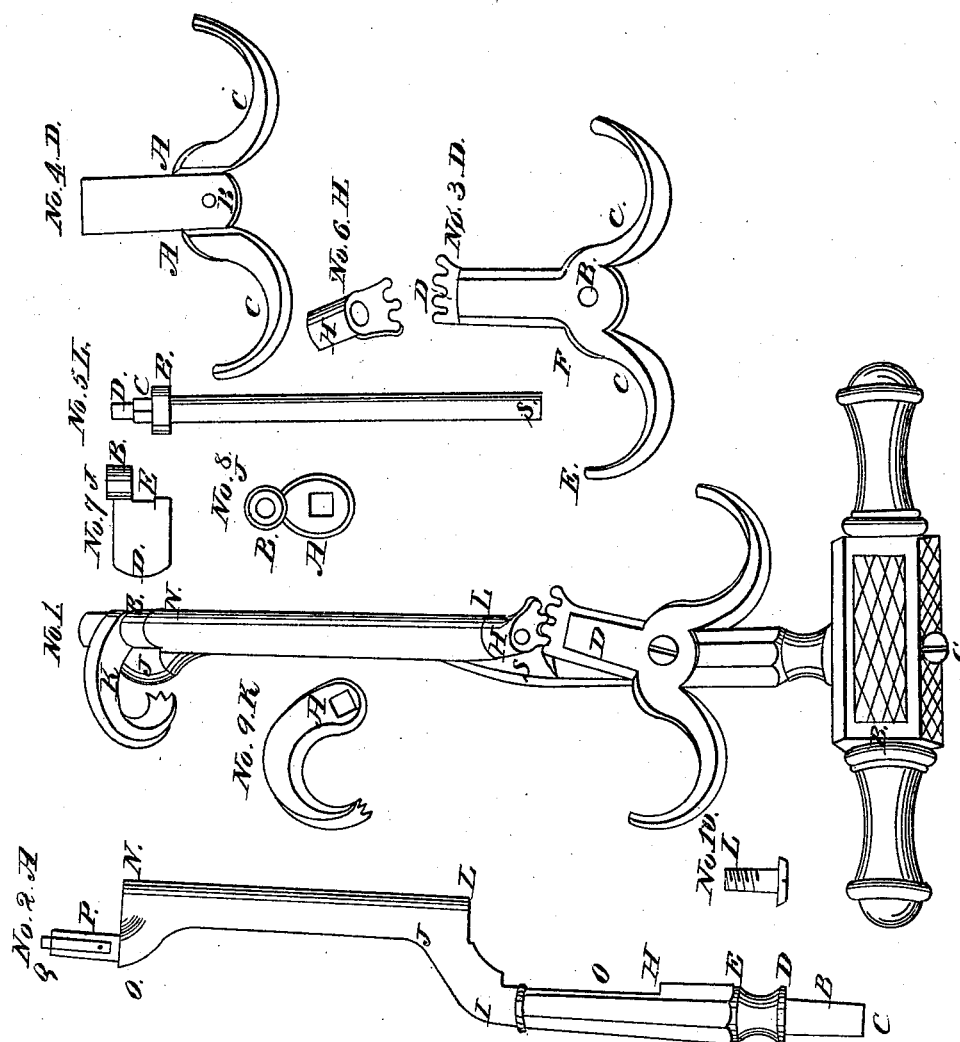


H. Todd,
Tooth Extractor.
N^o 4,506. Patented May 9, 1846.



Witnesses:
John Armstrong
Wm. Armstrong

Inventor:
Herbert Todd

UNITED STATES PATENT OFFICE.

HIRAM TODD, OF COLUMBUS, OHIO.

DENTIST'S TURN-KEY.

Specification of Letters Patent No. 4,506, dated May 9, 1846.

To all whom it may concern:

Be it known that I, HIRAM TODD, of the city of Columbus, in the county of Franklin and State of Ohio, have invented a new and useful Improvement in an Instrument called the "Cylinder Turn-Key" for Extracting Teeth, of which the following is a full and exact description.

My instrument consists of eight principal parts, besides the rivets and screws, which fasten them together.

The entire instrument is represented in the accompanying drawing; Figure No. 1. Each part is represented in the same drawing, and described and designated as follows:

First. The shank (Fig. 2,) is six inches in length; B, is a tenon one quarter of an inch square, at the shoulder D, and three sixteenths at the end C., where it is perforated with a hole to admit the screw (No. 10, L,) which fastens the handle B, to the shank—this tenon which thus enters the handle, is five eighths of an inch long. The shank at E, is about half an inch in diameter, and may be round or octagonal. At H, on the upper side of the shank, one inch from D, at H., a piece is cut out one eighth of an inch deep, and an inch and one eighth in length, to admit the lever (No. 3, D,) hereafter described—a hole is made three sixteenths of an inch from H, at O, for the purpose of riveting or screwing the said lever to the shank. At I, two and a quarter inches from shoulder D., the shank is bent up at an obtuse angle or obliquely as in the figure five eighths of an inch to J, it is again bent at right angles, and continues nearly in the same perpendicular plane, with the first part of the shank, two inches and three eighths from L, to N., as represented in the figure. The part of the shank last described is round and is three eighths of an inch in diameter. The shank from L, to N., is perforated with a round hole, three sixteenths of an inch in diameter and is called the cylinder, and two inches and three eighths in length. On the underside of the cylinder is a solid branch (O,) upon which is a square tenon P., three sixteenths of an inch in diameter, and seven sixteenths long—upon the side of this tenon is the small spring Q., projecting with a catch beyond the end as in the figure; this spring is to hold the hook and bolster in their place, and to allow the hook to be taken off and re-

versed at pleasure as hereafter described. This tenon P, is exactly parallel with the cylinder, and from the center of the tenon to the center of the cylinder, the distance is about three eighths of an inch, so that the axis of the tenon P., and the axis of the straight part of the shank, near the handle, are in one and the same straight line, (see Fig. No. 2.)

Fig. No. 3, D, represents the lever, which is of a T. shape, and about an inch and an eighth in length, and an eighth of an inch thick, and fits the space cut out of the shank at H, as above described, the arms are curved as in the drawing No. 3, C, C.; they should be about an inch in length measuring from E, to F, and one fourth of an inch thick, so that shoulders may project an eighth of an inch on the under side as in Fig. 4, A, A, to prevent the rack and pinion hereafter described from being thrown out of gear. At the extreme end at D, of the lever, (see Fig. No. 3, D,) at nearly right angles to the upper side is a segment of a cog wheel with four teeth projecting upwards from the surface of the lever one eighth of an inch, these teeth are one eighth by one sixteenth of an inch in size and form what I call the rack. The lever is perforated with a round hole at B, and fastened by rivet or screw upon which it turns, to the shank at O, to which it is fitted.

The handle B, is like that of a common turnkey and at right angles to the shank and fastened by means of the screw (No. 10, L,) as represented in the Fig. No. 1.

The spindle or arbor is represented by Fig. No. 5, L, and is straight and about three inches and one fourth in length, and at B, has a shoulder three eighths of an inch in diameter, and one eighth in length and a square tenon at C, three sixteenths of an inch in diameter and about one eighth of an inch in length and a round tenon D, three sixteenths of an inch long, and one eighth of an inch in diameter. The spindle from the shoulder B, to S, is three sixteenths of an inch in diameter and this part of it is about two and three fourth inches long and enters the hollow cylinder at N, (Fig. No. 2, A,) and passes through to L, and revolves in the cylinder as hereafter described. Upon the end S, of the spindle after it passes through the cylinder is placed the socket as represented in Fig. No. 6, H, the socket is three eighths of an inch in diameter, and

about five sixteenths of an inch in length, upon the under side of this socket is a segment of a cog wheel projecting downwards three sixteenths of an inch, having three
 5 teeth of the same size of those of the lever before described and there fit and play in the teeth of the lever, and thus form what I call the rack and pinion, this socket is riveted firmly upon the spindle upon which it
 10 is fitted and fits closely to the end of the cylinder at L, thus forming a shoulder or close joint as in Fig. No. 1. When the socket is riveted to the spindle, the tenon C, must stand diamond shape, (that is,) an
 15 angle of the tenon must be in the plane perpendicular to the upper side of the shank as in Fig. No. 1.

The hook is represented in the drawing No. 9, K., and is like the hook of the common turnkey except the hole A, which is square and exactly fits upon tenon C, of spindle, Fig. No. 5, L, (see Fig. No. 1, K.)

The bolster is represented in the drawing by Figs. No. 7, J, which presents the side, and by No. 8, J., which presents the end. The bolster is of an oval shape as in the figure, seven sixteenths of an inch long, about one half of an inch thick in the center, and about half an inch deep from D, to E.
 30 B, is a part of the bolster, about three eighths of an inch in diameter, and about three sixteenths long, and is round, with a hole just of the size to admit the end D, of the spindle before described. The bolster has a
 35 square hole entirely through it, as represented by A, in No. 8, J., and the round hole B, as seen in the same figure; these holes from center to center, are about three eighths of an inch apart, and the square one
 40 of the exact size of the tenon P, of the shank, and the round one of the same size as the end D, of the spindle, and the bolster thus fits upon the shank after the spindle is in-

serted in the cylinder, as seen in the drawing, Fig. No. 1, and is fastened by the spring 45 upon the tenon P., as before described.

No. 4, D., represents the underside of the lever. The hook is placed upon the square tenon C, of the spindle; then the bolster is placed upon the tenon P., and the round 50 tenon or pivot D., and is held firm by the spring as before mentioned. The hook is elevated or depressed at pleasure by means of the lateral motion given to the lever D, (see Fig. No. 1,) which by means of the 55 rack and pinion before described, moves the spindle in the cylinder, and the hook being firmly fastened to the end of the spindle as represented, in the Fig., as already described, partakes of the motion of the spindle, and is thus elevated and depressed at 60 pleasure, according to the lateral motion given to the lever.

The instrument, except the handle, is made of steel, and highly polished, but the 65 instrument might be made of iron, except the hook which should be of steel.

What I claim as my invention and desire to secure by Letters Patent are the following combinations of the parts of the instrument: 70

The controlling of the hook with the lever by means of the rack, pinion and socket, spindle and cylinder, as described and set forth in the accompanying drawings and 75 specifications.

In testimony whereof, I the said HIRAM TODD, hereunto subscribe my name to this my amended application in the presence of the witnesses whose names are hereto sub- 80 scribed, on the 22d day of April A. D. 1846.

HIRAM TODD.

Test:

GEO. DENIG,
 ELLIOTT DENIG.