W. L. CARSON & G. R. COULS.

PATTERN CUTTING DEVICE.

APPLICATION FILED JULY 3, 1907.

898,830. Patented Sept. 15, 1908.

2 SHEETS—SHEET 1.

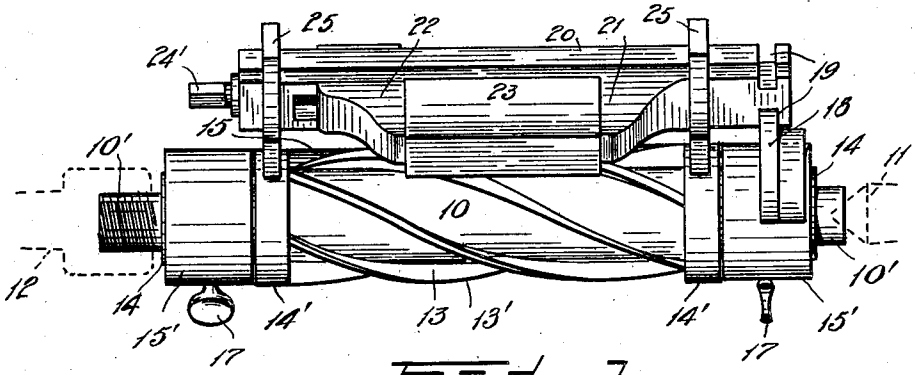


FIG. 1

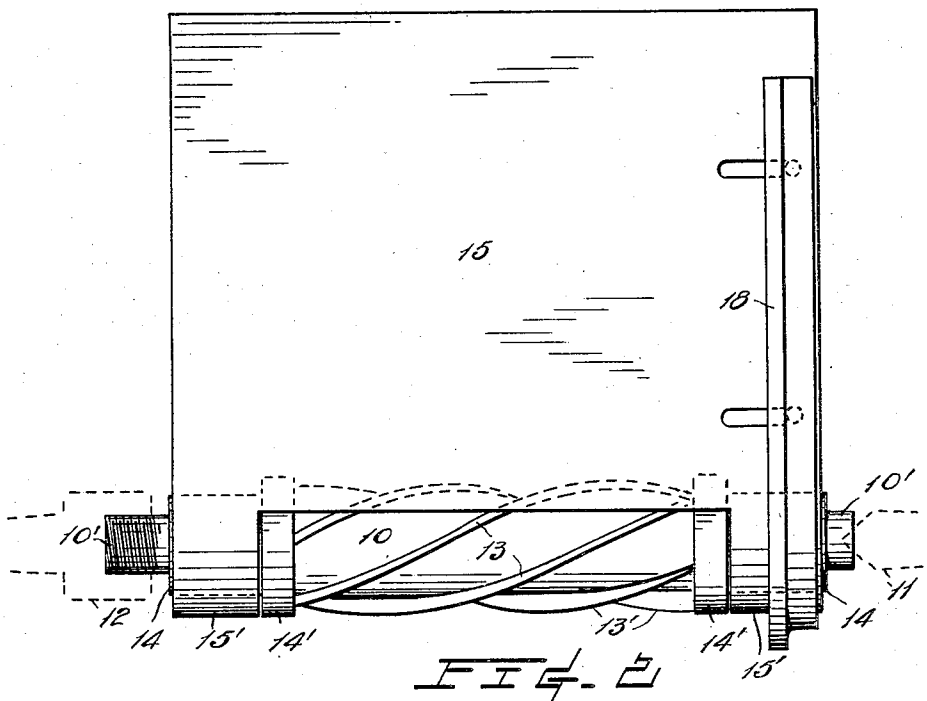


FIG. 2

WITNESSES:

Horace Barnes

E. H. Alvord

INVENTORS:

William L. Carson

and George R. Couls

BY

Pierre Barnes

ATTORNEY

THE NORRIS PETERS CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

FIG. 3

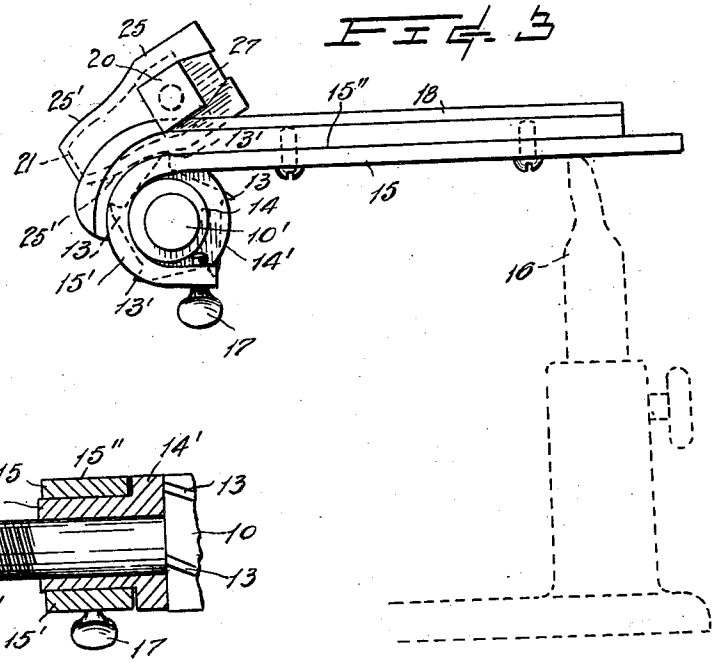


FIG. 4

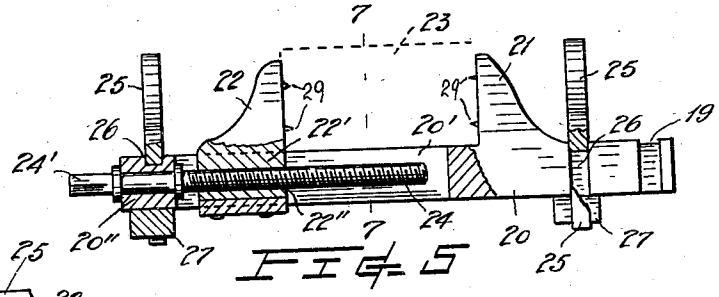


FIG. 5

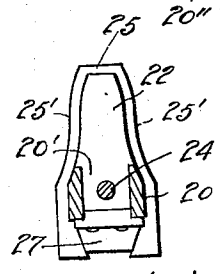


FIG. 7

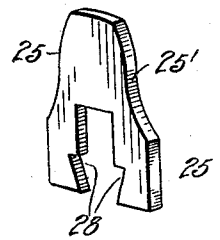


FIG. 6

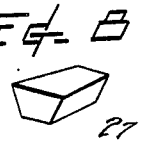


FIG. 8

WITNESSES:

Horace Barnes.

E. H. Alvord

INVENTORS:

William L. Carson

and George R. Couls

BY

Pierre Barnes

ATTORNEY

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM L. CARSON AND GEORGE R. COULS, OF SEATTLE, WASHINGTON.

PATTERN-CUTTING DEVICE.

No. 898,830.

Specification of Letters Patent. Patented Sept. 15, 1908.

Application filed July 3, 1907. Serial No. 381,988.

To all whom it may concern:

Be it known that we, WILLIAM L. CARSON and GEORGE R. COULS, citizens of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Pattern-Cutting Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to devices adapted to be instrumentally employed with various templets for forming work to regular or irregular shapes and, while it may advantageously be used in a number of applications, it is especially intended for producing forms for gear teeth in pattern shop practice.

The principal object of the invention is the provision of means or apparatus whereby operations which have hitherto been accomplished through manual labor may be facilitated through the employment of mechanical agencies and, where duplication of work is to be done, the product will be rendered with greater despatch and of uniform shapes.

With these and other ends in view the invention consists in the novel construction, adaptation and combination of parts as will be hereinafter described and claimed.

In the drawings, Figure 1 is an end view of devices embodying our invention; Fig. 2, a plan view of the same with the work-holder omitted; Fig. 3, an end elevation of Fig. 1, and Fig. 4 is a fragmentary sectional view of the mandrel and its adjustable bearings. Fig. 5 is a front elevation, partly in section, of the work-holder; Fig. 6, a perspective view of a templet; Fig. 7 is a cross sectional view taken through 7—7 of Fig. 5; and Fig. 8 is a perspective view of a key suitable for locking a templet in operative position to the work-holder.

The reference numeral 10 designates a mandrel adapted to be continuously operated during the progress of operation by suitable driving mechanism such, for example, as being supported between the tail and head centers 11 and 12 of a turning lathe and receiving its motion through the latter. Centrally of the mandrel it is provided with helical shaped cutting blades 13 having their outer cutting edges 13′ concentric to the mandrel axis as are also the axes of the mandrel extremities 10′. Said extremities are journaled eccentrically in cylindrical bushings 14 which are respectively provided with a collar 14′ of a diameter equal or approximately that of the cutter blades. The bushings are rotatably seated in the hooked outer extensions 15′ of the platform 15. These extensions are disposed at such a distance apart as to loosely embrace the collars 14′ when the parts are assembled and desirably of such a thickness as to have its upper surface 15″ tangential to the collars.

The platform is supported at its rear in any suitable manner, as in the illustrated example, by being borne upon the tool rest 16 of the lathe, while at its forward end it is fixedly secured to the aforesaid bushings by means of set screws 17 extending through threaded apertures in said extensions and having their ends impinge against the bushings, as most clearly shown in Fig. 3. These set screws also serve to maintain the bushings in various adjusted rotary positions and through the eccentricity of the journal-bearings thereof enables the mandrel being raised or lowered to compensate for wear, resharpening, or to vary the amount of cut, that is, to alter the height of the mandrel in order that the cutting edges of the blades will revolve in more or less exposed positions relatively of said platform.

Adjustably secured to the platform, and desirably in proximity of the edge to the left hand of the operator, is a guide rail 18 adapted for registering with a groove 19 provided in the work holder.

The work holder, see Figs. 5 and 7, is comprised of a shank 20 having a stationary jaw 21 and a movable jaw 22 between which the work 23 is clamped and retained by penetrating points 29. The movable jaw is connected to the shank by its lower portion 22′ being slidably seated within a slot 20′ extending longitudinally of the shank and is adjusted lengthwise, and also to effect the clamping of the work, by the action of a screw 24 which engages within a registering aperture 22″ of the jaw, and the screw is suitably mounted against longitudinal displacement within the end 20″ of the shank.

The screw 24 is actuated by convenient means, such as a wrench or a hand wheel adapted to engage the protruding end 24′ thereof.

The templets by which the cut upon the work is regulated consist of forms 25 shaped with exposed edges 25′ of contours similar to that at which the work is to be finished. The forms are arranged to be reliably secured to the work-holder, as by bifurcating their

lower ends and seating the same in saddle-grooves 26 provided in the holder-shank, and thus locked by keys 27 of a dove-tail shape in cross section interfitting in correspondingly shaped notches 28 provided in the templets and arranged so that the keys will bear against the under side of the holder-shank and wedge the forms into close contact with their respective seats.

The operation of the invention is as follows: Selected templets 25 being respectively secured as above described within their seats of the work-holder, and the work clamped between the jaws by manipulating the controlling screw 24. Whereupon the holder is grasped at its ends in the hands of an operator so that the groove 19 will engage the platform rail 18 and then by moving the holder with a slight rocking motion over the rotary cutter, or mandrel, the templets will be presented in alinement with the collars 14′ of the bushings and by causing the holder to thus traverse the path of the revolving cutting edges of the mandrel the work is acted upon until limited by the templets contacting with said collars and when such a condition prevails throughout the length of the templets the underside of the work is finished to a form corresponding to the configuration of that portion of the templet which was employed. When one side of the work has been finished the holder is reversed to accordingly treat the other side or end thereof in the same manner.

It may be said that in cutting pattern gear-teeth, that the templet upon one end of a holder would be of similar configuration but of slightly smaller size than that at the other end to cause the work to be formed to a slight taper and afford means for the patterns being drawn from the molds, as common.

Having described our invention, what we claim, is—

1. The combination with the rotary cutter having coaxially arranged extremities, journal-bearings having eccentrically-disposed openings for said extremities, a work-holder, templets carried by said holder, means carried by the bearings for supporting the templets, and devices for adjusting said bearings whereby the cut of the cutter is regulated.

2. The combination with a rotary cutter having helical shaped cutting blades and provided with journals, bearings having eccentric openings for said journals, and collars upon said bearings, and of a diameter so as to have the periphery thereof flush with the cutting edges of the blades of a work-holder, templets detachably secured to said holder and arranged to be supported by said collars for regulating the cut of the cutters.

3. The combination with the platform, a rotary cutter, journal bearings having eccentric openings for the cutter carried by said platform, and means for adjusting said bearings whereby the position of the cutter is regulated relatively of the platform, of a work-holder, templets adapted to be detachably secured to said holder, and supporting devices for the templets whereby the cut of the cutter upon the work is regulated.

4. The combination with the rotary cutter provided with coaxially disposed extremities, an eccentric bushing for each said extremity and respectively provided with collars, a platform provided with hooked extensions adapted to embrace the respective bushings, and set screws for adjustably securing said bushings, of a work-holder, and templets adapted to be detachably secured to said holder.

5. The combination with the rotary cutter provided with coaxially disposed extremities, an eccentric-bushing for each said extremity and respectively provided with hooked extensions adapted to embrace the respective bushings, set screws for adjustably securing said bushings, and a guide adjustably secured to said platform, of a work-holder provided with jaws for clamping the work, means to effect such clamping, and templets adapted to be detachably secured to said holder and arranged to coact with said collars whereby the cut of the cutters upon the work is regulated.

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

WILLIAM L. CARSON.
GEORGE R. COULS.

Witnesses:
PIERRE BARNES,
ROBT. B. GILLIES.