

A. B. LANDIS.

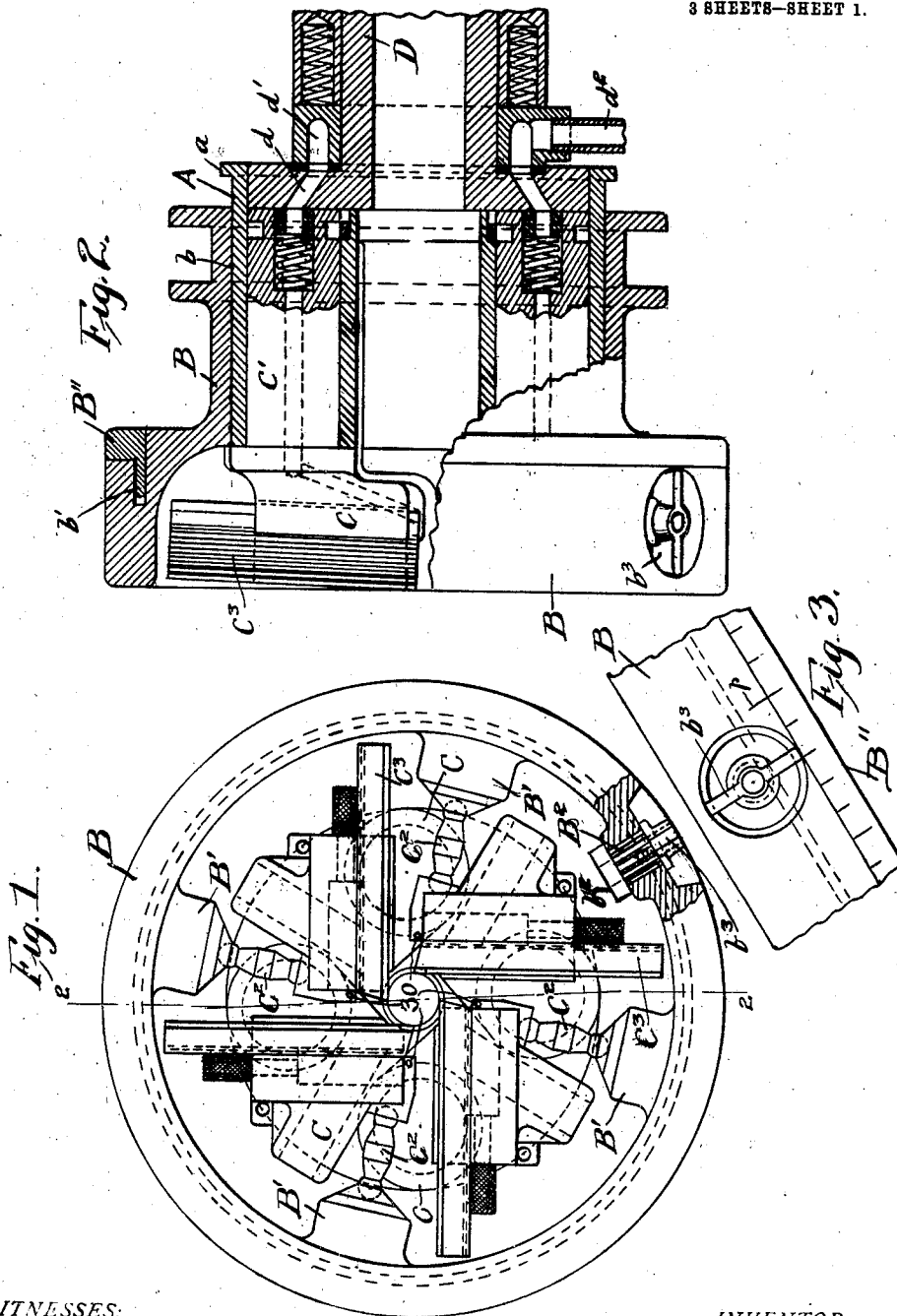
CUTTER HEAD.

APPLICATION FILED NOV. 20, 1909.

1,017,883.

Patented Feb. 20, 1912.

3 SHEETS—SHEET 1.



WITNESSES:

L. A. Price
C. H. Reichenbach

INVENTOR.

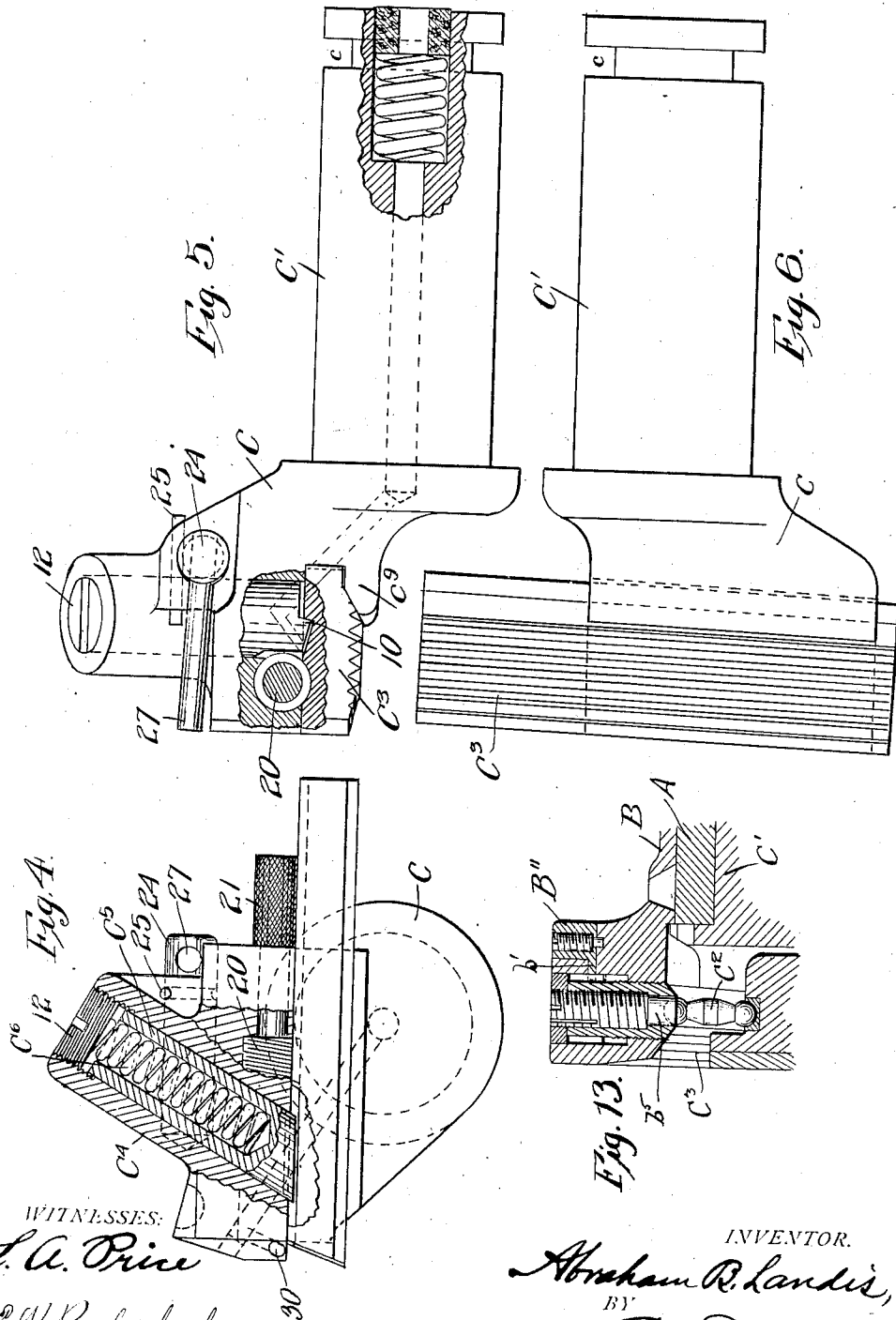
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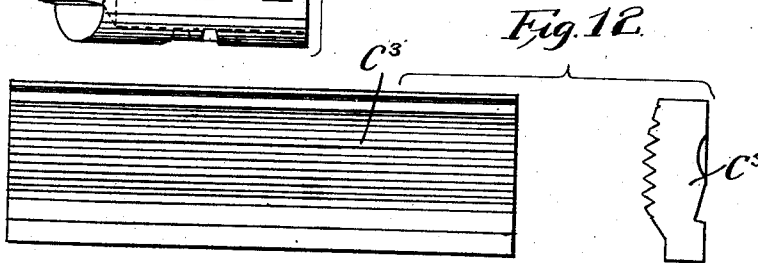
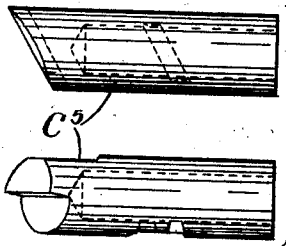
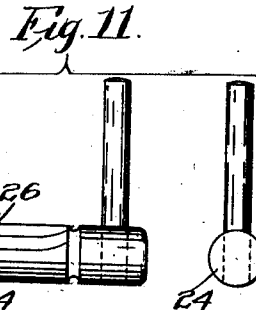
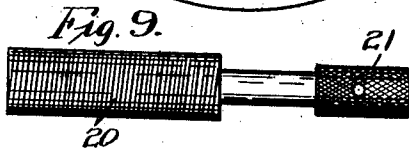
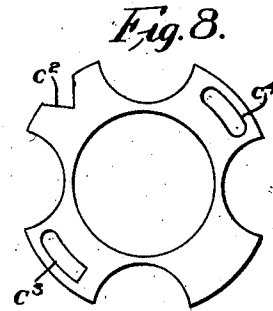
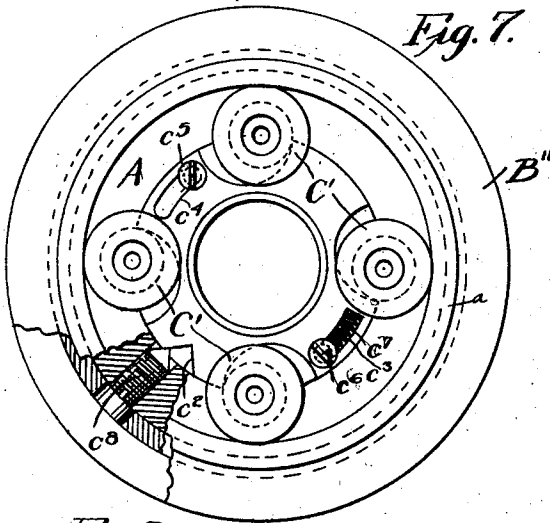
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WITNESSES:

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CUTTER-HEAD.

1,017,883.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed November 20, 1909. Serial No. 529,152.

To all whom it may concern:

Be it known that I, ABRAHAM B. LANDIS, a citizen of the United States, residing at Waynesboro, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Cutter-Heads, of which the following is a specification.

My said invention consists in various improvements in the details of construction and arrangement of parts of cutter-heads for cutting threads on bolts, screws, etc., whereby such a head is provided the parts of which may be easily and quickly assembled, or separated, and adjusted in relation to each other, without the employment of tools, and also wherein all of the parts are held rigidly and securely during operation, all as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings which are made a part hereof and on which similar reference characters indicate similar parts, Figure 1 is a front elevation of a cutter-head embodying my said improvements, Fig. 2 a longitudinal section through the same on the dotted line 2—2 in Fig. 1, except that one side of the rim is shown in elevation to better illustrate the position and arrangement of the die adjusting device, Fig. 3 a detail plan view of the face of the rim at the point of the location of said adjusting device, Fig. 4 an end view of a cutter-holder partly in elevation and partly in section, Fig. 5 a view of one side of a cutter-holder, Fig. 6 an underside plan view of the cutter-holder, Fig. 7 a rear elevation of the cutter-head showing a portion broken away to illustrate the means for adjusting the device for securing the cutter-holders in place more clearly, and Figs. 8, 9, 10, 11, 12 and 13 detail views showing parts of the apparatus separately.

In said drawings the portions marked A represent the main body or frame of the cutter-head, B the adjusting part for opening and closing the die, C the cutter-holders, and D the spindle of the machine on which said cutter-head is mounted.

As in several of my former applications, the body A is a casting of suitable size and dimensions for the purpose intended, preferably formed with a central perforation

and having a series of perforations arranged equi-distant around its axis and formed to constitute journal bearings for the trunnions of the cutter-holders. The rear end of said body A is adapted to be secured on the end of the spindle D of the machine in any approved manner.

The part B is in the form of a sleeve surrounding said body A and adapted to have a limited longitudinal movement thereon, said movement being limited in one direction by the annular flange *a* surrounding the rear end of the body A. A circumferential groove *b* is formed in said part B for the engagement of a shifting fork (not shown) for sliding said part in the usual manner. The forward end of said part B projects beyond the forward end of the body A and is also of a larger diameter than said body, being of a size adapted to surround the cutter-holders, as shown. On its interior face it is formed with a series of bosses *B'* arranged equi-distant from each other and containing radial perforations adapted to carry the adjustable seats *b⁵* for the outer ends of the toggle-levers *C²*, which support the outer ends of the cutter-holders. Said seats *b⁵* for the cutter-holders are of substantially the same form and arrangement as shown in my application No. 514,793, filed August 26, 1909, each being supported against a screw-threaded part carried in a rotary sleeve having teeth on its outer surface with which teeth on the inner edge of a flange *b'* on ring *B''* are adapted to engage. Said ring *B''* is set into a recess in the outer corner of the inside face of the rim of part B with the toothed flange *b'* projecting through suitable segmental recesses to engage with the teeth on said adjusting sleeves.

A pinion *B²* is mounted in a radial perforation in the rim of part B being secured by a nut *b²* on its inner end and a flange on its outer end and its teeth engage with the teeth of said flange *b'*. The outer end of said pinion is provided with turning wings *b³* by which it may be readily turned by hand, said wings being set into a counter-sunk recess in the base of the rim of part B, as shown most clearly in Figs. 1, 2 and 3. By the turning of said pinion *B²* through the medium of said wings the ring *B''* can be adjusted and its degree of adjustment de-

terminated by a scale shown on the edge thereof, as indicated in Fig. 3. An indicator point p is formed on the rim of part B by which the degree of adjustment may be readily seen. By this means the size of the die may be quickly and conveniently regulated by adjusting the position of the seats for the outer ends of the toggle-levers as will be readily understood.

10 The cutter-holders C are of substantially the form best shown in Figs. 4, 5 and 6 being formed with trunnions C' adapted to be journaled in the bearings formed therefor in the body A. The rear end of each trun-
 15 nion is formed with a circumferential groove c with which projecting flanges of an oscillating locking-plate c' are adapted to engage. Said locking-plate c' is set into a recess in the rear end of body A and is
 20 formed with semi-circular notches of a size to readily permit the end of the trunnion C' to pass through. It is formed with a V-shaped notch c^2 in one edge and segmental slots c^3 and c^4 in opposite sides. Screws c^5
 25 and c^6 extend through said segmental slots into the end of body A and hold said plate in position. A coiled spring c^7 is inserted between one of said screws and the oppo-
 30 site end of the slot through which it extends and tends to turn and hold said locking-plate with the edges of its recesses engaged with the circumferential grooves c in said trunnions. A screw c^8 with a conical
 35 point is inserted in a radial screw-threaded perforation in body A with its conical end adapted to seat in the conical notch c^2 in one edge of said plate c' . By turning said screw inward until its point
 40 seats in the point of said recess, said plate will be turned so that the curved edges of its notches will coincide with the circumference of the trunnions C' when said
 45 trunnions may be slid to position or removed from the head. By backing said screw out to the position indicated in Fig. 7 the spring c^7 will automatically turn plate C'
 50 C' so that its edges will engage with the grooves in the trunnions and thus lock them in position, while permitting their free rotation. It will thus be seen that said cutter-holders may be secured and released simultaneously and in a very convenient manner.

55 The cutter-holder proper is formed to extend to one side of the axis of its trunnion C' and has a recess in its inner face adapted to receive and support the cutter or chaser tangential to the work and on its outer end has a seat to receive the inner end of the
 60 toggle-lever C², the other end of which is supported in the adjustable seat mounted in a boss B' of the part B. A chaser C³ is mounted in each of said cutter-holders and is of a form best shown in Figs. 5 and 12.
 65 The recess in the cutter-holder for receiving

said chaser is open on the outer edge and has a flange c^9 at its inner edge adapted to project partly over the outer face of the inner edge of said chaser, which is formed with a correspondingly tapered portion extending
 70 nearly to said inner edge. From said tapered portion to said edge the face is formed at right angles with said inner edge or parallel with the back of the chaser, as best shown in Fig. 5. A space is left between
 75 the horizontal part of flange c^9 and the horizontal part of the chaser C³, the bearing between said parts being on the angle only. In the back of said chaser is formed a longitudinal groove formed with tapered sides
 80 but with the bottom or outer side of the groove at a short or abrupt angle, nearly parallel with the inner edge of the chaser. A socket C⁴ is formed to extend at an angle
 85 back from near the front side of the holder in which is mounted a plunger C⁵ the inner end of which is formed with a holding tongue 10 of a form corresponding to the form of the groove in the back of the chaser. The rear face of said tongue, with the sharp
 90 angle, being adapted to bear against the sharp angle of said groove, the formation of the tongue being such that the engagement between said sharp angles will hold said plunger from contact with the chaser
 95 at other points, as shown most clearly in Fig. 5, the bearing being solely on the short angle between the tongue and the groove. A heavy coiled-spring C⁶ is mounted between a screw-plug 12 in the outer end of the
 100 socket and said plunger and serves to force said plunger firmly against said chaser, which, the bearing being upon said short angle, tends to force said chaser toward the backside of the recess and at the same time
 105 clamp it firmly between said plunger and the angle of the flange c^9 , thus holding it securely in position. A screw 20 is mounted in a longitudinal recess in said cutter-holder and is adapted to engage with screw-
 110 threads on the back of the chaser, by which said chaser may be adjusted longitudinally. The outer end of said screw 20 is provided with a knurled nut or sleeve 21 by which it
 115 may be readily turned by hand. It is inserted in the recess in the cutter-head from the front side, its smaller end being projected through a perforation at the backside of the holder. Its shoulder bears against a shoulder in the recess and the
 120 part 21 is secured on the projecting outer end, as shown most clearly in Fig. 4. A short rod or cylinder 24 is mounted in a transverse perforation in the side of socket C⁴, being held from longitudinal movement
 125 therein by a pin 25 inserted in a pin-hole extending transversely thereof and engaging with a circumferential groove therein. Said cylinder is formed with a radial tooth or projection 26 adapted to engage with a
 130

notch in the side plunger C⁵. A transversely extending lever 27 is secured in its outer end by which it may be rocked to raise said plunger so as to release the chaser C³ when desired. By this means, by simply lifting the lever 27 cylinder 24 will be turned and plunger C⁵ raised so that the pressure of the spring against the shoulder in chaser C³ will be relieved when said chaser may be readily adjusted by turning the screw 20 through the sleeve 21 thereon. By this means the chaser is not only held in position without other clamping means than that shown, but is held in a manner to leave the front side of the cutter-holder open and so as to be readily adjusted or manipulated without the use of hand tools.

I have also shown substantially the same character of oiling arrangement as shown in my application No. 514,793, above referred to, consisting of a longitudinal perforation extending centrally through the trunnion of each cutter-holder and communicating with a channel *d* which in turn communicates with an annular oil chamber *d'* around the spindle D. The inner end of the perforation extends to the outer end of the cutter-holder but its extreme outer end is plugged and a transverse perforation 30 leads therefrom directly onto the end of the chaser, so that the oil flows constantly directly on the point of cutting, and serves not only to keep the work thoroughly lubricated but also to wash away the cuttings and keep the work clean at this point.

The operation of the device will be readily understood from the foregoing description, the operation of each feature having been previously described. It may be briefly recapitulated, however, as follows: The parts are assembled in the well known manner and as shown in the principal figures of the drawings. The holding plate C⁷ is held by the screw c⁸ properly adjusted so that the trunnion of the cutter-holders may be slid to position. Said screw c⁸ is then backed out as shown in Fig. 7, when the spring c⁷ turns the holding plate to engage the edges of its recesses with the circumferential groove in said several trunnions. The chasers are mounted in position and the outer seats for the toggle-levers are adjusted to secure the size of die desired. The die is opened and closed by sliding the part B longitudinally upon the body A in the well known or any approved manner. The chasers are held in position by the means above described and when their adjustment is desired it is readily effected by merely raising the lever 27 slightly and turning the screw 20 in the direction necessary to secure the desired adjustment. The oiling is effected through the annular chamber *d'* being supplied from any source through a pipe d²,

and flowing through the channels shown and described to the point of cutting.

Under the rules of practice a cross reference is made to my co-pending application No. 534,229.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a cutter-head the combination of the frame containing a series of cutter-holders mounted on trunnions in bearings around its axis, said cutter-holders, a sliding part mounted on said frame carrying seats, toggle-levers mounted at one end in seats in the outer end of said cutter-holders and at the other end in said seats in said sliding part, means for adjusting said seats in said sliding part radially comprising a ring engaging with each of said seats and adapted to be turned by means of a pinion mounted in a radial perforation in said sliding part, and said pinion provided with wings on its outer end for turning the same, substantially as set forth.

2. In a cutter-head the combination of the body or frame, cutter-holders pivotally mounted therein, cutters carried by said holders, a sliding part on said body or frame, adjustable seats carried by said sliding part, toggles inserted between said cutter-holders and said adjustable seats, a ring engaging said adjustable seats, and means for turning said ring consisting of a pinion mounted in a radial seat in said sliding part and formed in its outer end with wings seated in a counter-sunk socket in the rim of said sliding part, said ring and the rim of said sliding part being formed with an indicator and scale for determining the degree of adjustment, substantially as set forth.

3. In a cutter-head the combination of the body or frame, the cutter-holders mounted on trunnions, said trunnions mounted in perforations in said base or frame each formed with a circumferential groove, a locking-plate formed with notches adapted to embrace said trunnions and engage with said grooves, means for normally holding said plate into engagement with said grooves, and means for turning said plate and holding it out of engagement with said grooves, substantially as set forth.

4. In a cutter-head the combination of the base or frame formed with seats or bearings for the cutter-holders, cutter-holders formed with trunnions mounted in said bearings, each of said trunnions being formed with a circumferential groove near its rear end, a plate secured to the rear end of the body and formed with semi-circular notches adapted to embrace the ends of the trunnions and engage with said grooves, a spring for normally holding the ends of said notches into engagement with said grooves, and a conical screw adapted to engage with a conical re-

cess in the edge of said plate for turning and holding it out of engagement with said grooves, substantially as set forth.

5. In a cutter-head the combination of the
 5 body or frame, cutter-holders mounted in said body or frame formed with trunnions adapted to turn in their seats or bearings, means for holding and adjusting said cutter-holders, each of said cutter-holders being
 10 formed with a recess in its face to receive the chaser, said recess being formed with an overhanging flange on its inner edge having a tapered face, a chaser mounted in said recess and also formed with a correspondingly
 15 tapered face adapted to bear upon the tapered face of said flange and with a longitudinal groove in its back formed with tapered sides the backside being at a sharp angle, and a plunger mounted in a suitable
 20 socket in said cutter holder and formed with a tongue on its inner end adapted to engage with and bear against the short angle of said groove, substantially as set forth.

6. A cutter-head comprising a body or
 25 frame carrying cutter-holders and means for securing and adjusting said cutter-holders, each of said cutter-holders being formed with a chaser receiving recess open at its outer edge and with an over-hanging
 30 flange at its inner edge, said over-hanging flange being formed with a tapered face, a chaser mounted in said recess also formed with a correspondingly tapered face near its inner front edge and a longitudinal
 35 groove in its back with tapered sides, a spring pressed plunger mounted in a socket in said holder and formed with a tongue on its inner end adapted to engage with said
 40 groove, said tongue being also formed with a tapered edge adapted to bear against the tapered face of said groove and force said chaser back into the recess and against the tapered face of said flange on said holder, substantially as set forth.

7. A cutter-head comprising a body or
 45 frame carrying cutter-holders, means for adjusting and securing said cutter-holders, each of said cutter-holders being formed with a recess to receive and retain the
 50 chasers formed with an overhanging flange at its inner edge with a tapered bearing face, a chaser mounted in said recess formed with a correspondingly tapered face and with a longitudinal groove in its back with
 55 tapered edges, a spring mounted plunger with a correspondingly tapered tongue adapted to engage with said longitudinal recess, and a rocking part having a tooth engaging with the notch in said plunger,
 60 and a lever connected with said part for rocking it and lifting said plunger out of engagement with said recess, substantially as set forth.

8. A cutter-holder for cutter-heads
 65 formed with a recess to receive the chaser

having an over-hanging flange with a tapered bearing face, a socket for a holding plunger, said plunger, a spring for holding said plunger into engagement with a chaser, and a rocking part engaging with said
 70 plunger for operating it against the pressure of the spring, substantially as set forth.

9. A cutter-holder for cutter-heads formed with a recess having an over-hanging tapered flange, a cutter mounted there-
 75 in with a correspondingly tapered face adapted to engage a bearing upon said flange and formed with a longitudinal groove in its back with tapered faces, a plunger with a tapered tongue to engage
 80 said groove, means for forcing said plunger into engagement therewith, means for lifting said plunger out of engagement, and means for adjusting said chaser in its seat, substantially as set forth.

10. A cutter-holder for cutter-heads formed with a recess to receive the chaser, said chaser mounted therein and formed with a longitudinal groove in its back with tapered sides, and a holding automatically
 90 pressed plunger with a tapered tongue on its inner end adapted to engage with said groove and force said chaser into its seat in said recess, substantially as set forth.

11. A cutter-head comprising cutter-hold-
 95 ers each of which is formed with a recess for the cutter, said cutters mounted in said recesses each formed with longitudinal grooves in their backs with tapered faces, a plunger in each cutter-holder formed with
 100 a tapered tongue engaging with the groove of its cutter, means for holding said plunger into engagement with said groove with its rear face only bearing against the rear side of said groove said rear face being adjacent
 105 to the holding edge of the recess, and means for adjusting said several parts, substantially as set forth.

12. A chaser for cutter-heads formed with a tapered shoulder on its front side
 110 near its rear edge adapted to bear against a corresponding shoulder in a holder and with a tapered groove in its rear face adapted to engage with a tapered holding device arranged to force it against said
 115 tapered face, substantially as set forth.

13. A cutter-holder for cutter-heads formed with a recess to receive the chaser having an over-hanging flange with a tapered face at its outer edge, a chaser
 120 mounted in said recess formed at its inner edge with parallel back and front faces for a short distance and with a tapered face extending at an angle a distance from the inner edge of its face to bear upon the
 125 angle of said over-hanging flange and with a longitudinal groove in its back formed with tapered sides the rear side of which is formed at a sharp angle to serve as the bearing face, a plunger mounted in a socket
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and formed with a tongue on its inner end formed with angular faces the rear face being at a sharp angle and adapted to bear against the sharp angle in the groove in the back of said chaser, and means for holding said plunger under pressure against said chaser, substantially as set forth.

14. In a cutter-head the combination of the body or frame, the cutter-holders mounted therein, cutters in said cutter-holders, means for adjusting said cutter-holders, and an oiling device comprising channels extending through said cutter-holders and extending to points adjacent to the points of the cutters, substantially as set forth.

15. An oiling device for cutter-heads

comprising an annular oil chamber adjacent to said cutter-head, the cutter-holders with channels communicating therewith and leading through said cutter-holders to the outer ends thereof where they are formed with transverse perforations leading from said channels out through said cutter-holders to discharge at the point of the cutting, substantially as set forth.

In witness whereof, I have hereunto set my hand and seal at Washington, D. C., this 18th day of November, A. D. nineteen hundred and nine.

ABRAHAM B. LANDIS. [L. S.]

Witnesses:

J. D. YOAKLEY,

E. W. BRADFORD.