

948,896.

Patented Feb. 8, 1910.

3 SHEETS-SHEET 1.

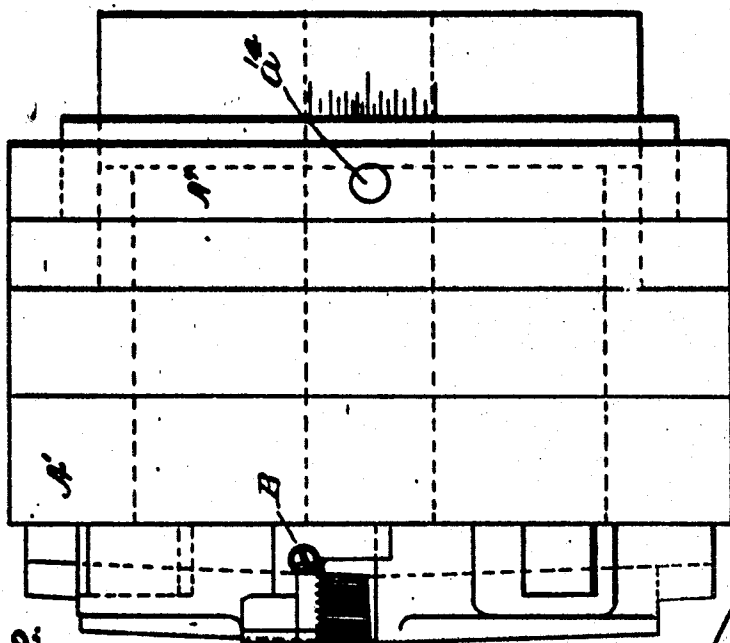


FIG. 2.

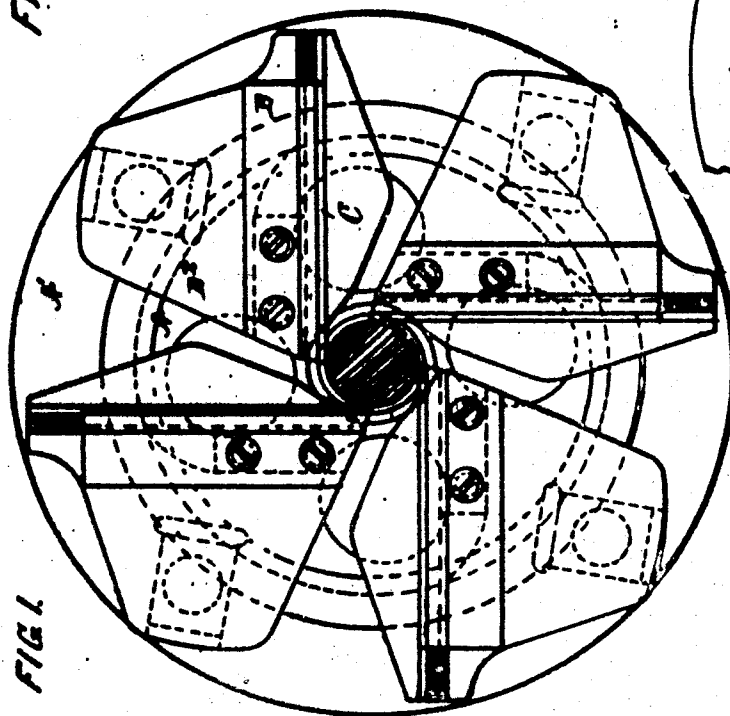


FIG. 1.

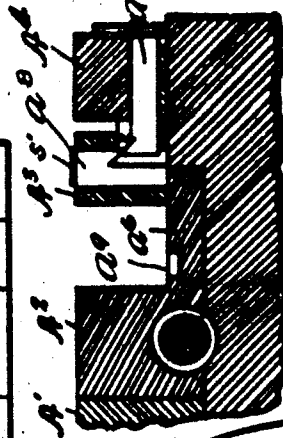


FIG. 9.

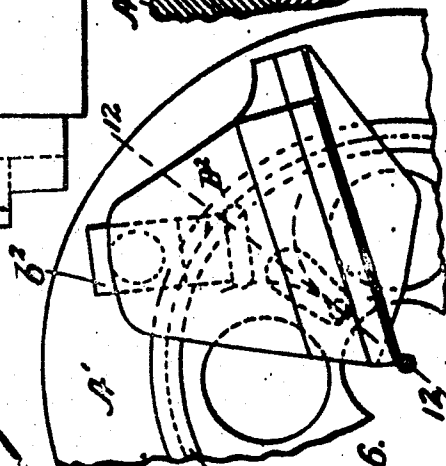


FIG. 6.

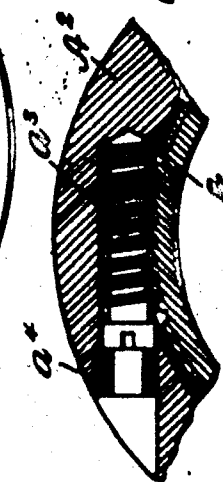


FIG. 10.

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OUTTER HEAD.

APPLICATION FILED JUNE 22, 1907.

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3 SHEETS—SHEET 3.

FIG. 11.

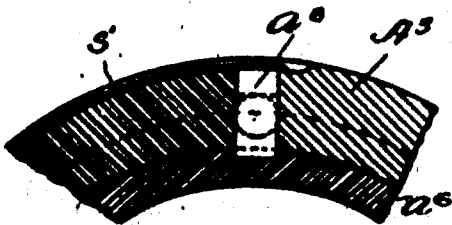
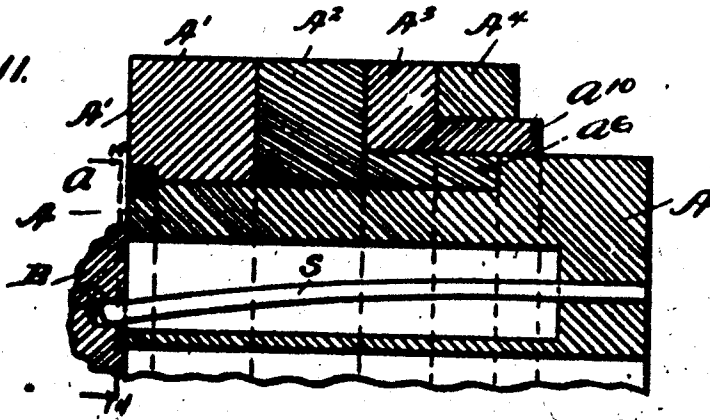


FIG. 12.

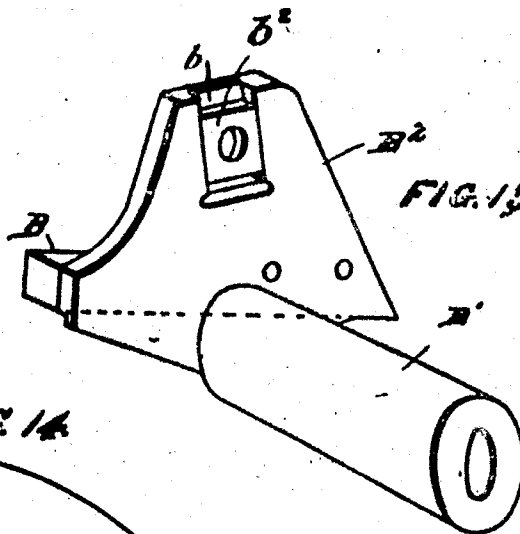
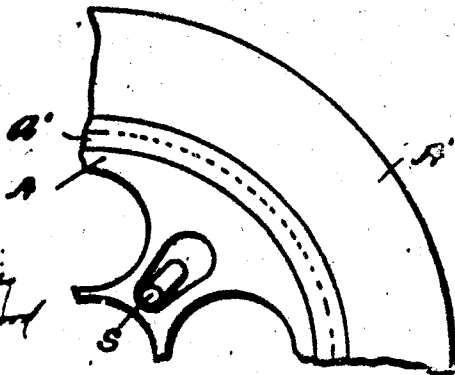


FIG. 13.

FIG. 14.



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UNITED STATES PATENT OFFICE.

ABRAHAM B. LANDIS, OF WAYNESBORO, PENNSYLVANIA.

CUTTER-HEAD.

948,893.

Specification of Letters Patent.

Patented Feb. 8, 1910.

Application filed June 22, 1907. Serial No. 300,302.

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 certain improvements in the details of construction and arrangement of parts of cutter-heads for cutting threads on screws, bolts, etc., whereby a cutter-head for the purpose is provided which is of durable and rigid construction and one wherein the cutting die may be conveniently and accurately adjusted for different sizes of work and readily opened and closed, 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 invention, Fig. 2 a side elevation thereof, Fig. 3 a rear elevation, Fig. 4 a central longitudinal section on the dotted line 4-4 in Fig. 3, Fig. 5 a detail sectional view on the dotted line 5-5 in Fig. 3, Fig. 6 a fragmentary view similar to a portion of Fig. 1, showing the cutter-holder adjusted for small work, and Figs. 7, 8, 9, 10, 11, 12, 13 and 14 detail views illustrating portions of the construction more clearly.

In said drawings the portions marked A represent the body or frame of the cutter-head, B the cutter-holders, and C the cutters.

The body A is substantially cylindrical in form, as shown in several of my former patents, contains a central opening for the accommodation of the work, and is adapted to be secured upon the mandrel of the machine in the usual, or any approved, manner.

The cutter-holders B are each mounted upon a spindle or trunnion B' which is journaled in a perforation or socket formed in the body A. Said sockets are arranged equidistant apart around the central perforation in said body, as shown. The several spindles are each formed with internally screw-threaded sockets in their rear ends and a screw b' extends through a perforation in the rear end of body A and engages therewith. By turning said screw the spindle may be drawn back until the inner face of the cutter-holder is close to the face of the

body A and held in this adjustment by a jam-screw b' mounted in a screw-threaded perforation in said screw b', with its inner end adapted to bear against the inner end of the socket and lock said screw b'. Each of said cutter-holders has a wing B' projecting from one side thereof in the back of which is formed a slot b in which a block b' is adapted to slide. A ring A' is mounted upon the front end of the body A and has a series of pins a projecting from the front thereof, each of which is adapted to engage with a perforation in each of said sliding blocks b'. Said several cutter-holders B are thus each connected through the wings B' and said sliding block and pin to said ring. Said ring A' is secured in place by means of a ring a' formed internally screw-threaded and adapted to screw onto a screw-threaded portion around the front end of the body A. The inner corner of said ring A' is recessed to fit over said ring a' so that the faces of said several parts will be flush with each other. At diametrically opposite points in the rear face of said ring A' cone-shaped recesses or sockets a' are formed, as shown most clearly in Figs. 4, 7 and 8. Behind said ring A' a ring A' is mounted on said body A and secured in circumferential adjustment thereon by means of a screw a' mounted in a tangential socket in said ring A' with the thread thereof engaging screw-threads in the periphery of said body A. Said screw is secured, as most clearly shown in Fig. 10, by means of an externally screw-threaded collar a' screwed into the outer end of the tangential socket, through the perforation in which a screw-driver may be inserted into the slot in the head of said screw for turning it and adjusting the relative circumferential positions of the parts A and A'. Said ring A' is formed with perforations a' which are adapted to register with the cone-shaped sockets a' in the ring A'. Said ring A' is formed, as most clearly shown in Figs. 4, 5 and 9, with a rearwardly extending flange a' which abuts against a shoulder near the rear end of the body A, thus securing both of said rings A' and A' between the collar a' and said shoulder so that they are prevented from sliding longitudinally upon said body. The outer surface of the flange a' is flush with the circumference of the rear end of the body and another ring A' is mounted to slide thereon. Said ring A' has projecting pins a' the shanks

of which are rigidly secured in said ring and the front ends of which are formed tapered or cone-shaped. When the parts are in the position shown in Fig. 4 the cylindrical portion of each of said pins fits snugly in one of the perforations in the ring A' and the cone-shaped end projects into a cone-shaped socket a' in the ring A'. Said ring A' is adapted to be locked to the ring A² by means of a sliding detent a² mounted in a radial perforation in said ring, the inner end of which is adapted to engage with the notch a' in the outer face of the flange a' being held in engagement by a spring S' (see Fig. 12). Said ring A' is also formed with a rearwardly projecting flange a'' and another ring A⁴ is mounted thereon and adapted to have a limited sliding movement between the face of the ring A' and the projecting heads of stop-screws a''' set into screw-threaded perforations in the outer end of said flange a'' with their heads projecting beyond the face thereof. Said ring A⁴ is formed with sockets a''' on opposite sides by which it is adapted to be engaged by the inwardly projecting pins of a shifting-fork connected with a lever (not shown) for operating it. Said ring A⁴ carries a sliding key a''' having a tapered front face adapted to engage with the tapered face of the sliding detent a'. Said key is secured by engaging shoulders with said ring A⁴ to slide therewith, the limited independent movement allowing for the operation of the detent.

In operation, when the ring A⁴ is slid from the position shown in Figs. 4 and 5 until its rear face strikes the head of the stop-screws a''' the parts separate and the tapered face of the key a''' sliding over the tapered face of the detent a' serves to raise said detent out of the notch a' in the flange a' of the ring A'. As soon as said detent is freed from said notch then the ring A' is free to slide with the ring A². Stop-screws a''' are arranged in the rear end of the body A close to its outer edge with their heads projecting slightly beyond the periphery and serve to limit the outward movement of the ring A⁴ carrying with it the ring A'. As soon as said ring A' is thus slid rearwardly on the body A the conical points of the pins a' are withdrawn from the conical sockets of the ring A², in the ring A', permitting said ring A' to turn on the body A following the receding sides of said pins and allowing the die-cutters to turn upon the spindles to open the die. This is effected by means of a spring S, shown most clearly in Fig. 11, one end of which is mounted securely in a perforation in the rear end of the body A and the other end of which extends through a slot formed in said body and engages with a notch in the adjacent side of the cutter-holder B. Each of said cutter-holders is thus connected with one of said springs and

said springs are adjusted so that their tensions are exerted against the cutter-holders in a direction which will tend to open them. Thus, as soon as the cone-shaped pins are withdrawn from the sockets A' said springs, pressing upon the inner ends of the cutter-holders, tend to throw said cutter-holders outward, thus rotating the ring to follow the withdrawal of the pins and keep the faces of the sockets in contact with the adjacent faces of said pins. In Fig. 4 the parts are shown in the position they occupy when the die is closed. In Fig. 7 the parts are shown in the position they occupy when the die is open and in Fig. 8 they are shown in the position they occupy when open when the head is provided with left-hand cutters and the parts adjusted to operate in a direction the reverse of that provided for by the arrangement shown in the principal views. The opening and closing of the die is thus accomplished by the sliding of the ring A', carrying the pins a', back and forth longitudinally upon the body A. When the parts are in a closed position, as shown in Fig. 4, the ring A' will be locked against accidental movement by means of the detent a' which is thrown into engagement with the notch a' immediately upon passing over said notch by means of the spring S', as shown most clearly in Fig. 12. When it is desired to adjust the die for work of different sizes it is done by turning the screw a' which will serve to turn the ring A² and, by reason of its connection with the ring A', through the medium of the pins a', will turn said ring A' and, through its connection with the cutter-holders, will turn said cutter-holders to adjust the points of the cutters to operate upon work of any size. The parts are thus all rigidly secured together and braced against any lost motion and a very rigid and secure construction provided.

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

1. A cutter-head comprising a body containing bearings, cutter-holders provided with spindles mounted in said bearings and formed with wings extending to one side thereof, each of said wings being formed with a groove in its rear face, a block mounted to slide in each of said grooves, a ring mounted upon said body adjacent to said cutter-holders and provided with projecting pins engaging and pivoting in perforations in said blocks, and means for adjusting said ring circumferentially and securing it in adjusted position, substantially as set forth.

2. A cutter-head comprising a body, cutter-holders mounted on spindles, said spindles journaled in suitable bearings in said body, a ring mounted upon said body adjacent to said cutter-holders each of said cutter-holders being secured to said ring by a

sliding part mounted in one of said parts and connected with the other by a pivotal connection, substantially as set forth.

3. A cutter-head comprising a body, cutter-holders mounted on spindles, said spindles pivoted in said body, a ring mounted on said body with which each of said cutter-holders is connected, means for adjusting said ring to open and close the die comprising a sliding tapered part adapted to engage with a tapered face in said ring, and means for operating said sliding tapered parts, substantially as set forth.

4. In a cutter-head, the combination, of the body, the cutter-holders mounted on spindles, said spindles journaled in said body, a ring mounted on said body and connected with each of said cutter-holders, means for adjusting said ring circumferentially to open and close the die comprising sliding tapered parts arranged to engage with tapered faces on said ring, said sliding parts being mounted in a ring mounted to slide longitudinally on said body, said sliding ring, and means for locking said ring in fixed position and adjusting it longitudinally to different positions, substantially as set forth.

5. In a cutter-head, the combination, of the body, the cutter-holders mounted on spindles journaled in said body, a ring mounted on said body connected with each of said cutter-holders, a second ring also on said body adjacent to said first ring, said second ring being secured in circumferential adjustment on said body by means of an inter-engaging screw, means for locking said two rings together whereby the adjustment of said second ring likewise adjusts said first ring comprising sliding tapered parts adapted to engage tapered faces in said first ring, and means for sliding said tapered parts, substantially as set forth.

6. In a cutter-head, the combination, of the body, the movable cutter-holders mounted in said body, a rotatable ring mounted on said body and connected with each of said cutter-holders to move them and provided with tapered sockets in its rear face, a second ring mounted on said body adjacent to said first ring, and rotatably connected to said body by means of an inter-engaging screw, said second ring being formed with perforations adapted to register with the sockets in said first ring, a third ring along-side of said second ring carrying pins adapted to project through the perforations in said second ring and having tapered points adapted to engage with the tapered sockets in said first ring, and means for adjusting said third ring longitudinally upon said body, substantially as set forth.

7. In a cutter-head, the combination, of the body, the cutter-holders mounted to pivot on said body, a ring mounted on said body

connected with each of said cutter-holders, springs mounted in said body and bearing against said cutter-holders to force them open, and a sliding tapered part engaging with a tapered face on said ring adapted to turn said ring to force them into closed position, substantially as set forth.

8. In a cutter-head, the combination, of the body, the cutter-holders pivoted on said body, springs mounted in said body and arranged to bear against said cutter-holders to force them open, a ring mounted on said body connected to each of said cutter-holders, means for turning said ring to force said cutter-holders into closed position comprising a sliding ring, tapered parts carried by said sliding ring and engaging with tapered faces on said ring that is connected to each of said cutter-holders, and means for operating said tapered parts, substantially as set forth.

9. In a cutter-head, the combination, of the body, the cutter-holders pivoted on said body, springs for normally holding said cutter-holders in open position, a ring rotatably mounted in said body engaging with each of said cutter-holders, a second ring mounted on said body adjacent to said first ring and rotatably connected with said body by an inter-engaging screw, means for adjusting said first ring to close the die comprising sliding parts operating through perforations in said second ring, and means for sliding said parts, substantially as set forth.

10. In a cutter-head, the combination, of the body, movable cutter-holders thereon, a ring rotatable on said body connected with each of said cutter-holders, a second ring mounted on said body, means for circumferentially adjusting said second ring and holding it in adjusted position, sliding parts operating through said second ring and constructed and arranged to engage with said first ring for turning it, a third ring carrying said sliding parts, means for sliding said third ring on said body, and a locking device for locking said third ring to hold the parts in closed position, substantially as set forth.

11. In a cutter-head, the combination, of the body, the pivoted cutter-holders, the ring on said body connected with each of said cutter-holders, a sliding ring carrying tapered parts engaging with tapered faces on said ring for operating it, and means for sliding and locking the cutter controlling ring comprising a collar mounted to have a limited motion on said ring, a locking device for locking said ring to hold the parts in closed position, and a key carried by said collar adapted to release said locking device during its limited independent movement, substantially as set forth.

12. A cutter-head comprising a body, piv-

12. A cutter-head comprising a body, pivoted cutter-holders thereon, a part connecting said cutter-holders, means for operating said part, said means operating through and connected with a part mounted on said body to be adjusted circumferentially and held in adjusted position, said part and means for adjusting and holding it, substantially as set forth.

13. A cutter-head comprising a body, pivoted cutter-holders on said body, a part connecting said holders to each other to pivot together, means for operating said part to throw said holders on their pivots, said means comprising parts connected to move through another part, said other part mounted to be adjusted circumferentially on said body, and means for operating said parts, whereby the size of the die may be adjusted as well as opened and closed, substantially as set forth.

14. In a cutter-head, the combination, of

the body, the cutter holders pivoted on said body, a ring on said body connected to each holder, a ring adjacent to said first ring secured to be adjusted circumferentially on said body and held in the desired adjustment, said two rings being constructed and arranged to be locked together when the die is closed and the first ring adapted to have a limited independent circumferential movement when the die is opened, means for locking and means for operating said rings, substantially as set forth.

In witness whereof, I have hereunto set my hand and seal at Washington, D. C., this 19th day of June, A. D. nineteen hundred and seven.

ABRAHAM B. LANDIS. [L. S.]

Witnesses:

E. W. BRADFORD,
A. M. SMALLWOOD.