

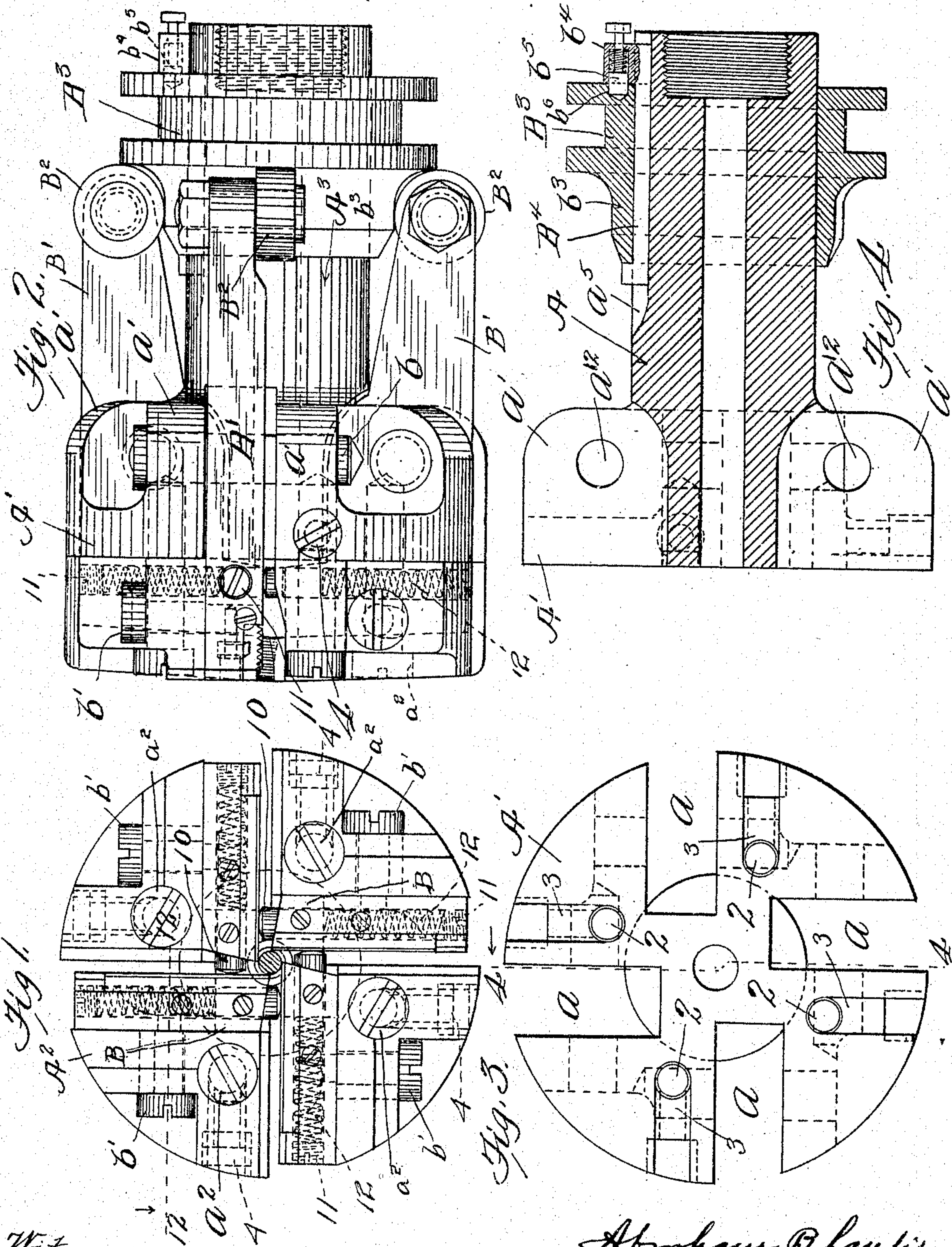
A. B. LANDIS.
CUTTER HEAD.

APPLICATION FILED MAR. 30, 1907.

948,890.

Patented Feb. 8, 1910.

2 SHEETS—SHEET 1.



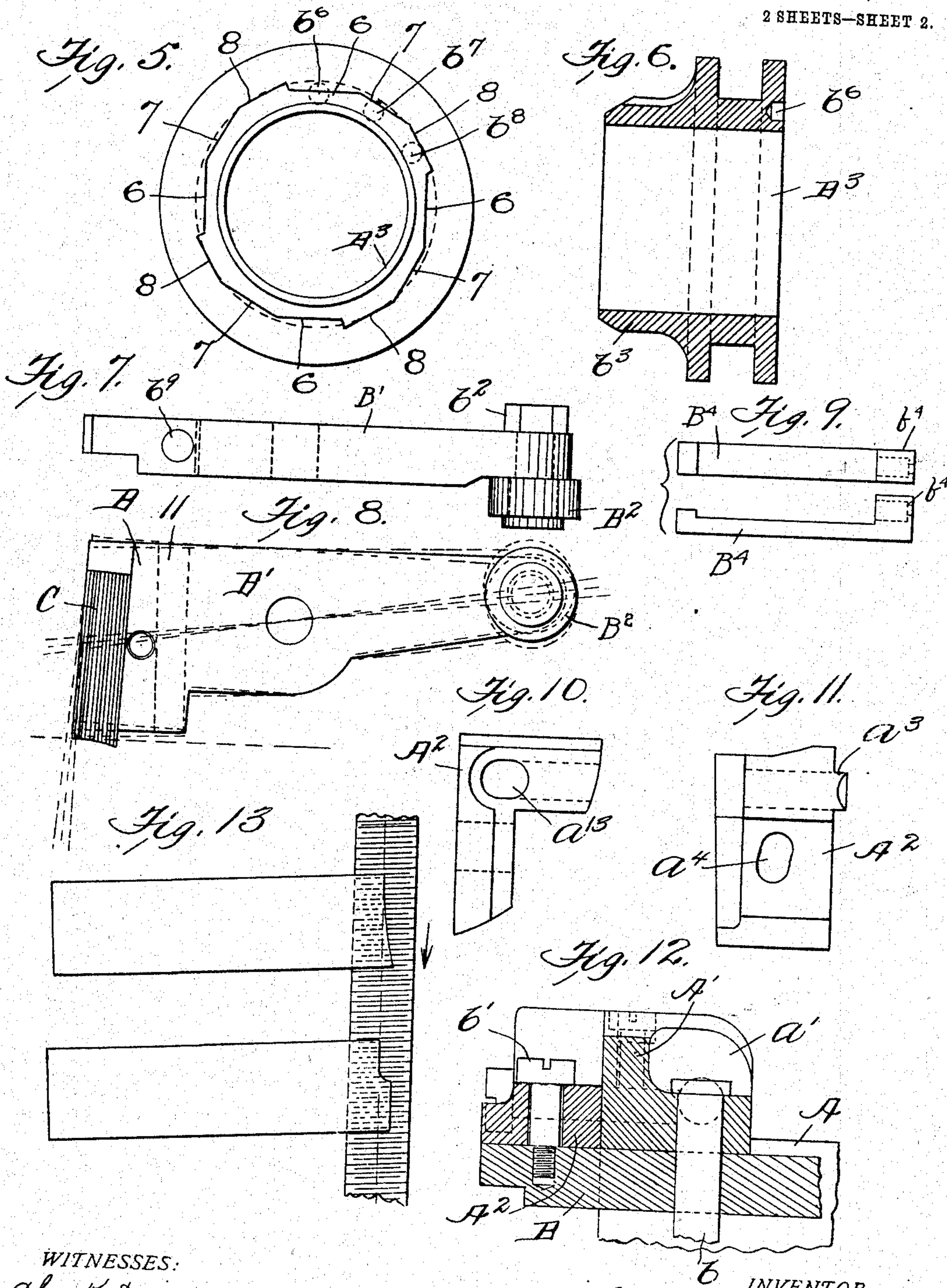
Witnesses.
C. H. Davis
A. M. Smallwood.

Abraham B. Landis,
per
E. W. Bradford
Attorney.

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WITNESSES:
Chas. H. Davies
A. W. Smallwood

INVENTOR.
Abraham B. Landis,
BY
E. W. Bradford
ATTORNEY.

UNITED STATES PATENT OFFICE.

ABRAHAM B. LANDIS, OF WAYNESBORO, PENNSYLVANIA.

CUTTER-HEAD.

948,890.

Specification of Letters Patent.

Patented Feb. 8, 1910.

Application filed March 30, 1907. Serial No. 365,502.

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 screws, bolts, etc., whereby such a tool is provided which is comparatively inexpensive to construct and convenient to manipulate and adjust, as well as efficient in 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 face view, or front elevation, of one of my improved cutter-heads with the parts shown in operative position, Fig. 2 a side elevation of the same, Fig. 3 a view similar to Fig. 1 with the cutter-holders and other parts composing the cutter-die removed, Fig. 4 a longitudinal section through the same on the dotted line 4—4 in Fig. 3, Figs 5 to 11 inclusive detail views illustrating separate parts of the device to show their form and construction more clearly, Fig. 12 a detail sectional view on the dotted line 12—12 in Fig. 1, and Fig. 13 a diagrammatic view illustrating the position of the cutters in relation to the work when in operation, as well as the particular form of said cutters.

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

The body A consists of a casting of suitable form for supporting and containing the other parts, the particular form of which is most clearly illustrated in Figs. 3 and 4. It consists chiefly of a cylinder having an annular flange or head A' on its front end in which are formed slots or recesses a , the inner wall of each of which is substantially on a line passing through the axis of the head. Rearwardly extending wings a' are formed on each side of said recesses in which are formed bearings a^{12} for the pivots of the cutter-holders. On the outer face of the head A' adjacent to the outer wall of each of the recesses a is secured a rest A² for the

bear against. Said rest is in the form of an angle one face of which is parallel with the outer wall of the recess a . Said rests are each secured in position by a screw a^2 which extends through a perforation at the angle therein and engages with a screw-threaded perforation 2 in the head. A tongue a^3 is formed on the back of each rest which is adapted to engage with groove 3 in the face of the head A'. A screw 4 is mounted in a screw-threaded perforation alongside and adjacent to said tongue, the head of which bears upon and serves as an additional securing device for said rest. The hole a^{13} in the angle of said rest A² through which the screw a^2 extends is formed elongated as shown most clearly in Fig. 10, and thus by the adjustment of screw 4 the position of the inner face of said rest may be adjusted.

The cutter-holders B are each mounted on the forward end of a lever B' and are pivoted on pivots b mounted in the pivot holes a^{12} in the wings a' . A screw b' extends through a curved slot a^4 in the rest A² and engages at its inner end with the screw-threaded perforation in the adjacent side of said cutter-holder (see especially Fig. 12). Said screw b' is formed with a shoulder at the end of its screw-threaded part between which and the head thereof it is substantially of a length equal to the thickness of said rest A². Said screw thus serves to steady the forward end of said cutter-holder and hold it in close relation to said rest. On the rear end of each of said levers is mounted an anti-friction roller B² on a bolt b^2 under which a cam projection b^3 on the front end of a sliding collar B³ is adapted to engage. Said collar B³ is mounted to slide on the body A being formed with an annular groove with which a shifting fork (not shown) is adapted to engage, in the usual manner, for operating said collar. The portion b^3 is preferably divided into four parts each part of which is formed with three cam faces, 6, 7, and 8, at varying distances from the center. In each division of the cam the corresponding faces are opposite and at right angles to the corresponding faces of the other divisions so that corresponding cam faces are in position to operate at one time upon the rollers B². Said collar B³ is secured from rotation on the body A by means of a key B⁴ mounted in a longitudinal groove a^5 in said body. Said key is of the form best shown in Fig. 9 having an

outwardly-projecting end b^4 in which is mounted a spring-pawl b^5 adapted to engage with one of a series of perforations b^6 , b^7 , and b^8 in the outer face of said collar B^3 .
 5 Said perforations b^6 , b^7 , and b^8 are located as indicated in Fig. 5 in line with the several cam faces 6, 7, and 8 of one of the four divisions of the cam b^3 . Thus when it is desired to use the cam faces 6, which are the
 10 nearest the center of the die, to operate the levers B' said spring-pawl b^5 is engaged with the perforation b^6 , which locks the collar B^3 to the body A in position to bring said cams 6 into position to operate said
 15 levers. When it is desired to use cam faces 7 the pawl is withdrawn and the collar B^3 turned until said pawl will engage with the perforation b^7 . In the same manner the cam faces 8 may be brought into operative posi-
 20 tion. By this means the levers may be thrown to hold the cutters at different angles to correspond with the pitch of the thread being cut.

Each of the cutter-holders B is formed to
 25 receive the cutters C in the usual or any approved manner. It is formed with a transverse perforation b^9 in which is mounted a plunger 10, the outer end of said perforation being provided with a screw-plug 11
 30 and a coiled-spring 12 being mounted between the inner end of said plunger and said screw-plug by which said plungers are normally forced inwardly to bear against the side of the adjacent cutter-holder and press
 35 the same tightly against the face of the rest A^2 and thus prevent any lost motion in operation. Said springs also serve to force the cutter-carrying end of said levers outwardly as soon as the cam b^3 on the collar
 40 B^3 is slid from under the outer ends of the rollers B^2 and thus open the die to permit the work to be withdrawn after it is finished.

The operation of my said invention is as follows: The parts being in operative position, as shown in Figs. 1 and 2 of the drawing, the work W is fed to the cutter-die composed of the cutters C in the usual manner. When the thread has been cut on the bolt or screw for the distance desired the collar B^3
 50 is slid rearwardly to withdraw the cam b^3 from under the rollers B^2 on the outer ends of the levers B' . The springs 12 immediately operate to open the die and permit the work to be withdrawn. The die is then
 55 closed by sliding the collar B^3 back so that the cam b^3 engages under said rollers and forces the outer ends of said levers outwardly. The adjustment of the die for different sizes of work is secured by adjusting
 60 the screws 4 to move the rests A^2 toward or away from the axis of the die. Screws a^2 are first loosened and then the screws 4 are backed out, when the springs 12, operating against the plungers 10 which bear against
 65 the sides of the several cutter-holders, push

said cutter-holders and said rests outwardly as far as the adjustment of the screw 4 will permit within the limits of the length of the hole a^3 in said rest. So also as the screws 4 are turned inwardly they will push
 70 said rests and cutter-holders toward the axis of the die and compress the springs 12 within the limits of the movement permitted by the length of said hole a^3 . By referring to Figs. 1 and 2 it will be noticed that the
 75 width of the slots a in the flange A' of the body A is sufficient to permit the cutter-holders to slide laterally a limited distance back and forth on their pivots b .

This particular form of die is designed especially for manufacturing purposes where its size will be seldom changed, different heads being used constantly for different sizes of work. The adjustments once made are therefore seldom altered and can be
 85 effected by hand in a satisfactory manner.

In Fig. 13 is illustrated the position occupied by the cutter in relation to the work, the forward or cutting side of the cutter being substantially on a line with the axis
 90 of said work and the rear or following side extending across said axis so that the grooves therein will firmly engage the threads of the work and draw it into the die as the operation proceeds. Two forms of cutters are
 95 shown but both operate the same and are substantially the equivalent one of the other.

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 body, the cutter-holders mounted to be carried on levers pivoted on pivots secured in said body in line with the face thereof, said levers, means for tilting said levers on
 105 their pivots to open and close the die, and means for adjusting them lengthwise of said pivots to regulate the size of the die, substantially as set forth.

2. In a cutter-head, the combination, of the body, having a head formed with a plurality of recesses each to one side of the axis and with the adjacent recesses at right angles to each other, levers mounted on pivots in said recesses, cutter-holders rigid on
 115 the forward ends of said levers, and means for operating the levers to move the cutters tangentially to the work, substantially as set forth.

3. In a cutter-head, the combination, of the body, the cutter-holders rigidly mounted on pivoted levers extending longitudinally of said body, the cutters on said cutter-holders arranged with their cutting grooves tangential to the work, and means for actuating
 125 said levers to move the thread-forming faces of said cutters tangentially with the work, substantially as set forth.

4. In a cutter-head, the combination, of the body formed with recesses, rests for the
 130

cutter-holders secured to the face of said body alongside said recesses, said cutter-holders mounted on levers pivoted in said body to extend longitudinally thereof, said
5 cutter-holders being slidably secured to said rests, and means for actuating said levers, substantially as set forth.

5. In a cutter-head, the combination, of the body, the rests adjustably secured on the
10 face thereof, levers pivoted in recesses in said body with the cutter-holders on their outer ends, said cutter-holders being mounted with their outer faces bearing against said rests, and means for actuating said le-
15 vers to open and close the die, substantially as set forth.

6. In a cutter-head, the combination, of the body the head whereof is formed with recesses extending at right angles with each
20 other around its axis, the levers pivoted in said recesses having the cutter-holders on their outer ends, rests secured on the face of the head, one adjacent to each recess and adjustable in relation to the axis of the head,
25 said cutter-holders being slidably connected thereto, means for holding said cutter-holders against said rests, means for adjusting said rests, and means for actuating said le-
30 vers to open and close the die, substantially as set forth.

7. In a cutter-head, the combination, of the body having a slotted head, the levers pivoted in the slots having the cutter-hold-
35 ers on their outer ends, said slots being wider than said levers to permit the adjustment of said cutter-holders transversely to the axis of the cutter-head, rests secured to the face of the head, means for adjusting said rests, means for holding said cutter-
40 holders against said rests, and means for actuating said levers to open and close the die, substantially as set forth.

8. In a cutter-head, the combination, of the body formed with a head having slots or
45 recesses, angular rests secured on the face of said head by tongue and groove connections, a screw for holding said angular rests against said head, and a second screw extending at right angles thereto for adjusting the por-
50 tion of said rests transversely to the axis of the head, levers with the cutter-holders on their outer end pivoted in the recesses in said head, means for holding said cutter-holders against said rests, and means for
55 actuating said levers to open and close the die, substantially as set forth.

9. In a cutter-head, the combination, of the body, adjustable rests for the cutter-holders on the face thereof, means for ad-
60 justing said rests transversely to the axis of the head, said cutter-holders mounted on levers pivoted in said body, and means for holding said cutter-holders in contact with said rests, substantially as set forth.

65 10. In a cutter-head, the combination, of

the body, the levers pivoted therein carrying the cutter-holders on the outer ends thereof, and cutters on said holders having thread-forming grooves on their faces which are adjacent to the axis of the head, said grooves
70 extending substantially in line with the motion of the end of said lever and tangentially to the work, substantially as set forth.

11. In a cutter-head, the combination of the body, the levers having the cutter-hold-
75 ers mounted on pivots in said body, cutters secured to the cutter-holders, rests on the face of said body, a slidable connection between said holders and said rests, and spring-mounted plungers in each cutter-holder ar-
80 ranged to bear against the adjacent cutter-holder for holding them against their respective rests, substantially as set forth.

12. In a cutter-head, the combination, of the body, the rests for the cutter-holders on
85 the face thereof, levers bearing said cutter-holders pivoted in said body, said cutter-holders being supported by said rests, each of said cutter-holders being provided with a spring plunger adapted to bear against the
90 side of the adjacent cutter-holder, and means for actuating said levers to open and close the die, substantially as set forth.

13. In a cutter-head, the combination, of the body formed with slots or recesses the
95 inner walls of which are substantially in line with the diameter of said head, the cutter-holders mounted on levers in said recesses, the cutters on said cutter-holders, adjustable rests on the face of said head
100 adapted to support the outer faces of said cutter-holders, means for adjusting said rests toward and from the axis of said head, a slidable connection between each holder and its rest, and a spring-bearing connection be-
105 tween each cutter-holder and the adjacent cutter-holder, whereby said cutter-holders are held firmly against said rests, and means for actuating said levers for opening and closing the die, substantially as set forth. 110

14. In a cutter-head, the combination, of the body having recesses, the levers carrying the cutter-holders mounted in said recesses, said recesses being of greater width than
115 said levers to afford them a lateral movement therein, means for supporting said cutter-holders, means for adjusting them laterally, and means for operating said levers to open and close the die, substantially as set forth. 120

15. In a cutter-head, the combination, of the body, the cutter-holders mounted on levers in said body, the recesses containing said levers being of greater width than the
125 levers to permit a lateral movement thereof, means for adjusting said levers laterally and securing them in the desired lateral adjustment, and means for opening and closing the die, substantially as set forth.

16. In a cutter-head, the combination, of 130

the body, cutter-holders mounted on levers pivoted in recesses in said body, means for adjusting said holders for various sizes of work, means for operating the levers to open and close the die, the adjustment for the various sizes being at substantially right-angles with the plane of the motion of said levers for opening and closing the die, substantially as set forth.

17. In a cutter-head, the combination, of the body, the cutter-holders carried on levers therein, and said levers mounted to move in one direction to adjust the die for different sizes of work and in another direction to open and close said die, substantially as set forth.

18. In a cutter-head, the combination, of the body, a plurality of transversely slidable levers pivoted therein carrying the cutter-holders, cutters rigidly mounted thereon, and a sliding collar on said body formed with a series of cam-faces at varying distances from the center, for engaging and operating said levers, substantially as set forth.

19. In a cutter-head, the combination, of the body, the cutter-holders on levers pivoted and transversely adjustable in recesses in said body, and means for operating said levers comprising a sliding collar mounted on said body and having a cam projection divided into as many parts as there are levers, each of said parts being formed with a series of cam-faces at varying distances from the center, the corresponding faces of each division being the same distance from the center, and means for adjusting said collar circumferentially on said body to bring one or the other of the corresponding sets of said cam-faces into position to operate said levers, substantially as set forth.

20. In a cutter-head, the combination, of the body, the cutter-holders carried by levers

pivoted in recesses in said body, cutters mounted on said cutter-holders with their cutting grooves substantially in line with the movement of said levers and tangential to the work, and means for operating said levers comprising a sliding collar on said body having a cam with a series of cam-faces at varying distances from the center, and means for locking said collar to secure the cam-faces desired in position to operate said levers, substantially as set forth.

21. In a cutter-head, the combination, of the body, the cutter-holders rigidly carried on levers pivoted in said body, cutters mounted on said cutter-holders with their cutting grooves substantially in line with the movement of said levers and tangential to the work, and means for holding said levers at varying angles, whereby the cutting grooves on the faces of the cutters may be held at varying angles to the work, substantially as set forth.

22. In a cutter-head, the combination, of the body, the cutter-die comprising cutters mounted in cutter-holders rigidly carried on the ends of levers pivoted in recesses in the body, said cutters being arranged with their grooves substantially in line with the movement of said cutter-holders, and means for holding said cutters with their cutting grooves at varying angles to the work comprising a sliding collar on the body having cam-faces at varying distances from the center adapted to engage with and operate said levers, substantially as set forth.

In witness whereof, I, have hereunto set my hand and seal at Washington, D. C., this 20th day of March, A. D. nineteen hundred and seven.

ABRAHAM B. LANDIS. [L. S.]

Witnesses:

E. H. PARKINS,
E. W. BRADFORD.