

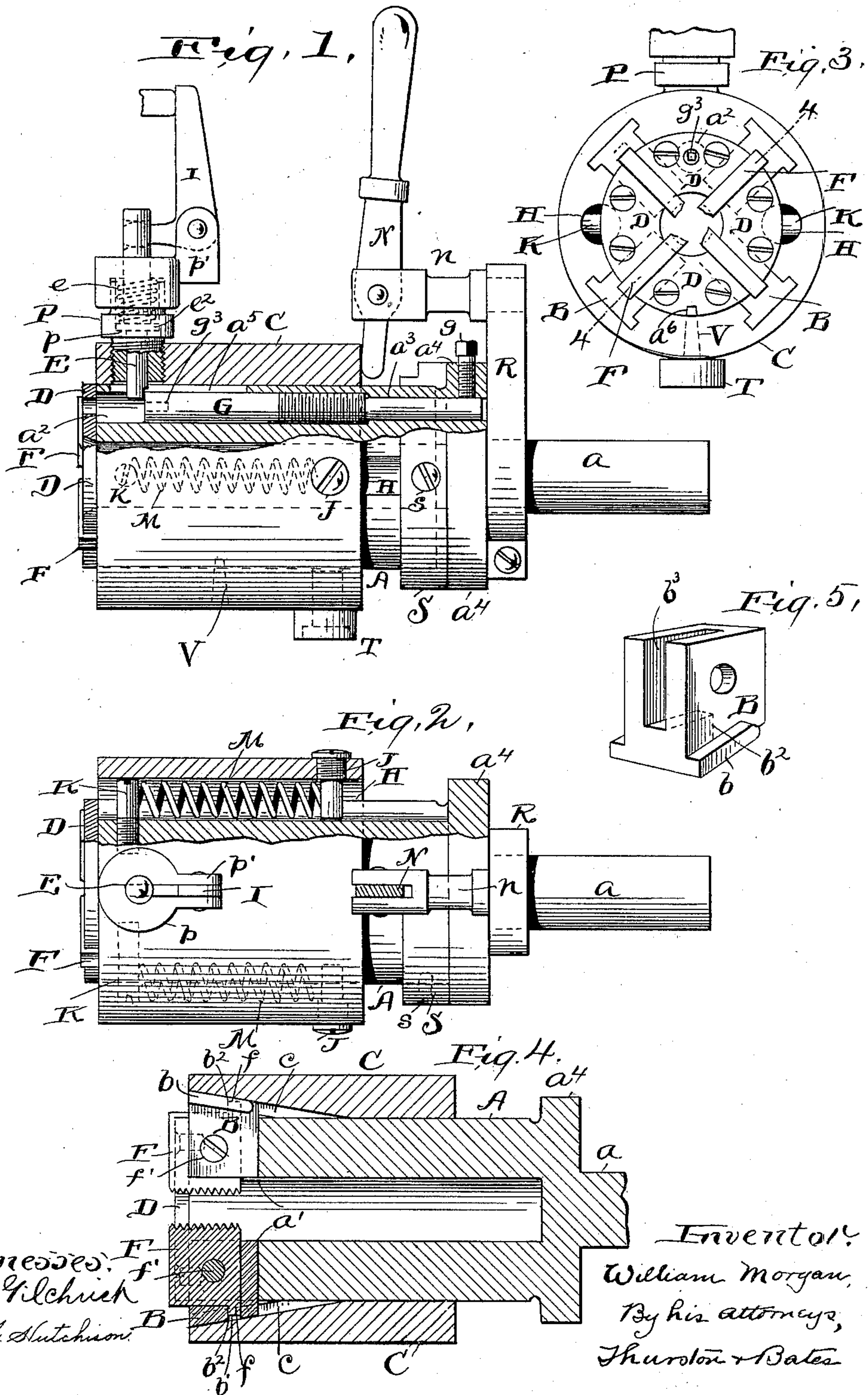
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Patented Sept. 13, 1898.

W. MORGAN.
DIE HEAD FOR SCREW MACHINES.

(Application filed Apr. 17, 1897. Renewed Feb. 18, 1898.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM MORGAN, OF CLEVELAND, OHIO.

DIE-HEAD FOR SCREW-MACHINES.

SPECIFICATION forming part of Letters Patent No. 610,632, dated September 13, 1898.

Application filed April 17, 1897. Renewed February 16, 1898. Serial No. 670,592. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MORGAN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Die-Heads for Screw-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a novel die-head for a screw-machine, the object of the invention being to simplify and cheapen the construction of such devices and to produce a form of such devices which shall operate quickly and with accuracy.

The invention consists in the construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of my improved die-head; and Fig. 2 is a plan view thereof, each being partly in section. Fig. 3 is a front end view of the same. Fig. 4 is a sectional view on line 4 4 of Fig. 3, and Fig. 5 is a perspective view of one of the die-cases.

Referring to the parts by letters, A represents the barrel of the head. The head, as shown, is adapted to be used as a turret-tool, and the shank a , which projects from the rear end of the barrel, is adapted to be secured in one of the tool-sockets of a screw-machine turret. The means for securing the head to the machine may, however, be varied to suit any special case.

In the front end of the barrel are four (more or less) radial slots a' . The die-cases B fit in these slots and are moved radially therein by a sleeve C, which surrounds and is longitudinally movable upon the barrel. The die-cases are provided with laterally-projecting inclined wings b b , which fit in corresponding inclined grooves c in the sleeve, whereby the movement of the sleeve toward the rear end of the barrel moves the die-cases outward, and its movement in the contrary direction moves them inward.

The length of the die-cases is equal to the depth of the slots a' from the front end of the barrel, and the cap-plates D D are secured to the end of the barrel and hold the cases in these slots, wherefore said cases may move

radially only. These cap-plates are sector-shaped and of such size that they lap over the ends of the cases, but leave openings through which the dies F pass.

The dies, which fit in slots b^3 in the cases, have a lug f , which enters a corresponding recess b' in the cases, and the rear face of each of said dies contacts with the rear wall b^2 of the case. Each die is secured in its case by a transverse screw f' .

In the barrel is a longitudinal hole a^2 , the middle part of which is threaded. A screw G is screwed into the hole and adjusted to the proper position. Both ends of the screw are unthreaded, and the inner end is of smaller diameter than the threaded part, and the part of the hole a^3 , which receives this inner end, fits it nicely. When the screw has been adjusted to the proper position, a set-screw g , which screws through the flange a^4 of the barrel A, clamps it in place. A square hole g^3 is made in the outer end of this screw G, whereby it may be turned with a key.

The sleeve C carries a latch or bolt E, which is under the influence of a spring e , tending to press it inward at all times. When the sleeve is being moved backward or forward, the end of this bolt E slides upon the unthreaded outer part of the screw G, passing through a slot a^5 in the barrel; but when the sleeve has been moved out far enough the bolt flies inward past the end of the screw, against which it bears and prevents the backward movement of the sleeve. The bolt E is withdrawn by suitable means when the dies have done their work in cutting a thread. The means provided consists of a bell-crank lever I, pivoted to the cap p' of the bolt-case. One end of this lever enters a slot in the bolt. The other end is vertical, and while it may be operated by hand is intended to be operated by some stop which is brought against it by the operation of the machine as a screw is being threaded. The bolt-case includes a tube P, which is screwed into the barrel and has an internal shoulder p , above which lies the flange e^2 on the bolt. A cap p' screws onto this tube and holds the spring e , which thrusts against it and the flange e^2 .

The longitudinal spring-sockets H H are cut partly in the outer periphery of the barrel A and partly in the inner periphery of the

sleeve C. Pins J are screwed through the sleeve near its rear end into these sockets, and other pins K, which extend across said sockets near their front end, are screwed into the barrel. The expansion coil-springs M are compressed in these sockets between these pins, wherefore they exert their force to move the sleeve rearward upon the barrel.

The sleeve may be moved forward upon the barrel by a lever N, which is pivoted to a bracket n, and bears against the rear end of the sleeve. This bracket is secured to a clamp R, which is clamped to the stem of the barrel.

When the described device is used as a turret-tool, the sleeve may be moved forward as the turret is turned to bring the head into operative position by the engagement of a friction-roller T, carried by the sleeve, with a fixed cam (not shown) which may be secured to the machine.

The operation of the device is as follows: When the sleeve is moved outward far enough, the spring-bolt E moves inward in front of the end of adjusting-screw G. The springs M pull the sleeve backward to hold said bolt against said screw. The forward movement of the sleeve moves the die-cases inward to the proper position, so that the dies may cut the desired thread. The inward movement of the dies may be varied by moving the adjusting-screw G; but when once this screw has been set the dies are always moved inward the same distance by the described forward movement of the sleeve. When the thread has been cut, the lever I is operated, the spring-bolt is withdrawn, and the springs M move the sleeve backward, thereby moving the dies outward. The backward movement of the sleeve is limited by any form of stop. As shown, a ring-segment S is secured by a screw s to the barrel. This form of stop may be quickly removed and a ring-segment of a different thickness substituted.

The rotation of the sleeve relative to the barrel is prevented, first, by the engagement of the sector-shaped plates D with the sides of the dies; second, by the engagement of the bolt E in the slot a^5 in the barrel, and in addition I have shown a tapered longitudinal groove a^6 in the barrel and a screw V with a tapered point, which screws through the sleeve and into said groove.

I claim—

1. In a die-head for screw-machines, the combination of a radially-slotted barrel, die-cases in said slots, a sleeve movable upon said barrel, and connections between the die-cases and sleeve whereby the former are moved radially by the longitudinal movement of the latter, with an adjustable screw G in the barrel, a spring-bolt carried by the sleeve and adapted to engage with the end of said screw, and springs for moving the sleeve rearward upon the barrel, substantially as specified.

2. In a die-head for screw-machines, the combination of a radially-slotted barrel, die-cases in said slots, a sleeve movable upon said

barrel, and connections between the die-cases and sleeve whereby the former are moved radially by the longitudinal movement of the latter, with an adjustable screw G in the barrel which is unthreaded at both ends, a set-screw for preventing the rotation of said adjustable screw, a spring-bolt carried by the sleeve and projecting through a slot in the barrel into engagement with the adjustable screw, means for moving the sleeve forward upon the barrel, and springs for moving it rearward, substantially as specified.

3. In a die-head for screw-machines, the combination of a radially-slotted barrel, die-cases in said slots, a sleeve movable upon said barrel, and connections between the die-cases and sleeve whereby the former are moved radially by the longitudinal movement of the latter, with means for moving the sleeve forward upon the barrel, springs for moving it rearward, an automatic spring-latch for preventing this rearward movement, and means for withdrawing said latch, substantially as specified.

4. In a die-head for screw-machines, the combination of a radially-slotted barrel, die-cases in said slots, a sleeve movable upon said barrel, and connections between the die-cases and sleeve whereby the former are moved radially by the longitudinal movement of the latter, with an adjustable screw G in the barrel having its ends unthreaded, a radial spring-bolt carried by the sleeve, a bell-crank lever carried by the sleeve for withdrawing the spring-bolt, means for moving the sleeve forward, and springs for moving it rearward, substantially as specified.

5. In a die-head for screw-machines, the combination of a radially-slotted barrel, die-cases in said slots, a sleeve movable upon said barrel, and connections between the die-cases and sleeve whereby the former are moved radially by the longitudinal movement of the latter, with means for moving the sleeve forward upon the barrel, springs in longitudinal sockets formed partly in the barrel and partly in the sleeve, pins projecting outward from the barrel into said sockets in front of said springs, pins projecting into said sockets from the sleeve behind said springs, and a latch for temporarily preventing the rearward movement of said sleeve, substantially as described.

6. In a die-head for screw-machines, the combination of a radially-slotted barrel, die-cases in said slots, a sleeve movable upon said barrel, and connections between the die-cases and sleeve whereby the former are moved radially by the longitudinal movement of the latter, with means for moving the sleeve forward upon the barrel, springs for moving it backward, an automatic spring-latch for preventing this backward movement, means for withdrawing said latch, and a ring-segment removably secured to the barrel and adapted to serve as a stop to the backward movement of said sleeve, substantially as described.

7. In a die-head for screw-machines, the

combination of a radially-slotted barrel, die-cases in said slots, a sleeve movable upon said barrel, and connections between the die-cases and sleeve whereby the former are moved
5 radially by the longitudinal movement of the latter, with sector-shaped plates which are secured to the front end of the barrel and overlap the ends of the die-cases but leave spaces between them through which dies car-
10 ried by said cases are adapted to project, substantially as described.

8. In a die-head for screw-machines, the

combination of the die-cases having oblique lateral wings, a die-slot with a closed rear end, and a recess *b'*, with a die secured in said
15 slot with its rear end against the rear wall of the case and having a lug *f* which enters said recess, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM MORGAN.

Witnesses:

ALBERT M. MAY,
E. L. THURSTON.