

Feb. 7, 1956

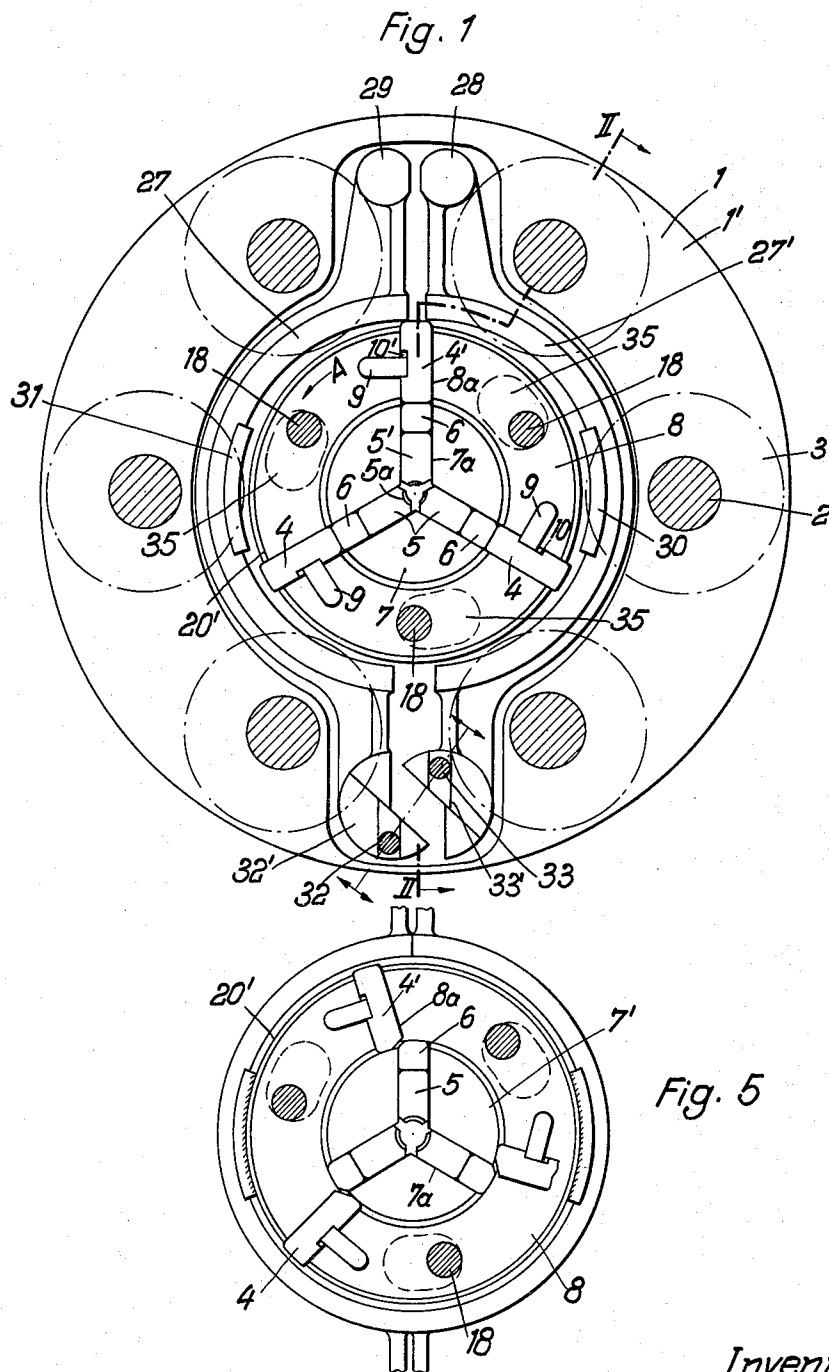
W. TRURNIT

2,733,458

MACHINE FOR FORMING THREADS BY RECIPROCATING HAMMER DIES

Filed Feb. 18, 1953

4 Sheets-Sheet 1



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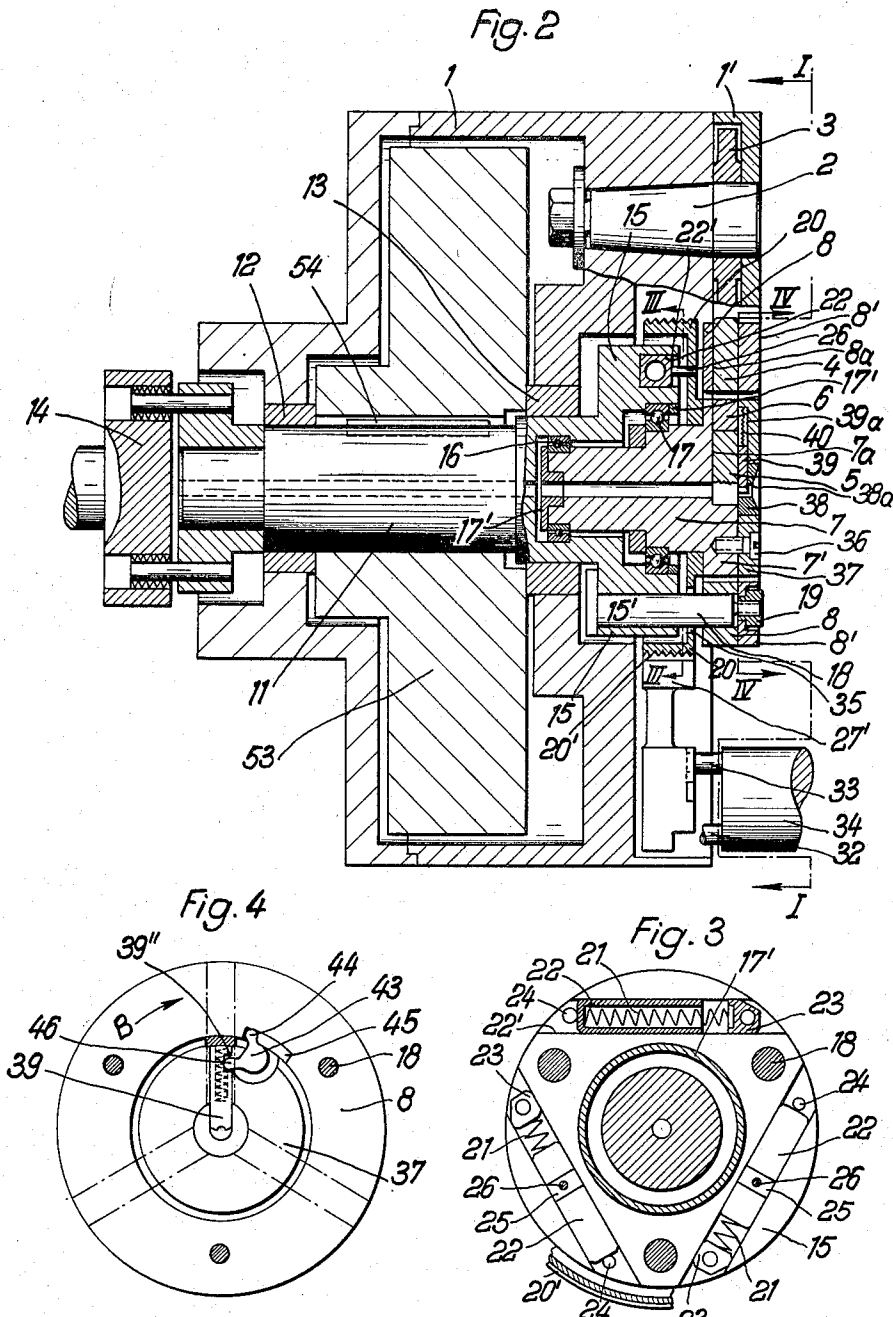
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4 Sheets-Sheet 2



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4 Sheets-Sheet 3

Fig. 6

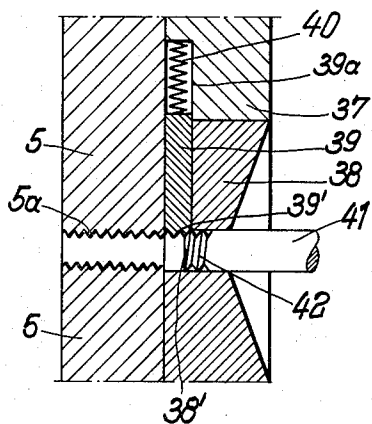


Fig. 7

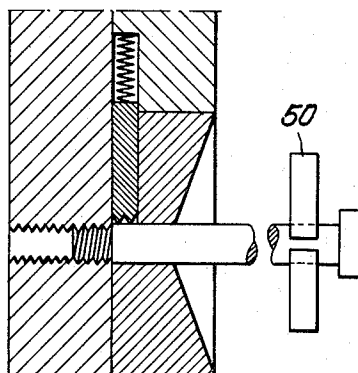


Fig. 8

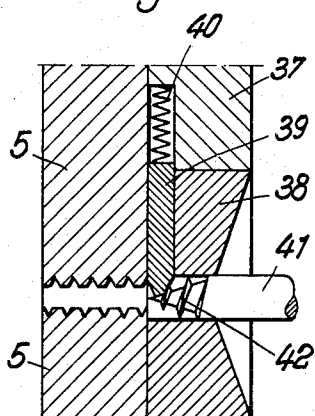
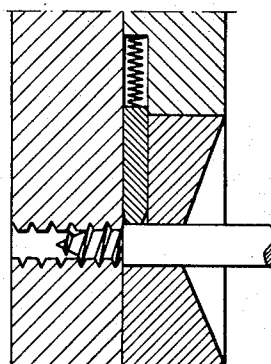


Fig. 9



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4 Sheets-Sheet 4

Fig. 10

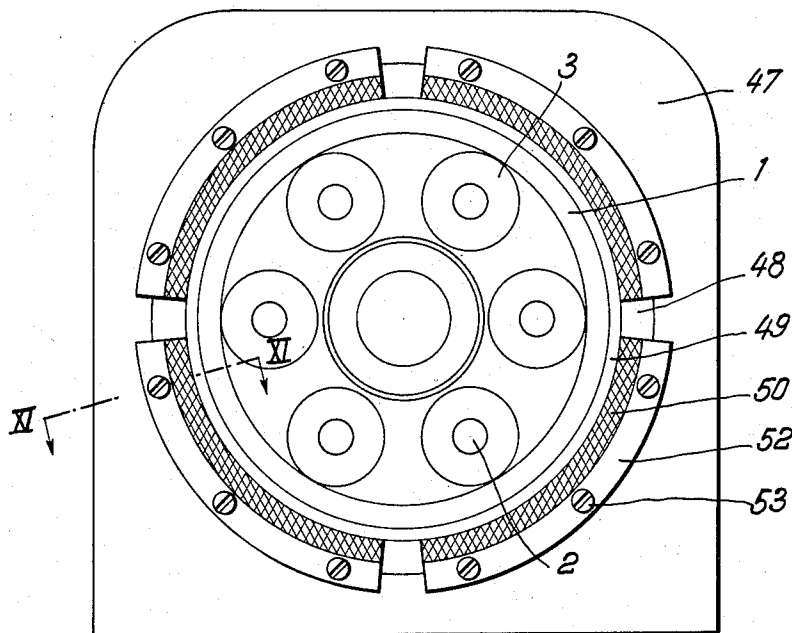


Fig. 11

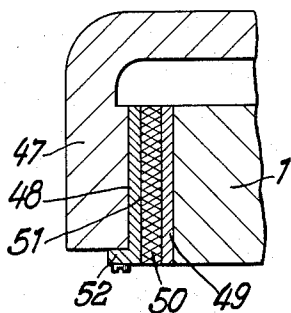
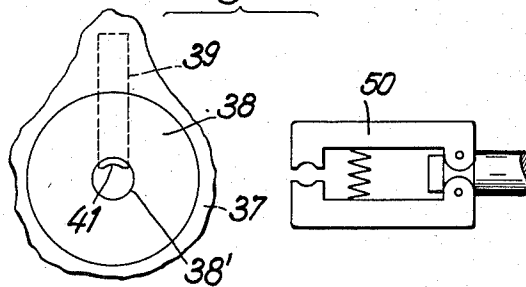


Fig. 12



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2,733,458

MACHINE FOR FORMING THREADS BY RECIPRO- CATING HAMMER DIES

Walter Trurnit, Waldshut, Germany

Application February 18, 1953, Serial No. 337,594

Claims priority, application Germany February 21, 1952

21 Claims. (Cl. 10—153)

The present invention relates to thread forming machines, and more particularly to thread forming machines for producing thread by hammering.

It is an object of the present invention to provide in a thread forming machine inwardly arranged thread forming jaws, and outwardly arranged hammers which are actuated to hammer thread forming faces of the jaws into a preformed thread of a blank.

It is another object of the present invention to mount the hammers in a rotary holding means, and the jaws in another rotary holding means, the rotary holding means being rotatable relative to each other to a releasing position in which the jaws are free to move outwardly to a blank releasing position.

It is a further object of the present invention to provide an automatically operated brake for engaging one of the holding means so as to effect relative rotation of the rotary holding means and release of the blank when the thread on the same is finished.

It is still a further object of the present invention to provide a blank adjusting member which rotates with the jaws, and is formed with an engaging thread portion engaging a preformed threaded guiding end portion of a blank for guiding the blank into correct engagement with the thread forming thread of the jaws.

With these objects in view, the present invention mainly consists in a thread forming machine comprising a stationary support, a first rotary holding means rotatably supported by the stationary support and formed with a plurality of angularly spaced radially extending first guiding means arranged in a transversal plane, a second rotary holding means rotatably mounted on and arranged coaxially with the first rotary holding means and formed with a plurality of radially extending second guiding means located in the same transversal plane as the first guiding means and at the same angular distance from each other as the first guiding means, a plurality of jaw means movably mounted in the second guiding means between a blank releasing position and an advanced thread forming position, the jaw means having a female thread means, a plurality of hammer means movably mounted in the first guiding means, means for rotating the first rotary holding means, brake means for braking the second rotary holding means, whenever desired, motion transmitting means including a yieldable resilient means and connecting the rotary holding means for rotation, the yieldable resilient means holding during rotation the holding means in a first relative position in which the first and second guiding means are aligned when the brake means are disengaged, the yieldable resilient means permitting a relative rotation of the rotary holding means to a second relative position in which the first and second guiding means are angularly spaced when the brake means engage the other rotary holding means, and actuating means mounted on the support and projecting into the path of the hammer means and being engaged by the same during rotation of the second holding means for pushing the hammer means periodically inwardly, feeding means for

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feeding a blank rod having a guiding thread, a guiding member secured to the second rotary holding means and formed with a bore adapted to receive a fed blank rod and to guide the same along a predetermined path between the jaw means, a blank adjusting element slidably mounted on the guiding member movable in a transversal direction between a retracted position and an advanced position, the blank adjusting element having a female thread portion slightly projecting into the bore in the advanced position of the blank adjusting element, and located in the advanced position adjacent the female thread means of the jaw means in the thread forming position of the same, and constituting a continuation of the same, spring means urging the blank adjusting element into the advanced position, and pivoted lever means engaging at one end thereof the blank adjusting element and at the other end thereof the first holding means, the lever means being pivoted during relative rotation of the first and second holding means, so as to withdraw the blank adjusting means to the retracted position when the rotary holding means assumes the second relative position.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantage thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 is a fragmentary front view of a thread forming machine on line I—I in Fig. 2;

Fig. 2 is a longitudinal sectional view on line I—I of Fig. 1;

Fig. 3 is a fragmentary cross-sectional view on line III—III of Fig. 2;

Fig. 4 is a fragmentary cross-sectional view on line IV—IV of Fig. 2;

Fig. 5 is a fragmentary front view showing a different position of the jaws and hammers;

Figs. 6 and 7 are longitudinal sectional views of a blank adjusting arrangement according to the present invention as applied to iron bolts;

Figs. 8 and 9 are longitudinal sectional views similar to Figs. 6 and 7 illustrating the blank adjusting arrangement applied to wood screws;

Fig. 10 is a front view of the thread forming machine;

Fig. 11 is a fragmentary sectional view on line 11—11 in Fig. 10; and

Fig. 12 is a side view of feeding means according to the present invention.

Referring now to the drawings, and more particularly to Fig. 10, in a stationary casing 47 which is provided with a bore 48 the hammer head of the machine is located and includes an annular support 1. Between the support 1 of the hammer head and the bore 48, a rubber means is arranged which consists of rubber members 50 arranged between an inner steel ring 49 and outer steel ring 51 which consists of several segments. The outer ring segments 51 are provided with flanges 52 having bores through which the screws 53 pass by which the segment 52 and the rubber means are secured to the outer casing 49. The rubber cushioning achieves a running of the machine free of noise.

Referring now to Figs. 1 and 2, the stationary support 1, supports six bolts 2 which are also supported in a cover plate 1'. On the bolts 2 actuating rollers 3 are freely rotatably mounted.

The rollers 3 serve for actuating the hammers 4 which are mounted in guiding grooves of an annular member 8, the grooves being covered by a ring 8'. The ring 8 is a part of first rotary holding means which further include

a resilient coupling 14 and the shaft 11 which is driven through coupling 14. Shaft 11 is mounted on bearings 12, 13 in the support 1 and carries a fly wheel 53 secured thereto by means of a key 54. The shaft 11 has a head portion 15 which is formed with an axial bore 15' in which second holding means 7 are freely rotatably mounted on ball bearings 16 and 17. The ball bearings 16 and 17 are held by rings 17' on inner shoulders of the second holding means 7.

The ring 8 which carries the hammers 4, is connected to the head portion 15 of the shaft 11 by three bolts 18 which are fixedly secured to the head portion 15, and the rings 8 and 8' by nuts 19 engaging the ring 8'.

A brake drum 20 is fixedly secured to the inner holding member 7. The brake drum 20 is provided with a plurality of elongated slots 35, see Fig. 1, which extend in tangential direction, and through which the bolts 18 pass.

On a transversal face of the head portion 15 three guiding grooves 22' are provided, as can be best seen from Figs. 2 and 3, in which cap members 22 are slidable. Springs 21 abutting against an abutment 23 of head 15 urge the cap members 21 in one direction and into engagement with the stops 24. As shown in Fig. 3, the cap members 22 have recesses 25 in the transverse faces thereof into which the pins 26 project, which on their other ends are secured to the brake drum 20.

As can be best seen from Fig. 1, brake means for braking the drum 20 are provided which include the two brake members 27' and 27 which are pivotally mounted at 28 and 29 on the support 1. Brake lining 30, 31 is secured to the brake members 27', 27 and engages the perimeter of the brake drum 20' when the brake is engaged. The free ends of the brake members are provided with grooves 32', 33' into which the pins 32, 33 of an operating member 34 project, that is rotatably mounted in the supporting frame of the machine. When the shaft 34 is rotated in one direction by means which are not an object of the present invention, the brake members 27', 27 are pressed against the perimeter 20' of the brake drum 20 whereby the second holding means 7' is braked, while rotation of the shaft 34 in the opposite direction effects releasing of the second holding means.

From the above description of the elements it will be understood that rotation of the first holding means 11, 14, 15, 18, 8, 8' in the direction of the arrow A will cause rotation of the second holding means 7 through the resilient means 21, 22, 25, 26 and the brake drum 20. At the same time the bolts 18 are resiliently pressed against one end of the elongated slots 35 and do not transfer a force. The resilient yieldable means 22, 21, 26 and drum 20 are the motion transmitting means between the first and second holding means.

When, however, the brake means 20, 26, 27 are operated by the shaft 34, and the second holding means 7 is braked through drum 20, a relative rotation takes place between the first holding means 11, 15, 8, 8' and 18 and the second holding means 7 against the action of the resiliently yielding means 21, 22, 25, 26 which are compressed. The relative rotation is terminated when the bolts 18 engage the other ends of the slots 35 in the position shown in Fig. 5. The brake is immersed in oil and permits sliding of the brake drum perimeter 20' on the brake linings 30, 31 while the rotation of the first and second holding means continues in the second position shown in Fig. 5.

The member 8, which is part of the first holding means, is provided with radially extending guiding means, which are shown to be grooves 8a covered by the ring 8', and in these grooves the hammers 4 are mounted slidable in radial direction. Such radial movement, however, is limited by the stop means 9 which project into recesses 10 in the hammers 4. One hammer 4' is provided with a shorter recess 10' and therefore is movable for a shorter distance than the other hammers. The flange 7' on the second rotary holding means 7 is provided with corre-

sponding guiding means for the jaws 5 and intermediate hammers 6, such as the grooves 7a which are covered by a ring 37 secured to the flange 7' by means of screws 36. The inner ends of the jaws 5 are provided with a thread forming thread 5a.

The thread forming operation which is performed by the jaws 5 is fully described in applicant's U. S. Patent 2,129,290. For the understanding of the present invention it is sufficient to know that during rotation of the first holding means 11, 15 and the second holding means 7 in the position shown in Fig. 1, the grooves 7a and 8a are aligned so that the hammers 4 engage the member 6 and act on the jaws 5 when the outer ends of the hammers 4 consecutively engage the actuating rollers 3 which push the hammers, and thereby the jaws aligned therewith inwardly to form a thread on a blank inserted between the jaws by a hammering operation. During each revolution one thread turn is completed, and the thread 5a of the rotating jaws 5 pulls the blank rod continuously in axial direction to form consecutively all turns of the thread. During each revolution the jaws 5 hammer and roughly form a thread turn, while the jaw 5' which moves for a shorter distance due to the shorter groove 4a' in the hammer 4' completes the final shape of each thread turn.

After the machine has rotated through so many revolutions as thread turns are to be produced, the brake means 34, 26, 27 and 20 are operated automatically by means which are not an object of the present invention, whereby the second rotary holding means 7 carrying the jaws 5 is retarded so that the resilient yielding means 21, 22 yield and the ring 8 and the flange 7' assume the second relative position shown in Fig. 5. In this position the grooves 8a and 7a are no longer aligned so that the hammers 4 when pushed inwardly by the actuating rollers 3, ineffectively project into the annular space between the flange 7' and the ring 8. At the same time the jaws 5 and the members 6 are outwardly thrown by the centrifugal force, permitting removal of the blank rod from the space between the jaw portions 5a by automatically operating means.

The blanks 41 which are used must have a preformed guiding thread 42 as can be best seen from Figs. 6-10, and are fed by the feeding means 50 between the jaw means 5 when the same are opened in the position shown in Fig. 5. When the brake is released and the resilient means 21, 22 urge the brake drum 20 by means of the pins 26 to move back to the position shown in Fig. 1, while the first and second holding means continue to rotate, the jaws periodically close due to the action of the rollers 3 and the hammers 4 and for the proper operation of the machine it is necessary that the preformed guiding thread 42 of the blank rod 41 properly engages the female thread 5a of the jaws 5 in order to start the screwing in of the blank into the jaws 5 during rotation of the same.

According to a preferred embodiment of the present invention a blank adjusting element 39 is provided for the purpose of engaging the guiding thread 42 of the blank 41 so that the blank is guided towards the jaw means 5 in such manner that its guiding thread fits into the female thread 5a.

The ring 37 carries a guiding member 38 which is formed with a bore 38' through which the blank rod is fed by the feeding means into the jaw means. In a radial groove 39a which extends through the guiding member 38 into the ring 37, a blank guiding element 39 is slidably mounted. This arrangement is illustrated in Figs. 6-9 on an enlarged scale and also shown in Figs. 2 and 4. A spring 40 urges the blank adjusting element 39 to engage with the female thread portion 39' the guiding thread 42. The female thread portion 39' has the same pitch as the female thread 5a of the jaw means 5 and constitutes in the advanced position of the blank adjusting element shown in Figs. 6 and 8 a continuation of the same. Since the members 37 and 5, as well as the adjusting element 39 rotate together, the blank rod 41,

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when fed by the clamping means 50, is screwed first into the thread 39' of the blank adjusting element and then accurately into the thread 5a of the jaw means 5. When the entire guiding thread 42 has passed into the jaw means 5, the blank adjusting element rides up unto the outer surface of the blank rod and remains in this retracted position, which is shown in Figs. 7 and 9, while the entire length of thread is formed on the blank by the hammering action of the jaw means 5. The spring 40 permits such movement of the blank adjusting element 39.

The positions shown in Figs. 6 and 7 for a bolt having normal thread, and in Figs. 8 and 9 for a wood screw, are assumed by the elements during the forming of the thread in the first relative position of the rotary holding means, and of the members 7' and 8 as shown in Fig. 1.

As pointed out before, the brake means effect relative rotation of the holding means into the position shown in Fig. 5 in which the jaws 5 open due to centrifugal force for removal of the blank whose thread has been completed. It is necessary that at the same time the blank adjusting element 39 is withdrawn so that its thread 39' does not resiliently snap into the newly fabricated thread of the blank when the same is removed. As shown in Fig. 4, a lever member 43 is pivotally mounted on the ring 37, and engages with one end portion thereof a groove 45 in the ring 8. The other end of the lever member 43 engages a groove 39'' in the adjusting element 39. It will be understood that the relative movement between the members 7, 37 on one hand and 15, 8 on the other hand due to braking required for release of the blank by the jaws 5 will cause a pivoting of the lever 43 and retraction of the blank adjusting element 39 against the action of the spring 40 into a retracted inoperative position permitting removal of the blank rod through the bore 38' in the guiding member 33.

The blank is fed by feeding means including clamping means 50 which are urged into a clamping position by the spring 51, or other suitable means. The clamping of the blank is tight enough to hold the same, but permits a sliding of the blank during the very short periods in which the blank is formed by the jaws when the same are inwardly pushed by hammers actuated by the rollers 3. The feeding means are moved in axial direction towards and away from the machine by means which are not an object of the present invention.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of thread forming machines differing from the types described above.

While the invention has been illustrated and described as embodied in a thread forming machine having two relatively moving holding means permitting withdrawal of thread forming jaws for removal of a blank, and a blank adjusting element for guiding a blank having a guiding thread into the thread of the thread forming jaws, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. In a thread forming machine, in combination, a stationary support; a first rotary holding means rotatably supported by said stationary support and formed with a plurality of angularly spaced radially extending first guid-

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ing means arranged in a transversal plane; a second rotary holding means arranged coaxially with said first rotary holding means and formed with a plurality of radially extending second guiding means located in the same transversal plane as said first guiding means and at the same angular distance from each other as said first guiding means; a plurality of jaw means movably mounted in said second guiding means; a plurality of hammer means movably mounted in said first guiding means; means for rotating said first rotary holding means; brake means for braking said second rotary holding means, whenever desired; motion transmitting means including a yieldable resilient means and connecting said rotary holding means for rotation, said yieldable resilient means holding during rotation said holding means in a first relative position in which said first and second guiding means are aligned when said brake means are disengaged, said yieldable resilient means permitting a relative rotation of said rotary holding means to a second relative position in which said first and second guiding means are angularly spaced when said brake means engage said second rotary holding means; and actuating means mounted on said support and projecting into the path of said hammer means and being engaged by the same during rotation of said second holding means for pushing said hammer means periodically inwardly, whereby said jaw means are inwardly pushed when said rotary holding means are in said first position, and are free to move outwardly when said rotary holding means are in said second position.

2. In a thread forming machine, in combination, a stationary support; a first rotary holding means rotatably supported by said stationary support and formed with a plurality of angularly spaced radially extending first guiding means arranged in a transversal plane; a second rotary holding means rotatably mounted on and arranged coaxially with said first rotary holding means and formed with a plurality of radially extending second guiding means located in the same transversal plane as said first guiding means and at the same angular distance from each other as said first guiding means; a plurality of jaw means movably mounted in said second guiding means; a plurality of hammer means movably mounted in said first guiding means; means for rotating said first rotary holding means; brake means for braking said second rotary holding means, whenever desired; motion transmitting means including a yieldable resilient means and connecting said rotary holding means for rotation, said yieldable resilient means holding during rotation said holding means in a first relative position in which said first and second guiding means are aligned when said brake means are disengaged, said yieldable resilient means permitting a relative rotation of said rotary holding means to a second relative position in which said first and second guiding means are angularly spaced when said brake means engage said second rotary holding means; and actuating means mounted on said support and projecting into the path of said hammer means and being engaged by the same during rotation of said second holding means for pushing said hammer means periodically inwardly, whereby said jaw means are inwardly pushed when said rotary holding means are in said first position, and are free to move outwardly when said rotary holding means are in said second position.

3. In a thread forming machine, in combination a stationary support; a first rotary holding means rotatably supported by said stationary support and formed with a plurality of angularly spaced radially extending first guiding means arranged in a transversal plane; a second rotary holding means arranged coaxially with said first rotary holding means and formed with a plurality of radially extending second guiding means located in the same transversal plane as said first guiding means and at the same angular distance from each other as said first guiding means; a plurality of jaw means movably

mounted in said second guiding means; a plurality of hammer means movably mounted in said first guiding means; means for rotating said first rotary holding means; brake means for braking said second rotary holding means, whenever desired; motion transmitting means including a yieldable resilient means and connecting said rotary holding means for rotation, said yieldable resilient means holding during rotation said holding means in a first relative position in which said first and second guiding means are aligned when said brake means are disengaged, said yieldable resilient means permitting a relative rotation of said rotary holding means to a second relative position in which said first and second guiding means are angularly spaced when said brake means engage said second rotary holding means; stop means terminating relative movement of said first and second rotary holding means in said second position; and actuating means mounted on said support and projecting into the path of said hammer means and being engaged by the same during rotation of said second holding means for pushing said hammer means periodically inwardly, whereby said jaw means are inwardly pushed when said rotary holding means are in said first position, and are free to move outwardly when said rotary holding means are in said second position.

4. In a thread forming machine, in combination, a stationary support; a first rotary holding means rotatably supported by said stationary support and formed with a plurality of angularly spaced radially extending first guiding means arranged in a transversal plane; a second rotary holding means rotatably mounted on and arranged coaxially with said first rotary holding means and formed with a plurality of radially extending second guiding means located in the same transversal plane as said first guiding means and at the same angular distance from each other as said first guiding means; a plurality of jaw means movably mounted in said second guiding means; a plurality of hammer means movably mounted in said first guiding means; means for rotating said first rotary holding means; a brake drum fixedly secured to said second rotary holding means coaxial with the same and being formed with at least one elongated slot extending in a tangential direction; stationary brake means for engaging and braking said brake drum and thereby said second rotary holding means, whenever desired; yieldable resilient means connecting said first rotary holding means with said brake drum; bolt means fixedly secured to said first rotary holding means and passing through said elongated slot in said second holding means, said bolt means being located during rotation at one end of said slot when said brake means are disengaged from said brake drum, and defining a first relative position of said first and second holding means in which said first and second guide means are aligned, said bolt means being located at the other end of said slot and terminating relative rotation of said rotary holding means in a second relative position when said second rotary holding means is braked, in which second relative position said first and second guiding means are angularly spaced, said resilient means returning said second rotary holding means to said first position when said brake means are disengaged from said brake drum; and actuating means mounted on said support and projecting into the path of said hammer means and being engaged by the same during rotation of said second holding means for pushing said hammer means periodically inwardly, whereby said jaw means are inwardly pushed when said rotary holding means are in said first position, and are free to move outwardly when said rotary holding means are in said second position.

5. A thread forming machine as claimed in claim 1 and including stop means limiting radial movement of said hammer means in said first guiding means between two positions, at least one of said hammer means being movable for a shorter distance than the other hammer means.

6. A thread forming machine as claimed in claim 1 and including a supporting casing formed with a cylindrical bore; and annular rubber means mounted in said inner bore of said outer casing, and wherein said stationary support has a cylindrical outer supporting face engaging said rubber means so that said stationary support is resiliently supported in said outer casing for the suppression of noise.

7. A thread forming machine according to claim 1, wherein said means for rotating said first rotary holding means is a resilient coupling means non-rotatably mounted on said first rotary holding means and adapted to be connected to driving means.

8. A thread forming machine according to claim 4, wherein said first rotary holding means is formed with a coaxial recess in one end portion thereof, and wherein said second holding means is partly located in said recess; and including ball bearing means rotatably supporting said second holding means in said axial recess of said first holding means.

9. A thread forming machine according to claim 1, wherein said first and second guiding means are elongated radially extending grooves having a rectangular cross-section.

10. A thread forming machine according to claim 4, wherein said second holding means has a flange in which said second guiding means are located; and wherein said first holding means include a ring formed with said second guiding means and surrounding said flange spaced a short distance from the same in radial direction so that said hammer means, when inwardly pushed by said actuating means in said second position of said rotary holding means, project into the space between said flange and said ring.

11. In a thread forming machine, in combination, feeding means for moving along a predetermined path a blank rod having at least a portion thereof formed with a guiding thread; a support mounted along said predetermined path; jaw means mounted on said support movable towards and away from said path and provided with female thread means adapted to engage said blank rod and form a thread on the same; and a blank adjusting element mounted movable between a retracted position spaced from said path and an advanced position moved toward said path, said blank adjusting element having an engaging portion adapted to engage in said advanced position said guiding thread on said blank rod for adjusting the position of said guiding thread relative to said female thread means on said jaw means.

12. In a thread forming machine, in combination, feeding means for moving along a predetermined path a blank rod having an end portion thereof formed with a guiding thread; a support mounted along said predetermined path, jaw means mounted on said support movable towards and away from said path and provided with female thread means adapted to engage said blank rod and form a thread on the same; and a blank adjusting element mounted movable between a retracted position spaced from said path and an advanced position moved toward said path, said blank adjusting element having an engaging female thread portion located adjacent said female thread means of said jaw means when the latter have moved toward said path, and constituting a continuation of said female thread means, said blank adjusting means being adapted to engage in said advanced position said guiding thread on said blank rod for adjusting the position of said guiding thread relative to said female thread means on said jaw means.

13. In a thread forming machine, in combination, feeding means for feeding a blank rod having an end portion thereof formed with a guiding thread; a guiding member formed with a bore defining a path of movement for said blank rod; a support mounted along said predetermined path; jaw means mounted on said support adjacent said guiding member movable towards and away

from said path and provided with female thread means adapted to engage said blank rod and form a thread on the same; and a blank adjusting element mounted on said guiding member movable in a transverse direction with respect to said bore between a retracted position spaced from said bore and an advanced position moved toward said bore, said blank adjusting element having an engaging female thread portion rotated adjacent said female thread means of said jaw means when the latter have moved toward said path, and constituting a continuation of said female thread means, said blank adjusting means being adapted to engage in said advanced position said guiding thread on said blank rod for adjusting the position of said guiding thread relative to said female thread means on said jaw means.

14. In a thread forming machine, in combination, feeding means for feeding a blank rod having an end portion thereof formed with a guiding thread; a guiding member formed with a bore defining a path of movement for said blank rod; a support mounted along said predetermined path; jaw means mounted on said support adjacent said guiding member movable towards and away from said path and provided with female thread means adapted to engage said blank rod and form a thread on the same; a blank adjusting element mounted on said guiding member movable in a transverse direction with respect to said bore between a retracted position spaced from said bore and an advanced position moved toward said bore, said blank adjusting element having an engaging female thread portion located adjacent said female thread means of said jaw means when the latter have moved toward said path, and constituting a continuation of said female thread means, said blank adjusting means being adapted to engage in said advanced position said guiding thread on said blank rod for adjusting the position of said guiding thread relative to said female thread means on said jaw means; and spring means abutting at one end against said guiding member and at the other end against said blank adjusting element and urging the latter into said advanced position.

15. In a thread forming machine, in combination, feeding means for feeding a blank rod having an end portion thereof formed with a guiding thread; a guiding member formed with a bore defining a path of movement for said blank rod; a support mounted along said predetermined path; jaw means mounted on said support adjacent said guiding member movable towards and away from said path and provided with female thread means adapted to engage said blank rod and form a thread on the same; a blank adjusting element mounted on said guiding member movable in a transverse direction with respect to said bore between a retracted position spaced from said bore and an advanced position moved toward said bore, said blank adjusting element having an engaging female thread portion located adjacent said female thread means of said jaw means when the latter have moved toward said path, and constituting a continuation of said female thread means, said blank adjusting means being adapted to engage in said advanced position said guiding thread on said blank rod for adjusting the position of said guiding thread relative to said female thread means on said jaw means; spring means abutting at one end against said guiding member and at the other end against said blank adjusting element and urging the latter into said advanced position; and means for withdrawing said blank adjusting element against the action of said spring means so as to permit removal of said blank rod.

16. In a thread forming machine in combination, feeding means for feeding a blank rod having an end portion formed with a guiding thread; a rotary guiding member formed with a bore adapted to receive a fed blank rod and defining a path for the same; jaw means movable in a transversal direction between a blank releasing position and an advanced thread forming position, and located in said thread forming position adjacent said bore, said jaw

means having a female thread means located in said advanced position of said jaw means in said path so as to be adapted to engage said blank rod and form a thread on the same; rotary holding means supporting said jaw means and said guiding means for rotation about the axis of said bore, and said jaw means for said transversal movement; a blank adjusting element slidably mounted in said rotary guiding member movable in a transversal direction between a retracted position and an advanced position, said blank adjusting element having a female thread portion slightly projecting into said bore in said advanced position, and located in said advanced position adjacent said female thread means of said jaw means in said thread forming position of the same and constituting a continuation of said female thread means, said blank adjusting means being adapted to engage in said advanced position thereof said guiding thread on said blank rod for adjusting the position of the same relative to said female thread means on said jaw means; and spring means abutting at one end against the guiding member and at the other end against said blank adjusting element and urging the latter into said advanced position.

17. In a thread forming machine, in combination, a stationary support; a first rotary holding means rotatably supported by said stationary support and formed with a plurality of angularly spaced radially extending first guiding means arranged in a transversal plane; a second rotary holding means rotatably mounted on and arranged coaxially with said first rotary holding means and formed with a plurality of radially extending second guiding means located in the same transversal plane as said first guiding means and at the same angular distance from each other as said first guiding means; a plurality of jaw means movably mounted in said second guiding means between a blank releasing position and an advanced thread forming position, said jaw means having a female thread means; a plurality of hammer means movably mounted in said first guiding means; means for rotating said first holding means; brake means for braking said second rotary holding means, whenever desired; motion transmitting means including a yieldable resilient means and connecting said rotary holding means for rotation, said yieldable resilient means holding during rotation said holding means in a first relative position in which said first and second guiding means are aligned when said brake means are disengaged, said yieldable resilient means permitting a relative rotation of said rotary holding means to a second relative position in which said first and second guiding means are angularly spaced when said brake means engage said second rotary holding means; stop means terminating relative movement of said first and second rotary holding means in said second position; and actuating means mounted on said support and projecting into the path of said hammer means and being engaged by the same during rotation of said second holding means for pushing said hammer means periodically inwardly feeding means for feeding a blank rod having a guiding thread; a guiding member secured to said second rotary holding means and formed with a bore adapted to receive a fed blank rod and to guide the same along a predetermined path between said jaw means; a blank adjusting element slidably mounted on said guiding member movable in a transversal direction between a retracted position and an advanced position; said blank adjusting element having a female thread portion slightly projecting into said bore in said advanced position of said blank adjusting element, and located in said advanced position adjacent said female thread means of said jaw means in said thread forming position of the same, and constituting a continuation of the same; spring means urging said blank adjusting element into said advanced position; and pivoted lever means engaging at one end thereof said blank adjusting element and at the other end thereof said first holding means, said lever means being pivoted during relative rotation of said first and second

holding means, so as to withdraw said blank adjusting means to said retracted position when said rotary holding means assumes said second relative position.

18. In a thread forming machine, in combination, a stationary support; a first rotary holding means rotatably supported by said stationary support and formed with a plurality of angularly spaced radially extending first guiding means arranged in a transversal plane; a second rotary holding means rotatably mounted on and arranged coaxially with said first rotary holding means and formed with a plurality of radially extending second guiding means located in the same transversal plane as said first guiding means and at the same angular distance from each other as said first guiding means; a plurality of jaw means movably mounted in said second guiding means between a blank releasing position and an advanced thread forming position, said jaw means having a female thread means; a plurality of hammer means movably mounted in said first guiding means; means for rotating said first rotary holding means; a brake drum fixedly secured to said second rotary holding means coaxial with the same and being formed with at least one elongated slot extending in a tangential direction; stationary brake means for engaging and braking said brake drum and thereby said second rotary holding means, whenever desired; yieldable resilient means connecting said first rotary holding means with said brake drum; bolt means fixedly secured to said first rotary holding means and passing through said elongated slot in said second holding means, said bolt means being located during rotation at one end of said slot when said brake means are disengaged from said brake drum, and defining a first relative position of said first and second holding means in which said first and second guide means are aligned, said bolt means being located at the other end of said slot and terminating relative rotation of said rotary holding means in a second relative position when said second rotary holding means is braked, in which second relative position said first and second guiding means are angularly spaced, said resilient means returning said second rotary holding means to said first position when said brake means are disengaged from said brake drums; stop means terminating relative movement of said first and second rotary holding means in said second position; and actuating means mounted on said support and projecting into the path of said hammer means and being engaged by the same during rotation of said second holding means for pushing said hammer means periodically inwardly, feeding means for feeding a blank rod having a guiding thread; a guiding member secured to said second rotary holding means and formed with a bore adapted to receive a fed blank rod and to guide the same along a predetermined path between said jaw means; a blank adjusting element slidably mounted on said guiding member movable in a transversal direction between a retracted position and an advanced position; said blank adjusting element having a female thread portion slightly projecting into said bore in said advanced position of said blank adjusting element, and located in said advanced position adjacent said female thread means of said jaw means in said thread forming position of the same, and constituting a continuation of the same; spring means urging said blank adjusting element into said advanced position; and pivoted lever means engaging at one end thereof said blank adjusting element and at the other end thereof said first holding means, said lever means being pivoted during relative rotation of said first and second holding means, so as to withdraw said blank adjusting means to said retracted position when said rotary holding means assumes said second relative position.

19. A thread forming machine as claimed in claim 18 wherein said feeding means include clamping means adapted to hold said blank rod rotatable.

20. In a thread forming machine, in combination, a

stationary support; a first rotary holding means rotatably supported by said stationary support and formed with a plurality of angularly spaced radially extending first guiding means arranged in a transversal plane; a second rotary holding means arranged coaxially with said first rotary holding means and formed with a plurality of radially extending second guiding means located in the same transversal plane as said first guiding means and at the same angular distance from each other as said first guiding means; a plurality of jaw means movably mounted in said second guiding means; a plurality of hammer means movably mounted in said first guiding means; means for rotating said first rotary holding means; brake means for braking said second rotary holding means, whenever desired; motion transmitting means including a yieldable resilient means and connecting said rotary holding means for rotation, said yieldable resilient means holding during rotation said holding means in a first relative position in which said first and second guiding means are aligned when said brake means are disengaged, said yieldable resilient means permitting a relative rotation of said second rotary holding means to a second relative position in which said first and second guiding means are singularly spaced when said brake means engage said other rotary holding means, said yieldable resilient means including a member mounted in said first rotary holding means slidable in tangential direction, a pin secured to said brake means and engaging said slidable member, resilient means abutting at one end against said first rotary holding means and at the other end against said slidable member, and a stop secured to said first holding means and limiting movement of said slidable member due to the action of said resilient means; and actuating means mounted on said support and projecting into the path of said hammer means and being engaged by the same during rotation of said second holding means for pushing said hammer means periodically inwardly, whereby said jaw means are inwardly pushed when said rotary holding means are in said first position, and are free to move outwardly when said rotary holding means are in said second position.

21. In a thread forming machine, in combination, a stationary support; a first rotary holding means rotatably supported by said stationary support and formed with a plurality of angularly spaced radially extending first guiding means arranged in a transversal plane; a second rotary holding means rotatably mounted on and arranged coaxially with said first rotary holding means and formed with a plurality of radially extending second guiding means located in the same transversal plane as said first guiding means and at the same angular distance from each other as said first guiding means; a plurality of hammer means movably mounted in said first guiding means; means for rotating said first rotary holding means; a brake drum fixedly secured to said second rotary holding means coaxial with the same and being formed with at least one elongated slot extending in a tangential direction; stationary brake means for engaging and braking said drum and thereby said second rotary holding means, whenever desired; yieldable resilient means for connecting said first rotary holding means with said brake drum, said yieldable resilient means including a slidable cap member mounted in said first rotary holding means slidable in tangential direction, a pin secured to said brake drum and engaging said slidable cap member, a spring abutting at one end thereof against said first rotary holding means and at the other end thereof against said slidable cap member, and a stop secured to said first holding means and limiting movement of said slidable cap member due to the action of said spring; bolt means fixedly secured to said first rotary holding means and passing through said elongated slot in said second holding means, said bolt means being located during rotation at one end of said slot when said brake means are disengaged from said brake drum, and defining a first relative position of

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said first and second holding means in which said first and second guide means are aligned, said bolt means being located at the other end of said slot and terminating relative rotation of said rotary holding means in a second relative position when said second rotary holding means is braked, in which second relative position said first and second guiding means are angularly spaced, said resilient means returning said second rotary holding means to said first position when said brake means are disengaged from said brake drum; and actuating means mounted on said support and projecting into the

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path of said hammer means and being engaged by the same during rotation of said second holding means for pushing said hammer means periodically inwardly, whereby said jaw means are inwardly pushed when said rotary holding means are in said first position, and are free to move outwardly when said rotary holding means are in said second position.

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