May 15, 1962 H. F. COX, JR., ETAL 3,034,548

POWER-OPERATED DRIVER FOR THREADED FASTENERS

Filed Aug. 4, 1959 6 Sheets-Sheet 1

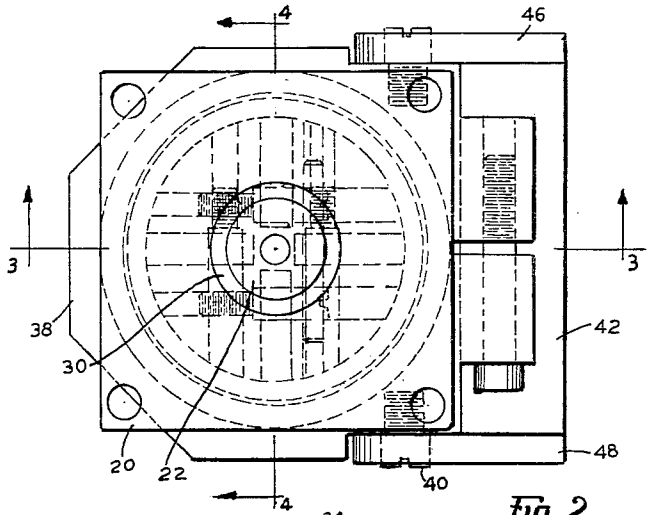


Fig. 2

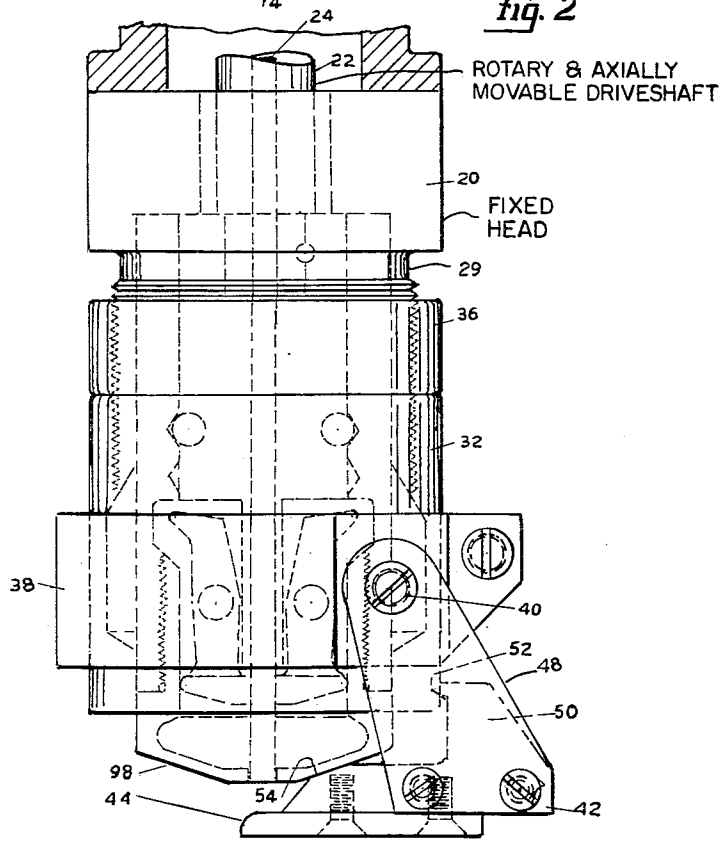


Fig. 1

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POWER-OPERATED DRIVER FOR THREADED FASTENERS

Filed Aug. 4, 1959 6 Sheets-Sheet 2

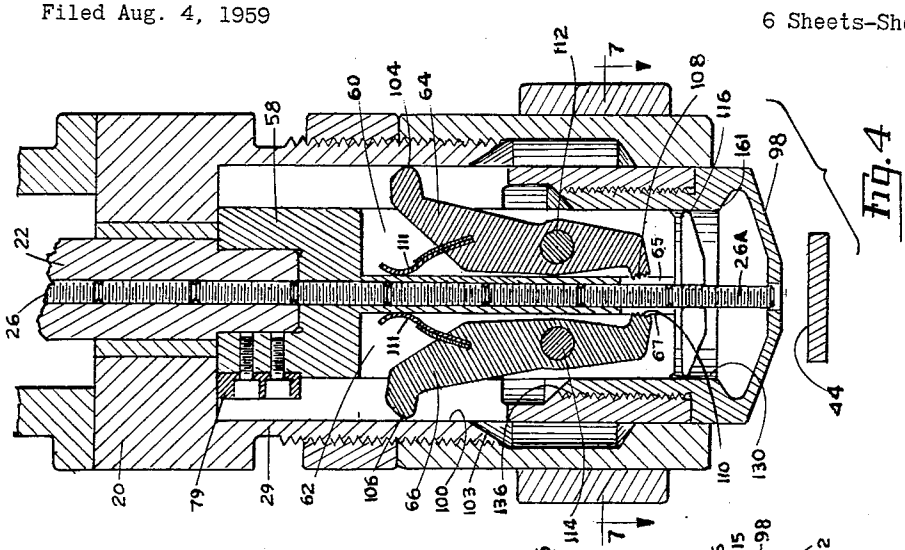


Fig. 4

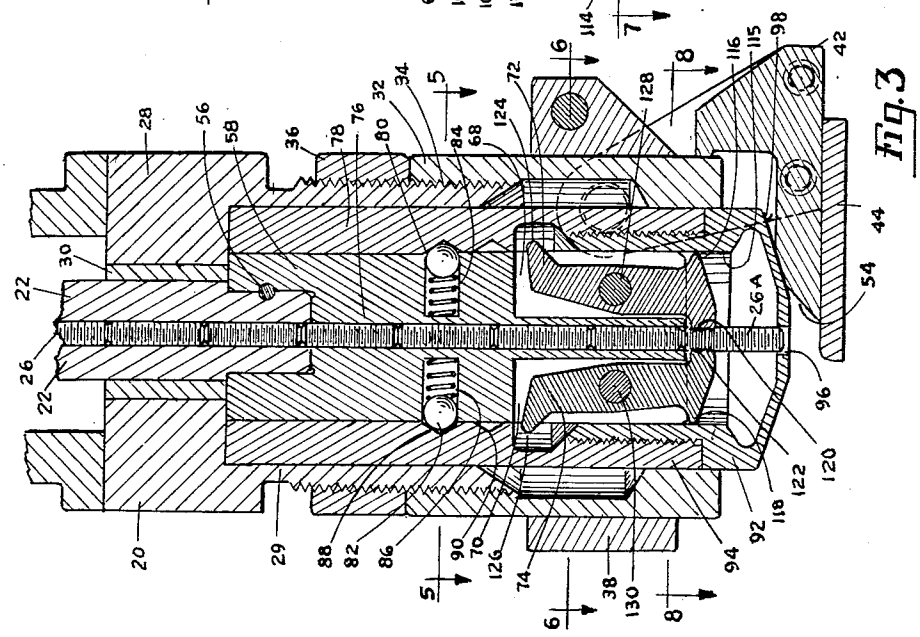


Fig. 3

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POWER-OPERATED DRIVER FOR THREADED FASTENERS

Filed Aug. 4, 1959 6 Sheets-Sheet 3

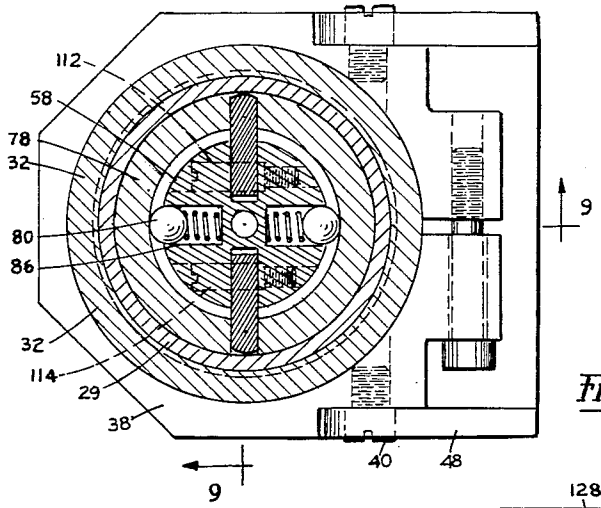


Fig. 5

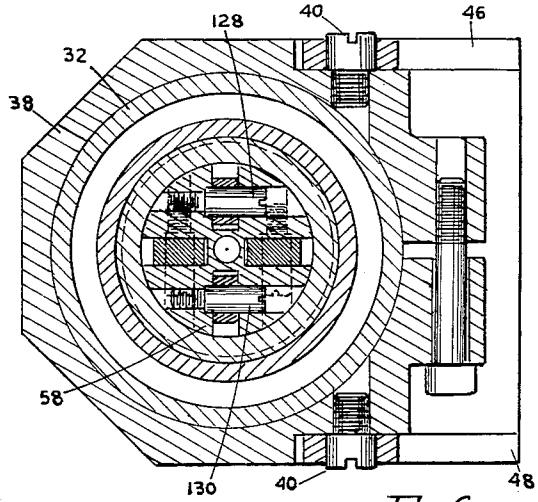


Fig. 6

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POWER-OPERATED DRIVER FOR THREADED FASTENERS

Filed Aug. 4, 1959 6 Sheets-Sheet 4

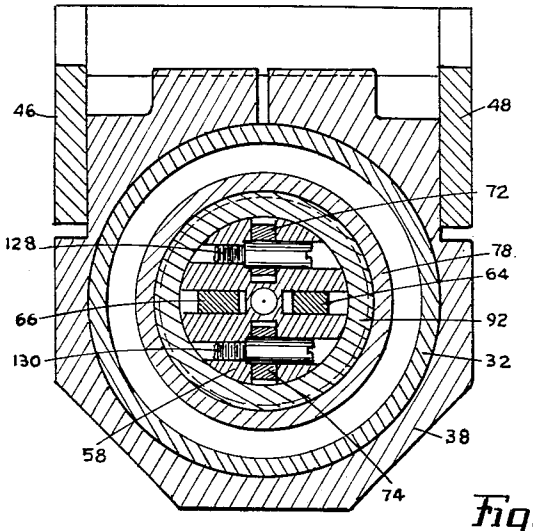


Fig. 7

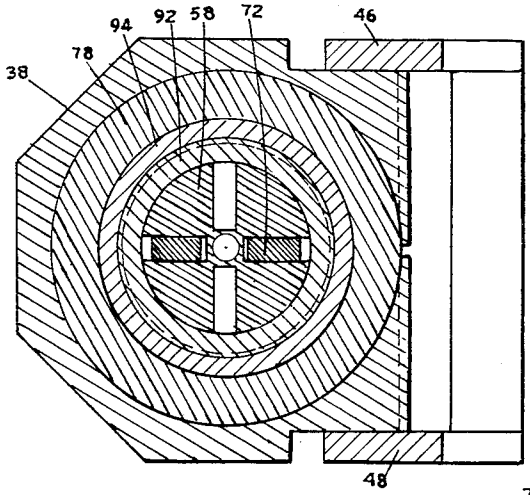


Fig. 8

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POWER-OPERATED DRIVER FOR THREADED FASTENERS

Filed Aug. 4, 1959 6 Sheets-Sheet 5

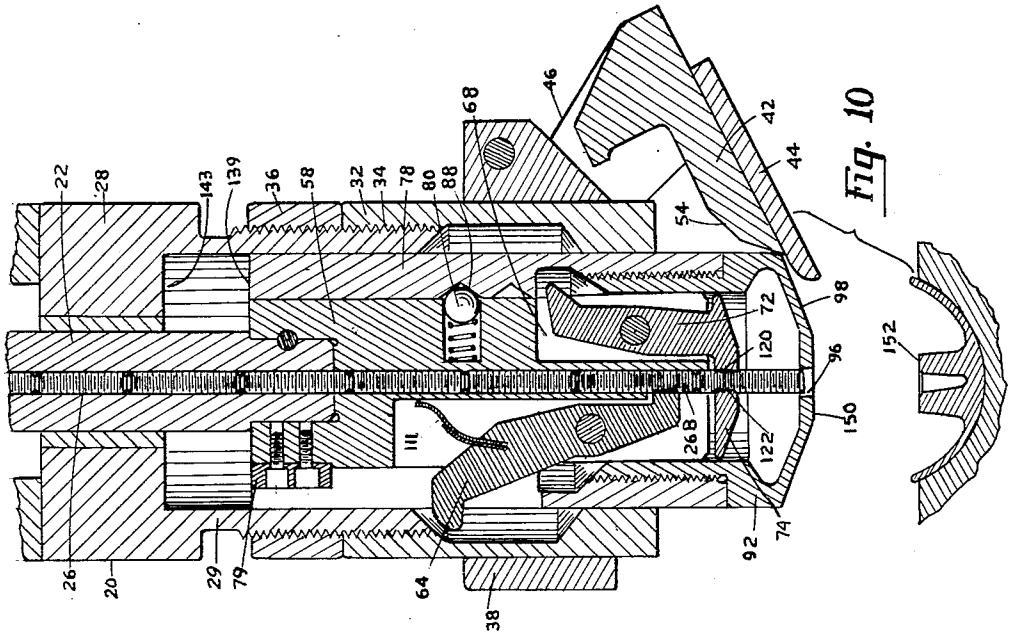


Fig. 10

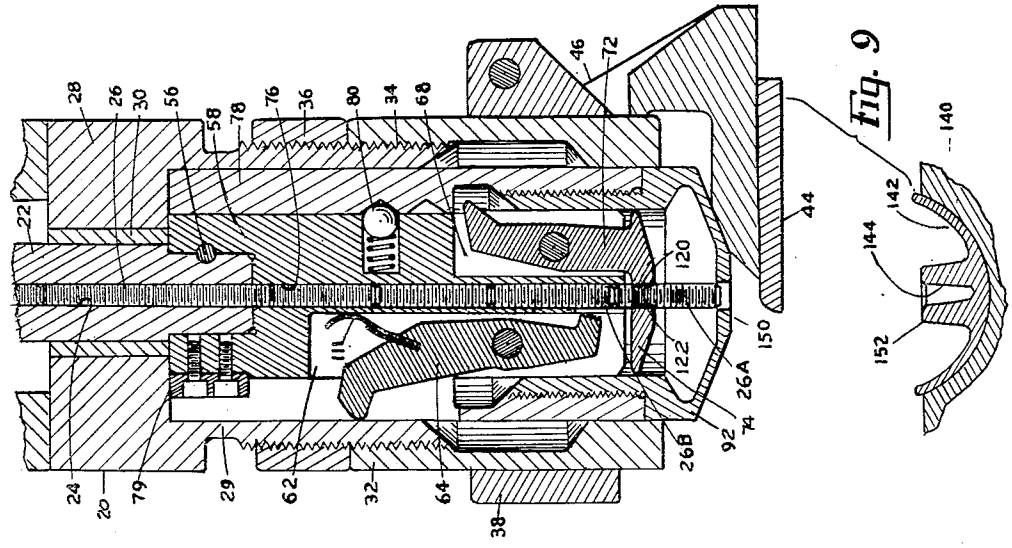


Fig. 9

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POWER-OPERATED DRIVER FOR THREADED FASTENERS

Filed Aug. 4, 1959 6 Sheets-Sheet 6

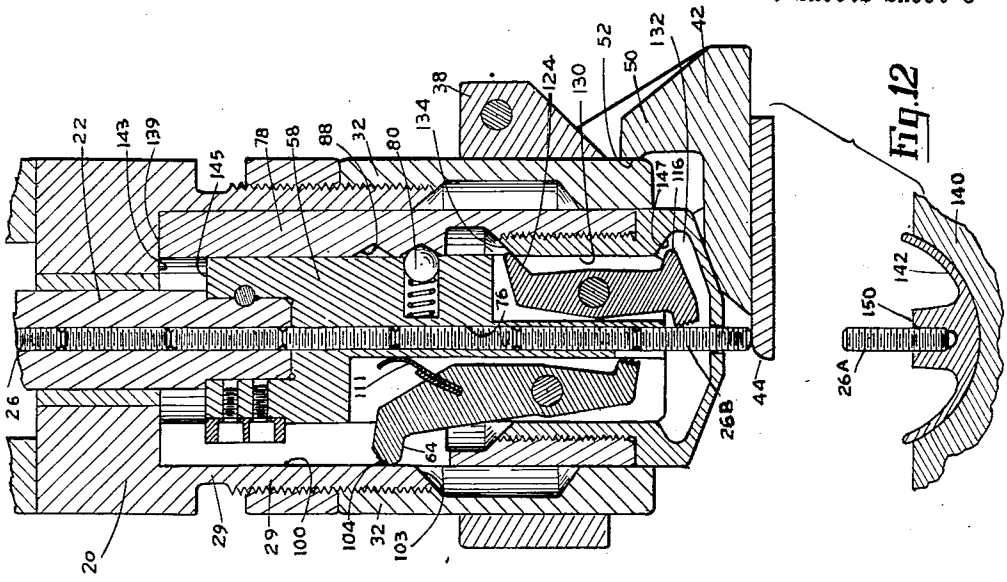


Fig. 12

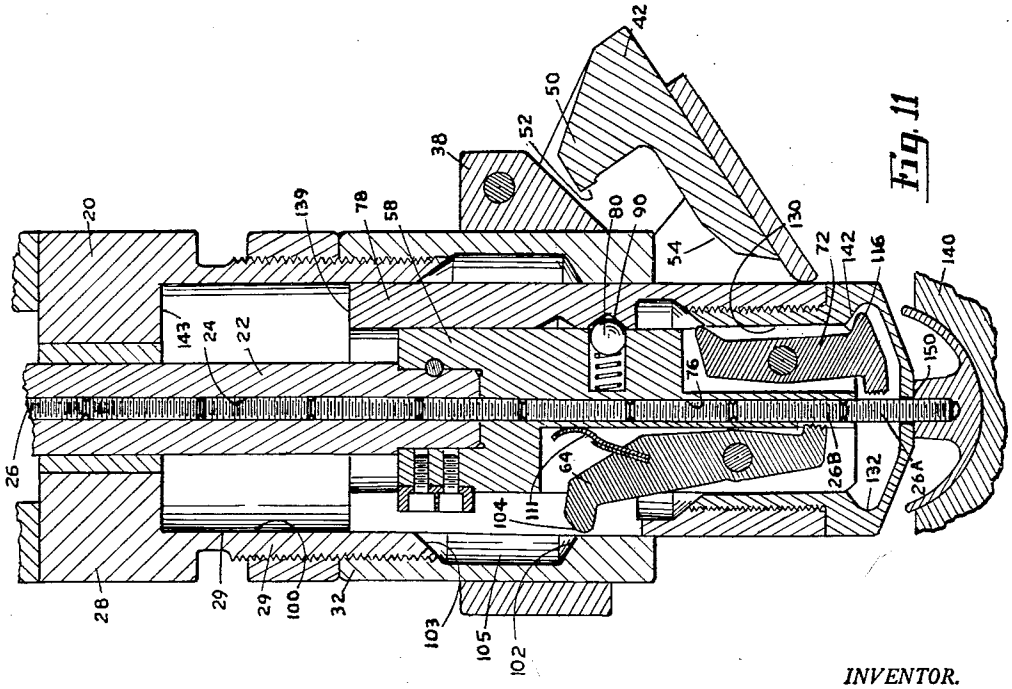


Fig. 11

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United States Patent Office 3,034,548 Patented May 15, 1962

3,034,548

POWER-OPERATED DRIVER FOR THREADED FASTENERS

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Filed Aug. 4, 1959, Ser. No. 831,585
15 Claims. (Cl. 144—32)

This invention relates to a driver for threaded fasteners, and more particularly to a stud driver having center feed whereby a sequence of studs may be driven in rapid succession, without the necessity of auxiliary feeding equipment.

In stud drivers heretofore employed it has been usual to provide a separate apparatus to feed a single stud, one at a time to the stud driving chuck because of the fact that each individual stud must be gripped for the driving operation by a portion of its threads. The location of such feed apparatus is such as to often interfere with work requiring many closely spaced studs, and tends to limit the speed of operation.

The present invention comprises a chuck mounted on a hollow drive shaft acting as the center feed with provision within the chuck for securing the stud to be driven by its threads, and securing a subsequent stud against axial movement in a manner to provide an axial shoulder to prevent axial movement of the stud to be driven.

The various features of the invention will appear more fully hereinafter from the following detailed description when taken in conjunction with the accompanying drawings. It is expressly understood that the drawings are employed for purposes of illustration only and are not designed as a definition of the limits of the invention, reference being had for this purpose to the appended claims.

In the drawings wherein like reference characters indicate like parts:

FIGURE 1 is a side elevation of the center feed stud driver;

FIGURE 2 is an end elevation;

FIGURE 3 is an axial section taken on the line 3—3 of FIGURE 2;

FIGURE 4 is an axial section taken on the line 4—4 of FIGURE 2;

FIGURE 5 is a transverse section taken on the line 5—5 of FIGURE 3;

FIGURE 6 is a transverse section taken on the line 6—6 of FIGURE 3;

FIGURE 7 is a transverse section taken on the line 7—7 of FIGURE 4;

FIGURE 8 is a transverse section taken on the line 8—8 of FIGURE 3;

FIGURES 9, 10, 11 and 12 are quarter sections taken substantially on the right angle line 9—9 of FIGURE 5, and show the parts in various sequential stages of operation.

Referring to FIGURES 1–4, there is shown a hollow head 20, which is secured to the fixed stationary arbor of a drill press or the like, and a rotatable driven hollow drive shaft 22, which is vertically movable by any suitable power to provide the sequence of operation. The shaft 22 has a hollow feed bore 24 of a diameter to receive a series of studs 26, and at its upper end, any suitable flexible or other type of conduit means (not shown) may be utilized to feed the studs to the hollow shaft feed bore 24.

The head 20, comprises an upper collar member 28 having a bearing sleeve 30 to receive the shaft 22, and a depending sleeve portion 29, upon which a lower sleeve portion 32, is externally threaded as at 34. The sleeve 32 is locked in place by a jam nut 36. Clamped

around the sleeve 32 is a split yoke 38, to which is pivotally attached as at 40, a stop shoe 42, having a tongue 44 adapted to swing into position beneath the end of the bore 24, as shown in FIGURES 9 and 12, or swing out of position to the position indicated in FIGURE 11. The shoe has spaced arms 46 and 48, between which is located a cam and stop member 50, having a stop surface 52 engaging the exterior of the sleeve 32, and a cam portion 54, to which reference will be made hereinafter.

Pinned to the end of the shaft 22 as at 56 is a spindle 58. The spindle is provided with opposed radial and lengthwise extending slots 60 and 62 at its lower end, to receive pivotal jaws 64 and 66, and opposed radial and lengthwise extending slots 68 and 70 also at its lower end to receive cam actuated pivotal grippers 72 and 74. The grippers 72 and 74 are located in a plane at right angles to the plane of jaws 64 and 66. The spindle 58 has a central feed bore 76 forming an extension of the bore 24 in the drive shaft 22.

Surrounding the spindle 58 is a sleeve 78 which is keyed or splined to the spindle 58, for rotation therewith, as at 79, but which is slidable within the head 20, and slidable axially upon the spindle 58. The sleeve is adapted to be held in either of two positions, and to be moved from one to the other, as will appear hereinafter, by spring pressed ball detents 80 and 82 located in opposed radial bores 84 and 86 in the spindle member 58, the ball detents being yieldingly thrust outwardly into two spaced V grooves 88 and 90 on the inside wall of the sleeve 78, which grooves may be annular, for ease of manufacture. The lower end of the sleeve 78 is provided with a hollow head 92, which may be screw threaded within the sleeve as at 94. The head has a central aperture 96 through which the studs such as 26 may be projected, one by one in sequence. The exterior end contour 98, of the head is adapted to cooperate with the cam 54 of the shoe 42 to cause the shoe to swing counter-clockwise from the position shown in FIGURES 1, 3 or 12, to which it normally moves by gravity, to that shown in FIGURE 11, when the spindle 58, and sleeve 78 are moved downwardly in respect to the fixed head 20.

The internal surface 100 of the upper head sleeve 29 and conical surfaces 102 and 103, spaced by the annular relief area 105 at the lower end of the sleeves 29 and 32 constitute an annular and axially extending cam surface contoured to cooperate with the upper outwardly projecting cam follower ends 104 and 106 of the upper jaws 64 and 66. The lower inner ends of the jaws 64 and 66 have complemental female thread engaging faces 108 and 110 adapted to complementally grip the threaded portion of a stud 26 to prevent axial movement of a stud when gripped. The jaws are pivoted on pins 112 and 114 disposed in the spindle 58 as is indicated in FIGURE 5. The lower thread engaging faces 108 and 110 are yieldingly urged toward thread gripping relation by leaf springs 111.

The internal surface of the head 92 constitutes an annular and axially extending cam 115, for engaging the cam follower portions 116 and 118 at the lower end of the grippers 72 and 74, the portions 116 and 118 being disposed radially outward of the gripping faces 120 and 122. The gripping faces are provided with complemental thread grooves constituting segmental female thread faces to securely grip a stud substantially around its entire circumference. The cam 115 also operates the grippers to a released position by engaging the upper cam follower ends 124 and 126 of the grippers 72 and 74.

The grippers are pivoted on pivot pins 128 and 130 in the spindle 58, as shown in FIGURES 6 and 7.

Referring to FIGURES 9, 10, 11 and 12 there will be

seen a work holder 140, having a work piece 142, which may be a die casting or otherwise formed member, in which there has been formed an aperture 144, adapted to receive a stud. Each stud may be formed with a thread cutting groove at its lower end but such groove is not necessary. In FIGURE 9, it will be seen that the gripper 72 there shown is in engagement with the lowermost stud 26*a*, and that the jaw 64 there shown is out of engagement with the stud 26*b* immediately therebehind. In FIGURE 10, the spindle 58 and surrounding sleeve 78 which are rotating together, have moved as a unit downwardly to a point where the jaw 64 has gripped the stud 26*b*, and the lower head surface 98 has commenced to cam the shoe 42 laterally out of the way.

The spindle assembly is moved downwardly by vertical power applied to the shaft 22 while it rotates. The spindle and sleeve continue to move downwardly as a unit until the tip 150 of the head 92 abuts the shoulder or boss end 152 of the work piece. Thereafter, the sleeve 78 is prevented from further downward movement, while the spindle 58 continues to move downwardly; the ball detents 80, 82 permitting such relative movement between spindle 58 and sleeve 78. As the spindle continues to move downwardly, the lowermost stud 26*a* is caused to project through the aperture 96 in the head 92 and enter the aperture 144, and commence to thread into the aperture. The stud 26*a* is securely gripped between the female threads of the lower end of the grippers 72 and 74 and is backed up by the next stud 26*b* which is held against axial movement by the jaws 64 and 66. Thus torque is positively applied to the stud 26*a*, by its abutment at its upper end with stud 26*b* which blocks the bore, and its firm seat within the female threads 120 and 122 of the gripper members 72 and 74. The rotating spindle 58, is gradually moved downwardly by the force moving shaft 22 downwardly until the stud 26*a* has cut its thread and been driven home as is shown in FIGURE 11, at which time the ball detents are about to roll into the annular groove 90, and the cam follower surfaces 116 and 118 of the grippers 72 and 74 move beyond the lower end of the cylindrical surface 130, allowing the grippers to spread into the annular cavity 132, and in fact being forced to spread by the action of the conical surface 134 upon the cam followers 124 and 126 at the upper ends of the grippers.

Retraction of the spindle 58 carries sleeve 78 upwardly with it, allowing the stack of studs to temporarily rest against the upper end of the driven stud 26*a*, until the cam followers 104 and 106 of jaws 64 and 66 clear the conical cam face 102 which allows the jaws 64 and 66 to close in under action of the springs 111 and grip the stud 26*b*. Thereafter the stud 26*b* and the column of studs therebehind move upwardly with the spindle, and as the lower head end 98 of the sleeve clears the tongue 44 and shoe cam 54, the shoe 42 swings into position as is shown in FIGURE 12. Subsequently as the spindle 58, and sleeve 78 move upwardly further, the cam followers 104 and 106 of jaws 64 and 66 reach the conical face 103, and retract the jaws 108 and 110 to release stud 26*b* and the column of studs therebehind allowing all of the studs to drop into position with the stud 26*b* being held or blocked by the tongue 44 of the shoe, as shown in FIGURE 12. Further upward movement of the spindle 58 brings the upper end 139 of the sleeve 78 into abutting relation with the face 143 of the head 20. Upon further upward movement of spindle 58, the sleeve 78 is held, whereupon the detent balls 80 and 82 are returned to the upper annular groove 88. During such movement of the spindle 58, the gripper cam followers 116 and 118 reengage the conical cam 147 and are drawn into the cylindrical bore 130 and caused to grip stud 26*b*, and as soon as this takes place, further retraction of the spindle 58 retracts stud 26*b*, until the spindle 58 reaches its upper limit of movement, by its end face 145 engaging the face 143 of the head 20, whereupon all the parts are in

the initial position shown in FIGURE 9 with stud 26*b* now becoming stud 26*a*.

It will be appreciated that the abutting ends of the adjacent studs will be rounded or sufficiently smooth whereby any turning movement of lower stud 26*a*, while being inserted and threaded into the work piece, will not transmit turning torque to the stud 26*b* following it. Thus the axial securement of stud 26*b*, and the female threads 120 and 122 of the grippers 72 and 74 form a firm pocket to hold the stud 26*a*, and effect positive driving torque to the stud 26*a*.

As can be seen from a consideration of FIGURE 10, for example, the angle or line of action between the pivot pin 114, and the gripping area 110 of the jaw 66 is inclined at about 30°, so that the upward thrust of a stud being held by the gripping area 110 acts normal to the contacting thrust bearing surfaces of the gripper thread grooves, and the thrust side of the threads of the gripped stud, which in an ordinary V thread is inclined about 60° from the axis of the stud. Any tendency of the upward thrust of the lower stud 26*a*, on the stud 26*b* thus being held, to cause the jaws to move out of engagement, is eliminated, so that the springs 111 merely actuate the jaws to holding position, but are otherwise unstressed by the end thrust of the stud being held.

From the foregoing, it will be seen that the stud 26*a* is held by the expedient of holding the stud referred to as 26*b* against axial movement, and by rigidly gripping the stud 26*a* by threaded opposed gripping faces 120 and 122 of the grippers 72 and 74, backed up by the semi-circular cam follower portions 116 and 118 bearing outwardly against the internal cylindrical surface of the head 92. In each of FIGURES 9 and 10, which are quarter sections, not only is the gripper 72 shown, but a fragment of the gripper 74 is also shown for illustrative purposes, in order to illustrate the positive and rigid grip around the threads of the stud 26*a*. Thus the stud 26*a* is confined against axial movement by the stud 26*b* and thereby forced to rotate with the grippers, the grippers and stud 26*b* constituting a solid unyielding dead end pocket for the stud 26*a*, during the driving and thread cutting action.

It will be seen that the bore 24 is slotted as at 65 and 67 to permit entry of the threaded gripper ends 108 and 110 into the bore, and the grippers in coaction with a stud comprise means to block the bore against the end thrust of stud 26*a* during the threading thereof into the work piece 142.

For simplicity, the pieces being fed and driven have been illustrated and described as studs, which are, in effect pieces of threaded rod. However, as those skilled in the art will recognize, the principles described can be used for driving other fasteners such as cap screws, machine screws, flat head screws, wood screws and the like.

Although a single embodiment of the invention has been illustrated and described, it is to be understood that the invention is not limited thereto. As various changes in the construction and arrangement may be made without departing from the spirit of the invention, as will be apparent to those skilled in the art, reference will be had to the appended claims for a definition of the limits of the invention.

What is claimed is:

1. A center feed driver for threaded fastener members comprising a drive spindle having a center bore for receiving a series of aligned threaded members in sequence, means carried by the spindle having segmental female thread faces for entering and complementally gripping the threads of a member with its end portion projecting beyond the end of the drive spindle bore, and means carried by the spindle for securing another threaded member of said series within the bore against axial movement to block the bore behind said first named member, and sleeve means disposed about said spindle and having axial movement relative to said spindle for actuating said gripping and securing means.

2. A center feed driver for threaded fastener members comprising a drive spindle having a center bore for receiving a series of threaded members in sequence, laterally movable gripper means carried by the spindle having segmental female thread faces for entering and complementally gripping the threads of a threaded member having an end portion projecting beyond the end of the drive spindle bore, and means carried by the spindle for intermittently holding another member of said series against axial movement for blocking the bore of said spindle behind said projecting threaded member.

3. A center feed driver for threaded fastener members comprising a drive spindle having a center bore for receiving a series of threaded members in sequence, laterally movable gripper means carried by the spindle for entering and complementally gripping the threads of a threaded member having an end portion projecting beyond the end of the drive spindle bore, means carried by the spindle for intermittently holding another member of said series against axial movement for blocking the bore of said spindle behind said projecting threaded member, and sleeve means axially movable relative to said spindle for actuating said blocking means.

4. A center feed driver for threaded fastener members comprising a spindle having a hollow bore therein for receiving a series of threaded members in sequence, of laterally movable grippers disposed around and rotatable with said spindle having segmental thread engaging faces, disposed immediately beyond the end of said bore, and gripper lock means axially slidable on said spindle to hold said grippers in gripping relation upon a threaded member and radially movable means for holding another member of said series by its threads against axial movement for blocking said bore behind a threaded member held by said faces.

5. A center feed driver for threaded fastener members comprising a spindle having a hollow bore therein for receiving a series of threaded members in sequence, of laterally movable grippers disposed around and rotatable with said spindle having segmental thread engaging faces, disposed immediately beyond the end of said bore, said grippers having arcuate heel portions, and a gripper lock sleeve axially slidable on said spindle having an internal cylindrical wall adapted to be moved into and out of heel embracing position around said grippers, and radially movable means for holding another member of said series against axial movement for blocking said bore behind a threaded member held by said faces.

6. A center feed driver for threaded fastener members comprising a non-rotatable hollow head having an open ended sleeve, a drive spindle slidably and rotatably mounted within said head having a center bore extending the length thereof for receiving a series of threaded members in sequence, a sleeve slidably disposed on said spindle, and keyed for rotation therewith, and disposed between said spindle and open ended sleeve, radially and axially extending slots in said spindle, a gripper pivoted in one of said slots, adapted to complementally grip the threads of a threaded member in said bore, and means responsive to relative movement between said intermediate sleeve and said spindle for controlling the grip and release of said member, a jaw pivoted in another of said slots adapted to complementally grip the threads of a second member located behind said first named member, and means responsive to relative movement between said spindle and said head sleeve for controlling the grip and release of said second member.

7. A center feed driver for threaded fastener members comprising a non-rotatable hollow head having an open ended sleeve, a drive spindle slidably and rotatably mounted within said head having a center bore extending the length thereof for receiving a series of threaded members in sequence, a sleeve slidably disposed on said spindle and keyed for rotation therewith, and disposed between said spindle and open ended sleeve, detent means

for yieldingly holding said sleeve in one or the other of two end portions, radially and axially extending slots in said spindle, a gripper pivoted in one of said slots, adapted to grip the threads of a member in said bore, and means responsive to relative movement between said intermediate sleeve and said spindle between said detent held portions for controlling the grip and release of said member, a jaw pivoted in another of said slots adapted to grip the threads of a second member located behind said first named member and prevent axial movement of said sleeve and member, and means responsive to relative movement between said spindle and said head sleeve for controlling the grip and release of said second member.

8. A center feed driver for threaded fastener members comprising a non-rotatable hollow head having an open ended sleeve, a drive spindle slidably and rotatably mounted within said head having a center bore extending the length thereof for receiving a series of threaded members in sequence, a sleeve slidably disposed on said spindle, and keyed for rotation therewith, and disposed between said spindle and open ended sleeve, radially and axially extending slots in said spindle, a gripper pivoted in one of said slots, adapted to complementally grip the threads of a threaded member in said bore, and means responsive to relative movement between said intermediate sleeve and said spindle for controlling the grip and release of said member, a jaw pivoted in another of said slots adapted to complementally grip the threads of a second member located behind said first named member, means responsive to relative movement between said spindle and said head sleeve for controlling the grip and release of said second member, and means for blocking and unblocking said bore beyond the end, responsive to relative movement between said head and said intermediate sleeve.

9. A center feed driver for threaded fastener members comprising a non-rotatable hollow head having an open ended sleeve, a drive spindle slidably and rotatably mounted within said head having a center bore extending the length thereof for receiving a series of threaded members in sequence, a sleeve slidably disposed on said spindle and keyed for rotation therewith, and disposed between said spindle and open ended sleeve, detent means for yieldingly holding said sleeve in one or the other of two end portions, radially and axially extending slots in said spindle, a gripper pivoted in one of said slots, adapted to grip the threads of a member in said bore, and means responsive to relative movement between said intermediate sleeve and said spindle between said detent held portions for controlling the grip and release of said member, a jaw pivoted in another of said slots adapted to grip the threads of a second member located behind said first named member and prevent axial movement of said sleeve and member, means responsive to relative movement between said spindle and said head sleeve for controlling the grip and release of said second member, and means for blocking and unblocking said bore beyond the end responsive to relative movement between said head and intermediate sleeve.

10. A center feed driver for threaded fastening members comprising a relatively stationary head having a depending hollow sleeve, a spindle and sleeve assembly disposed within the sleeve of said head and affixed upon a rotatable and axially movable drive shaft extending downwardly through said head, said sleeve being splined to said spindle and axially movable relative to said spindle, detent means for yieldingly holding said sleeve on said spindle in two axially spaced end positions, a center feed bore for threaded members extending axially through said shaft and said spindle, two pairs of opposed radial lengthwise extending slots in said spindle, lying in planes transverse to one another, and slots in said spindle sleeve radially aligned with one of said pairs of slots in said spindle, the slots in said one of said pairs having apertures extending to the spindle bore adjacent

their lower ends, a pair of opposed lever jaw members pivoted centrally on transverse axes within said one of said pair of slots, said lever jaws having at their lower ends radially inwardly projecting ends adapted to project through said apertures into said bore, and cam followers at their upper ends adapted to project outwardly through said sleeve slots, said head sleeve having a cylindrical cavity having upper and lower annular inclined cam faces adapted to engage said cam followers on relative axial movement between said spindle and head, means for yieldingly urging said jaw faces radially inward, and a pair of gripper levers pivotally mounted centrally thereof within said other pair of slots on transverse axes, said gripper levers having complemental thread engaging jaw faces at their lower ends disposed immediately beyond the end of said spindle, and radially outwardly extending cam follower portions at both the upper and lower ends, said spindle sleeve having an inwardly projecting cylindrical cam face having annular outwardly inclined faces at opposite ends adapted to coact with said gripper lever cam follower portions upon relative axial movement between said spindle and spindle sleeve, said last named cylindrical face acting to hold and lock said gripper jaw faces upon a threaded member through the lower cam followers of said gripper levers.

11. A center feed driver for threaded fastening members comprising a relatively stationary head having a depending hollow sleeve, a spindle and sleeve assembly disposed within the sleeve of said head and affixed upon a rotatable and axially movable drive shaft extending downwardly through said head, said sleeve being splined to said spindle and axially movable relative to said spindle, detent means for yieldingly holding said sleeve on said spindle in two axially spaced end positions, a center feed bore for threaded members extending axially through said shaft and said spindle, two pairs of opposed radial lengthwise extending slots in said spindle, lying in planes transverse to one another, and slots in said spindle sleeve radially aligned with one of said pairs of slots in said spindle, the slots in said one of said pairs having apertures extending to the spindle bore adjacent their lower ends, a pair of opposed lever jaw members pivoted centrally on transverse axes within said one of said pair of slots, said lever jaws having at their lower ends radially inwardly facing complemental thread engaging jaw faces adapted to project through said apertures, and cam followers at their upper ends adapted to project outwardly through said sleeve slots, said head sleeve having a cylindrical cavity having upper and lower annular inclined cam faces adapted to engage said cam followers on relative axial movement between said spindle and head, means for yieldingly urging said jaw faces radially inward, and a pair of gripper levers pivotally mounted centrally thereof within said other pair of slots on transverse axes, said gripper levers having complemental thread engaging jaw faces at their lower ends disposed immediately beyond the end of said spindle, and radially outwardly extending cam follower portions at both the upper and lower ends, said spindle sleeve having an inwardly projecting cylindrical cam face having annular outwardly inclined faces at opposite ends adapted to coact with said gripper lever cam follower portions upon relative axial movement between said spindle and spindle sleeve, said last named cylindrical face acting to hold and lock said gripper jaw faces upon a threaded member through the lower cam followers of said gripper levers.

12. A center feed driver for threaded fastening members comprising a relatively stationary head having a depending hollow sleeve, a spindle and sleeve assembly disposed within the sleeve of said head and affixed upon a rotatable and axially movable drive shaft extending downwardly through said head, said sleeve being splined to said spindle and axially movable relative to said spindle, detent means for yieldingly holding said sleeve on said spindle in two axially spaced end positions, a center feed bore for threaded members extending axially through said shaft and said spindle, two pairs of opposed radial lengthwise extending slots in said spindle, lying in planes transverse to one another, and slots in said spindle sleeve radially aligned with one of said pairs of slots in said spindle, the slots in said one of said pairs having apertures extending to the spindle bore adjacent their lower ends, a pair of opposed lever jaw members pivoted centrally on transverse axes within said one of said pair of slots, said lever jaws having at their lower ends radially inwardly facing complemental thread engaging jaw faces adapted to project through said apertures, and cam followers at their upper ends adapted to project outwardly through said sleeve slots, said head sleeve having a cylindrical cavity having upper and lower annular inclined cam faces adapted to engage said cam followers on relative axial movement between said spindle and head, means for yieldingly urging said jaw faces radially inward, a pair of gripper levers pivotally mounted centrally thereof within said other pair of slots on transverse axes, said gripper levers having complemental thread engaging jaw faces at their lower ends disposed immediately beyond the end of said spindle, and radially outwardly extending cam follower portions at both the upper and lower ends, said spindle sleeve having an inwardly projecting cylindrical cam face having annular outwardly inclined faces at opposite ends adapted to coact with said gripper lever cam follower portions upon relative axial movement between said spindle and spindle sleeve, said last named cylindrical face acting to hold and lock said gripper jaw faces upon a threaded member through the lower cam followers of said gripper levers, means for blocking and unblocking the bore below the end thereof pivotally mounted on the head sleeve on a transverse axis to one side of the bore axis, said blocking means having a tongue adapted to extend across the bore axis when said spindle assembly is retracted upwardly within said head, and having cam means coacting with said spindle assembly for swinging said blocking means laterally and clear of said spindle assembly when projected to drive a threaded member.

13. A center feed driver for threaded fastening members comprising a relatively stationary head having a depending hollow sleeve, a spindle and sleeve assembly disposed within the sleeve of said head and affixed upon a rotatable and axially movable drive shaft extending downwardly through said head, said sleeve being splined to said spindle and axially movable relative to said spindle, detent means for yieldingly holding said sleeve on said spindle in two axially spaced end positions, a center feed bore for threaded members extending axially through said shaft and said spindle, two pairs of opposed radial lengthwise extending slots in said spindle, lying in planes transverse to one another, and slots in said spindle sleeve radially aligned with one of said pairs of slots in said spindle, the slots in said one of said pairs having apertures extending to the spindle bore adjacent their lower ends, a pair of opposed lever jaw members pivoted centrally on transverse axes within said one of said pair of slots, said lever jaws having at their lower ends radially inwardly projecting ends adapted to project through said apertures into said bore, and cam followers at their upper ends adapted to project outwardly through said sleeve slots, said head sleeve having a cylindrical cavity having upper and lower annular inclined cam faces adapted to engage said cam followers on relative axial movement between said spindle and head, means for yieldingly urging said jaw faces radially inward, a pair of gripper levers pivotally mounted centrally thereof within said other pair of slots, on transverse axes, said gripper levers having complemental thread engaging jaw faces at their lower ends disposed immediately beyond the end of said spindle, and radially outwardly extending cam follower portions at both the upper and lower ends, said spindle sleeve having an inwardly projecting cylindrical cam face having annular outwardly inclined faces at opposite ends

adapted to coact with said gripper lever cam follower portions upon relative axial movement between said spindle and spindle sleeve, said last named cylindrical face acting to hold and lock said gripper jaw faces upon a threaded member through the lower cam followers of said gripper levers, means for blocking and unblocking the bore below the end thereof pivotally mounted on the head sleeve on a transverse axis to one side of the bore axis, said blocking means having a tongue adapted to extend across the bore axis when said spindle assembly is retracted upwardly within said head, and having cam means coacting with said spindle assembly for swinging said blocking means laterally and clear of said spindle assembly when projected to drive a threaded member.

14. A center feed driver for threaded fastener members comprising a drive spindle having a center bore for receiving a series of disconnected individual threaded members in sequence, means carried by the spindle having segmental female thread faces for releasably entering and complementally gripping the threads of a first threaded member having an end portion projecting beyond the end of the drive spindle bore, and means including a second member in the bore behind said first member and laterally movable grippers carried by the spindle for holding another member of said series by its threads against axial movement for blocking the bore behind said first member to prevent axial movement of said first member during the threaded driving thereof into a work piece.

15. A center feed driver for threaded fastener members comprising a drive spindle having a center bore for receiving a series of disconnected individual threaded members in sequence, means carried by the spindle having segmental female thread faces for releasably entering and complementally gripping the threads of a first threaded member having an end portion projecting beyond the end of the drive spindle bore, and means including a second member in the bore behind said first member and including means carried by the spindle comprising laterally movable means for holding another member of said series by its threads against axial movement for blocking the bore behind said first member to prevent axial movement of said first member during the threaded driving thereof into a work piece.

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