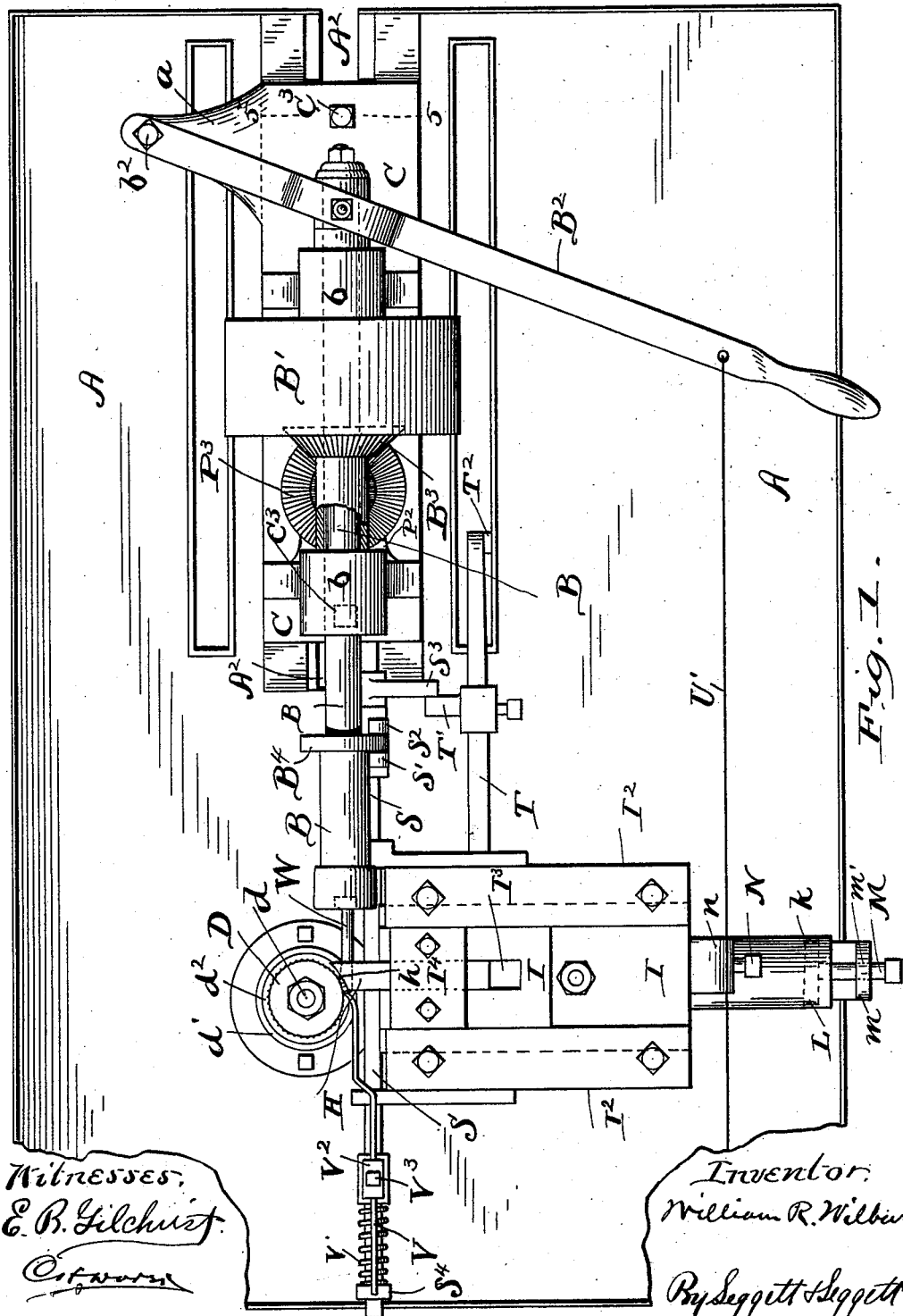


(No Model.)

4 Sheets—Sheet 1.

W. R. WILBUR.
MACHINE FOR PROVIDING BOLTS WITH THREADED OR GIMLET POINTS.
No. 522,246. Patented July 3, 1894.



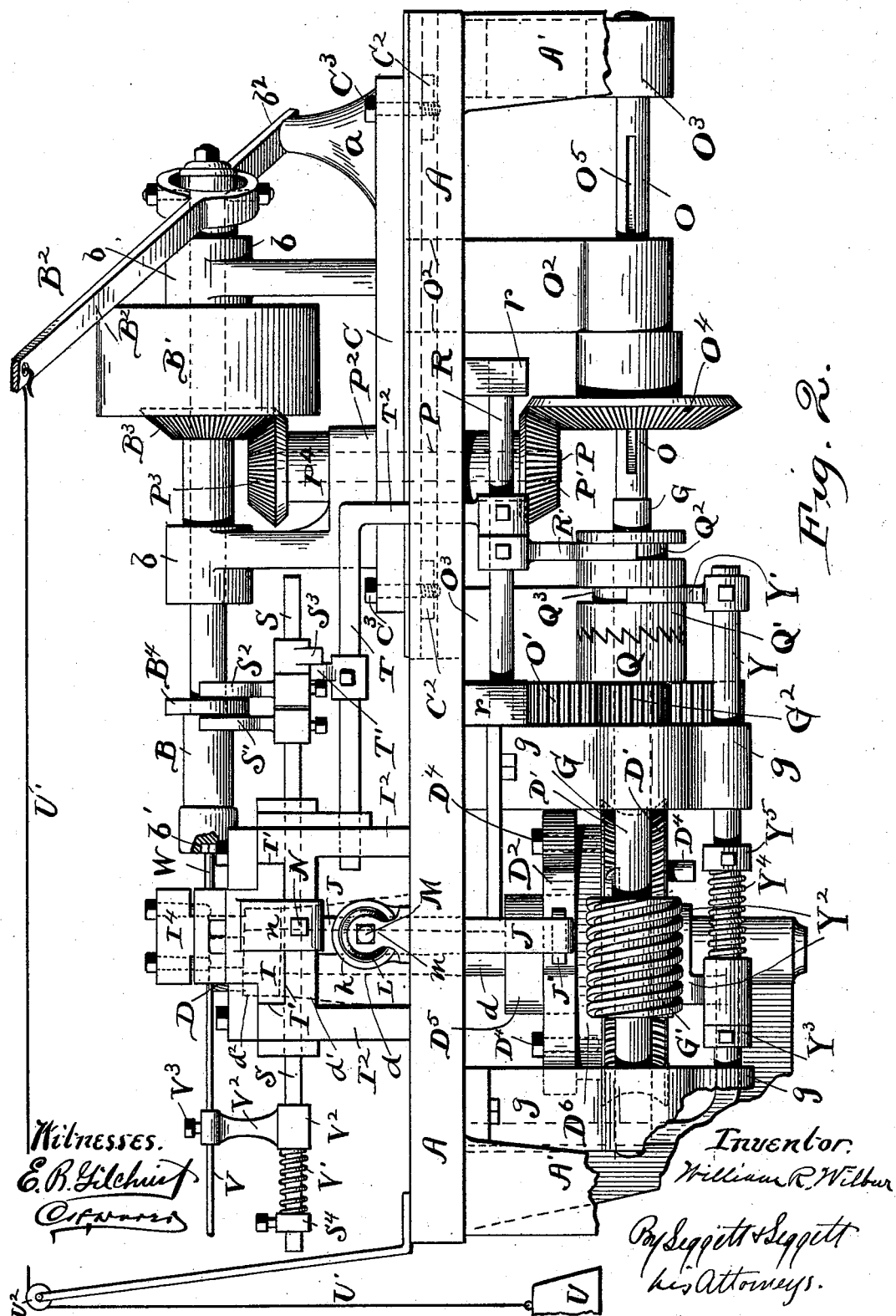
Witnesses:
E. B. Gilchrist
C. J. Worn

4 Sheets—Sheet 2.

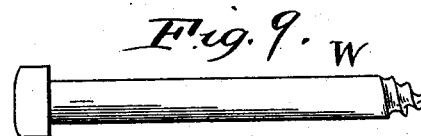
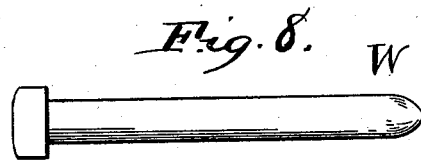
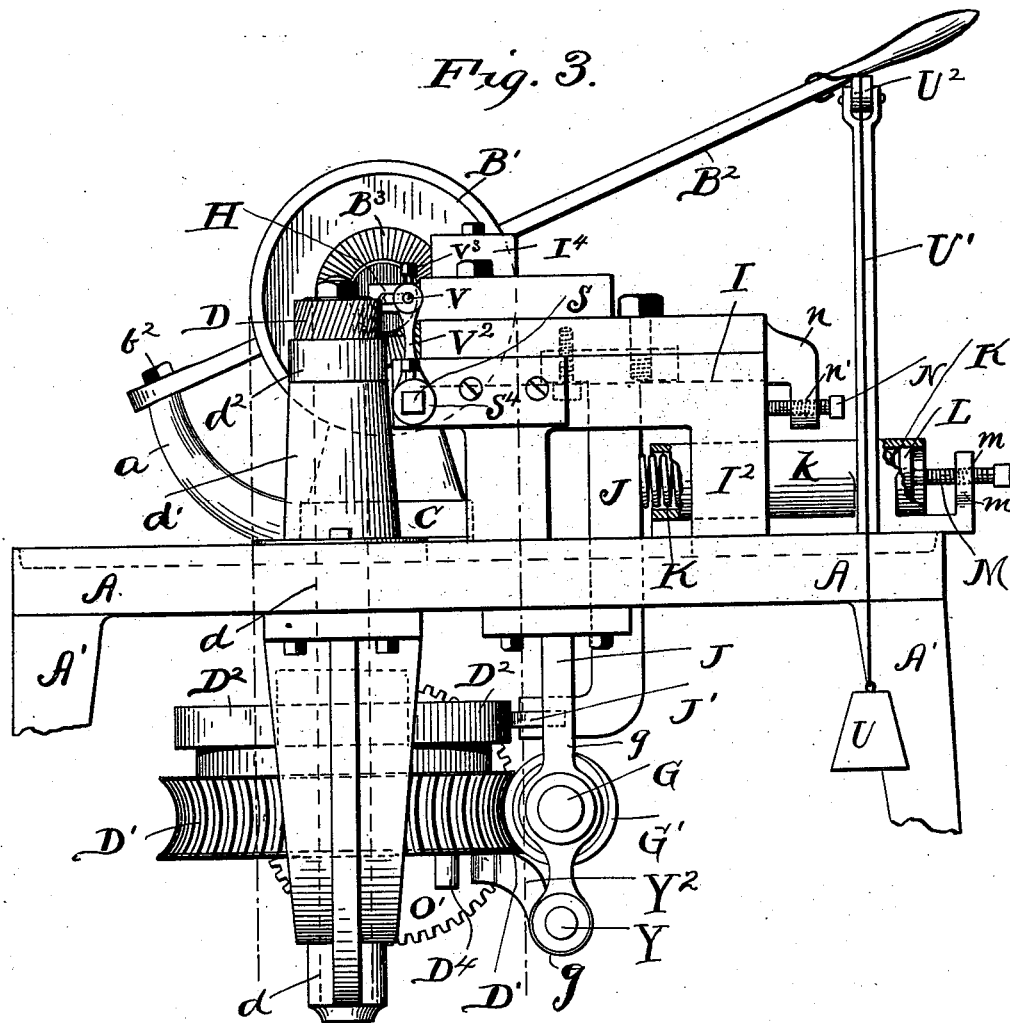
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Witnesses:
E. B. Gilchrist.
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Inventor
William R. Wilbur
By *Seppett & Seppett*
his Attorneys.

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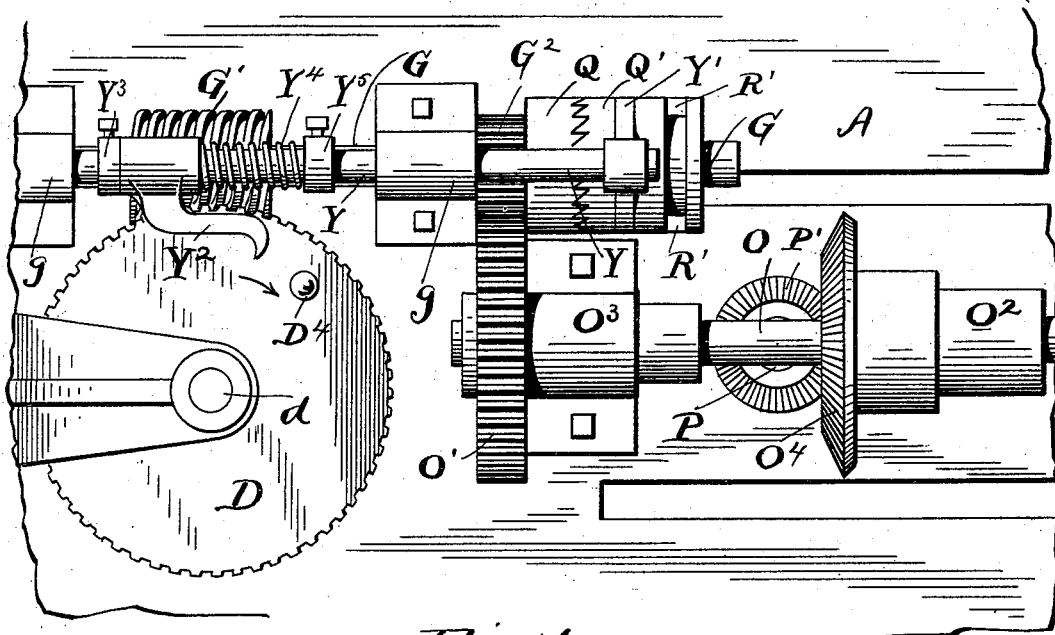


Fig. 4.

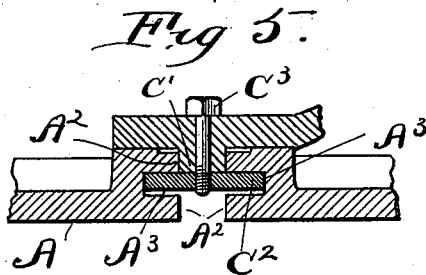


Fig. 5.

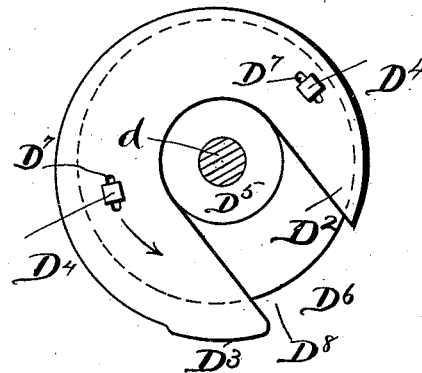


Fig. 6.

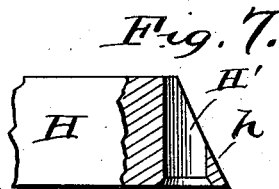


Fig. 7.

Witnesses:
E. B. Gilchrist.
[Signature]

Inventor
William R. Wilbur.
[Signature]
By Leggett & Leggett
His Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM R. WILBUR, OF CLEVELAND, OHIO, ASSIGNOR TO THE LAMSON & SESSIONS COMPANY, OF SAME PLACE.

MACHINE FOR PROVIDING BOLTS WITH THREADED OR GIMLET POINTS.

SPECIFICATION forming part of Letters Patent No. 522,246, dated July 3, 1894.

Application filed September 21, 1893. Serial No. 436,061. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. WILBUR, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Machines for Providing Bolts, Screws, &c., with Threaded or Gimlet Points; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in machines for providing bolts, screws, tools, &c., with threaded or gimlet-points, the object being to produce a machine that is cheaper and simpler in construction, and more efficient than machines heretofore devised for the purpose, and that is more especially designed for providing bolts or screws with threaded or gimlet-points preparatory to threading the body of the shank of the bolt or screw.

With this object in view, my invention consists in certain features of construction and in combination of parts hereinafter described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a top plan of the machine, partly in section. Fig. 2 is a left hand side elevation, partly in section, and Fig. 3 is a rear end elevation, partly in section, portions being broken away in said figures to reduce the size of the same. Fig. 4 is a bottom plan of a portion of the machine. Fig. 5 is a section in detail hereinafter described, the section being taken on line 5—5, Fig. 1. Fig. 6 is a plan of the cam D^2 , and means employed for securing the same in position. Fig. 7 is an enlarged plan, partly in section, of the portion of the feeding or guiding-bar or device that engages the work and guides or feeds the same laterally against the cutter during the threading or cutting operation. Fig. 8 exhibits a blank-bolt or screw, and Fig. 9 one having its point provided with a threaded or gimlet-point by my machine.

As already indicated, my improved machine, as will hereinafter appear, is more especially designed for providing with threaded or gimlet-points, bolts or screws whose shanks have not yet been threaded.

Referring to the drawings, A represents the bed of the machine, the same being supported upon legs A' .

B designates the work-holding-spindle that is supported a suitable distance above and extends longitudinally of the bed of the machine, the same having bearing in boxes, b , rigid with head, C, that is suitably supported by and adjustable endwise of the machine-bed, the adjustability of said head being preferably attained by the following peculiarities in the construction:—The head has a depending tongue or member C' (see Fig. 5) that fits into the upper portion of a slot A^2 in the machine-bed, said slot being sufficiently long to accommodate the adjustment of head C and being enlarged laterally at its central portion, as at A^3 , for receiving sliding-plates or blocks C^2 . Bolts or screws C^3 extend through the head into blocks or plates C^2 as shown in Figs. 2 and 5. Now, it will be observed, that, upon loosening bolts or screws C^3 , the head will be rendered free to be adjusted endwise, and by thereupon tightening said bolts or screws blocks or plates C^2 will be drawn tightly against the top walls of the enlarged portion A^3 of slot A^2 , and the head will be caused to tightly engage the top surface of the machine-bed, thereby causing the head to be securely held in the desired adjustment.

The work-holding-spindle is provided with a driving-pulley, B' , to which power is applied by belting (not shown) in the usual manner. Spindle B, at its outer or forward end, has operatively connected therewith a hand-lever, B^2 , that is fulcrumed at its lower end, as at b^3 , to an arm or bracket, a , rigid with head C. The work-holding-spindle, at its inner or rear end, is of any suitable construction to adapt it to receive and hold the bolt or screw or work, W, that is to be provided with a threaded or gimlet-point, the spindle having preferably a socket b' suitably shaped to receive the head of the bolt or screw or device to be operated upon. By means of hand-lever B^2 the spindle is capable of being moved endwise of its bearings, as required for the insertion of the work preparatory to the cutting or threading operation.

D represents the cutter that is operatively mounted upon the upper end of an upright

shaft or spindle *d* that (see Figs. 1 and 2) extends downwardly through the bed of the machine, and has suitable bearing in a box, *d'*, rigid with the bed, said shaft or spindle
 5 being supported by means of a collar, *d*², rigid or integral with the spindle, and resting upon box *d'*. The cutter rests upon collar *d*² and is held against upward displacement in any well known manner. The location of the cutter, relative to the work to be
 10 operated upon, is substantially the same as heretofore. The cutter-spindle, below the bed of the machine, is suitably intergeared with a horizontal shaft, *G*, (see Figs. 2 and 3) that is suitably supported by brackets or
 15 hangers or members *g* depending from and rigid with the bed of the machine. The intergearing referred to, consists preferably of a worm-wheel, *D'*, operatively mounted upon
 20 cutter-spindle *D*, and meshing with a worm *G'* operatively mounted upon or integral with shaft *G*.

Suitable means are provided for guiding or feeding the work laterally toward the cutter, during the cutting or threading operation, in
 25 such a manner that the threads of the gimlet-point on the bolt, screw or work shall be cut simultaneously or approximately so. The means for the purpose indicated, consists preferably of a bar, *H*, that is operatively
 30 connected with a slide, *I*, adapted to reciprocate endwise of ways, *I'*, that are supported a suitable distance above and arranged transversely of the machine, said ways being preferably
 35 formed in an upright frame or stand, *I*² rigid with the machine-bed.

Guiding or feeding-device *H* is adapted to engage the work and feed or guide the same laterally toward the cutter in the operation
 40 of the machine, said guiding-device being preferably perforated laterally and horizontally near its inner end, as at *H'*, for receiving and holding the work and to prevent vertical displacement of the work during the cutting
 45 or threading operation, said guiding or feeding-device being suitably cut away at its inner end, as at *h*, to enable it to properly present the work to the cutter. (See Figs. 1 and 7.) Guiding or feeding-device *H* is preferably
 50 ably removable, being preferably seated in a recess *I*³ (see Fig. 1) in the slide and secured in the adjustment required by means of a cap-plate *I*⁴ detachably secured to the slide.

Slide *I*, with the feeding or guiding-bar or device carried thereby, is actuated, in the
 55 direction to cause said bar or device to perform its function, by the action of a spring, *K*, (see Fig. 3) that is confined within a case, *k*, suitably supported from the bed of the machine or the stand that supports said slide, as
 60 the case may be, and engaging and acting upon the outer side of an arm, *J*, rigid with and depending from slide *I*, as shown very clearly in Fig. 3, said spring being held under
 65 compression by means of a plate or block, *L*, engaging the outer end of the spring and engaged, upon its outside, by a screw, *M*, that

extends through a correspondingly-threaded hole, *m'*, in an upright flange or member, *m*, rigid with the supporting-bed of the machine, 70 said screw being adapted to regulate the tension of the aforesaid spring.

Depending arm *J* of slide *I* extends downwardly through the bed of the machine, and, at its lower end, is provided with a roller, 75 *J'*, that is engaged by cam *D*² operatively mounted upon the cutter-spindle, said cam being adapted to hold roller-bearing-arm *J* and the slide with which said arm is connected, and attachments, in their normal position, and to cause spring *K* to gradually feed said slide and attachments inwardly, and thereby cause
 80 guiding or feeding-device *H* to perform its function during the rotation of said cam, the portion of said cam *D*², that has the greatest 85 radius, having its periphery concentric with the axis of the cam, and the periphery of the cam gradually reducing in radius from said concentric portion in the direction opposite to the rotation of the cam, as shown in Fig. 6. 90 Hence, it will be observed that slide, *I*, and members carried therewith, are held in their normal position while roller *J'* of roller-bearing-arm *J* engages the aforesaid concentric portion of the cam; that spring *K* commences 95 the performance of its function immediately upon the disengagement of said portion of the cam and the aforesaid roller, and that slide *I*, and consequently the guiding or feeding-device, are returned to their normal position as 100 soon as portion *D*³ of the cam, during the rotation of the latter, again comes into engagement with the roller-bearing-arm of the slide, the tension of spring *K* being regulated so as to be at zero, or approximately so, when roller *J'* 105 comes into engagement with the greatest radially reduced portion of the cam. Cam *D*² is secured in place preferably by means of bolts or screws *D*⁴ that screw into the enlarged portion *D*⁶ of the hub *D*⁵ of worm-wheel *D'*, as shown in 110 Figs. 2 and 6, the holes *D*⁷ in the cam, through which said bolts or screws extend being elongated concentrically with the axis of the cam as shown in Fig. 6, whereby, upon loosening the securing-bolts or screws, the cam is capable of being adjusted circumferentially. The 115 cam is slotted, as at *D*⁸, between the smallest and greatest radius to enable it to be mounted on the hub of wheel *D'*, after the other parts of the machine are assembled. 120

The arrangement of parts is of course such that the cutter and the feeding or guiding device *H* shall engage the work at opposite sides, respectively, as shown in Figs. 1 and 3, the cutter being rotated in the direction 125 toward the work-holding-spindle and the latter being rotated in the direction to rotate the work toward the cutting-edge of the cutter and away from the feeding or guiding-device, the direction of rotation of said parts 130 being indicated by arrows.

A suitable stop is provided for arresting the inward movement of feeding or guiding-device *H* upon the completion of the thread-

ing or cutting-operation, that is, upon the engagement of roller-bearing-arm J by the portion of cam D² having the smallest radius. The stop referred to is preferably adjustable and consists preferably of a screw, N, (see Fig. 3) that extends through a correspondingly-threaded hole n' in an arm or member n depending from the outer end of slide I, the arrangement of parts being such that the shank of said screw shall engage the supporting-stand or frame of the slide upon the completion of the threading or cutting-operation.

Upon shaft G is loosely mounted a gear, G², that meshes with a gear, O', operatively mounted upon a shaft, O, arranged lengthwise of and below the bed of the machine, preferably parallel and in the same horizontal plane with shaft G. Shaft O is suitably supported by means of brackets or hangers, O², O³, (see Fig. 2) the latter O³ depending from and rigid with the bed of the machine, and the former O² depending from and rigid with head C. A bevel-gear, O⁴, is also operatively mounted upon shaft O a suitable distance forward of gear O', said bevel-gear being operatively connected with the shaft by the well known means of groove and feather, the groove in the shaft being designated by O⁵, in Fig. 2, and elongated sufficiently lengthwise of the shaft to accommodate the endwise movement of said bevel-gear upon the shaft in adjusting head C endwise as required to accommodate different lengths of work. Gear O⁴ meshes with a bevel-gear, P', operatively mounted upon the lower end of an upright shaft, P, that extends upwardly through the bed of the machine and has suitable bearing in a box, P², rigid with head C. A bevel-gear P³, is rigidly mounted upon the upper end of shaft P, the hub P⁴ of said gear resting upon the upper end of box P² and thereby supporting the shaft. Gear P³ meshes with a corresponding gear B³ operatively mounted upon the work-holding-spindle. I would here remark that the intergearing between the work-holding and cutter-spindles should be such that when operative connection is established between gear G² and shaft G, and the work-holding-spindle set in motion, the cutter shall turn one tooth to one rotation of the work-holding-spindle.

The means provided for automatically establishing operative connection between gear G² and shaft G, and thereby establishing operative connection between the work-holding-spindle and cutter-spindle, upon the actuation of the work-holding-spindle rearwardly, to bring the work in position to be operated upon, is preferably as follows:—Gear G² (see Fig. 2) is provided with the one or stationary member Q of a clutch, and the other or movable member Q' of the clutch is operatively and slidably mounted upon shaft G. It will, therefore, be observed that, by actuating clutch-member Q' into engagement with its relatively stationary companion member, op-

erative connection shall be established between the aforesaid gear and shaft, and, consequently, between the work-holding- and cutter-spindles by the intermediate mechanism hereinbefore described. Clutch-member Q' is provided with an annular groove Q², that is engaged by the fork of a forked arm, R', of a reciprocating rod or bar, R, arranged below and lengthwise of the bed of the machine and supported by and adapted to slide endwise of boxes, r, rigid with the machine-bed. A reciprocating-rod or bar, S, is arranged lengthwise of and above the machine-bed, and is suitably supported by the supporting-stand or frame of slide I, and is adapted to be actuated lengthwise of the machine, said reciprocating-rod or bar being provided with two arms, S', S², engaging opposite sides, respectively, of a collar, B⁴, on and rigid or integral with the work-holding-spindle, and is also provided with a dog or projecting-member S³ that is adapted to engage the forward side of a similar dog or projecting-member T' on a rod or bar, T, that has bearing in the supporting-stand of slide I in such a manner as to be capable of reciprocation lengthwise of the machine, and reciprocating bar or rod T is operatively connected, preferably by means of a link or connecting-member T², with reciprocating-rod or bar R, said connecting-member extending downwardly through the bed of the machine. The bed of the machine is, of course, suitably slotted to accommodate the location and operation of the moving parts that extend through the bed.

By the construction hereinbefore described, it will be observed that when the operator, who stands at the front end of the machine, actuates the work-holding-spindle rearwardly, by means of lever, B², to bring the work to be operated upon into the position required relative to the cutter, reciprocating-rod or bar S, by means of the engagement of collar B⁴ on the work-holding-spindle with arm S' of said rod or bar and at the rear of said collar, is also actuated rearwardly, and reciprocating-rod or bar T, by means of the engagement of dog or projecting member T' on said rod or bar by the similar dog or projecting-member S³ on rod or bar S, is also actuated rearwardly, resulting, by means of the operative connection of said rod or bar S with reciprocating-rod or bar R, in the rearward actuation of bar or rod R to cause the movable clutch-member, by means of the forked arm R' of said rod or bar R, to be thrown into operative engagement with the stationary clutch-member and thereby establish operative connection between gear G² and shaft G, and consequently between the work holding and cutter-spindles. The attendant, by means of hand-lever B², holds the work-holding-spindle in the position required relative to the cutter, during the threading or cutting operation, and in this he is assisted by a weight, U, attached to a wire, rope, chain or

cable, U', that leads over a sheave U² suitably supported at the rear of the machine, to hand-lever B² to which it (the flexible connection) is suitably attached.

- 5 Upon the completion of the threading or cutting operation, the attendant, by means of hand-lever B² actuates the work-holding-spindle toward him or forwardly for the release of the work just operated upon and for the insertion of another piece of work, the work just operated upon being automatically ejected or dislodged from the guiding or feeding-device H preferably by mechanism as follows:—A reciprocating-rod or member V is located and arranged so as to be engaged by the point or inner end of the work and thereupon actuated rearwardly when the work is placed in position to be operated upon, against the action of a coil-spring, V', mounted and confined upon the rear portion of reciprocating-rod or bar S between a collar S⁴ rigid with said bar or rod S and an upright arm, V², that supports member V and is slidably mounted upon rod or bar S, that, as already indicated, 25 is connected with the work-holding-spindle so as to reciprocate therewith, member V being rigidly but preferably adjustably secured to its support by means of a screw V³.

By the construction and arrangement of 30 parts just described it will be observed that upon actuating the work-holding-spindle forwardly or away from reciprocating member V after the completion of the threading or cutting operation, said reciprocating and work-engaging member will, by the action of the aforesaid spring, be actuated into its normal position and thereby effect the disengagement of the work from the feeding or guiding-device H to permit the work to drop from the 40 work-holding-spindle.

Suitable means is also provided for automatically interrupting operative connection between gear G² and shaft G, and consequently between the cutter-spindle and work-holding-spindle, and for returning reciprocating-rods or bars R and T to their normal position upon the completion of the cutting or threading operation.

- Preferable means for the purpose indicated 50 is as follows: A reciprocating rod or bar, Y, is suitably supported by brackets or hangers, g, and is provided with a laterally-projecting forked arm, Y', the fork whereof engages another annular groove, Q³, in clutch-member Q'. A dog or projecting-arm or member, Y², is loosely mounted upon said rod or bar between the supporting-brackets or hangers and is held against displacement rearwardly by means of a collar, Y³, rigid on said rod or bar, and a spring, Y⁴, is confined between the forward side of said dog or projecting-member and a collar, Y⁵, rigid on the reciprocating rod or bar. Dog or arm Y² is somewhat hook-shaped at its free extremity, as shown in Fig. 4, and said hook-shaped portion is adapted to be engaged by a lug, pin or member, D⁴, projecting downwardly from the worm-wheel

D', the arrangement of parts being such that said downwardly-projecting lug, pin or member of the worm-wheel shall come into engagement with said hook-shaped member of dog or arm Y² at the completion of the threading or cutting-operation, and thereby actuate reciprocating rod or bar Y forwardly to interrupt operative engagement between 75 the clutch-members, and consequently operatively disconnect gear G² and shaft G, the spring being compressed during said actuation of dog or arm Y² and thereby, by its action, causing the hook-shaped or bent extremity of said dog or arm to slip back of projecting member D⁴ of the worm-wheel should operative connection between the clutch-members be interrupted just as said projecting-member of the worm-wheel had come into engagement with, or before it had disengaged itself from, the aforesaid dog or arm on the clutch-separating rod or bar.

What I claim is—

1. In a machine for providing bolts, screws, 90 &c., with threaded or gimlet-points, the combination with the work-holding-spindle arranged lengthwise of the machine, cutter-spindle, cutter on the cutter-spindle, and means for suitably rotating said spindles, of a reciprocating guiding or feeding-device arranged transversely of the machine and adapted to engage the work and feed or guide the same laterally against the cutter during the threading or cutting operation, and suitable means for effecting the reciprocation of said feeding or guiding device to cause the same to perform its function, the arrangement of parts being substantially as and for the purpose set forth. 105

2. In a machine for providing bolts, screws, &c., with threaded or gimlet-points, the combination with the work-holding-spindle, cutter-spindle, cutter on the cutter-spindle and means for suitably rotating said spindles, of a reciprocating guiding or feeding-device adapted to engage the work and guide or feed the same laterally against the cutter during the threading or cutting operation, a spring for actuating said guiding or feeding-device to cause the latter to perform its function and suitable means for returning said device to its normal position upon the completion of the threading or cutting operation, substantially as set forth. 120

3. In a machine for providing bolts, or screws, &c., with threaded or gimlet-points, the combination with the work-holding-spindle, cutter-spindle, cutter on the cutter-spindle, and means for suitably rotating said spindles, of a guiding or feeding-device adapted to engage and feed or guide the work laterally against the cutter, a roller-bearing-arm operatively connected with said feeding or guiding-device, suitable means for actuating the guiding or feeding-device to cause the latter to perform its function, a cam operatively mounted upon the cutter-spindle and engaged by the roller of the aforesaid roller- 130

bearing-arm, said cam having such shape as to return the guiding- or feeding-device to its normal position and to cause said feeding or guiding-device to guide or feed gradually, substantially as set forth.

4. In a machine for providing bolts, or screws, &c., with threaded or gimlet-points, the combination with the work-holding-spindle, cutter-spindle, cutter on the cutter-spindle and means for suitably rotating said spindles, of a guiding or feeding-device adapted to engage the work and guide or feed the same laterally against the cutter during the threading or cutting-operation, and suitable means for actuating said guiding or feeding-device to cause the latter to perform its function, the guiding or feeding-device being suitably constructed or shaped to engage and hold the work in such a manner as to prevent vertical displacement of the work, substantially as set forth.

5. In a machine for providing bolts, or screws, &c., with threaded or gimlet-points, the combination with the work-holding-spindle, cutter-spindle, cutter on the cutter-spindle and means for suitably rotating said spindles, of a guiding or feeding-device adapted to engage the work and feed or guide the same laterally against the cutter during the threading or cutting operation, a spring for actuating the guiding or feeding-device to cause the latter to perform its function, a roller-bearing-arm operatively connected with the guiding or feeding-device and a rotary cam engaging the roller of said roller-bearing-arm and having such shape as to effect the return of the guiding or feeding-device to its normal position upon the completion of the threading or cutting-operation and to cause the aforesaid spring to gradually perform its function, substantially as set forth.

6. In a machine for providing bolts or screws, &c., with threaded or gimlet-points, the combination with the work-holding-spindle, means for suitably rotating said spindle, cutter-spindle, cutter on the cutter-spindle, a guiding or feeding-device shaped to engage and feed or guide the work against the cutter, and provided with a roller-bearing-arm, a spring for actuating said guiding or feeding-device to cause the latter to perform its function, a cam operatively mounted upon the cutter-spindle and suitably shaped to return the aforesaid guiding or feeding-device to its normal position upon the completion of the threading or cutting-operation and to graduate the action of the aforesaid spring, of a shaft, G, operatively connected with the cutter-spindle, a gear mounted loosely upon said shaft but operatively connected with the work-holding-spindle, a clutch, the one member whereof is rigid with said gear and the other member whereof is operatively and slidably mounted upon said shaft, suitable mechanism for throwing the movable clutch-member into operative engagement with the relatively stationary clutch-member upon act-

uating the work-holding-spindle rearwardly to bring the work into the position required relative to the cutter preparatory to the cutting or threading operation, and suitable mechanism for automatically interrupting said operative connection between the clutch-members upon the completion of the threading or cutting-operation, substantially as set forth.

7. In a machine for providing bolts, screws, &c., with threaded or gimlet-points, the combination with the bed of the machine, upright cutter-spindle extending through the bed, work-holding-spindle suitably supported above and arranged lengthwise of the bed, suitable means for rotating the work-holding-spindle and suitable means for actuating said spindle toward and from the cutter, of a shaft arranged below and lengthwise of the bed of the machine and operatively connected with the cutter-spindle, a gear loosely mounted upon said shaft and operatively connected with the work-holding-spindle, a clutch, the one member whereof is rigid with said gear, but normally operatively disconnected with the shaft, the other member of the clutch being operatively and slidably mounted upon the shaft, suitable mechanism for actuating the movable clutch-member into operative connection with the relatively stationary clutch-member, suitable mechanism operatively connected with the work-holding-spindle for actuating said movable clutch-member actuating-mechanism upon the rearward reciprocation of the work-holding-spindle preparatory to the threading or cutting operation, suitable means for operatively disconnecting or separating the movable clutch-member from the stationary clutch-member, and suitable means operatively connected with the cutter-spindle for thus actuating said clutch-separating-mechanism, substantially as set forth.

8. In a machine for providing bolts or screws, &c., with threaded or gimlet-points, the combination with the machine-bed, work-holding-spindle, head or carrier C supporting the work-holding-spindle, means for suitably rotating said spindle, the aforesaid head being adjustable in the direction of the length of the work-holding-spindle, cutter and cutter-spindle, of a rotating-shaft, O, suitable means for operatively connecting said shaft with the cutter-spindle, suitable means for interrupting operative connection between said spindle and the shaft, a gear or wheel operatively and slidably mounted upon said shaft and suitable means establishing operative connection between said gear or wheel and the work-holding-spindle, whereby said shaft is not operatively disconnected with the work-holding-spindle in the endwise adjustment of the aforesaid head or work-holding-spindle carrier, substantially as set forth.

9. In a machine for providing bolts or screws, &c., with threaded or gimlet-points, the combination with the cutter and cutter-

spindle, of a rotating-shaft, suitable means for establishing operative connection between said shaft and the aforesaid spindle, suitable mechanism for interrupting said operative connection, and suitable means operatively connected with the cutter-spindle for actuating said interrupting mechanism to perform its function upon the completion of the threading or cutting operation, substantially as set forth.

10. In a machine for providing bolts or screws, &c., with threaded or gimlet-points, the combination with the cutter and cutter-spindle, of a rotating shaft suitably intergeared with the cutter-spindle, a gear loose upon the shaft, suitable means for communicating power to said gear, a clutch the one member whereof is rigid with said gear but normally operatively disconnected with the shaft, the other member of said clutch being operatively and slidably mounted upon the shaft, suitable mechanism for automatically establishing operative connection between said clutch-members preparatory to the threading or cutting operation, suitable means for automatically separating the clutch-members and suitable means operatively connected with the cutter-spindle for actuating said clutch-separating mechanism after the completion of the threading and cutting operation, substantially as set forth.

11. In a machine for providing bolts or screws, &c., with threaded or gimlet-points, the combination with the cutter and cutter-spindle, of a rotating shaft suitably intergeared with the cutter-spindle, a gear loose upon said shaft, suitable means for communicating power to said gear, a clutch the one member whereof is rigid with said gear and normally operatively disconnected with the shaft, the other member of said clutch being operatively and slidably mounted upon the shaft, suitable mechanism for automatically establishing operative connection between said clutch-members preparatory to the threading or cutting-operation, a reciprocating clutch-separating rod or bar operatively connected with the movable clutch-member, a dog or projecting-member operatively mounted upon said rod or bar and suitable means operatively connected with the cutter-spindle for engaging and actuating said dog or projecting member in the direction to cause the aforesaid clutch-separating-bar to perform its function, substantially as set forth.

12. In a machine for providing bolts or screws, &c., with threaded or gimlet-points, the combination with the cutter and cutter-

spindle, of a rotating shaft suitably intergeared with the cutter-spindle, a gear loose upon said shaft, suitable means for communicating power to said gear, a clutch the one member whereof is rigid with said gear but normally operatively disconnected with the shaft, the other member of said clutch being operatively and slidably mounted upon the shaft, suitable means for automatically establishing operative connection between said clutch-members preparatory to the threading or cutting-operation, a reciprocating rod or bar operatively connected with the movable clutch-member, a dog or arm loosely mounted upon said rod or bar and bent laterally at its free end, suitable means for preventing the rearward displacement of said bent dog or arm, a spring suitably confined upon said rod or bar and adapted to be compressed by said dog or arm and suitable means operatively connected with the cutter-spindle for engaging the bent portion of said dog or arm and actuating the same in the direction to compress the aforesaid spring and to cause the aforesaid reciprocating rod or bar to separate the clutch-members, the arrangement of parts being such that the clutch-members shall be automatically separated after the completion of the threading or cutting-operation, substantially as set forth.

13. In a machine for providing bolts or screws, &c., with threaded or gimlet-points, the combination with the work-holding spindle, cutter-spindle, cutter on the cutter-spindle, suitable means for rotating said spindles, of a guiding or feeding-device adapted to engage or hold the work to feed or guide the same against the cutter during the threading or cutting operation, suitable means for actuating said guiding or feeding-device to feed or guide the work, and suitable means for effecting the disengagement of the work from said guiding or feeding-device upon the completion of the threading or cutting operation, said disengaging means comprising a spring and a reciprocating-rod or member adapted to be engaged by the point of the work and adapted to be actuated against the action of the spring in placing the work in position to be operated upon, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 31st day of July, 1893.

WILLIAM R. WILBUR.

Witnesses:

C. H. SESSIONS,
C. H. DORER.