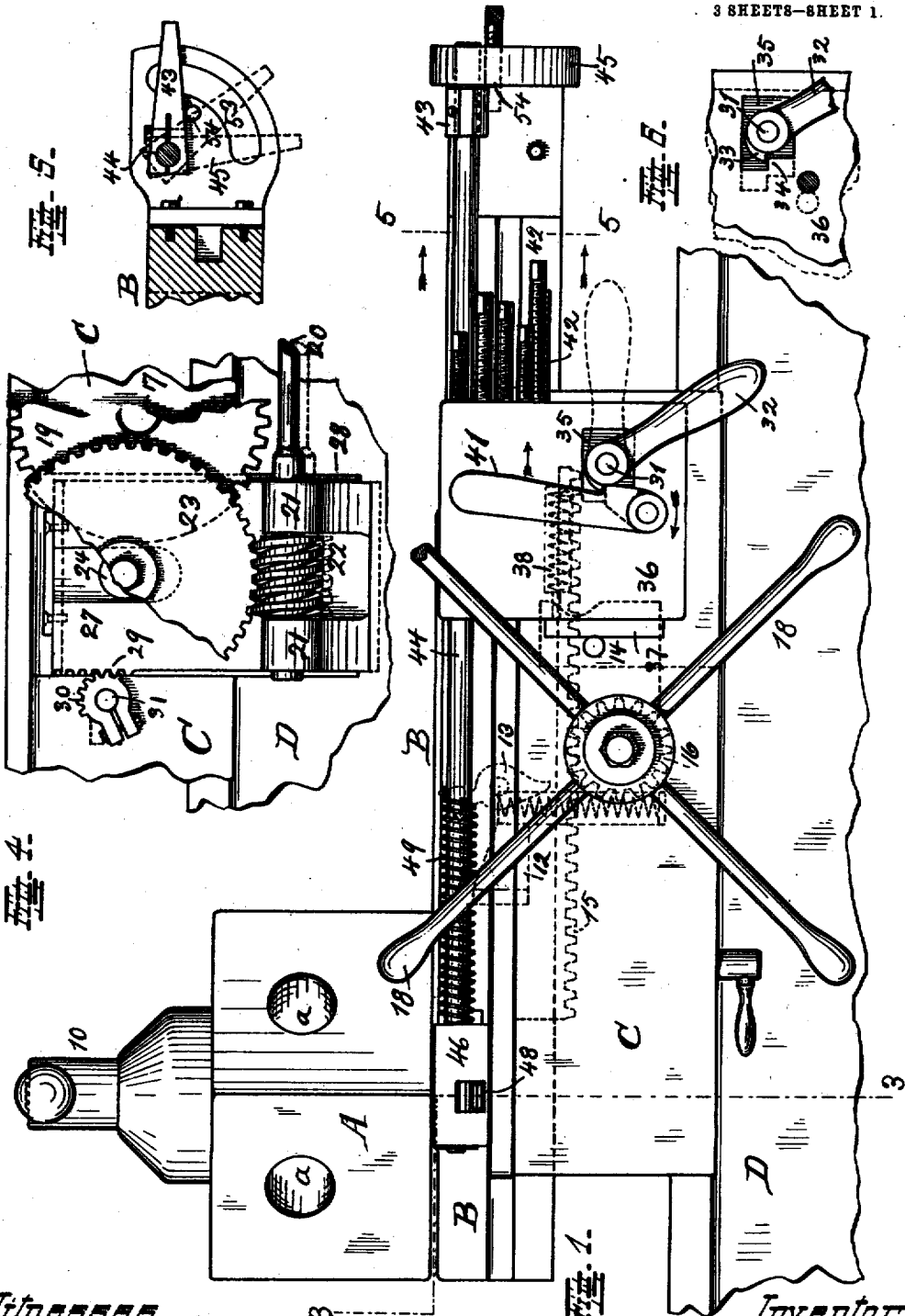


H. DRESES.
STOP MECHANISM FOR TURRET LATHES.
APPLICATION FILED AUG. 9, 1911.

1,017,859.

Patented Feb. 20, 1912.

3 SHEETS-SHEET 1.



Witnesses.
A. S. Archibald
T. LeBeau

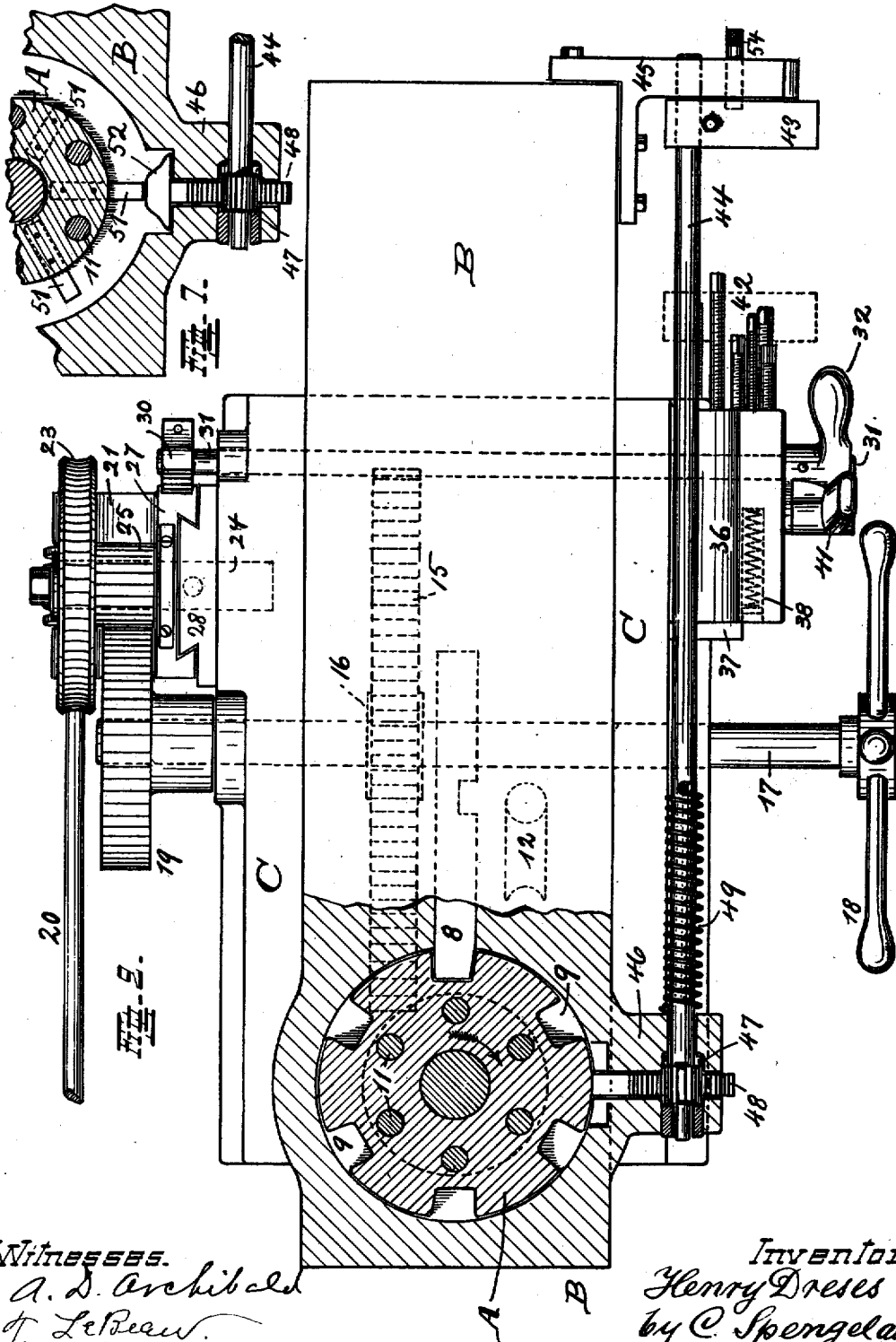
Inventor.
Henry Dreses
by C. Spengler Atty

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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3

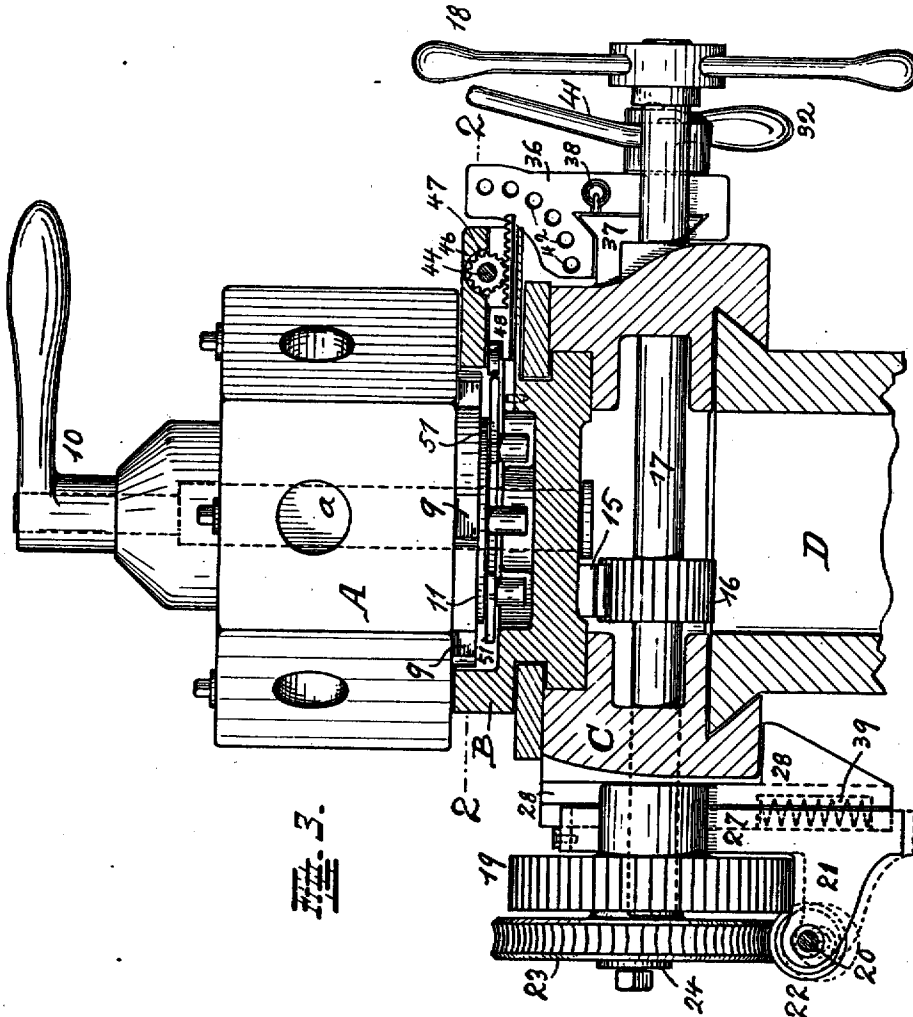


FIG. 3.

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UNITED STATES PATENT OFFICE.

HENRY DRESES, OF CINCINNATI, OHIO.

STOP MECHANISM FOR TURRET-LATHES.

1,017,859.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed August 9, 1911. Serial No. 643,081.

To all whom it may concern:

Be it known that I, HENRY DRESES, a citizen of the United States, and a resident of Cincinnati, Hamilton county, State of Ohio, have invented a certain new and Improved Stop Mechanism for Turret-Lathes; and I do declare the following to be a clear, full, and exact description of the invention, attention being called to the three sheets of drawings which accompany this application and form a part thereof.

This invention consists of certain means whereby in a turret-lathe the forward or feed-motion of the slide which carries the tool-holding turret is stopped at the proper time when the particular tool which acts at the time has done its work.

It also consists of means and connected devices whereby the turret-carrying slide, in case it is moved by power-feed, may be disconnected therefrom manually either at any time or automatically at certain predetermined times.

In the following specification and particularly pointed out in the claims at the end thereof will be found a full description of my invention, together with its operation, parts and construction, which latter is also illustrated in the accompanying three sheets of drawings, in which:—

Figure 1, is part of a side-elevation of a turret-lathe, showing the turret and adjacent parts of the lathe. Fig. 2, is a top-view of Fig. 1, with parts of it in horizontal section taken on line 2—2 of Fig. 3. Fig. 3, is a vertical cross-section on line 3—3 of Fig. 1. Fig. 4, shows certain parts on that side of the lathe opposite to the side shown in Fig. 1, and fully explained hereinafter. Fig. 5, is a vertical section on line 5—5 of Fig. 1. Fig. 6, is a detail view showing portions of Fig. 1, also fully explained hereinafter. Fig. 7, is part of a view similar to the part shown in section in Fig. 2, it being a similar section taken slightly below the former section.

In the drawing, A indicates the turret mounted for rotation upon a slide B, which latter is fitted for longitudinal movement upon a carriage C. The turret is provided in its side with the usual number of sockets *a* adapted to receive tools, sockets for six tools being shown. The proper position of the tool which operates at the time is secured by a bolt 8 while occupying one of six bolt-

sockets 9 provided in the lower part of the turret. The position of the turret may be rendered more rigid by a locking handle 10 whereby it is tightened down on the slide. Six pins shown at 11 project from the underside of the turret and constitute in conjunction with a spring-actuated dog 12, supported on carriage C, the indexing device for the turret. When the slide with the turret is returned at the end of the forward feed movement, handle 10 having been eased off, contact of one of these pins 11, with stationary member 12 causes a partial rotation of the turret so graduated it being one-sixth in this case as to bring another tool on the turret into proper position for working. This occurs during the latter part of this return movement, the first part of it having caused a trip-device to become active to withdraw the spring-actuated locking bolt 8 to render such rotation possible. This trip-device consists of two complementary parts, one of which, part 13, is carried by the slide. The other part 14 which co-acts therewith is supported in carriage C. This latter is supported on the lathe-bed D on which it is adjustable longitudinally and with reference to the work-holding chuck carried on the lathe-spindle it being adjusted in position according to the kind of work to be done and the size thereof. After its position has been determined for the time being, it is locked in place and becomes a fixed support for slide B.

15 is a rack on the underside of the slide and 16 is a pinion in mesh with it. This pinion is mounted upon a shaft 17 supported in carriage C and by its rotation accordingly, the slide may be moved either forward, toward the lathe-spindle, or away therefrom. Rotation may be had by hand by means of lever-handles 18 on one end of shaft 17, or by a power-actuated gear-wheel 19 at its other end, operated by the power driven feed-shaft 20, actuated in the usual manner from the head-end of the lathe where one of its ends is supported.

Since none of the parts so far described are considered new, it is thought they have been explained and shown with sufficient clearness for the purpose.

The other end of shaft 20 is supported in bearings 21 and carries a worm 22 which is in mesh with a worm-wheel 23 supported on a stud-shaft 24 which projects laterally

from carriage C. There is also a pinion 25 which rotates with the worm-wheel and meshes with gear-wheel 19 on shaft 17.

When slide B is to be moved by hand the power feed is cut out and this is done by dropping the worm out of mesh with the worm-wheel. See dotted position in Figs. 3 and 4. For this purpose shaft-bearings 21—21 are provided in connection with a sliding bracket 27, fitted for vertical movement upon a guide-way 28 provided on the rear side of carriage C. A limited portion of one edge of this bracket is provided with teeth to form a rack 29, which teeth 15 are in engagement with a pinion 30 on a rod 31 mounted in carriage C. By means of this pinion when rotated by rod 31 the bracket may be raised from its dropped position and if thereafter rotation of this 20 rod is prevented, it serves also to hold the bracket in its elevated position as shown in Figs. 3 and 4 to maintain the worm-gear in operative connection. A handle 32 is provided at the other end of rod 31 for its 25 manipulation from the front-side of the lathe. The hub of this handle has a check 33 and as long as this check is in engagement with, that is supported by a shoulder 34, rotation of rod 31 and of pinion 30 thereon 30 is prevented and bracket 27 remains in its elevated position. See Fig. 6. This shoulder 34 is formed within an opening 35 contained in a bracket 36 supported to have a limited horizontal movement on a guide- 35 way 37 provided on the front-side of carriage C. A spring 38 recessed in the bracket serves to hold this latter normally against the hub of arm 32, which brings shoulder 34 to a position in which 40 it may support check 33 as soon as this latter is raised above it by manipulation of handle 32. See Fig. 6. It will now be seen, that when bracket 36 is moved away from rod 31, check 33 is deprived of 45 its support by shoulder 34 and releases rod 31. This permits pinion 30 to rotate and to drop bracket 27, thereby disconnecting the worm-gear. A spring 39 recessed between this bracket 27 and its guide-way 40 serves to cause this drop to occur promptly. This actuation of bracket 36 to cut out the feed-motion by power may be had by manual operation at any time and automatically at predetermined times.

55 Actuation manually is by means of a knocker arm 41 pivotally carried on bracket 36. It lies against the hub of handle 32 and if pushed against this hub it will, by re-action at its lower connected end, move 60 bracket 36 away therefrom. This causes also shoulder 34 to move out from below check 33 thereby tripping the same and causing the worm-supporting bracket to drop. See Fig. 6, dotted lines, the knocker- 65 arm being omitted in this view.

Automatic actuation is provided to stop the forward movement of the slide at the proper time when a certain tool has done its work, so as to relieve the operator of close attention and precluding possibility 70 of mistakes and accidents. This is accomplished by a number of stops 42, consisting substantially of screw-threaded pins adjustably seated in the upper part of bracket 36, 75 one stop for each tool-socket in the turret. They act in conjunction with a swinging dog 43, carried by the slide so as to be immovable lengthwise with respect thereto and adapted to co-act with all of stops 42, one 80 at the time only, at the forward or feed-movement of the slide. If this dog comes in contact with one of these stops it will push bracket 36 away from the hub of 85 handle 32 causing thereby also shoulder 34 to move out from under check 33. This latter is thereby tripped and permits the worm-supporting bracket to drop the same as before described for the manual actuation by handle 41. The feed-movement of 90 the slide is thereby caused to stop and the slide is returned by actuation of handles 18, after which it is re-connected to the power-feed by re-adjustment of the worm-gear 95 which is done by manipulation of handle 32. This return-movement of the slide has also effected a rotary adjustment of the turret as before described so that now another tool is in position for action. In due 100 time dog 43 co-acts again with one of the stops 42, another one this time, and by another actuation of bracket 36 drops the worm and again cuts out the power-feed as before described. In order to thus enable 105 the dog to co-act with another stop and with all the others successively, an adjustment is required whereby the dog is successively moved and set so as to be in position to encounter the various stops as it is carried toward them by the slide. This is done auto- 110 matically and by means actuated by the turret when the same is caused to rotate when the slide is returned. For such purpose dog 43 is rigidly mounted upon a rod 115 44 supported for rotation in bearings, one formed by a bracket 45 and the other in an extension 46 of slide B. 47 is a pinion on this rod in engagement with a rack 48 fitted into a guide-way so formed in said 120 extension that the rack is capable of movement to or from the turret.

49 is a spring sleeved upon rod 44 and so connected as to impart to this latter a normal tendency to rotate the pinion in a direction which would move rack 48 toward 125 the turret. Means are provided on the turret which act with each rotary movement of it upon said rack and in a manner to move the same so as to effect a limited rotation of rod 44 in opposite direction and against 130 the action of spring 49. This movement is

sufficient to change the position of dog 43 to cause it to encounter another one of stops 42 when again moving forward with the slide. Any applicable means causing end-wise movement of the rack may be used as for instance pusher-arms 51 secured to the underside of the turret from which they radially project, there being one for each tool-socket. They act upon rack 48 end-wise and move the same to cause it to rotate rod 44 and to change the position of dog 43 as described. They are graduated as to amount of projection, Fig. 7 showing extremes, the rack being shown as engaged and held against the action of spring 49, by the one having the largest projection which accordingly holds the swinging dog in one of its extreme positions, the highest one as shown in Fig. 5, and in which position it co-acts with the uppermost one of stops 42. The next rotary actuation of the turret permits spring 49 to rotate rod 44 to the extent which another pusher-arm of less projection permits, said pusher-arm limiting this rotation by its contact with the end of rack 48 and holds dog 43 in a position in which it is adapted to co-act with the next succeeding one of stops 42. A cam-shaped shoe 52 carried at the inner end of rack 48 facilitates the action of the pusher-arms when they pass in position opposite the end of the rack. Each of the stops 42 is of course properly adjusted by preliminary test-movements before a certain line of work is started. A curved slot 53 is provided in bracket 45 to clear such of stops 42 which are set out so far that they would interfere with the longer feed-movement of the slide permitted by stops not set out so far. It may occur that work is done in which each recurring feed-motion of the slide is of the same extent requiring the use of one stop only. In such case only the uppermost stop is used and a locking pin 54 is provided in bracket 45 which may be moved so as to project under dog 43 thereby holding the same up in the position now shown in Fig. 5. The inner end of rack 48 is thereby held beyond the action of the pusher-arms and not affected by them.

The turret slide may of course be also fed forward entirely by hand by use of handles 18, the worm being simply left in its dropped position, the same stop-devices being used. Or the lathe may be built without power-feed, the same stop-devices and adjusting means for them being used. In this case bracket 36 which carries stops 42 or an equivalent support for them is simply rigidly secured in position.

Having described my invention, I claim as new:

1. In a turret-lathe, the combination of a turret, a feed-slide upon which it is mounted with a rotary adjustment, a support upon

which the feed-slide is movably fitted, power-actuated-mechanism to move the slide on its support involving a worm-wheel and a complementary worm, a shaft near one end of which the worm is supported, a bearing for this end of the shaft, a bracket of which this bearing forms a part, means on which this bracket is supported so as to permit sliding adjustment in a manner whereby the worm may be moved with respect to the worm-wheel, a rack and pinion to hold and adjust this bracket, devices to lock the pinion against rotation to cause the sliding bracket to hold the worm in operative engagement and means to operate these devices to effect disengagement of the worm.

2. In a turret-lathe, the combination of a turret, a feed-slide upon which it is mounted with a rotary adjustment, a support upon which the feed-slide is movably fitted, power-actuated mechanism to move the slide on its support involving a worm-wheel and a complementary worm, a shaft near one end of which the worm is supported, a bearing for this end of the shaft, a bracket of which this bearing forms a part, means on which this bracket is supported so as to permit sliding adjustment in a manner whereby the worm may be moved with respect to the worm-wheel, a rack provided on this bracket, a pinion for it, a rod upon which this pinion is mounted, a handle to manipulate this rod, a projection provided in connection with this rod, a movable shoulder which, when in engagement with this projection, prevents rotation of the rod and means to actuate this shoulder so that when disengaged from the projection mentioned the pinion-carrying rod is released and permitted to rotate.

3. In a turret-lathe, the combination of a turret, a feed-slide upon which it is mounted with a rotary adjustment, a support upon which the feed-slide is movably fitted, power-actuated mechanism to move the slide on its support involving a worm-wheel and a complementary worm, a shaft near one end of which the worm is supported, a bearing for this end of the shaft, a bracket of which this bearing forms a part, means on which this bracket is supported so as to permit sliding adjustment in a manner whereby the worm may be moved with respect to the worm-wheel, a rack provided on the bracket, a pinion for it, a rod upon which this pinion is mounted, a handle to manipulate this rod, a projection provided in connection with this rod, a movable support, a spring whereby it is yieldingly held in engagement with the projection mentioned so as to prevent rotation of the rod and a handle to manipulate this support to disengage it from said projection to release the rod to permit rotation of the pinion.

4. In a turret-lathe, the combination of a

turret, a feed-slide upon which it is mounted with a rotary adjustment, a support upon which the feed-slide is movably fitted, power-actuated mechanism to move the slide on its support involving a worm-wheel and a complementary worm, a shaft near one end of which the worm is supported, a bearing for this end of the shaft, a bracket of which this bearing forms a part, means on which this bracket is supported so as to permit sliding adjustment in a manner whereby the worm may be moved with respect to the worm-wheel, a rack provided on the bracket, a pinion for it, a rod upon which this pinion is mounted, a handle to manipulate this rod, a projection provided in connection with this rod, a movable support, a spring whereby it is yieldingly held in engagement with the projection mentioned so as to prevent rotation of the rod and means carried by the feed-slide and adapted to act upon said support in a manner to disengage it from the projection to release the rod and the pinion thereon for rotation.

5. In a turret-lathe, the combination of a turret, a feed-slide upon which it is mounted with a rotary adjustment, a support upon which the feed-slide is movably fitted, power-actuated mechanism to move the slide on its support involving complementary worm-gear-elements, an adjustably connected support for one of these elements, means involving a spring-actuated device to hold this support in adjustment to maintain the worm-gear elements in operative engagement, adjustably connected stops provided in connection with the device mentioned one for each turret-tool, an element carried by the feed-slide and adapted to act upon one of these stops on each forward movement of said feed-slide and means automatically actuated by the rotary adjustment of the turret whereby the element mentioned is adjusted to act upon a different stop, on each succeeding forward movement of the feed-slide.

6. In a turret-lathe, the combination of a turret, a feed-slide upon which it is mounted with a rotary adjustment, a support upon which the feed-slide is movably fitted, power-actuated mechanism to move the slide on its support involving complementary worm-gear-elements, an adjustably connected support for one of these elements, means involving a spring-actuated device to hold this support in adjustment to maintain the worm-gear elements in operative engagement, adjustably connected stops provided in connection with the device mentioned one for each turret-tool, a spring-actuated rod supported for rotation and traveling with the feed-slide, a dog rigidly mounted on said rod and adapted to act upon one of the stops mentioned on

each forward movement of the feed-slide, a pinion on this rod, a rack in engagement therewith and pusher-arms provided on the turret from which they project at graduated lengths, one for each turret-tool, they being adapted to act upon the rack to rotate the rod mentioned, one of them upon each rotary adjustment of the turret, to cause the dog on said rod to act upon a different stop on each succeeding forward movement of the feed-slide.

7. In a turret-lathe, the combination of a turret, a feed-slide upon which it is mounted with a rotary adjustment, a support to which the feed-slide is movably fitted, means to move the slide, a series of adjustably connected stops, one for each turret-tool, a spring-actuated rod supported for rotation and carried on the outside of the feed-slide on which it extends forwardly so as to terminate opposite the turret from which it is laterally spaced, a dog rigidly mounted on said rod and adapted to act upon one of the stops mentioned on each forward movement of the feed-slide, a pinion on this rod, a rack in engagement with the pinion and supported on the slide so as to be in radial relation to the turret, and means provided on the turret and adapted to act upon the rack to effect limited rotation of the rod mentioned upon each rotary adjustment of the turret so as to cause the dog on said rod to assume different positions to act upon a different stop on each forward movement of the feed-slide.

8. In a turret-lathe, the combination of a turret, a feed-slide upon which it is mounted with a rotary adjustment, a support to which the feed-slide is movably fitted, means to move the slide, a series of adjustably connected stops, one for each turret-tool, a spring-actuated rod supported for rotation and traveling with the feed-slide, a dog rigidly mounted on said rod and adapted to act upon one of the stops mentioned on each forward movement of the feed-slide, a pinion on this rod, a rack in engagement with the pinion and pusher-arms provided on the turret from which they project at graduated lengths, one for each turret-tool, they being adapted to act upon the rack to rotate the rod mentioned, one of them upon each rotary adjustment of the turret, to cause the dog on said rod to act upon a different stop on each succeeding forward movement of the feed-slide.

9. In a turret-lathe, the combination of a turret, a feed-slide upon which it is mounted with a rotary adjustment, a support upon which the feed-slide is movably fitted, power-actuated mechanism to move the slide on its support involving a worm-wheel and a complementary worm, a shaft near one end of which the worm is supported, a bearing for this end of the shaft, a bracket of

which this bearing forms a part, means on which this bracket is supported so as to permit sliding adjustment in a manner whereby the worm may be moved with respect to the worm-wheel, a rack provided on the bracket, a pinion for it, a rod upon which this pinion is mounted, a handle to manipulate this rod, a projection provided in connection with this rod, a movable support, a spring whereby it is yieldably held in engagement with the projection mentioned so as to prevent rotation of the rod, adjustably connected stops provided in connection with the movable support mentioned, one for each turret-tool, a spring-actuated rod supported for rotation and traveling with the feed-slide, a dog rigidly mounted upon said rod and adapted to act upon one of the stops mentioned on each forward movement of the feed-slide, a pinion on this rod, a rack in engagement therewith and means provided on the turret and adapted to act upon this rack to effect limited rotation of the rod mentioned upon each rotary adjustment of the turret to cause the dog on said rod to act upon a different stop on each succeeding forward movement of the feed-slide.

10. In a turret-lathe, the combination of a turret, a feed-slide upon which it is mounted with a rotary adjustment, a support upon which the feed-slide is movably fitted, power-actuated mechanism to move the slide on its support involving a worm-wheel and a complementary worm, a shaft near one end of which the worm is supported, a bear-

ing for this end of the shaft, a bracket of which this bearing forms a part, means on which this bracket is supported so as to permit sliding adjustment in a manner whereby the worm may be moved with respect to the worm-wheel, a rack provided on the bracket, a pinion for it, a rod upon which this pinion is mounted, a handle to manipulate this rod, a projection provided in connection with this rod, a movable support, a spring whereby it is yieldingly held in engagement with the projection mentioned so as to prevent rotation of the rod, adjustably connected stops provided in connection with the movable support mentioned, one for each turret-tool, a spring-actuated rod supported for rotation and traveling with the feed-slide, a dog and a pinion on this rod, a rack engaging the pinion and pusher-arms provided on the turret from which they project at graduated lengths, one for each turret-tool, they being adapted to act upon the rack to rotate the rod mentioned, one of them upon each rotary adjustment of the turret to cause the dog on said rod to act upon a different stop on each succeeding forward movement of the feed-slide.

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

HENRY DRESES.

Witnesses:

C. SPENGLER,
T. LE BEAU.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."