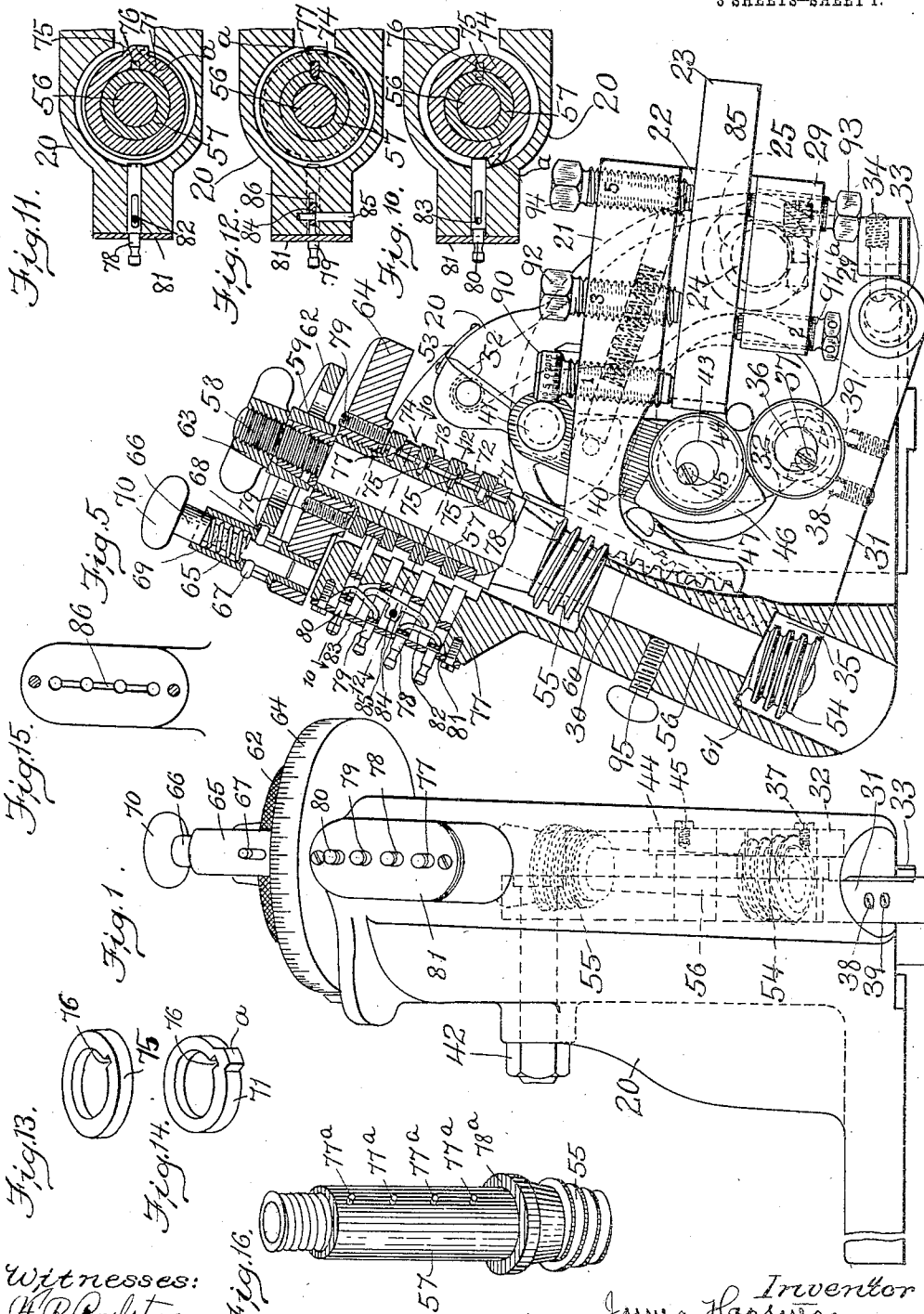


J. HARTNESS.
TURNING TOOL.
APPLICATION FILED SEPT. 30, 1911.

1,056,097.

Patented Mar. 18, 1913.

3 SHEETS—SHEET 1.



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3 SHEETS-SHEET 2.

Fig. 2.

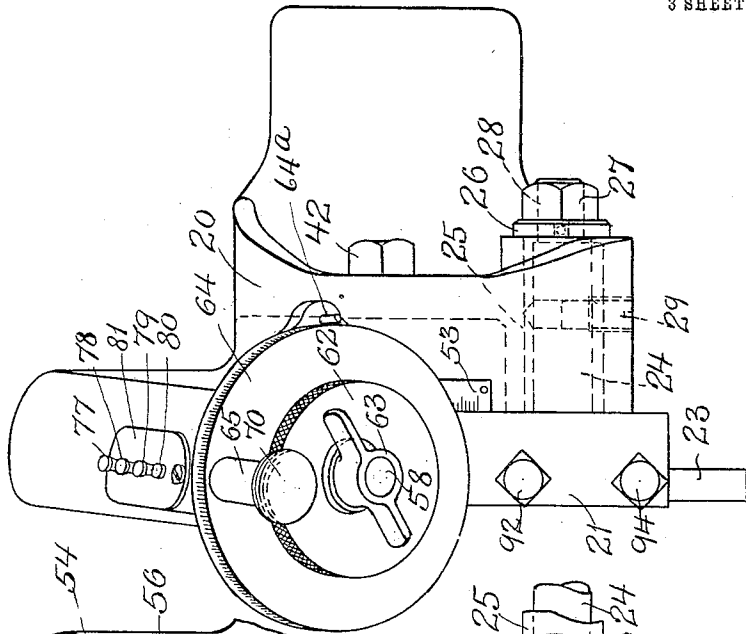


Fig. 4.

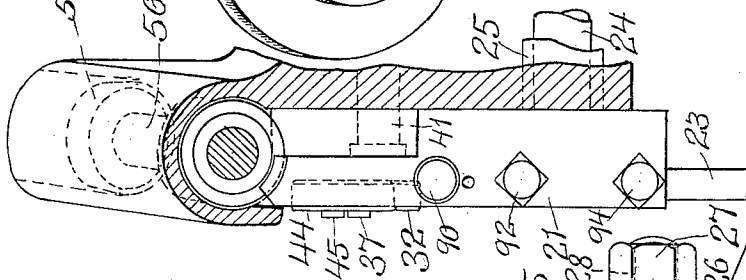
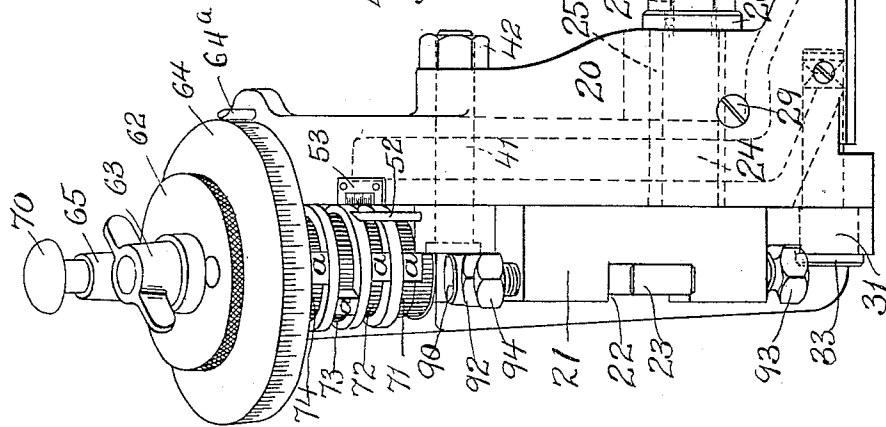


Fig. 3.



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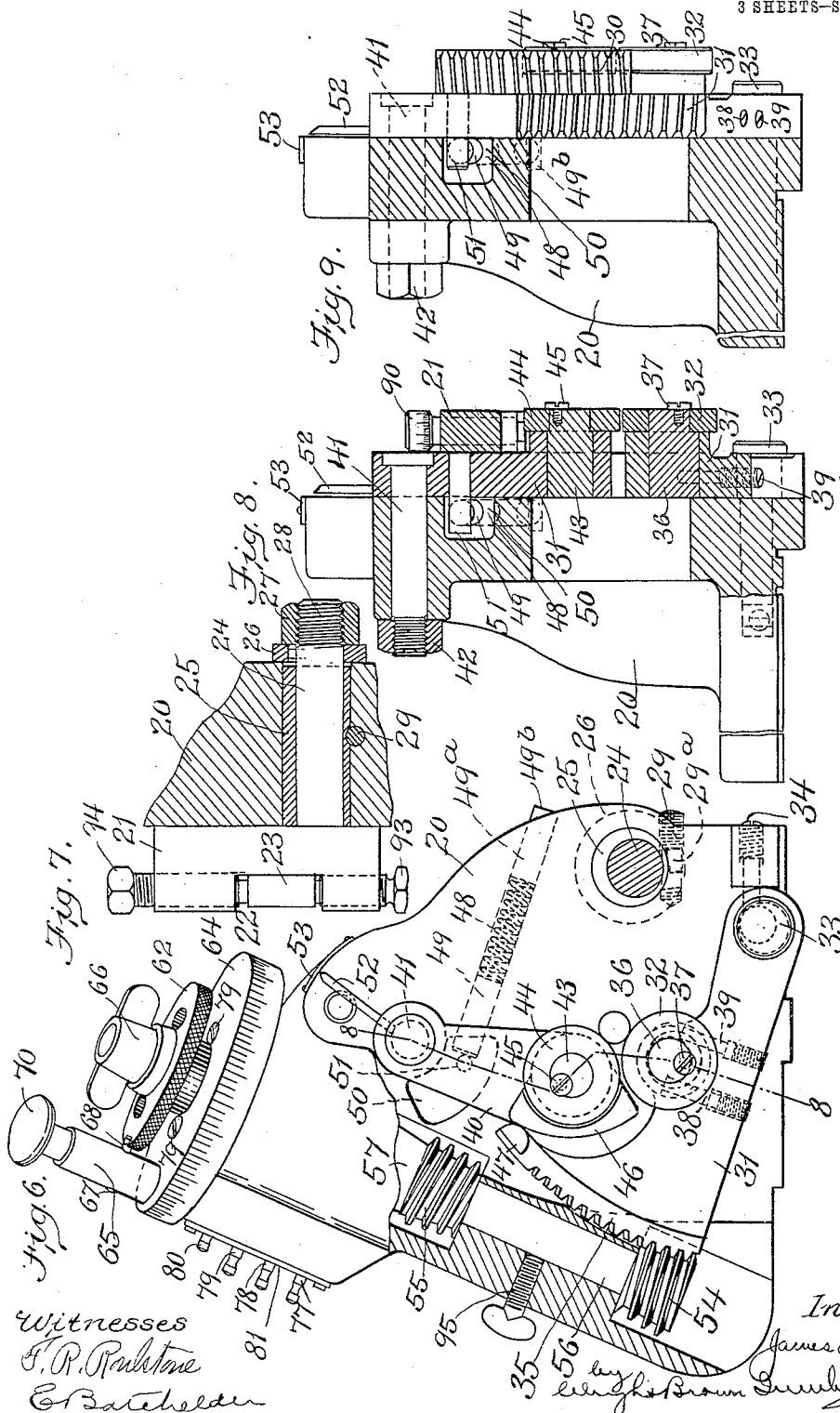
TURNING TOOL.

APPLICATION FILED SEPT. 30, 1911.

1,056,097.

Patented Mar. 18, 1913.

3 SHEETS-SHEET 3.



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UNITED STATES PATENT OFFICE.

JAMES HARTNESS, OF SPRINGFIELD, VERMONT.

TURNING-TOOL.

1,056,097.

Specification of Letters Patent.

Patented Mar. 18, 1913.

Application filed September 30, 1911. Serial No. 652,046.

To all whom it may concern:

Be it known that I, JAMES HARTNESS, a citizen of the United States, and resident of Springfield, in the county of Windsor and State of Vermont, have invented certain new and useful Improvements in Turning-Tools, of which the following is a specification.

This invention has relation to turning tools which may be placed upon the tool slide of an engine or turret lathe for reducing the diameter of the work.

One of the objects of the invention is to so construct a tool that the cutter will be held in its cutting relation to the work with the greatest rigidity and without danger of the cutter springing backward from the work.

Another object of the invention is to provide for the withdrawal of the cutter or the rests or both from the work when the cut is completed, so that the tool may recede with the tool slide with the operative parts disengaged from the work.

Still another object of the invention is to secure a quick resetting of the tool to potential working position, and to this end to provide a series of selective stops by means of which the tool and the rests may be set at predetermined positions without loss of time on the part of the operator.

A fourth object of the invention is to so construct the tool that after one cutter has become worn it may be replaced by another and the latter located with facility and with precision with respect to the work and the rests.

Referring to the drawings: Figure 1 represents an end elevation of a tool embodying the invention. Fig. 2 (Sheet 2) represents a plan view of the same. Fig. 3 represents an elevation of the other end of the tool. Fig. 4 represents a horizontal section through the tool and shows the cutter carrier in plan view. Fig. 5 (Sheet 1) represents a vertical longitudinal section through the tool and illustrates the cutter and rest carriers in side elevation. Fig. 6 (Sheet 3) represents a similar section just in the rear of the cutter carrier. Fig. 7 represents an end elevation of the cutter carrier and illustrates a portion of the body and the eccentric bushing in section. Fig. 8 represents a section on line 8—8 of Fig. 6. Fig. 9 represents a partial section through the tool for the purpose of illustrating the end of one of the rest carriers and the adjacent end of the

cutter carrier. Fig. 10 (Sheet 1) represents a section on the line 10—10 of Fig. 5. Fig. 11 represents a section with the stop pin withdrawn and stop ring moved away from the pin. Fig. 12 represents a section on the line 12—12 of Fig. 5. Figs. 13 and 14 represent respectively a spacer and one of the stop rings. Fig. 15 represents the slotted portion of the body in which the levers or links are mounted. Fig. 16 represents the sleeve or member which effects the adjustment of the cutter carrier.

The same reference characters indicate the same or similar parts wherever they occur.

The tool as I have illustrated it consists of a body upon which are pivotally mounted three carriers, one for the cutter, one for the back rest or diameter-determining rest, and one for the top rest which engages the work between the cutter and the back rest so as to prevent its moving laterally under the stress of the cut. These carriers are all moved simultaneously and to the same extent into and out of engagement with the work, although the cutter carrier and the two rest carriers may be adjusted independently of each other when occasion demands. The positions of the cutter and the rests are determined by a selective stop mechanism, so that the instrumentalities referred to may be set in any one of a series of predetermined positions by moving one or the other of a series of stops into active position, the selective stop mechanism being so constructed and arranged that the movement of any one of the stops into active position causes the movement of the remainder of the stops to inactive position.

Proceeding to a more detailed description of the particular embodiment of the invention which I have illustrated: the tool comprises a body 20 which is laterally extended at its base so that it may be firmly bolted or otherwise secured to the tool slide of a lathe. The work carrier 21 consists of a block having in one side a groove or recess 22 for the reception of a cutter 23. The carrier is formed with a pivot stud 24 which is journaled in an eccentric bushing 25 located in a cylindrical aperture in the body 20. A collar 26 is keyed on the stud 24, and bearing against the collar is a nut 27 screwed on the threaded end 28 of said stud, so that by tightening the nut one face of the carrier may be drawn with sufficient pressure against the adjacent flat face of the body.

The bushing 25 may be rotatively adjusted and is clamped in position by a screw pin 29 (dotted lines in Fig. 5) having its end abutting against a wedge block 29^a bearing against the bushing. The bushing is set with its major axis substantially vertical, so that by slightly rotating it in one direction or the other the cutter carrier may be adjusted bodily substantially longitudinally or endwise of the cutter. The cutter carrier is extended beyond the cutting end of the cutter and is formed with a sector-shaped arm 30 having worm teeth cut therein. I shall subsequently describe how the cutter is secured to the cutter block and located with precision with reference to the work and to the rests. 31 (Figs. 5 and 6) indicates another carrier upon which there is mounted a back or diameter-determining rest 32. The carrier is pivoted to the body by a headed pivot stud 33 passed into an aperture in the body and having an eccentric portion near its head on which the carrier itself is pivoted. A screw pin 34 passed into the end of the body engages the pivot stud to hold it in any position to which it may be adjusted. By the employment of the eccentric pivot stud I am enabled to adjust the rest carrier lengthwise. The two studs 24 and 33 are substantially parallel and are approximately close together, so that the two carriers extend in substantially the same direction from their pivots. At its free end the carrier 31 is sector-shaped, as indicated at 35, and is provided with worm teeth. The sector-shaped ends of the two carriers overlap, as shown in Fig. 5. The rest 32 consists of a roller journaled upon a stud 36 and held in place by a threaded screw 37. The portion of the stud 36 on which the roller is journaled is eccentric with respect to the body of the stud, so that when the stud is rotated in its socket in the carrier the rest will be adjusted toward and from the cutter. To effect this rotative adjustment of the stud I provide screw pins 38, 39, (dotted lines in Fig. 5 and Fig. 6) passed into the under side of the carrier 31 and engaging shoulders formed on the stud.

The carrier for the top rest is indicated at 40, and it consists of an arm journaled on a headed pivot stud 41 which is passed through the body of the carrier and held in place by a nut 42, as shown in Figs. 6 and 8. The pivot stud 41 is located near the top of the body and the carrier is pendent therefrom so as to lie at an angle to the carrier 31. Near its lower end it is provided with a pivot stud 43 on the projecting end of which the top rest 44 is journaled, the latter being held in place by a headed screw 45. The carrier 40 is formed with a curved cam portion 46 which is engaged with a finger 47 projecting laterally from the sector-shaped end 35 of the carrier 31. The curvature of

the cam is such that when the carrier 31 is moved upward the finger 47 will ride along its cam and swing the carrier 40 to the right toward the work to precisely the same extent that the carrier 31 is moved. Thus when the back rest carrier is adjusted by mechanism which I will subsequently explain, the top rest is adjusted simultaneously with it. For the purpose of preserving the engagement of the cam 46 with the finger 47, a spring 48 (dotted lines in Fig. 6) located in a socket in the body 20 bears against a pin 49 located in said socket and projecting into an aperture 50 in the body, and said pin 49 in turn bears against a pin 51 projecting laterally from the carrier 40 into the said aperture 50. The other end of the spring bears against a pin 49^a abutting against a lateral pin 49^b projecting from the cutter carrier. The hub or pivoted end of the carrier 40 has an index or point 52 which moves along a graduated scale plate 53 affixed to the top of the body so that the operator may roughly determine the location of the two rests, and the cutter when the latter is moved with them.

For the purpose of simultaneously or independently moving the cutter carrier and the rest carriers, I employ two worms which are indicated respectively at 54, 55. The worm 54 is formed on or secured to the end of a shaft 56 which is inclined obliquely downward from the top of the body, as shown in Figs. 1 and 5 taken in conjunction. The worm 54 engages the worm teeth on the back-rest carrier 31, so that by rotating the shaft the carrier will be moved about its pivot. The worm 55 is formed on a sleeve 57 located upon the shaft, the end of the worm abutting against a shoulder in the body by which it is held against downward movement. The worm 55 engages the worm teeth on the sector-shaped end 30 of the cutter carrier 21. The shaft 56 projects above the top of the body 20 and is provided with a reduced threaded end 58 on which a tapered collar 59 is screwed so as to engage the end of the sleeve 57 and force the worm 55 toward the worm 54 until the confronting faces of both worms abut against the shoulders 60, 61, in the body. A milled disk 62 whose hub has a tapered bore is forced on the collar 59 by a thumb nut 63 threaded on the end 58 of the shaft 56. By rotating the milled disk the sleeve may be rotated independently of the shaft 56 to effect the independent adjustment of the rest carriers. Screwed upon the threaded reduced end of the sleeve 57 is a disk 64 parallel with that at 62, and by rotating said disk 64 the cutter carrier may be adjusted independently of the rest carriers, in which case I can adjust the set screw 95 to engage the worm shaft 56 and hold it and the rest carriers against movement. To

provide, however, for adjusting all the carriers simultaneously the disk 64, which is of greater diameter than the disk 62, is provided with a socket member 65 in which is movably mounted a pin 66 having a cross locking pin 67 one end of which is adapted to engage a notch 68 in the periphery of the disk 62. A spring 69 located in the socket member abuts against the shoulder therein and against the shoulder on the pin 66 so as to hold the pin 66 normally upward with the locking pin 67 engaged with the disk 62. The socket member 65 and the pin 66 which has a head 70 constitute a handle by which the disks may be simultaneously rotated in one direction or the other. It will be observed that the two worms 55 and 54 and the complementary worm teeth on the two carriers 40 and 31 are oppositely threaded so that when the handle just described is moved in one direction or the other the carriers 40 and 31 will be caused to approach toward or recede from each other. On the periphery of the disk 64 is a micrometer scale, and on the body is a pointer or index 64^a which coöperates therewith. By depressing the pin 66 the handle may be rotated to adjust only the rest carriers, and while the pin is thus depressed the disk 62 may be rotated independently of the disk 64 to effect an independent adjustment of the cutter carrier. After the cutter and rest carriers have been adjusted independently of each other to bring the cutter and the rests into a predetermined relation so as to properly engage work of a certain diameter, by loosening the wing nut 63 the disk 62 may be adjusted with reference to the shaft 56 so as to bring its notch 68 in registration with the locking pin 67, after which the thumb nut will be again tightened to secure the disk 62 in place. This adjustment may be desired at times when different cutters are used.

As previously indicated, I employ a selective stop mechanism for quickly locating the cutter and work rests in any one of a series of predetermined positions. This mechanism comprises a series of stop rings 71, 72, 73 and 74 which are loosely journaled upon the sleeve 57 and separated by spacer rings 75. The spacer rings are provided with internal notches or keyways 76 to be engaged by pins 77^a projecting from the sleeve. The sleeve is formed with a shoulder 78^a (see Fig. 16) and the stop rings and spacers are clamped against said shoulder by set screws 79 passed through the disk 64. Each of the stop rings 71, 74, is provided with a projecting stop *a* extending from its periphery, one edge of the stop being beveled as shown by Figs. 10 and 14. By loosening the set screws 79 each of the stop rings may be adjusted rotatively to bring its stop *a* into any desired position with reference to the others

and to the sleeve. For coaction with the stop rings I employ a series of manually movable stop pins 77, 78, 79, 80, which are located in sockets formed in the body and arranged radially and in the plane of the stop rings 71, 72, 73 and 74 respectively. These stop pins have reduced ends projecting through a cover plate 81 affixed to the body so that they are accessible to the operator, in consequence of which he may depress any one of the them to move it into the path of movement of the stop on the adjacent stop ring. I provide devices by which the setting of any one of the pins to active position withdraws the remainder of the pins to inactive position, and this mechanism consists of a series of levers or links, as shown in Fig. 5. Two levers 82, 83, which are approximately bow-shaped extend into the slots in the stop pins 77, 78, and 79, 80, respectively. Bearing against these two levers midway between their ends is a similar lever 84 mounted in a pivot stud 85. These levers are located in a narrow slot 86 formed in the body, as shown in Fig. 15 and Figs. 10, 11 and 12. In general appearance these levers resemble the equalizing doubletrees and whiffletrees of a wagon, but they are so located with respect to each other that the movement of any one of the pins, say for instance 80, to active position swings the various levers about their fulcra so as to force the other stop pins to inactive position, as will be readily understood by an examination of Fig. 5. The provision of this selective stop mechanism makes it possible for the operator to instantly set any one of the stop pins in active position so as accurately to locate the cutter and the rests in the desired positions. The slots in the stop pins are sufficiently long to enable the operator to manually withdraw the active stop pin to inactive position and thereby permit him to impart several rotations to the carrier-moving members to bring the cutter and rests into approximate position with respect to the work. I have stated that the stops on the rings are beveled on one side, and this is done to permit the operator to turn the carrier-moving members reversely to separate the rests and the cutter from the work without withdrawing the active pin. In practice, when the cutter has completed its cut on the work the operator will impart to the two disks a partial reverse rotation to separate the cutter and rests simultaneously from the work and permit the tool to be fed back from the work without scratching it; or, if desired, the operator may by depressing the pin 66 rotate only the disk 64 reversely to withdraw the cutter from the work while leaving the rests in engagement therewith.

Referring now to the cutter: it is my purpose to provide the tool with a plurality

of straight bar cutters rectangular in cross section and to mark on each cutter figures indicating its height or thickness from its bottom face to its top face. The thickness
 5 of the cutter is considerably less than the groove or socket 22 in which it is located, and instead of resting upon the bottom wall of the groove I provide for the cutter being
 10 secured between screws which project into said groove through the top and bottom walls thereof. Each cutter bar has at its extremity a cutting edge, which is at an angle to its top and bottom faces, and constitutes what is commonly known as an end
 15 cutter.

Referring to Fig. 5, 90 indicates what I may for convenience call an abutment screw. It is passed downwardly through the top wall of the groove in the carrier 21, and its
 20 head is provided on its periphery with a graduated scale. The inner end of the screw is flat and it is adapted to be engaged by the top of the cutter 23 approximately at the cutting end thereof in position to take the thrust of the work against the cutter. The
 25 position of this screw determines the position of the cutting edge with reference to the work, and it is intended to be adjusted in or out in accordance with the thickness or height of the cutter, this being indicated by the numeral stamped upon the cutter. 91
 30 indicates what I term a fulcrum screw which is passed through the lower wall of the groove in the carrier 21 so as to engage the under side of the cutter bar at a point farther from the cutting edge than the screw
 35 90. The position of the abutment screw having been determined, the screw 91 is adjusted upwardly until it engages the cutter 23 and holds the top surface of the cutter flat against the bottom of the screw 90. A
 40 screw 92 parallel with that at 90 but farther from the cutting edge than the screw 90 and the screw 91, is passed downward through the upper wall of the groove and, engaging the top of the cutter bar, clamps the cutter
 45 against the abutment screw 90 and the fulcrum screw 91 by slightly tilting it about the latter. Two additional screws 93, 94, which I term clamping or binding screws,
 50 are passed through the bottom and top walls of the groove and are arranged substantially in alinement with each other so as to firmly clamp the cutter bar between them. These
 55 last two screws are depended on for holding the cutter firmly against lengthwise movement, whereas the first three screws which were described are depended upon for the accurate location of the cutting edge. The
 60 five screws are set or actuated in the order described, and it will be noticed that the cutter carrier bears upon it adjacent the several screws the numbers 1, 2, 3, 4 and 5, to indicate to the operator the order in
 65 which they should be adjusted.

By the devices thus described, I provide a quick resetting tool. That is, when a cutter which has become dull has been removed from the holder or carrier and is replaced
 70 by another, the character thereon indicating its thickness enables the operator with ease and despatch to adjust the screw 90 so as to exactly position the cutting nose of the cutter, and place it where the nose of the previous cutter was located.

It will be apparent to any one skilled in the art to which this invention relates, that the tool which I have described possesses numerous advantages, to all of which it is unnecessary to refer. I may, however, point
 75 out that the construction is such that the parts cannot spring but are held rigidly in the positions to which they are adjusted. The body of the tool is a single casting with an aperture for the passage of the work, into
 80 which aperture the two rests and the cutter project. The two main carriers, that is, the cutter carrier and the back-rest carrier, have their respective operative members located to engage the work substantially mid-
 85 way between the ends of said carriers, one end of each carrier being fulcrumed and the other end being moved, so that each constitutes a lever of the second class, in which the fulcrum is at one end, the load
 90 in the middle, and the force applied to the other end. It will likewise be apparent to those skilled in the art that the invention is capable of a variety of embodiments and that some of the parts which I have added
 95 for refinement and for securing substantially ideal conditions may be omitted without departing from the spirit and scope of the invention.

Having thus explained the nature of my said invention, and described a way of constructing and using the same, although without attempting to set forth all the forms in which it may be made or all the modes of its use, what I claim is:

1. A turning tool comprising a body, a cutter, a cutter carrier having a segmental rack, a pivot for pivoting said carrier to said body, a rotatable member journaled on the body, and a worm on said member engaged
 110 with said rack for moving said carrier.

2. A turning tool comprising a body, a cutter, a cutter carrier having a rack, a rotatable member journaled on the body, a worm on said member engaged with said
 115 rack for moving said carrier, and manually-operable mechanism comprising a plurality of stops for stopping the rotation of the worm in any one of a plurality of predetermined positions.

3. A turning tool comprising a body, a cutter carrier having a rack on one end, a pivot connecting the other end of said carrier to said body, a cutter supported on said
 120 carrier between the ends thereof, a rotatable

member journaled on the body, a worm on said member engaged with said rack for moving said carrier, and a manually-operable stop movable into and out of active position for stopping the rotation of the worm in a predetermined position.

4. A turning tool comprising a body, a cutter, a cutter carrier, a rotatable member journaled on said body and operatively connected with said carrier for adjusting it, and a series of stops adapted to be selected for stopping said member in any one of a series of selected positions.

5. A turning tool comprising a body, a cutter, a cutter carrier, a rotatable member journaled on said body and operatively connected with said carrier for adjusting it, a series of stops rotatable with said member, and a series of stops on said body adapted to be selected for engagement with the first-mentioned stops respectively.

6. A turning tool comprising a body, a cutter, a cutter carrier, a rotatable member journaled on said body and operatively connected with said carrier for adjusting it, a series of stop-rings adjustably secured on said member, and a series of stop pins on said body adapted to be selected for engagement with the respective stop-rings.

7. A turning tool comprising a body, a cutter, a cutter carrier, a rotatable member journaled on said body and operatively connected with said carrier for adjusting it, a series of stops rotatable with said members, a series of coacting stop pins on the body, and connections between said pins and actuated by the movement of any one of them to active position for moving the remainder to inactive position.

8. A turning tool comprising a body, a cutter, a cutter carrier, a rotatable member journaled on said body, and operatively connected with said carrier for adjusting it, a series of stops rotatable with said member, a series of coacting stop pins and equalizing links between said pins, constructed and arranged whereby when one of said pins is moved to active position it automatically restores the remainder to inactive position.

9. A turning tool comprising a body, a cutter, a cutter carrier, a rotatable member journaled on said body and operatively connected with said carrier for adjusting it, a work rest, a rest carrier, a rotatable member journaled on said body and operatively connected with said rest carrier for adjusting it, and means for connecting said members to rotate in unison and simultaneously to adjust said carriers.

10. A turning tool comprising a body, a cutter, a cutter carrier, a rest, a rest carrier, said carriers being formed with rack teeth, and worm mechanism mounted on said body and engaged with said rack teeth for adjusting said carriers simultaneously.

11. A turning tool comprising a body, a cutter, a cutter carrier, a rest, a rest carrier, a rotatable member operatively engaged with one of said carriers to adjust it, a rotatable member operatively engaged with the other of said carriers to adjust it, said members being independently rotatable, and means for coupling said members to rotate in unison.

12. A turning tool comprising a body, a work rest, a work-rest carrier having a rack on one end, a pivot connecting said carrier to said body, a rotatable member journaled on the body, and a worm on said member engaged with said rack for moving said carrier.

13. A turning tool comprising a body, a work rest, a work-rest carrier having a rack, a rotatable member journaled on the body, a worm on said member engaged with said rack for moving said carrier, and manually operable mechanism adapted to be selected for stopping the rotation of the worm in any one of a plurality of predetermined positions.

14. A turning tool comprising a body, a work rest, a work-rest carrier having a rack, a rotatable member journaled on the body, a worm on said member engaged with said rack for moving said carrier, and a manually operable stop for stopping the rotation of the worm in a predetermined position.

15. A turning tool comprising a body, a work rest, a work-rest carrier, a rotatable member journaled on said body and operatively connected with said carrier for adjusting it, and a series of stops adapted to be selected for stopping said member in any one of a series of selected positions.

16. A turning tool comprising a body, a work rest, a work-rest carrier, a rotatable member journaled on said body and operatively connected with said carrier for adjusting it, a series of stops rotatable with said member, and a series of stops on said body adapted to be selected for engagement with the first-mentioned stops respectively.

17. A turning tool comprising a body, a cutter, a cutter carrier, a rest, a rest carrier, a rotatable member operatively engaged with one of said carriers to adjust it, a rotatable member operatively engaged with the other of said carriers to adjust it, said members being independently rotatable, a disk connected to each of said members, and means for connecting said disks together.

18. A turning tool comprising a body, a cutter, a cutter carrier, a rest, a rest carrier, a rotatable member operatively engaged with one of said carriers to adjust it, a rotatable member operatively engaged with the other of said carriers to adjust it, said members being independently rotatable, a disk connected to each member to rotate it, and a movable pin carried by one disk and adapted

ed to engage the other disk to connect them together.

19. A turning tool comprising a body, a cutter, a work rest, a sector toothed cutter carrier, a sector toothed rest carrier, pivots
5 connecting said carriers to said body, oppositely threaded worms supported by said body and engaged with said carriers respectively, and means for rotating said
10 worms.

20. A turning tool comprising a body, a cutter, a work rest, a sector toothed cutter carrier, a sector toothed rest carrier, pivots
15 connecting said carriers to said body, oppositely threaded worms supported by said body and engaged with said carriers respectively, and a rotatable member connected to each worm to rotate it independently of the other.

21. A turning tool comprising a body, a cutter, a work rest, a sector toothed cutter carrier, a sector toothed rest carrier, pivots
25 connecting said carriers to said body, oppositely threaded worms supported by said body and engaged with said carriers respectively, a rotatable member connected to each worm to rotate it independently of the other, and means for connecting said members to rotate in unison.

22. A turning tool comprising a body, a cutter, a work rest, a sector toothed cutter carrier, a sector toothed rest carrier, pivots
35 connecting said carriers to said body, oppositely threaded worms supported by said body and engaged with said carriers respectively, rotatable means for rotating said worms in unison, and selective stop mechanism for stopping said means and worms at any one of a plurality of predetermined points in their rotation.

23. A turning tool comprising a body, a cutter, a cutter carrier, a back rest, a back-rest carrier, a top rest, a top-rest carrier, pivots connecting said carriers to said body,
45 and means for simultaneously adjusting said carriers to the same extent.

24. A turning tool comprising a body, a cutter, a top rest, a carrier therefor, a back rest, a carrier therefor, pivots connecting
50 said carriers to said body, one of said carriers having a curved portion and the other engaging said curved portion, whereby the movement of the latter is imparted to the former, and means for moving the second-mentioned carrier.

25. A turning tool comprising a body, a carrier having a socket or recess, a cutter located in said recess, a position-determining abutment screw for engaging the top
60 of the cutter, an oppositely arranged fulcrum screw for engaging the bottom of said cutter and farther from the cutting edge, and a clamping screw for engaging the top of the cutter and still farther from the cutting edge, said screws being threaded into

said carrier and entering said socket or recess.

26. A turning tool comprising a body, a carrier having a socket or recess, a cutter located in said recess, a position-determining abutment screw for engaging the top
70 of the cutter, an oppositely arranged fulcrum screw for engaging the bottom of said cutter and farther from the cutting edge, a clamping screw for engaging the top of the cutter and still farther from the cutting edge, said screws being threaded into said carrier and entering said socket or recess, and oppositely arranged clamping screws with confronting ends for engaging the top
75 and bottom of said cutter at points more remote from its cutting edge, all of said screws being threaded into said carrier and entering said socket or recess, substantially as set forth.

27. A quick resetting turning tool comprising an end cutter consisting of a bar having a cutting edge at its end, a holder for said cutter having an adjustable abutment to engage the end of the cutter adjacent the cutting edge opposite the cutting point, and determine the position of said point, and clamping means for holding said cutter against said abutment whereby the cutting edge is positioned.

28. A quick resetting turning tool comprising a cutter consisting of a bar having a cutting edge at its end terminating in a cutting point, and having a character thereon indicating the thickness of the cutting end of the cutter, and a holder having an adjustable abutment bearing characters to indicate the position of said abutment, said abutment being located on said holder to engage the cutting end of the cutter bar
100 opposite the cutting point, and means for clamping said cutter against said abutment.

29. A turning tool comprising a cutter consisting of a bar having at its end a cutting edge terminating in a cutting point, a holder having an abutment to engage the cutter at its end adjacent the cutting edge, adjustable means for holding said cutter against said abutment and oppositely arranged adjustable means on said holder for
110 engaging said cutter and clamping it to said holder.

30. A quick resetting turning tool comprising a body, a cutter carrier movably mounted on said body to carry the cutter toward and from the work, an end cutter consisting of a bar having a cutting edge at one end, an adjustable diameter-determining abutment on said carrier engaging one of the longitudinal faces of the cutter bar at the cutting end of the said cutter bar to resist the lateral thrust of the cutter, and means for clamping said cutter bar against said abutment.

31. A quick resetting turning tool com- 130

prising a cutter holder, clamps thereon to engage and clamp the cutter, a cutter bar having a cutting edge at its extremity and having its cutting end projecting beyond
5 said clamps, and an abutment on said holder engaging the projecting end of said cutter and resisting the lateral thrust against said cutter.

10 32. A quick resetting turning tool comprising a cutter consisting of a bar having top and bottom longitudinal faces and having a transverse cutting edge at its end, a cutter holder having a recess for the cutter of greater width than the height of the cut-
15 ter bar, an abutment projecting into said recess, and engaging one of said faces of said cutter opposite the point of engagement of the cutting edge with the work to resist the lateral thrust against the end of the cut-
20 ter and to determine the diameter of the work, and clamping devices projecting into

said recess and engaging the top and bottom faces of said cutter to clamp it against said abutment and to hold it against longitudinal movement.

25 33. A quick resetting turning tool comprising a cutter holder, clamps thereon for engaging a cutter, a cutter bar having a symbol thereon indicating its diameter, an adjustable abutment for engaging the end
30 of the cutter behind the nose thereof, and a scale to indicate the position of the adjustable abutment and thereby to enable the operator to adjust the abutment to correspond with the diameter of the cutter.

35 In testimony whereof I have affixed my signature, in presence of two witnesses.

JAMES HARTNESS.

Witnesses:

J. W. BENNETT,

J. W. WALKER.

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