

W. KRAMER,
ATTACHMENT FOR LATHES AND THE LIKE.
APPLICATION FILED OCT. 15, 1913.

1,260,271.

Patented Mar. 19, 1918.
3 SHEETS—SHEET 1.

Fig. 1.

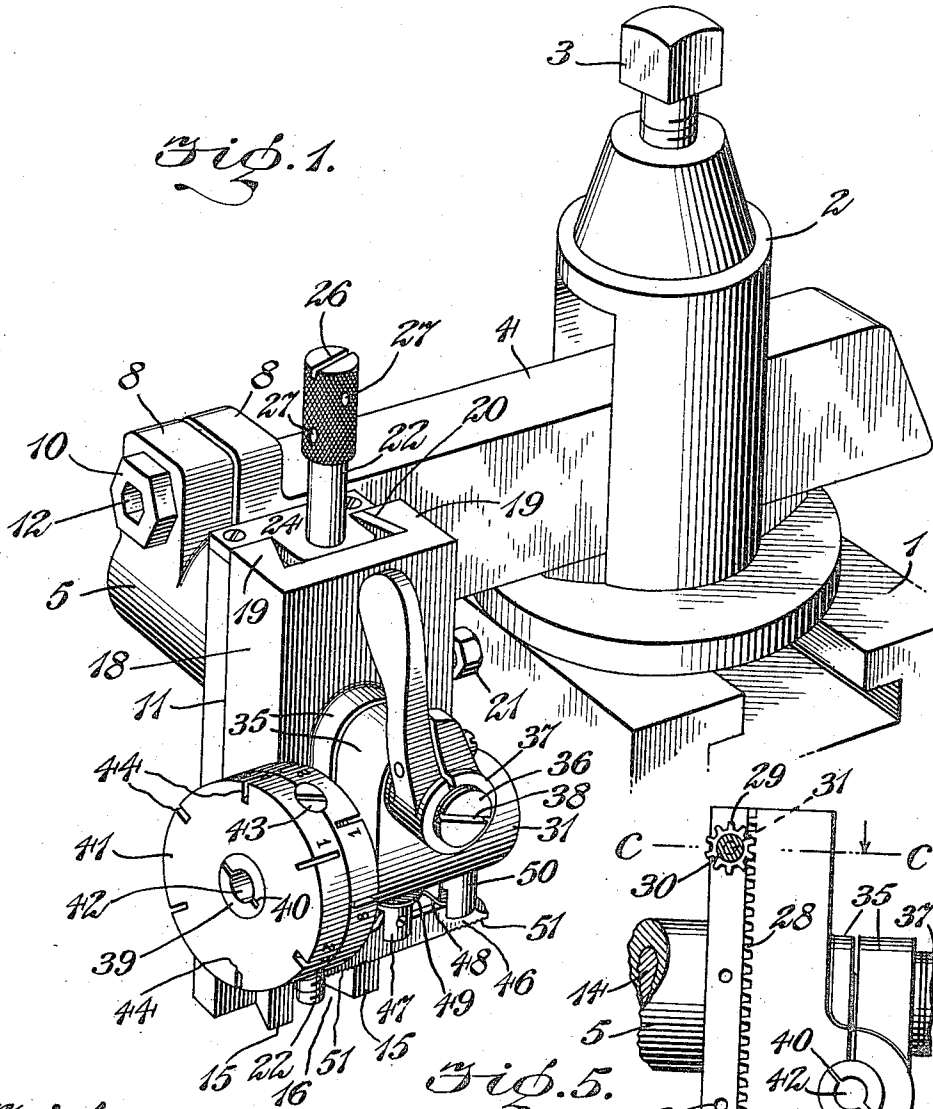


Fig. 5.

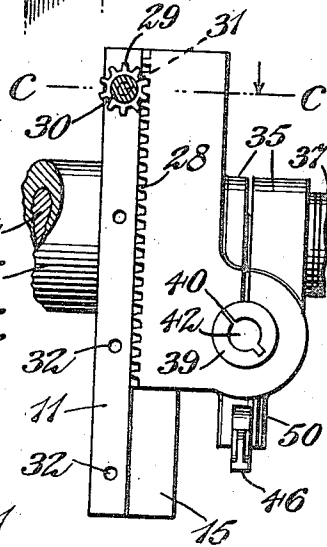
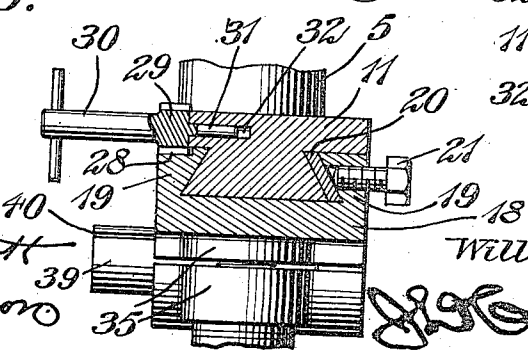


Fig. 6.



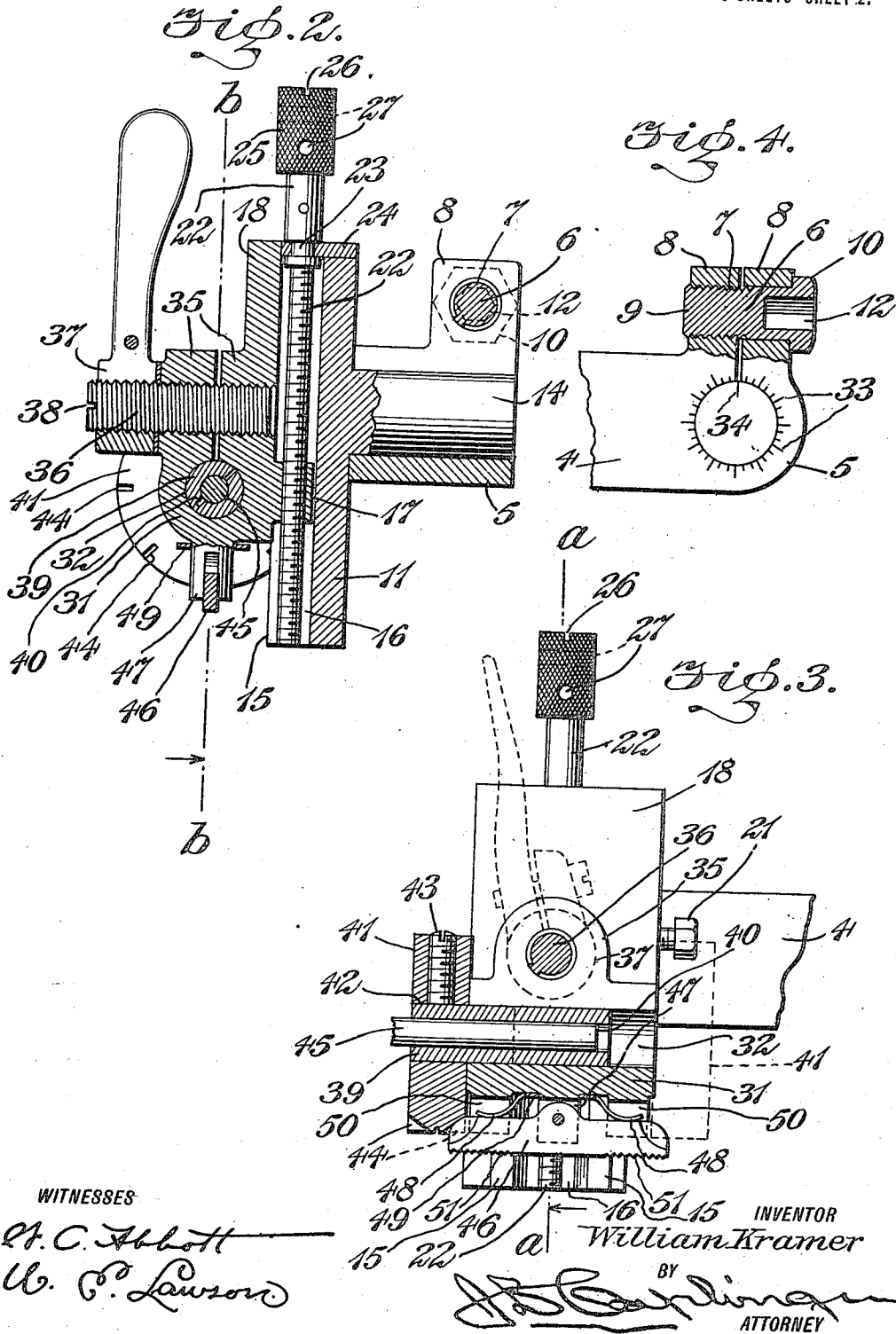
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3 SHEETS—SHEET 2.



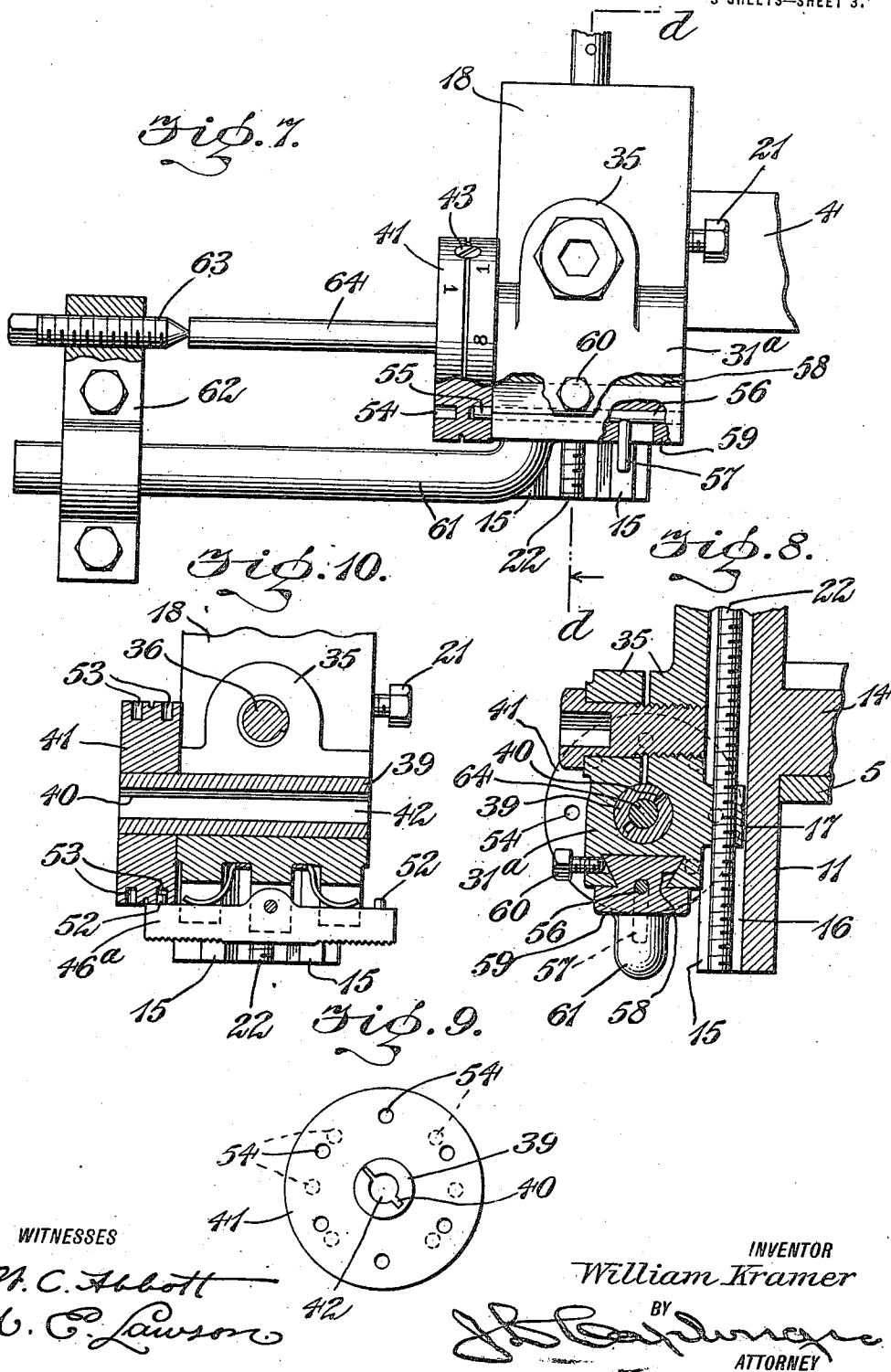
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3 SHEETS—SHEET 3.



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ATTACHMENT FOR LATHES AND THE LIKE.

1,260,271.

Specification of Letters Patent.

Patented Mar. 19, 1918.

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To all whom it may concern:

Be it known that I, WILLIAM KRAMER, a citizen of the United States, and a resident of the city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Attachments for Lathes and the like, of which the following is a specification.

This invention relates to certain improvements in work and tool holding attachments for lathes and the like, and has for its object to provide a device of this general character of a simple and comparatively inexpensive nature, and of a strong compact and durable construction, presenting certain features of novelty and improvement whereby various desirable and accurately gaged adjustments of the work or tool with regard to the operative parts of the lathe or other machine in connection with which the improved attachment is used may be effected in a simple and convenient manner, whereby a material economy in time is attained, and a high degree of accuracy is assured in the performance of the work.

The invention consists in certain novel features of the construction, and combinations and arrangements of the several parts of the improved holder whereby certain important advantages are attained and the device is rendered simpler, less expensive and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In order that my improvements may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein—

Figure 1 is a perspective view showing a tool or work holding attachment constructed in accordance with my invention, applied to the slide rest of a lathe or the like;

Fig. 2 is a sectional view taken vertically through the work or tool holder in the plane indicated by the line *a—*a** in Fig. 3;

Fig. 3 is a sectional view taken through the device in a plane at right angles to the plane of the section in Fig. 2, as indicated by the line *b—*b** in said figure;

Fig. 4 is a fragmentary sectional elevation illustrating features of construction which will be hereinafter described;

Fig. 5 is a fragmentary side elevation illustrating a modified formation of the attachment comprised within my present invention;

Fig. 6 is a sectional view taken through the device shown in Fig. 5 in the plane indicated by the line *c—*c** in said figure;

Fig. 7 is a sectional elevation showing another embodiment of the invention which will be hereinafter described;

Fig. 8 is a sectional view somewhat similar to Fig. 2, but taken through the device shown in Fig. 7 in the plane indicated by line *d—*d** in said figure;

Fig. 9 is a detail view illustrating the structure of certain of the parts shown in Figs. 7 and 8, and

Fig. 10 is a detail sectional view, somewhat similar to Fig. 3, but illustrating a modified formation of the latch mechanism comprised in my present invention.

As shown in the accompanying drawings and with particular reference to Figs. 1 to 4, inclusive, 1 denotes a slide rest of any ordinary or preferred construction provided with the upstanding post 2, to which is adapted to be clamped in the usual manner through the medium of the endwise adjustable part 3, the elongated shank or supporting member 4 of the improved holder, having at one end a split collar or compression bearing 5, the bore whereof is extended at right angles to the length of said shank and is adapted to receive a rotatable stud or pin 14 projecting laterally from the body portion 11 of the attachment, which is thereby adjustably and removably held upon said shank or supporting member. The collar or compression bearing 5 is provided with spaced lips 8, 8, apertured as shown at 7 for the passage of a clamping bolt 6, one end 9 of which has screw engagement with one of said lips, while its opposite end has a head or enlargement 10 bearing upon the other lip 8 so that when the bolt is turned, the bearing will be tightened or loosened to clamp or release the stud or pin 14, in order to hold the body portion 11 securely in adjusted position upon the supporting member. As shown in the drawings, the head 10 of the bolt is of polygonal shape to permit the employment of a wrench to properly manipulate the bolt, but I also find it of advantage to produce in the head end of

the bolt 6 a polygonal recess 12 to accommodate a suitable key, whereby the bolt 6 may be adjusted.

At its surface opposite to the stud or pin 14, the body portion 11 is provided with parallel undercut or dovetail guides 15, 15 extended lengthwise along said member at right angles to the axis of the pin or stud 14, and spaced away from each other to afford a longitudinally directed space or channel 16 adapted to be traversed by a lug or projection 17 upon a carriage 18 which is provided with spaced undercut guides 19, 19 adapted to engage and play lengthwise along said guides 15, 15 of the body portion when the carriage is adjusted relatively to said body portion.

20 is a wear plate interposed between the guides 15 and 19 at one side of the carriage and held in place by means of a screw 21, and 22 represents a shaft traversing the channel 16, having one end collared as indicated at 23 in a projection 24 of the body portion, its opposite end portion being threaded for screw engagement with the lug or projection 17 of the carriage in such a way that turning of said shaft compels adjustment of the carriage lengthwise along the guides 15 of the body portion. The shaft 22 has a head or enlargement 26 apertured at 27 for the reception of a tool by means of which it may be conveniently turned.

I do not wish to be understood as limiting myself to this particular arrangement whereby the carriage 18 may be adjusted upon the body portion 11, as I have found that other means may be employed with advantage; as, for example, the construction shown in Figs. 5 and 6 wherein the carriage is provided with a toothed rack surface 28 extending lengthwise thereof adapted to be engaged by the teeth of a pinion 29 carried upon a rotatable key 30 having a reduced cylindrical terminal extension or stem 31^a adapted for detachable interchangeable engagement in one or another of a series of sockets or bearings 32^a produced at intervals along the length of the body portion in such positions as to afford bearings wherein the extension or stem 31 may be engaged to enable the teeth of pinion 29 to mesh with those of the rack 29 and cooperate therewith to move or adjust the carriage lengthwise along its guides on the body portion when the key is turned. The production of a plurality of said sockets or bearings 32 permits the rack surface to be made much shorter and the carriage much less bulky than would otherwise be necessary, since the key extension may be engaged with that bearing or socket 32 which is opposite to the carriage in any position of adjustment of the latter.

The carriage 18 is provided with a com-

pression bearing 31 herein shown integrally produced upon and projecting from the outer surface of said carriage opposite to the body portion 11 and provided with a bore 32 extended at right angles to the direction of movement of said carriage when adjusted lengthwise along the body portion 11 and to the pin or stud 14 which supports said body portion adjustably within the bearing 5 of the shank or supporting member 4, said bore being adapted for the reception of a tool or piece of work which may thereby be held adjustably in position to operate upon or to be operated upon by a corresponding piece of work or tool supported upon the lathe to which my improved attachment is applied for use.

The bearing 31 has apertured lugs 35 traversed by a pin 36 projecting from the carriage 18 and having a screw-threaded outer end portion engaged by a clamping member 37 which, when turned, operates to tighten the bearing in such a manner as to clamp and hold securely the tool or piece of work within the bore 32, reverse movement of said member operating to release the work or tool as will be readily understood. 39 represents a chuck herein shown in the form of a split sleeve or bushing adjustably and removably held in the bore 32 of the bearing 31, having a bore or passage adapted for the reception of the tool or work to hold the same in position in the bearing, the split formation of said sleeve or bushing, with a longitudinal slot extended radially through one of its sides and partly through it at a diametrically opposite point, as shown at 40, serving to impart a high degree of compressibility to the same such as is calculated to enable the tool or piece of work to be gripped and held securely thereby when the bearing 31 is tightened.

A plurality of such sleeves or bushings 39 may be employed with advantage, interchangeably insertible in the bearing 31 and differing from each other in the diameters of their bores so as to be adapted for employment in holding tools or work of different sizes, but I have deemed it sufficient to illustrate but one of them herein. Where a plurality or series of such bushings or sleeves having bores of graduated diameters are employed in this manner, it will be evident that the compression thereof ensuing upon the operation of the clamping or tightening means for the bearing 31 will enable tools or work not conforming precisely to either one of said sleeves or bushings to be gripped and held securely.

For gaging and indicating the position of the work, I have shown the sleeve or bushing 39 provided with a dial or index member in the nature of a cylindrical head or enlargement 41 having a bore 42 trav-

ersed by said sleeve or bushing, and adjustably held in position thereupon by means of a set screw 43 or equivalent means. The perimetral surface of said head or enlargement is provided adjacent to its opposite ends or faces, with two series of kerfs or recesses 44, 44 adapted for interchangeable engagement with the opposite ends of a flattened latch member 46 centrally pivoted upon a stud 47 depending from the underside of the bearing 31 and adapted, when engaged in one or another of said kerfs or recesses, to hold said head or enlargement, together with the sleeve or bushing whereon the same is secured, in reliable adjustment.

The set screw 43 operates similarly to the bearing 31 to compress the split sleeve or bushing 39 so as to hold the tool or work securely within the bore of said sleeve or bushing irrespective of the clamping action of the bearing 31, so that displacement of the work or tool within the holder is prevented during adjustment of the latter at said bearing, and the recesses of each of the two series 44, 44 are equidistantly spaced, those of one series being, however, greater in number than the recesses of the other series, and it will be seen that this construction and arrangement of the parts permits accurate angular adjustment of the tool or work in the bearing 31 so that, for example, similar equidistant cuts may be produced upon the work by loosening the bearing 31 after the first cut is taken, turning the sleeve or bushing 39 together with the head or enlargement 41 and the work clamped in said sleeve or bushing until the latch 46 is engaged with the desired kerf or recess 44 and then tightening the bearing and taking the next cut. When the sleeve or bushing is released from the bearing, the latch may be disengaged from the kerf or recess 44 previously engaged by it by simple endwise movement of said sleeve or bushing or if desired, said latch may be moved pivotally by the operator to disengage it from such kerf or recess.

The two series of kerfs or recesses 44, 44 are herein shown provided with suitable index characters and the structure is such that when the head or enlargement 41 is at one face of the bearing 31, one of said series of kerfs or recesses is adapted for engagement with one end of the latch 46, and when the sleeve or bushing is reversed within the bearing, so as to position said head or enlargement at the opposite side or face of the bearing, the kerfs or recesses of the same series will be engageable by the opposite end of said latch, whereas if the head or enlargement be thus positioned at the opposite side or face of said bearing without reversing the bushing or sleeve therein, it will be apparent that the latch

46 may be caused to engage with the kerfs or recesses of the other of said series 44.

49 represents an actuating spring for the latch 40 having a circular body portion encircling the stud 47 upon which the latch is pivoted, and provided with ends 48 operatively engaged with the opposite ends of said latch to press them in a direction to engage the kerfs or recesses of said series 44. Obviously when one end of the latch is engaged with one of said kerfs or recesses, pressure beneath the opposite end of the latch will serve to withdraw the latter from said kerf or recess in order that the tool or work within the sleeve or bushing 39 may be turned within the bearing 31 without withdrawal of said sleeve or bushing therefrom. A scale 33 and index 34 may be formed respectively on the end of the pin 14 and the bearing 5 surrounding said pin to indicate the extent of angular adjustment of the carriage.

To maintain the latch member 46 against any undue lateral movement such as might interfere with the accurate adjustment or positioning of the body or member 41, I have shown the opposite end portions of such latch member projecting through the bifurcated posts 50, 50, also depending from the undersurface of the head 31, and in alignment with the pivotal engagement of the latch member 46 with the post 47, the extent of the bifurcations being sufficient to permit such rocking movement of the member 46 as may be requisite for disengagement thereof from any one of the recesses or slots 44, in which an end portion thereof may be engaged and to facilitate this operation of the latch member 46, I have shown the outer under edges thereof serrated, as at 51, 51, for effective pressure of the fingers thereon.

In the embodiment of the invention herein shown, wherein the head or enlargement 41 is adapted to be reversibly positioned at opposite sides of the bearing 31, the employment of the latch device centrally arranged between such opposite positions of the head or enlargement is a matter of material advantage by reason of the simplicity and economy of construction attained and the facility and convenience with which said latch may be employed interchangeably for holding said head or enlargement in adjusted relation in either of said reversed or opposite positions thereof. The employment of the two series of kerfs or notches 44 upon said head or enlargement, each engageable by said latch in one or the other of said opposite or reversed positions of the head or enlargement, is also a feature of material advantage by reason of the simplicity of structure afforded and the facility with which two series of cuts or other operations may be effected in the work by application

of said head or enlargement, without displacement from the work holding sleeve or mandrel, first at one side of the bearing 31 and afterward at the other side thereof.

5 It will also be apparent that according to my invention, in the embodiment herein set forth, alternative means or devices are provided for assuring retention of the work or tool holding mandrel, sleeve or equivalent member accurately positioned, one of these means or devices including the head or enlargement 41 with its screw 43 or equivalent part, which operates as such a means when said work or tool holding member is released from the clamping engagement of the bearing 31 and the interlocking engagement of the latch 46 with its notches or kerfs 44, either upon complete separation of the work or tool holding member from said bearing 20 or otherwise, and co-acts with the latch 46 as such a means or device when said member remains within the bearing 31 and is merely released from the clamping engagement thereof, and the other of such means 25 or devices including the releasable clamping bearing 31 itself, which operates as such a means or device whenever the work or tool holding member clamped therein, is released from the head or enlargement 41 by disengagement of the screw 43 thereof, it being apparent that the first-mentioned retaining means is capable of operation to assure accurate positioning of the work whenever for any reason the sleeve, mandrel, or equivalent member is released or withdrawn from the clamping bearing 31, while the other alternative means or device, including said bearing, serves to assure accurate positioning of the tool or work whenever the mandrel, sleeve, or equivalent member is for any reason released from such first-mentioned means or device, as for example, to permit reversal of the position of the head or enlargement 41 upon said sleeve or mandrel.

45 I do not wish to be understood as limiting myself to any particular character or style of latch member as various other kinds may be employed without departure from my invention. As shown in Fig. 10 of the drawings, the latch member 46^a is provided with pins 52, 52 adapted to be accommodated within recesses or pockets 53, 53 produced in the perimeter of the member 41, said recesses or pockets 53, 53 being disposed as set forth with reference to the recesses or slots 44, 44, while in Figs. 7, 8, and 9, I show the body 41 provided with recesses or pockets 54, 54 produced in the opposite faces thereof adjacent the periphery thereof and adapted to accommodate one or the other of the opposite end portions 55 of the sliding latch 56 which are positioned at opposite sides of the bearing 31 for engagement with the head or enlargement in one or the other of its opposite or reversed positions as

will be readily understood. The latch when thus constructed may be moved endwise in either direction to engage its respective end portions with the head or enlargement, under control of the finger piece 57. 70

As shown in Figs. 7, 8 and 9, my invention also contemplates the provision of means whereby work of unusual length may be the more effectively and reliably supported with a view to preventing such flexure or vibration thereof as might tend to interfere with accuracy either in laying out or performing the desired cutting or other operations, and as shown in these views, the underside of the bearing 31^a is grooved 80 to afford an undercut or dovetail guideway 58 in which is mounted a removable slide or bearing member 59, which as herein shown carries the latch 56 and is adapted to be locked securely in position by means of a set screw 60. 85

The slide or bearing member 59 is provided with an elongated arm or extension 61, directed parallel with the axis of the work supporting sleeve, mandrel, or other member, and provided with a terminal support 62 secured upon it and capable of longitudinal adjustment along said arm or extension, said support having its projecting extremity provided with a screw 63 or equivalent means for releasable and adjustable engagement with the projecting end of the work opposite to the work holding member, and being axially aligned with the latter so as to permit turning of the work, indicated at 64 in Fig. 7, so that the same may be operated upon at different circumferential points, while being effectively supported at its opposite ends to overcome such tendency to vibration or flexure as might give rise to inaccuracy. 100 105

The slide or bearing member 59 being removably supported in the guideway 58 may be removed and replaced in reversed position in the event that the arm or extension is not desired for use or in case said arm or extension should interfere with the convenient accomplishment of any particular operations, and it will be evident that when it is desired to remove the work or tool holding member from one side of the bearing 31 and to reapply the same for further operation at the opposite side of said bearing, the member 59 may also be removed from the guideway and re-applied thereto in reversed position in order that its arm or extension 61 shall project at the proper side of said bearing for effective support of the work or tool. 110 115 120

From the foregoing description of my improvements it will be obvious that a holder constructed in accordance with my invention is of an extremely simple and comparatively inexpensive nature and is particularly well adapted for use by reason of 125 130

the convenience with which the various adjustments desired may be made and the accuracy with which work may be laid out and performed and it will also be obvious from the foregoing description that my improved holder is susceptible of some change and modification without material departure from the spirit and principles of my invention and for this reason I do not wish to be understood as limiting myself to the precise formation and arrangement of the several parts as herein shown in carrying out my invention in practice except as set forth in the appended claims.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described having a laterally directed supporting member adapted to be mounted at the slide rest of a lathe or the like, a connection angularly adjustable upon said supporting member and capable of longitudinal adjustment, a pivotally adjustable work holder reversibly supported upon said connection, and a double ended latch adapted to engage said work holder in either position of the latter, for the purpose set forth.

2. A device of the character described having a laterally directed supporting member adapted to be mounted at the slide rest of a lathe or the like, a guide member carried upon said supporting member, a carriage adjustable lengthwise along the guide member angularly to said laterally directed supporting member, a work holder pivotally adjustable upon said carriage and means for rigidly clamping said work holder in different positions upon the said carriage.

3. A device of the character described having a laterally directed supporting member adapted to be mounted at the slide rest of a lathe or the like, a guide member carried upon said supporting member, a carriage adjustable lengthwise along said guide member angularly to said laterally directed supporting member, a rotatable work-holder supported by said carriage, means for rigidly clamping said work holder in different positions upon the said carriage, and means for moving said carriage lengthwise along said guide member.

4. A device of the character described having a laterally directed supporting member adapted to be mounted at the slide rest of a lathe or the like, a guide member pivotally adjustable upon said supporting member, a carriage adjustable lengthwise along said guide member in a direction angular to said laterally directed supporting member, a work holder pivotally supported upon said carriage and means for rigidly clamping said work holder in different positions upon the said carriage.

5. A device of the character described

having a laterally directed supporting member adapted to be mounted at the slide rest of a lathe or the like, a guide member carried upon said supporting member, a carriage adjustable lengthwise along the guide member angularly to the laterally directed supporting member, and spaced relatively adjustable work holding devices supported upon the carriage, one of said devices comprising a clamp formed upon the said carriage.

6. A device of the character described comprising a supporting member adapted to be mounted at the slide rest of a lathe or the like, a guide member carried by said supporting member, a carriage adjustable lengthwise along said guide member, a compression head formed upon said carriage and having a contractible boring therein, a contractible work-holding sleeve mounted in said boring, and means for contracting the said boring and sleeve therein to change the work against rotary movement.

7. A device of the character described comprising a supporting member adapted to be mounted at the slide rest of a lathe or the like, a guide member carried by said supporting member, a carriage adjustable lengthwise along said guide member, a compression head formed upon said carriage and having a contractible boring therein, a contractible work-holding sleeve mounted in said boring, and means for contracting the said boring and sleeve therein to clamp the work against rotary movement, and latching means carried partially by said work-holding sleeve and said carriage to hold said sleeve in a predetermined position prior to the operation of said clamping means.

8. A device of the character described comprising a supporting member adapted to be mounted at the slide rest of a lathe or the like, a guide member carried by said supporting member, a carriage adjustable lengthwise along said guide member, a compression head formed upon said carriage and having a contractible boring therein, a contractible work-holding sleeve mounted in said boring, and means for contracting the said boring and sleeve therein to clamp the work against rotary movement, and latching means carried partially by said work-holding sleeve and said carriage to hold said sleeve in a predetermined position prior to the operation of said clamping means, said latching means comprising a collar fixed upon the said sleeve and having the periphery thereof formed with a series of spaced notches, and a spring-pressed latch mounted on the carriage and adapted to engage with said notches.

9. A device of the character described having a supporting member adapted to be mounted at the slide rest of a lathe or the like and provided with a bearing, a work

holder reversibly supported in said bearing, and devices carried, respectively, by said bearing and the work holder capable of operation to position the latter in said bearing in each of the reverse adjustments of said work holder in the bearing.

10. A device of the character described having a supporting member adapted to be mounted at the slide rest of a lathe or the like and provided with a bearing having a clamping device, a work holder reversibly mounted in said bearing and adapted to be clamped in either of its reverse adjustments by the clamping device thereof, and devices, carried, respectively, by said bearing and the work holder capable of operation to position the latter in the bearing in each of the reverse adjustments of the work holder in the bearing.

11. A device of the character described having a supporting member adapted to be mounted at the slide rest of a lathe or the like and provided with a bearing having a clamping device, a work holder removably mounted in the bearing and with which said bearing has clamping engagement when its clamping device is operated, to retain the work holder in adjusted position in said bearing, and devices carried, respectively, by the bearing and said work holder, capable of engagement independently of the clamping engagement of the bearing with a work holder, to assure retention of the work holder in adjusted relation when released from clamping engagement of the bearing.

12. A device of the character described having a supporting member adapted to be mounted at the slide rest of a lathe or the like and provided with a bearing, a work holder mounted in said bearing and where-with said bearing has releasable positioning engagement to retain the work holder in adjusted relation, and devices carried, respectively, by the bearing and said work holder, capable of engagement independently of the positioning engagement of the bearing with the work holder to assure retention of the latter in adjusted relation when released from positioning engagement of said bearing.

13. A device of the character described having a supporting member adapted to be mounted at the slide rest of a lathe or the like and provided with a bearing, a work holder mounted in said bearing and where-with said bearing has releasable positioning engagement to retain the work holder in adjusted relation, and means to assure retention of the work holder in adjusted relation when released from the positioning engagement of said bearing, including a detent on

said bearing, and a dial upon the work holder with which said detent has releasable engagement.

14. A device of the character described having a supporting member adapted to be mounted at the slide rest of a lathe or the like and provided with a bearing, a work holder mounted in said bearing and where-with said bearing has releasable positioning engagement to retain the work holder in adjusted relation, and means to assure retention of the work holder in adjusted relation when released from the positioning engagement of said bearing, including a detent on said bearing, and a dial adjustably mounted upon the work holder having plural series of recesses wherewith said detent is interchangeably engageable in different positions of adjustment of the dial upon the work holder.

15. A device of the character described having a supporting member adapted to be mounted at the slide rest of a lathe or the like and provided with a bearing, a work holder reversibly insertible in the bearing and wherewith said bearing has releasable positioning engagement to retain the work holder in adjusted relation in each of the reversed positions of the work holder, and devices carried, respectively, by the bearing and said work holder, capable of engagement independently of the positioning engagement of the bearing with the work holder to assure retention of the latter in adjusted relation in each of its reversed positions in the bearing when released from the positioning engagement of the latter.

16. A device of the character described having a supporting member adapted to be mounted at the slide rest of a lathe or the like and provided with a bearing, a work holder reversibly insertible in the bearing and wherewith the latter has releasable positioning engagement to retain the work holder in adjusted relation in each of its reversed positions in said bearing, and means to assure retention of the work holder in adjusted relation in each of its reversed positions in the bearing when released from the positioning engagement of said bearing therewith, including a detent on said bearing and a dial upon the work holder with which the detent has releasable engagement in each of the reversed positions of the work holder in said bearing.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM KRAMER.

Witnesses:

W. E. LAWSON,
W. C. ABBOTT.