

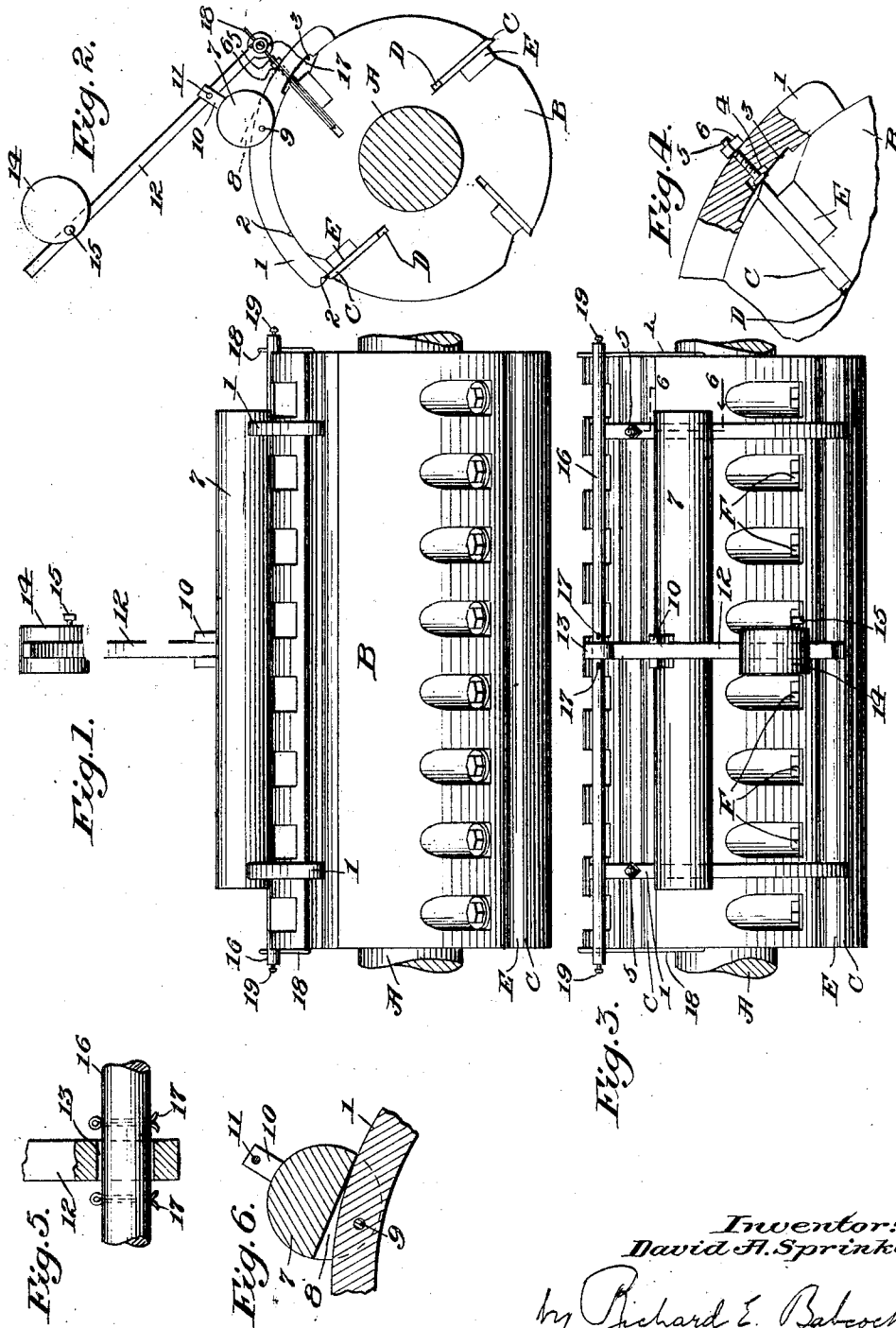
May 1, 1928.

1,668,431

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PLANER CYLINDER CUTTER BIT ADJUSTING AND SETTING GAUGE

Filed Sept. 2, 1927



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## UNITED STATES PATENT OFFICE.

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PLANER-CYLINDER-CUTTER-BIT ADJUSTING AND SETTING GAUGE.

Application filed September 2, 1927. Serial No. 217,188.

This invention relates to adjusting and setting gauges for the knives or bits of rotary cutters, more particularly the bits of rotary planing cylinders.

Heretofore various gauges of different types for obtaining a proper setting of the bits have been known, but in most instances these only had provision for checking up successively the end portions of a given bit, and did not have any provision for adjusting the bit itself. Further, most of these prior known devices provided merely for checking up a particular bit in relation to the body of the planer cylinder and not with relation to the other bits or the next adjacent bit of the cylinder, and this is true of all of those rather limited instances in which provision is made for checking up both ends of the bit simultaneously.

The main objects of this invention are to provide a one-man adjusting and setting gauge for the purpose mentioned and which will hold the bit in adjusted position, permitting the operative free use of both hands in order to quickly adjust the usual bit clamping or locking means of the planer cylinder; to provide a tool for simultaneously adjusting and setting both ends of a particular bit with particular relation to the corresponding portions of the next adjacent bit, whereby all bits of the cylinder may be successively correspondingly set with relation to each other; to provide a simple construction of gauge and adjuster for automatically moving a particular bit to a predetermined point with relation to the next adjacent bit; to provide in such a device a simple construction whereby the bit adjusting means will also act to hold the device as a whole in proper relation with respect to the planer cylinder and bits thereof with which said device is in contact; to provide means for adjusting the positions of the stops or contact surfaces of the gauge for limiting the outward movement of the bits by said adjusting means; to provide adjustable means for engaging the bit to adjust the latter; and to provide a tool for use in connection with a variety of different types of planer cylinders of approximately the same diameter, all of which objects, among others, are accomplished by the construction, combination and arrangement of parts, all as hereinafter more particularly set forth, described and claimed.

In this application I show and describe

only the present preferred embodiment of my invention, simply by way of illustration of the practice thereof as by law required. However, I recognize that my invention is capable of other and different embodiments, and that the various details thereof may be modified in various ways, all without departing from my said invention; therefore, the drawing and description herein are to be considered merely as illustrative and not as exclusive.

In the accompanying drawings:

Figure 1 represents a front elevation of a planer cylinder with an adjusting and setting gauge embodying my invention applied thereto for the purpose of adjusting and setting the bits of said cylinder with respect to each other;

Figure 2, an end elevation of said planer cylinder and adjusting and setting gauge as arranged in Figure 1;

Figure 3, a top plan view of Fig. 1;

Figure 4, an enlarged fragmentary detail view of one of the arcuate plates, partially broken away, and the adjacent portion of the planer cylinder;

Figure 5, a fragmentary plan view of the medial portion of the adjusting crossbar, showing the end of the operating lever with the eye or yoke thereof partially broken away to illustrate the loose fit of said bar in said eye or yoke; and

Figure 6, a detail fragmentary sectional view through the crossbar 7 and an arcuate plate 1 on the line 6—6 of Fig. 3.

Referring now in detail to the drawings, A represents the planer cylinder shaft; B, the planer cylinder; C, the planer bits fitting in sockets D; E, the bit-clamping blocks; and F the means for operating upon said blocks E to clamp or lock the bits C in adjusted position or to release the same to permit adjustment thereof.

Thus far all parts above specifically referred to by designating letters are old and well known constructions not forming any part of my invention, but simply conventionally shown to demonstrate more clearly the operation of my invention, its manner of use and function.

In the illustrated embodiment of my invention 7 designates a heavy crossbar transversely slotted or grooved in each end portion, as at 8, on the same side of its axis, said slots 8 being of the same size, shape and depth and being in registry in an axial

direction. Two plates 1 having inner faces corresponding to the external peripheral contour of the planer cylinder B, being arcuate in the embodiment illustrated, are mounted respectively in said slots 8 and secured therein by the respective pivot pins 9 extending through the respective end portions of said bar 7 into or through said plates 1 respectively, the radially inner walls of said slots 8 preferably being straight and thus providing for a rocking movement between said bar 1 and plates 7 which in the embodiment illustrated have arcuate outer faces, and the said pivot pins 9 having a common axial line parallel to the axis of said bar 7 and the said arcuate plates 1 fitting so snugly between the radial walls of said slots 8 as to prevent any substantial relative movement axially of said bar.

Midway of its length said bar 7 is provided with a pair of lugs 10 extending forwardly at an angle of about 45 degrees to said radially inner walls of said slots 8 and on the opposite side, with relation thereto, of the axis of said bar 7, and a lever 12 is pivotally mounted between said lugs 10 by means of a pivot pin 11 extending through said lugs and the intervening portion of said lever 12 and parallel to the axis of said bar. The forward end of said lever 12 is formed with an eye or yoke 13 to loosely receive the rigid adjusting bar 16, two cotter pins 17 passing through said adjusting bar 16, one on either side of said eye or yoke 13, acting as end-movement stops serving to maintain the medial portion of said adjusting bar 16 in said yoke.

The end portions of said adjusting bar 16 are transversely bored to receive the adjusting hook rods 18 and are axially bored and internally screw threaded to receive screws 19 adapted to project respectively into said transverse bores to engage and clamp said hook-rods 18 in any desired position of adjustment.

A weight 14 is mounted, preferably on the upper side of the rear end portion of said lever 12, and is held in such adjusted position lengthwise thereof as may be found most suitable for a particular planer cylinder bit C by means of a clamping or friction screw 15 turning through a portion of said weight and engaging against the portion of said lever 12 in the slot of said weight to clamp said lever 12 in said slot, or by any equivalent means.

The arcuate plates 1 have their rear end portions notched, as at 2, in alignment in an axial direction, and may have their inner faces provided with one or more axially aligned pairs of notches 2 for use with planer cylinders of the same diameter, but with different numbers of, and hence differently peripherally spaced, cutter bits C.

The forward inner face portions of said

arcuate plates 1 are formed with a pair of axially aligned, long recesses 3 to receive the respective end portions of the edge of the cutter bits C as said bits C are successively adjusted, the depth of said recesses 3 limiting, of course, the extreme outward adjustment of said cutter bits C.

However, in order to provide for a wide range of setting of the bits, I provide adjustable strikes or stops comprising a head 4 located in said recesses respectively in such position as to engage the edge of the bit being adjusted and having a screw threaded stem 5 of smaller diameter extending radially through the respective arcuate plates 1 and in screw thread engagement therewith and respectively receiving on their outer ends lock nuts 6 adapted to bear against the outer faces respectively of said arcuate plates 1 and so lock said stops in any one of an infinite number of positions of adjustment, giving a wide range of very delicate possible adjustments.

The inner faces of the respective recesses 3 are countersunk concentric with the respective stems 5 and strikes or stops 4 to permit the latter to be adjusted flush with the adjacent portions of the peripherally extending faces of said recesses 3 respectively.

From the foregoing it will be obvious that when the gauge and adjuster is placed with the inner faces of the plates 1 against a planer cylinder A with one axially aligned pair of notches 2 of said plates 1 fitting squarely against the edge of a bit C and with the adjacent bit C released for adjustment and the adjusting hooks 18 hooked under the ends thereof, all as shown in Fig. 2, on release of the lever 12 the weight 14 thereof will force the rear end of said lever 12 down toward the cylinder A, pulling the front end of said lever upward, and consequently the bit C being adjusted upward until the edge of its respective end portions strikes against the stops 4, which act to simultaneously set both end portions, so that the cutting edge of said bit C as a whole is parallel with the adjacent bit C received in said notches 2, and will hold said bit being adjusted in such set or adjusted position without further attention, so that the operative is left free to answer any interruption or to get any necessary tools and to use both hands in turning up the usual clamping block adjusting means F without need of assistance.

Of course, should the bit C being adjusted be stuck, as by a film of oil or grease, in its socket D the operator may depress the rear end of the lever 12 by hand, simply relying on the weight 14 to hold it down after being moved to the desired position.

Of course, the weight 14 may be adjusted to any desired position endwise of the rear arm of the lever 12 as may be necessary to

compensate for the weight of the respective cutter bits C of a particular planer cylinder.

It will be obvious from the above description, also from the illustration in Fig. 2, that the weight 14 also acts to hold the gauge and adjuster device as a whole in proper arranged relation on the planer cylinder.

Also, it is obvious that the rocking connection between the crossbar 7 and the arcuate plates 1, while of such nature as to effectually prevent relative movement between said parts axially of said bar 7, permits a limited endwise movement, as a whole, of the lever 12 with the adjusting bar 17 and adjusting hooks 18, which construction, in cooperation with the loose connection between said lever 12 and adjusting bar 17, permits said parts to be freely moved to a variety of positions to compensate for the variation in angle of mounting of the bits C as embodied in various well known planer cylinders now in general use.

However, while such rocking construction is preferred, and results in a more efficient device for use with a number of different makes of planer cylinders, it is not of vital importance, particularly where the device is to be used on a single size and construction of planer cylinder, and in fact in such circumstances the bar 7 and plates 1 might be made integral. In such case, though, the conditions must be ideal, with the bits C parallel to the axis of the planer cylinder A, and the outer peripheral face of the latter exactly true, and the device itself must be true. In many planer cylinders, particularly after use, and in others due to inherent features of construction, such ideal conditions do not obtain; and it is, therefore, in such cases so highly desirable as to be almost essential that the gauge have some provision for relative movement between the respective arcuate plates 1, or one of them, and the bar 7.

Further, if the arcuate plates 1 and bar 7 were made all integral there would be risk of their being sprung and so getting out of true, though so long as true and used under the ideal conditions mentioned it would function in a highly satisfactory manner.

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

1. A planer-cylinder cutter-bit adjusting and setting gauge comprising two plates adapted to rest against the outer peripheral face of the planer-cylinder adjacent the respective ends thereof, and a crossbar connected to said plates for rocking motion with relation thereto in a direction parallel to the axis of said bar, said plates being adapted to engage the respective end portions of the edge of a cutter-bit and being provided with a pair of axially aligned recesses respec-

tively adapted to span the respective corresponding portions of an adjacent cutter-bit, in combination with means mounted on said crossbar and adapted to engage said last mentioned cutter-bit and to automatically raise the latter to project a predetermined distance into said recesses and to hold it in such position.

2. A planer-cylinder cutter-bit adjusting and setting gauge comprising two plates adapted to rest against the outer peripheral face of the planer-cylinder adjacent the respective ends thereof, and a crossbar connecting said plates, said plates being adapted to engage the respective end portions of the edge of a cutter-bit and being provided with a pair of axially aligned recesses respectively adapted to span the respective corresponding portions of an adjacent cutter-bit, in combination with means for engaging said last mentioned cutter-bit and automatically raising it to project a predetermined distance into said recesses and to hold it in such position.

3. A planer-cylinder cutter-bit adjusting and setting gauge comprising two plates adapted to rest against the outer peripheral face of the planer-cylinder adjacent the respective ends thereof, and a crossbar connecting said plates, said plates being adapted to engage the respective end portions of the edge of a cutter-bit and being provided with a pair of axially aligned recesses respectively adapted to span the respective corresponding portions of an adjacent cutter-bit, in combination with means for engaging said last mentioned cutter-bit and acting to pull the latter toward said plates and to force said plates toward said planer-cylinder.

4. A planer-cylinder cutter-bit adjusting and setting gauge comprising two plates adapted to rest against the outer peripheral face of the planer-cylinder adjacent the respective ends thereof, and a crossbar connecting said plates, said plates being adapted to engage the respective end portions of the edge of a cutter-bit and being provided with a pair of axially aligned recesses respectively adapted to span the respective corresponding portions of an adjacent cutter-bit, in combination with a lever pivotally mounted on said crossbar, an adjusting bar loosely mounted in the forward end of said lever, means depending from the respective end portions of said adjusting bar and adapted respectively to engage the respective end portions of the last mentioned cutter-bit to adjust the latter, and means acting on said lever to hold said last mentioned cutter-bit in adjusted position.

5. A planer-cylinder cutter-bit adjusting and setting gauge comprising two plates adapted to rest against the outer peripheral face of the planer-cylinder adjacent the

respective ends thereof, and a crossbar connected to said plates for rocking motion with relation thereto, said plates adapted to engage the respective end portions of the edge of a cutter-bit and being provided with a pair of axially aligned recesses respectively adapted to span the respective corresponding portions of an adjacent cutter-bit, in combination with means mounted on said crossbar for engaging said last mentioned cutter-bit to move it into, and hold it in, adjusted position with relation to the first mentioned cutter-bit.

6. A planer-cylinder cutter-bit adjusting and setting gauge comprising two plates adapted to rest against the outer peripheral face of the planer-cylinder adjacent the respective ends thereof, and a crossbar connected to said plates for rocking motion with relation thereto, said plates being adapted to engage the respective end portions of the edge of a cutter-bit and being provided with a pair of axially aligned recesses respectively adapted to span the respective corresponding portions of an adjacent cutter-bit, in combination with a lever pivotally mounted on said crossbar, an adjusting bar loosely mounted in the forward end of said lever, means connected to the respective end portions of said adjusting bar and adapted respectively to hook under the respective end portions of the last mentioned cutter-bit, and means for moving said lever about its pivot for adjusting said last mentioned bit and holding it in adjusted position.

7. A planer-cylinder cutter-bit adjusting and setting gauge comprising two plates adapted to rest against the outer peripheral face of the planer-cylinder adjacent the respective ends thereof, and a crossbar connected to said plates for rocking motion with relation thereto in a direction parallel to the axis of said bar, said plates and bar being so related as to prevent relative movement axially of said bar, said plates being provided with an axially aligned pair of notches respectively adapted to snugly receive the respective end portions of the edge of a cutter-bit and with a pair of axially aligned recesses respectively adapted to span the respective corresponding portions

of an adjacent cutter-bit, in combination with a lever pivotally mounted on said crossbar, an adjusting bar loosely mounted in the forward end of said lever, adjusting hooks depending from the respective end portions of said adjusting bar and adapted respectively to hook under the respective end portions of the last mentioned cutter-bit, and a weight mounted on said lever to the rear of its point of pivotal connection to said crossbar.

8. A planer-cylinder cutter-bit adjusting and setting gauge comprising two plates adapted to rest against the outer peripheral face of the planer-cylinder adjacent the respective ends thereof, a crossbar connected to said plates for rocking motion with relation thereto in a direction parallel to the axis of said bar, said plates and bar being so related as to prevent relative movement axially of said bar, said plates being provided with an axially aligned pair of notches respectively adapted to snugly receive the respective end portions of the edge of a cutter-bit and with a pair of axially aligned recesses respectively adapted to span the respective corresponding portions of an adjacent cutter-bit, stops arranged in said recesses respectively and adapted to be respectively engaged by the respective end portions of the edge of the latter cutter-bit, means respectively engaging said plates for adjusting said stops, and means for locking the latter means, in combination with a lever pivotally mounted on said crossbar, an adjusting bar loosely mounted in the forward end of said lever, adjusting hooks depending from the respective end portions of said adjusting bar and adapted respectively to hook under the respective end portions of the last mentioned cutter-bit, means for adjusting said hooks with relation to said adjusting bar, and a weight adjustably mounted on said lever to the rear of its point of pivotal connection to said crossbar.

In testimony whereof, I have signed my name to this specification at Columbia, South Carolina, this 1st day of August, 1927.

DAVID A. SPRINKLE.