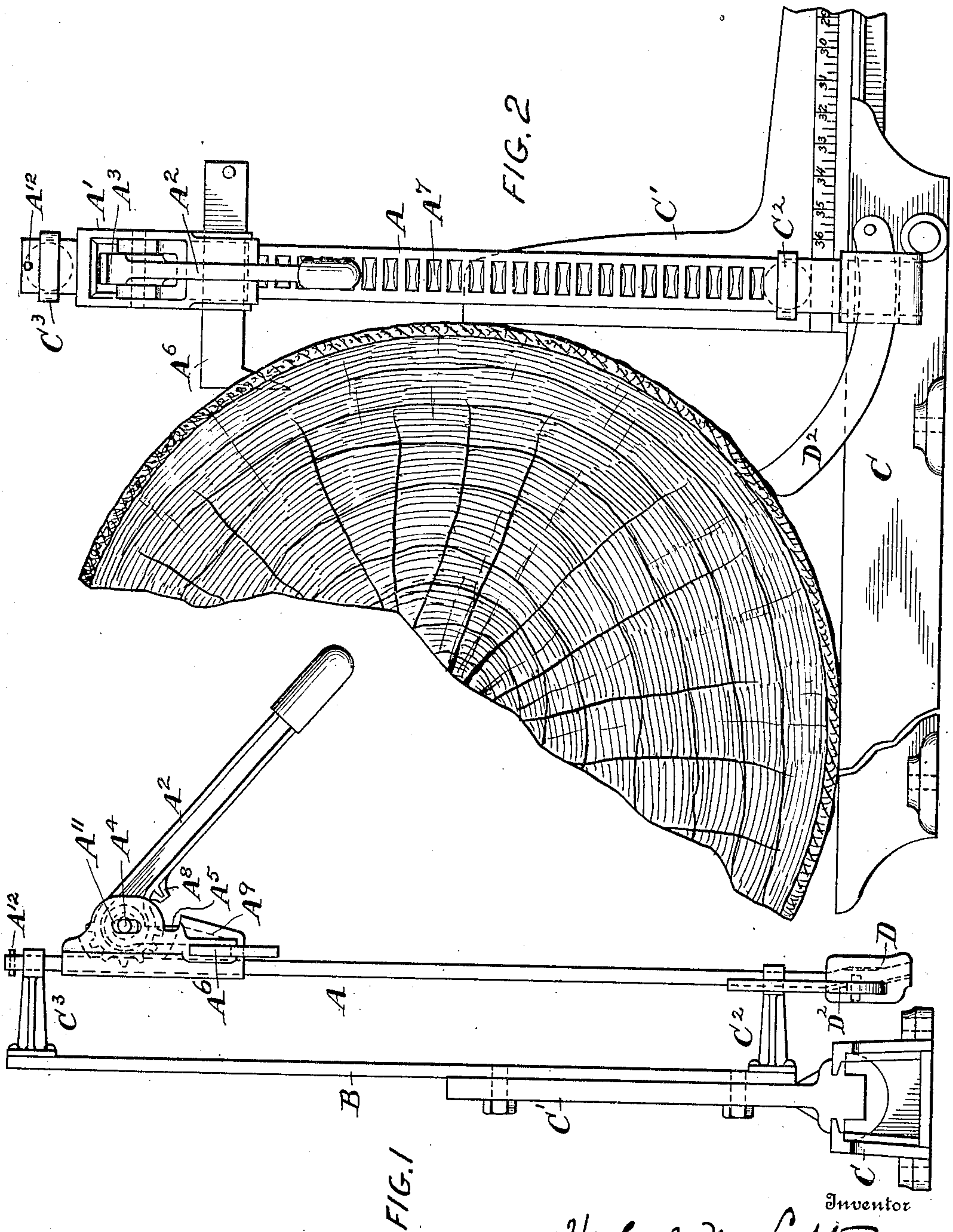


912,696.

H. M. LOFTON.
SAWMILL DOG.
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2 SHEETS—SHEET 1.



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UNITED STATES PATENT OFFICE.

HERBERT M. LOFTON, OF ATLANTA, GEORGIA.

SAWMILL-DOG.

No. 912,696.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HERBERT M. LOFTON, a citizen of the United States, and a resident of the city of Atlanta, county of Fulton, State of Georgia, have invented an Improvement in Sawmill-Dogs, of which the following is a specification.

My invention has reference to sawmill dogs and consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The object of my invention is to provide a sawmill dog which shall be automatic in the operations of its detail parts both of the upper and lower bits under the simple operation of a hand lever.

My object is also to provide a capacity to the dog such that it may perform a triple function as more fully set out hereinafter.

My invention consists of a knee combined with a vertically movable rack-bar, a cross-head carrying an adjustable bit movable on the rack-bar, a gripping bar on the cross-head for clamping the bit and a hand lever having a sector engaging the rack-bar and operating to simultaneously move the gripping bar and cross-head; also in the above structure combined with a lower movable bit-head carrying a bit and adapted to clamp the bit in adjusted position by cam action of the rack-bar upon the bit-head.

More generically, my invention consists of a vertically adjustable bar, combined with upper and lower bits, and hand operated devices for automatically causing said bits to be moved toward each other to dog the timber and also to be clamped to said bar.

My invention also comprehends details of construction which, together with the features above specified, will be better understood by reference to the drawings, in which:—

Figure 1 is a front elevation of a sawmill dog embodying my invention; Fig. 2 is a side elevation of the same; and Figs. 3, 4, 5 and 6 are sectional elevations of parts of the same on a larger scale.

The dog is attached to what is known as the "knee", which is arranged to slide in the head-block C, in the usual manner. The working parts of the dog are supported by the main upright bar B bolted to the knee C' and having horizontal standards C² and C³. The rack-bar A is arranged to work vertically in slots provided in the outer ends

of the standards C² and C³, as is shown in Figs. 1 and 2. A cross-head A' is arranged to slide on the rack-bar A vertically and is provided with a slot for supporting and guiding the bit A⁶ which may be adjusted horizontally. The upper end of the cross-head is provided with housings A¹⁰ which have the vertical slotted holes A¹¹. A lever A² is pivoted in the housings and is provided with the toothed sector A³ which engage the teeth A⁷ of the rack-bar A. This lever is also provided with the pin A⁴, which is intended to work freely in the slotted holes A¹¹. The cross-head A' is also provided at its lower end with housings for carrying the gripping bar A⁵, which is forked at its upper end to extend upon each side of the toothed sector A³. The lower end of this gripping bar has a wedge shape construction, the taper surface being on its outer side, as is indicated at A¹⁰.

The cross-head A' opposite the bit A⁶ is made with a socket for the gripping bar and is formed with an inclined or cam surface A⁹ for cooperating with the inclined surface A¹⁰ of the gripping bar A⁵, as clearly shown in Fig. 1. The pin A⁴ is rigidly secured to the lever A² and aside from having its ends guided in the slots A¹¹ of the housings of the cross-head, it is also guided in slots A¹⁴ in the yoke portions A¹³ of the grip bar A⁵ to raise or depress it. The lower end of the rack-bar A is provided with the bit-head D, which is provided with a slot through which the curved bit D² may slide freely for adjustment when the dog is not in actual use. This bit-head is also provided with a vertical slot D³ which permits the rack-bar A to have a limited vertical motion relatively to the bit-head. It is also provided with the two cam shoulders D', which engage cam portions D⁴ of the rack-bar A. Between the cam portions D⁴ of the rack-bar is provided the straight parallel surface D⁵ which engages the curved bit D².

The operation may be described as follows:—The log, after it has been rolled on the head-blocks, is "dogged", as shown in Fig. 2. The first part of the operation will be to raise the lever A² to almost an upright position. This causes the toothed sector A³ to be revolved in the rack-bar A until the teeth of this sector are entirely disengaged from the grooved teeth A⁷ therein. This permits the cross-head A' and bit A⁶ to be raised vertically on the rack-bar. This

same movement of the lever A^2 raises the gripping bar A^5 by the action of the pin A^4 before the cross-head A' is raised. The raising of the gripping or wedge bar A^5 allows the bit A^6 to be moved freely in the slot in the cross-head for adjustment. After raising the cross-head A' to the proper height, the bit A^6 is moved out on a line where it is necessary to insert it in the log. The lever A^2 is then pressed downward, which movement reengages the toothed sector A^3 in the teeth A^7 of rack A , and the further depression of the handle causes the cross-head A' to move downwardly, inserting the bit in the timber. At the same time, the gripping bar A^5 is caused to be pressed downwardly by a pin A^4 of the lever A^2 , and by means of the inclined surface A^9 said gripping bar is caused to clamp the bit A^6 , thus preventing the said bit from having any movement until it is again released by an upward movement of lever A^2 . As the lower bit D^2 is intended to operate simultaneously with the upper bit A^6 , it is necessary to describe the operation of this along with the operation of the upper bit.

It will be seen from the foregoing description that in dogging the upper bit, the rack-bar A is moved upwardly, which causes it to slide through the bit-head D at the lower end. This sliding movement causes the straight parallel surface D^5 to be pressed against the lower bit D^2 by means of the cam action of the cam shoulders D^4 of the rack-bar A sliding against inclined or cam shoulders D' of the slot D^3 in the bit head D , thereby gripping the lower bit, and pulling it up into the timber at the same time the upper "dogging" operation is carried on, as has been previously described.

In order to "undog" or to release the bits from the timber, the following operation is necessary: The handle A^2 is moved upwardly, raising the gripping bar A^5 , and thus taking the tension off of the bit A^6 . The next work performed by the upward movement of the lever, in addition to that already described, is to exert a downward push on the rack-bar A by means of the toothed sector A^3 . This downward pressure on rack-bar A causes it to slide downward and release the lower bit D^2 . A further downward movement of the rack-bar pushes the lower bit D^2 out of the timber, and at the same time carries the bit-head D along with it. This downward move of the rack-bar A continues until the pin A^{12} at its upper end is brought in contact with the standard C^3 . At this time the lower bit D^2 has been released so that it can slide horizontally through the slot in bit-head D . The lower bit has also been pressed down entirely out of the timber, and the rack-bar A has been depressed as far down as it can go. A continuance of the upward movement of lever

A^2 serves to raise the cross-head A' upwardly, thereby disengaging the bit A^6 from the upper side of the timber; a still further upward movement of said lever A^2 causes the toothed sector to be disengaged from rack A whereby the cross-head A' may be raised vertically until it is entirely out of the way. After the cross-head has been raised, the lever A^2 is again lowered and its sector A^3 engages the rack A , as indicated in Fig. 1, and in which position it is suspended until ready to "dog" in another piece of timber.

The elliptic or curved form of lower bit D^2 is important for the following reasons: If the lower bit D^2 was straight, as is the case with the upper bit A^6 , it would be seen that it would not "dog" a large round log on the bottom, as is shown in Fig. 2. By employing the curved form of bit, however, the outward movement will cause the point of the bit to be raised, so that it will engage the lower side of a large round log, and yet by being pressed backwards, it is quickly adjusted for engaging a square log. It is advisable that both of these bits A^6 and D^2 in actual operation should be so arranged that they will not project more than one-half inch from the end of the knee when they are adjusted back as far as they will go. The object of this is to allow the piece of timber to be held by the dogs until there is only one inch remaining on the saw carriage. This it will be seen allows one-half inch clearance between the outer edge of the bit and cutting edge of the saw. The above advantages of the curved lower bit are quite important, especially in view of the fact that the vertical movement of the lower bit-head D is of necessity very limited. This is not so with the upper bit, as the range of vertical movement in this case is only limited by the length of the rack-bar A , and therefore it will be seen that the bit A^6 having the straight horizontal shank fulfills all requirements for the upper bit.

The dog has the following capacity: First; it will "dog" a square timber at the top with the upper bit pressed as far back as it will go; second, it will "dog" a square timber from the bottom with the lower bit pressed as far back as it will go; third, it will "dog" a round log from the bottom by simply pushing the curved bit out until it comes in contact with the log; thus giving to the dog a triple function. It is understood in connection with this that the upper bit of course can be pushed out and dog a round log from the top also as shown in Fig. 2, but this is true of any ordinary dog; consequently, it is not considered that this capacity adds any additional function to the dog. The dog may therefore be designated as a "triplex" dog.

By further references to Figs. 1 and 3, it

will be noticed that the lever A^2 is provided with the lug A^8 on its under side, which, when the lever is entirely dropped, will press on the gripping bar A^5 and causing the gripping bar to press inwardly and grip the bit A^6 . The object of this is that when the cross-head A' is moved up entirely out of the way, and dog is not in use, this process just described will hold the bit temporarily to keep it from working out in front of the saw, while the log is being sawed without being "dogged". When the lower bit D^2 is not in use, the weight of the bit-head D will drop down on the rack-bar A , and by coming in contact with the cam surfaces D' , it will grip this bit D^2 at point indicated at D^4 , thus preventing it from working out in front of the saw when this lower bit is not in use. Both of these features for locking the bits A^6 and D^2 are of the utmost importance in actual sawmill operations. It will be seen that all these functions are entirely automatic, and each of them takes care of its own particular functions without any attention from the operator, other than handling of the lever A^2 , and moving the bits in or out as may be required.

I have described my invention in the form which I have found excellently adapted for commercial use, and while I prefer the same, I do not limit myself to the details thereof as these may be modified without departing from the spirit of the invention.

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

1. In a sawmill dog, the combination of the head-block, an upright frame guided in the head-block, a rack-bar supported by the upright frame and vertically adjustable thereon, a cross-head carried by the rack-bar, a lever having a toothed sector journaled in the cross-head with capacity of vertical movement thereon and engaging the rack-bar, a bit carried by and adjustable transversely of the cross-head, and a gripping bar moved by the lever and arranged to clamp the bit in position.

2. In a sawmill dog, the combination of the head-block, an upright frame guided in the head-block, a rack-bar supported by the upright frame and vertically adjustable thereon, a cross-head carried by the rack-bar, a lever having a toothed sector journaled in the cross-head with capacity of vertical movement thereon and engaging the rack-bar, a bit carried by and adjustable transversely of the cross-head, and a gripping bar carried by the cross-head and adjustable vertically thereon whereby it may be moved by the lever and arranged to clamp the bit in position.

3. In a sawmill dog, the combination of the head-block, an upright frame guided in

the head-block, a rack-bar supported by the upright frame and vertically adjustable thereon, a cross-head carried by the rack-bar, a lever having a toothed sector journaled in the cross-head with capacity of vertical movement thereon and engaging the rack-bar, a bit carried by and adjustable transversely of the cross-head, a gripping bar moved by the lever and arranged to clamp the bit in position, a bit-head adjustably secured upon the lower end of the rack-bar by means of cam shaped parts, and a bit carried by the bit-head and arranged to be clamped between the bit-head and rack-bar when the upward movement of the rack-bar is resisted by the dogging of the bit with the log.

4. In a sawmill dog, a bit, a bit-head through which the bit extends laterally, a vertically adjustable bar engaging and supporting the bit-head through cam connections so shaped that when the bar is raised the bit is clamped between the bar and bit-head during the dogging operation of the bit.

5. In a sawmill dog, a vertically adjustable bar having a cam surface at its lower end, and means to suspend and raise the bar, combined with a bit-head fitted upon the lower end of the bar and coöperating with its cam surface to clamp the bit, and a bit transversely adjustable upon the bit-head and adapted to be clamped upon the bit-head while the log is being dogged by the bit and the bar raised.

6. In a sawmill dog, a suspended bar arranged to be moved vertically, a bit transversely adjustable with respect to the lower end of the bar, means for raising the bar during the act of dogging a log with the bit, and means carried by the bar for automatically clamping the bit to the bar during the upward movement of the bit and bar and when the upward movement of the bit is resisted by the log.

7. In a sawmill dog, the combination of a vertically adjustable bar having cam surfaces D^4 and straight part D^5 between them, with the bit-head D having a vertical slot D^3 having cam surfaces D' with which the cam surfaces D^4 of the bar engage, and a bit D^2 extending through a slot in the bit-head and arranged between the latter and part D^5 of the bar.

8. In a sawmill dog, a suspended bar arranged to be moved vertically, a bit transversely adjustable with respect to the lower end of the bar, a second bit transversely adjustable with respect to the upper end of the bar, means for raising the bar during the act of dogging a log with the bit and automatically clamping the upper bit to the bar, and means carried by the bar for automatically clamping the lower bit to the bar

during the upward movement of the said bit and bar and when the upward movement of the bit is resisted by the log.

9. In a sawmill dog, a vertically adjustable bar having a cam surface at its lower end, and means to suspend and raise the bar, combined with a bit-head fitted upon the lower end of the bar and coöperating with its cam surface to clamp the bit, a bit transversely adjustable upon the bit-head and adapted to be clamped upon the bit-head while the log is being dogged by the bit and the bar raised, a cross-head having a sliding connection with the upper part of the vertically adjustable bar, an upper bit, and means on the cross head to clamp the bit to the cross-head automatically when the bar is being raised, whereby both the upper and lower bits are dogged at one operation.

10. In a sawmill dog, the combination of the bit head having a lateral curved slot and a vertical slot opening into the lateral curved slot and also provided above and below it with cam portions D^3 and D^4 , a curved bit D^2 fitting the lateral curved slot and guided by it, and a vertical bar extending through the vertical slot and having cam portions co-acting with the cam portions of the slot and arranged to clamp the curved bit automatically when lifting it against a log in dogging the bit.

11. The combination of the rack-bar A, the cross-head A' moving vertically on same, a bit A^6 extending transversely through the cross-head, the toothed sector carrying pin A^4 loosely journaled in the cross-head so as to have vertical movement thereon and having a lever A^2 , and the gripping bar A^5 adapted to be pressed downward by the pin A^4 of the toothed sector and its lever A^2 and having at its lower end a parallel surface on one side for pressing against bit A^6 and on the other side having taper surface A^9 for wedging the bit when the said gripping bar is pressed downward, whereby the upward or downward movement of the lever A^2 will cause this gripping bar to move in advance in either direction of the cross-head A' .

12. In a sawmill dog, the combination of the rack-bar, a cross-head adjustably supported thereon and having vertical slots, a bit carried by the cross-head and adjustable transversely, a gripping bar having a sliding cam connection with the cross head for causing it to grip the bit and clamp it in adjusted position and having a horizontal slot, a transverse pin extending through the vertical slots of the cross-head and horizontal slot of the gripping bar, a sector secured to the transverse pin and engaging the rack-bar, and a lever to rock the sector.

13. In a sawmill dog, the combination of the rack-bar, a cross-head adjustably supported thereon and having vertical slots, a

bit carried by the cross-head and adjustable transversely, a gripping bar having a sliding cam connection with the cross head for causing it to grip the bit and clamp it in adjusted position and having a horizontal slot, a transverse pin extending through the vertical slots of the cross-head and horizontal slot of the gripping bar, a sector secured to the transverse pin and engaging the rack-bar, and a lever to rock the sector having a clamping lug to press upon the gripping bar to clamp the bit when the same is not in use.

14. In a sawmill dog, the combination of a vertical bar, a cross-head, a bit carried by the cross-head independently of the vertical bar and adjustable thereon, a gripping bar to clamp the bit carried with the cross-head to the cross-head alone, a pivoted lever device for adjusting the cross-head upon the vertical bar and also arranged to press upon the gripping bar transversely to its direction of travel to cause it to clamp the bit when not in use.

15. In a sawmill dog, the combination of a vertical bar provided at its lower end with a bit, a cross-head guided upon the vertical bar, an upper bit guided in and supported wholly by the cross-head, means to clamp the upper bit to the cross-head alone, and hand operated means for successively operating the means to clamp the upper bit and for raising the vertical bar in the cross-head whereby the upper and lower bits are forcibly moved toward each other.

16. In a sawmill dog, the combination of a vertical bar provided at its lower end with a bit-head, a lower bit adjustably clamped between the bit-head and vertical bar, means for suspending the vertical bar with capacity for limited movement, a cross-head guided upon the vertical bar, an upper bit guided in and supported wholly by the cross-head, means to clamp the upper bit to the cross-head alone, and hand operated means for successively operating the means to clamp the upper bit and for raising the vertical bar in the cross-head whereby the upper and lower bits are forcibly moved toward each other.

17. In a sawmill dog, the combination of a vertical bar, means for suspending the bar, a heavy bit-head carried upon the lower end of the vertical bar and adjustable thereon, and an adjustable bit carried by the bit-head and arranged to be clamped between the vertical bar and bit-head by the weight of the bit head coacting with the vertical bar.

18. In a sawmill dog, the combination of a rack-bar, means for suspending it, a lower bit carried by the rack-bar, a cross-head adjustable upon the rack-bar, an upper bit carried wholly by and adjustable upon the cross-head, a gripping device on the cross-head for clamping the upper bit to the cross-head alone, and a sector engaging the

rack-bar and having means engaging the gripping device and the cross-head for operating them in succession.

19. In a sawmill dog, the combination of
5 a rack-bar, means for suspending it, a lower
bit carried by the rack-bar, a cross-head ad-
justable upon the rack-bar, an upper bit car-
ried wholly by and adjustable upon the
cross-head, a gripping device on the cross-
10 head for clamping the upper bit to the
cross-head alone, and a sector engaging the
rack-bar and having means engaging the
gripping device and the cross-head for oper-
ating them in succession said sector being
15 provided with a hand lever and means for
pressing upon the gripping device trans-
versely to the direction of its travel and
under the weight of the lever to clamp the
upper bit when out of use.

20 20. In a sawmill dog, an upper adjustable
bit, and a lower adjustable bit, combined

with movable means connecting them, and
hand controlled devices carried by the mov-
able means for simultaneously clamping and
drawing the two bits toward each other when 25
dogging a timber.

21. In a sawmill dog, the upper and lower
adjustable bits, a vertically adjustable con-
nection between the two bits, and hand con-
trolled means for shortening the length of 30
the connections between the bits and simul-
taneously clamping and unclamping the bits
upon the vertically adjustable connection
respectively with the shortening or lengthen-
ing of said connection. 35

In testimony of which invention, I have
hereunto set my hand.

HERBERT M. LOFTON.

Witnesses:

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T. T. SMITH, Jr.