Jan. 9, 1923.

1,441,392

G. BASTIAN.
REED STONING MACHINE.
FILED MAY 2, 1921.

3 SHEETS-SHEET 1

Fig. 1.

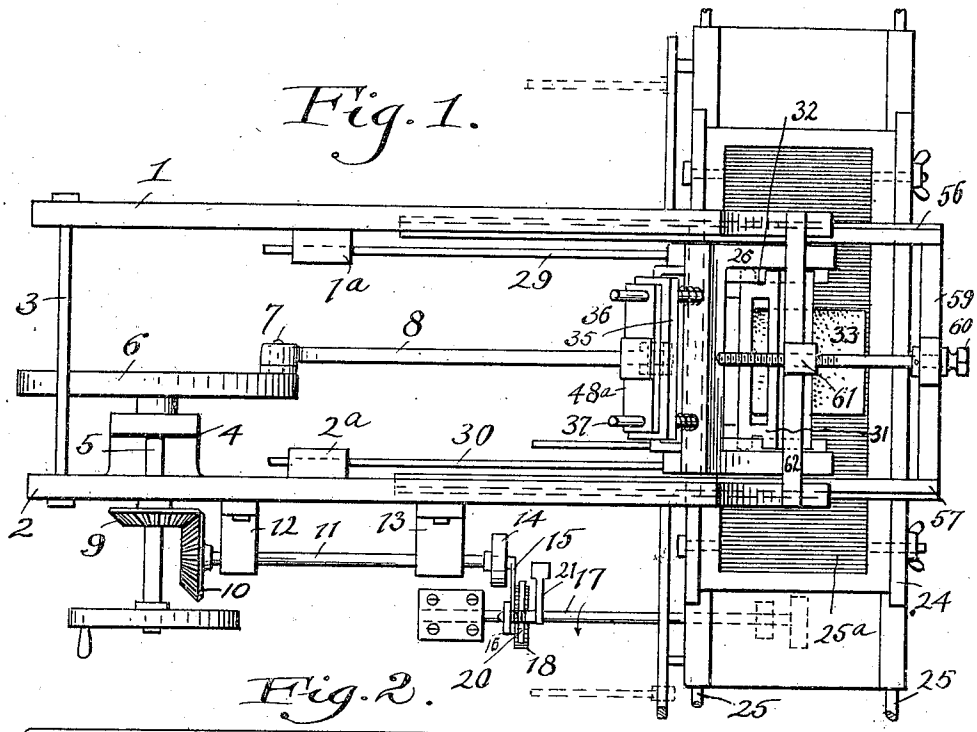


Fig. 2.

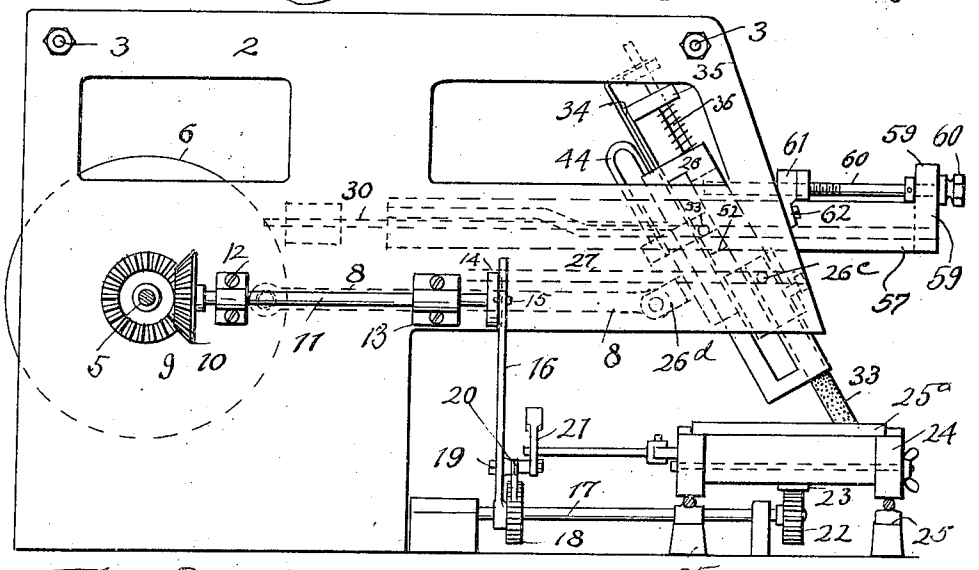
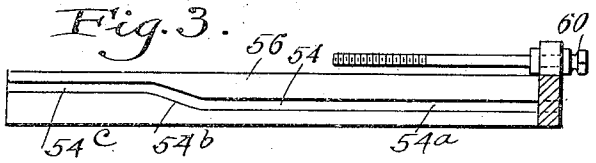


Fig. 3.



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3 SHEETS-SHEET 2

Fig. 8.

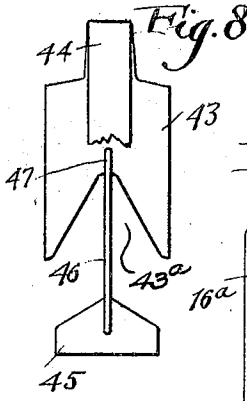


Fig. 4.

Fig. 9.

Fig. 6.

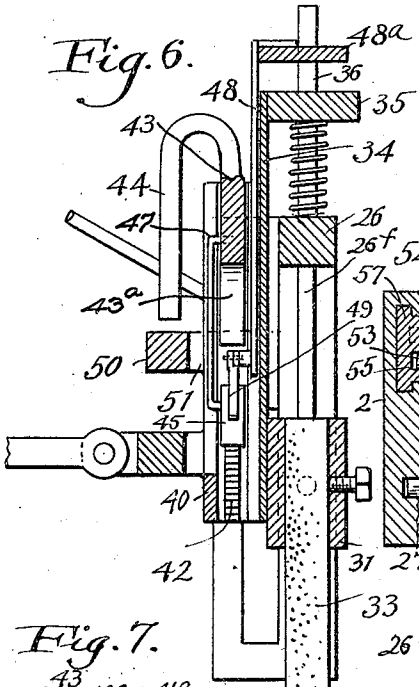


Fig. 5.

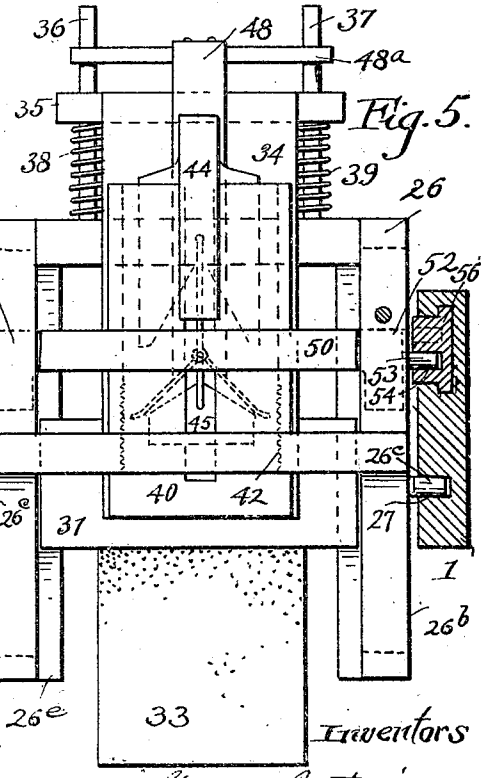
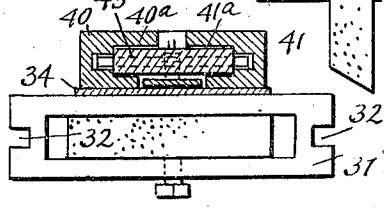


Fig. 7.



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Fig. 11.

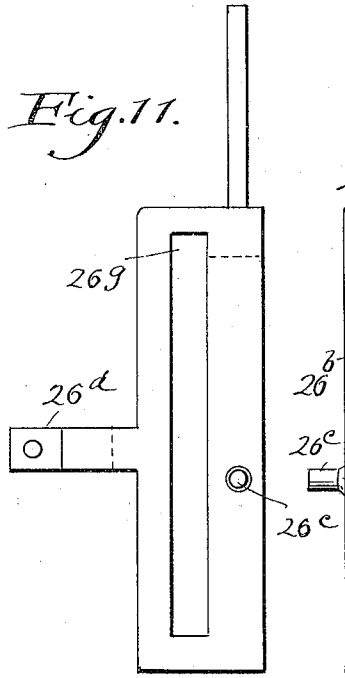


Fig. 10.

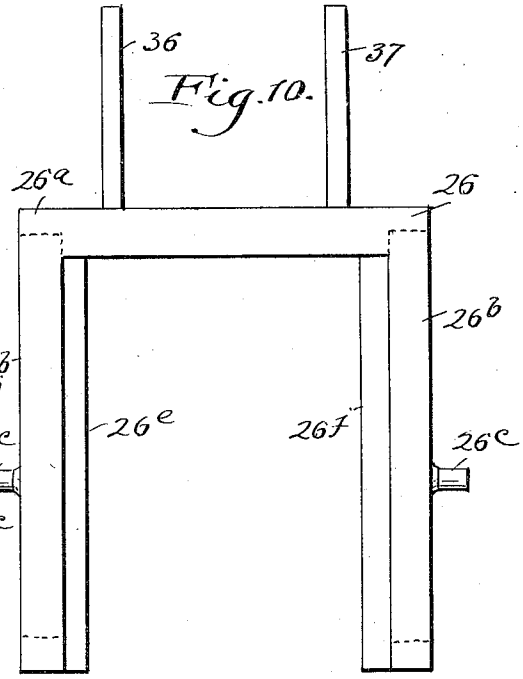


Fig. 13.

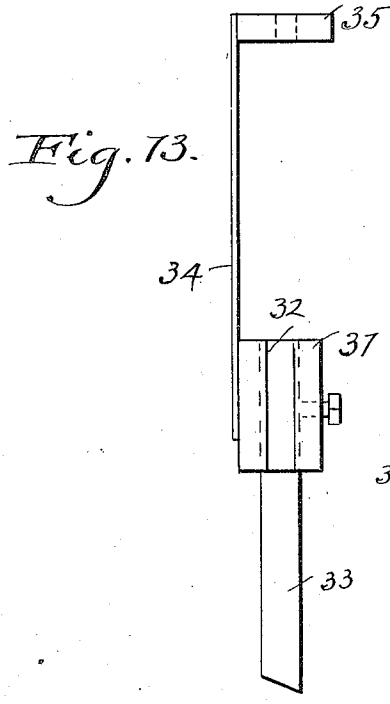
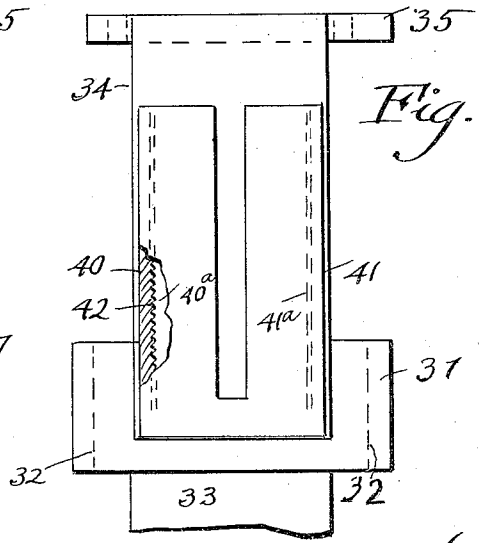


Fig. 12.



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Patented Jan. 9, 1923. 1,441,392

UNITED STATES PATENT OFFICE.

GEORGE BASTIAN, OF MARION, OHIO, ASSIGNOR OF ONE-HALF TO AUGUST VON ENDT, OF MARION, OHIO.

REED-STONING MACHINE.

Application filed May 2, 1921. Serial No. 466,178.

To all whom it may concern:

Be it known that I, GEORGE BASTIAN, a citizen of the United States, residing at Marion, in the county of Marion and State of Ohio, have invented a certain new and useful Improvement in Reed-Stoning Machines, of which the following is a full, clear, and exact description.

The present invention relates to a machine which is particularly adapted and intended for use in the stoning or honing of reeds which are used in connection with silk weaving.

The object of the invention is to produce a machine in which a tool such as a honing stone may be given a movement transversely of the object on which it is working, as for instance a reed, and additionally to provide mechanism whereby the honing stone or a tool carried by a suitable holder may be raised from the work at the end of a working stroke and the working stroke may be varied. Additionally, the machine provides a mechanism whereby the carrier or support for the honing stone or other tool will be completely lowered into contact with the object being worked on, each time the stone is brought into engagement with the reed or other object and so compensate for any wear of the stone, without requiring any actual adjustment of the stone.

Other objects will appear as the description proceeds.

Reference should be had to the accompanying drawings forming a part of this specification in which Fig. 1 is a top plan view of the machine; Fig. 2 is a side elevation; Fig. 3 is an elevation with portions in section showing one part of the machine; Fig. 4 is a front elevation of the machine; Fig. 5 is a sectional elevation looking toward the rear of the moving head of the machine; Fig. 6 is a sectional elevation through the head of the machine and the parts associated therewith; Fig. 7 is a top plan view with portions in section of the tool carrier; Fig. 8 is an elevation of a member forming a portion of the mechanism; Fig. 9 is an elevation of a portion of the head of the machine; Fig. 10 is a front elevation of the head of the machine with the co-operating parts removed; Fig. 11 is a side elevation of the showing in Fig. 10; Fig. 12 is a front elevation of the tool carrier; Fig. 13 is a side elevation of the showing in Fig. 12.

Referring to the drawings, 1 and 2 indicate side members which are suitably secured together by means of transversely extending bolts 3. These side members when bolted together constitute what will herein be termed, a frame. One of the side members is provided with an offset member indicated at 4 in which is formed a suitable opening in line with another opening formed in the side member 2 and adapted to receive a shaft 5 and to form bearings for said shaft. At one end of the shaft is a crank member which in the present instance is a disc 6 which is provided with a pin 7 upon which is mounted a pitman 8.

The shaft 5 has secured thereto a bevel gear 9 which meshes with a bevel gear 10. This gear 10 is carried upon a shaft 11 which is mounted in bearing members 12 and 13. At the end of the shaft 11 there is a disk 14 to which is pivotally secured one end of the connecting rod 15. The opposite end of this connecting rod 15 is pivotally mounted in a slot 16ª of the lever 16, this construction being for the purpose of providing an adjustment between the connecting rod 15 and the lever 16 to regulate the extent of movement of the lever 16 by the connecting rod 15. The lever 16 at its lower end is loosely mounted upon a shaft 17 and this shaft has secured thereto a ratchet wheel 18. Adjacent the lower end of the lever 16 there is a pin 19 upon which is pivoted a double pawl 20 having an extending arm 21. By moving the arm 21 to one side or the other, either end of the double pawl 20 may be moved into engagement with the ratchet wheel 18 so that the ratchet wheel may be turned in either direction in accordance with whichever end of the pawl is in engagement with the ratchet wheel.

The shaft 17 carries a pinion 22 which is adapted to cooperate with a rack 23 carried upon the underside of a bed 24. This bed is mounted upon two spaced supporting track members indicated at 25 and the bed is adapted to move upon these track members and transversely with respect to the frame of the machine. This bed 24 is adapted to receive the article which is to be worked on as for instance a reed which is indicated at 25ª.

As will be readily understood, the bed will be moved intermittently by the mechanism before described and the direction of movement of the bed may be reversed by changing the pawl engagement with the ratchet wheel 18.

Mounted between the side members 1 and 2 is a head 26 which is shown in detail in Fig. 10. This head comprises, substantially, a top portion 26^a and side portions 26^b. On the side portions are extending members 26^c which extend into grooves 27 that are formed in the side members 1 and 2. These members 26^c may be plain pins or they may be rollers so as to reduce the friction. Extending rearwardly from the head 26 are rods 29 and 30 disposed adjacent the side members 1 and 2, and these rods are adapted to extend through openings in blocks 1^a and 2^a which are carried by the members 1 and 2 respectively. The grooves 27 serve to support the head 26 and in part to guide the same in its reciprocating movement which is about to be described, and the rods 29 and 30 also serve to guide and support the head.

The head 26 at the rear thereof is provided with an extension 26^d and this extension is pivotally connected with the pitman 8 so that as the pitman 8 is reciprocated by the mechanism with which it cooperates, the head 26 and the parts carried thereby will be reciprocated longitudinally of the frame of the machine.

Slidably mounted upon the head 26 is what we call a tool holder, and while, in the present instance, the tool holder is adapted to hold a honing stone, the term tool is used in the broad sense and is inclusive of anything which can perform work upon the article or object carried by the bed 24.

The tool holder comprises a transversely extending member 31 which at its side edges is provided with grooves 32 and these grooves are adapted to cooperate with guide strips 26^e and 26^f that are carried upon the inner side of the side members 26^b of the head 26. The tool carrier 31 so far as its mounting is concerned may freely slide upon the members 26^e and 26^f of the head 26. The tool carrier as before stated is in the present instance particularly adapted to receive and retain a honing stone which is indicated at 33.

Secured to the member 31 is an upwardly extending strip-like member 34 which extends behind the head 26 and above the same and at its upper end there is a transversely extending member 35. This member is provided with openings through which openings extend pins 36 and 37 which are mounted upon the top of the head 26. Surrounding the pins 36 and 37 are springs 38 and 39 and these springs extend between the top of the head 26 and the underside of the transversely extending member 35. These springs serve to cushion the descending movement of the tool carrier and the honing stone carried thereby when the same is released after having been moved upwardly as will later be described.

Upon the rear portion of the tool holder 31 and extending above the same are guiding members which are indicated at 40 and 41. These members provide guide grooves such as indicated at 40^a and 41^a, the side walls of these grooves being provided with ratchet teeth 42. Occupying the guide grooves 40^a and 41^a is an operating member 43 which has an upwardly extending and downwardly bent portion 44. This operating member is more clearly shown in Fig. 8. The lower portion of the member 43 has a recess 43^a, the purpose of which will be later described. Depending from the member 43 is a spreader 45, the upper surface of which has oppositely slanting portions. This spreader is carried by a depending rod 46 which is pivotally mounted on the member 43 as indicated at 47.

Behind the member 43 is a flat strip-like member 48 which at its lower end has two oppositely disposed pawls 49 pivoted thereto. (See Fig. 9). These pawls extend sidewardly toward the ratchet teeth 42 and as will be seen from Fig. 6 the spreader 45 lies just below the pawls 49 and in position to cooperate with and spread the pawls 49 when the spreader 45 is elevated. When the pawls 49 are spread they will be moved into contact with certain of the ratchet teeth 42, and this mechanism comprising the pawls and the spreader 45 in effect forms a clutch mechanism which joins the tool carrier to the operating member 43 so that when the member 43 is elevated, as will be later described, it will carry with it the tool holding member. The strip 48 at its upper end is provided with a cross member 48^a which is provided with openings to receive the pins 36 and 37 so that the movement of the member 48 and the parts associated therewith is guided by the engagement of the pins with the member 48^a.

Extending transversely of the head and behind the head is a member 50. This member at its opposite ends has arms, one of which is indicated at 51 and these arms carry extensions in the form of blocks which are shown in dotted lines at 52 in Fig. 5, which extensions lie within the oppositely disposed slots which are formed in the side members 26^b of the head 26, one of which slots is indicated at 26^g in Fig. 11. These blocks 52 carry outwardly projecting guide rollers 53 which occupy grooves 54 and 55 in oppositely disposed track members 56 and 57.

The track members 56 and 57 each occupy a groove formed in the side members 1 and 2, respectively, and are so mounted that they

may be moved longitudinally in these grooves. At their forward end the track members are joined by a member 59 and this member has mounted in it a screw 60. The screw extends through a threaded boss 61 which is carried on a transversely extended bar 62 which is secured to the front portions of the side members 1 and 2. By turning the screw 60, the track members 56 and 57 may be moved forward and backward into any adjusted position with respect to the side members 1 and 2 of the frame.

In Fig. 3 one of the track members is shown and in it a cam groove, which is the cam groove 54. As will be seen this groove has a straight portion 54^a and inclined portion 54^b and an upper straight portion 54^c. The groove in the track 57 is similarly formed. It will be recalled that the rollers 53 operate in the cam grooves 54 and 55. As the head 26 is reciprocated and with it the parts carried thereby, the rollers 53 move through the straight portions 54^a of the grooves in the track members 56 and 57, and, when they reach the inclined portions 54^b of the grooves, they move upwardly therein and this causes the member 50 to be elevated with respect to the head. When this member 50 is elevated it engages with the portion 44 of the operating member 43 which raises the operating member causing the spreader 45 to engage with the pawls 49 and pushing them into engagement with the ratchet teeth carried by the sides 40 and 41 which form a part of the tool holder, and as the spreader 45 is elevated with the member 43 the tool holder is carried along and so elevated from the work upon which the tool carried thereby has been operated.

The foregoing movement takes place during a rearward excursion of the head and of course when the rearward excursion of the head has been completed and the forward excursion commenced, the rollers 53 will presently return to the lower portion of the cam grooves in which they operate and thereby relieve the pawls 49 so that the tool carrier drops by gravity against the springs 38 and 39 and so the honing stone is in proper position for a working stroke.

As before described, the track members 56 and 57 are adjustable in the frame and hence the raising or elevating movement of the tool carrier may be timed to occur at any desired point in the reciprocation of the head. For instance if the track members 56 and 57 are moved outwardly from the position in which they are shown in Fig. 2, the tool holder will be elevated sooner, with respect to the reciprocation of the head than would be the case with the track members in position as shown in the drawing.

This adjustability of the track members and the consequent ability to control the raising of the tool holder, is of importance with respect to the effective stroke of the tool holder with respect to the work on which the tool carried by the tool holder is working. In other words, by adjustment of the track members, the working stroke of the tool holder may be made a long or short stroke.

It will be noted from the foregoing description that when the tool holder is in its working position, that is to say, when the tool carried thereby is in position to operate upon the object to be worked on, the weight of the tool holder is upon the tool or in this case, the honing stone, thereby giving a uniform pressure upon the honing stone. As will be obvious the tool holder may be made of a desired or any proper weight to give the desired pressure on the honing stone in order for the honing stone to do its efficient and proper work.

The mechanism which has heretofore been described, by which the tool holder is elevated is such that the tool holder is entirely released when it is on its operating stroke so that as the honing stone may wear, it requires no adjustment of the honing stone or the tool holder, this being automatically taken care of by the fact that the gripping pawls 49 may grip or engage with any one of the teeth 42 which form a part of the tool holder. This is a very important result inasmuch as it secures an absolutely uniform honing action on the reed which is being honed.

While in the drawing I have shown a hand operative machine, that is to say the shaft 5 is operated by hand, it will be understood that I do not mean to confine myself in this respect, if power operation be found desirable.

Furthermore I wish to repeat that in the specification and claims where I use the term tool holder, I mean this to be a broad application and covering any implement which may perform work upon some object which is to be worked upon, and thus broadly considered, a honing stone is a tool.

Having described my invention, I claim—

1. In a device of the character described, a reciprocable supporting head, means for supporting said head, a tool support which is loosely supported in said head and free to move toward the work and means engageable with the said tool support during a reciprocating movement of the head to lift the tool support away from the work.

2. In a device of the character described, a reciprocable supporting head, means for supporting said head and for imparting a horizontal stroke thereto, a tool support which is movably mounted in said head and means for imparting vertical reciprocating movement to the tool support at one end of the stroke of the head.

3. In a device of the character described,

a reciprocable supporting head, means for supporting said head, a tool support which is movably mounted in said head and means for imparting vertical reciprocating movement to the tool support during a part of the reciprocating movement of the head, said means being adjustable to vary the time of elevation of said tool support with respect to the reciprocation of the head.

4. In a device of the character described, a reciprocable supporting head, means for supporting said head and for imparting a reciprocating stroke thereto, a tool support movably mounted in said head, cam members which cooperate with the said tool support for moving the said tool support at one end of the stroke of the head.

5. In a device of the character described, a reciprocable supporting head, means for supporting said head and imparting a reciprocating stroke thereto, a tool support loosely supported in said head and free to move toward the work during a portion of the stroke of the head, cam members which cooperate with the said tool support for moving the said tool support during another portion of the stroke of the head, said cam members being adjustable whereby to vary the time of movement of the tool carrier with respect to the stroke of the said head.

6. In a device of the character described, a reciprocable supporting head, means for supporting said head and imparting a reciprocating stroke thereto, a tool support movably mounted in said head, track members, means on the tool carrier engaging with the track members, said track members having an inclined portion serving to cause the tool support to be elevated during a reciprocating movement of the said head.

7. In a device of the character described, a reciprocable supporting head, means for supporting said head, a tool support movably mounted in said head, track members, means on the tool carrier for cooperating with the track members, said track members serving to cause the tool support to be elevated during a reciprocating movement of the said head, said track members being adjustable in the direction of reciprocating movement of the head whereby the time of movement of the tool support may be adjusted with respect to a reciprocation of the said head.

8. In a device of the character described a frame having side members, a head extending between the side members and cooperating with the said head, means for reciprocating the head, a tool support slidably mounted in the head, oppositely disposed cam track members which are slidably mounted in the opposite sides of the frame, means for adjusting said cam track members, means on the tool support cooperating with said cam track members.

9. In a device of the character described, a frame having side members, a head mounted between said side members, guides carried by the said side members, means associated with the head and cooperating with the said guide members, means for reciprocating the said head, a work carrier mounted beneath said head, means for moving said work carrier transversely with respect to the said frame, a tool support slidably mounted in the said head, the said tool support being reciprocated transversely of the said work carrier when the head is reciprocated, means carried by the frame and cooperating with the said tool support whereby the tool support is elevated during a reciprocating movement of the said head.

10. In a device of the character described, a frame having side members, a head mounted between said side members, guides carried by the said side members, means associated with the head and cooperating with the said guide members, means for reciprocating the said head, a work carrier mounted beneath said head, means for moving said work carrier transversely with respect to the said frame, a tool support slidably mounted in the said head, the said tool support being reciprocated transversely of the said work support when the head is reciprocated, adjustable means associated with the frame for elevating the tool carrier during a reciprocation of the said head.

11. In a device of the character described, a frame having side members, a head mounted between said side members, guides carried by the said side members, means associated with the head and cooperating with the said guide members, means for reciprocating the said head, a work carrier mounted beneath said head, means for moving said work carrier mounted beneath said head, means for moving said work carrier transversely with respect to the said frame, a tool support slidably mounted in the said head, the said tool support being reciprocated transversely of the said work carrier when the head is reciprocated, cam track members mounted in opposite sides of the frame, means carried by the said tool support cooperating with the track members, whereby the tool support will be elevated in the head during a reciprocation of the head and means for adjusting the said cam track members to vary the time of elevation of said tool support with respect to the reciprocation of the said head.

12. In a device of the character described, a reciprocable head, a tool support slidably mounted in said head, a moving member extending transversely of the head and slidable thereon, means for causing the moving member to slide upon said head during a reciprocation of the head, an actuating mechanism which is contacted and operated by the

moving member, said actuating mechanism including a clutching device which connects with the said tool support whereby the tool support is elevated as the moving member is moved.

13. In a device of the character described, a reciprocable head, a tool support slidably mounted in said head, a moving member extending transversely of the head and capable of movement with respect to the head, means for causing the moving member to be moved during a reciprocation of the head, an actuating mechanism carried by the said head and adapted to be contacted and operated by said moving member, said actuating mechanism including a pawl which is adapted when moved to engage with the said tool support, said actuating mechanism also including a means for moving said pawl when said mechanism is actuated whereby when the moving member operates the tool support is elevated.

14. In a device of the character described, a reciprocable head, a tool support slidably mounted in said head, a portion of said tool support being provided with a series of notches, a moving member extended transversely of the head and capable of the movement with respect to said head, means for causing said moving member to move with respect to the head during a reciprocation of the head, an actuating mechanism carried by the head and adapted to be contacted and operated by said moving member, said pawl is mounted adjacent to the notches on the said tool support, said actuating mechanism also including a means for engaging and moving said pawl when the actuating mechanism is operated, whereby the tool support is elevated when the said moving member is moved.

15. In a device of the character described, a reciprocable head, a tool support slidably mounted in said head, a portion of said tool support being provided with a series of notches, a moving member extending transversely of the head and slidably mounted thereon, means for causing the moving member to slide upon said head during the reciprocation of the head, a support mounted in said tool support, a pawl carried by said support and in position to cooperate with the notches carried by the tool carrier, an operating member having a portion adapted to engage said pawl and move it into engagement with a notched portion of the tool support, said operating member being in position to be engaged by the moving member whereby the tool support is elevated upon movement of the moving member.

16. In a device of the character described, a reciprocable head, a tool support slidably mounted in said head, a moving member extending transversely of the head and capable of being moved with respect to said head, means for causing the moving member to be moved with respect to the head during a reciprocating movement of the head, an actuating mechanism adapted to be contacted and operated by said moving member, said actuating mechanism including a pair of engaging members adapted to be moved into engagement with portions of said tool support, said actuating mechanism also including a means for moving said engaging members into engagement with the tool support when the actuating mechanism is moved, whereby the tool support is elevated.

17. In a device of the character described, a reciprocable head, a tool support slidably mounted in said head, a member extending transversely of the head and slidable with respect to the head, means for causing the moving member to move with respect to the head during a reciprocation of the head, a support which is slidably mounted in the tool support, engaging members carried by said support and in position to engage with portions of the tool support, an operating member having a portion adapted to engage with said engaging members and move them into cooperative contact with the tool support, said operating member being positioned to be engaged by the said moving member when it is moved relative to the head, whereby the tool support is elevated when the moving member is moved.

18. In a device of the character described, a reciprocable head, a tool support slidably mounted in said head, a moving member extending transversely of the head and slidable thereon, means for causing the moving member to slide upon said head during a reciprocation of the head, a pawl support frame which is slidably mounted, pawls carried by said support, said pawls being adapted when spread, to engage with portions of the said tool support, an operating member which is adapted to be engaged and moved by the said moving member, said operating member having a spreader member which engages with the pawls and spreads the same when the operating member is elevated.

19. In a device of the character described, a reciprocable head, a tool support slidably mounted on said head, a moving member extending transversely of the head and slidable thereon, means for causing the moving member to slide upon said head during a reciprocation of the head, a support slidably mounted in said tool support, movably engaging members carried by said support and adapted when moved to engage with portions of the tool support, an operating member mounted upon the tool support and adapted to be engaged by said moving member, said operating member having a wedge shaped portion which is adapted to engage with the said engaging members to spread

them and move them into engagement with the said tool support when the operating member is elevated.

20. In a device of the character described, the combination with a reciprocable head, means for supporting and imparting a reciprocating stroke to the head, a tool support reciprocable with the head and free to move transversely with respect to the line of movement of the head during one portion of the stroke, and means for holding said tool support against movement with respect to the head during another portion of the stroke.

In testimony whereof, I hereunto affix my signature.

GEORGE BASTIAN.