

(No Model.)

3 Sheets—Sheet 1.

C. SEYMOUR.
GAINING MACHINE.

No. 515,253.

Patented Feb. 20, 1894.

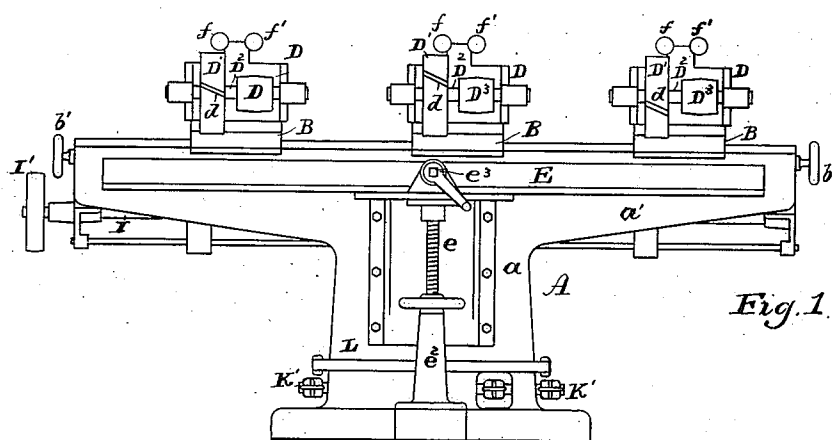


Fig. 1.

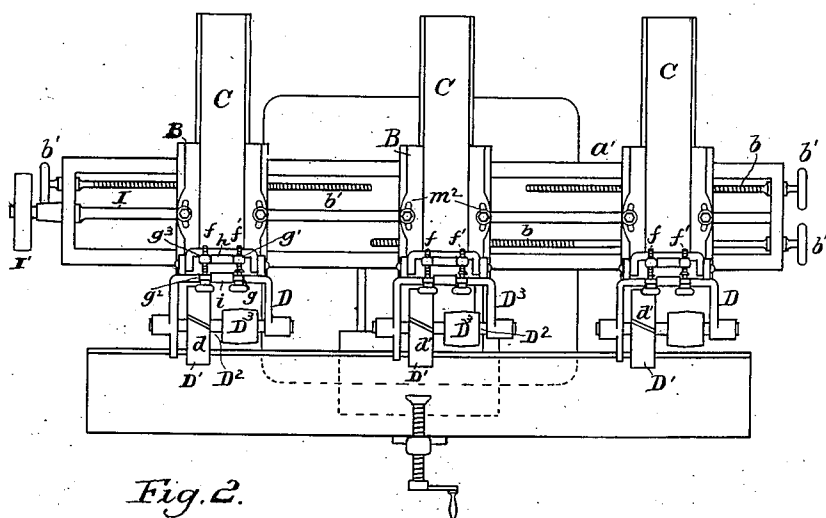


Fig. 2.

Witnesses
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Fig. 3.

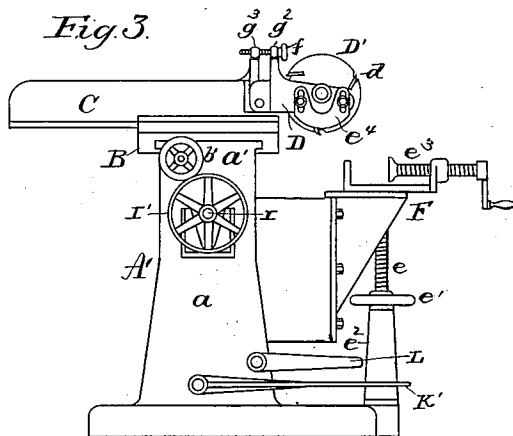


Fig. 4.

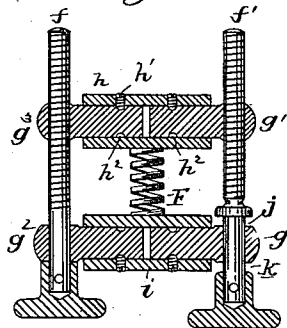


Fig. 5.

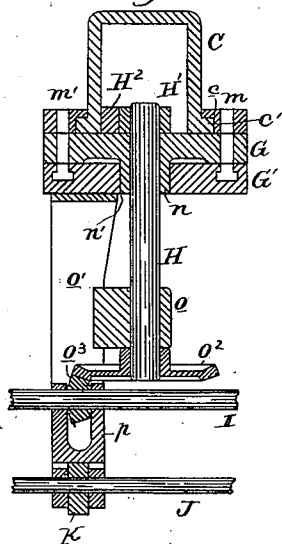


Fig. 6.

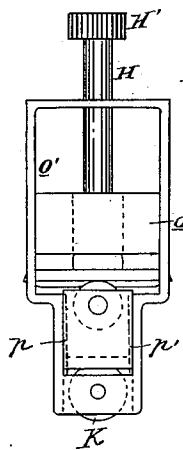
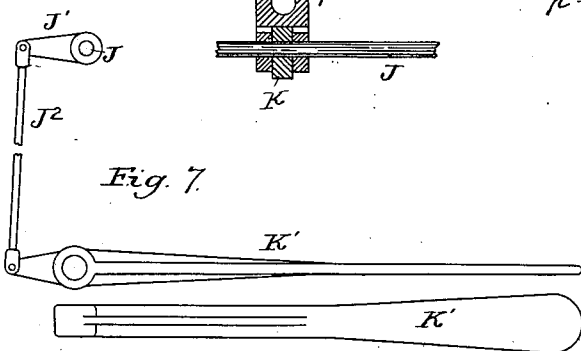


Fig. 7.



Witnesses

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Fig. 8.

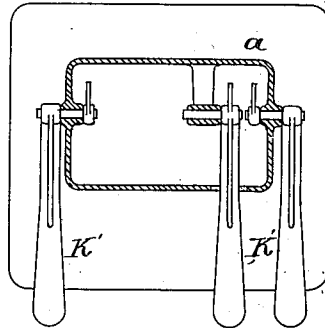
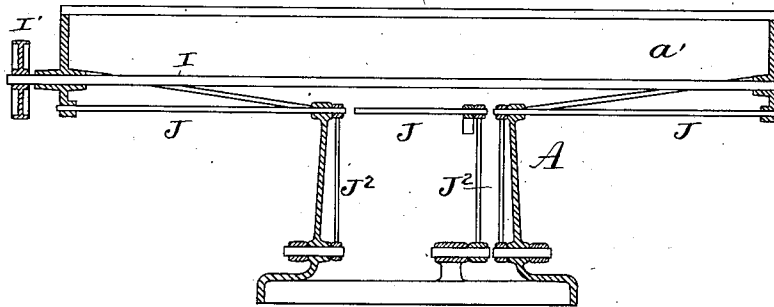


Fig. 9.

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UNITED STATES PATENT OFFICE.

CHARLES SEYMOUR, OF DEFIANCE, OHIO, ASSIGNOR TO THE DEFIANCE
MACHINE WORKS, OF SAME PLACE.

GAINING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 515,253, dated February 20, 1894.

Application filed May 24, 1892. Serial No. 434,205. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SEYMOUR, a resident of Defiance, in the county of Defiance and State of Ohio, have invented certain new and useful Improvements in Gaining-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in gaining machines,—its object being to produce a gaining machine having a series of cutting devices, and to so construct and arrange said cutting devices that they can be operated singly or all simultaneously.

A further object is to produce a gaining machine, constructed and arranged in such manner that the cutting devices can be disposed at various angles relatively to the material to be acted upon.

A further object is to produce a gaining machine which shall be of simple construction, easy to manipulate and effectual in the performance of its functions.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings: Figure 1 is a front elevation of my improved gaining machine. Fig. 2 is a plan view. Fig. 3 is an end elevation. Fig. 4 is an enlarged view of the devices for the accomplishment of the minute adjustment of the depth of the cut. Fig. 5 is an enlarged cross section of the carriage, showing the feed works. Fig. 6 is a view of the hanger and a portion of the feed works, shown in section in Fig. 5 and at right angles thereto. Fig. 7 represents the treadle and connections for throwing the feed works into action. Figs. 8 and 9 are sectional views of the frame, showing the treadle mechanism.

A represents the main frame and bed plate of the machine, comprising a central upright portion *a* and a laterally projecting portion *a'*. Mounted to slide on the frame A, is a series of carriages B, any desired number of said carriages being provided. Passing through

the ends of the portions *a'*, of the frame, is a series of screws *b*, each having a hand wheel *b'*, one of said screws being connected with and adapted to slide each carriage. The carriages B are made with ways *c* for the reception of the flanges *c'* of the sliding rams C. To the inner ends of each ram C a head-stock D is hinged, and in each head stock D a cutter disk or wheel *D'* is mounted and carries a series of cutters *d*. On the shaft *D²* of each cutter head *D'*, is a pulley *D³*, to which motion may be imparted from belting arranged over the machine. Below the cutters, a table E which supports the material to be acted upon, is located,—said table being adapted to be adjusted vertically by means of a screw *e* having an operating wheel *e'*, said screw also entering a hollow post *e²*. The table E is also provided with a screw clamp *e³*. By hinging the head stock to the ram C the cutter head will be allowed to rise and fall to a limited extent to allow it to follow the surface of a warped board,—in which case an adjustable gage or shoe *e⁴* serves to gage the depth of the cut. Freedom for such action is provided by means of screws *f, f'*, and their adjuncts, as shown most clearly in Fig. 4. In said figure a pair of sleeves *h* and *i* are shown in horizontal section. These sleeves are shown in elevation in Fig. 3. In each sleeve a pair of plugs are fitted *g', g²* and *g, g²* respectively. These plugs are each provided with a circumferential groove in each of which a pin *h'* operates to allow the plugs to turn freely but to prevent endwise movement. The outer ends of the plugs protrude a short distance beyond the sleeves and the screws *f, f'* pass through holes in the plugs, said sleeve *i* being prevented from lateral movement by means of screws *i'* entering recesses *i²* in the bars *g, g²*. This construction and arrangement of parts is for the purpose of securing the working fit of the screws. It will be seen that an amount of vibration may be secured for the head stock, equal to the sum of the spaces *j* and *k*, and also that when the screw *f* is screwed up, the space *j* may be entirely taken up and the head stock D be held rigidly, without freedom of vibration. This latter condition, that is, of locking the head stock fast, is the one desired when gain-

ing squared or heavy timber, in which the dimensions from the bottom of the gain to the bottom of the timber is definite. In the space l , between the sleeves h , i , a spring F is located to urge said sleeves and the parts to which they are connected, apart, against the stress imposed by the tension of the belt, upward, on the pulley which drives the cutter head.

Each carriage is furnished with a turntable device as shown in Fig. 5, and consists of plates G , G' , which are bound together by means of bolts inserted in the openings m , m' , curved slots m^2 (Fig. 2) being provided to permit the upper portion of the carriage to be turned. This turn-table device is for the purpose of swinging the upper portion of the carriage so that the cutter head can travel at any desired angle. The plate G is provided at its center with a depending annular flange n , which enters an opening n' in the plate G' . A shaft H passes through the opening in the plate G and is provided at its upper end with a pinion H' , which meshes with a rack bar H^2 carried by the ram C . The shaft H passes through an arm o projecting from a bracket o' depending from the carriage B , and carries at its lower end, a friction wheel o^2 . A feathered shaft I provided with a pulley I' , is mounted in the frame of the machine and extends from end to end thereof. This shaft is small, preferably made of steel and is sufficiently flexible so that one part of it may be forced out of its normal position independently of the rest of the shaft for a purpose hereinafter described. Mounted on this shaft and having a feather connection therewith, are friction wheels o^3 adapted to have contact with the friction wheels o^2 on the shaft H . The lower end of the bracket o' is preferably contracted somewhat, for the reception of a vertically sliding box p , the sides of said box being provided with grooves for the reception of tongues p' on the bracket o' and thus prevent the lateral displacement of said box. The box p is adapted to embrace the friction wheel o^3 so as to properly move said friction wheel on the shaft I when the carriage is moved.

Mounted in the frame of the machine is a series of shafts J , said shafts being of a length about equal to the length of travel of each carriage and located beneath said carriages. The lower portion of the brackets o' is perforated for the passage of the shafts J . A cam K is mounted on each shaft J and in the lower end of the brackets o' , said cams having a feather connection with said shafts. By arranging the cam between the parts of the bracket o' , it will be carried along its shaft when the carriage is moved and thus always be directly under the adjacent box p . Fitted to each shaft J is a crank arm J' , to the free end of which a rod or pitman J^2 is pivotally connected. The lower ends of the rods J^2 are

connected with foot levers K' . By the operation of one of the foot levers K' the corresponding shaft J will be oscillated in one direction and its cam K , made to force the adjacent box p up and cause the friction wheel o^3 to make contact with the friction wheel o^2 , and thus throw the mechanism for feeding the ram and the cutting devices carried thereby, forward. By means of the levers K' , any of the cutting devices can be thrown into operation as desired.

A bail treadle L is situated above the foot levers K' by the operation of which all the cutter heads may be brought into operation simultaneously. Or if it be desired to omit the action of any one cutter-head, its foot lever or treadle may be disconnected and the remaining cutter heads be brought into action simultaneously by pressing the treadle L .

By the construction and arrangement of apparatus as above described, any desired number of cutter heads may be employed and operated simultaneously in the same plane and the cutter heads may be disposed at any desired angle relatively to the material to be operated upon. Simple and efficient feeding and adjusting mechanisms are provided and the machine is effectual in the performance of all its functions.

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

1. The combination with a suitable frame work, of a series of carriages, screws for moving and setting these carriages laterally, rams having sliding connection with the carriages, and head stocks hinged to the rams, substantially as set forth.

2. The combination with a suitable frame work, of a series of carriages, screws for moving and setting these carriages, rams having sliding connection with the carriages and adapted to move at right angles to the line of movement of the carriages, head stocks hinged to the rams, and means for setting said head stocks, substantially as set forth.

3. In a gaining machine, the combination with a ram, of a head stock hinged thereto, a cutter head carried by said head stock, and adjustable means for locking said head stock at the angle desired, substantially as set forth.

4. The combination with a ram, of a head stock hinged thereto, oscillatory bars connected with the ram and the head stock, and screws passing through said bars for the purpose of setting the stock, substantially as set forth.

5. The combination with a laterally movable carriage, and a turntable connected with the carriage, of a ram having sliding connection with the turn table, and a cutter connected with the ram, substantially as set forth.

6. In a gaining machine, the combination with a ram a head stock and a cutter head carried by said head stock, of sleeves carried by the head stock and ram, bars entering said

sleeves and adapted to have an oscillatory motion therein, and screws journaled in one pair of said bars and passing through screw-threaded openings in the other pair, substantially as and for the purpose set forth.

7. In a gaining machine, the combination with a ram and a turn table of a hinged head stock, a cutter head carried by said head stock, and a gage attached to the head stock and adapted to regulate the depth of the cut, substantially as set forth.

8. In a gaining machine, the combination with a sliding ram and cutter head, of a rack bar carried thereby, a shaft, a pinion carried by said shaft and adapted to mesh with said rack bar, a friction wheel also carried by said shaft, a shaft extending through the machine, a friction wheel having a feather connection with the last mentioned shaft and adapted to engage the first mentioned friction wheel, and means for maintaining the movable friction wheel in proper position, and means for throwing said friction wheels into engagement, substantially as set forth.

9. The combination with a sliding ram and cutter head of a rack bar carried thereby, a vertical shaft, a pinion carried by said vertical shaft and adapted to mesh with the rack bar, a friction wheel carried by the vertical shaft, a shaft extending horizontally through the machine, a friction wheel movably mounted to rotate with said shaft and engage the friction wheel on the vertical shaft, and a sliding box adapted to embrace the friction wheel on the horizontal shaft and maintain it in proper relation to the friction wheel on the vertical shaft, substantially as set forth.

10. The combination with a carriage, and a sliding ram thereon, and cutter head of a rack bar carried by said ram, a vertical shaft, a pinion carried by said vertical shaft and adapted to mesh with the rack bar, a friction wheel carried by the vertical shaft, a horizontal shaft, a movable friction wheel mounted to rotate with said horizontal shaft, a bracket depending from the carriage, a box carried by said bracket and adapted to embrace the friction wheel on the horizontal shaft and means for raising said box to throw said friction wheels into contact, substantially as set forth.

11. In a gaining machine, the combination with a carriage a ram carried by said carriage, cutting devices carried by said ram and feed mechanism for said ram, of a cam, and means for operating said cam to throw

the feed mechanism into operation, substantially as set forth.

12. In a gaining machine, the combination with a series of carriages, a ram carried by each carriage, cutting devices carried by each ram, and a feed mechanism for each ram, of a cam for each feed mechanism and means for operating said cam to throw all the feed mechanisms into operation simultaneously, substantially as set forth.

13. In a gaining machine, the combination with a series of carriages, a ram carried by each carriage, cutting devices carried by each ram and feed mechanism for each ram, of a series of shafts, a series of cams carried by said shafts, a bracket carried by each carriage and adapted to embrace said cams and cause them to slide on their shafts when the carriages are moved, and means for operating said shafts to throw the feed mechanism into gear, substantially as set forth.

14. In a gaining machine, the combination with a carriage, a sliding ram carried thereby, cutting mechanism carried by said ram and feed mechanism for said ram, of a bracket depending from the carriage, a box mounted in said bracket and adapted to embrace one of the wheels of the feed mechanism, a shaft mounted in the lower end of said bracket, a cam mounted on said shaft within the bracket, a crank arm on said shaft, a foot lever and a rod or pitman connecting said foot lever with the crank arm, substantially as and for the purpose set forth.

15. In a gaining machine, the combination with a series of carriages, a sliding ram carried by each carriage, cutting devices carried by each ram and feed mechanism for each ram, of a series of shafts, cams on said shafts for throwing the feed mechanism into gear, crank arms connected with said shafts, foot levers connected with said crank arms whereby any of the feed mechanisms can be thrown into gear, and a bail lever or treadle over the foot levers whereby all of said levers may be operated to simultaneously throw all the feed mechanisms into gear, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES SEYMOUR.

Witnesses:

GEO. W. DEATRICK,
WM. A. KETTENRING.