

February 12, 1914.

DRAWING

2,704

A careful search has been made this day for the original drawing or a photolithographic copy of the same, for the purpose of reproducing the said drawing to form a part of this book, but at this time nothing can be found from which a reproduction can be made.

Finis D. Morris,

Chief of Division E.

AWK

UNITED STATES PATENT OFFICE.

JAMES HAMILTON, OF NEW YORK, N. Y.

SAWMILL-GATE FOR CURVILINEAR SAWING.

Specification of Letters Patent No. 2,704, dated July 2, 1842.

To all whom it may concern.

Be it known that I, JAMES HAMILTON, of the city, county, and State of New York, engineer, have invented and made and applied to use certain new and useful Improvements in the Construction and Equipment of Sawmill-Gates, such improvements being especially intended for the purpose of enabling the attending workman to saw direct in a straight line or to diverge and saw a common or compound curve line in or across or through timber for any required purpose, but more particularly for sawing out ship-timber, for which improvements I seek Letters Patent of the United States; and that the said improvements and the mode of constructing and using the same are fully and substantially set forth and shown in the following description and in the drawings annexed to and making part of this specification, wherein—

Figure 1, is a front elevation of a saw gate as seen on the part next the work and fitted with my improvements. Fig. 2, is a similar elevation of the opposite side of the same gate. Fig. 3, is a vertical section as if cut through at the position of the saw. Fig. 4, is an end elevation as if seen at A, Fig. 1, and represents the principal hand gear by which the workman is to direct the course of the saw through the timber. Fig. 5, is a plan of the gate and equipments taken horizontally from A to B, Fig. 1, and which will serve also for the parts from C to D, Fig. 1.

The other figures are consecutively explained and the same letters and numbers as marks of reference apply to the same parts in all the different figures.

E is a fixed metal frame attached either to the fender posts and standards of a common saw mill or suspended from a traveling frame above where the saw is made to travel as is represented in my patent dated the twenty seventh of June one thousand eight hundred and forty.

a, a^1 are fixed bearing blocks to carry the journals of the upper and lower guide screw shafts b, b^1 . At the side A, Fig. 1, these screw shafts have on them the chain band gear wheels d, d^1 . Between these the bracket e on the frame E carries the hand gear shaft and crank handle f on which is mounted the chain gear pinion f^1 working into the chain band g , the shaft and crank handle being set in sliding journals on the bracket

e so as to tighten the chain g when needed. The screws b, b^1 have on them the guide blocks c, c^1 , and these carry the vertical grooved slideways h, h^1 which receive and guide the upper and lower slide pieces i, i^1 attached to the upper and lower saw slings k, k^1 . These are fitted on the saw gate F which is to be made of either wood or metal and connected to the driving power by two pitmen G, G, on the top stretcher as shown in the drawing when attached to a traveling frame above.

Under the saw sling k is a cushion l sliding on a pair of horizontal V slides m on the top stretcher of the gate F and between the sling k^1 and the lower stretcher a similar pair of slides m^1 receive an inverted cushion n and in k^1 a tightening screw o going through the bight of the sling to the cushion n gives a proper tension to the saw p which is held in place by the chops q under the sling k and chops q^1 . Above the sling k^1 the chops themselves are made so as to revolve and carry the saw to any required angle on center bolts r going through the slings k and k^1 .

The construction of the slings k and k^1 and the parts connected with them are shown in larger sized sections in the detached Figs. 6 and 7.

On the vertical sides of the frame E are a pair of square slide ways 1, 2, and another pair of V slide ways 3, 4, and on the gate are corresponding slide pads 5, 6, 7, 8, and also two pair of clamp pads 9, 10. These slides and pads collectively guide the gate F in the vertical motion on the frame E and prevent any direct or lateral sway in the gate when in work.

Between the vertical parts of the frame E is the double slide bar s , which is to be adjusted by screws to any height that will be just clear above the timber to be operated on. A vertical slot along the length of the double bar receives a pivot bolt v which goes through the slotted saw guide lever t shown detached in Figs. 12 and 13 and holds it in place between the bars s . The point of the lever is fitted as a fork u which receives and guides the saw p .

When the machinery is thus constructed and fitted and adjusted for work, the timber to be operated on may either be fixed in the common way on a carriage and brought up to the saw or the timber may be fixed and the saw frame and gate be made to travel

from above. In either case the timber is to be marked with lines representing the curves required to be cut and the attendant workman is to take the saw guide lever *t* in one hand and the crank handle in the other and power being applied to work the saw gate up and down in any convenient manner the workman is to turn the saw on the center bolts *v* to any required angle, by the lever *t* and by turning the crank handle *f* give the saw any needful amount of lateral motion as the screws *b*, *b*¹, and guide blocks *c* *c*¹, operating through the grooved slide ways *h*, *h*¹, on the slides *i*, *i*¹, and saw slings *k*, *k*¹, will carry the saw laterally back and forth to any desired position, the lever *t* directing it successively to the proper angles so as to follow the curve lines made on the timber, and by this arrangement a great quantity of curvilinear sawing can be effected in a short time.

When cutting for ship building or other purposes that require the timber to be cut with a compound bevel as well as curvilinear, such timber is to be presented to the saw with a rolling motion by a pair of headstocks sustaining frames and blocks of a peculiar construction for which it is my intention to seek a separate patent.

When cutting straight work in the timber the saw is to be held in the proper line by the apparatus shown in front in Fig. 9 and sidewise in Fig. 8. A guide pin *x* on the sling *k*¹, passes through a slot in the keeper piece *z*. A screw and nut *y* also passes through and secures it in place and the clutch fork in the upper part of the keeper piece *z* retains the chops *q*¹, and saw *p* in the proper line for the work. A similar fork inverted on the upper sling *k*, completes this arrangement.

A different mode of constructing the parts on the top and bottom stretcher of the gate *F*, is shown in front in Fig. 10 and in plan in Fig. 11, where *a*² is the stretcher made in two thicknesses or so as to have a long mortise or slot vertically through it, this is to be connected to the power by a pitman at either end in any convenient manner and have the metal railways 14 on the top edge. These receive a roller carriage 11, through which the bolt 12 passes having on one end the chops 13, and secured to vibrate on a center nut 15. When in use the slides *i* and *i*¹ will work into the slide ways *h*, and *h*¹ and the lateral and angular motion of the saw be given in all respects as before described.

I do not intend to confine myself to the mode described of moving the saw laterally by screws and guide blocks impelled by chain gear wheels and bands as racks and pinions and tooth wheel or ratchet gear or other competent mechanical means may be used and other means of giving the saw the

required angle may be employed without any substantial departure from the general arrangement herein predicated; neither do I intend to limit myself to the arrangement of means described to give the gate and saw the proper vertical cutting motion as it will be evident that the gate can be worked from above or below by any of the common and well known mechanical means now in use or the gate may work on the fender posts and standards of a common saw mill and these may be made to carry the guiding parts without the frame *E*, if conveniently available for such purposes without any interference with the herein described arrangements for guiding and controlling the saw. I do not claim to have invented any of the parts in the machinery herein described, taken separately as each part is well known and in common use for various purposes but

I do claim as new and of my own invention—

1. The mode of connecting the hand gear crank handle and shaft *f* through the hand gear pinion *f*¹, chain band *g*, chain band gear wheels *d*, *d*¹, and guide screws *b*, *b*¹, to the guide blocks *c*, *c*¹, and grooved slide ways *h*, *h*¹, and the combination of these parts with the slide pieces *i*, *i*¹ and saw slings *k*, *k*¹, for the purpose of enabling the attending workman to control and direct the lateral movement of the saw *p* when such mode of connection and combination is employed to effect either straight or curvilinear sawing including any merely mechanical variations in the connecting and working parts which shall be substantially the same in the means employed and the effects produced.

2. The mode of mounting the saw *p* in the chops *q*, *q*¹, in combination with the mode connecting the chops with the slings *k*, *k*¹, by the center pins *r*, and the combining of these parts with the guide lever *t* and fork *u*, on the double slotted bar *s*, for the purpose of enabling the attending workman to direct the operations of the saw successively in any required lines either straight or curvilinear substantially as such mode of mounting, connecting and combining the same is herein described including such merely mechanical variations as shall be substantially the same in the means employed and the effects produced.

In witness whereof I have hereunto set my hand in the city of New York this first day of November one thousand eight hundred and forty one, in the presence of the witnesses signing hereto.

JAMES HAMILTON. [L. s.]

Witnesses:

JOHN R. BURKE,
SAML. H. HAMILTON.