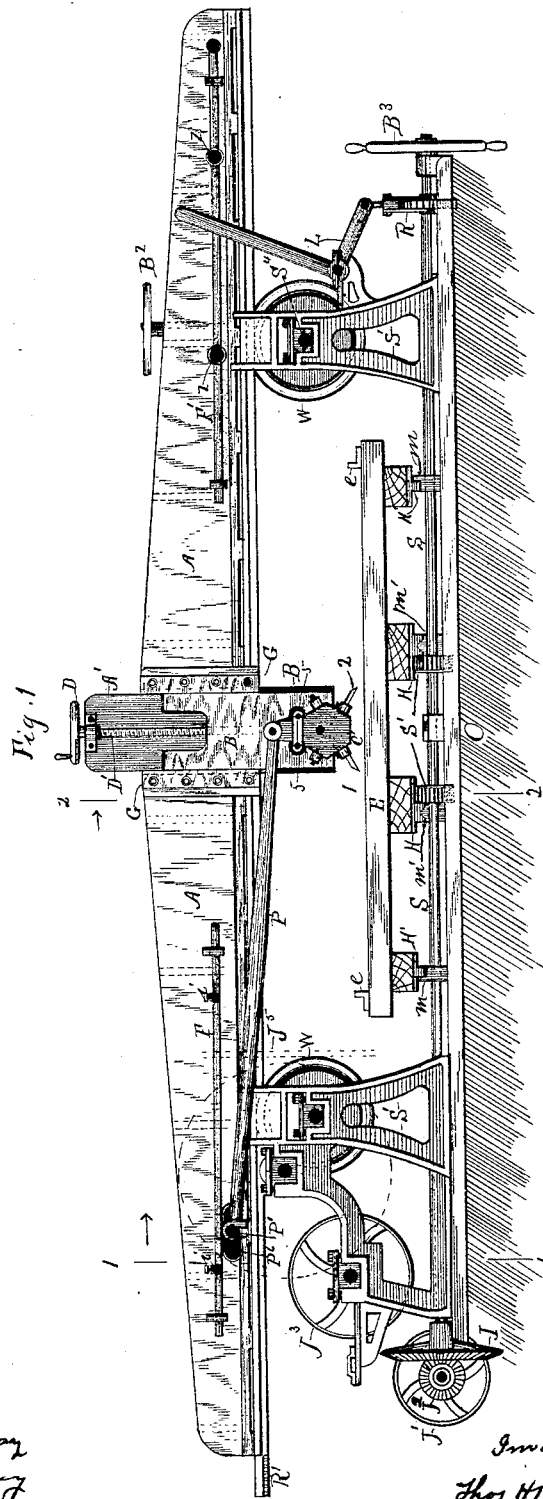


C. KENNEDY.
STONE PLANING MACHINE.

No. 454,481.

Patented June 23, 1891.



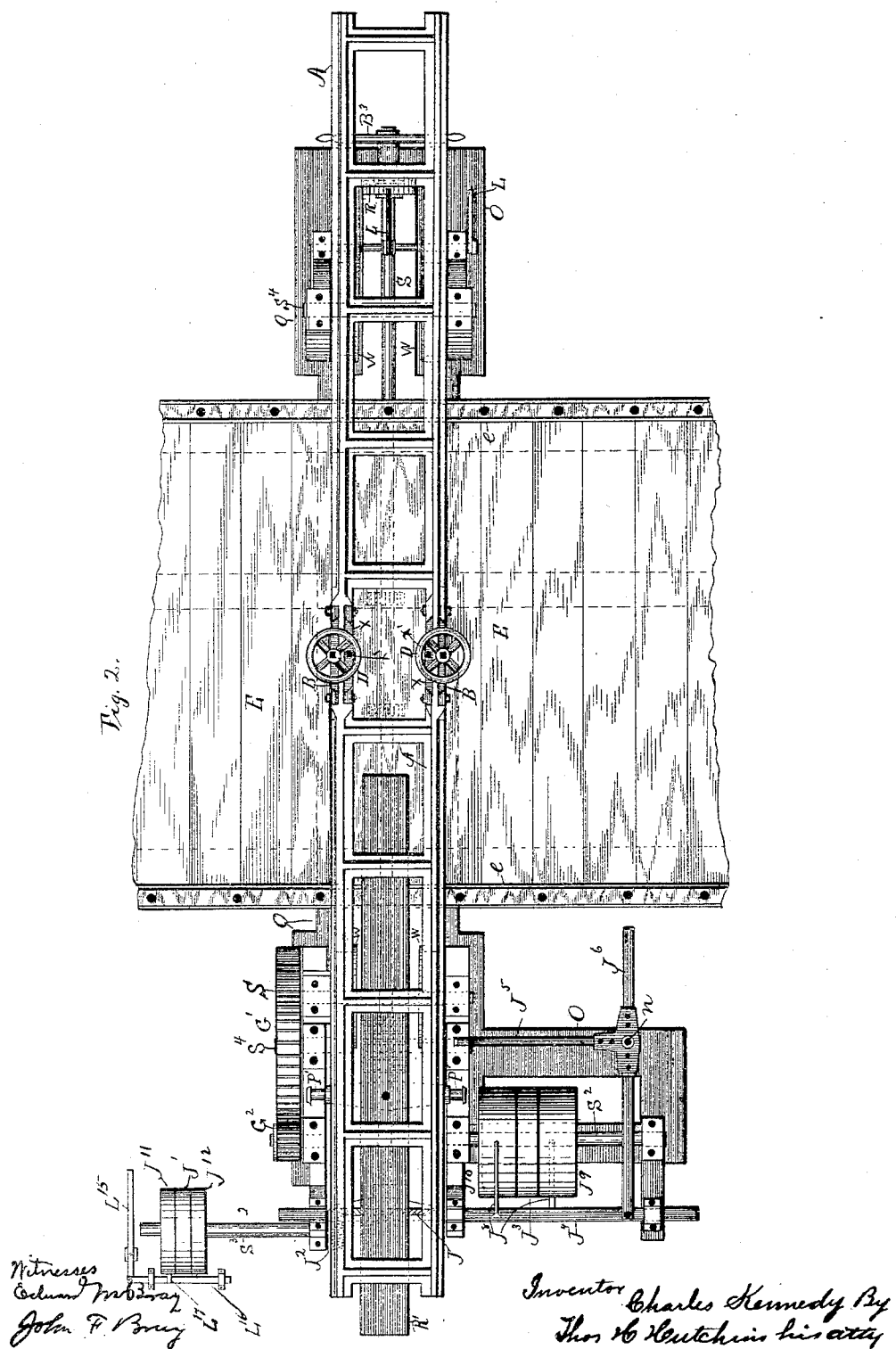
Witnesses
Edmund M. Bray
John F. Bray

Inventor
Charles Kennedy By
Thos H. Hutchins his atty

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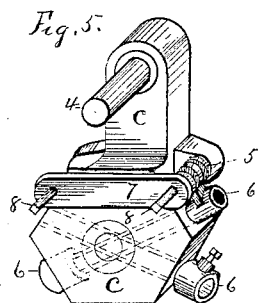
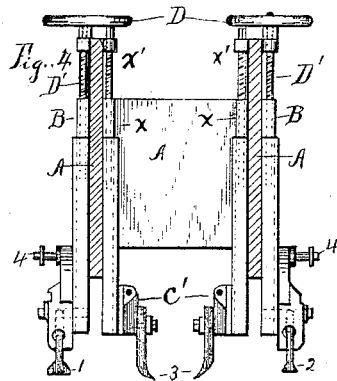
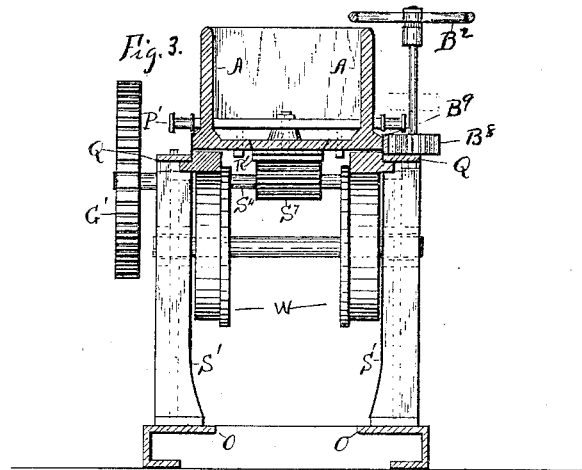
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UNITED STATES PATENT OFFICE.

CHARLES KENNEDY, OF JOLIET, ILLINOIS, ASSIGNOR OF ONE-HALF TO
JOHN C. CROMWELL, OF SAME PLACE.

STONE-PLANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 454,481, dated June 23, 1891.

Application filed September 19, 1890. Serial No. 365,574. (No model.)

To all whom it may concern:

Be it known that I, CHARLES KENNEDY, a citizen of the United States of America, residing at Joliet, in the county of Will and State of Illinois, have invented certain new and useful Improvements in Stone-Planing Machines, of which the following is a specification, reference being had therein to the accompanying drawings and the letters and figures of reference thereon, forming a part of this specification, in which—

Figure 1 is a side elevation. Fig. 2 is a top plan view. Fig. 3 is a vertical cross-section of Fig. 1 of the reciprocating tool-bed, taken on line 1, looking in the direction of the arrow. Fig. 4 is a vertical cross-section of said bed, taken on line 2 of Fig. 1, looking in the direction of the arrow; and Fig. 5 is a perspective view of one of the oscillating tool-holders.

This invention relates to certain improvements in stone-planing machines, which improvements are fully set forth and explained in the following specification and claims.

Referring to the drawings, O is the bed of the machine, which is intended to rest on and be secured to a foundation of masonry.

S' are stands resting on and secured to bed O and having journal-boxes at their upper ends for receiving the journals of the axles, on which are secured the flanged wheels W W.

A is a reciprocating tool-bed resting on said flanged wheels W W, on which it reciprocates within certain limits controlled by a belt-shifting mechanism hereinafter explained.

C C are tool-holders for holding, respectively, the roughing-tool 2 and the finishing-tool 1. These tool-holders are respectively pivoted to the lower outer sides of the slides B B, attached to the outer sides of the reciprocating-bed A by means of the gibs G and adapted to be vertically adjusted by means of the screws D', having hand-wheels D on their upper ends for the purpose of adjusting the tools to their work.

X X are similar slides to B, and attached to the inner sides of the reciprocating bed A opposite the slides B B and held in place by means of similar gibs, and have respectively pivotally attached to their lower ends tool-holders C' for holding the tools 3 for planing

the edges of the stone to be planed. These slides X X are vertically adjusted by means of the screws X' X' and hand-wheels D, the said hand-wheels being removable and adapted to fit the square upper ends of both screws D' and X'.

The oscillating tool-holder C is provided with the hollow shafts 6, passing through the body of said tool-holder at an angle with each other, which hollow shafts form sockets at their lower extending ends for holding the cutting-tools, and these hollow shafts are intended to be rotated to some extent by means of the worm-gearing mechanism 5 8, for the purpose of presenting the cutting-tools to their work in the proper manner.

R' is a toothed rack arranged in ways on the under side of the reciprocating bed A, so that it may reciprocate within certain limits, and its teeth project downward, so as to mesh with pinion S', secured on shaft S', passing through under said rack. Said sliding rack has pivotally attached to its upper side the cross-bar P', the two outer ends of which project out through slots P⁶ in the sides of the reciprocating bed A, so that the reciprocating movement of the rack R' in the bed A is limited to the length of said slots. The outer ends of the said cross-bar P' are respectively connected with the wrists 4 of the tool-holders C by means of the rods P, by means of which connection the said tool-holders are oscillated to turn the tools 1 and 2 alternately to their work as said rack is reciprocated in its ways.

The outer end of shaft S' has secured on it the gear-wheel G', which meshes with the pinion G² on the outer end of drive-shaft S², having ordinary fast pulley J³ and loose pulleys J⁹ and J¹⁰, to which a drive-belt may be applied to drive the machine.

The reciprocation of bed A is obtained by means of a belt-shifter, which shifts the bed by means of shifting the drive-belts alternately from loose pulleys J⁹ J¹⁰ on shaft S² to a fast pulley J³ between them. It is intended to have a drive-belt on each of said loose pulleys, one of which belts is crossed, so it will turn its pulleys in the opposite direction from that over which the other belt passes. As these belts are shifted alternately from the said loose pulleys to the fast pulleys J³ said fast pulley will be turned alternately in op-

posite directions. This belt-shifting mechanism is shown in Fig. 2, and consists of the sliding bar J⁴, having the arms J⁸ for engaging the belts on said pulleys. The lever J⁶ is
 5 pivoted at *n* on the bed O and pivoted at its outer end to bar J⁴. Arm J⁵ is connected to arm J⁶ and has its outer end bent to extend upward and be engaged alternately by the
 10 extending tappets *i* $\frac{1}{2}$, adjustably attached to rail F on the side of bed A (the broken lines in Fig. 2 showing the upwardly-extending end of arm J⁵) for the purpose of shifting the drive-belt, so as to drive shaft S² alternately in either direction, as stated.

15 E is a reciprocating bed for holding on its upper surface the stone to be planed. This bed consists of heavy planking bolted to cross-beams underneath, which are faced on their under side with guideways H H', resting on suitable guides *m m'*, which said bed
 20 reciprocates below the tool-holders and at right angles with the bed A above.

S is a shaft located centrally on the upper side of bed O and extending its entire length, and is provided on one end with the bevel-gear J, which meshes with bevel-pinion J³ on
 25 shaft S³, having on it the fast pulley J' and loose pulleys J¹¹ and J¹², by means of which shaft S is driven when the machine is used
 30 for planing the edges of a stone placed on bed E, and said shaft S is also provided about centrally with pinions S' for meshing with racks on the under side of guideways H. The opposite end of shaft S is provided with a
 35 hand-wheel B³, and also a ratchet-wheel R, located next to said hand-wheel.

When the machine is operating to plane the upper surface of a stone secured on bed E, the reciprocation of bed A will cause the tappets Z on rail F', attached to its side, to alternately engage the long arm of bell-crank L.
 40 The short arm of said bell-crank is provided with a pawl that engages ratchet-wheel R on shaft S. When said tappets Z so engage said
 45 bell-crank, the said ratchet-and-pawl mechanism will rotate shaft S intermittently and move bed E forward, so as to feed the work forward to the tools, so that the work will be moved forward at each reciprocation of the
 50 tool, so it can take a new cut across the work.

The hand-wheel B³ furnishes means for reciprocating bed E backward or forward for the purpose of placing it in proper position at the commencement of a piece of work.

55 When it is desired to plane the edges of a stone placed on bed E, the cutting-tools 3 are used, and in such case a pair of belts are applied, one on each pulley J¹¹ and J¹², on being crossed, so as to turn said pulleys in opposite
 60 directions, and designed to be shifted alternately to the fast pulley J' between them by means of a belt-shifter consisting of the sliding bar L¹⁶, having the arms L¹⁷ and the lever L¹⁵, it being intended that the operator may,
 65 by means of taking hold of said lever, operate

the belt-shifter to cause bed E to move in either direction at his will.

When tools 3 are in operation, the tools 1 and 2 are moved upward out of the way, and when the tools 3 are being thus used the bed
 70 A with said tools must be moved to its proper position and held stationary, and for such purpose is provided with a hand-wheel B², having a pinion B⁸ on the lower end of its shaft for meshing with a rack B⁹ on the side
 75 of said bed. (Shown in Figs. 1 and 3 only.) By means of this pinion-and-rack mechanism bed A may be moved and held by locking said pinion, so as to place tools 3 in proper
 80 position for planing the edges of the work as it lies on reciprocating bed E, thus adapting the machine for planing the edges as well as the surface of a stone that may be placed on
 85 bed E. The angle-rails *e* on the upper surface of bed E are securely bolted thereto and are for the purpose of holding the work on the said bed.

When the machine is in use for planing the surface of the stone, the pawl on the lower arm of bell-crank L is disengaged from the
 90 ratchet-wheel R on shaft S, and rack B⁹ and pinion B⁸ are placed out of gear by means of sliding said pinion upon its shaft, to which it is feathered and held by means of a pin passing through its shaft or by any other suitable
 95 means.

In operation, when the machine is to be used for planing and dressing off the upper surface of a stone, the stone is placed on bed E and secured therein in such position as to be
 100 engaged by the tools 1 and 2, (the tool 2 being what is called the "rougher," for making the first cut, and tool 1 being the smoother, for following tool 2 to finish up the work.) The bed E with its work is set by means of
 105 turning hand-wheel B³, so as to cause the said tools to commence at one edge of the stone to do their work. Power being applied to hand-wheel J³ will drive shaft S², with its pinion G³, and gear G' and its shaft S⁴, with its pinion
 110 S⁷, and reciprocate rack R' in whichever direction the belt-shifting mechanism on shaft S² may determine until the cross-bar P', attached to said rack, will engage bed A at the ends of the slots P⁶ in the sides of said bed,
 115 and by means of such engagement move bed A with it until the belt-shifting mechanism causes a reverse movement, when said cross-bars will move to the opposite end of said slots and move bed A in the opposite
 120 direction, and thus reciprocate bed A. The object of having cross-bar P' move in said slots before it moves bed A is to oscillate tool-holder C by means of its connection with said cross-bar through the medium of rods P,
 125 so as to turn the tools 1 and 2, respectively, to their work, and so said tools alternately operate upon the work—one when bed A moves in one direction and the other when
 130 said bed returns—so that work is being done

continuously at each reciprocation of said bed. When the surface of the stone is finished and it is desired to plane its edges, the machine is set and operated, as before stated, to bring tools 3 in operation for that purpose.

Q are guides secured on the upper ends of the stands S' and are arranged to project over projecting side flanges of bed A to prevent its becoming detached from the top of said stands.

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

1. In the stone-planing machine shown and described, the combination of the reciprocating bed A, flanged wheels W W, slides X X, having the tool-holders C' C' attached, respectively, to their lower ends, screw-rods X' X', hand-wheels D, rack B⁹, pinion B⁸ and its shaft, pinions J J², shaft S, pulleys J' J¹¹ J¹², and belt-shifter L¹⁵ L¹⁶ L¹⁷, all arranged to operate substantially as and for the purpose set forth.

2. In the stone-planing machine shown and described, the combination of the reciprocating bed A, having the side slots P⁹ and toothed rack R', cross-bar P', pivotally attached to said rack and having its ends extending out

through said slots and adapted to move within the limits of said slots, oscillating tool-holders C, rods P for connecting said cross-bar and tool-holders, pinion S', shaft S⁴, gear G', pinion G², shaft S², pulleys J³ J⁴ J⁹, belt-shifting bar J⁴, lever J⁶, arm J³, rail F, having the adjustable tappets i i, rail F', having the adjustable tappets Z Z, bell-crank L and its pawl, and shaft S, having ratchet-wheel R and pinions S', all arranged to operate substantially as and for the purpose set forth.

3. In the machine for planing stone shown and described, the combination, with the reciprocating bed A, of the rails F and F', the adjustable tappets arranged on said rails, and levers L and J⁵, substantially as and for the purpose set forth.

4. In the stone-planing machine shown and described, the combination of bed A, slides X X, screw-rods X' X', hand-wheels D, pinion B⁸ and its shaft, hand-wheel B², rack B⁹, reciprocating bed E, and the means shown and described for reciprocating said bed E, substantially as and for the purpose set forth.

CHARLES KENNEDY.

Witnesses:

THOS. H. HUTCHINS,
J. C. CROMWELL.