

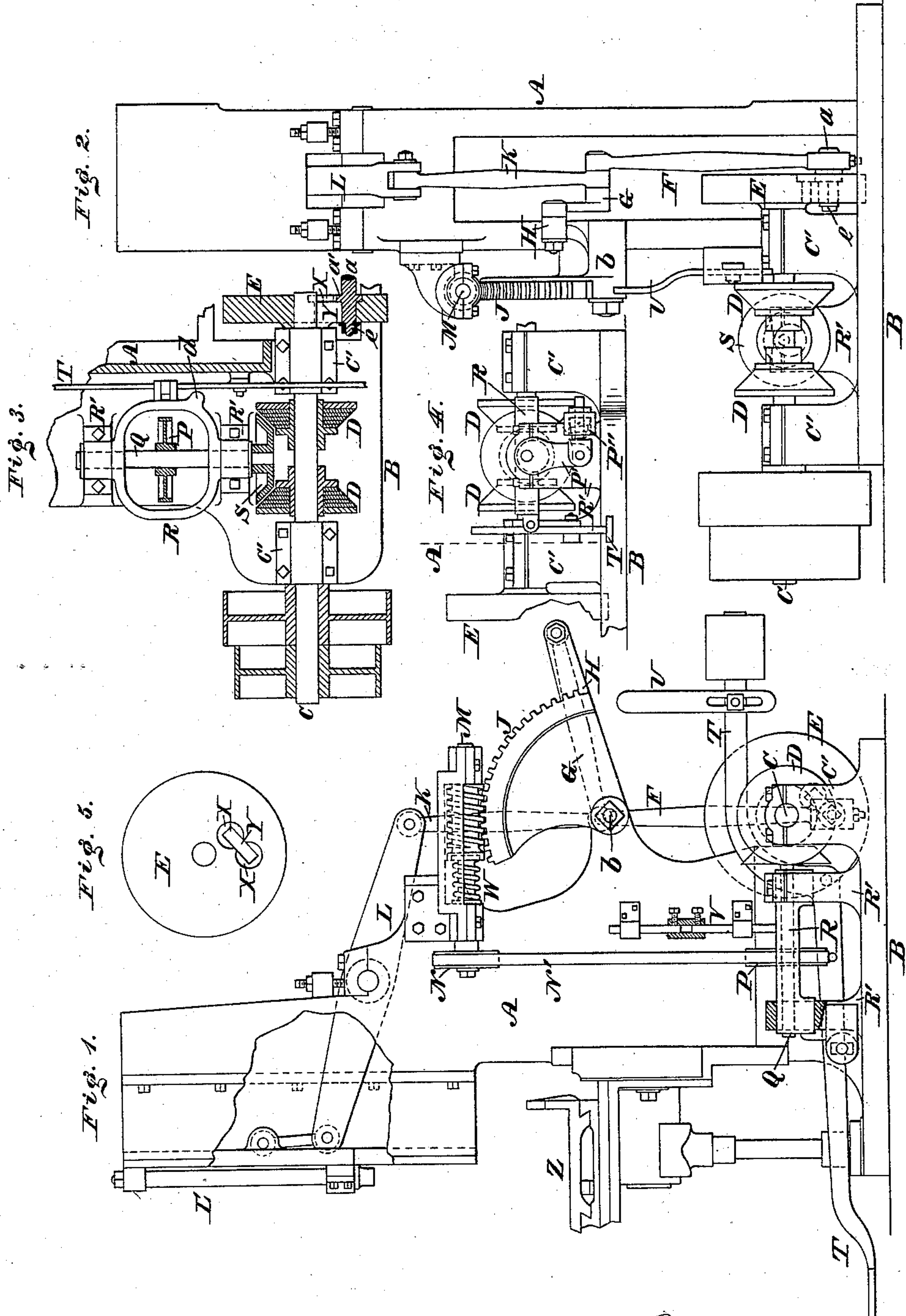
(No Model.)

L. O. ORTON & L. H. BERRY.

MORTISING MACHINE.

No. 280,326.

Patented June 26, 1883.



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# UNITED STATES PATENT OFFICE.

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## MORTISING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 280,326, dated June 26, 1883.

Application filed January 10, 1883. (No model.)

*To all whom it may concern:*

Be it known that we, LYMAN O. ORTON and LUCIEN H. BERRY, both citizens of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Mortising-Machines, which improvement is fully set forth in the following specification and accompanying drawings, in which—

10 Figure 1 is a side elevation, partly sectional, of the mortising-machine embodying our invention. Fig. 2 is an end elevation thereof. Fig. 3 is a horizontal section of a detached part. Fig. 4 is an end elevation of a portion  
15 opposite to Fig. 2. Fig. 5 is a view of a crank or crank-wheel of the machine detached.

Similar letters of reference indicate corresponding parts in the several figures.

20 Our invention consists in adapting the chisel-head to be operated from different points, whereby the chisel may be lowered into or raised from the wood.

It also consists of certain novel details, as will be hereinafter fully set forth.

25 Referring to the drawings, A represents the frame of the machine, and B the bed thereof.

C represents the driving-shaft, which is suitably mounted on the bearing C', rising from the bed; and D represents two friction-pulleys,  
30 which are keyed or otherwise secured to the shaft, and located as most clearly shown in Fig. 3.

To the end of the shaft C opposite to the driving-pulleys is secured a crank-wheel, E, with the wrist-pin *a* of which is connected an arm, F, whose upper end is mounted on a crank, G, (see Fig. 2 and dotted lines, Fig. 1,) said crank being hung from an arm, H, which is formed with or secured to a toothed  
40 segment, J, the axis whereof is on the frame A, as at *b*.

On the crank G is also mounted an arm, K, whose upper end is pivoted to a rocking or swinging lever, L, whose axis is on the upper  
45 part of the frame A, said lever being connected with the tool-carrying or chisel head L'.

On the frame is mounted a worm, M, which meshes with the segment J, and carries a pulley, N, around which passes a belt, N', which  
50 also passes around a pulley, P, the latter being secured to a shaft, Q, which is mounted

eccentrically in the journals of a rocking frame, R, said journals being fitted concentrically in upright bearings R', rising from the bed B of the machine, and said shaft carrying a friction-  
55 pulley, S, which is located between the pulleys D D, and adapted to engage with either of said pulleys D. The frame R incloses the pulley P, and is connected at one side with the treadle T, whose axis is on the bed or bot-  
60 tom of the frame A, and has its rear end weighted, and provided with an upright arm, U, which is so located that it may be engaged at the top by the adjacent end of the segment J.

One side of the frame R is formed with a  
65 laterally-projecting lip or lug, *d*, above which is a vertically-arranged rod or bar, V, which is mounted on the frame A, and has its upper end adapted to engage with the end of the segment J opposite to the arm U, said bar  
70 being adjustable in length by suitable means. The shaft Q is mounted on one end on a jointed arm, P', the lower part of which is secured to or rested against a spring, P'', which is fitted  
75 within a box or other suitable device supported on the bed B, (see Fig. 4,) whereby should the strain on said shaft Q be excessive when shifted to cause the engagement of the pulley S with either pulley D, said strain is  
80 received by the spring P'', and injury of parts thereby prevented.

On the shaft of the worm M is fitted a spring, W, which bears against said worm and one of the bearings thereof, whereby should  
85 excessive strain be exerted on the worm by the motion of the segment J in the direction toward the bar V, said spring W receives the strain and prevents injury of the immediate parts of the machine.

On the crank-wheel E are two recesses, X,  
90 which are in communication by means of a slot, Y, which is passed through said wheel, either of said recesses being adapted to receive an enlarged portion or head, *a'*, of the wrist-pin *a* of said wheel E, said pin passing  
95 through the slot Y, and having its rear end threaded for engagement of a nut, *e*, which tightens against the back of the wheel E.

It will be seen that the wrist-pin may be passed through the slot Y and its head fitted  
100 in either of the recesses X, whereby when the nut *e* is tightened the wrist-pin is prevented



from shifting. By this construction the throw of the connecting-rod F, lever L, and head L' may be adjusted, and provision made for changing the stroke and speed of the chisel relatively to the requirements for large work or deep mortises and small work or shallow mortises.

Z represents the table, which in the present case is of usual construction.

The operation is as follows: The treadle T is depressed and power applied to the shaft C. Owing to the crank-wheel E, rods F K, and lever L, motion is communicated to the tool-carrying head L', and the mortising operation begins, the wood resting on the table Z, which is properly advanced. When the treadle is depressed, (see Fig. 3,) the right-hand side of the frame R is lowered, whereby the shaft Q, mounted eccentrically in said frame, is thrown to the right, thus moving the pulley S against the right-hand pulley D, and said shaft is rotated, the power being communicated to the pulley P, and consequently to the band N', pulley N, and worm M. This turns the segment J and arm H downwardly, whereby the lower end of the crank G is raised and set in such position that the throw imparted to the lever L causes the chisel to work. The segment J, having reached its lowest point, strikes the arm U, thus raising the treadle T, on which, however, the operator retains his foot. The frame R, being raised by the treadle, throws the shaft Q sufficiently to the left to move the pulley S between the pulleys D without contact with either. This stops the pulley P, and consequently the worm and segment; but the machine, being properly set by the position of the crank G, as has been stated, continues its operation. As soon as the work of mortising is accomplished, the operator removes his foot from the treadle, whereby the weight of said treadle throws up the end previously held by the operator's foot. This raises the frame R, whereby the shaft Q is moved to the left and the pulley S thrown in gear with the left-hand pulley D. Power is thus communicated to said shaft Q, and consequently to the pulley N, in such manner that the movement of the segment J is toward the bar V. This raises the arm H and lowers the lower end of the crank G, whereby the rods or links F K act as a toggle, which opens and closes with the motion of the crank-wheel E without imparting motion to the lever L. The chisel is also raised clear of the wood and held elevated, and the wood may then be removed from the table. The segment reaches the bar V and depresses it against the lip or lug d of the frame R, thus lowering said frame and throwing the shaft Q and pulley S to the right between the two pulleys D, thus stopping the motion of the worm and segment, without, however, stopping the motion of the crank-wheel. Another piece of wood or timber may then be placed on the table, and the treadle T is lowered, whereby by means of the interne-

mediate mechanism heretofore stated, the chisel-head is lowered so as to enter the wood, and the other operations are repetitions of those already explained.

The crank-wheel E, or "crank-shaft," as said wheel and the shaft C may be termed, is placed at the bottom of the machine. Heretofore said wheel or shaft has been located at the top of a mortising-machine, and the machine, owing to its rapid shaking, requires to be braced to the building or floor, which occupies room and is inconvenient, all of which we avoid by the present arrangement of the crank-wheel or crank-shaft.

In mortising-machines hitherto made, the thrust of the chisel on the material is received on the operator's foot through the treadle mechanism that draws down said chisel, and, besides being tiresome to the operator, also jars his foot. This is avoided by the mechanism which moves the rod or link in and out of stroke. In lieu of the worm M and worm-tooth of the segment J, we may substitute bevel or other suitable gearing without affecting the operation of said segment and connected parts.

Having thus described our invention, what we claim as new; and desire to secure by Letters Patent, is—

1. In a mortising-machine, a treadle and shifting friction-pulley operated thereby, in combination with a driving-shaft having two friction-pulleys mounted thereon and adapted to rotate the said shaft in either direction, in combination with a crank operated by said shaft, a lever and chisel-head operated by said crank, a segment operated by said crank, a worm which meshes with said segment, and connecting devices between said worm and the support of said shifting friction-wheel.

2. In a mortising-machine, a treadle, a rocking frame operated thereby, a shifting friction-pulley, two friction-pulleys on the driving-shaft, with either of which it may be thrown into contact, a segment oscillated by said shaft, a worm meshing with said segment, and connecting devices whereby said worm is enabled to move said frame so as to ungear said shifting friction-wheel and stop the machine, substantially as set forth.

3. In a mortising-machine, a treadle provided with an upright arm, in combination with a rocking frame provided with a lateral lug and connected with said lever, a shifting friction-pulley carried by said rocking frame, a vertical bar hung to the frame of the machine above said lug, a driving-shaft provided with two friction-pulleys, either of which may be engaged by the shifting friction-wheel above mentioned, and a segment operated by said driving-shaft and adapted to engage either said upright arm or said vertical bar, substantially as set forth.

4. The combination of a driving-shaft, its two friction-pulleys, the chisel-head, and its operating-toggles with a friction-pulley oper-



ated by a treadle and adapted to be thrown into gear with either one of said friction-wheels on the driving-shaft, or forced from them entirely, a segment rocked by said driving-shaft and adapted to engage attachments of said shifting friction-wheel as said segment oscillates in either direction, a worm which

gears with said segment, and a spring operating on said worm, substantially as set forth.

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