

A. H. FRANK & G. SPIRE.

SAWING-MACHINE.

No. 174,950.

Patented March 21, 1876.

Fig. 1.

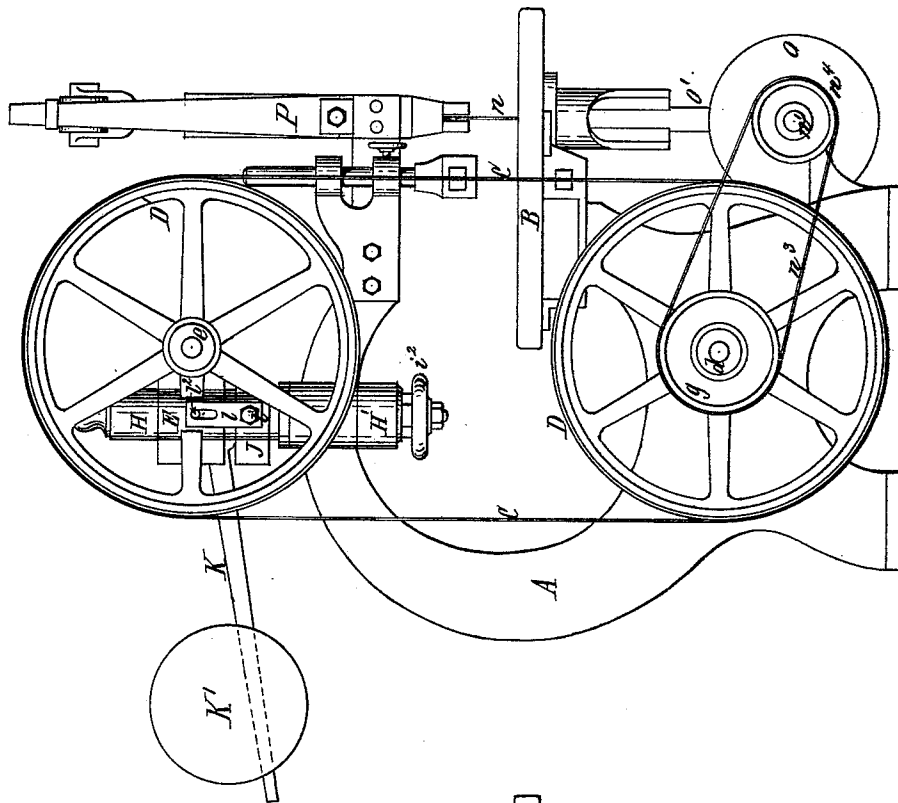
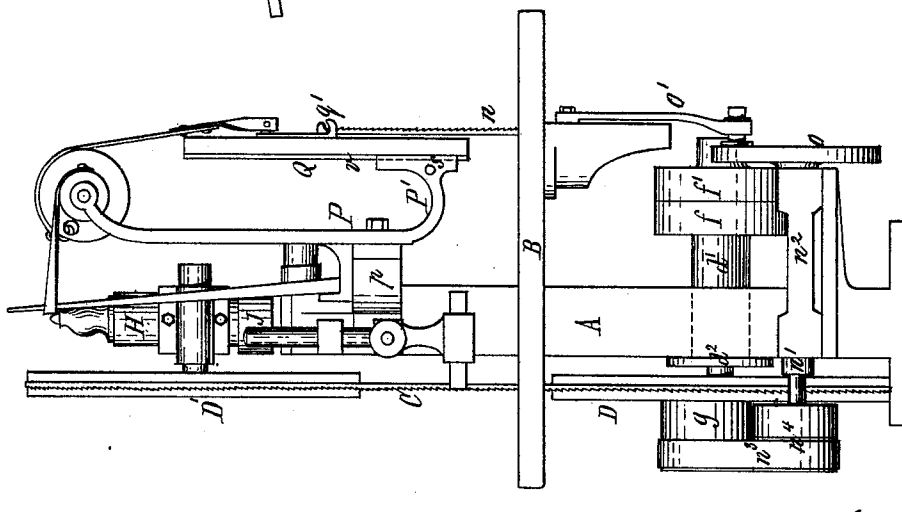


Fig. 2.



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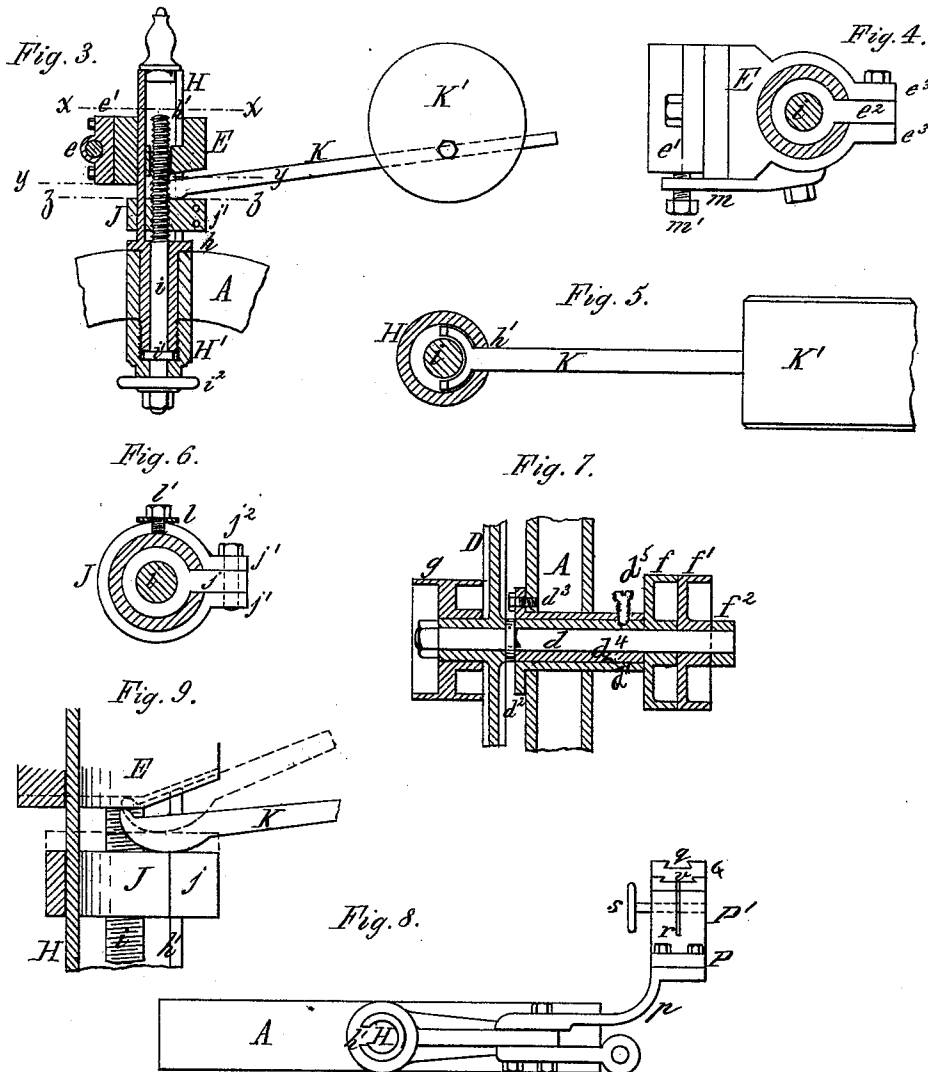
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UNITED STATES PATENT OFFICE.

ANDREW H. FRANK AND GEORGE SPIRE, OF BUFFALO, NEW YORK.

IMPROVEMENT IN SAWING-MACHINES.

Specification forming part of Letters Patent No. **174,950**, dated March 21, 1876; application filed April 1, 1875.

To all whom it may concern :

Be it known that we, ANDREW H. FRANK and GEORGE SPIRE, both of the city of Buffalo, in the county of Erie and State of New York, have invented certain Improvements in Sawing-Machines, of which the following is a specification :

This invention relates more particularly to a machine in which a band-saw and a gig-saw are combined, and its nature will be best understood from the following description.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation of a machine provided with our improvements. Fig. 2 is an elevation at right angles to Fig. 1. Fig. 3 is a detached sectional view of the mechanism for regulating the tension of the band-saw. Fig. 4, 5, and 6 are horizontal sections, on an enlarged scale, respectively, in lines *x x*, *y y*, and *z z*, Fig. 3. Fig. 7 is a vertical section through the shaft of the lower band-saw pulley. Fig. 8 is a top plan view of the frame of the machine. Fig. 9 is a detached view of the inner end of the weighted lever and follower for adjusting the same.

Like letters of reference designate like parts in each of the figures.

A is the main frame of the machine; **B**, the table secured thereto; **C**, the band-saw, and **D D'** the pulleys over which the latter is arranged. **d** is the shaft of the lower pulley **D**, forming the driving-shaft of the machine. It is supported in a sleeve-bearing, **d¹**, extending through the lower part of the main frame, and secured to the same by a flange, **d²**, and bolts **d³**. **d⁴** is the cylindrical bearing-box of the shaft **d**, arranged within the sleeve-bearing **d¹**, so as to be laterally adjustable therein, and **d⁵** a set-screw by which the said bearing-box is secured in place. Upon loosening the set-screw the bearing-box **d⁴** can be readily adjusted within the sleeve **d¹**, causing a corresponding adjustment of the shaft **d**, and lower saw-pulley, thereby enabling the latter to be readily brought in the same vertical line with the upper saw-pulley without disturbing the sleeve **d¹**. **f f¹** represent a tight and loose pulley mounted on the shaft **d** by means of a collar, **f²**, for the reception of the belt by which the machine is driven. **g** is a pulley arranged on the outer side of the pulley **D**, and secured

to the outwardly-projecting hub of the latter, as clearly shown in Fig. 7. **e** is the shaft of the upper pulley **D'**, supported in a bearing-box, **e¹**, attached to or formed with a head-bearing, **E**. **H** is a round hollow post or standard secured vertically in a cylindrical socket in the upper part of the main frame by a flange, **h**, on the upper side, and a screw-cap, **H'**, on the lower side, of the socket. It is provided on the side opposite the shaft **e** with a vertical slot, **h'**, as clearly shown in the drawings. **i** is a screw-shaft arranged axially within the hollow standard **H**, and held against longitudinal movement by a collar, **i¹**, clamped between the screw-cap **H'** and the lower end of the standard **H**, as clearly shown in Fig. 3. The shaft **i** is rotated by a hand-wheel, **i²**, secured to the lower end thereof. **J** is a follower composed of two parts, the outer one surrounding the standard, while the inner one fits in the bore thereof, and is provided with an internal screw-thread, so as to engage with the screw-shaft **i**. The inner part is provided with an ear or flange, **j**, projecting through the slot **h'**, and secured between two corresponding flanges, **j¹**, of the outer part, by screw-bolts **j²**. The head-bearing **E** is constructed of two parts similar to the follower **J**, with the exception that the inner part is not provided with a screw-thread, but simply surrounds the screw-shaft loosely, while it fits snugly within the bore of the standard **H**, so as to serve as a guide. The inner part of the head-bearing **E** is provided with a flange, **e²**, which projects through the slot **h'** of the post, and is clamped between two flanges, **e³**, of the outer part, which latter fits around the standard **H**, so as to slide thereon. **K** is the tension-lever, provided at its outer end with an adjustable weight, **K'**, and resting with its inner end on the follower **J**, within the hollow standard **H**. The inner end of the lever **K** is made bifurcated or semicircular, so as to extend partly around the screw-shaft **i**, as clearly shown in Fig. 5, the under side of the inner end being made convex, while the upper side is provided with slight projections, upon which the inner part of the head-bearing **E** rests, as clearly shown in Fig. 3. **l**, Fig. 1, is a connecting-strap secured to the side of the follower **J** by a screw, **l¹**, and provided with a vertical slot, in

which engages a pin, l^2 , projecting from the head-bearing E. m , Fig. 4, is a screw-bearing, attached to the opposite side of the head-bearing E, and provided with a set-screw, m' , by which the bearing e^1 of the upper pulley-shaft e can be laterally adjusted. The inner end of the lever K is so curved on its lower side that, in raising and lowering the follower J, the leverage on which the weight K acts will remain the same in all positions of the follower, thereby insuring a uniform and proper tension of the saw. By raising the outer end of the lever K so as to permit the head-bearing E to drop slightly, the strain is removed from the saw, and the latter enabled to be taken from the pulleys. By raising and lowering the follower J, the head-bearing E is adjusted in accordance with the length of the band saw. The slotted strap l permits the head-bearing E to adjust itself independent of the follower J, in accordance with the pressure of the weighted lever K, while the accidental displacement of the head-bearing E is prevented by this strap. n represents the gig-saw, and n^1 the driving-shaft thereof, supported in a bracket bearing, n^2 , secured to the lower part of the main frame. The shaft n^1 is driven from the pulley g on the main shaft d by means of a belt, n^3 , and tight and loose pulleys n^4 . The gig-saw is driven from the shaft n^1 by a crank-wheel, o , and pitman o' , in a common manner. P is the frame of the gig-saw, secured to the upper part of the main frame A by means of an angular arm, p , as clearly shown in Figs. 2 and 8, so that both the main and gig-saw frames form one rigid frame-work. Q is the vertical upper guide of the gig saw, provided on its front side with a dovetail-groove, q , in which slides the shoe or cross-head q' , to which the upper end of the gig-saw is attached. r is a dovetail feather arranged longitudinally on the rear side of the guide Q, and fitting in a corresponding groove formed in the lower part P' of the frame P. The part P' of the frame is divided into two

jaws by a central slit or narrow groove, r , and provided with a screw, s , by which the two jaws can be sprung together, when the guide Q is tightly clamped between the same. Upon loosening the screw s the guide Q slides loosely in the dovetail groove of the part P', so that it can be adjusted therein to any desired height in accordance with the price of work operated upon.

We claim as our invention—

1. The combination, with the frame and upper pulley, of a band-saw, the hollow guide-post H, screw-shaft i , threaded follower J, head-bearing E, and weighted lever K, interposed between the follower J and bearing E, substantially as and for the purpose hereinbefore set forth.

2. The combination, with the follower J, weighted lever K, and head-bearing E, of the slotted connecting-strap l , and pin l^2 , substantially as and for the purpose hereinbefore set forth.

3. The combination, with the gig-saw n , and upper guide Q, provided with dovetail feather v , of the clamping-jaws P', and tightening-screw s , substantially as and for the purpose hereinbefore set forth.

4. A sewing-machine comprising in its organization a band-saw, C, gig-saw n , main frame A, and gig-saw frame P at right angles to the main frame, and rigidly connected therewith by an arm, p , arranged substantially as and for the purpose hereinbefore set forth.

5. The combination, with the frame A, shaft d , and pulley D, of the stationary sleeve-bearing d^1 , and adjustable sleeve d^2 , arranged within the same, and set-screw d^3 , substantially as and for the purpose hereinbefore set forth.

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Witnesses:

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