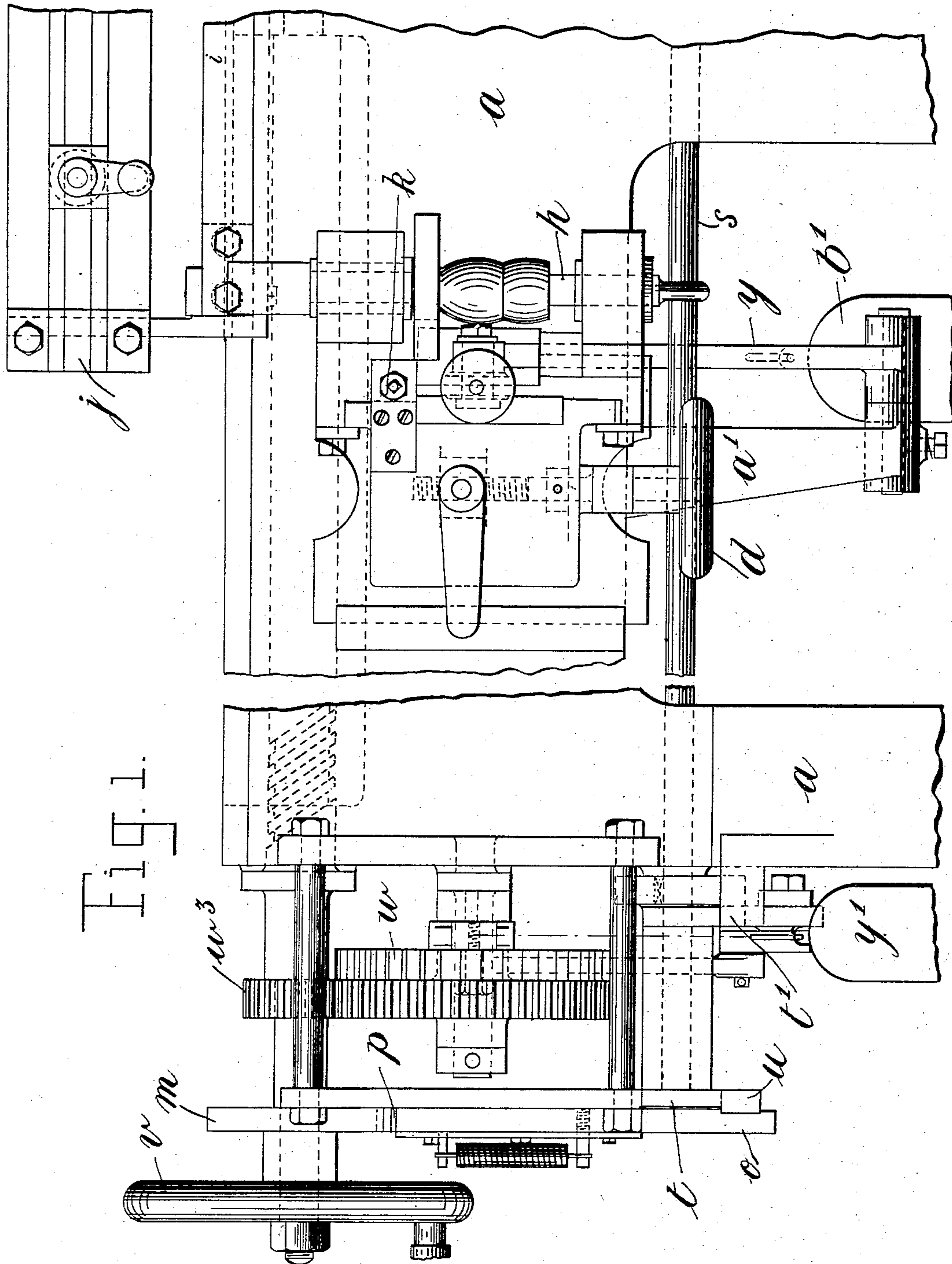


J. & D. SAGAR.
DOVETAILING MACHINE.

(Application filed Jan. 7, 1902.)

(No Model.)

5 Sheets—Sheet 4.



Witnesses.

Edmund P. Rea.
Walter Allen

Inventors:

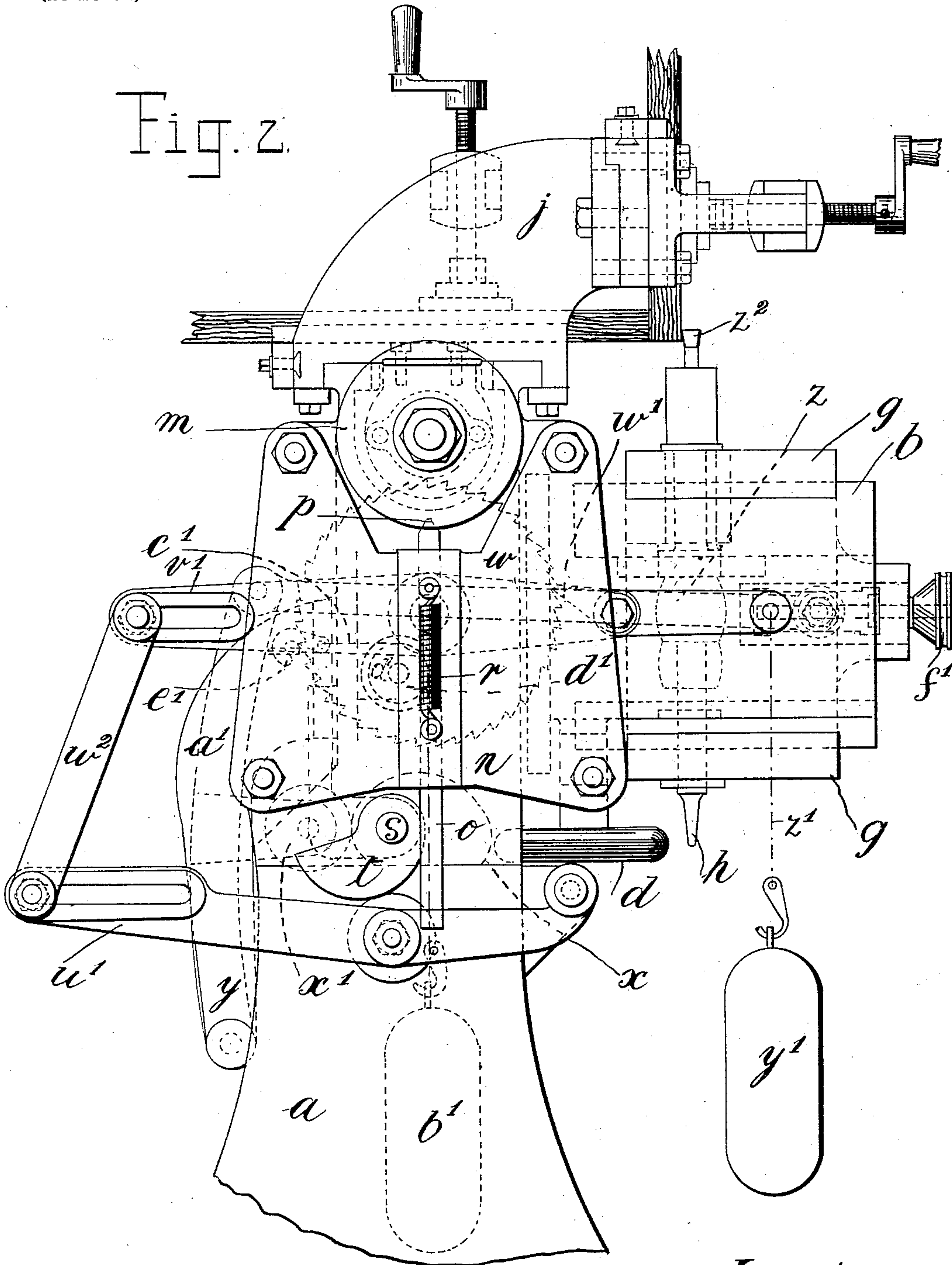
Joe Sagar and Donald Sagar.
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5 Sheets—Sheet 2.



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No. 703,002.

Patented June 24, 1902.

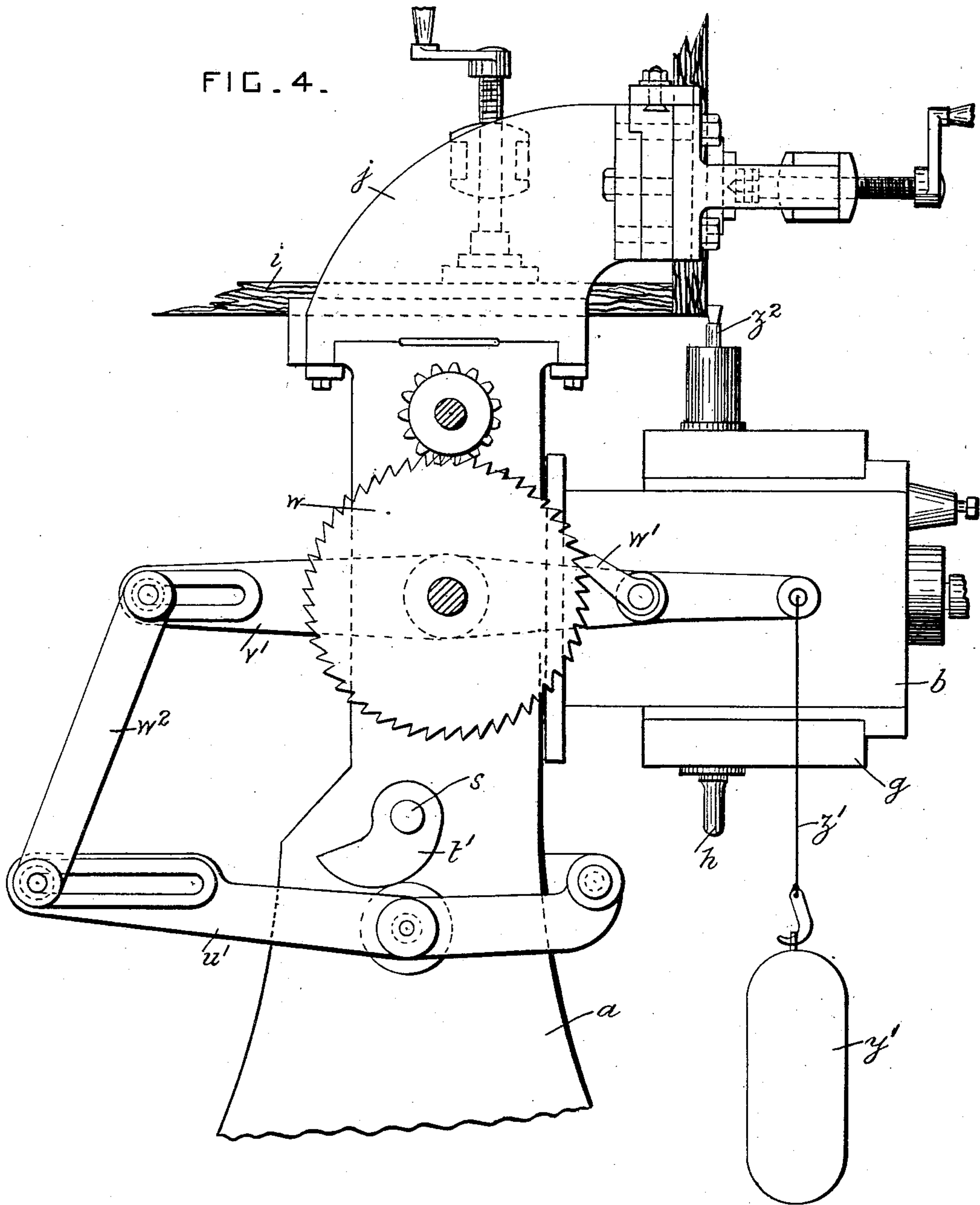
J. & D. SAGAR.
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FIG. 4.



Witnesses:

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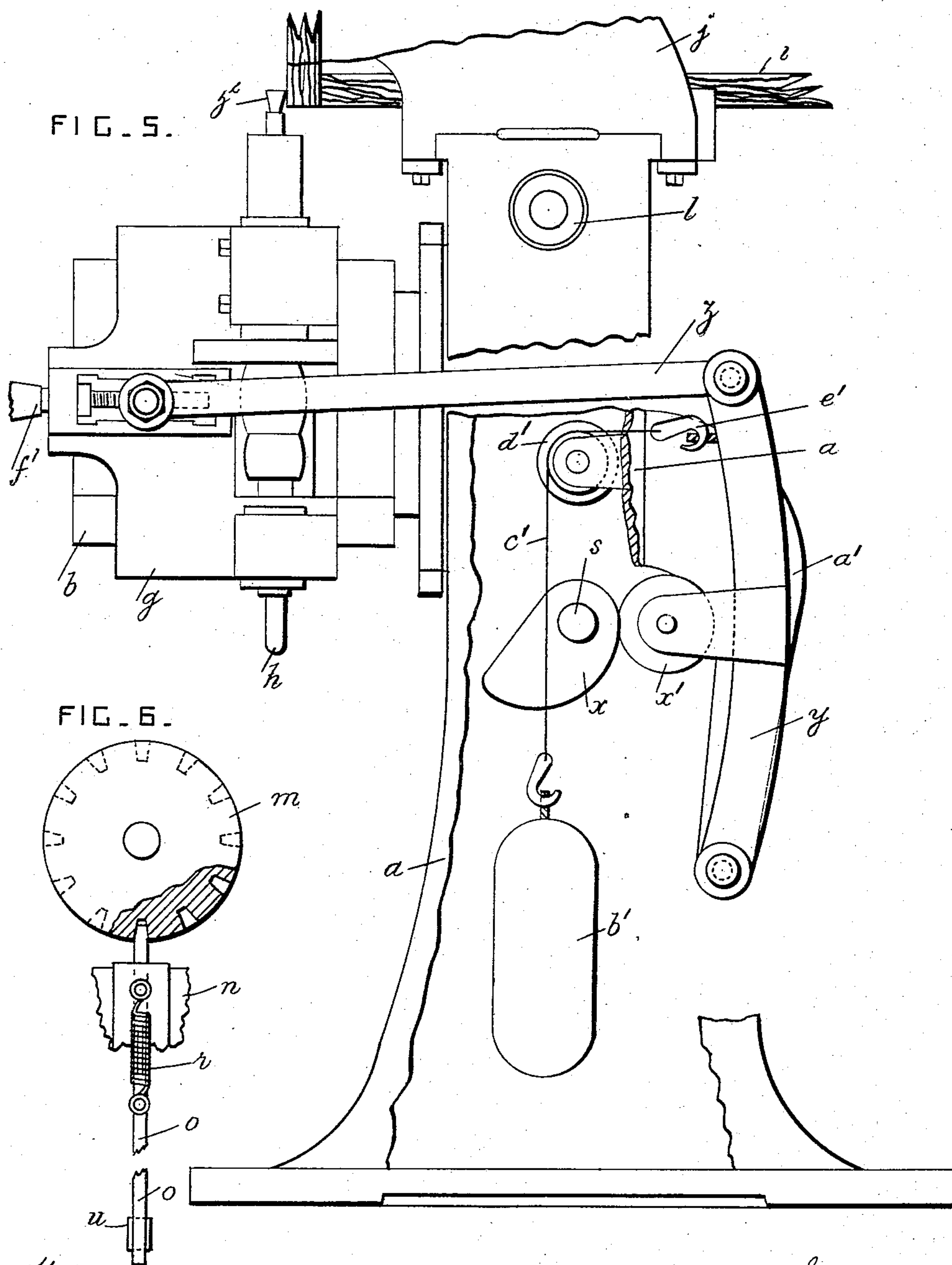
Joe Sagar and Donald Sagar.
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DOVETAILING MACHINE.

(Application filed Jan. 7, 1902.)

(No Model.)

5 Sheets—Sheet 5.



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UNITED STATES PATENT OFFICE.

JOE SAGAR AND DONALD SAGAR, OF HALIFAX, ENGLAND.

DOVETAILING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 703,002, dated June 24, 1902.

Application filed January 7, 1902. Serial No. 88,721. (No model.)

To all whom it may concern:

Be it known that we, JOE SAGAR and DONALD SAGAR, subjects of the King of Great Britain, residing at Halifax, in the county of York, England, have invented certain new and useful Improvements in Dovetailing-Machines; and we 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.

Our invention has reference to machines for cutting dovetails, our object being to simplify the construction and arrangement of the mechanism and to render the machine automatic and easier to work.

We will now fully describe our invention with reference to the annexed sheets of drawings, wherein—

Figure 1 is a side elevation of such parts of our improved dovetailing-machine as are necessary to illustrate our improvements. Fig. 2 is an end elevation. Fig. 3 is a plan of a portion of the machine. Fig. 4 is an end view showing the mechanism for operating the table. Fig. 4^a shows a modified construction for feeding the table. Fig. 5 is an end view showing the mechanism for reciprocating the cutter. Fig. 6 is a detail view of the spacing-disk *m* and its locking-bar.

Letter *a* represents the framework of the machine, in front of which is carried a projecting bracket *b*, adjustable vertically by means of screw *c* and hand-wheel *d*, set at the required height by screw *e*, operated by lever *f*. In grooves or ways on this projecting bracket *b* is carried another bracket *g*, in which is journaled or supported the upright cutter-spindle *h*, which is driven by a belt (not shown) from the end of the machine or in any other convenient manner.

On slides on the upper part of the framework *a* is mounted a table *i*, having at each end a bracket *j*. (See Figs. 1 and 2.) The timber to be worked is carried by the table *i* and brackets *j* and held in position by adjustable stops.

Beneath the table *i* and supported in bearings in the framework *a* is a longitudinal screw *l*, working in a nut underneath the table *i*, so that the said screw by its rotation moves the table, and consequently the tim-

ber carried thereby, longitudinally in front of the revolving cutter. On one end of this screw *l* is mounted an interchangeable spacing disk or plate *m*, having on its periphery a series of notches or openings cut at certain distances according to the spacing or pitch of the dovetails to be cut. Beneath this spacing-disk *m* is a bracket *n*, carrying an upright locking-bar *o*, whose upper end terminates in a dog or tooth *p*. This bar is normally held by a spring *r* in such position that the dog or tooth thereon enters one of the notches or openings in the spacing-disk *m* to hold same, and thereby the table *i* and brackets *j*, carrying the timber, stationary while the cutter is operating.

On a suitable driven shaft *s*, located below the machine, and which we shall term the "cam-shaft," is mounted a cam *t*, adapted in its rotation to strike a lug *u* on the locking-bar *o* and draw it down against the resistance of the spring *r*, thus removing the dog or tooth *p* on said bar from its engagement with the notch or opening in the spacing-disk *m* and permitting same and the screw *l*, on which it is mounted, to be rotated until the next succeeding notch or opening is presented to the dog or tooth *p*, when the spring before named again draws said dog or tooth into engagement with the next said succeeding notch or opening in the spacing-disk *m*, the operating-cam *t* being so timed as to release the upright bar *o* in time to permit of its being acted upon by the spring *r*. The parts are so arranged that by rotating the spacing-disk *m* to move one notch from the upright locking-bar *o* and present the next succeeding notch thereto the screw *l*, actuating the table *i*, shall have moved said table and the timber carried thereby a distance equal to the desired pitch or spacing of the dovetails.

The spacing-disk *m* and screw *l* may either be operated by hand by means of a hand-wheel *v*, fixed on the end thereof, or automatically by ratchet *w* and pawl *w'* or other arrangement operated by some convenient moving part of the mechanism, as shown in Figs. 1 and 2, to give a rotary movement to the said spacing-disk and screw equal to the distance from one notch to the next on the spacing-disk, or more, as the case may be. The motion may, for instance, be obtained from

cam t' on the cam-shaft s by slotted levers u' and v' , connected by adjustable link w^2 , the lever v' pulling pawl w' to rotate ratchet-wheel w , and thereby the pinion w^3 , on the screw-shaft, and a weight y' by chain z' moving pawl w' in the opposite direction.

A handle (not shown) may be provided on the locking-bar o for holding same clear or out of engagement with the spacing-disk m when it is required to operate the feed-screw l independently.

We will now describe the mechanism for giving the reciprocatory motion to the cutter-spindle h for moving it up to the timber to cut the dovetail and away therefrom after the cut to allow the spacing mechanism to operate.

On the cam-shaft s , previously referred to, situated beneath the machine, is mounted a cam x , (shown in dotted lines in Fig. 2, but not shown in Fig. 1,) which through a bowl x' acts upon a pivoted upright curved lever y , the upper end of which is connected by an arm or connecting-rod z to the bracket carrying the cutter-spindle and the lower end of said lever y pivoted in a casting a' , depending from the framework a . The revolution of the cam rocks the curved upright lever y and through the connecting-arm z transmits a reciprocatory motion to the cutter-spindle bracket g . The arm z is timed to move the cutter z^2 up to the timber to cut a dovetail therein and back clear of the work and then to give a sufficient dwell to allow the spacing-cam t to operate the spacing mechanism to move the work across the front of the cutter the required distance, when it again advances the cutter to cut another dovetail. A weight b' may be attached by a cord or chain c' passing over a pulley d' to a hook e' for assisting to pull back the lever y on the cam x , leaving the bowl x' bracketed on the said lever y , and thereby moving the cutter-spindle away from the timber. The depth of cut is regulated by means of a screw and hand-wheel f' , which adjust the position of the cutter-spindle bracket in relation to the connecting-rod z . The stroke of the cutter is invariable; but by shifting the bracket on the connecting-rod a part of the stroke may be completed before the cutter enters the timber.

An adjustable stop or stops may be provided, as shown at k , to determine the exact distance the cutter-spindle shall recede, so that as the spacing mechanism moves the work across the face of the cutter it shall not

quite clear same, so that a partial dovetail or longitudinal recess will be cut along the side of the piece of work to form a lip thereon, so that on the joint being put together this lip or projection will cover up the small space left showing on the inside of the joint.

Two or more cutter-spindles and cutters may be employed, thus enabling us to operate on two or more pieces of work at the same time.

Instead of using a screw for traversing the table i other equivalent mechanical means may be employed, such as a rack l' , as shown in Fig. 4^a, operated by vibrating pawl l^2 , receiving motion from the lever l^3 , worked either by hand or mechanical means.

We claim as our invention—

1. In a dovetailing-machine, the combination, with a frame, a work-table supported by the frame, and means for moving the said work-table longitudinally step by step; of a revoluble cam x , a lever y pivoted to the said frame and operated in one direction by the said cam, a bracket b projecting from the frame, a bracket g slidable on the bracket b crosswise of the work-table, a revoluble cutter carried by the bracket b , a connecting-rod z between the bracket g and the lever y , and means for moving the said bracket g and lever y in the reverse direction automatically, substantially as set forth.

2. In a dovetailing-machine, the combination, with a frame, a revoluble cutter supported from the said frame, and means for reciprocating the said cutter horizontally; of a revoluble cam t' , a lever u' operated in one direction by the said cam, a lever v' , a pawl w' pivoted to the lever v' , a connecting-rod w^2 between the levers u' and v' , a ratchet-wheel w journaled on the pivot of lever v' and driven by the said pawl, means for moving the said levers in the reverse direction automatically, a work-table slidable in the said frame crosswise of the said cutter, a screw for traversing the said work-table, driving connections between the said ratchet-wheel and screw, and a spacing-disk connected with the said screw and provided with a locking-bar, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JOE SAGAR.

DONALD SAGAR.

Witnesses:

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LEONARD H. CROSSLEY.