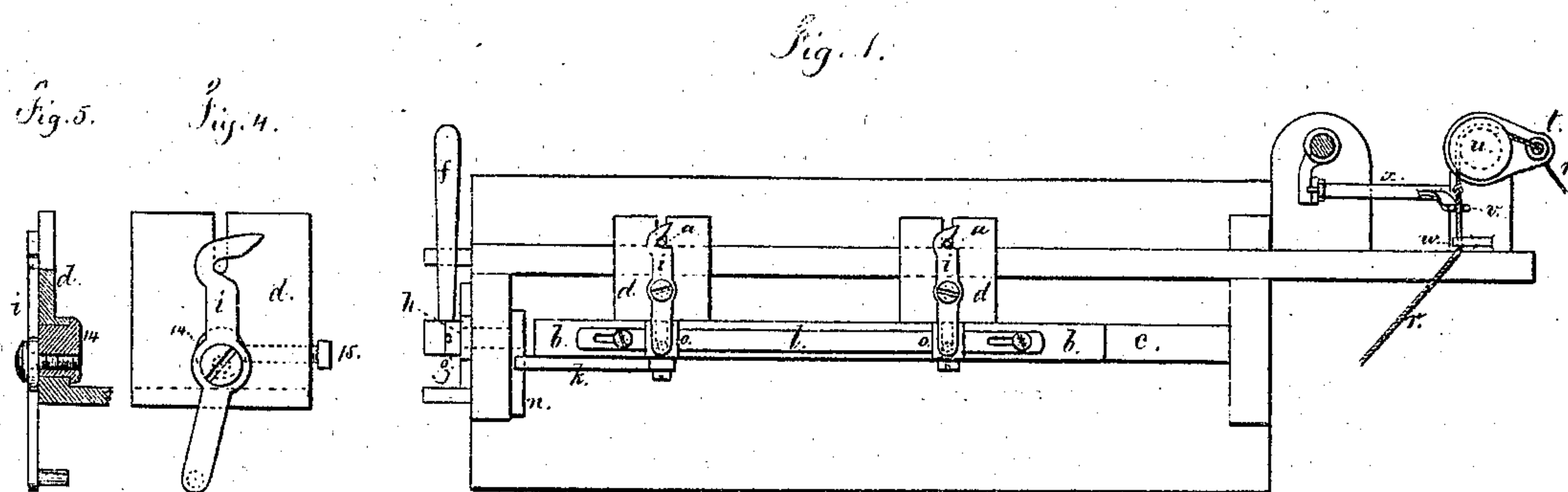
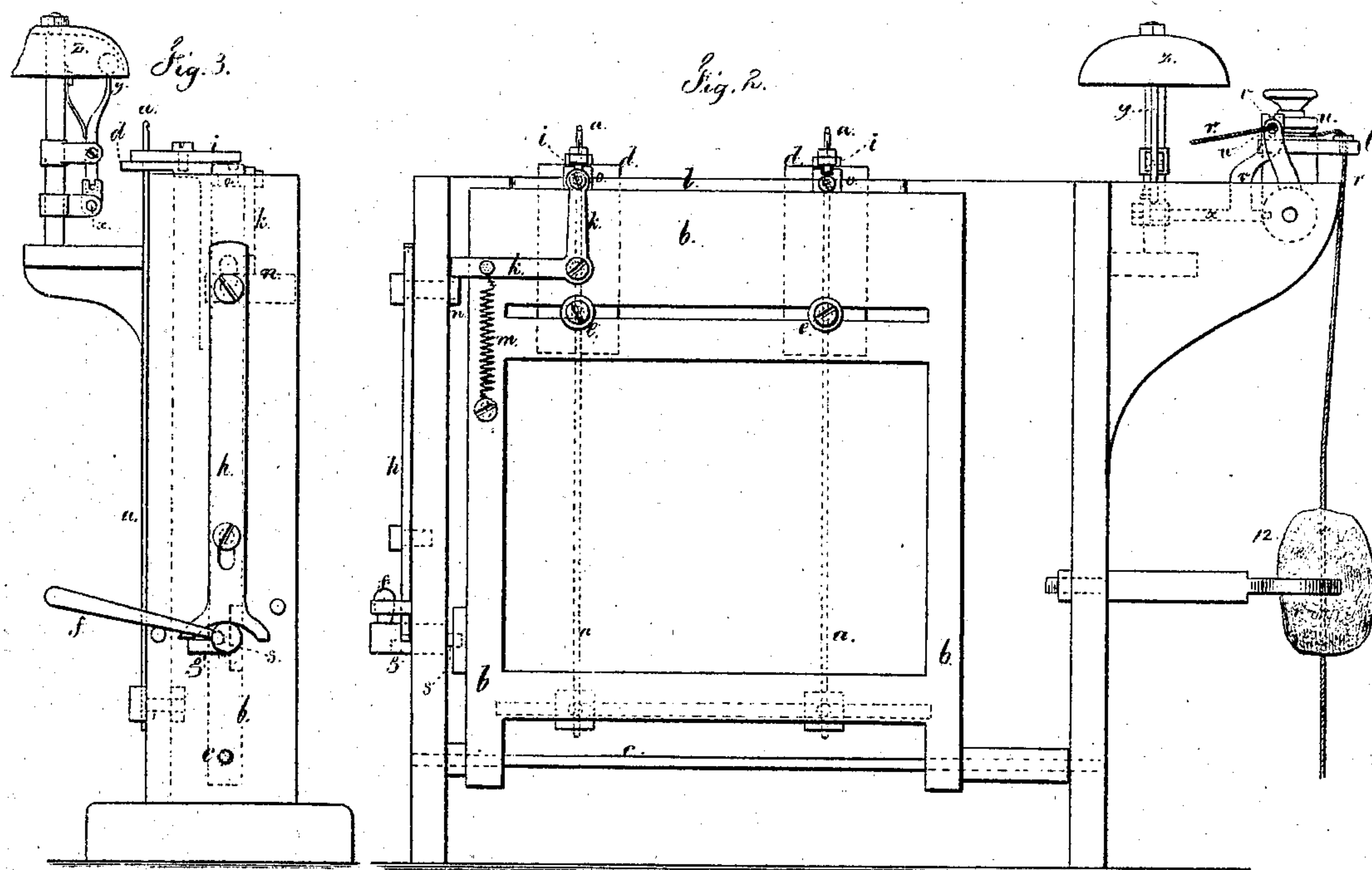


H. G. THOMPSON & E. G. PARKHURST.

Book Sewing-Machines.

No. 150,495.

Patented May 5, 1874.



Witnesses.

Chas. H. Smith,  
Geo. A. Walker.

H. G. Thompson  
E. G. Parkhurst  
Lemuel B. Correll  
att.



# UNITED STATES PATENT OFFICE.

HENRY G. THOMPSON, OF MILFORD, AND EDWARD G. PARKHURST, OF HARTFORD, CONN., ASSIGNORS TO HENRY G. THOMPSON.

## IMPROVEMENT IN BOOK-SEWING MACHINES.

Specification forming part of Letters Patent No. 150,495, dated May 5, 1874; application filed November 19, 1873.

*To all whom it may concern:*

Be it known that we, HENRY G. THOMPSON, of Milford, in the county of New Haven, and EDWARD G. PARKHURST, of Hartford, in the county of Hartford, both in the State of Connecticut, have invented an Improvement in Book-Sewing Machines; and the following is declared to be a correct description thereof.

The mechanism heretofore employed in sewing books by machinery has consisted of a series of needles with eyes near their upper ends entering the saw-cuts at the folded portion of the sheets, said sheets resting upon a descending table, and the thread being introduced by a traveling hook.

Devices for performing the sewing in this manner are set forth in Letters Patent Nos. 74,948, and 91,175, and a reference is hereby expressly made to the same as illustrating the circumstances under which our present improvements are to be employed.

In book-sewing machines of this character, there has been a difficulty in keeping the long thin needles in their proper positions, and in Letters Patent No. 100,407, a device is shown for preventing the needles bending by the weight or pressure as the sewing progresses.

The supporting-brackets, being secured below the rear table, as in Patent 100,407, support the vertical stationary needles when the machine is in position to commence work; but as the folded sheets or "signatures" are placed upon the vertical needles, the rear table descends as the sheets accumulate thereon, and the needles extending above the table are left without the required support to keep them in position.

Our invention is made for the purpose of holding the upper ends of the vertical needles in their proper positions for receiving the lacing-threads as the rear table descends, and for the purpose of adjusting the machine to the different thicknesses of the paper that is being sewed.

We employ beveled latches that act to position and hold the upper ends of the needles each time a sheet is placed over and pressed down. Thereby the traveling-hook that places

the thread will move near to the needles, and the thread will be received by the hooks of said needles.

In book-sewing machines the thread is frequently broken by a knot catching in the hook, and by the sudden rapid movement the thread is snapped. If the attendant had any warning, the machine could be stopped or moved slowly, so as to allow the knot to pass the hook, or for another knot to be tied, thus saving considerable time, and rendering the operations more certain and continuous. To effect this, we employ a swinging fork, through which the thread runs freely, but which will be moved by a knot, and give an alarm on a bell, or stop the machine; but said fork, by yielding to the knot, does not prevent its passage freely through the machine, or break the thread.

In the drawing, Figure 1 is a plan of the portions of the book-sewing machine to which our invention relates. Fig. 2 is a side view, and Fig. 3 is an end view.

The needles *a* are made with eyes and hooks, and supported at their lower ends, and the devices for supplying the thread, supporting the sheets, folding and pressing them, are similar to those shown in the before-named patents, and are not shown or further described herein. A frame, *b*, is provided for carrying the beveled latches. Said frame is shown as swinging upon the rod *c*. The lifters *d* are attached to this frame *b* by screws *e* that pass through a slot so as to be positioned to correspond with the needles; hence, when the frame *b* is swung back, the lifters *d* will be out of the way of the needles, and the sheets of paper can be pressed down beneath said lifters *d*, and when the frame *b* is swung toward the needles, the lifters *d* pass at each side of such needles, the needles occupying the slot in the lifters. Upon each of these lifters *d* is a latch, *i*, with a hook-shaped inclined end that, when swung around, draws the needle to the base of the slot, and hence holds it firmly in position while the sheet is being sewed, and this latch is moved or turned sidewise to liberate the needle and then is



drawn back with the lifters *d* to allow the sewed sheet to be forced down upon the needles.

The swinging movement given to the frame *b* and the turning of the latch *i* may be through the medium of any suitable mechanism. We have, however, shown a bar, *l*, having movable tappets *o*, that act upon pins at the back ends of the latches *i* to move all the latches at once; and these tappets *o* can be moved to allow of said latches and guides *d* being positioned to suit the needles; and this bar *l* is moved by a right-angle lever, *k*, and spring *m*, the reverse motion to unlatch the hooks *i* being given by a lever, *f*, cam *g*, slide *h*, and bearing-bar *n*. An eccentric pin, *s*, upon the axis of the cam *g* is shown as the means for swinging the frame *b* back and forth.

When the paper that is being sewed is thick, or the number of folds large, more room is required between the needle and the vertical fence; hence we make the hook *i* adjustable by placing its center screw eccentrically in a bush, 14, (see Figs. 4 and 5,) that is in the lifter *d*, and is held by a screw, 15, so that by turning the bush 14 the inner face of the hook may be moved nearer to or further from the bottom of the slot in the lifter *d*.

The thread *r* passes from a suitable spool through the guide-eye *t*, and around the tension-clamp *u*; thence, through a slot in the arm *v*, to the eye *w* and to the traveling hook, that passes the thread to the hooks of the needles *a*. The arm *v* is on a shaft, *x*, that has a cam to act upon the hammer *y* of the bell *z*, and the slot *v* will allow the thread to pass freely; but when a knot comes into contact with such arm, it is moved and the bell sounded. The knot, however, slides off the arm *v* without breaking the thread; but the attendant is warned, and slackens the speed or stops the machine, so that the thread may not be broken.

In sewing books, the thread has to remain double in the fold of the sheet, hence requires to be very fine, and the suddenness of movement frequently breaks the thread. We make use of a sponge, 12, moistened with water, through which the thread runs before reaching the eye *t*, and thereby the fine flax fibers

are smoother, the thread rendered stronger, and the twisting and kinking entirely prevented by the water rendering the thread soft; and, when laid in the fold of the paper, the thread is sufficiently soft to be flattened, and occupy less space than it otherwise would.

The signature is notched, and placed upon the needles. The lacing-thread is passed, and the signature folded. The lifters *d* are then thrown forward by means of the levers *f*, the cam *g* operating the frame *b*, thus holding the sewed signatures firmly in position. At the same movement of the lever *f* the cam *g* operates upon the slide *h*, which is kept tightly pressed against the cam *g* by the pressure of the right-angle lever *k* upon the bearing-bar *n* by means of the spring *m*. The movement of the right-angle lever *k* by this means operates the bar *l*, and throws the pivoted hooks *i* around the needles, holding them firmly in position for the operation of the thread-carrier. A backward movement of the lever *f* withdraws the hook *i* from around the needles, and the lifters *d* from over the signatures, and permits the addition to the partly-sewed book of an additional signature.

We claim as our invention—

1. The latch *i*, for retaining the heads of the vertical needles in position while the lacing-threads are being passed in the book-sewing machine, substantially as set forth.

2. The latch *i*, in combination with the lifters *d* in the book-sewing machine, substantially as specified.

3. The eccentric 14, for adjusting the latch *i*, in combination with the lifters *d*, as set forth.

4. In a book-sewing machine in which the thread is supplied from a reciprocating hook, the tension and alarm mechanism applied between the spool and the reciprocating hook, for the purposes and substantially as set forth.

Signed by us this 22d day of December, A. D. 1871.

HENRY G. THOMPSON.  
E. G. PARKHURST.

Witnesses:

JOHN HENRY BROCKLESBY,  
GEORGE CASE.