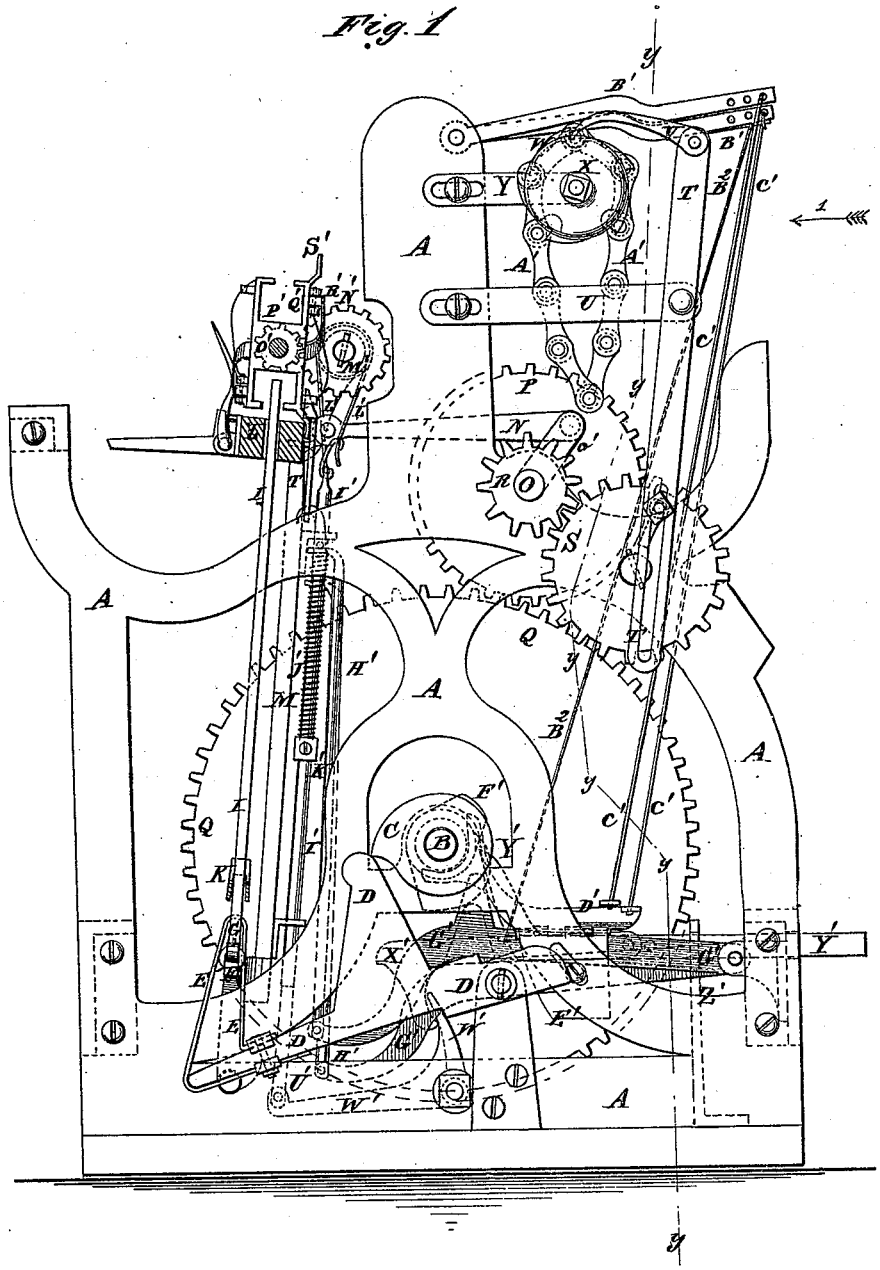
3 Sheets—Sheet 1.

J. HYDE.

SHUTTLE-BOX LOOM.

No. 187,281. Patented Feb. 13, 1877.

Fig. 1



WITNESSES:

A. W. Almqvist

Alex. F. Roberts.

INVENTOR:

James Hyde.

BY Munn & Co

ATTORNEYS.

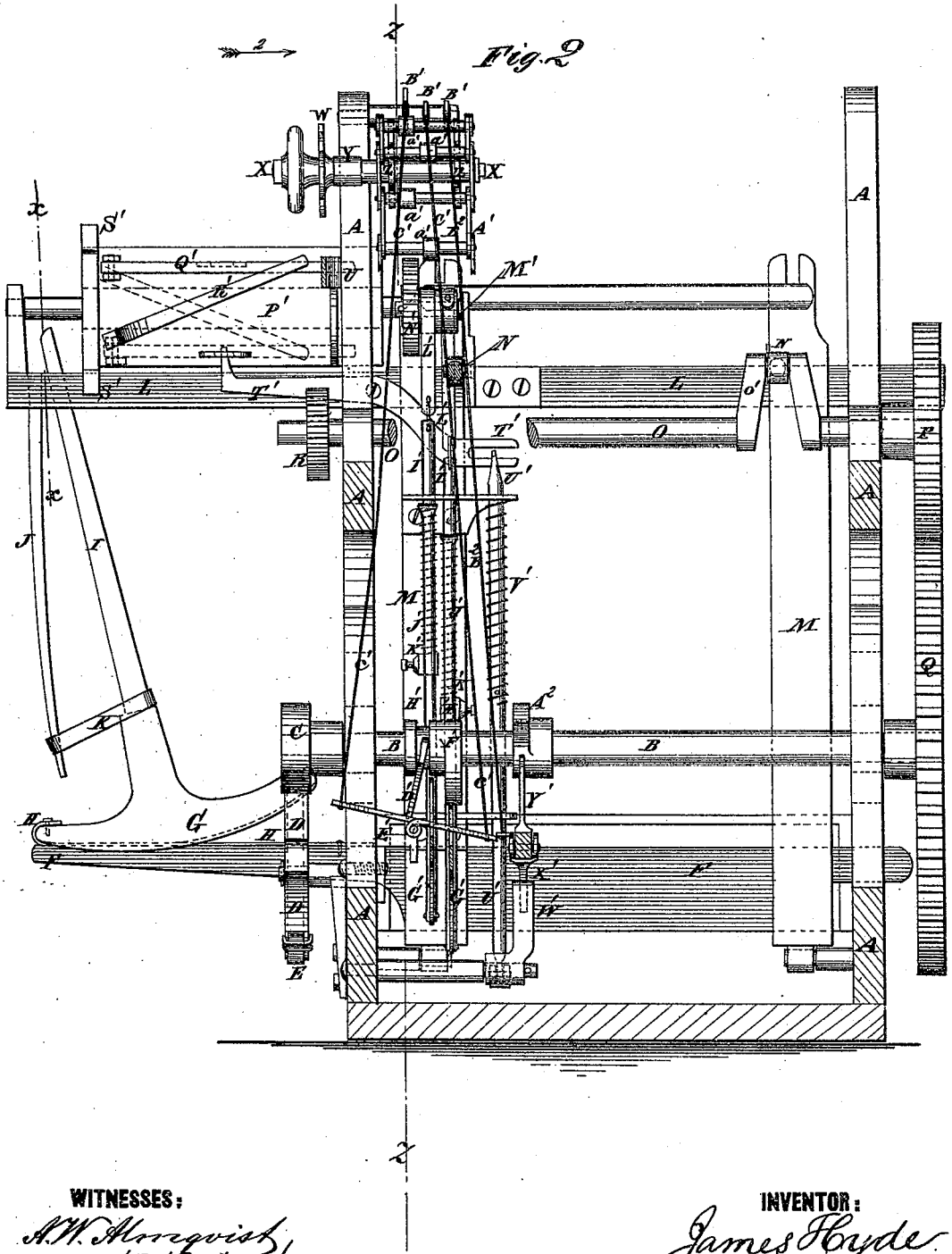
3 Sheets—Sheet 2.

J. HYDE.

SHUTTLE-BOX LOOM.

No. 187,281. Patented Feb. 13, 1877.

Fig. 2



WITNESSES:

A. W. Abrahamson

Alex F. Roberts.

INVENTOR:

James Hyde

BY Munn & Co

ATTORNEYS.

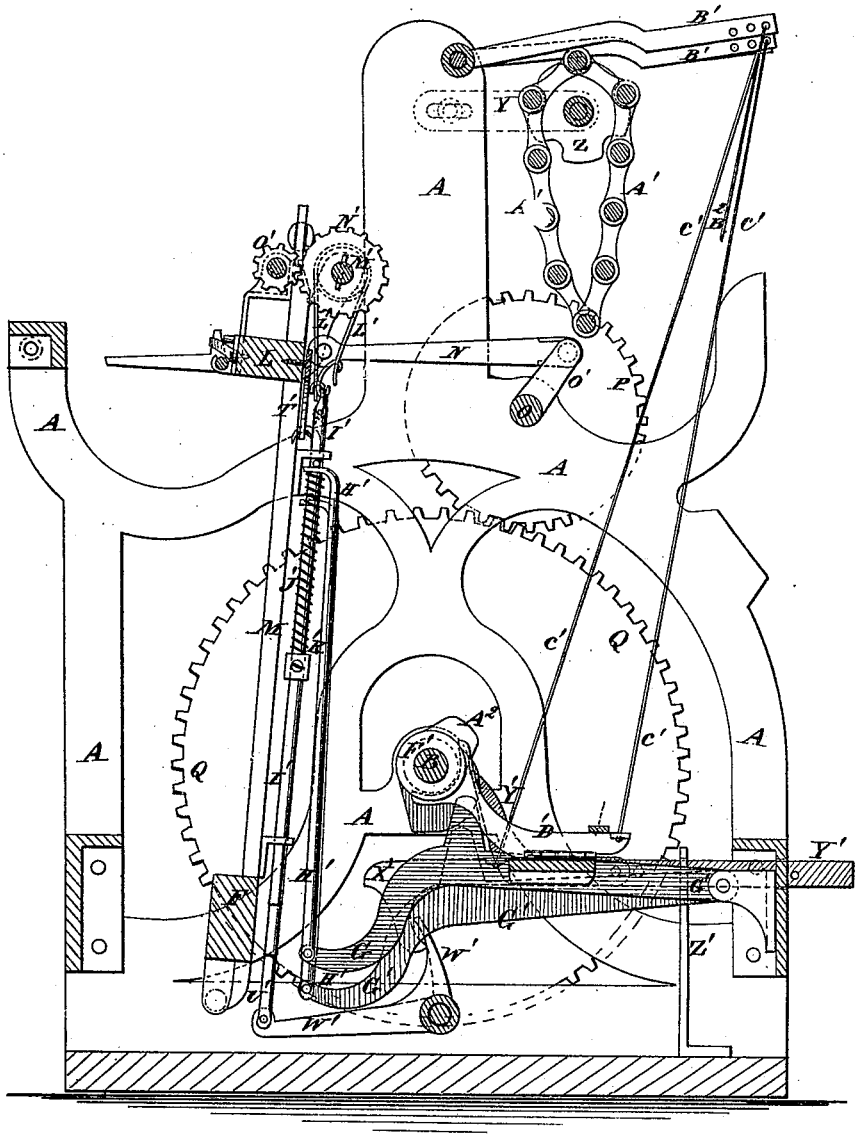
3 Sheets—Sheet 3.

J. HYDE.

SHUTTLE-BOX LOOM.

No. 187,281. Patented Feb. 13, 1877.

Fig. 3



WITNESSES:

A. W. Almgquist

Alex F. Roberts.

INVENTOR:

James Hyde

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JAMES HYDE, OF STOTTVILLE, NEW YORK.

IMPROVEMENT IN SHUTTLE-BOX LOOMS.

Specification forming part of Letters Patent No. **187,281**, dated February 13, 1877; application filed December 4, 1876.

To all whom it may concern:

Be it known that I, JAMES HYDE, of Stottville, in the county of Columbia and State of New York, have invented a new and useful Improvement in Semi-Revolving Shuttle-Box Loom, of which the following is a specification:

Figure 1, Sheet 1, is a side view of part of a loom to which my improvements have been applied, partly in section, through the line *x x*, Fig. 2. Fig. 2, Sheet 2, is a cross-section of the same, taken through the line *y y y y y y*, Fig. 1, looking in the direction of arrow 1. Fig. 3, Sheet 3, is a longitudinal section of the same, taken through the line *z z*, Fig. 2, looking in the direction of arrow 2.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved fancy loom, which shall be so constructed that it may be run at greater speed and at less expense than ordinary fancy looms; that it may be worked without pickers or spindles, and that shall be simple in construction and convenient in use.

The invention consists in the combination of the hinged cam-mover, the sliding cam, the crooked levers, the rods, the spiral springs, the flexible straps, the shaft, and the gear-wheels, with the chain-levers, the driving shaft, and the semi-revolving shuttle-box; and in the combination of the lock-lever, the rod, the spiral spring, the compound lever, the sliding bar, and the cam, with the driving-shaft, the semi-revolving shuttle-box, and the chain-lever, as hereinafter fully described.

A represents the frame of the loom, in bearings in the side parts of which revolves the driving-shaft B. The shaft B is driven by gearing, or it may be driven by a belt and pully in the usual way, and to its end is attached a cam, C, which operates the picking-treadle D. The picking-treadle D, works upon a pivot attached to the frame A, and to its forward end are attached the ends of a strap, E, forming a loop, which passes around the rocker-rail F, and over the inner end of the rocker G. H is the rocker-strap, which passes longitudinally between the rocker-rail F and the rocker G. The inner end of the strap H is attached to the rail F, and its outer end is attached to the outer end of the rocker G. To the rocker G is attached the picking-stick I, by the movement of which, as its upper end is thrown forward by the action of the cam C, the shuttle is thrown. The picking-stick I is drawn back by the spring J, the lower end of which is connected with the picking-stick I by a strap, K, passing around said picking-stick and attached adjustably to said spring. The upper end of the picking-stick spring J is attached to the lathe L, which is rigidly connected with the rocker-rail F by the bars M. The rocker-rail F is pivoted or hinged to the frame A and to the lathe L. To the upper parts of the bars M are pivoted or hinged the forward ends of the connecting-rods N, the rear ends of which are pivoted to cranks *o'*, formed upon the shaft O. The shaft O revolves in bearings attached to the upper parts of the sides of the frame A. To the end of the shaft O is attached a gear-wheel, P, the teeth of which mesh into the teeth of the larger gear-wheel Q, attached to the shaft B, so that the shaft O may be driven from the said shaft B. To the other end of the crank-shaft O is attached a small gear-wheel, R, the teeth of which mesh into the teeth of a larger gear-wheel, S, which revolves upon a pivot attached to the frame A, and is slotted radially to receive a crank-pin, so that the said crank-pin may be adjusted nearer to or farther from the center of said wheel S, as may be desired. The crank-pin of the gear-wheel S passes through a longitudinal slot in the lever T that is pivoted to the end of an arm, U. The other end of the arm U is slotted to receive the bolt by which it is secured adjustably to the frame A. To the upper end of the lever T is pivoted a pawl, V, the engaging end of which rests upon the ratchet-wheel W, attached to the short shaft X. The short shaft X revolves in a bearing in the outer end of an arm, Y, the inner end of which is slotted to receive the bolt by which it is secured adjustably to the frame A. To the shaft X are attached the chain-wheels Z, which carry the chain A^1. The cross-rods of the chain A^1 are provided with collars *a'*, which operate the chain-levers B^1. The levers B^1 rest upon the cross-rods of the chain A^1, and their forward ends are pivoted to a pivot attached to the frame A. To

the rear ends of the levers B^1 are attached the upper ends of the rods C′, the lower ends of which are attached to the side-arms of the cam-mover D′. The cam-mover D′ is hinged to a bracket or support, E′, attached adjustably to the frame A. The forward end of the cam-mover D′, or an arm formed upon said forward end, projects upward and is forked to engage with the sides of a groove formed in the hub of the cam F′, so that the cam F′ may be moved back and forth upon the shaft B, by the rocking of the cam-mover D′.

The cam F′ is connected with the shaft B by a pin and groove, so that it may be carried around by and with the said shaft in its revolution, while being free to slide back and forth upon it, to come into contact with one or the other of the crooked levers or treadles G′. The rear ends of the crooked levers G′ are pivoted to the rear part of the frame A, and to their forward ends are pivoted the lower ends of the rods H′. The upper ends of the rods H′ are bent forward at right angles, and have holes formed through them to receive the rods I′. The bent-over upper ends of the rods H′ rest upon the upper ends of the spiral springs J, placed upon the said rods I′, and the lower ends of which rest upon collars K, secured adjustably to said rods I′ by set-screws.

The rods I′ slide in guides attached to the bar M that connects the rocker-rail F with the lathe L; and upon their upper ends are formed hooks to receive the flexible straps L′, which are coiled in opposite directions around, and their other ends are attached to a short shaft or roller, M′.

The shaft M′ revolves in bearings or brackets attached to the lathe L or bar M; and to its end is attached a gear-wheel, N′, the teeth of which mesh into the teeth of the small gear-wheel O′, attached to a journal of the shuttle-box P′, so that the said shuttle-box P′ may be revolved back and forth, through a half revolution, by the reciprocating movement of the gear-wheel N′. The journals of the shuttle-box P′ revolve in bearings attached to the lathe L. The shuttles are held in the cavities of the box P′ by the swells Q′, placed in slots in the sides of the said box P′, pivoted at one end to said box P′, and pressed inward by the springs R′, also attached to the shuttle-box P′.

The shuttle-box P′ is stopped in position by stops S′, attached to it, and which strike alternately against the opposite sides of the lathe L. The shuttle-box P′ is locked in position by the lever T′, the forward end of which projects upward to enter keepers formed upon the sides of the said box P′.

The lever T′ is pivoted to the lathe L. Its inner arm is curved downward and outward, and its inner end is slotted to receive the hook formed upon the upper end of the rod U′. The rod U′ passes through guides attached to the bars M, and has a spiral spring, V′, placed upon it. The upper end of the spring V′ rests against the upper guide for the rod U′, and its lower end rests against a stop-pin or collar attached to said rod U′. The lower end of the rod U′ is pivoted to the forward arm of the bent lever W′, which is pivoted at its angle to a pivot attached to the frame A.

The forward side of the upwardly-projecting arm of the lever W′ is overlapped by the downwardly-projecting arm of the bent lever X′. The other arm of the lever X′ projects to the rearward, is slotted to receive the bar Y′, and is pivoted at its end to the said bar Y′. The bar Y′ slides in guide-holes in the frame A, and in a standard, Z′, and to its forward end is attached, or upon it is formed, an upwardly-projecting arm, which is struck by the cam A^2 attached to the shaft B, so that as the said shaft B revolves the said cam A^2 may strike the arm of the bar Y′, and thus operate the compound lever W′ X′ to unlock the shuttle-box P′.

By this construction, by holding the part X′ of the compound lever W′ X′ raised, the forward part, W′, of said compound lever will not be operated by the revolution of the cam A^2. The part X′ of the lever W′ X′ is connected, by a rod, B^2, with one of the chain-levers B^1, so that the said part X′ may be held up, and allowed to drop at the proper time, by the chain A^1.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of the hinged cam-mover D, the sliding cam F′, the crooked levers G′, the rods H′ I′, the spiral springs J′, the flexible straps L′, the shaft M′, and the gear-wheels N′ O′ with the chain-levers B^1, the driving-shaft B, and the semi-revolving shuttle-box P′, substantially as herein shown and described.

2. The combination of the lock-lever T′, the rod U′, the spiral spring V′, the compound lever W′ X′, the sliding bar Y′, and the cam A^2 with the driving-shaft B, the semi-revolving shuttle-box P′, and the chain-lever B^1, substantially as herein shown and described.

JAMES HYDE.

Witnesses:
C. H. STOTT,
FRANK H. STOTT.