

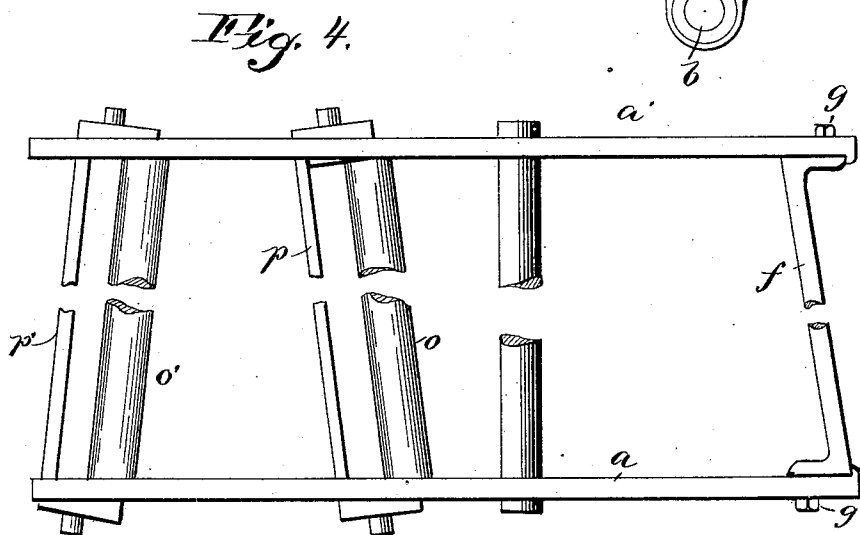
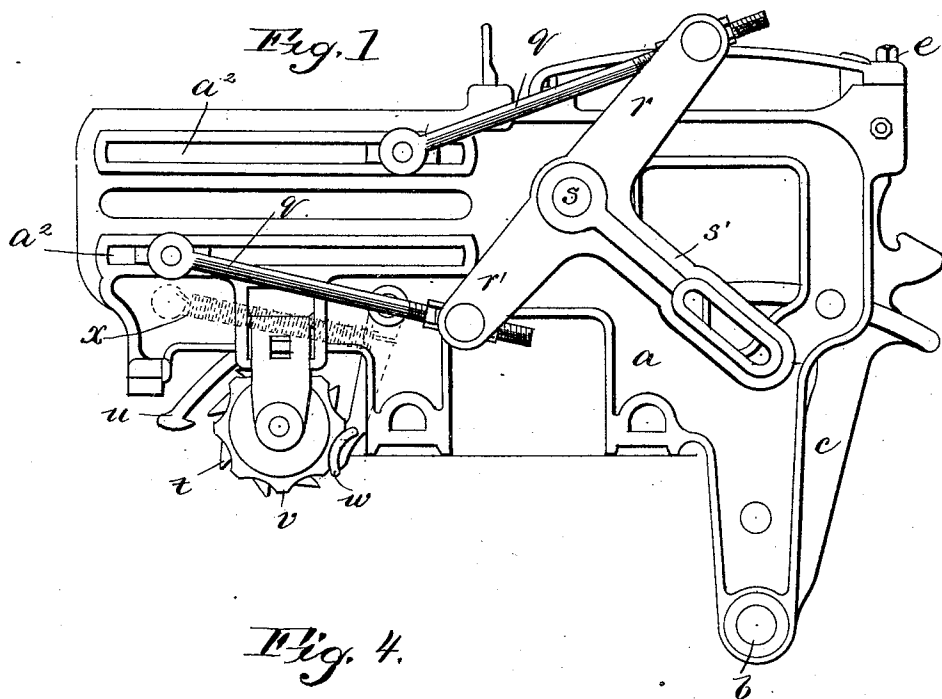
(No Model.)

2 Sheets—Sheet 1.

G. W. STAFFORD.
SHEDDING MECHANISM FOR LOOMS.

No. 475,625.

Patented May 24, 1892.



Witnesses:

O. Bushman.
Robert Wallace.

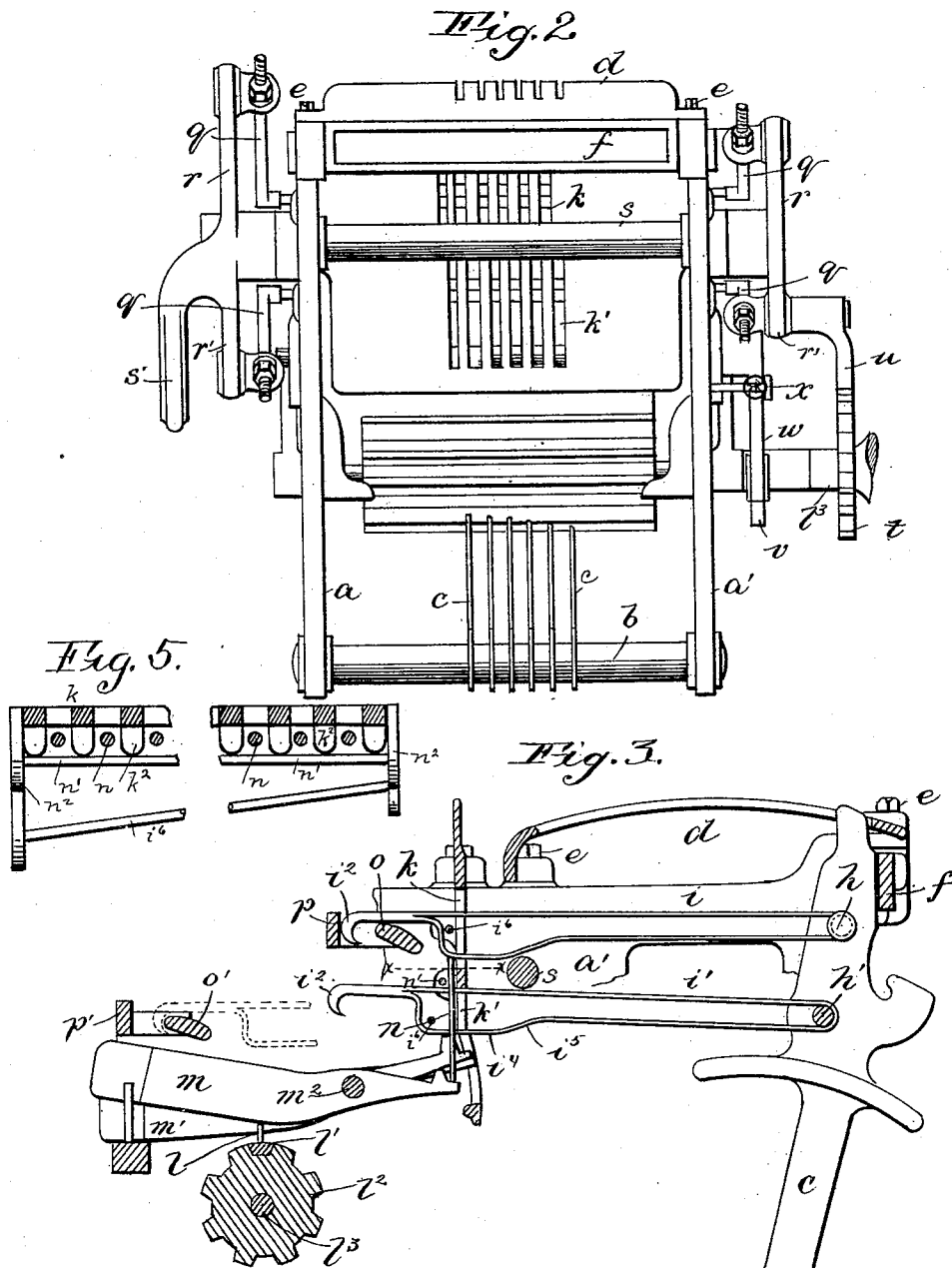
Inventor:

George W. Stafford
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UNITED STATES PATENT OFFICE.

GEORGE W. STAFFORD, OF PROVIDENCE, RHODE ISLAND.

SHEDDING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 475,625, dated May 24, 1892.

Application filed November 16, 1891. Serial No. 412,063. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. STAFFORD, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Shedding Mechanism for Looms, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to double-action dob-
bies or shedding mechanisms for looms. These
have heretofore generally comprised a con-
nector or jack-lever which is pivotally mount-
ed at mid-length thereof upon each harness-op-
erating lever, hooked jacks which are pivoted
to the upper and lower ends, respectively, of
each connector or jack-lever, and are con-
trolled in their position by means of pattern-
indicators applied to the surface of a pattern-
drum or to a chain which passes around a
suitable cylinder or drum, the said indicators
acting to determine the position of the jacks
through intermediately-placed pattern or in-
dicator levers, and wires or needles resting
upon the said pattern or indicator levers and
supporting the free ends of the hooked jacks.
Usually the lower jack of the pair of jacks
which are pivoted to the opposite ends of a
connector or jack-lever rests upon the up-
turned inner end of one pattern or indicator
lever, while the upper jack of the said pair is
supported by a vertical wire or needle which
at its lower end rests upon the inner end of
an adjacent pattern or indicator lever. The
hooked jacks, when permitted to descend by
the pattern-controlling devices aforesaid, are
engaged by reciprocating draw-bars, which
are called "lifters." One lifter is placed be-
neath the upper series of hooked jacks in the
dobby or shedding mechanism in position to
engage therewith when required, and the
other lifter is placed beneath the lower series
of hooked jacks in position to engage there-
with when required. The lifters are reciproc-
ated in parallel horizontal planes, and they
move in a given direction alternately, they
being actuated by devices connected with the
driving mechanism of the loom, whereby one
of them is moved outward prior to one pick
of the loom and the other is moved outward
prior to the next pick of the loom, and so on
successively.

The object of my invention is to provide a
double-action dobby of improved and simpli-
fied construction and at the same time to pro-
vide a dobby that shall retain all of the ad-
vantages that are found to be possessed by
known dobbies of this class.

My invention consists of certain novel and
improved combinations and arrangements of
parts, which will now be described with refer-
ence to the accompanying drawings, and
which will be particular pointed out and de-
fined in the claims at the close of this speci-
fication.

Figure 1 of the drawings is a view in side ele-
vation of a dobby embodying my present in-
vention. Fig. 2 is a view of the said dobby in
end elevation, the same being viewed from the
right-hand side in Fig. 1, the upper portions
of the harness-levers being broken away in the
said Fig. 2 and the hooked jacks or hooks and
certain adjacent parts being omitted. Fig. 3
is a view showing the dobby as it would ap-
pear in longitudinal section, parts of the side
frame being broken away. Fig. 4 is a view
in plan of the side frames and certain parts,
which will hereinafter be referred to. Fig. 5
is a detail view showing a section on line *x*
x in Fig. 3.

In the drawings, *a a'* are the side frames of
the dobby, and *b* is a rod or shaft fixed in
downwardly-projecting extensions of the said
side frames, this shaft serving as the pivotal
support or fulcrum for the harness-operating
levers *c*. The upper ends of the levers pro-
ject up through and are guided in the slots of
an over arching curved grate *d*, which is fast-
ened by bolts *e* to the side frames *a a'*. When
in their innermost position, the inner edges of
the said upper ends of the harness-levers *c*
rest against the outer face of a back-stop bar
f, which is secured by bolts *g* to the said side
frames *a a'*.

Each harness-lever *c* has on one side thereof
two headed studs *h h'*, the stud *h'* being
nearer the center or fulcrum on which the
harness-levers *c* turn than the stud *h*, the
head of this stud *h'* being removed in Fig. 3 in
order to show the manner in which the hooked
jacks or hooks *i i'* are fitted to the stems of
the studs *h h'*. The jacks or hooks *i i'* have
slotted or looped body portions, as shown in
Fig. 3, which fit upon the studs, their outer

ends z^2 being hooked. The outer portion of the body of each jack or hook is expanded or increased in vertical width at i^4 , this expanded or widened portion being connected by an incline i^5 with the narrower portion of the jack or hook, and the object of this feature of construction being to occasion the disengagement of the jacks or hooks from the lifters or draw-bars as the latter move inward and as their undersides slide upon the needles or pattern-levers, hereinafter described, the said wires or needles being elevated. The jacks or hooks pass through grates $k k'$, by which they are properly held in position and guided.

The vertical position of the hooked ends of the jacks and the engagement thereof with the lifters or draw-bars $o o'$ are determined by the indicators l , which are applied to bars l' , passing around a grooved drum or cylinder l^2 , the indicators acting against the under side of the outer ends of the pattern or indicator levers $m m'$, which are mounted side by side upon a cross-rod m^2 , supported in the side frames $a a'$. The inner end of the pattern or indicator lever m supports a vertical wire or needle n , upon the upper end of which rests the upper jack i , while the lower jack i' rests directly upon the inner end of the pattern-lever m' . The jacks, when their hooked ends are permitted to remain in their depressed position, as in the case of the jack i in Fig. 3, are engaged by lifters or draw-bars $o o'$ and moved outward thereby. These lifters or draw-bars have connected therewith jack-returning bars $p p'$, which serve, respectively, as a lifter or draw-bar moves inwardly to force inwardly, also, any jack or hook which may have been carried outward by the corresponding lifter or draw-bar in the outward movement thereof and which may not have been returned to the normal position (represented in Fig. 3) in consequence of the movement of a harness-lever inward.

The ends of the lifters or draw-bars and connected returning-bars slide in slots $a^2 a^2$, formed in the side frames $a a'$. Each end of each lifter or draw-bar is pivotally connected with one end of a connecting-rod q . The other ends of the rods q pertaining to the upper lifter or draw-bar are connected to upwardly-extending arms r on opposite ends of a rock-shaft s , which is journaled in bearings in the side frames $a a'$, and the other ends of the rods q pertaining to the lower lifter or draw-bar are connected to downwardly-extending arms r' on the said shaft s . The shaft s is provided at one end with an arm s' , which in practice is connected by a rod to some suitable moving part of the loom, to which the dobby is applied, the said rock-shaft s being in practice operated with such relative timing as that one lifter or draw-bar shall be caused to move outwardly at one pick of the loom and the other lifter or draw-bar shall be caused to move outwardly at the next pick of the loom, and so on successively.

For the purpose of imparting a step-by-step

movement of rotation to the drum or cylinder l^2 the shaft l^3 of the said drum or cylinder is provided with a ratchet-wheel t , the teeth of which are engaged by a pawl u , pivoted to one of the arms r' . The drum or cylinder is prevented from overrunning by means of a check-wheel v , which is fast to the shaft l^3 and is formed with recesses, which are entered in succession by the curved end of the holding-arm w , the said arm being pivoted to the side frame a' and acted upon by a spring x .

With the object in view of imparting more movement progressively to the rear harness-levers in the loom I communicate more movement to the rear ends of the lifters or draw-bars than to the forward ends thereof. I effect this by connecting the rods q to the arms $r r'$ on one side of the dobby at points which are proportionately farther from the axis of the shaft s than are the points at which the rods q on the other side of the dobby are connected with the corresponding arms $r r'$ at that side. For the purpose of avoiding lost motion when the harness-levers and lifters or draw-bars are thus operated the back-stop bar f is secured to the side frames $a a'$ in an inclined position, which is parallel with the position occupied by the lifters or draw-bars when in their innermost position. In order to prevent the hooks or jacks from moving too far inward and so insuring that they shall be indicated when required, a cross-wire i^6 is passed through the open portions of the hooks or jacks of each series, these wires being mounted in lugs projecting from the ends of the grates $k k'$. These cross-wires i^6 extend from one side frame to the other in an inclined or angular position, as indicated in Fig. 5, they being parallel with the outer face of the back-stop bar f .

Inasmuch as the jacks i' engage with the studs h' , which are located nearer the center or fulcrum on which the harness-levers turn than are the studs h , with which the jacks i engage, it is necessary to provide for moving the upper lifter or draw-bar through a greater path of movement than that through which the lower lifter or draw-bar is moved. I therefore connect the rods q pertaining to the said upper lifter or draw-bar to the arms r at points which are proportionately farther from the axis of the shaft s than are the points at which the rods q pertaining to the lower lifter or draw-bar are connected to the arms r' .

The grates $k k'$ preferably are cast in one and from the front side of the casting projects a series of lugs k^2 , the spaces between these lugs forming pockets for the reception of the upper ends of the needles n , the latter being retained in place by a cross-wire n' , passing outside the same and supported in lugs n^2 , projecting from the ends of the casting.

Having described my invention and the best manner of reducing the same to practice with which I am at present acquainted, I claim—

1. The combination, with the harness-levers,

each having studs $h h'$, and the upper and lower hooks or jacks having loose or sliding connection with said studs, of the lifters or draw-bars, the returning-bars moving with the lifters or draw-bars, the inclined back-stop bar, means for operating the lifters or draw-bars with a proportionately greater range of movement of the upper one thereof than of the lower one and with a greater range of movement at the rear ends thereof than at the forward ends thereof, and pattern-controlling devices for determining the engagement of the hooks or jacks with the lifters or draw-bars, substantially as described.

2. The combination, with the harness-levers, each having studs $h h'$, and the upper and lower hooks or jacks having loose or sliding connection with the studs, of the lifters or draw-bars, the returning-bars moving with the lifters or draw-bars, the rock-shaft having arms $r r'$ at opposite ends thereof, the rods connecting the lifters or draw-bars with the said arms, the said rods at one side of the dobbie being connected with the said arms at points which are proportionately farther from the axis of the shaft than are the points of connection at the other side and those per-

taining to the upper lifter or draw-bar being connected with the upper arms at points which are proportionately farther from the said axis than are the points of connection between the lower lifter or draw-bar and the lower arms, the inclined back-stop bar, and pattern-controlling devices determining the engagement of the hooks with the lifters or draw-bars, substantially as described.

3. The combination, with the inclined back-stop bar f , the harness-levers, the studs $h h'$ thereon, and the hooks or jacks $i i'$, having loose or sliding connection with said studs, of the angularly-placed cross-wires $i^b i^b$, acting to determine the position of the hooks or jacks, the lifters or draw-bars, and means for operating the said lifters or draw-bars with a greater range of movement at the rear ends thereof than at the forward ends thereof, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEO. W. STAFFORD.

Witnesses:

CHAS. F. RANDALL,
WM. A. MACLEOD.