

No. 766,975.

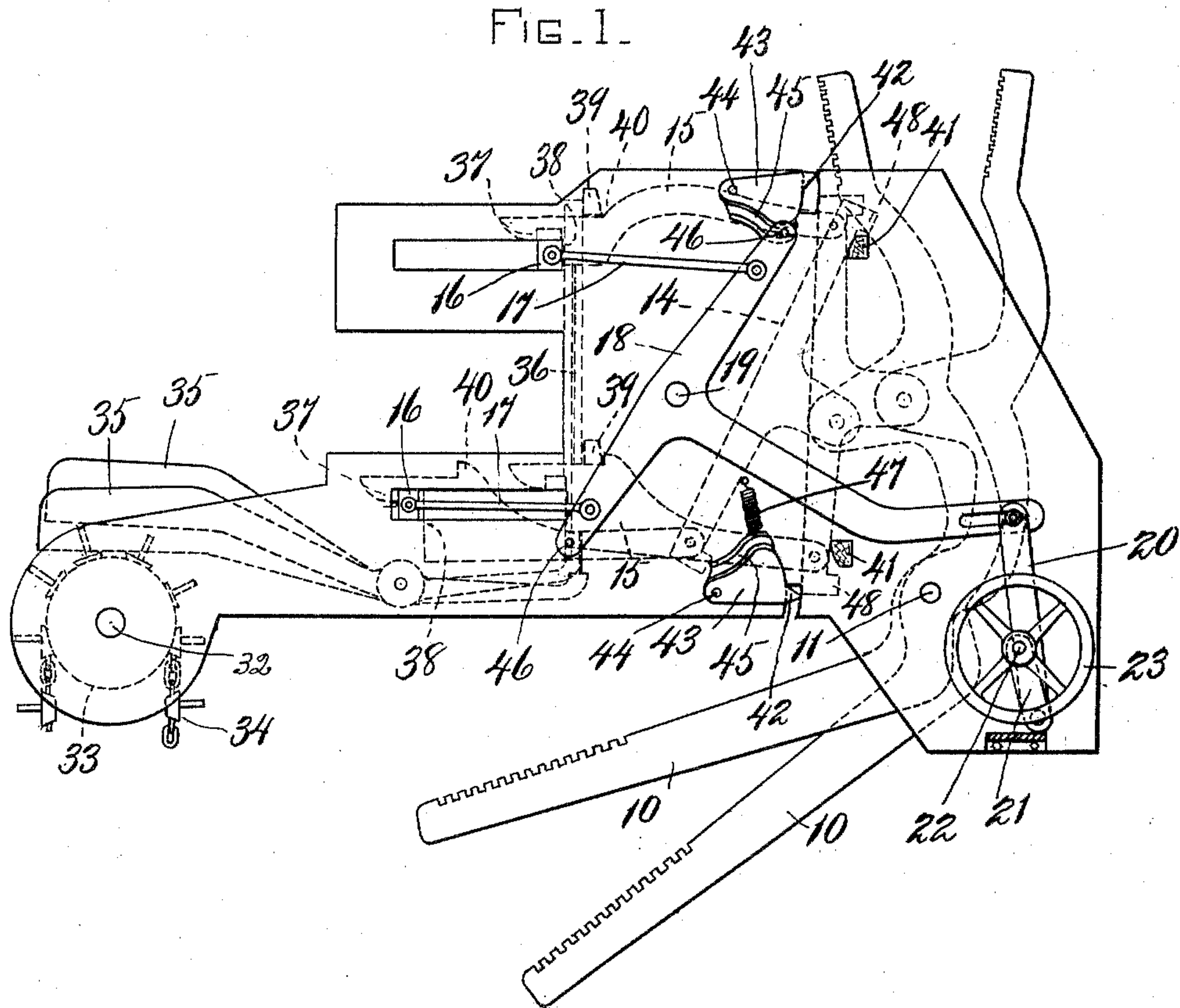
PATENTED AUG. 9, 1904.

J. W. SHARKEY.
LOOM.

APPLICATION FILED APR. 12, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:
P. W. Perzetta
E. Batchelder

INVENTOR:
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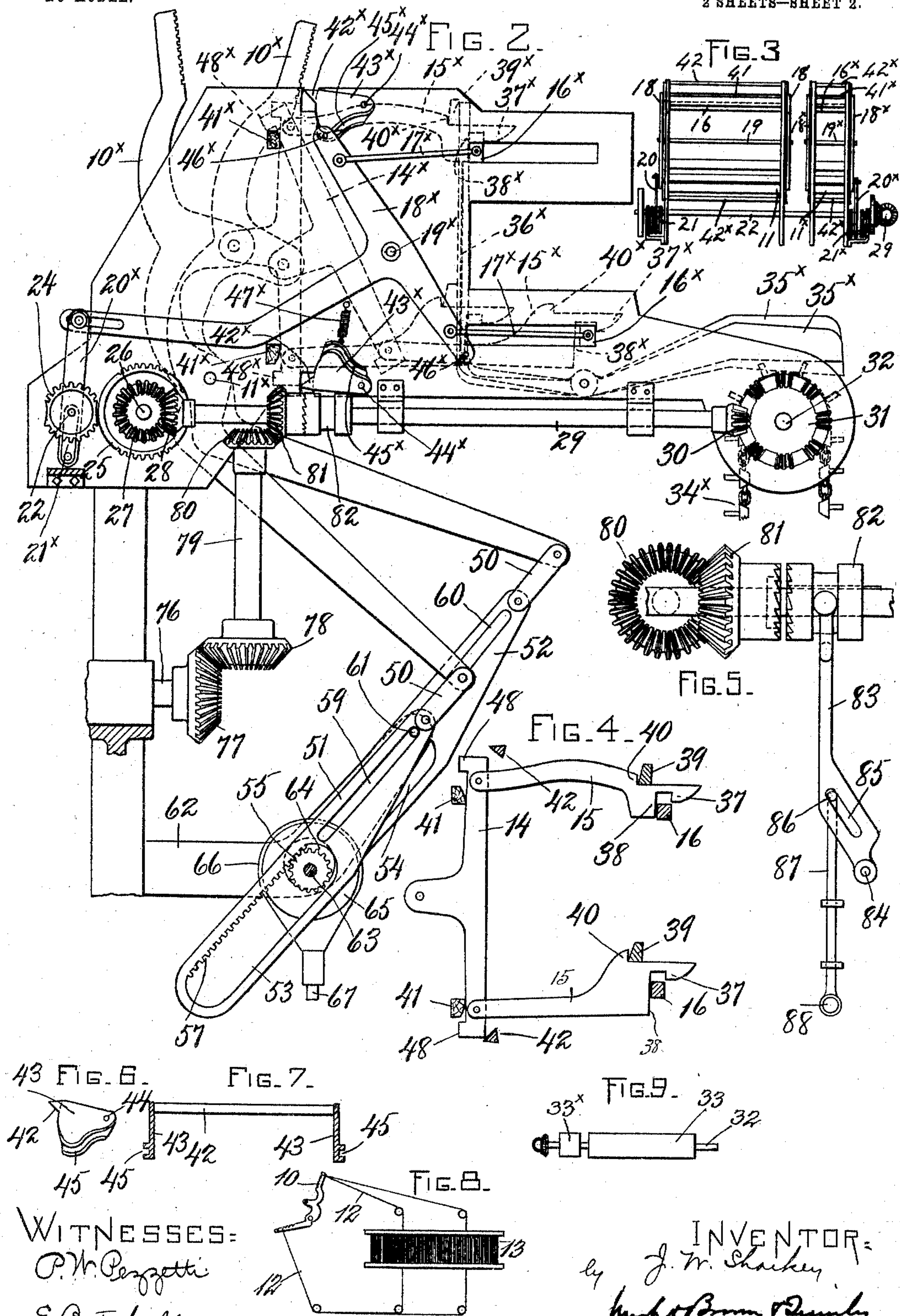
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By *Wm. B. Denny*

UNITED STATES PATENT OFFICE.

JAMES W. SHARKEY, OF BOSTON, MASSACHUSETTS.

LOOM.

SPECIFICATION forming part of Letters Patent No. 766,975, dated August 9, 1904.

Application filed April 12, 1902. Serial No. 102,542. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. SHARKEY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Looms, of which the following is a specification.

This invention relates to looms; and its principal object is to provide improved means whereby the type of double-acting dobby employing oppositely-reciprocating griffs or knives may be made positive in action, so as to both raise and lower the harnesses or positively act in both directions of movement on a shuttle-changing mechanism.

Of the accompanying drawings, Figure 1 represents a side elevation of the dobby looking at the harness-controlling side. Fig. 2 represents a side elevation looking at the shuttle-box-controlling side. Fig. 3 represents a rear elevation of the dobby-frame and most of the moving cross parts. Fig. 4 represents a detail view of the griff-hooks, their lever, and controlling parts. Fig. 5 represents a detail plan view of the clutch-controlling mechanism. Fig. 6 represents an elevation of the movable fulcrum-bar. Fig. 7 represents a sectional view thereof. Fig. 8 represents a view showing the connection of a harness-lever with the harnesses. Fig. 9 represents a view showing the relation of the harness and shuttle-box chain-barrels.

The same reference characters indicate the same parts in all the figures.

In the drawings, 10 10, Figs. 1 and 8, represent the pivoted harness levers or jacks strung on a shaft 11 and having their opposite ends connected by cords 12 12 with both the top and bottom bars of the harnesses 13, as shown in Fig. 8, so that the oscillation of any one of said levers causes it to both raise and lower its harness positively. To the jacks 10 are pivoted the levers 14, and to the opposite ends of said levers are pivoted the upper and lower hooks 15 15, adapted to engage the griffs or knives 16 16. The latter are connected by links 17 17 with the upper and lower arms of pivoted levers 18, connected by a rock-shaft 19. One of said levers is T-shaped, and its rearward arm is connected by a link 20

with a crank 21 on a shaft 22, having a hand-wheel 23 at one end and an intermittent locking-gear 24 at the opposite end. 25 is a complementary intermittent locking-gear mounted on a stud 26 and having secured to it a bevel-gear 27, meshing with a bevel-gear 28 on a shaft 29. On the opposite end of said shaft 29 is an intermittent locking bevel-gear 30, meshing with a complementary intermittent locking bevel-gear 31, mounted on the pattern-barrel shaft 32. On the latter is secured the barrel 33, Fig. 9, carrying the pattern-chain 34, Fig. 1, for controlling the harnesses, which chain acts upon pivoted fingers or lifters 35 35. One set of these acts directly in the usual manner on the lower set of hooks 15 and the other through the medium of vertical bars or needles 36 on the upper set of hooks 15. The hooks 15 are provided with the usual projections 37 37, adapted to take over the edges of the griffs 16 and cause the hooks to be drawn forwardly or outwardly with said griffs when the pattern mechanism allows hooks to fall, and said hooks are further provided with abutments or projections 38, which are constantly in the path of the rear sides of the griffs.

39 represents fixed bars or abutments engaged by shoulders 40 on the hooks 15 when the latter are raised, so as to prevent forward movement of the hooks, but dropped out of engagement with said bars when the hooks are depressed.

41 41 are fixed fulcrum-bars engaging the ends of the levers 14 on the rear sides of the latter to resist rearward movement of either end of any lever 14 when said end is acting as the fulcrum end, and 42 42 are movable abutment or fulcrum bars carried by arms 43 43, pivoted at 44 to the dobby-frame and formed with cam-grooves 45 45. These grooves on the upper and lower arms are entered by pins 46 46 at the upper and lower ends of the levers 18 as said ends move rearwardly, whereby the corresponding fulcrum-bar 42 is moved out of the path of levers 14. As the pins 46 again move forward in the cam-grooves 45 the fulcrum-bars 42 are positively moved into the path of the levers 14 and re-

tained in said path after the pins leave the grooves, the upper bar by gravity and the lower bar by a spring 47.

48 48 are projections on the ends of the levers 14 adapted to take over the bars 41 and prevent the levers 14 from slipping endwise out of engagement with the fulcrum-bars 42 as the levers are swung.

The operation of the harness-controlling part of the dobby is as follows: The shaft 22 is intermittently rotated a half-rotation at a time by the gears 24 25 and locked during its periods of rest. This rotation oscillates the levers 18 and reciprocates the griffs 16 16, one griff moving outwardly as the other returns, and vice versa. The pattern-shaft 32 is intermittently rotated by the gearing 30 31 and locked during its periods of rest, whereby the lags of the pattern-chain 34 are successively brought under the lifters 35. The presence of pegs in the pattern-chain under the lifters allows the corresponding hooks 15 to be depressed and engaged with the griffs, so as to move outwardly as the latter move out. Assuming that one of the lower hooks 15 has been engaged and moved outwardly by the lower griff, as seen in Fig. 1, this causes the corresponding lever 14 to have its lower end swung outwardly, while its upper end finds a fulcrum on the upper bar 41, whereby the corresponding harness-lever 10 is oscillated to raise its harness. Should the pattern call for a return of this harness on the succeeding pick of the loom, the upper hook 15, attached to the lever 14, would remain lifted, so as to leave its shoulder 40 in engagement with the upper abutment-bar 39. The lower griff 16 in returning from the position shown in Fig. 1 would engage the shoulder 38 on the hook 15 in engagement with it and positively move said hook and the lower end of the lever 14 back to their normal position, thereby oscillating the harness-lever 10 backwardly and returning the harness to the bottom of the shed. After the lever 18 has moved from the position shown in Fig. 1 sufficiently to move the upper fulcrum-bar 42 in front of the upper end of the lever 14 said upper end then has a fulcrum directly resisting its forward movement and removing or partially removing the compressive strain upon the upper hook 15. While the harness or harnesses which have been raised are returning to the bottom of the shed by reason of the return movement of the lower griff 16 other harnesses may be simultaneously raised by the action of the upper griff, and when the latter returns the lower parts 38 39 40 42 will operate to resist the forward movement of the lower ends of levers 14, which are then acting as fulcrum ends in a manner similar to that above described for the upper parts. It will thus be seen that I obtain a positive movement for the harnesses in a double-acting dobby. The advantages of the positive movement are well known, since

it does away with the use of springs or weights to depress the harnesses and allows the majority of warp-threads to be kept in the top of the shed without undue strain on the mechanism, thus minimizing the chafing of the shuttle on the warp-threads as it passes over the bottom of the shed.

The shoulders 38 on the hooks 15 should preferably project a slight distance through the grids (not shown) which separate said hooks in normal or rearward position of the hooks, so that as the griffs 16 return to their rearward positions they will even the hooks and insure the disengagement of their shoulders 40 from the abutment-bars 39.

A brief description of the application of the invention to a shuttle-changing mechanism will now be given.

The parts of the dobby for operating the shuttle devices are substantial duplicates of those for the harness mechanism and are designated by the same reference-numerals with the addition of the symbol "x."

10^x indicates two oscillating levers whose lower ends are connected with a compound eccentric mechanism 64 65 through links 50, rack members 51 and 52, guided by slots 59 60, and a pin 61, having slots 53 54, embracing gears, such as 55, on the eccentrics meshing with the racks 57 58. A stud 63 in a bracket 62 supports the eccentrics. Connections to the shuttle-boxes or cells on the lay are through an eccentric-strap 66, rod 67, and other suitable mechanism. By the described arrangement through a positive movement of the levers 10^x in either direction any one of four cells in the shuttle-box may be alined with the shuttle-race on the lay by a proper arrangement of the shuttle-controlling pattern-surface 34^x.

Connections from the crank-shaft or other power-shaft 76 of the loom to the shaft 29 are through bevel-gears 77 78, vertical shaft 79, bevel-gears 80 81, the latter being loose on shaft 29 and having a clutch member and sliding clutch member 82, splined on said shaft. Member 82 is controlled by lever 83, pivoted at 84 and having cam-slot 85, a manually-operated rod 87, having pin 86 in cam-slot, and handle 88. It is thus made possible to disconnect the dobby mechanism from the loom and reverse the dobby by the use of the hand-wheel 23 in picking out a bad place in the cloth, the harness and shuttle controlling mechanisms and their pattern-chains retaining their proper relation or sequence of operations.

I claim—

1. In a loom, the combination of a lever which swings from either end as a fulcrum, devices for reciprocating the same, and abutments automatically moved into and out of the paths of said ends transversely of said paths, for resisting forward movement of said ends.

2. In a loom, the combination of a lever

which swings from either end as a fulcrum, hooks pivoted to said lever, griffs to engage said hooks, end extensions on said lever beyond the pivots of the hooks, and abutments automatically moved into and out of the paths of said extensions for resisting forward movement thereof.

3. In a loom, the combination of a lever which swings from either end as a fulcrum, devices for reciprocating the same, and pivoted abutments automatically swung in a direction parallel to the plane of movement of the lever into and out of the paths of its ends, for resisting forward movement of said ends.

4. In a loom, the combination of a lever adapted to be swung from either end as its fulcrum end, pattern-controlled means for positively reciprocating each end of said lever in both directions, means for positively resisting backward movement of each end of the lever while acting as fulcrum end, movable abutments for engaging each end of the lever and resisting its forward movement, and mechanism for automatically moving said abutments into and out of the paths of said ends transversely of said paths.

5. In a loom, the combination of a lever adapted to be swung from either end as its fulcrum end, oppositely-reciprocating griffs, rocking means having link connections with said griffs for reciprocating the latter, hooks pivoted to the opposite ends of the lever and

having provisions for positively engaging said griffs in both directions of movement of the latter, pattern mechanism controlling said hooks, means for positively resisting backward movement of each end of said lever while acting as fulcrum end, and movable abutments actuated by said rocking means to move into and out of the paths of the lever ends transversely of said paths for positively resisting forward movement of said ends.

6. In a loom, the combination of a lever adapted to be swung from either end as its fulcrum end, oppositely-acting griffs, hooks pivoted to opposite ends of the lever and having provisions for positively engaging said griffs in both directions of movement of the latter, pattern mechanism controlling said hooks, means for positively resisting backward movement of each end of the lever while acting as fulcrum end, abutments automatically moved into and out of the paths of the lever ends transversely of said paths for resisting forward movement of said ends, and fixed abutments engaged by the hooks in their inactive position for resisting forward movement of said hooks.

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

JAMES W. SHARKEY.

Witnesses:

R. M. PIERSON,

ADELINE C. RATIGAN.