(No Model.)

4 Sheets—Sheet 1.

H. WYMAN.

SHUTTLE BOX MECHANISM FOR LOOMS.

No. 411,408. Patented Sept. 17, 1889.

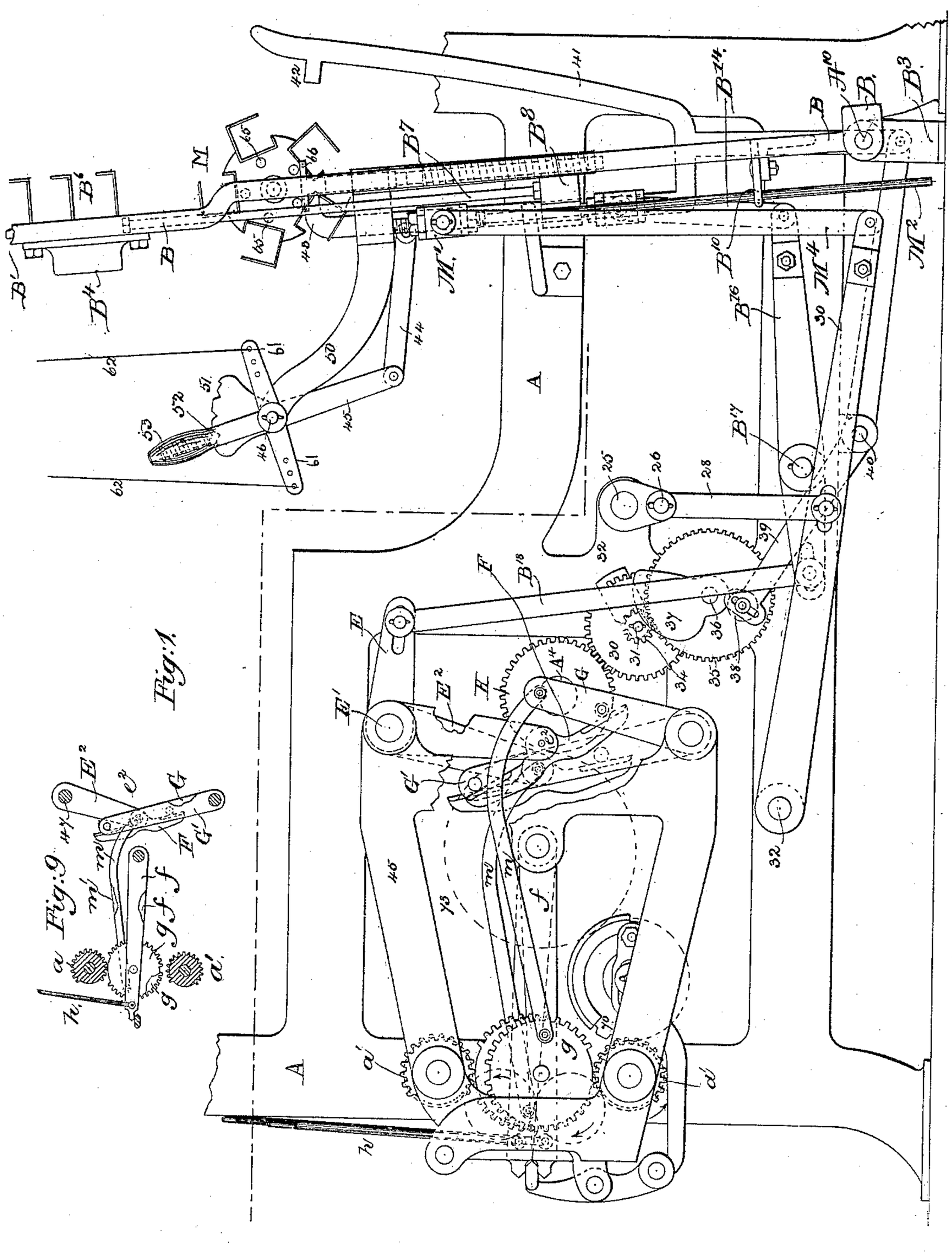


Fig: 1.

Fig: 9.

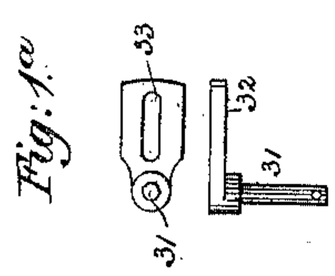


Fig: 1a.

Witnesses:
Edgar A. Goddin
Frederick L. Emery.

Inventor:
Horace Wyman,
by Crosby & Gregory
Attys.

(No Model.) 4 Sheets—Sheet 2.

H. WYMAN.

SHUTTLE BOX MECHANISM FOR LOOMS.

No. 411,408. Patented Sept. 17, 1889.

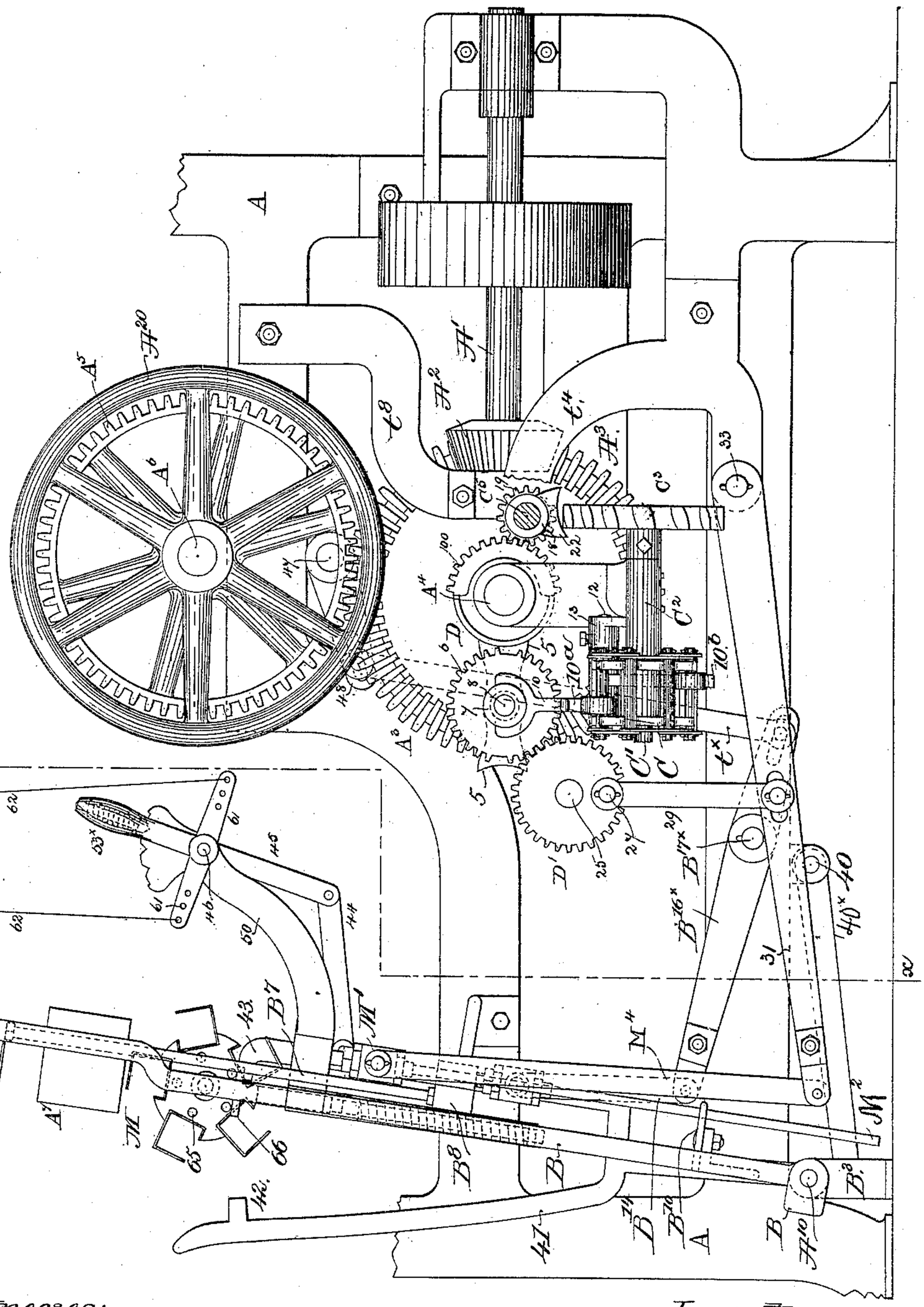


Fig. 2.

Witnesses:
Edgar A. Goddin
Frederick L. Emery.

Inventor:
Horace Wyman,
by Crosby & Gregory
Attys.

(No Model.) 4 Sheets—Sheet 3.

H. WYMAN.

SHUTTLE BOX MECHANISM FOR LOOMS.

No. 411,408. Patented Sept. 17, 1889.

Fig: 3.

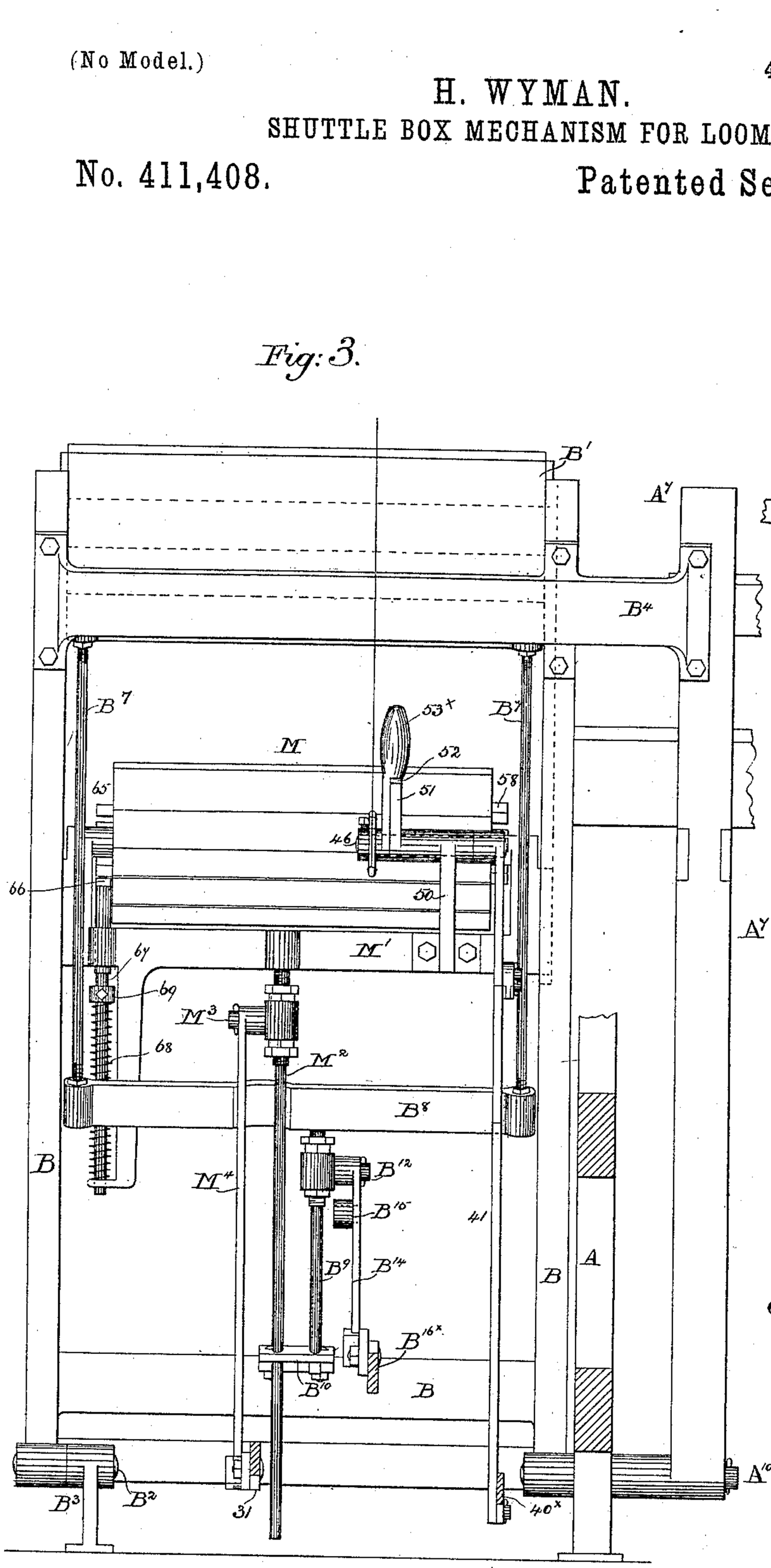


Fig: 7.

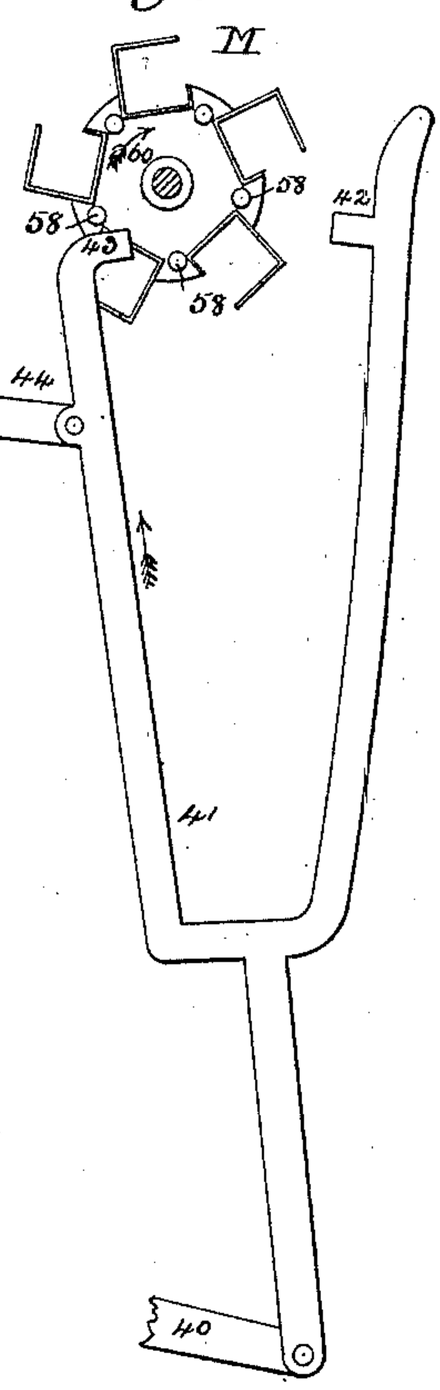
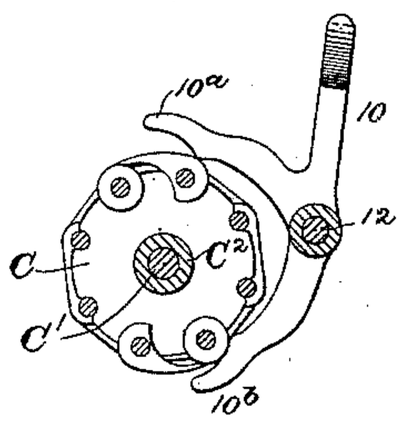


Fig: 6.



Witnesses:
Edgar A. Goddin
Frederick L. Emery.

Inventor.
Horace Wyman,
by Crosby & Gregory
Attys.

(No Model.) 4 Sheets—Sheet 4.

H. WYMAN.

SHUTTLE BOX MECHANISM FOR LOOMS.

No. 411,408. Patented Sept. 17, 1889.

Fig. 5.

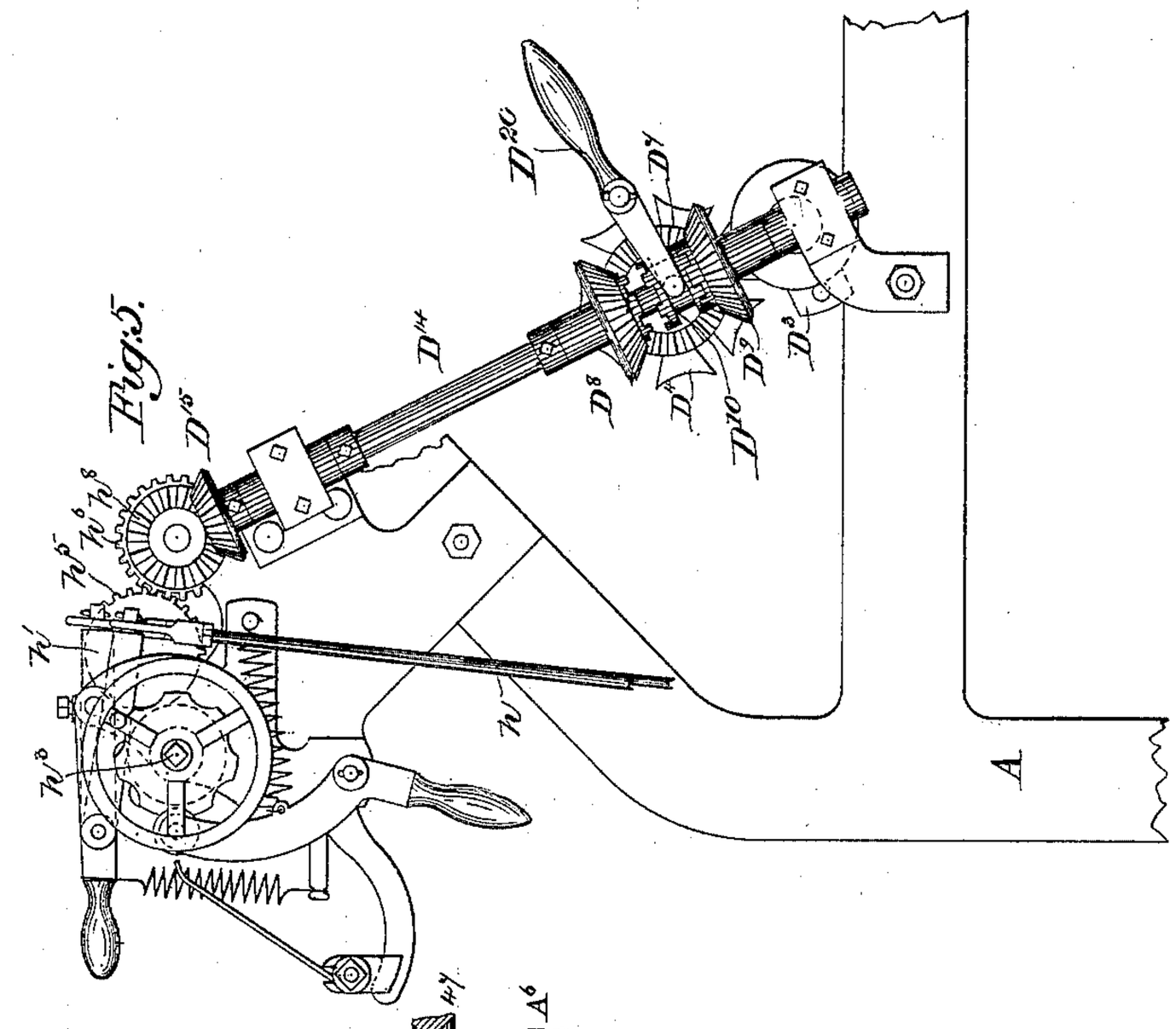


Fig. 4.

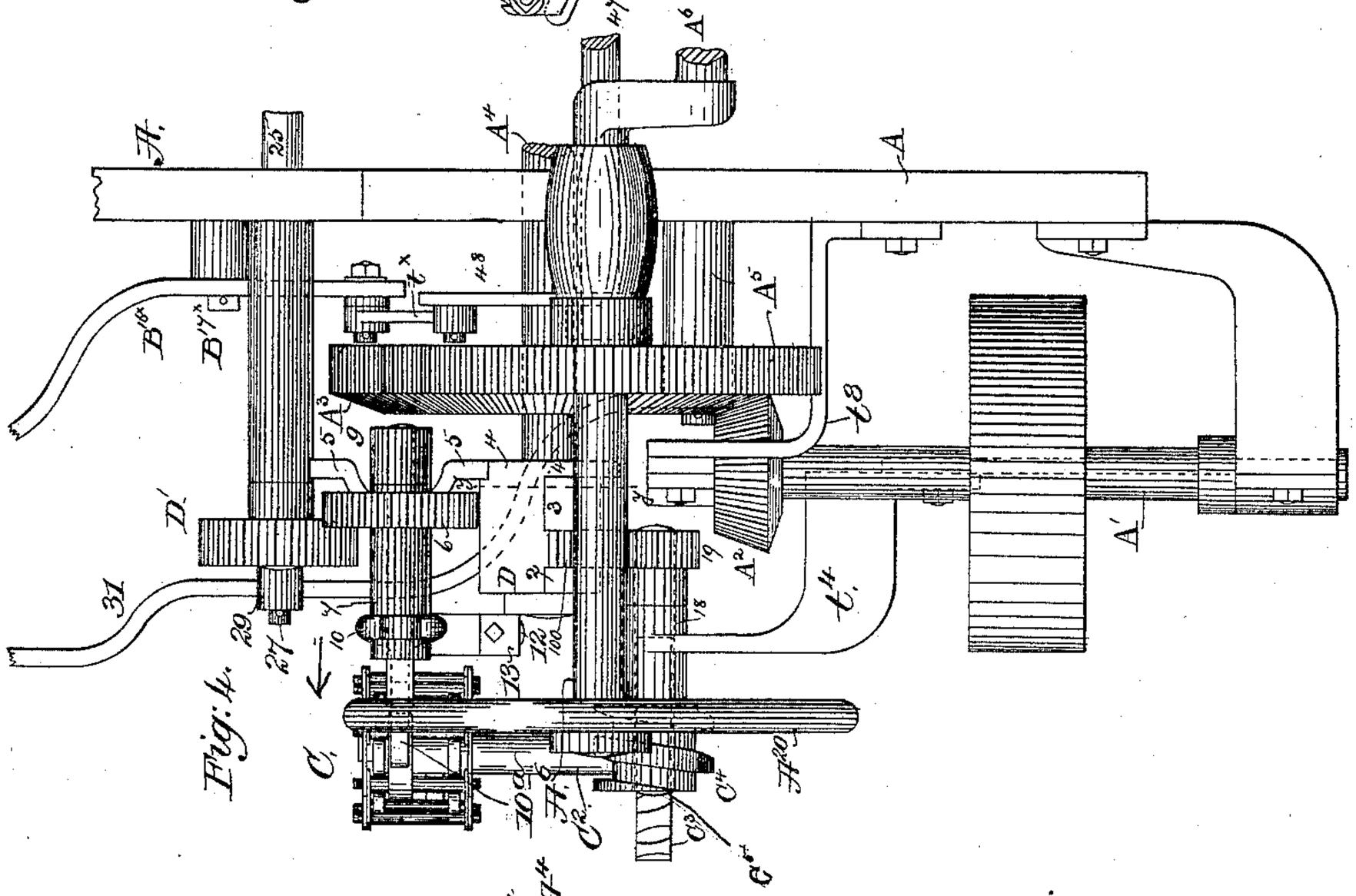
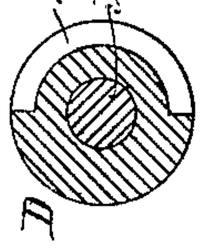


Fig. 8.



Witnesses:
Edgar A. Goddin
Frederick L. Emery.

Inventor:
Horace Wyman.
by Lemby & Gregory
Attys.

UNITED STATES PATENT OFFICE.

HORACE WYMAN, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE CROMPTON LOOM WORKS, OF SAME PLACE.

SHUTTLE-BOX MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 411,408, dated September 17, 1889.

Application filed February 14, 1889. Serial No. 299,870. (No model.)

To all whom it may concern:

Be it known that I, HORACE WYMAN, of Worcester, county of Worcester, State of Massachusetts, have invented an Improvement in Shuttle-Box Mechanism for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to improve that class of looms employing both vertically-sliding or "drop" shuttle-boxes, as I shall call them, and rotating shuttle-boxes, an example of which is contained in United States Patent No. 97,106, being used chiefly in weaving carpets. In this class of loom prior to my invention it has been customary to mount the bearings for the rotary shuttle-boxes in the same frame which carries the drop shuttle-boxes, this requiring that both sets of boxes be moved together, the vertical movements of both sets of boxes at one end of the loom being derived from one and the same lever actuated by a cam.

In a loom of the class referred to, where both kinds of boxes are mounted in and made movable vertically together in one frame, the weight to be moved and the distance are such that necessarily the speed at which the loom may be run is limited.

In carpet-weaving it frequently happens that the pattern requires not over four colors, or the number of colors which may be put in by the drop shuttle-boxes alone; but in looms heretofore made the rotary boxes had to be raised and lowered in unison with the drop-boxes, even though the shuttles in the rotary boxes were not required in the production of the pattern then being woven, and this extra duty of the loom results in unnecessary expenditure of power and wear of bearings. In my experiments to improve this class of loom I have mounted the shaft or journals for the rotary shuttle-boxes in a frame which may be moved vertically on or with relation to the frame which guides the drop shuttle-boxes, both the frame carrying the rotary shuttle-boxes and the frame carrying the series of drop shuttle-boxes being provided with independent means by which to raise and lower or move them vertically in proper time or order to place opposite the race of the lay either one of the cells of the drop-boxes or one of the cells of the rotary box. In this manner, when a carpet or other fabric is being woven which requires only the number of colors which may be readily supplied from the drop-boxes alone, it is possible to leave the series of rotary boxes down in their lowest position, or, in other words, the vertical movements of the frame carrying the rotary boxes may be suspended.

When more colors are needed in the pattern than can be readily put in from the drop-boxes, then in my improved loom the series of rotary boxes may be readily elevated, and any of its shuttles may be employed for one or more picks, and the rotary shuttle-box be then lowered and be left down for any desired number of picks.

In my improved loom the order of movement of the drop shuttle-boxes at both ends of the loom is controlled by a pattern-surface at one end of the loom, the shuttle-box levers at both ends of the loom employed to operate the drop-boxes being actuated by a shaft extended across the loom, and in the form in which my invention is herein embodied the end of the loom opposite that containing the pattern-surface employed to effect the changes in the drop shuttle-boxes has been provided with an auxiliary pattern-surface, which, as shown, derives its movement intermittingly from a cross-shaft, the said pattern-surface indicating the times of movement and of rest of the levers employed for moving vertically the frame which carries the journals of the rotary boxes.

In my invention, as herein shown, I have represented the drop shuttle-boxes as having four cells, and the shuttle-box moving mechanism co-operating with the drop-boxes is so devised in well-known manner as to enable any one of the said cells to be brought to the level of the race of the lay, as required; but when the pattern requires for its production more colors than can be supplied from the drop shuttle-boxes alone and the rotary boxes have to be called upon to supply the deficiency, then the order of movement of the drop-boxes has to be somewhat changed, as it will be obvious that the drop shuttle-boxes

have to be raised higher than before far enough to leave proper space in which to elevate the rotary boxes to the level of the race, and consequently the upper box of the series cannot be used. To do this, I have made the connecting-rod between the lever actuating the drop shuttle-boxes and the drop-box rod so that its effective length may be changed, it in effect being lengthened when both the drop-boxes and rotary boxes are to be employed together, the drop-boxes at such time being lifted higher.

One feature of my invention consists, essentially, in a loom containing the following instrumentalities, viz: a series of drop shuttle-boxes, a guide therefor, and a series of rotatable shuttle-boxes, an independent frame in which the said rotatable shuttle-boxes are mounted, and means to move the said frame independent of the means employed to move the drop-boxes, as will be described.

Other features of my invention will be hereinafter described, and specified in the claims at the end of the specification.

Figure 1 is a partial left-hand end elevation of a loom embodying my present invention, the upper part of the frame-work being omitted, the uppermost cell of the series of drop shuttle-boxes being broken off, the lowermost cell of the drop shuttle-boxes being supposed to be in operative position opposite the raceway of the lay, (shown only in Figs. 2 and 3,) the rotary box being supposed to be in its lowest position. Fig. 1ª shows the stand for supporting the intermediate gear, to be described. Fig. 2 is a partial right-hand end view of the loom shown in Fig. 1, but with the lay added, the parts being, however, in a different position, for in Fig. 2 the drop shuttle-boxes have been lifted another step and two of the cells at the top are broken off, the rotary box being supposed to be down in its lowest position, the shaft C^5 being in section back of the worm C^4. Fig. 3 is a partial rear elevation of the parts represented in Fig. 2 at the left of the dotted line *x*. Fig. 4 is a partial plan view of parts at the right of the dotted line *x*, Fig. 2. Fig. 5 is a view showing a part of the devices omitted from Fig. 1 at the left side of the loom, the said devices being employed to operate the pattern-surface for the drop shuttle-boxes. Fig. 6 is a sectional detail of the pattern-surface for the rotary shuttle-box; Fig. 7, a detail showing the inner end of one of the rotary shuttle-boxes, with its pins and the pawl to engage the said pins when the rotary box is to be rotated in one or in the opposite direction. Fig. 8 is a cross-section of the hub D in the dotted line *y y* thereon, Fig. 4; and Fig. 9 is a detail, but on a smaller scale, of the stud-carriers, connecting-rods, toothed cranks, secondary lever, and arm and shaft employed to move the drop shuttle-boxes at the opposite or right-hand side of the loom, the said devices lying behind the parts for moving lever E.

In the form in which my invention is herein shown as embodied the series of drop shuttle-boxes and the frame carrying the rotary boxes are made to slide up and down in guide-frames at opposite sides of the loom, the said guide-frames being connected to and adapted to vibrate in unison with the lay; but I desire it to be understood that the said drop shuttle-boxes and frame carrying the rotary boxes may be supported in any other usual form of guide—as, for instance, in some looms, as in United States Patent No. 211,718, wherein the guides are attached to the loom-frame rather than to the lay.

The frame-work A of the loom (but partially shown) is and may be of usual shape to support the working parts.

The power-shaft A′, its beveled pinion A^2, the toothed gear A^3 on the cross or picking shaft A^4, the toothed gear A^5, driven by it and fast on the crank-shaft A^6, and in practice joined to the lay A^7 by usual connecting-rods, are and may be all as common to looms now in use.

Viewing Fig. 3, it will be seen that the journal A^{10}, on which the sword of the lay turns, is extended through the loom-frame and forms one of the pivotal points for the guide-frame B, which guides the drop shuttle-box frame B′, the opposite side of the guide-frame B having a pivot B^2 in a stand B^3. The frame B and the parts carried by it are alike at opposite sides of the loom-frame.

The lay and guide-frame, as herein shown, are bound together by a brace, as B^4, so that they move forward and backward in unison in usual manner for each pick; but my invention as to the independent movements of the drop shuttle-boxes and of the rotary shuttle-boxes might be practiced to advantage in a guide-frame substantially such as in United States Patent No. 211,718 referred to, wherein the guide-frame is stationary rather than vibrating with the lay.

The frame B has a suitable guide, in or on which slides the frame B′, carrying the shelves or cells of the series of drop shuttle-boxes.

Herein it will be supposed that the drop shuttle-boxes have four cells; but in the drawings, Fig. 1, the uppermost cell of the series is represented as broken off to save space on the drawings, two said cells being broken off in Fig. 2 for a like purpose.

The lower part of the frame B′, as shown best in Fig. 3, has connected to it by two like rods B^7 a cross-bar B^8, to which is attached the box-rod B^9, having its lower end extended through a hole in a bracket B^{10}, carried by or forming part of the frame B. The box-rod B^9 has a stud B^{12} extended from it, over which, when both the drop and rotary shuttle-boxes, to be described, are to be employed together for the production of the pattern being woven, is fitted the upper end of the connecting-rod B^{14}, the said connecting-rod having, however, as herein shown, a second hub, as B^{15}, which may be applied to the said stud to thus shorten the effective length of the rod B^{14}, such being

necessary when only the drop shuttle-boxes are to be used in the production of the pattern, for in this latter case all the four cells of the drop-boxes may carry each a shuttle.

The connecting-rod B^{14}, instead of having the two holes or hubs referred to, may be constructed in other usual manner, whereby its effective length may be readily changed when required. The connecting-rod B^{14} is jointed to the forward end of a drop-box lever B^{16}, pivoted at B^{17} on the loom side. The rear end of the lever B^{16} is connected by a link B^{18} with a main lever E, herein shown as of elbow shape and mounted to turn freely upon a stud E′, supported in suitable bearings forming part of a frame or bracket 45, secured to the loom side. One arm of the main lever has pivoted upon it at e^2 a secondary lever F, it having near its opposite ends two flat faces, which are acted upon respectively by pins or studs extended from two stud-carriers G G′, joined, respectively, by connecting-rods *m m′* to like toothed cranks *g*, each mounted upon a like vibrator *f*, each vibrator being connected by a suitable rod, as *h*, which, extended upwardly, is attached to one of a series of like fingers *h′*, to be described.

Commencing with the lever E, just above referred to, and ending with the fingers *h′*, the parts referred to are substantially as in United States application, Serial No. 263,272, filed February 7, 1888, and also substantially as in United States Patent No. 336,623. As the fingers *h′* are acted upon by the usual pattern-cylinder upon which they rest, the said toothed cranks *g* are raised or lowered, so that they may be engaged with and rotated by one or the other of the partial gears *a′* or *d′*, common to the said Patent No. 336,623, the said gears being rotated in opposite directions by the usual train of gearing between them.

The shaft containing the gear *d′* in this present instance of my invention is shown as deriving its usual motion by or through a gear, as 70, common to my said application, it being engaged and rotated by a gear 73, (shown by dotted lines in Fig. 1,) the gear 73 being an intermediate, which derives its motion from a toothed gear H, which is fast upon the opposite end of the shaft A^4, before described as having fast upon it the gear A^3. In line with the stud E′ there is a shaft 47, common to my said application, and but partially shown in Figs. 4 and 9, the end of the said shaft at the right-hand end of the loom being in practice supported in a suitable box or bearing. The shaft 47 at the left-hand end of the loom has fast upon it an arm E^2, (shown partially in Fig. 1, by breaking away part of the lever E, and in Fig. 7,) the lower end of the arm E^2 having pivoted upon it a like secondary lever F, which is acted upon by like stud-carriers G G′, having jointed to them connecting-rods like *m* and *m′*, which in turn are jointed to like toothed cranks *g*, the said toothed cranks in their partial rotations in one or the other direction serving to rock the shaft 47, it having at its opposite end or at the right-hand side of the loom (see Fig. 4) a crank or arm, as 48, which is connected by a link, as $t^{\times}$, with a stud at the inner end of the drop-lever $B^{16\times}$, like the lever B^{16}, before referred to, the said lever $B^{16\times}$ having its fulcrum on a stud $B^{17\times}$, and being connected, as described of the lever B^{16}, with the box-rod depending from the lower end of the frame carrying the series of drop shuttle-boxes and located at the right-hand end of the loom.

As one means of actuating the pattern-surface, which may be of any usual construction and upon which rest the fingers *h′*, I may provide the crank-shaft (see Fig. 5) with a pin-wheel, as D^3, which in its rotation will actuate intermittingly a star-wheel D^4, mounted upon a suitable stud and having an attached beveled pinion D^7, the said beveled pinion engaging two like beveled pinions D^8 D^9, loose on the pattern-actuating shaft D^{14}, it having at its upper end a beveled pinion D^{15}, which engages a beveled pinion h^8, mounted upon a suitable stud and having a connected gear h^6, which engages an intermediate gear h^5, rotating it so that the latter in engagement with a suitable gear on the pattern-shaft h^3, common to my said application, rotates the pattern-surface.

I do not desire to limit my invention to the means employed for rotating the pattern-surface for moving the fingers *h′*, as I may use instead any other usual actuating means. The clutch-collar D^{10}, splined on the shaft D^{14} and controlled by the lever D^{20}, may be engaged with either wheel D^8 or D^9, according to the direction in which it is desired to rotate the shaft D^{14}. The devices herein described for such purpose are, however, as in my said application.

Referring to Figs. 2 and 4, it will be seen that the shaft A^4, outside the gear A^3, has fast upon it a hub D, having at one side of it near its center a substantially semicircular series of teeth 100, the hub at each side of the said teeth being cut away somewhat, as at 2 3, to leave spaces which extend about the said hub for substantially one hundred and eighty degrees, the inner end of the hub being, however, left to present a smooth surface, as 4, extending entirely about it, upon which may bear the concaved face of one of the locking projections 5, connected to or forming part of a toothed gear 6, fixed to a sleeve-like hub 7, mounted to slide freely upon a stud 8, fixed in a suitable stand, as 9, attached to the loom side. The hub 7, near its outer end, has an annular groove, which is embraced by pins at the forked upper end of a lever 10, (best shown in Figs. 2, 4, and 6,) the said lever being pivoted on a stud 12 in a stand 13, secured to the loom side. This lever 10, as best shown in Fig. 6, has three arms, two of the arms, as 10^a 10^b, extending over and under the pattern-surface C, fast upon a shaft C′, extended through a tubular bearing C^2, and

having fast upon its opposite end a worm-toothed gear C^3, which is engaged and rotated by a worm C^4, fast on a short shaft C^5, mounted in a bearing 18, forming part of a suitable stand t^4, the said shaft having at its inner end a toothed pinion 19. The pinion 19 is engaged by the teeth 100, referred to as attached to the hub secured to the shaft A^4, the said teeth rotating the said pinion 19 once during each rotation of the shaft A^4, and consequently moving the pattern-surface intermittingly. The short shaft C^5 has fast upon it a locking projection 22, (see Fig. 2,) having a concaved face, the said locking projection, as soon as the teeth 100 run out of mesh from the pinion 19, meeting the convexed face of the hub D, the shaft C^5, so long as the projection 22 bears against the hub, remaining at rest, as will be well understood. The pattern-surface C has usual rolls, projections, and spaces to vibrate the lever 10, and thereby move the hub 7 longitudinally, and with it the gear 6 and locking projections 5.

When the parts are in the position shown in Fig. 4, with one of the locking projections, as 5, bearing against the unbroken periphery 4 of the hub D, the gear 6 cannot rotate, and consequently the gear D′, with which it is engaged, remains at rest; but when it is desired to rotate the gear D′, the time of such rotation depending upon the pattern-surface, the hub 7 is drawn in the direction of the arrow, Fig. 4, far enough to place the gear 6 in the range of motion of the teeth 100 of the hub D, the latter then acting to give the gear 6 a half-rotation and leave it at rest, one of the locking projections 5 coming against the cylindrical part of the hub D as the teeth 100 run out of mesh with the gear 6.

The gear 6 constitutes what I call a "clutch-gear," and is of the same diameter as the gear D′, so that each half-rotation of the gear 6 causes a half-rotation of the gear D′. The gear D′ is fast on a shaft 25, extended across the loom-frame and having upon its opposite end (see Fig. 1) a crank arm and pin, as 26. The gear D′ has a crank-pin 27. The crank-pins 26 and 27 are connected, respectively, by links 28 and 29 with suitable studs secured to or projecting from the like levers 30 31, each pivoted, as at 32 or 33, at its rear end.

As will be understood, a semi-rotation of the shaft 25 will move levers 30 31 up or down, according to which half of the circle the crank-pin is traveling in.

The levers 30 and 31 being alike, I shall for sake of brevity describe the connections between but one of them with the frame carrying the rotating shuttle-boxes, and I shall select for such illustration the lever 31 at the right-hand side of the loom.

Each rotary shuttle-box M, as herein shown, has five cells or shelves. The shaft or journal of each rotary shuttle-box is mounted in a slide-frame M′, having ends to run in or on suitable ways of the guide-frame B. Each slide-frame M′ has connected to it a suitable box-rod M^2, which is extended down through a hole in the guide-plate B^{10}, before referred to. Each box-rod M^2 has a suitable pin or stud M^3, which is engaged by the upper end of a link, as M^4, which in turn is connected to one of the levers 31 or 30, so that as the said levers are moved the said slide-frame M′, containing the rotary shuttle-boxes, is raised and lowered in the proper time and order, and it will be noticed that this movement of the slide-frame M′ is entirely independent of the movement of the slide-frame B′, each frame deriving its own movement of reciprocation in a vertical direction through independent devices and in accordance with the demands of the pattern-surface.

The gear H on the shaft A^4 engages an intermediate gear 30, mounted on a stud 31 of a stand 32, adjustably secured to the loom side by a suitable bolt extended through a slot, as 33, in the stand. (See Fig. 1^a.) The gear 30 has secured to or forming part of it a pinion 34, which engages a toothed gear 35, mounted on a stud 36, and having attached to it a cam 37, the said cam in its rotation acting upon a roll 38 at one end of a lever 39, connected to a rock-shaft 40, extended across the loom and having at the opposite side of the loom an arm $40^\times$. The front end of the arm 39 and of the arm $40^\times$ are joined in like manner to like double pawls 41, (see Fig. 7,) having projections 42 43, each pawl having connected to it a link 44, which is in turn jointed (see Fig. 1) to an arm 45 of a rock-shaft 46, mounted in suitable bearings of a stand 50, provided, as herein shown, with a notched plate 51, which is adapted to be engaged in one or the other of its notches by a spring-held pin 52, (shown by dotted lines, Figs. 1 and 2,) inclosed in a handle 53 or $53^\times$, projected from the shaft 46, the movement of the said handles in one or the other direction effecting the movements of the double pawls 41, so that one or the other of their projections 42 or 43 will engage in the vertical movement of the pawl a pin, as 58, at one or the other side of the center of motion of the rotary shuttle-boxes, so as to turn the said boxes about their journal or center in one or the other direction, according to the requirements of the pattern being woven.

In the position in which the parts are shown in Figs. 2 and 7, Fig. 7 being supposed to be a view taken from the main side A of the loom outward, it will be seen that the projection 43 is underneath one of the projections 58, so that when the pawl 41 is raised or moved in the direction of the arrow thereon, Fig. 7, it will rotate the shuttle-box in the direction of the arrow 60, Fig. 7. It will be readily understood, however, that should either handle 53 or $53^\times$ be moved toward the front of the loom the projection 42 would stand under one of the pins 58 and would effect the rotation of the rotary shuttle-box M in the opposite direction.

In case it should be desired to move the

rock-shaft 46 by or through a pattern-surface, then the said rock-shaft may have projecting from it in opposite directions arms 61, which may be connected by suitable cords, as 62, with any usual or suitable Jacquard contrivance to shift the rock-shaft and move the pawl 41 into either of its two positions.

To prevent the overrunning of the rotary shuttle-boxes, each shuttle-box is provided at one end with suitable pins, as 65, which are acted upon by a head 66 at the upper end of a slide-rod 67, extended through suitable guides in the slide-frame M′ and normally held upward by a spring, as 68, surrounding the said rod and acting upon a collar 69, secured to the rod.

By changing the gears 30 34 for gears of other size the speed of rotation of the gear 35 and its cam 37 may be increased or decreased, so as to operate the lever 39 and pawl 41 more or less frequently, that depending upon the frequency with which it is desired to rotate the rotary shuttle-boxes.

I have omitted from the drawings the picking mechanism, shuttle-box binders, breast-beam, warp-beam, take-up, &c., as in practice the said parts forming the usual accompaniments of a power-loom will and may be of usual construction.

I have described the crank-pin 26 as deriving its intermitting rotation from the shaft 25; but it will be obvious that I may connect the said crank-pin with a gear, such as the one D′, described as carrying the crank-pin 27, and in such case I may provide at the left-hand side of the loom a gear, as 6, and operating devices therefor, as at the right-hand side of the loom. (See Fig. 2.) In this way the rotary shuttle-boxes at the opposite sides of the loom may be actuated vertically independently.

The crank-shaft A^6 is shown as prolonged at the right-hand side of the loom, where it has applied to it the hand-wheel A^{20}.

I claim—

1. A loom containing the following instrumentalities, viz: a series of drop shuttle-boxes, means to move them, a series of rotatable shuttle-boxes, an independent frame on which the rotatable shuttle-boxes are mounted, a guide for the said frame and the drop shuttle-boxes in their movement, and means to move the frame of the rotatable shuttle-boxes independently of the drop shuttle-boxes, substantially as described.

2. The two series of rotary shuttle-boxes, frames carrying them, two levers, connections between them and the said frames, two cranks, means to connect them with the said levers, and means to rotate the said cranks, combined with two series of drop shuttle-boxes, means to actuate them, and guides for the said frame and drop shuttle-boxes, substantially as described.

3. The two series of rotary shuttle-boxes, frames carrying them, two levers, connections between them and the said frames, a cross-shaft, cranks at each end thereof, connections between said cranks and levers, guides for the said frames, and means to rotate the said rotary boxes, combined with a gear on the said shaft, a pattern-surface, a clutch-gear, means to rotate it, and means between the clutch-gear and the said pattern-surface to move the clutch-gear laterally and cause the said cross-shaft to be rotated intermittingly, substantially as described.

4. The series of rotary boxes, means to rotate them, and the series of drop shuttle-boxes, the guides for the drop-boxes, and the drop-box levers, and means to operate them and the box-rods, combined with links between the said levers and box-rods, the said links being constructed to enable their effective length to be varied, substantially as described.

5. A series of drop shuttle-boxes, a series of rotating shuttle-boxes, a vertically-movable frame in which the rotating shuttle-boxes are mounted to rotate, guides for the said drop shuttle-boxes and the said frame, levers, and connections between them and the said drop shuttle-boxes and the said frame, and means to actuate the said levers to raise and lower the said shuttle-boxes, combined with independent pattern-surfaces to control the order of movement of the means employed to actuate the said levers, whereby the drop-boxes and the rotary boxes may be moved vertically independently of each other, or the drop-boxes be moved vertically while the rotary boxes are out of operative position, substantially as described.

6. Two series of rotary shuttle-boxes, frames carrying them, guides for the said frames, two levers, and connections between them and the said guide-frames, combined with a cross-shaft, means to actuate it, connections between it and the said levers, and pattern mechanism, and means between it and the said cross-shaft to control the actuation of the latter, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HORACE WYMAN.

Witnesses:
GEO. W. GREGORY,
B. DEWAR.