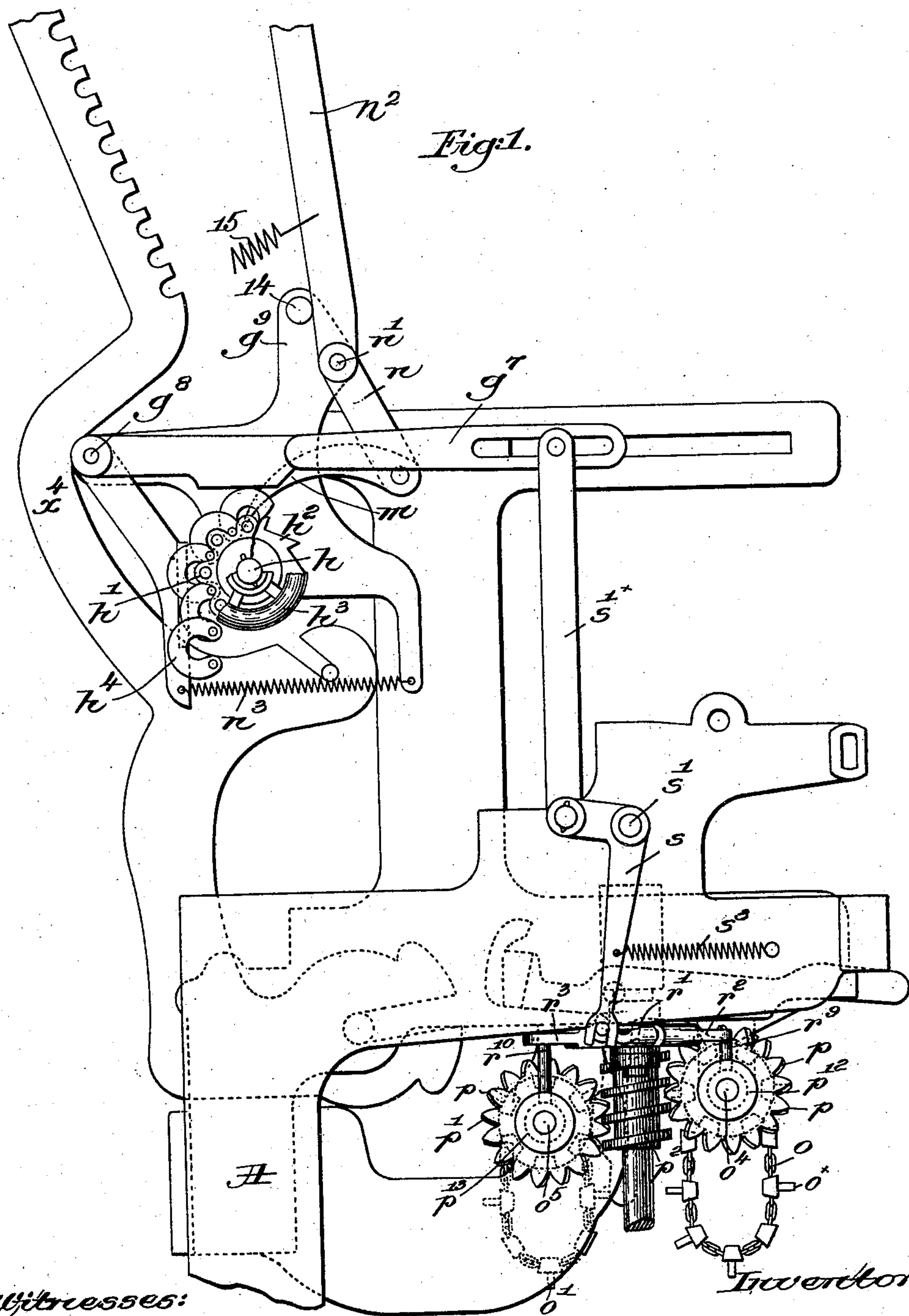


2 Sheets—Sheet 1.

No. 603,308.

Patented May 3, 1898.



Inventors:

Horace Wymann.

William H. Redding.
by Crosby & Gregory. *etc.*

(No Model.)

2 Sheets—Sheet 2.

H. WYMAN & W. H. REDDING.
SHEDDING MECHANISM FOR LOOMS.

No. 603,308.

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Fig. 3.

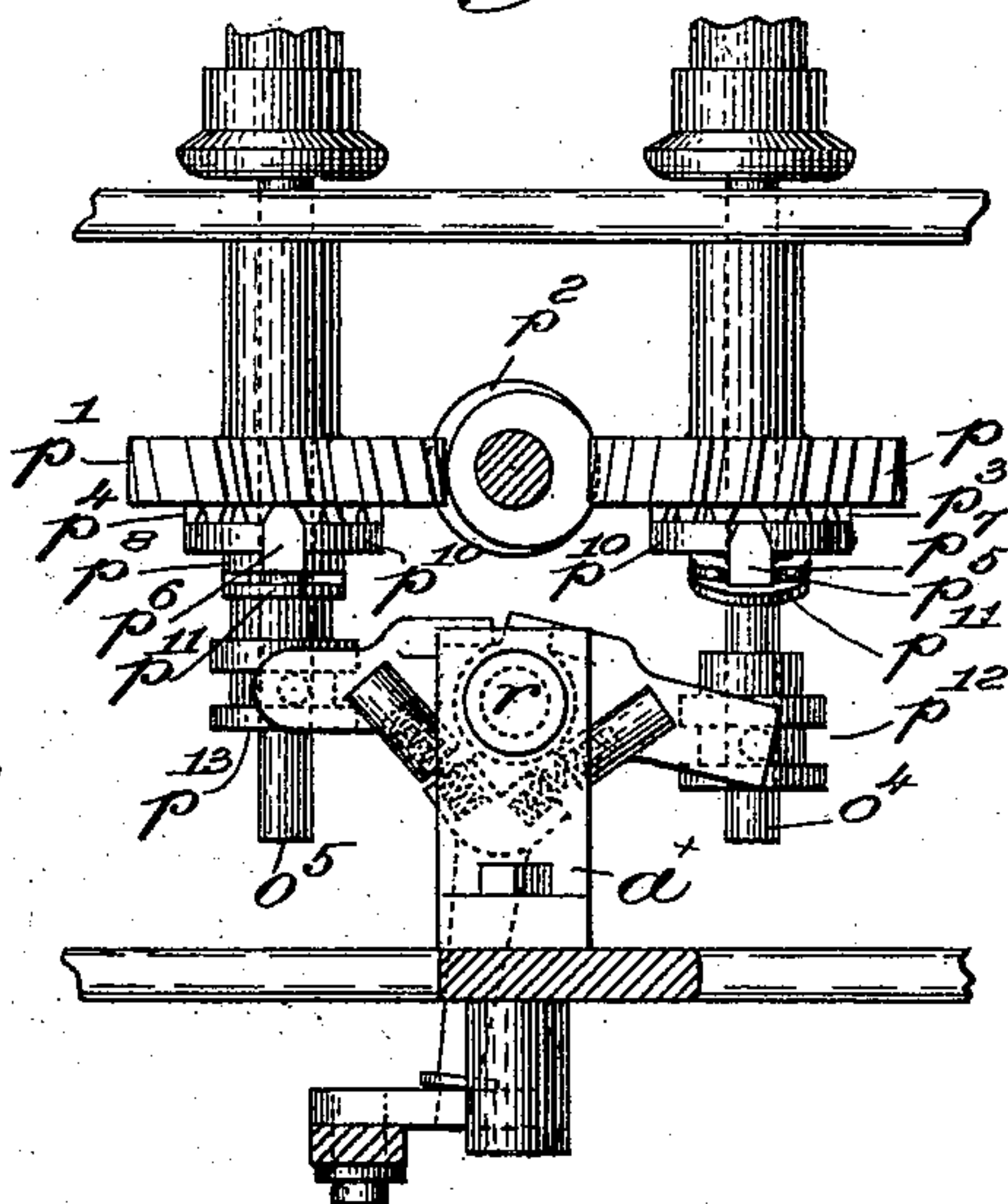


Fig. 2.

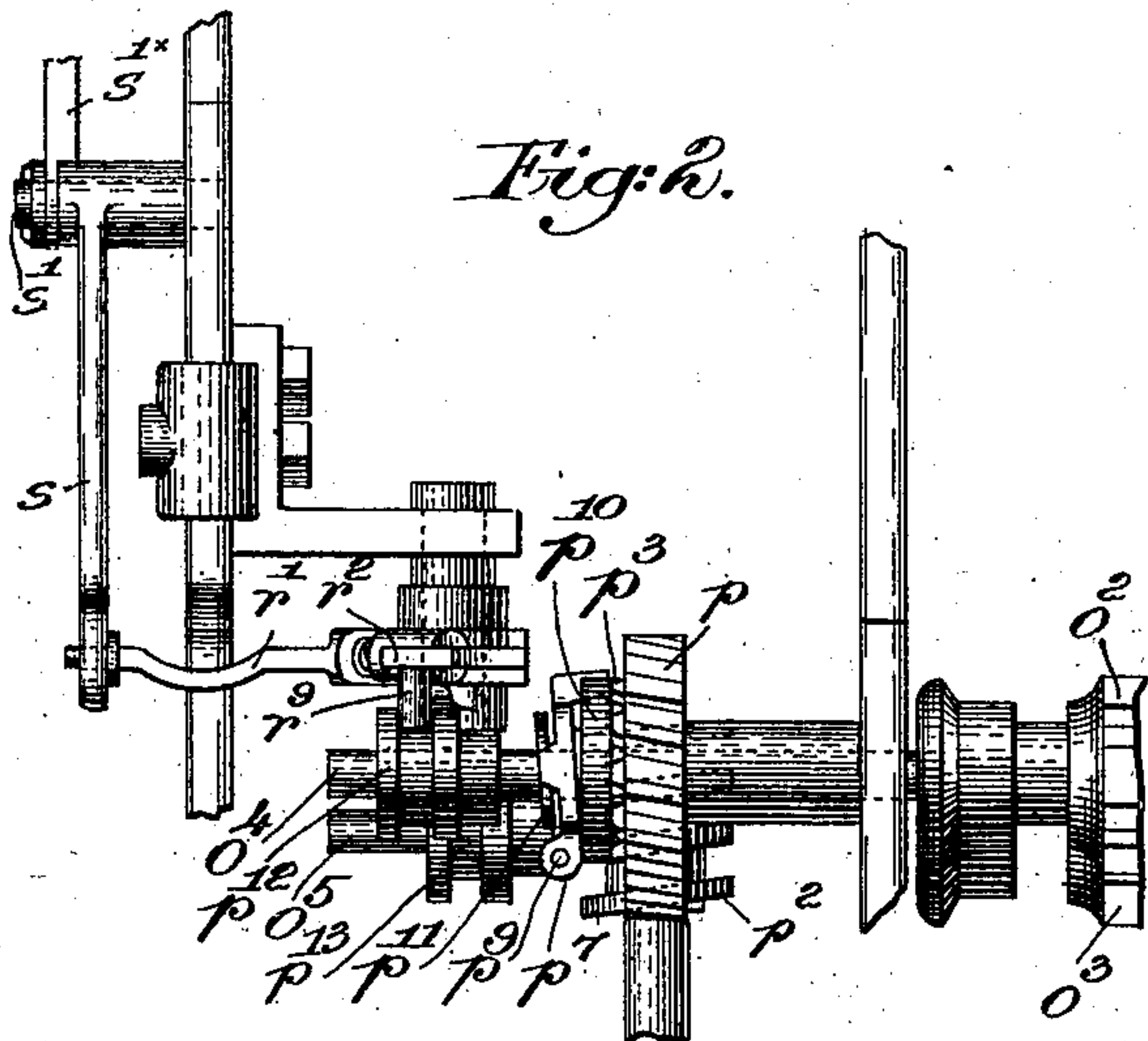


Fig. 5.

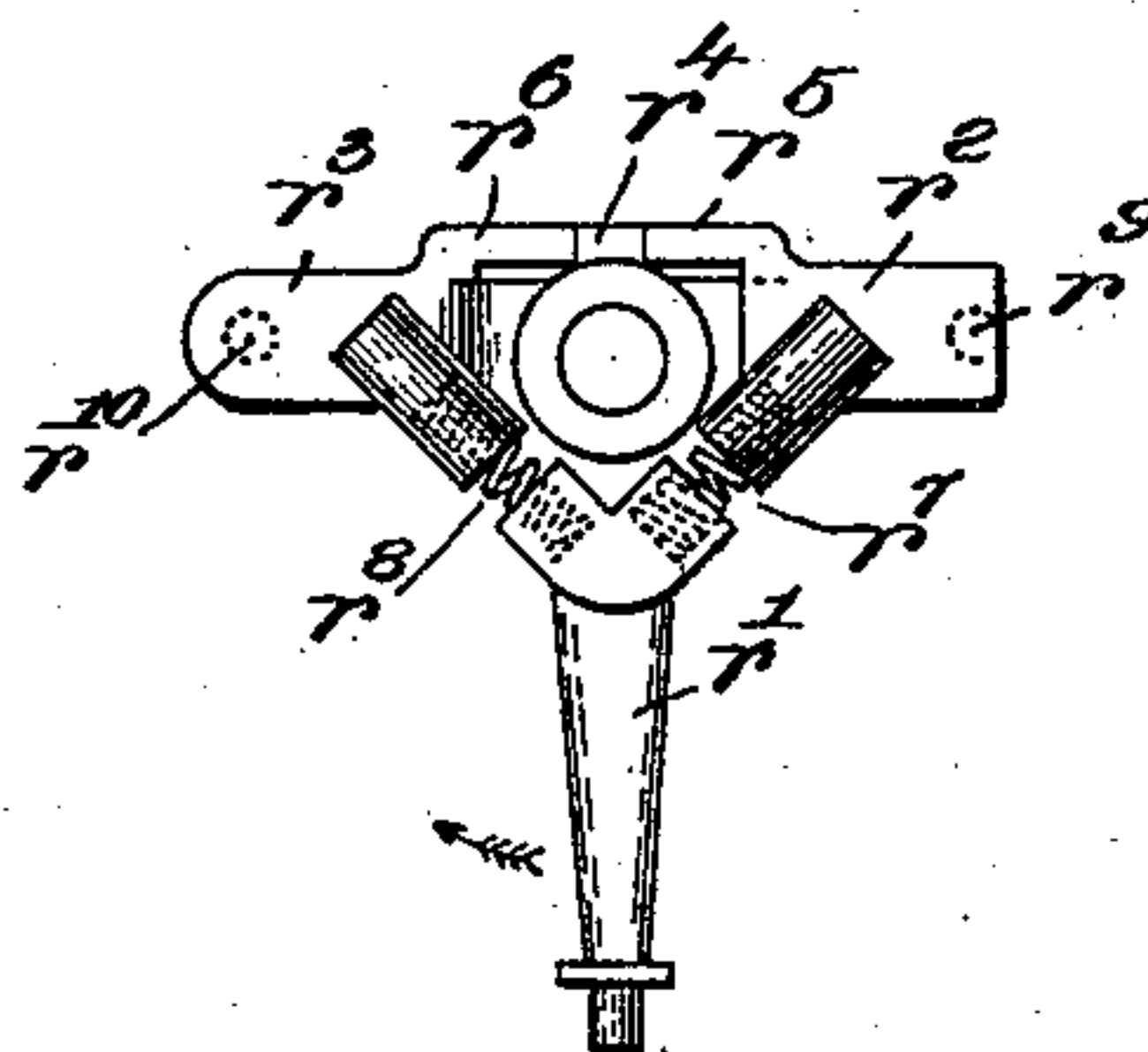
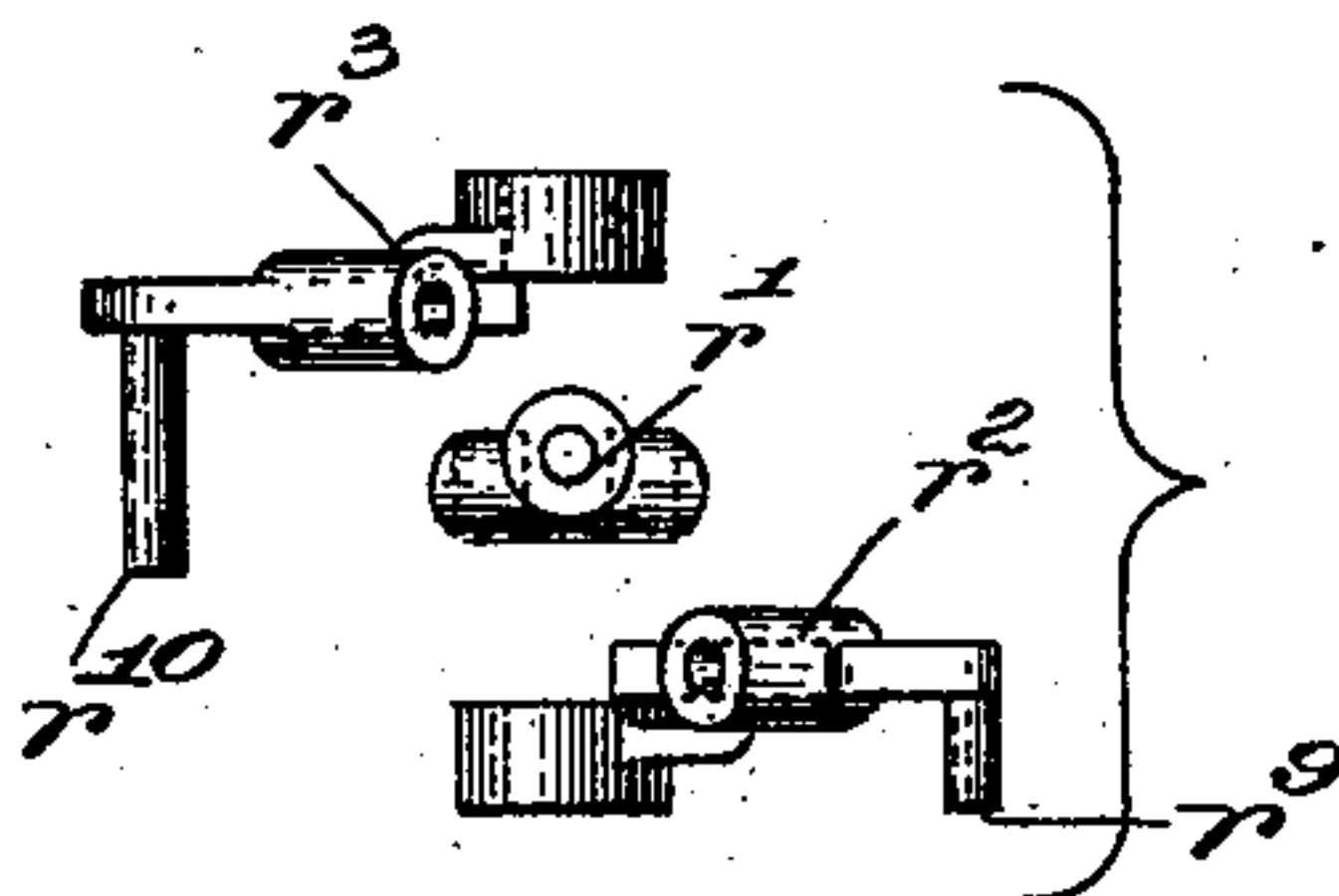


Fig. 6.



UNITED STATES PATENT OFFICE.

HORACE WYMAN AND WILLIAM H. REDDING, OF WORCESTER, MASSACHUSETTS, ASSIGNORS TO THE CROMPTON & KNOWLES LOOM WORKS, OF SAME PLACE.

SHEDDING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 603,308, dated May 3, 1898.

Application filed May 13, 1896. Serial No. 591,378. (No model.)

To all whom it may concern:

Be it known that we, HORACE WYMAN and WILLIAM H. REDDING, of Worcester, county of Worcester, and State of Massachusetts, have invented an Improvement in Shedding Mechanism for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention in looms has reference particularly to looms provided with a "dobby" or other arrangement of pattern mechanisms, each employing a plurality of pattern-surfaces in the form of chains or otherwise, adapted to be operated successively—for example, one during the weaving of a border or end and the other during the weaving of a plain portion or body of a fabric.

The object of our invention is to simplify and to otherwise improve pattern mechanisms of the class referred to, whereby the change from one pattern to another and the operation of the loom may be facilitated.

An important feature of our invention is the mounting of the pattern-surfaces in fixed position or in fixed bearings to thereby save the time usually required in shifting the pattern-surfaces (heretofore mounted in movable bearings) from inoperative into operative position.

In the drawings, Figure 1, in side elevation, partially broken away, illustrates one embodiment of our invention; Fig. 2, a partial end elevation of the mechanism, Fig. 1, looking from the right; Fig. 3, a top or plan view of the part shown in Fig. 2; Fig. 4, a diagrammatical section illustrating the preferred embodiment of the pattern-surface relatively to the parts moved thereby; Fig. 5, a detail in plan view showing the clutch-operating arms, and Fig. 6 a view showing the several parts of Fig. 5 separated.

Our invention is not necessarily limited to any particular pattern mechanism; but we have herein elected to disclose our invention in connection with a typical dobby—such, for instance, as shown and described in Letters Patent of the United States, issued under

date of November 28, 1893, No. 509,712, to Horace Wyman.

Referring to the drawings, the loom-frame A, the notched jacks x^4 , the auxiliary pattern-finger g^7 , pivoted at g^8 on a stand g^9 , the stud h , mounted on said stand and carrying loosely the auxiliary pattern-cylinder h' , having an attached ratchet h^2 and hand-wheel h^3 , said cylinder carrying the auxiliary pattern-surface, shown as a chain h^4 , provided with suitable protuberances and spaces to raise and lower said finger g^7 , the pawl m , pivoted on a lever n , fulcrumed on a stud n' , mounted on the stand g^9 , the stop 14, the spring 15, and the brake-supporting arm, but partially shown at n^2 , are and may be of similar construction and operation to the parts similarly lettered in said Patent No. 509,712 referred to, to which reference may be had.

In accordance with our invention the pattern-surfaces, shown as two in number and indicated at o o' and herein shown as in the form of chains, are mounted upon suitable cylinders o^2 and o^3 , partially shown in Fig. 2, fixed upon suitable shafts o^4 o^5 , journaled in suitable bearings in or carried by the dobby-frames. Loose upon the shafts o^4 o^5 , respectively, are the worm-wheels or drivers p p' , driven continuously by a worm p^2 , arranged between them, said worm being driven in suitable manner from some working part of the loom. The outer faces of these worm-wheels p p' are shown provided with a plurality of projections or teeth p^3 p^4 , (see Fig. 3,) adapted to be engaged by the lugs p^5 p^6 on the clutch members p^7 p^8 , fulcrumed at p^9 on the carriers p^{10} , fast on the pattern-shafts o^4 o^5 .

The lugs p^5 p^6 are arranged to travel through suitable slots in their respective carriers p^{10} , which serve as guides, the said clutch members being provided, respectively, with contacting or abutting faces p^{11} to be engaged by one or the other of the sliding collars p^{12} p^{13} , mounted, respectively, to slide loosely on the pattern-shafts o^4 o^5 . Either of the collars p^{12} p^{13} when moved to the right, Fig. 2, will engage the clutch member mounted upon the same shaft therewith and will swing said clutch member also to the right to cause its

clutch-lug p^5 or p^6 to enter between two of the projections or teeth on its adjacent worm-wheel to clutch the latter to and upon the shaft upon which it is mounted to cause rotation of the said shaft and its pattern-surface by and with said worm-wheel. When the sliding collar is returned again to its outermost position, Fig. 2, the clutch member drops back to disengage the worm-wheel from the shaft and stop rotation of the latter and consequent movement of its pattern-surface.

Referring now particularly to Fig. 3, the frame A is provided with an inwardly-extended bracket a^x , carrying a stud r , upon which are loosely journaled the clutch-actuating lever r' and the two coöperating clutch-actuating arms $r^2 r^3$. (See Fig. 5.) A lug r^4 on the inner end of the lever r' stands between ears $r^5 r^6$ on the respective arms $r^2 r^3$, so that rocking of the lever r' in one or the other direction causes corresponding and positive movement of one or the other of the arms $r^2 r^3$, springs $r^7 r^8$, interposed between the said arms $r^2 r^3$ and the lever r' , tending to return said arms toward their positions, Fig. 5. The arms $r^2 r^3$ are provided, respectively, with depending pins $r^9 r^{10}$, which enter circumferential grooves in the peripheries of the collars $p^{12} p^{13}$, whereby the lever r' and its arm r^2 when rocked, for instance, in the direction of the arrow, Fig. 5, will act to withdraw the collar p^{12} and disengage the shaft o^4 from its worm-wheel p to stop the pattern-surface o , while at the same time the spring r^8 will force the arm r^3 also in the direction of the arrow, Fig. 5, to act, through the collar p^{13} , to engage the shaft o^5 with the worm-wheel p' and start rotation of the pattern-surface o' . Rocking of the lever r' in the direction opposite the arrow, Fig. 5, will cause the arm r^3 to be positively moved to disengage its clutch p^8 and the spring r^7 to move its arm r^2 to engage its shaft with and to be rotated by the worm-wheel p . Rocking of the lever r' thus causes the pattern-surfaces o and o' to be alternately or successively operated, the springs $r^7 r^8$ permitting movement of the said lever after one shaft has been clutched to make certain the positive disengagement of the other clutch and its shaft, said spring being also necessary to enable one or the other of the arms to remain momentarily unmoved after the initial movement of the lever until a space between two of the projections on the adjacent rotating worm-wheel reaches such a position as will permit its clutch-lug to spring into locking engagement with said projections.

Our invention is not limited to the particular type of clutch shown.

The clutch-actuating lever r' is actuated in suitable manner, in the present instance by a bell-crank lever s , fulcrumed at s' on the frame A and connected by a link s^x with the finger g^7 , referred to, the rising-and-falling movement imparted to the latter by the pattern-surface h^4 causing vibration of the lever s and also of the clutch-actuating lever r , a

spring s^3 acting on the lever s to move the parts in the direction opposite that in which they are moved by said pattern-surface h^4 .

Referring now to Figs. 1 and 4, the pattern-surfaces o and o' are suitably formed herein with pins or projections o^x , which are adapted to coöperate with and effect the operative movement, herein rise and fall, of the selecting-surfaces $a^{20} a^{21}$, herein shown as on the arms a^{22} and a^{23} of the selecting-fingers a , fulcrumed at a^2 and constructed in suitable manner to cause the shifting of the hooks of the dobby, said fingers in the present instance being shown as provided at their inner ends with the horns s^2 and pockets for the reception of the rods b , as in the Patent No. 509,712, referred to.

In the construction herein shown the arms a^{22} and a^{23} stand at right angles with each other, so that one is acted upon by and at the top of its pattern-cylinder and the other by and at the side of its pattern-cylinder, the latter for this purpose being arranged at a lower level than the former.

The surfaces $o o'$ in the embodiment of our invention shown, when operated, move continuously, and the clutch devices and their actuating mechanisms are so adjusted that the pattern-surfaces are always stopped in a position, as shown in Fig. 4, with the selecting-surfaces $a^{20} a^{21}$ standing in position opposite the space between two adjacent or successive projections of their pattern-surfaces. In other words, any projection lifting its selecting-surface is permitted to pass that surface before the chain carrying that projection is stopped, and by so doing said chain is always left in readiness to immediately engage and move its selecting-surface when again set in motion. By thus stopping each pattern-surface with its coöperating selecting-surface in position between two of the pattern-surface projections said pattern-surface is always in readiness to move said selecting-surface on initial movement of the pattern-surface, enabling the change from one pattern to the other to be effected more quickly than is possible with mechanisms of this class as at present constructed.

It is evident our invention is not limited to the particular embodiment herein shown, for the same may be varied without departing from the spirit and scope of our invention.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a loom, a plurality of pattern-surfaces arranged respectively in fixed position and provided respectively with suitably-arranged projections; means to operate said pattern-surfaces singly, selecting-surfaces arranged to coöperate with the respective pattern-surfaces, and means to successively stop said pattern-surfaces each in position with its selecting-surface opposite the space between two projections of the pattern-surface, substantially as described.

2. In a loom, a plurality of pattern-surfaces provided respectively with suitably-arranged projections; means to continuously operate said pattern-surfaces singly, selecting-surfaces arranged to cooperate with the respective pattern-surfaces, and means to successively stop said pattern-surfaces each in position with its selecting-surface opposite the space between two projections of the pattern-surface, substantially as described.

3. In a loom, a plurality of pattern-surfaces provided respectively with suitably-arranged projections; means to operate said pattern-surfaces singly; rigidly-connected selecting-surfaces arranged to cooperate with the respective pattern-surfaces, and means to successively stop said pattern-surfaces each in position with its selecting-surface opposite the space between two projections of the pattern-surface, substantially as described.

4. In a loom, a plurality of pattern-surfaces provided respectively with suitably-arranged projections, means to operate said pattern-surfaces singly, selecting-surfaces arranged to move the same selecting-finger, arranged to cooperate with the respective pattern-surfaces, and means to successively stop said pattern-surfaces each in position with its selecting-surface opposite the space between two projections of the pattern-surface, substantially as described.

5. In a loom, a plurality of pattern-surfaces arranged in fixed position, drivers for the respective pattern-surfaces; means to successively connect said pattern-surfaces with and to be moved by their respective drivers, and the selecting-surfaces cooperating with said pattern-surfaces, substantially as described.

6. In a loom, a plurality of pattern-surfaces mounted to travel about fixed axes; selecting-surfaces; drivers mounted to rotate about axes coincident with said fixed axes, means to rotate said drivers, and clutch devices to successively connect said pattern-surfaces with their respective drivers, substantially as described.

7. In a loom, a plurality of pattern-surfaces mounted in fixed position; continuously-rotating worm-wheel drivers therefor; means to successively connect said pattern-surfaces with and to be moved by said drivers, and the selecting-surfaces, substantially as described.

8. In a loom, a plurality of pattern-surfaces mounted to travel about fixed axes, selecting-surfaces, drivers mounted to rotate about axes coincident with said fixed axes, a single worm arranged to rotate said drivers, and means to successively connect said pattern-surfaces with and to be moved by said drivers, substantially as described.

9. In a loom, a plurality of pattern-surfaces mounted upon shafts journaled in fixed bear-

ings; worm-wheel drivers also mounted on said shafts but rotatable independently of said pattern-surfaces; clutch devices adapted to connect said drivers with their respective pattern-surfaces, sliding collars on said shafts adapted to engage and operate said clutch devices, and means to successively move said sliding collars, substantially as described.

10. In a loom, a plurality of pattern-surfaces, arranged in fixed position, means to successively move said pattern-surfaces, an auxiliary pattern-surface and means controlled thereby to govern the successive operations of said first-named pattern-surfaces, substantially as described.

11. In a loom, a plurality of pattern-surfaces, arranged in fixed position, rotary devices for the respective pattern-surfaces; clutch devices to connect said drivers with and to move their respective pattern-surfaces; and an auxiliary pattern-surface and clutch-actuating devices controlled thereby and governing the operation of said clutch devices, substantially as described.

12. In a loom, the combination with a plurality of pattern-surfaces and means to operate the same, of selecting-surfaces for the respective pattern-surfaces, said selecting-surfaces being arranged substantially at right angles to each other, substantially as described.

13. In a loom, the combination with a plurality of pattern-surfaces and means to operate the same, of one or more selecting-fingers provided respectively with a plurality of arms each having a selecting-surface arranged to cooperate with a pattern-surface, substantially as described.

14. The combination in a loom-dobby, of two or more selecting-fingers, pattern-surfaces arranged in fixed positions in different levels, said pattern-surfaces cooperating with said selecting-fingers, and means to actuate said pattern-surfaces, substantially as described.

15. In a loom-dobby, a plurality of pattern-surfaces mounted in fixed bearings; selecting-surfaces, rotary drivers provided at their faces with projecting surfaces, clutch members connected with said pattern-surfaces and means to move the said clutch members into locking engagement with the projecting surfaces of their respective drivers, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HORACE WYMAN.
WILLIAM H. REDDING.

Witnesses:

JUSTIN A. WARE,
SAMUEL B. SCHOFIELD.