(No Model.)

4 Sheets—Sheet 1.

# H. WYMAN.

## TAKE-UP MECHANISM FOR LOOMS.

No. 422,044. Patented Feb. 25, 1890.

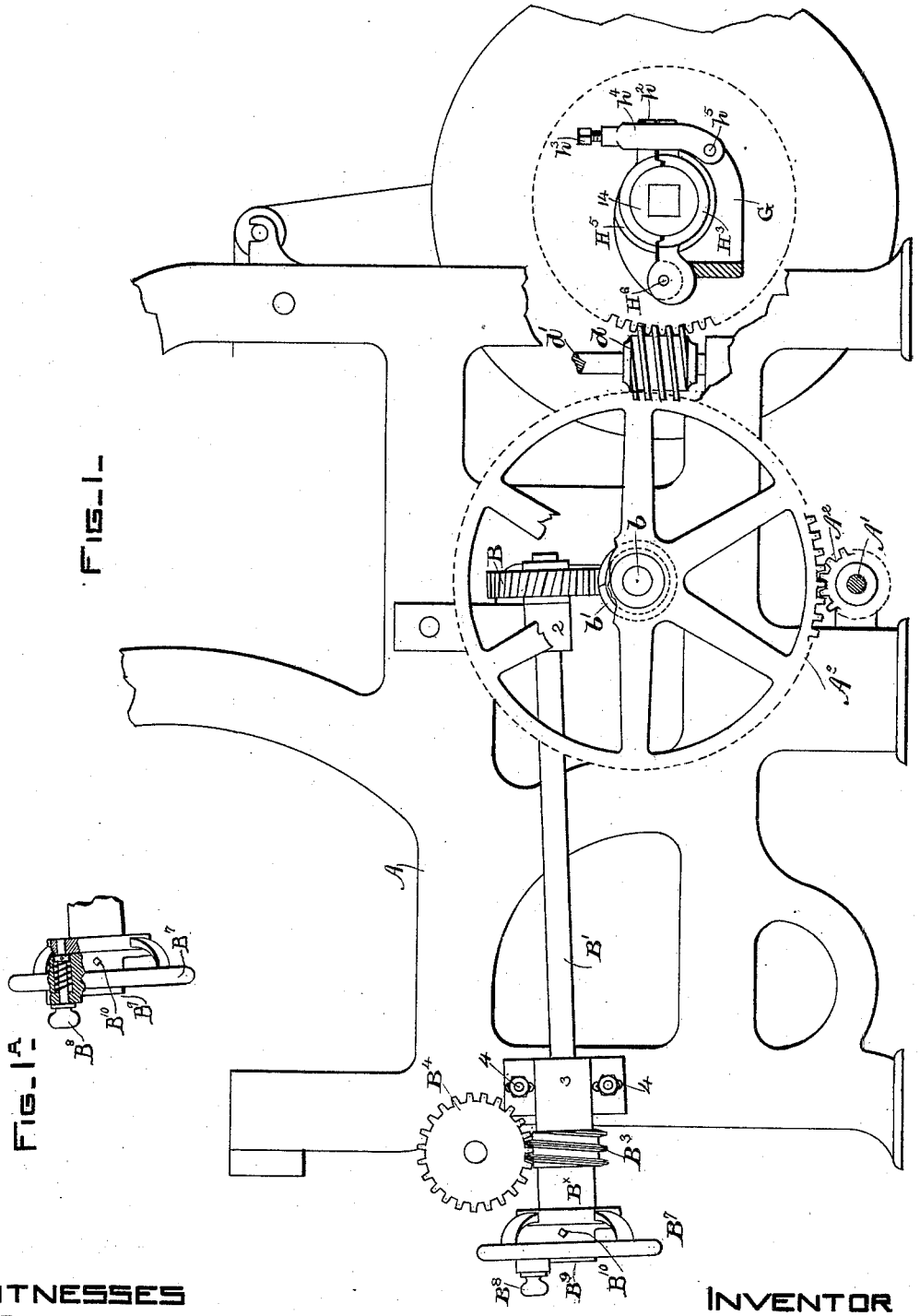

FIG. 1.



FIG. 1A.

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## TAKE-UP MECHANISM FOR LOOMS.

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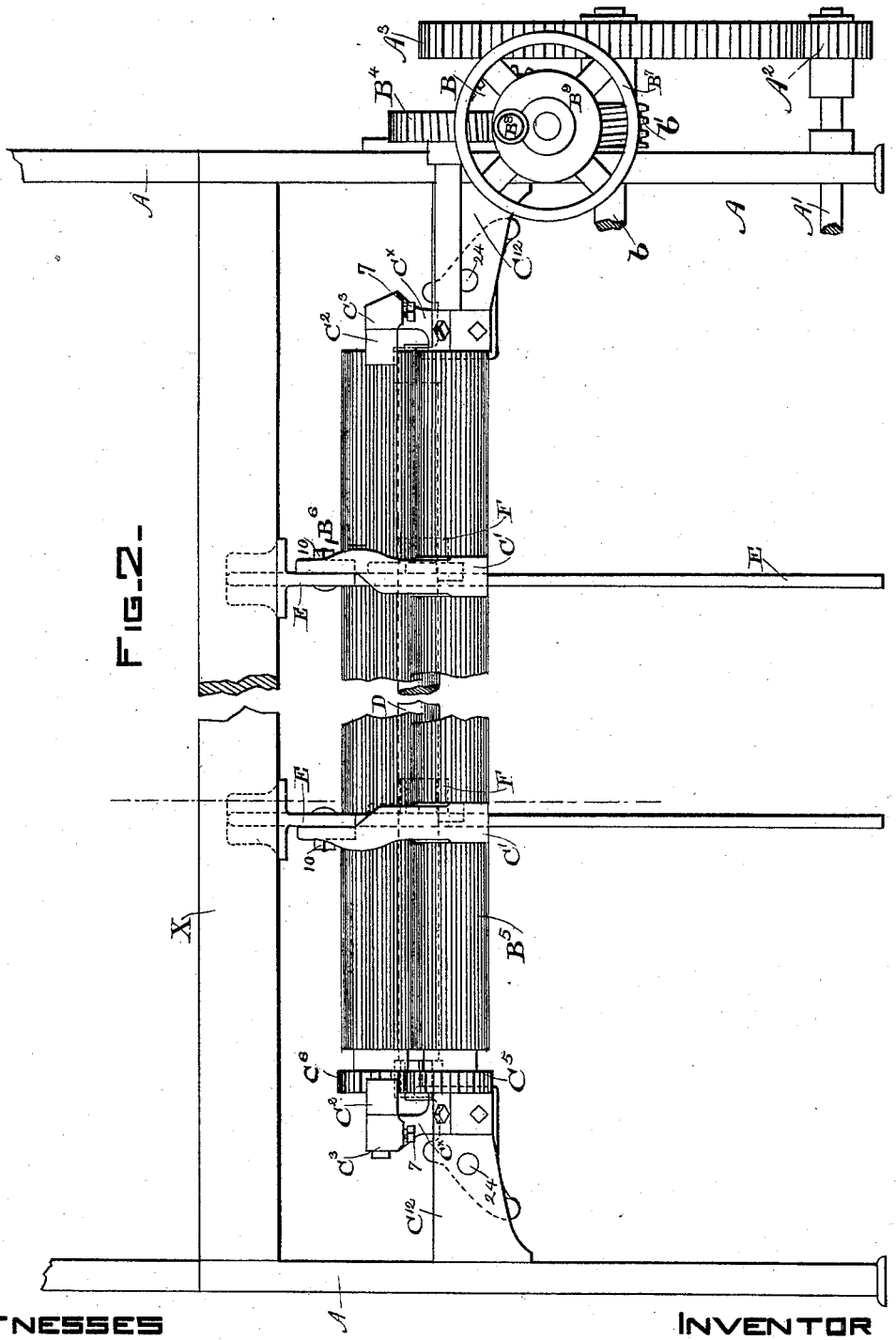
FIG. 2.

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## TAKE-UP MECHANISM FOR LOOMS.

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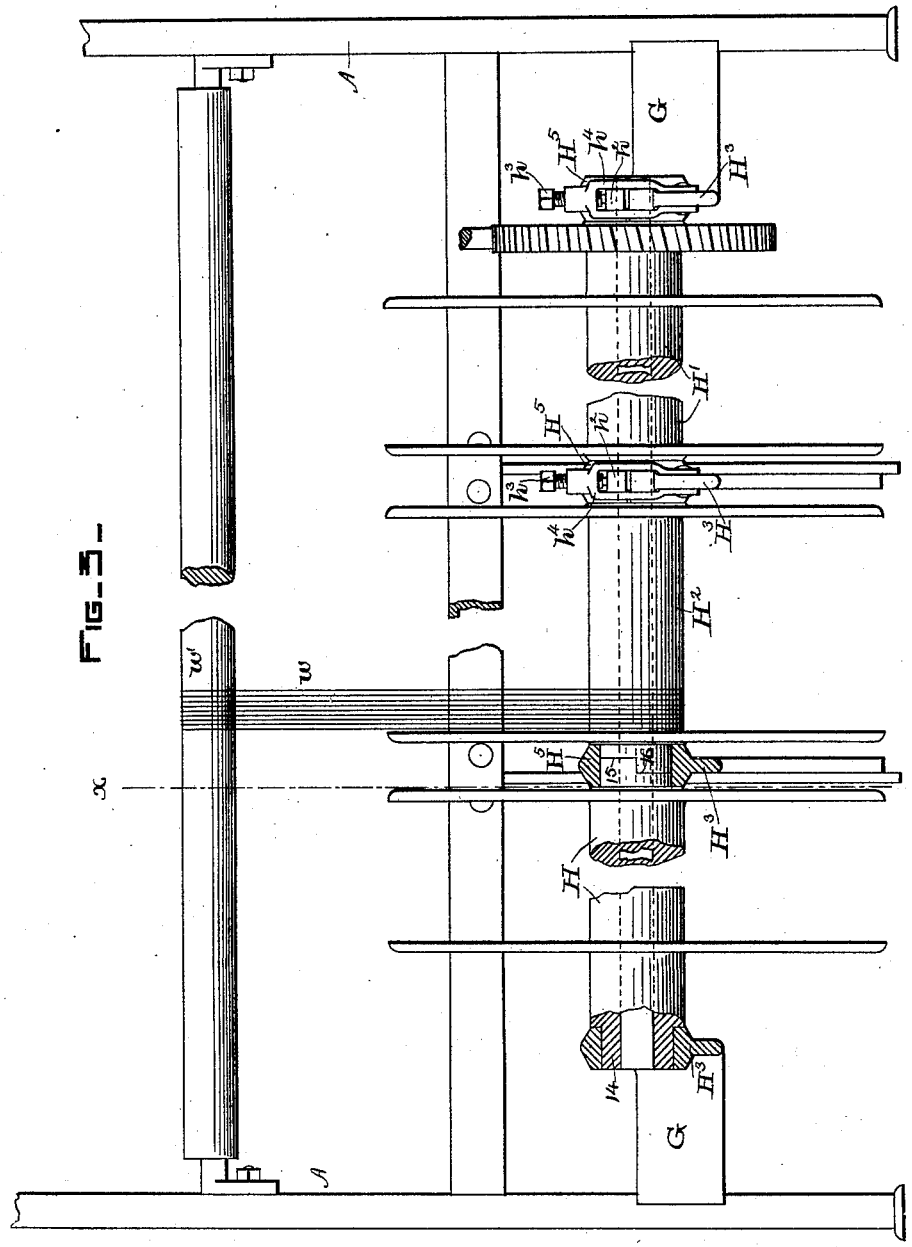


FIG. 3.

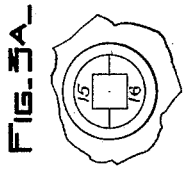


FIG. 3A.

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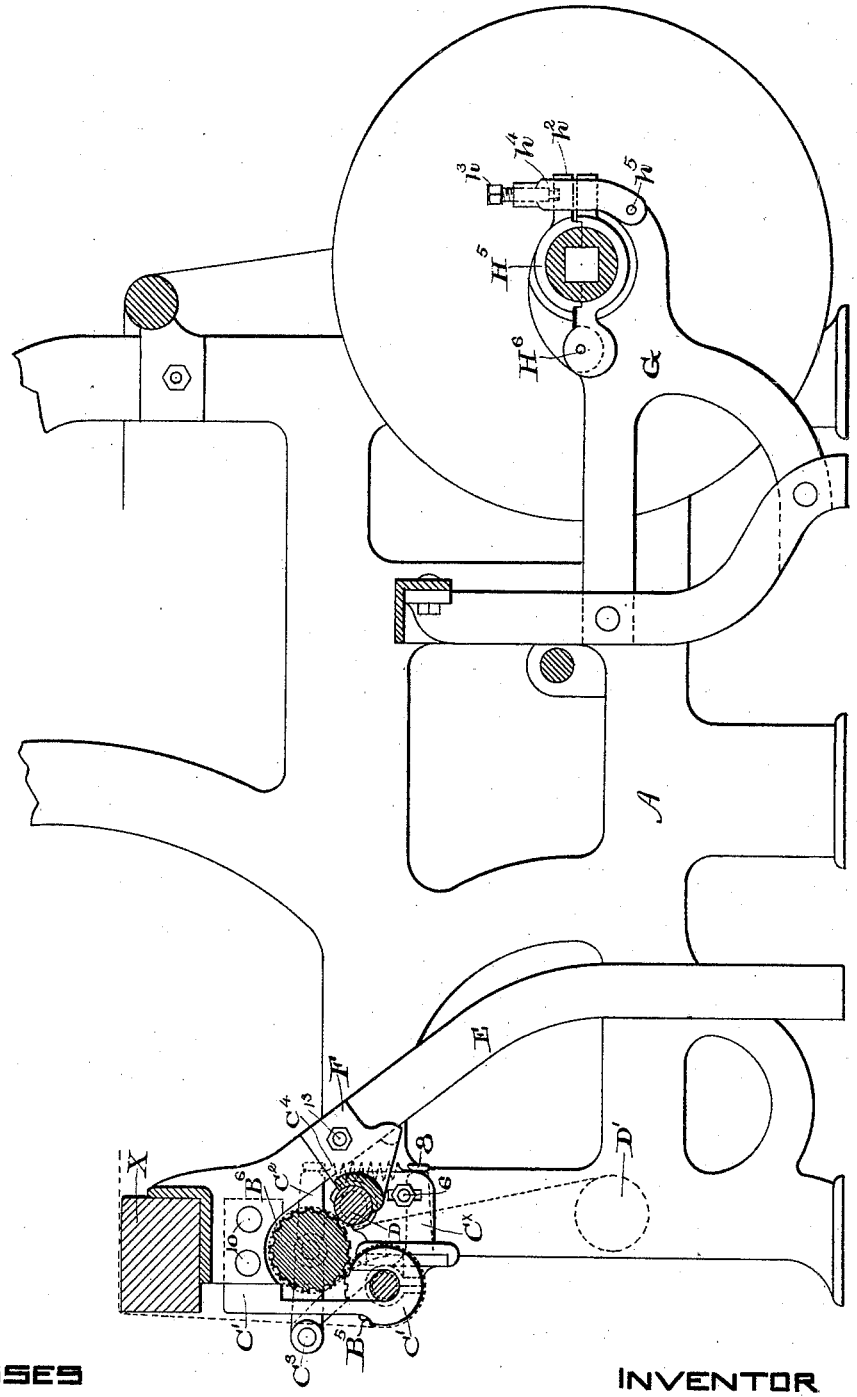
## TAKE-UP MECHANISM FOR LOOMS.

No. 422,044. Patented Feb. 25, 1890.

FIG. 4.

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# UNITED STATES PATENT OFFICE.

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

## TAKE-UP MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 422,044, dated February 25, 1890.

Application filed April 22, 1887. Serial No. 235,761. (No model.)

*To all whom it may concern:*

Be it known that I, HORACE WYMAN, of Worcester, county of Worcester, and State of Massachusetts, have invented an Improvement in Take-Up 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 has for its object the production of a novel mechanism for taking up woven fabric from the breast-beam in looms.

For this apparatus I employ a set of drawing-rolls composed, as herein represented, of two rolls, the undermost roll, besides its end bearings, having one or more intermediate bearings to prevent the roll from springing, so that a wide fabric can be taken evenly and uniformly from the breast-beam.

I have herein shown a third roll so arranged as to act against the uppermost roll and prevent it from springing, as will be described.

My invention consists, essentially, in a drawing-roll combined with a second co-operating drawing-roll having one or more end and intermediate bearings, the said intermediate bearings preventing the springing of the roll.

Other features of my invention will be pointed out in the claims at the end of this specification.

Figure 1 in side elevation represents a sufficient portion of a loom, which, taken in connection with United States Patent No. 264,864, will enable my invention to be understood. Fig. 1ª is a side view of the hub and hand-wheel, partly broken out to show the locking device. Fig. 2 is a front end view of the loom partially broken out. Fig. 3 is a rear end view partially broken out, chiefly to show the construction of the let-off beam and its bearings; Fig. 3ª, a detail of the end of one of the journals which interlocks with another one of the journals; and Fig. 4 is a longitudinal section of the loom in the line *x*, Fig. 3.

The loom-frame A, of any usual or suitable shape, has suitable bearings for the working parts.

Power to drive the machine is applied in any usual or suitable manner to a shaft A′, having a suitable pinion $A^2$, which engages and rotates a toothed gear $A^3$, fast on the main cam or picking-shaft *b*, which is supposed to be the same as the shaft represented by like letter in United States Patent No. 264,864. The shaft *b* at the rear of the wheel $A^3$ has fast upon it a worm *b*′, which engages a worm-gear B on a shaft B′, having bearings 2 and 3, the bearing 3 being adjustably connected by bolts 4 to the loom-side. The shaft B′ has a hub $B^9$ secured to its front end by a set-screw $B^{10}$. This hub $B^9$ carries a locking device $B^8$, herein shown as a spring-pressed pin, the inner end of which is free to enter a hole in the hub of a hand-wheel $B^7$, the said hand-wheel being connected to or forming part of a sleeve $B^*$, provided with a worm $B^3$, the said sleeve and its worm being loose upon the shaft B′, but rotating in unison with it so long as the locking device $B^8$ engages the hub of the hand-wheel. By releasing the locking device and rotating the hand-wheel it and the worm may be turned without rotating the shaft B′, rotation of the worm and sleeve causing the drawing-rolls to be rotated, this provision being of material assistance when it is desired to take up or let back the woven fabric or carpet while the loom is at rest.

The worm $B^3$ engages a worm-gear $B^4$, secured to the journal of the lowermost roll $B^5$ of the said drawing or take-up rolls to take the woven fabric from the breast-beam X, over which the cloth passes from the reed of the lay. (Not shown.)

In practice the gear $B^4$ will have a greater or less number of teeth, according to the number of picks to the inch of the cloth being woven.

The lowermost roll $B^5$ of the set of drawing-rolls has at one end a toothed gear $C^5$, which engages a toothed gear $C^6$, fast on a journal or other part of the uppermost drawing-roll $B^6$, having its journals in suitable bearings of levers $C^2$, having their fulcra at $C^3$ on suitable stands $C^*$, made to clip partly about brackets $C^{12}$, the stands $C^*$ being bolted by bolts 24 to the said brackets. The brackets $C^{12}$ are secured in any suitable manner to the loom-frame. The fulcra $C^3$ consist of studs confined in the said brackets by means

of set-screws 7. The inner ends of the levers $C^2$ have suitable springs $C^4$ attached to them and to an arm, stud, or projection, as 8, the said springs—one at each end of the loom-frame—serving to normally keep the uppermost roll $B^6$ pressed toward and against the undermost roll $B^5$, the cloth passing under the roll $B^5$, then up between it and the roll $B^6$, as shown by dotted lines, thence between it and a long or continuous bearing-roll D, to be described, extended from end to end of rolls $B^6$ and $B^5$, and thence to any usual receiving-roll, as D'. The roll D co-operates with the roll $B^6$ throughout its length and aids in preventing the roll springing.

In the employment of long drawing-rolls to take the woven fabric from the breast-beam great difficulty is experienced in the springing of the beam between its ends, and wherever the beam springs the pressure or hold of the rolls upon the woven fabric is diminished, and the speed at which the woven fabric is taken up from selvage to selvage is not uniform. To obviate this difficulty, due to the springing of the roll $B^5$, I have provided the said roll with one or more annular grooves to receive intermediate bearings C', made, as herein shown, as depending slotted brackets connected by bolts 10 to stands E, (shown best in Fig. 4,) the said stands having, preferably, notched upper ends to embrace the under portion and rear side of the breast-beam X, the lower end of each of the said stands resting, preferably, upon a rigid or unyielding support, which may be, as herein shown, the floor upon which the loom-frame sits. That portion of the intermediate bearing C' which enters an annular groove (referred to) of the lowermost roll $B^5$ is of such shape or fullness (see Fig. 4) as to normally coincide with the periphery of the said roll, thereby preventing the entrance of the woven fabric into the said annular groove, which might injuriously mar or crease the woven fabric passing between them in a longitudinal direction.

To prevent the springing of the roll $B^6$ under the strain of the woven fabric passed nearly around it, I have provided the stands E with suitable bearings F, bolted thereto by bolts 13, the said bearings being semicircular or arc-shaped and acting against the periphery of the bearing-roll at one or more points between its ends.

In practice the ends of the roll D are caused to enter bearings forming part of the stands C*.

The rear end of the loom-frame has suitable brackets or extensions G, having suitable bearings to receive the end journals 14 of the sections H H' of a sectional let-off beam, there being, as herein shown, a third or central section or beam $H^2$. The let-off or warp beam is herein shown as made up in three sections H H' $H^2$. The sections H H' have at their outer ends cylindrical journals, as 14, which enter the concaved semicircular bearings $H^3$, a bearing-cap $H^5$, pivoted at $H^6$, holding the journals in place, the bearing-cap being made to fit the said journals by means of a loop or link $h^4$, pivoted at $h^5$, and having an adjusting-screw $h^3$, the said loop embracing the end $h^2$ of the cap $H^5$ and being acted upon by the screw $h^3$. The section H' has a worm-toothed gear, which is engaged by a worm on an upright shaft, the said worm and shaft being common to United States Patent No. 264,864.

Instead of the worm-gear and worm to determine the delivery of the warp, any other well-known equivalent mechanism which will let the warp be delivered at the proper speed and as required may be used.

The journals at the inner ends of the sections H H', as well as the journals at both ends of the intermediate section $H^2$, are tongued and grooved or otherwise notched or matched together, so that one will engage with the other, both journals entering and turning in like bearings $H^3$ under hinged bearing-caps $H^5$.

Figs. 3 and $3^a$ show one manner of fitting together the journals referred to, each journal being cut away at its end to leave a shoulder, as 15 or 16, the projection of one journal entering the recess of the other. These journals will be so shaped and arranged together in the intermediate bearings $H^3$ and under the caps $H^5$ that when the caps are turned up either an end or intermediate section may be lifted from its bearing without removing any other section.

In Fig. 3 the beams H and $H^2$ stand in such relation to each other that the section H may be lifted out of its bearings after raising the bearing-caps; but should it be desired to lift out the intermediate section $H^2$ it would be necessary to rotate the beam until the projection 16 is uppermost. The journals of the sections being matched or connected together, are rotated in unison.

Instead of making the journals of the beam-sections of the shape shown, they may, if desired, be made of any other usual or suitable shape which will compel the sections to rotate in unison and yet permit one of the said sections to be lifted out of engagement with the journal of the other section when the cap used to retain both the said journals in their bearings is lifted.

Either an end or an intermediate warp-beam section may be removed at will by simply lifting it out of its bearings after raising the bearing-caps co-operating with its journals.

I claim—

1. The drawing-roll $B^6$, combined with a co-operating drawing-roll $B^5$, having end and intermediate bearings, the said intermediate bearing preventing the springing of the roll $B^5$, substantially as described.

2. The drawing-roll $B^6$, the parallel drawing-roll $B^5$, having annular grooves, combined with one or more intermediate bearings for the said roll $B^5$, the portions of the intermediate bearings entering the said annular grooves and forming bearings for the roller $B^5$ between its ends and substantially filling

the said annular grooves, thus preventing formation of longitudinal creases in the fabric, substantially as described.

3. The uppermost drawing-roll $B^6$, the co-operating parallel drawing-roll $B^5$, having bearings for the ends of its journals, and an intermediate bearing to support the said roll $B^5$ between its ends, combined with a bearing-roll D, co-operating with the roll $B^6$ to prevent it from springing, substantially as described.

4. The drawing-rolls, the gear $B^4$ upon the shaft of the undermost roll carrying it and a worm, a sleeve provided with a hand-wheel, the hub $B^9$, the shaft B', on which said hub is made fast, and a locking device $B^8$ to fix the said sleeve and worm in position with relation to the shaft actuating them, the release of the locking device enabling the drawing-rolls to be moved freely in one or the other direction by the hand-wheel while the loom is at rest.

5. The uppermost drawing-roll $B^6$ and parallel bearing-roll D, co-operating therewith, combined with end bearings and an intermediate bearing for the said bearing-roll, substantially as described.

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

HORACE WYMAN.

Witnesses:

BERNICE J. NOYES,

C. M. CONE.