(No Model.) 2 Sheets—Sheet 1.

D. McTAGGART.

WARP COMPRESSOR.

No. 573,346. Patented Dec. 15, 1896.

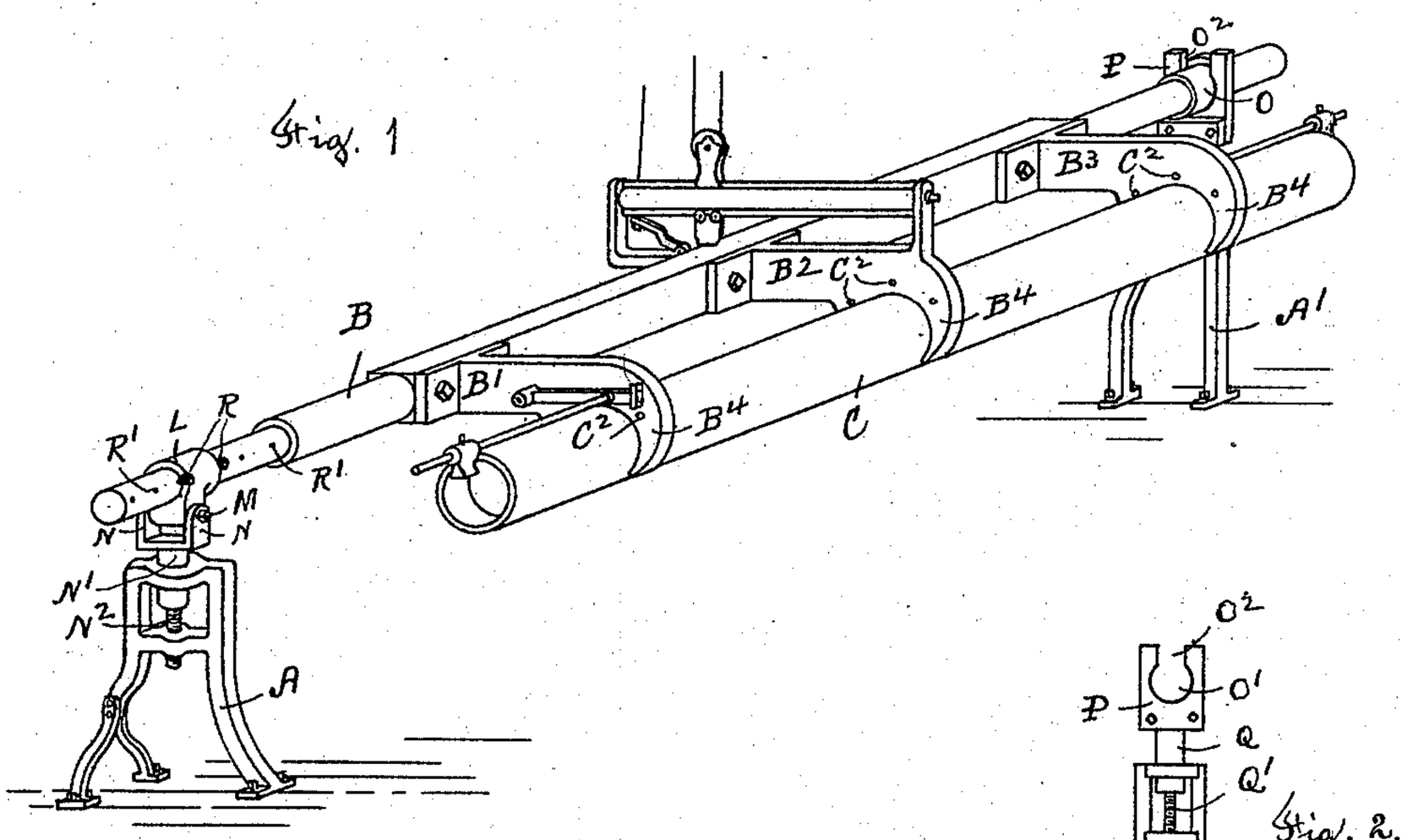

Fig. 1

Fig. 2.

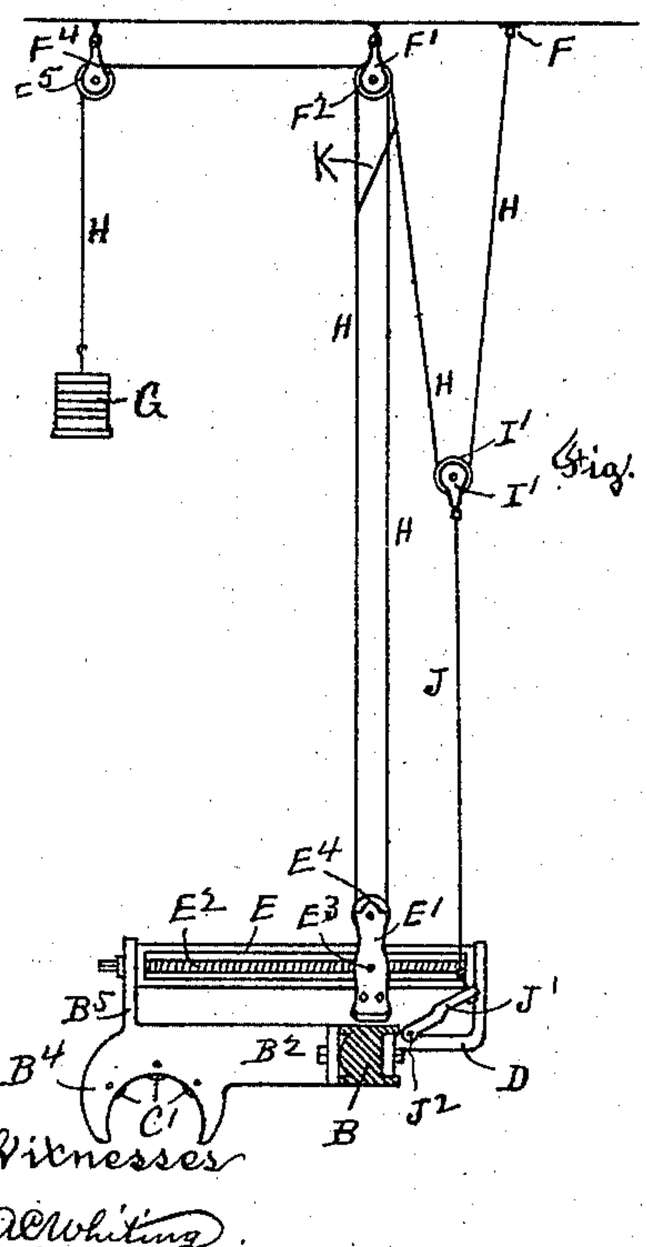

Fig. 3.

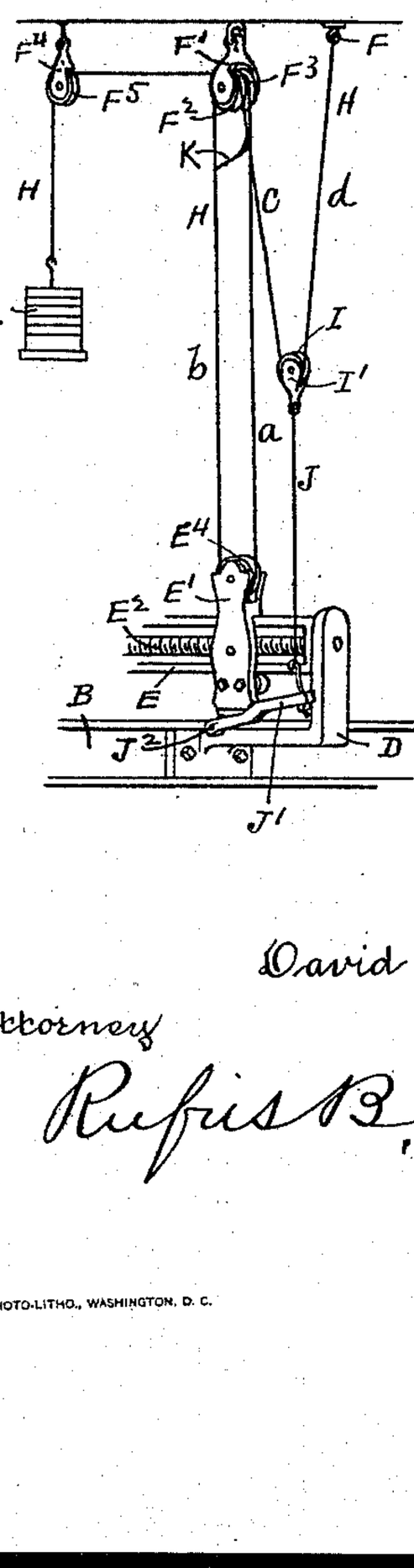

Fig. 4.

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(No Model.)

2 Sheets—Sheet 2.

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WARP COMPRESSOR.

No. 573,346. Patented Dec. 15, 1896.

Fig. 5.

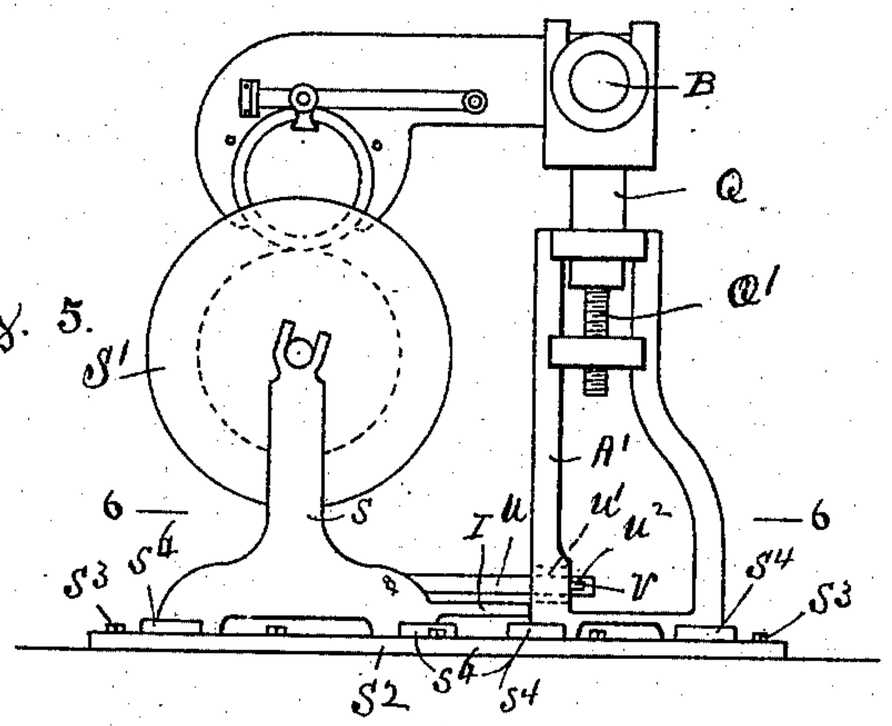


Fig. 6.

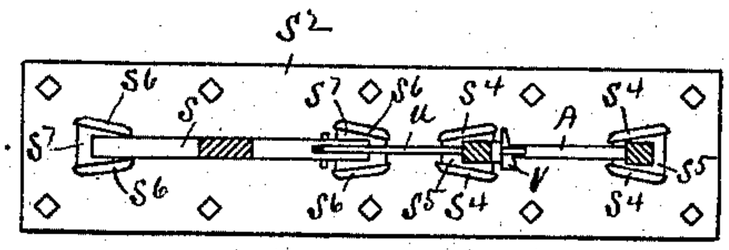
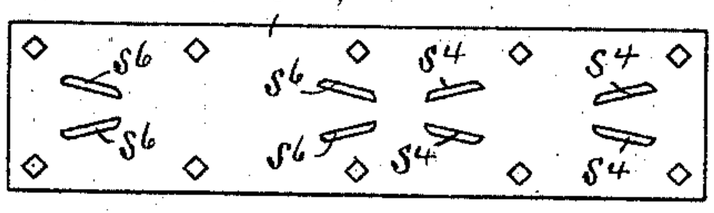


Fig. 7.



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UNITED STATES PATENT OFFICE.

DAVID McTAGGART, OF WORCESTER, MASSACHUSETTS.

WARP-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 573,346, dated December 15, 1896.

Application filed December 6, 1895. Serial No. 571,321. (No model.)

To all whom it may concern:

Be it known that I, DAVID MCTAGGART, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Warp-Compressors, of which the following is a specification, accompanied by drawings representing a warp-compressor embodying my invention.

My present invention relates to an apparatus for applying pressure upon a warp as it is being wound upon the warp-beam, whereby the warp is wound more tightly and solidly upon the beam, thereby increasing the amount of warp upon the beam and rendering its tension more uniform during the process of weaving; and it consists in certain improvements, as hereinafter set forth, in the warp-compressing apparatus forming the subject of my application for Letters Patent of the United States, Serial No. 528,350.

Figure 1 of the accompanying drawings represents a perspective view of the warp-compressor. Fig. 2 represents one of the supporting-stands in which the rocking shaft of the warp-compressor is journaled. Fig. 3 is a transverse sectional view of the rocking shaft and representing the mechanism by which the gravity of a suspended weight is applied to rock the shaft and apply pressure to the warp upon the beam. Fig. 4 represents in perspective view the mechanism for applying the suspended weight to the rocking shaft. Fig. 5 represents an end view of the warp-beam and warp-compressor applied to compress the warp wound thereon and showing the stands for supporting the warp-beam and the compressor upon a common floor-plate. Fig. 6 is a top view of the floor-plate and supporting-stands, the latter being shown in sectional view on line 6 6, Fig. 5; and Fig. 7 is a top view of the floor-plate.

Similar letters refer to similar parts in the different figures.

Referring to the drawings, A A′ denote stands supporting a rock-shaft B, to which I attach the arms B′, B^2, and B^3, having hooked ends B^4, inclosing about two-thirds of the periphery of a pressure-roll C, which is of suitable length to enter between the heads of a warp-beam and rest upon the warp as it is being wound upon the beam. The hooked ends B^4 of the arm are recessed to receive friction-rolls C′, Fig. 3, which rotate upon pins C^2 and bear against the periphery of the pressure-roll C in order to reduce the friction upon the pressure-roll and enable it to rotate freely within the arms. To the rocking shaft B and opposite the central arm B^2 is attached a bracket D, and the arm B^2 is provided with an upright arm B^5. Between the arm B^5 and the bracket D is a bar E, placed transversely to and above the rocking shaft B and provided with ways for a sliding block E′.

The sliding block E′ is traversed along the bar E by means of a rotating screw E^2, journaled in the ends of the transverse bar E and parallel therewith and engaged by a pin E^3, held in the sliding block. The upper end of the sliding block E′ carries a rotating scored pulley E^4. Attached to the ceiling above the warp-compressor are an eyebolt F, a pulley-block F′, containing the scored pulleys F^2 and F^3, and a pulley-block F^4, containing the scored pulley F^5.

A weight G is attached to one end of a chain or cable H, which passes over the pulleys F^5 and F^3 and around the pulleys E^4 and F^2 and around the pulley I, held in the pulley-block I′, which is connected by a chain or cable J with a lever J′, pivoted at J^2 upon the bracket D. From the pulley I the cable or chain H extends upward, and it has its end attached to the eyebolt F, causing the weight G to exert an upward pull upon the sliding block E′, which is multiplied by the doubling of the chain or cable H. When the sliding block E′ is moved along the transverse bar E by the actuating-screw E^2, so the pull exerted by the weight G will be applied in a plane between the axis of the rocking shaft B and the pressure-roll C, it will tend to raise the pressure-roll off the warp; but if the sliding block E′ is moved along the transverse bar E to the rear of the rocking shaft B the pull exerted upon the block E′ will tend to rock the shaft B in the opposite direction and carry the pressure-roll C down upon the warp, so the pressure exerted by the roll C will be received by the warp as it is being wound upon the warp-beam held in supporting-stands beneath the pressure-roll, as shown in Fig. 5. The chain or cable H as it passes around the scored pulleys F^2, F^3, E^4, and I is divided

into sections *a*, *b*, *c*, and *d*, and the sections *b* and *c* are connected by a short chain or cable K. When the sliding block E′ is moved forward over the rocking shaft B, as represented in Fig. 3, the weight G will raise the pulley-block I′ and lever J′ until the connecting-chain K is drawn taut, as shown in Fig. 3, connecting the sections *b* and *c*, cutting out the section *d* and that portion of the section *c* below the chain K, and causing the entire weight to be applied to the sliding block E′. The lever J′ is provided with a curved or cam surface upon its upper side adapted to be engaged by the lower end of the sliding block E′ when the sliding block E′ is moved back, as represented in Fig. 4, causing the lever J′ to be depressed, drawing down the block I′, and rendering the connecting-chain K slack, so that the force of the weight G will be exerted upon the sliding block E′ through the sections *a*, *b*, *c*, and *d* of the chain H, thereby increasing the force applied to rock the shaft B and carry the pressure-roll down upon the warp.

By the above-described method of applying the weight G the force exerted upon the sliding block E′ is reduced whenever the sliding block E′ is moved off the lever J′ and when it is not desired to apply pressure to the warp; but the force of the weight G is largely increased when the sliding block E′ is moved back over the lever J′ in position to apply pressure to the warp.

One end of the rocking shaft B is journaled in a sleeve L, which is pivoted upon a pin M, held in the lugs N, attached to a rotating spindle N′, journaled in the stand A and provided with a screw N^2, engaging a screw-thread in the stand, and the opposite end of the rocking shaft B is journaled in a sleeve O, held in a plate P, which is attached to a rotating spindle Q, journaled in the stand A′ and provided with a screw Q′, engaging a screw-thread in the stand A′, thereby allowing the bearings of the rocking shaft B to be varied vertically in order to bring the pressure-roll C in the proper horizontal plane to allow it to rest upon the warp.

The sleeve O is capable of sliding on the shaft B and being withdrawn from the circular hole O′ in the plate P in order to allow the end of the rocking shaft B to be lifted through the opening O^2, causing the sleeve L to rock on the pin M, raising the rocking shaft B in an oblique position, and balanced by the weight G in order to allow access to the warp-beam. The rocking shaft B is also capable of being moved endwise in its bearings in order to bring the arms B′, B^2, and B^3 over the warp-beam, and when adjusted in position it is held by the pins R R, the shaft being provided with a series of holes R′ to allow the adjustment of the shaft.

In Figs. 5, 6, and 7 I have shown the stand A, by which the compressor is supported at one end, and the stands by which the warp-beam S′ is supported at one end as connected and held upon a common floor-plate S^2, the stands and floor-plate at the opposite end of the machine being a duplicate of that shown in Fig. 5. The floor-plate S^2 is attached to the floor by bolts S^3, and upon its upper surface are lugs S^4, provided with dovetailed openings between them to receive the dovetailed feet S^5 of the stand A. The plate S^2 is also provided with lugs S^6, provided with dovetailed openings between them to receive the dovetailed feet S^7 of the stand S, but with the taper of the lugs S^6 opposite to that of the lugs S^4, so that as the stands A and S are drawn together the feet S^5 and S^7 will tightly be wedged between the lugs S^4 and S^6 and firmly attached to the foot-plate S^2. The stand S is provided with a projecting arm I, which is arranged to strike against the stand A and limit the approach of the stands toward each other. Pivoted to the stand S is a bar U, which passes through a mortise U′ in the stand A and is provided with a hole U^2 to receive a wedge V, by which the stands S and A are drawn together until the arm I is brought into contact with the stand A. The arm I is made the proper length to cause the feet S^5 and S^7 to fit tightly in the lugs S^4 and S^6. The floor-plate S^2 and the corresponding plate at the opposite end maintain the stands of the warp beam and compressor in true relation to each other, so the axes of the warp-beam and the pressure-roll shall be parallel, and the method of attaching the stands thereto allows either to be detached and stands of other heights to be substituted when required.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with a rocking frame and a pressure-roll carried by said frame, of a stand supporting one end of said frame, a rotating screw-threaded pin held in said stands and a sleeve forming one of the bearings for said rocking frame, said sleeve being pivoted to said pin at right angles to its axis and means for supporting the opposite end of said rocking frame, substantially as described.

2. The combination of a rocking frame and a pressure-roll carried by said rocking frame of a pulley E^4 carried by said frame, pulleys F^2 and F^3 held in a fixed pulley-block, a pulley I carried by a movable pulley-block, a cord passing around said pulleys having one end attached to a fixed support, a weight attached to the opposite end of said cord, a short flexible connection connecting the section of said cord between the pulleys F^2 and I to the section of cord between the pulleys F^2 and E^4, a flexible connection between said rocking frame and said movable pulley-block, and means for taking up the same, whereby the strain exerted by said weight will be received by the entire length of cord and its power thereby increased to rock said frame, substantially as described.

3. The combination of a rocking shaft, arms

extending from the side of said shaft, a pressure-roll carried by said arms, a bar placed transversely to said rocking shaft and provided with ways for a sliding block, a sliding block sliding on said ways, a pulley E^4 carried by said sliding block, pulleys F^2 and F^3 held by a fixed pulley-support, a pulley I carried by a movable pulley-block, a cord passing around said pulleys with one end attached to a fixed support, a weight attached to the opposite end of said cord, a short flexible connection connecting that section of said cord lying between the pulleys F^2 and I, to that section of the cord between the pulleys F^2 and E^4, a connection between the movable pulley-block and a pivoted lever, and a pivoted lever arranged in the path of said sliding block, whereby said sliding block will depress said lever and said movable pulley-block, thereby causing the strain exerted by said weight to be received by the entire length of said cord, substantially as described.

4. In a warp-compressor, the combination with supporting-stands for holding a warp-beam, a rocking frame and a pressure-roll carried by said rocking frame, of a floor-plate provided with lugs having dovetailed openings between them, dovetailed feet on said stands fitting between said lugs, a bar attached to one of said stands and passing through a mortise in the other stand and a wedge inserted in said bar, whereby said stands are drawn together, substantially as described.

5. In a warp-compressor, the combination with supporting-stands for holding a warp-beam, a rocking frame and a pressure-roll carried by said rocking frame, of a floor-plate provided with lugs having dovetailed openings between them, dovetailed feet on said stands fitting between said lugs, a bar attached to one of said stands and passing through a mortise in the other stand and a wedge inserted in said bar, whereby said stands are drawn together, and an arm projecting from one of said stands, whereby the movement of said stands toward each other, is limited, substantially as described.

Dated this 9th day of November, 1895.

DAVID MCTAGGART.

Witnesses:

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RUFUS B. FOWLER.