No. 661,940. Patented Nov. 13, 1900.

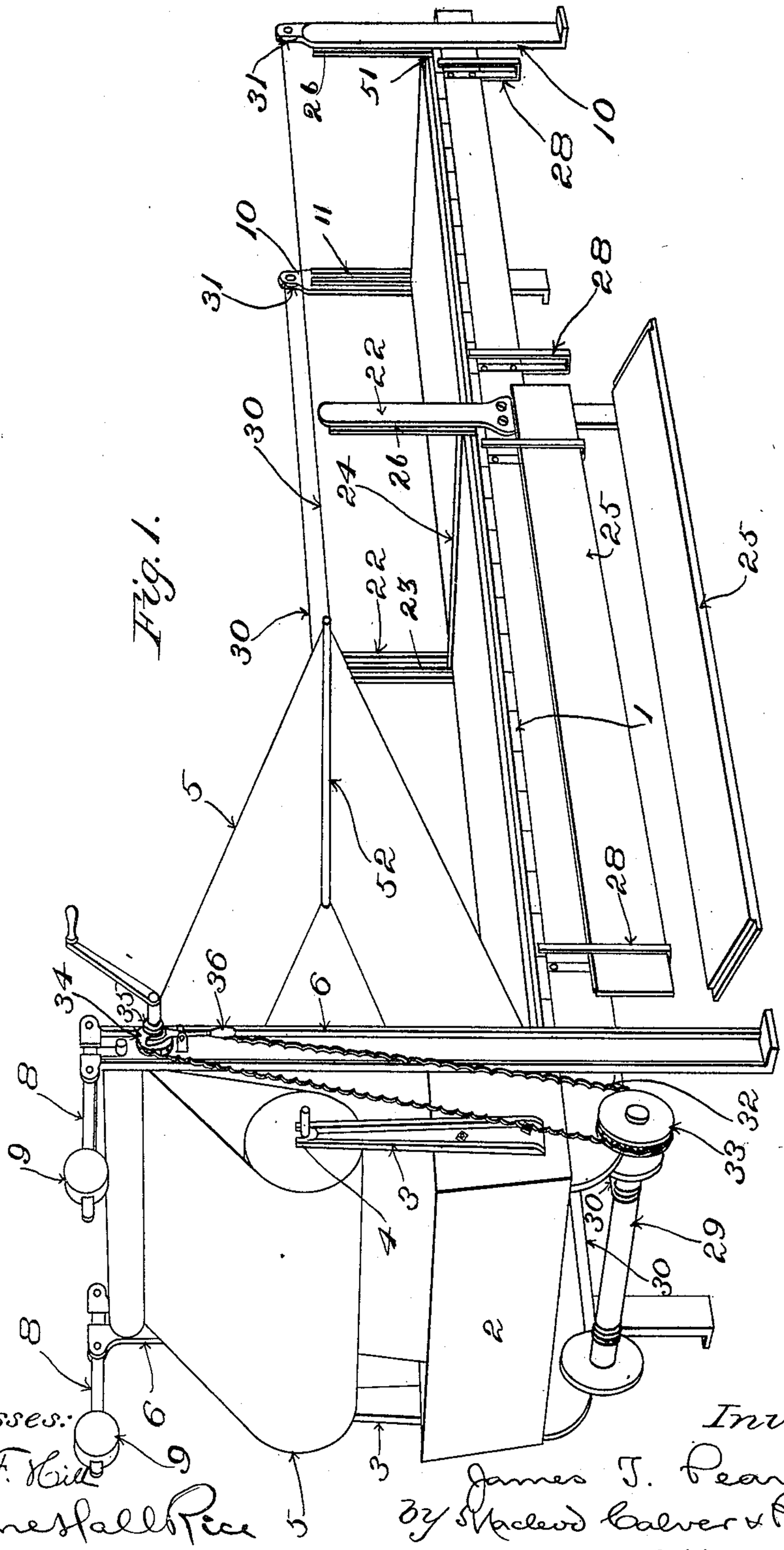
J. T. PEARSON.

MACHINE FOR HUMIDIFYING YARNS.

(Application filed July 5, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



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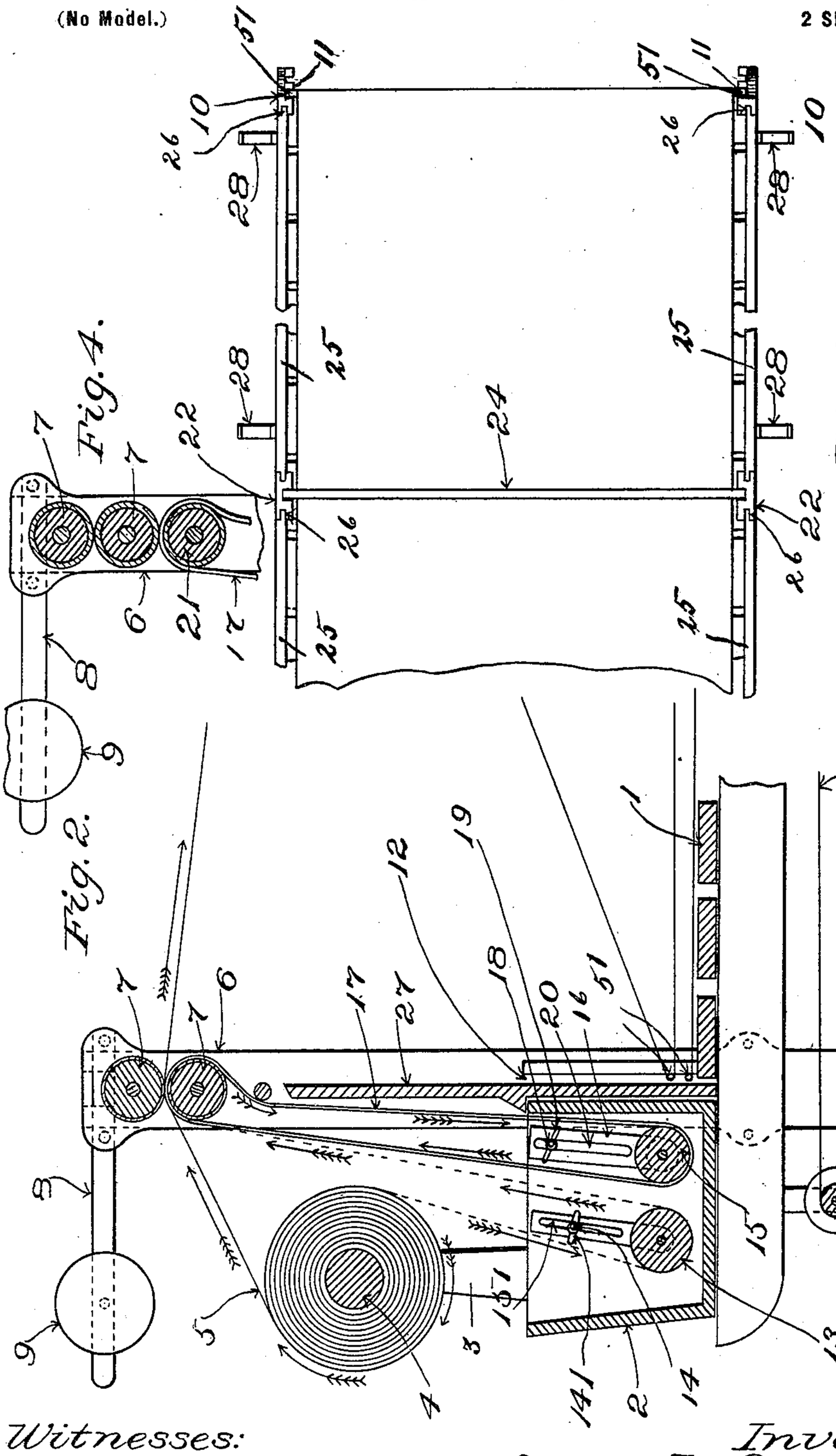

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UNITED STATES PATENT OFFICE.

JAMES TOWNSLEY PEARSON, OF BURNLEY, ENGLAND.

MACHINE FOR HUMIDIFYING YARNS.

SPECIFICATION forming part of Letters Patent No. 661,940, dated November 13, 1900.

Application filed July 5, 1900. Serial No. 22,533. (No model.)

To all whom it may concern:

Be it known that I, JAMES TOWNSLEY PEARSON, a subject of the Queen of Great Britain, residing at Burnley, in the county of Lancaster, England, have invented a certain new and useful Improvement in Machines for Conditioning or Humidifying Yarns and other Fibrous Materials, (for which I applied for Letters Patent of Great Britain, dated December 12, 1899, No. 24,665,) of which the following is a specification, reference being had therein to the accompanying drawings.

The general aim of the invention is to provide an improved machine for use in effecting the humidification of various substances, more especially for use in effecting the conditioning or humidification of cotton, worsted, and other yarns, and thereby placing them in fit condition for being employed as weft in the weaving of cloth.

In particular the invention has for its objects to produce a machine that shall be capable of effecting either heavy, medium, or light conditioning at will, whereby a more perfect regulation and finer degree of uniformity in the conditioning or humidifying process shall be attained, and, further, to enable different counts of yarn to be dealt with or treated simultaneously, while being kept separate from one another.

The invention is illustrated in the accompanying drawings, in which latter—

Figure 1 is a perspective of a machine embodying the invention. Fig. 2 shows the head end of the machine in vertical section on a plane extending parallel with the sides of the machine. Fig. 3 is a partial plan illustrating certain details. Fig. 4 is a view in vertical section illustrating a modification.

Having reference to the drawings, 1 designates a table or platform supported conveniently upon suitable uprights.

2 is a transversely-extending trough located at the head end of the machine and during the use of the machine more or less completely filled with water.

3 3 are uprights located at opposite ends of the trough 2 and provided at their upper ends with bearings for the journals of a roll 4.

5 is a continuous conditioning cloth or felt, which at the outset is wound upon roll 4.

6 6 are other uprights, also located adjacent to the opposite ends of trough 2, these uprights 6 6 being provided at their upper ends with bearings for the journals of the pair of rubber-covered squeeze-rolls 7 7.

8 8 are weight-carrying press-levers acting to compress the rolls 7 7 together, the weights 9 9 upon the said press-levers being mounted thereon with capacity for adjustment toward and from the fulcra of the press-levers, as usual, in order to permit of variation in the degree of compression as may be required in practice.

10 10 are uprights at the foot end of the machine, and 11 11 are vertical grooves or guideways in the sides of said uprights which are turned toward each other. Similar vertical grooves or guideways 12 12 are provided in the uprights 6 6 at the head end of the machine or in other suitable uprights there located.

The conditioning-cloth 5 from the roll 4 passes between the squeeze rolls 7 7, and in the use of the machine for conditioning or humidifying purposes the said cloth after having been moistened, as explained hereinafter, is laid upon the table or platform 1 in successive layers formed by folds of the same extending back and forth lengthwise of the said table or platform. The said layers are held stretched by means of rods 51 51, placed within the bends of the folds and having their ends dropped into the grooves or guideways 11 11 and 12 12 at the opposite ends of the table or platform. The yarns in cop or other form or other substances to be treated are spread out on the successive layers of the said conditioning-cloth 5, the table or platform constituting a receiver for the pile or accumulation constituted by the said layers. Before the conditioning-cloth 5 is laid in folds upon table or platform 1 it is necessary to apply to the said cloth the amount of moisture which is required for the purpose of effecting the desired degree of conditioning or humidification of the yarns or other substances to be treated. As one means of enabling the said cloth to be moistened a roller 13 is mounted within the trough 2 by means of brackets 14, which are applied to the ends of the said trough. The brackets are respectively held in place by means of a bolt and thumb-nut, as at 141, or the like fastening means and are slotted, as at 151, to

facilitate adjustment vertically. The dotted lines in Fig. 2 show how the conditioning-cloth 5 may be led down from the roll 4, on which it is wound, under and around the roller 13, thus causing it to dip into the water which is contained in trough 2 and in which roller 13 is submerged, and thence to the squeeze-rolls 7 7. When the cloth is made to follow the course shown by dotted lines, it becomes wetted more or less completely throughout its thickness, the excess of water being expressed from the cloth by the squeeze-rolls, thereby leaving the desired degree of moisture therein.

In order to enable light conditioning to be effected, I provide means for carrying moisture from the trough to the conditioning-cloth, which permits the said cloth to be led from the roll 4 to the squeeze-rolls without dipping into the trough 2, substantially as indicated by full lines in Fig. 2. Thus I mount a second roller, as 15, upon brackets 16 in the said trough, and around the said roller 15 I cause an auxiliary or additional cloth 17 to pass. Thereby the said auxiliary cloth 17 is made to dip into the water which is contained in the trough 2. The brackets 16 are held in place by bolts 18 and thumb-nuts 19 and are slotted, as at 20, to enable the roller 15 to be raised and lowered. The moisture taken up by the auxiliary cloth 17 is transferred to conditioning-cloth 5. In Fig. 2 I have shown the said auxiliary cloth 17 as extending around one of the squeeze-rolls 7, and thereby coming in contact with the conditioning-cloth as the latter passes between such squeeze-rolls. Fig. 4 shows the auxiliary cloth 17 as passing between one of the squeeze-rolls and a supplemental roll 21, which last is supported in proximity to the former and rotated by friction therefrom. In this instance the lower squeeze-roll 7 serves to transfer the moisture from the auxiliary cloth 17 to the conditioning-cloth 5. Preferably the auxiliary cloth 17 is formed into an endless web, as shown.

My invention is not limited in all cases with respect to the precise character of the auxiliary means of applying moisture to the conditioning-cloth.

The auxiliary devices which have been described cause the moisture to be applied to only one side of the conditioning-cloth. This side, preferably, is the side opposite to that which comes in contact with the yarn or other substance to be treated. Consequently the moisture must travel through the thickness of the conditioning-cloth before reaching or being transmitted to the said yarn or other substance.

When it is desired to effect heavy conditioning, the conditioning-cloth will be caused to pass into the trough 2, around the roller 13, before going to the squeeze-rolls in the course indicated by dotted lines in Fig. 2, and at the same time the auxiliary arrangement will be employed. This will cause the amount of moisture remaining in the conditioning-cloth as it passes to table 1 to be increased to the maximum.

In order to enable different counts or qualities of yarn or the like to be treated in the machine at one time and be kept separate from each other, I provide one or more pairs of uprights 22 22 at intermediate points in the length of the table 1. The said uprights are furnished with grooves 23 23 or other guideways for the reception of cross or division rods 24 24, which I place upon the respective layers of the conditioning-cloth between the portions of material (yarn or the like) which are to be kept distinct from each other. This enables two or more counts or qualities to be placed upon different portions of the length of each layer without danger of mixing them. It will be obvious that the rods 24 24 may be used without the uprights 22 22.

25 25 are the removable side boards, which I apply by introducing their ends into the guideways 26 26 in the various uprights along the table, as indicated in the drawings. The said side boards, the headboard 27, Fig. 2, and a footboard (not shown) serve the purpose of casing-in the pile of conditioning-cloth and yarn or the like during the period while the latter is left to become permeated with the moisture with which the conditioning-cloth is loaded.

28 28 are brackets applied to the side edges of the table or platform and designed to receive and hold the side boards while they are not in use.

For convenience in stretching the conditioning-cloth in folds along the table or platform 1 a roller 29 is mounted in bearings at the head end of the machine. From the said roller cords 30 30 extend beneath the table or platform to the other end thereof and upward around sheaves or pulleys, one pair of which is shown at 31 31. When the conditioning-cloth is to be extended to the foot end of the machine, one of the rods 52 is placed behind the same and then has the cords 30 30 connected with its opposite ends. Then the squeeze-rolls are rotated by hand to feed forward the conditioning-cloth, and at the same time roller 29 is rotated to wind the cords 30 30 thereon. Thereby a double layer of the conditioning-cloth is drawn to the foot end, as indicated in Fig. 1, the said rod 52 being dropped into the guideways 11 11 of the uprights 10 10 to hold such layer extended. For convenience in rotating the roller 29 it is connected with the lower squeeze-roll by the sprocket-chain 32 and sprocket-wheels 33 34. In order to facilitate the operation of drawing the free ends of cords 30 30 by hand forward to the head end of the machine for connection with another rod 52 when the operation of extending the conditioning-cloth is to be repeated, the sprocket-wheel 34 is connected with the shaft of the lower squeeze-roll by means of a clutch, the

movable member 35 of which is controlled by a hand-lever 36. This enables the roller 29 to turn independently when desired.

I claim as my invention—

1. In a conditioning-machine, in combination, the conditioning-cloth, means to charge the said cloth with moisture, means to regulate the amount of moisture retained in the cloth, auxiliary means to apply moisture to one side of the cloth, and a receiver to receive alternating layers of the moisture-laden conditioning-cloth and the yarns or other substance to be treated, substantially as described.

2. In a conditioning-machine, in combination, the conditioning-cloth, the trough, means to guide the cloth through the contents of the trough, means to regulate the amount of moisture retained in the cloth, auxiliary means to apply moisture to one side of the cloth, and a receiver to receive alternating layers of the moisture-laden conditioning-cloth and the yarns or other substance to be treated, substantially as described.

3. In a conditioning-machine, in combination, the conditioning-cloth, the trough, a roller to guide the cloth through the contents of the trough, the squeeze-rolls to express surplus moisture from the cloth, auxiliary means to apply moisture to one side of the cloth, and a receiver to receive alternating layers of the moisture-laden conditioning-cloth and the yarns or other substance to be treated, substantially as described.

4. In a conditioning-machine, in combination, the conditioning-cloth, the trough, means to guide the cloth through the contents of the trough, the squeeze-rolls to express surplus moisture from the cloth, the auxiliary cloth by which moisture is applied to one side of the cloth, and a receiver to receive alternating layers of the moisture-laden conditioning-cloth and the yarns or other substance to be treated, substantially as described.

5. In a conditioning-machine, in combination, the conditioning-cloth, the trough, a guide-roller for the conditioning-cloth in the said trough, the squeeze-rolls, the auxiliary cloth, a guide-roller for said auxiliary cloth in the said trough, and the table to receive successive layers of the moisture-laden conditioning-cloth and the yarns or other substance to be treated, substantially as described.

6. In a conditioning-machine, in combination, the conditioning-cloth, means to apply moisture to the said cloth, a receiver to receive alternating layers of the moisture-laden conditioning-cloth and the yarns or other substance to be treated, and transverse division-pieces removably interposed between the said layers intermediate the ends thereof to separate different counts or qualities of yarn or the like, substantially as described.

7. In a conditioning-machine, in combination, the conditioning-cloth, means to apply moisture to the said cloth, a receiver to receive alternating layers of the moisture-laden conditioning-cloth and the yarns or other substance to be treated, division-pieces applied to the said layers to separate different counts or qualities of yarn or the like, and guides to maintain said division-pieces in place, substantially as described.

8. In a conditioning-machine, in combination, the conditioning-cloth, means to charge the said cloth with moisture, auxiliary means to apply moisture to one side of the cloth, and a receiver to receive alternating layers of the moisture-laden conditioning-cloth and the yarns or other substance to be treated, substantially as described.

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

JAMES TOWNSLEY PEARSON.

Witnesses:

W. T. WHITAKER,

FRED BALDWIN.