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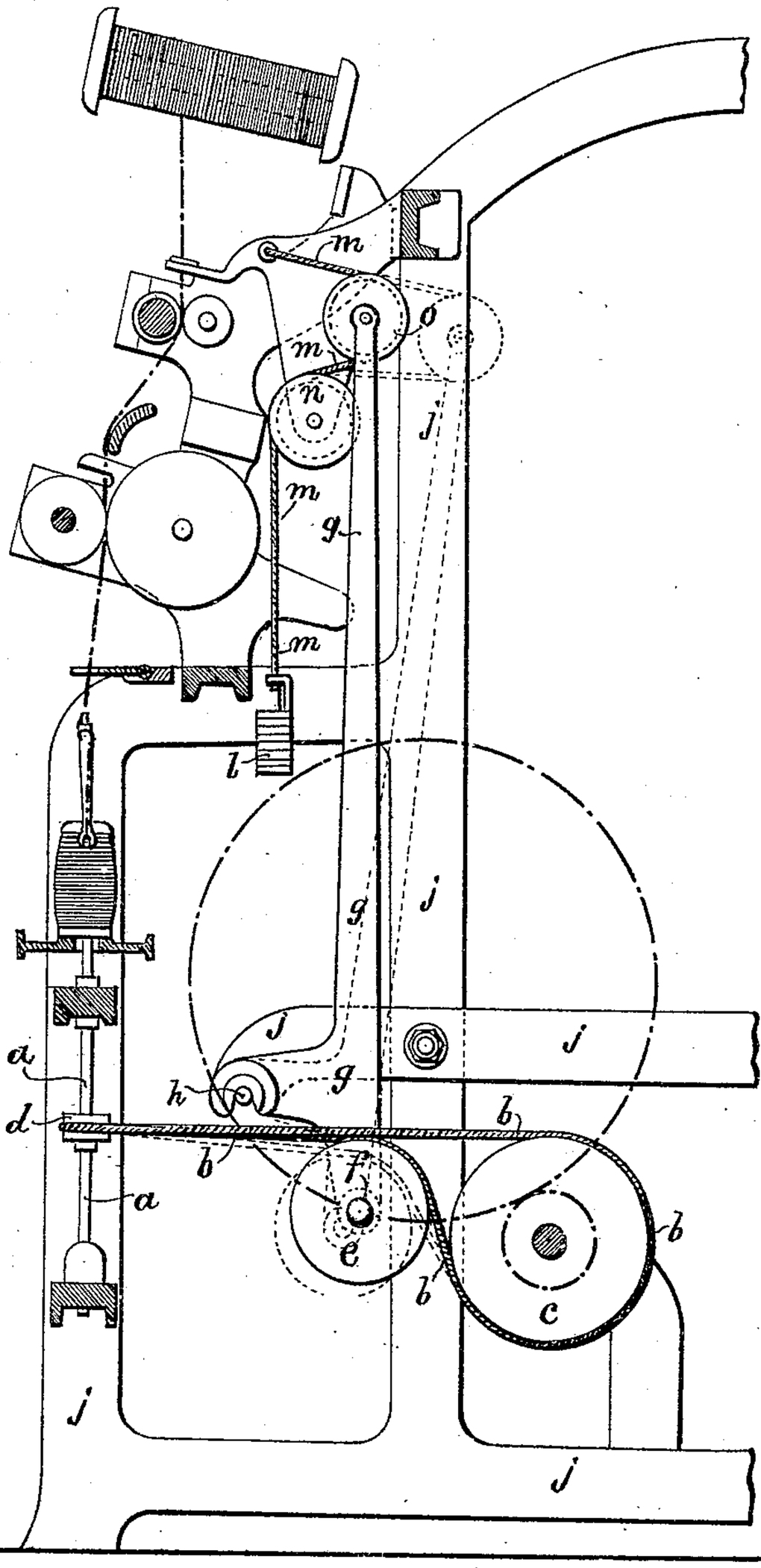
SPINDLE DRIVING ARRANGEMENT OF SPINNING FRAMES AND THE LIKE.

APPLICATION FILED MAR. 3, 1906.

908,420. Patented Dec. 29, 1908.

2 SHEETS—SHEET 1.

FIG. 1.



WITNESSES

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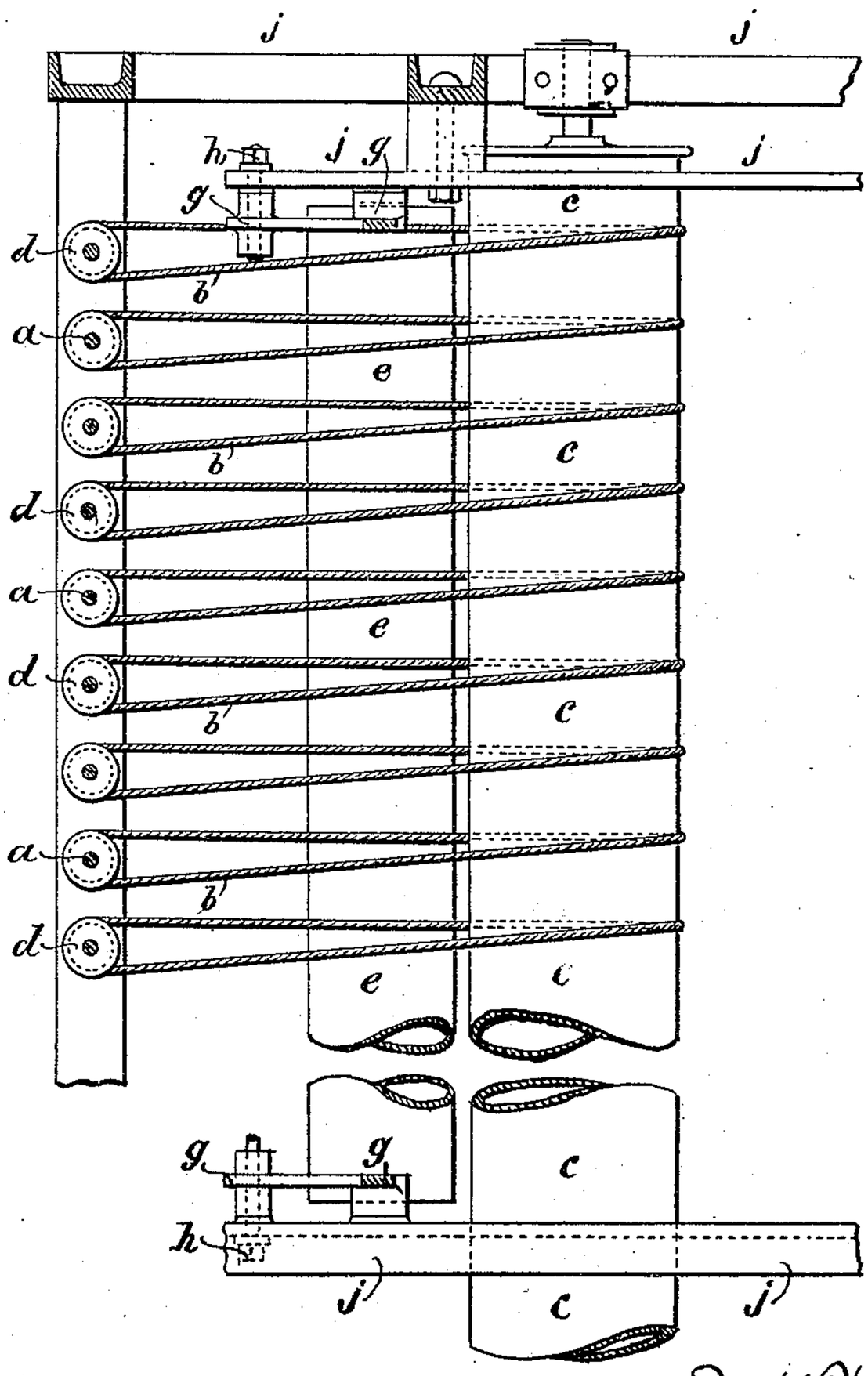
2 SHEETS—SHEET 2.

FIG. 2.



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DAVID PHILLIPS, OF DUNDEE, SCOTLAND.

SPINDLE-DRIVING ARRANGEMENT OF SPINNING-FRAMES AND THE LIKE.

No. 908,420. Specification of Letters Patent. Patented Dec. 29, 1908.

Application filed March 3, 1906. Serial No. 304,074.

To all whom it may concern:

Be it known that I, DAVID PHILLIPS, a subject of the King of Great Britain and Ireland, and a resident of Dundee, Scotland, (whose postal address is Dura Works, Dundee, Scotland,) have invented certain new and useful Improvements in or Relating to Spindle-Driving Arrangements of Spinning-Frames and the Like, and of which the following is a specification.

This invention relates to spindle-driving arrangements for spinning frames, and the like, in which a separate driving band is used for each spindle; and has for its object to provide means for so automatically controlling and regulating the driving bands that their tension is maintained, as nearly as may be, constant or rather proportional to the spindle resistance; variation in the lengths of the bands from atmospheric humidity or other causes being automatically compensated for. At the same time, with my improved arrangements, the pressure of the spindles upon their footstep bearings is materially reduced, with a consequent similar reduction in the driving power required.

In carrying out my invention I interpose between the spindles (which are, as usual, on vertical axes) and the usual horizontal driving cylinder therefor, an intermediate tensioning cylinder whose axis is kept substantially parallel to that of the driving cylinder, by the uniform length of the driving bands, but whose position relative thereto and to the driving bands is capable of variation.

The manner of arranging, supporting, and applying the pressure to the tensioning cylinder, requisite to give the desired tension to the driving bands may be widely varied, but in order that the invention and the manner of performing the same may be properly understood, I hereunto append two sheets of explanatory drawings (throughout which like reference letters indicate similar parts) showing an example of the carrying out of my invention, and in which—

Figures 1 and 2, Sheets 1 and 2, are, respectively, a sectional side elevation and a sectional plan of part of a spinning frame showing the application of one example of my improvements.

According to the example shown in Figs. 1 and 2, each of the spindles, *a*, which are of usual construction, is driven by a separate driving band, *b*, which passes from the usual horizontal common driving cylinder, *c*, tangentially to the wharve, *d*, of the spindle; the wharve being so positioned relatively to the driving cylinder that the bands meet it at right angles, or nearly so, to its axis. From the wharves, *d*, the bands pass to the upper side of a tensioning cylinder, *e*, this cylinder, like the driving cylinder, *c*, being common to a convenient number of spindles. From the tensioning cylinder, *e*, the bands pass to the under side of the driving cylinder, and from thence back to the wharves.

The tensioning cylinder, *e*, is carried on gudgeons, *f*, carried by the downwardly extending arms of a pair of levers, *g*, independent of each other and centered on pivots, *h*, in the gables, *j*, of the machine, there being one at each end of the cylinder. The levers, *g*, have upwardly extending arms, to the upper ends of which pressure is applied to give the necessary tension to the bands, *b*. In the present example, this pressure is applied by weights, *l*, acting through cords, *m*, passing over pulleys, *n*, carried by brackets fixed to the gables, *j*, then over pulleys, *o*, carried on the ends of the arms, and then to the gable brackets to which they are secured.

It will be seen that the vertical disposition of the tensioning lever just described is structurally convenient in view of the difficulty of otherwise obtaining the desired length of lever arm so essential to sensitive tensioning within the restricted space available in a spinning frame, the sensitive action being obtained by making the counterweight arm much longer than the cylinder arm and thereby obtaining increased leverage.

The bands shown are of the ordinary double loop cord kind engaging the usual V-shaped grooves in the wharves, but flat bands may be used if desired.

The foregoing examples are only given by way of illustration, and it is obvious that the form and position of the tensioning levers, and the forms of tensioning device may be varied.

It will be seen that, as with my improved device a separate driving band is used for each spindle, when it is desired to stop a particular spindle for yarn repair, or other spinning operation, it is only necessary for the worker to cast the band off the wharve

of that spindle, as heretofore and the spindle immediately stops without interfering with any other spindle without the use of additional mechanism, and without affecting the tension of other bands. It is further to be pointed out that, where a single tensioning cylinder has been used with a single band to many spindles, that cylinder has been carried in a cradle formed by interconnected levers, whereas the cylinder of my arrangement is carried by two independent levers which, for the purpose, is a much simpler, cheaper and better working mechanism and is more easily applied to both new and old spinning frames without expensive structural alteration being required.

What I claim is:—

1. In machines of the type described, a common horizontal driving cylinder, a plurality of vertical spindles, a separate band driving each spindle, a common horizontal tensioning cylinder bearing upon and movable relatively to the driving bands between spindles and driving cylinder, independent levers one at each end of the tensioning cylinder to carry same, and means altering the tensioning pressure of said levers.

2. In machines of the type described, a common horizontal driving cylinder, a plurality of vertical spindles, a separate band driving each spindle, a common horizontal tensioning cylinder bearing upon and movable relatively to the driving bands between spindles and driving cylinder, independent two-armed levers one at each end of the tensioning cylinder to carry same, and means for applying tensioning pressure to each lever.

3. In machines of the type described, a common horizontal driving cylinder, a plurality of vertical spindles, a separate band driving each spindle, a common horizontal tensioning cylinder bearing upon and movable relatively to the driving bands between spindles and driving cylinder, independent two-armed levers one at each end of the tensioning cylinder to carry same, and a weight adapted to be applied to each lever for the purpose of applying tensioning pressure to the tensioning cylinder.

4. In machines of the type described, a common horizontal driving cylinder, a plurality of vertical spindles, a separate band driving each spindle, a common horizontal tensioning cylinder bearing upon and movable relatively to the driving bands between spindles and driving cylinder, independent two-armed levers one at each end of the tensioning cylinder to carry same, a pulley on one arm of each lever, a corresponding pulley on the machine framing, a cord attached at one end to the machine and passing round the pulleys and a tensioning weight attached to the cord.

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

DAVID PHILLIPS.

Witnesses:
WM. ELDER,
J. L. RUTHVEN.