

No. 692,705.

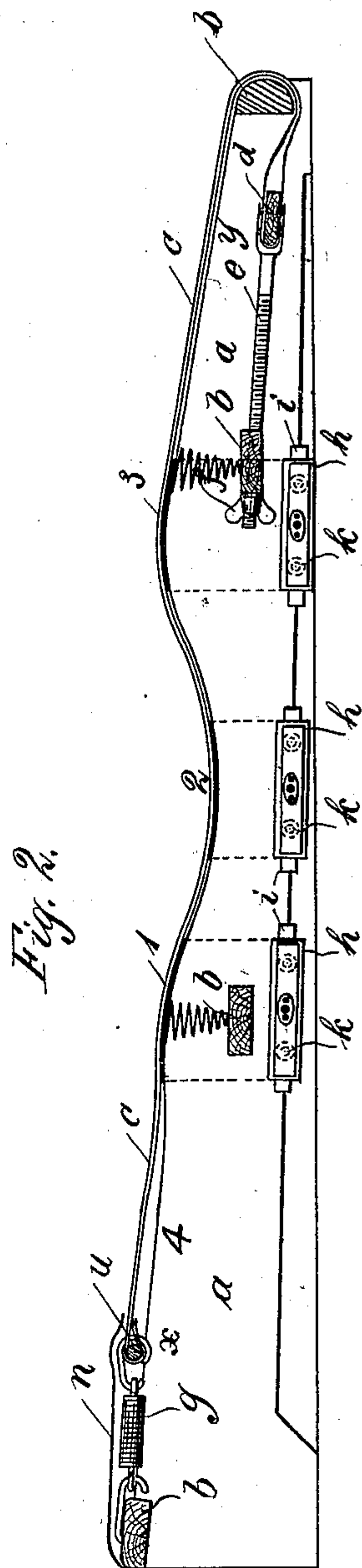
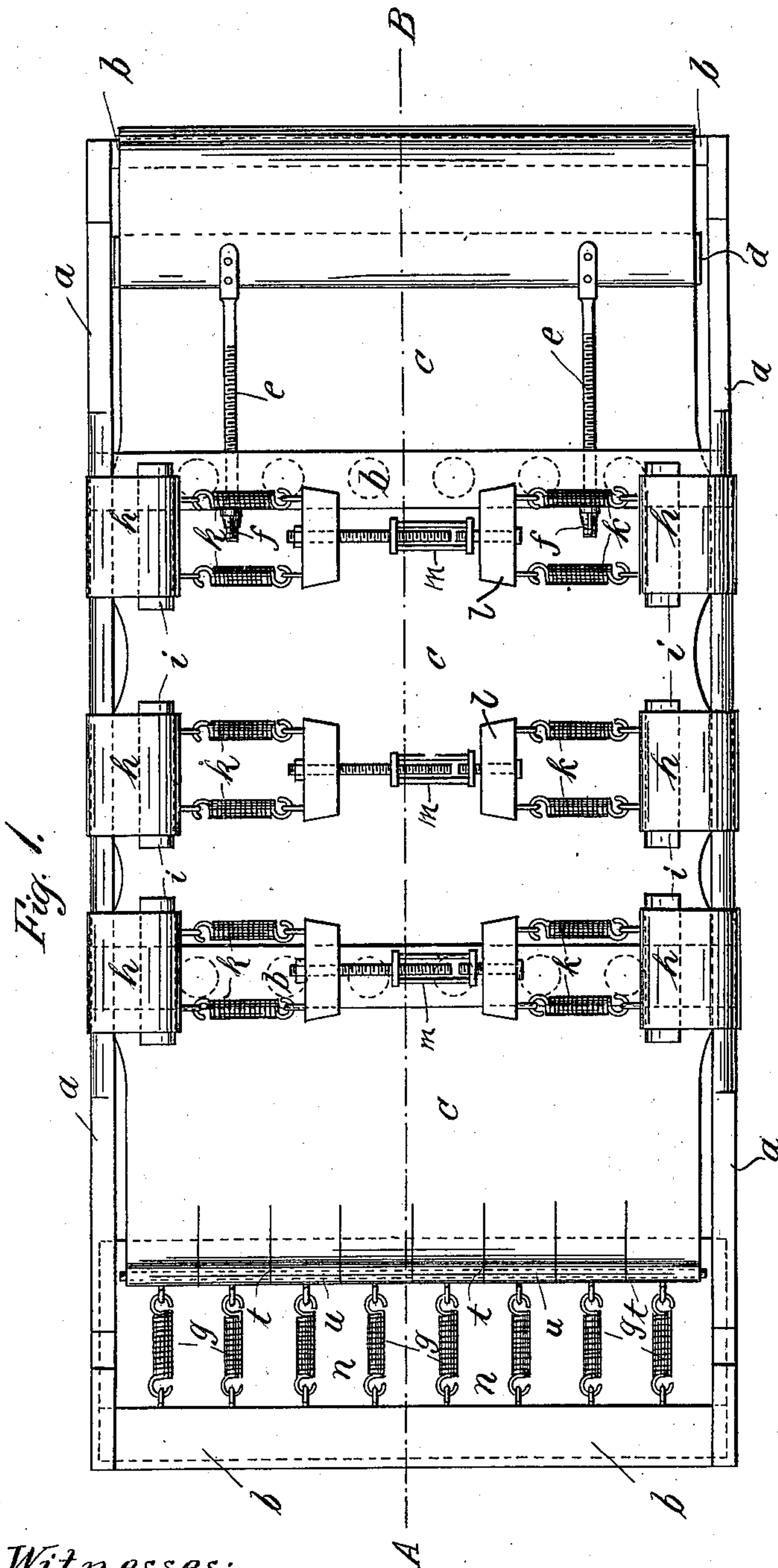
Patented Feb. 4, 1902.

F. PLETTENBERG.  
MATTRESS.

(Application filed Apr. 6, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:  
O. H. König.  
E. W. Mason

Inventor:  
Friedrich Plettenberg

No. 692,705.

F. PLETTENBERG.  
MATTRESS.

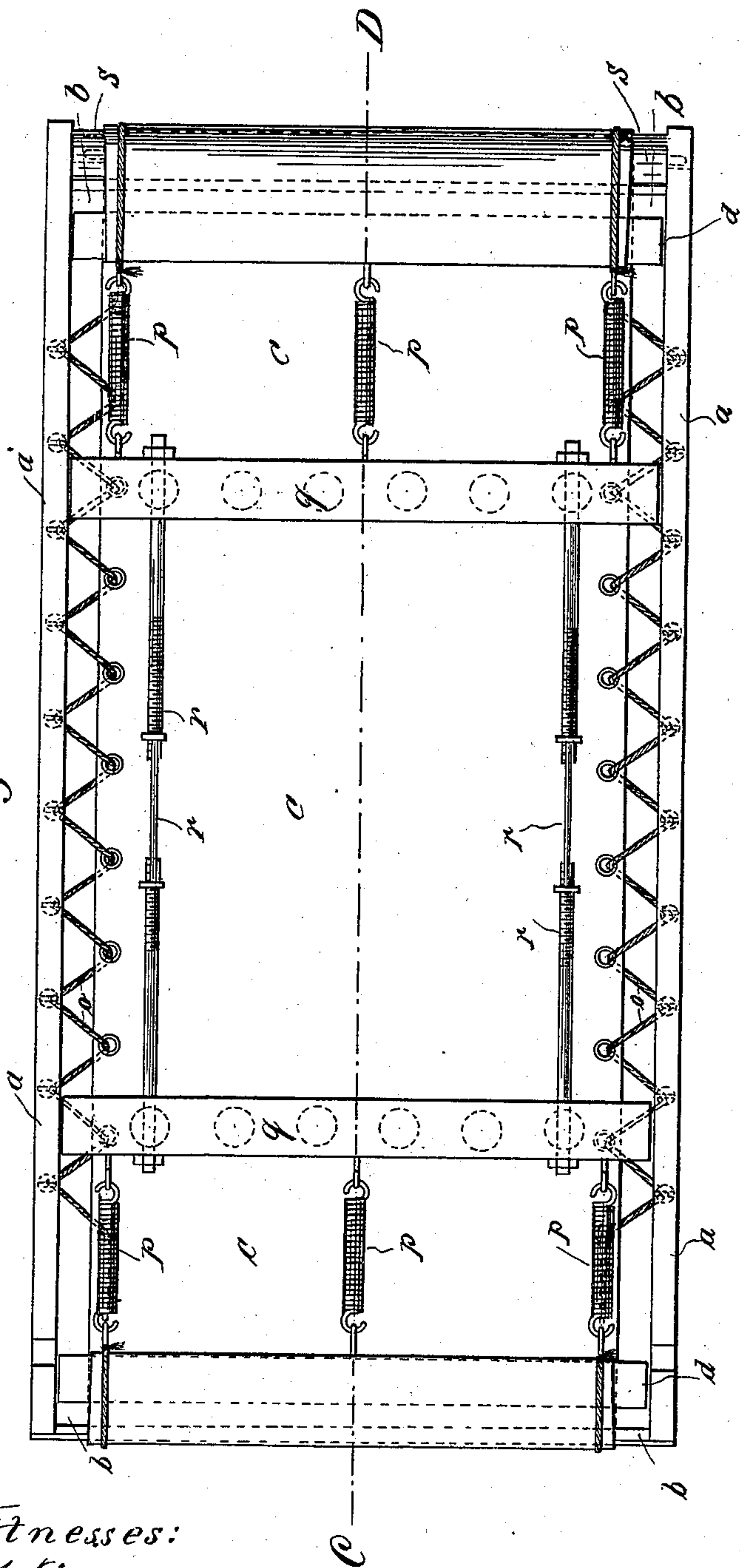
(Application filed Apr. 6, 1901.)

Patented Feb. 4, 1902.

(No Model.)

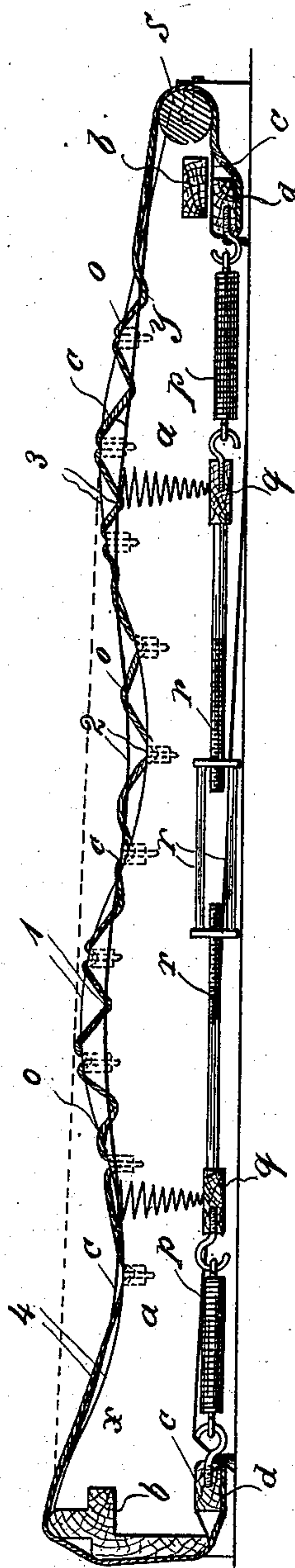
2 Sheets—Sheet 2.

Fig. 3.



Witnesses:  
Oth. King  
E. W. Mason

Fig. 4.



Inventor:  
Friedrich Plettenberg



# UNITED STATES PATENT OFFICE.

FRIEDRICH PLETTENBERG, OF ISERLOHN, GERMANY.

## MATTRESS.

SPECIFICATION forming part of Letters Patent No. 692,705, dated February 4, 1902.

Application filed April 6, 1901. Serial No. 54,712. (No model.)

*To all whom it may concern:*

Be it known that I, FRIEDRICH PLETTENBERG, manufacturer of furniture, a subject of the Emperor of Germany, residing at Iserlohn, in the Province of Westphalia and Empire of Germany, have invented a new and useful Mattress, of which the following is a specification.

The mattresses which have been in general use up to the present do not efficiently fulfil their purpose—namely, that of resting the human body thoroughly and at the same time healthfully. This inefficiency is caused chiefly by the mattresses now in use being stuffed, so that they are convex, both in longitudinal and in transverse section, and in the case of iron mattresses are forced upward in the middle by supports. The result is that an elevation is formed in the middle of the mattress, which is the chief hindrance to the body reposing comfortably, because it is caused to assume an unnatural posture.

The object of this invention is to provide a mattress suitably shaped to conform to the contour of the body, so as to support the same in a natural posture for repose.

According to this invention the mattress consists principally of two side pieces cut out in the shape of the profile of the human back, on which side pieces sail-cloth or other suitable material is stretched and capable of being tightened longitudinally or transversely to correspond to the profile, as required or desired by the person resting.

The accompanying drawings illustrate two modifications of the mattress constructed according to this invention.

Figure 1 is an underside plan of the mattress with adjustable longitudinal and transverse tightening-gear. Fig. 2 is a section at A B in Fig. 1. Fig. 3 is a similar view to Fig. 1 of a mattress with adjustable longitudinal tightening-gear and lacing at the sides. Fig. 4 is a section at C D in Fig. 3.

The frame of the mattress consists of two side pieces *a*, which are connected together by a number of transverse tie-bars *b*. The profiling of the side pieces *a* coincides with the profile of those parts of the body that rest on the mattress, the surfaces 1, 2, and 3 corresponding, respectively, to the resting positions of the back, pelvis, and upper part of the

thigh or knee. Further, a raised part 4 for the head may be provided. (See Fig. 4.) Double sail-cloth *c*, india-rubber, wire-netting, or other suitable material is stretched over this frame and is led over the end transverse bars *b* to the under side of the frame, where it is held and stretched by means of screws. In the arrangement represented by Fig. 1 the stretching of the sail-cloth is effected in a longitudinal and transverse direction in such a manner that the cloth assumes the shape cut out of the side pieces *a* in a longitudinal direction and remains flat in a transverse direction. For the purpose of stretching longitudinally the cloth is wrapped around a loose bar *d*, situated transversely between the side pieces *a*, which is provided with screwed rods *e*, which project through one of the fixed transverse bars *b* and which can be tightened up or slacked off by means of winged nuts *f* or the like. As the bar *d*, with the cloth *c* wrapped around it, is free, it is either pulled or slacked off as the screwed bolts *e* are tightened up or loosened. In order to render the longitudinal stretching elastic, the head end of the cloth *c* is attached to springs *g*, which in their turn are secured to the end transverse bar *b* of the frame, the whole being covered on the top by a cloth *n*. In order to make the cloth *c* conform to the profiling of the side pieces *a*, or, in other words, to the contour of the back of the person resting, a transverse stretching arrangement is provided, which is entirely independent from the longitudinal stretching-gear. For this transverse stretching the cloth *c* is provided with tabs *h* at each side and at each resting-point—that is to say, at the points 1, 2, and 3, for example. These tabs *h* are led over the side pieces *a* to the under side of the mattress, their ends being secured to short strips of wood or the like *i*. Springs *k* are hooked to the strips *i* at one end, the other ends of the springs being hooked to other strips *l*, which can be made to approach one another or recede from one another by means of screw-gear *m*. By thus adjusting the strips *l* the cloth *c* is correspondingly stretched in a transverse direction by means of the tabs *h*, the springs *k* rendering the stretching elastic. This elastic longitudinal and transverse stretching causes the cloth *c* not only to con-



form to the shape of the human body, but also to be resilient in all directions.

In the modification represented by Figs. 3 and 4 the transverse stretching of cloth *c* is effected by laces *o*, connecting it to the side pieces *a*. For the longitudinal stretching of the cloth movable cross-bars *d* are secured to the end of the same, which are attached to two other movable cross-bars *g* by means of springs *p*, which can be drawn together by screw-gear *r* or loosened, according as to whether the cloth is to be stretched or loosened. The springs *p* render the longitudinal tension elastic and permits the cloth *c* to "give." The arrangement illustrated by Figs. 3 and 4 can be further modified by making the top edges of the side pieces *a* straight, as shown by the dotted line in Fig. 4, the hooks for the lacing *o* being fastened on the inner sides of these side pieces to suit the back profile of the human body. The invention can be carried out in various ways without departing from the spirit thereof. Fig. 4 shows a roller *s* at the foot end of the mattress, around which the cloth *c* is wrapped. In the same way the gear for tightening the cloth in both longitudinal and transverse directions may be varied, provided of course that they are entirely independent of one another.

The most important advantage offered by this novel construction of mattress is that the body of the person reclining on it is in a natural position for resting and that every part of his body, more especially the vertebral column and all joints, are in perfectly comfortable postures. It is possible for any one at any time to adjust the mattress in case the springs should grow weak. Further, the mattress gives to all protuberances of the body and conforms at all points to the contour of the same. Above everything, the breast is assured free breathing action independent of the sleeper's position, whether he be lying on his back or side, because the side profile is almost exactly the same as the back profile of the human body. A little more room is required for the shoulders in this case to insure a comfortable position, and to this end the springs *g* are provided at the head end, which give easily to the pressure of the shoulder. Stretching the cloth transversely prevents the body being bedded in a groove, as often occurs with mattresses that are only elastic in a transverse direction.

In order to offer a perfectly comfortable resting-surface for the head in whatever position it may be in, the movement of the springs *g* may be independent of one another. For this purpose the cross-bar *u*, Fig. 1, may

be divided up into separate lengths and slits made in the end of the cloth *c*, as shown at *t*. Each of these divisions will move independently of the other in response to the pressure brought to bear on its spring *g*, in consequence of which the place of rest for the head adapts itself independently, be the head still or moving about. Finally, attention may be drawn to the fact that the side pieces *a* are so made as to be higher at the head end *x* than at the foot end *y*, so that the body of the person resting is inclined. The body is prevented from slipping down the incline, as the knee has sufficient hold at 2 and 3.

I claim—

1. In a bed-bottom, the combination of the side rails *a, a* having elevations 1, 3, 4 and intervening depressions corresponding to the profile of the human back; the webbing *c*; means for stretching said webbing longitudinally, and lateral supports for the said webbing from the respective elevations 1, 3 and intervening depressions 2 of the side rails whereby the said webbing is made to conform approximately to the contour of the back, substantially as explained.

2. The combination of the side rails *a, a*, having elevations 1 and 3 and intervening depressions 2; transverse stay-bars *b, b, b*; webbing *c*; means for applying elastic and variable longitudinal tension to the said webbing; and independent means for stretching the webbing laterally from the undulating bearing-points 1, 2, 3; substantially as and for the purposes set forth.

3. The combination of the side rails *a, a*, having bearing-supports 1, 2, 3 for the webbing of unequal elevation; the stay-bars *b, b*, connecting said side rails; the webbing *c*; connected to a straining-bar and tension-springs at one end, and turned down and over the other end of the frame; a straining-bar *d* to which said turned-over end of the webbing is connected and suitable straining-screws *e* and nuts *f* operating in conjunction with one of the transverse bars *b* to apply tension to the webbing, as described.

4. The combination of the side rails *a, a*, formed with support-bearings 1, 2, 3 of unequal height; the webbing *c*; means for applying elastic and variable longitudinal tension to the webbing; lateral tabs *h*, supporting the webbing from the several bearing-points 1, 2, 3; and means for stretching the webbing transversely through the medium of said tabs, substantially as explained.

FRIEDRICH PIETTENBERG.

Witnesses:

OTTO KÖNIG,  
E. W. MASON.