No. 861,352. PATENTED JULY 30, 1907.

J. E. L. BLACKMORE.

EXTENSIBLE ROD.

APPLICATION FILED NOV. 26, 1906.

2 SHEETS—SHEET 1.

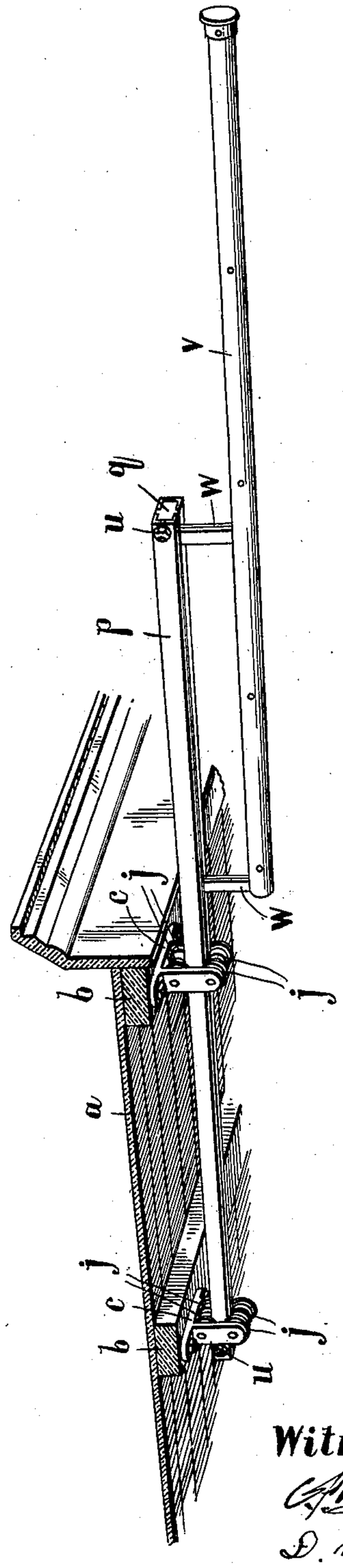

Fig. 1.

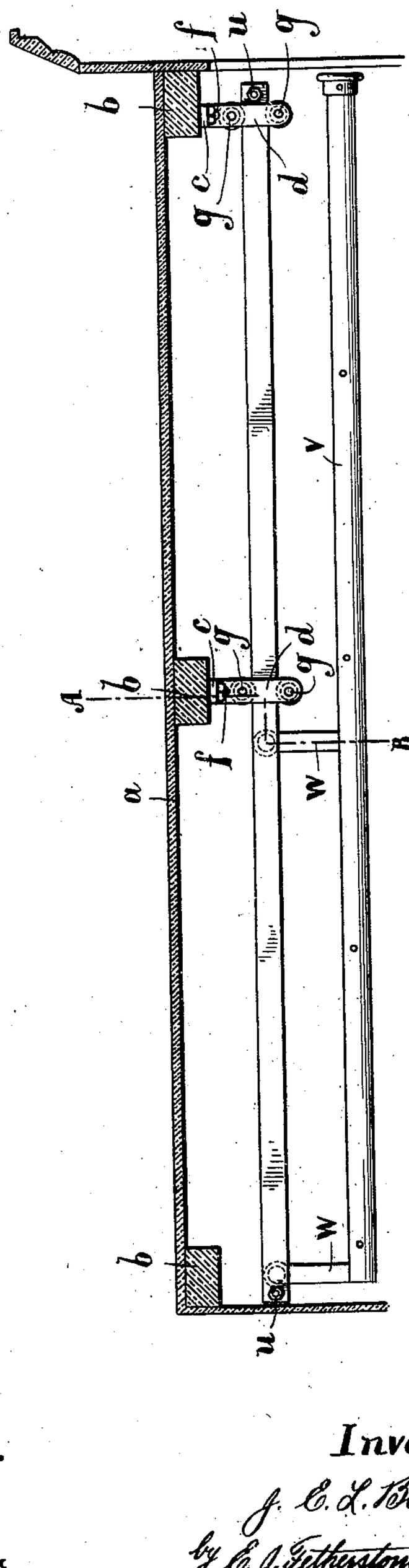

Fig. 2.

Witnesses.

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2 SHEETS—SHEET 2.

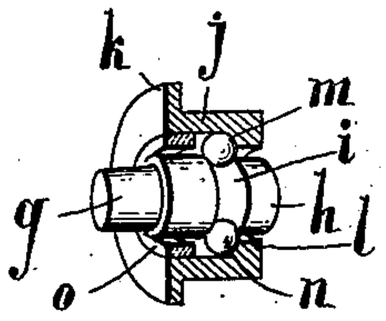

Fig. 4.

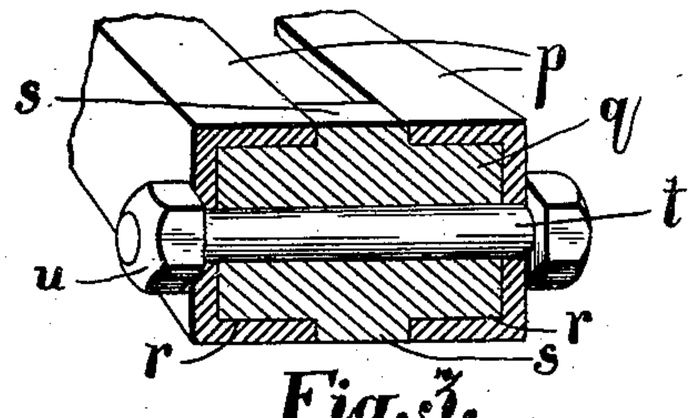

Fig. 3.

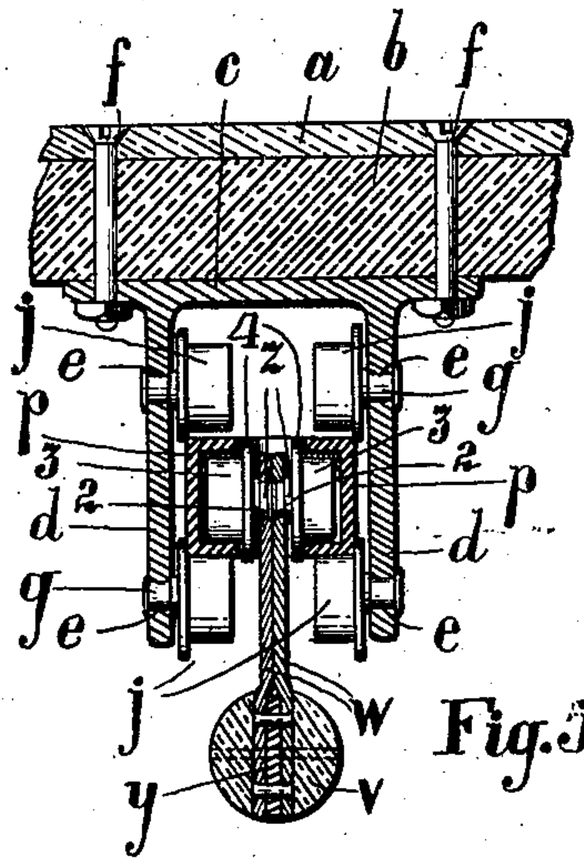

Fig. 5.

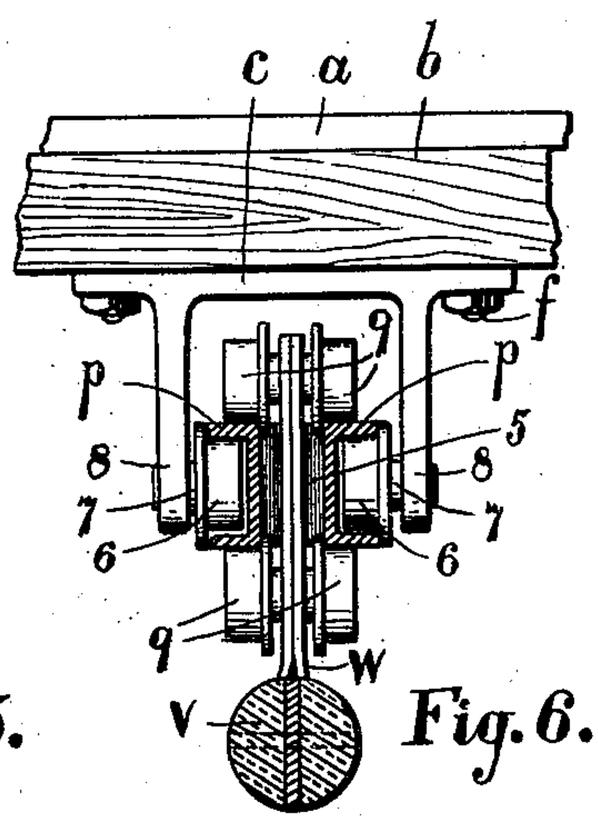

Fig. 6.

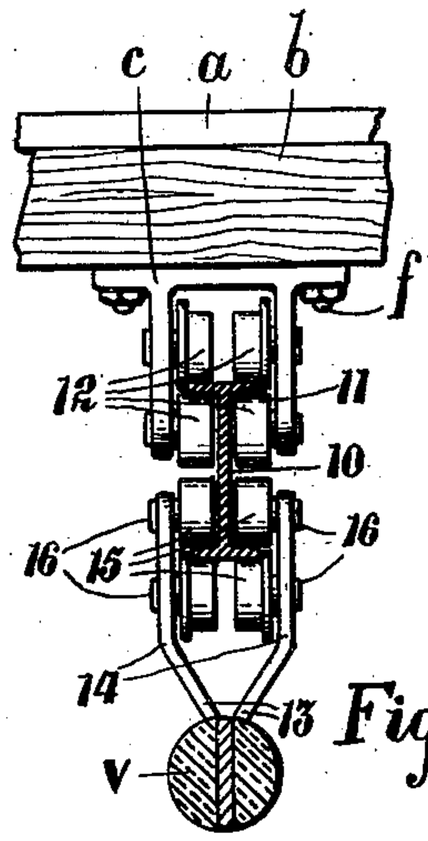

Fig. 7.

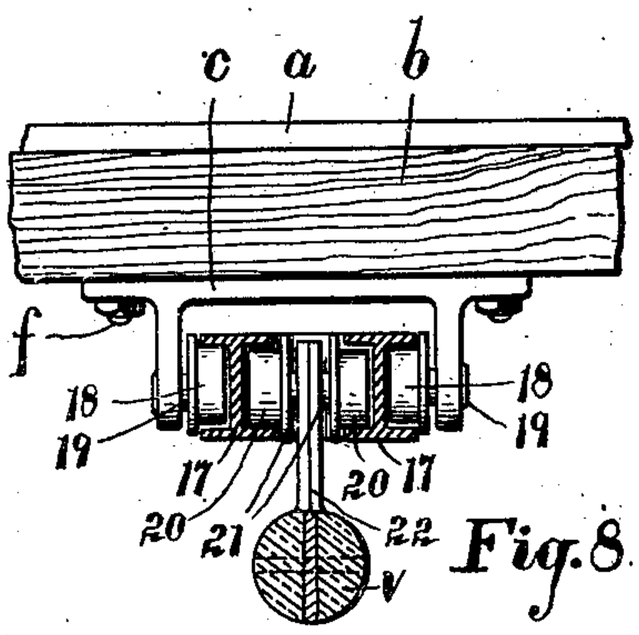

Fig. 8.

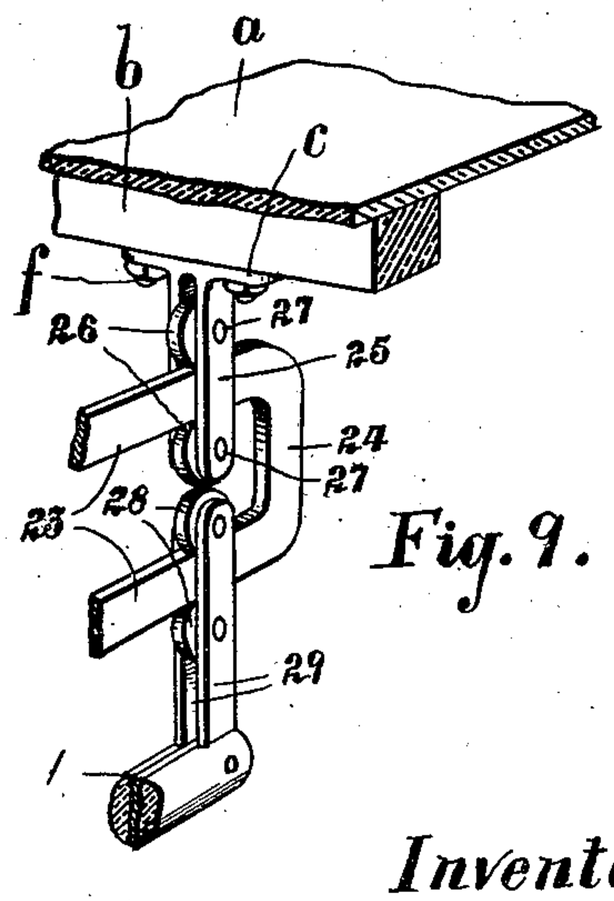

Fig. 9.

Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN ERVINE LLOYD BLACKMORE, OF MONTREAL, QUEBEC, CANADA.

EXTENSIBLE ROD.

No. 861,352. Specification of Letters Patent. Patented July 30, 1907.

Application filed November 26, 1906. Serial No. 345,237.

To all whom it may concern:

Be it known that I, JOHN ERVINE LLOYD BLACKMORE, a subject of the King of Great Britain, residing at 112 St. James street, in the city of Montreal, in the district of Montreal, in the Province of Quebec, in the Dominion of Canada, have invented certain new and useful Improvements in Extensible Rods, of which the following is a specification.

This invention relates to improvements in extensible rods, as described in the present specification and illustrated by the accompanying drawings that form part of the same.

The invention consists essentially of a plurality of brackets fixedly secured to a frame or a suitable surface, a plurality of rollers suitably journaled in each of said brackets, metal lengths suitably joined and traveling on said rollers and forming track-ways, a rod having a plurality of hangers extending therefrom and rollers journaled in said hangers and traveling on said trackways.

The objects of the invention are to secure the greatest possible extension of rod to support the maximum weight, to devise a simple and smoothly running mechanism and to provide a cheap and durable construction, not too cumbersome.

Referring to the drawings, Figure 1 is a perspective view of the rods in their extended position secured to the ceiling of a wardrobe. Fig. 2 is a side elevation of the rods in their closed position and secured to a wardrobe ceiling. Fig. 3 is a perspective sectional detail of a portion of the inner supporting bars showing a means of joining the said bars. Fig. 4 is a perspective sectional detail of a roller. Fig. 5 is a cross sectional view through the line A—B in Fig. 2. Fig. 6 is a cross sectional view showing a modification of the upper supporting bar construction. Fig. 7 is a cross sectional view of the rods showing a further modification of the upper supporting bar. Fig. 8 is a cross sectional view showing another modification of the upper supporting bar. Fig. 9 is a sectional perspective view showing another form of upper supporting bar.

Like letters of reference indicate corresponding parts in each figure.

Referring to the drawings, *a* is the top inner frame or ceiling of a wardrobe.

b are beams or blocks secured to said ceiling and extending across the wardrobe. *c* are brackets having the downwardly depending plates *d* and the holes *e* through said plates in horizontal alinement towards the upper and lower ends thereof respectively. The brackets *c* are secured to the ceiling *a* through the beams or blocks *b* by the bolts *f*.

It must be understood that the particular place and manner of fastening these brackets is not an essential feature to this invention as they may be secured in any suitable place and in any manner desirable and it is for convenience in this description that the extensible rods are attached directly to the ceiling of a wardrobe of special construction.

g are pins fixedly secured, preferably by riveting in the holes *e* through the bracket plates *d*, said pins having the journal bearing portion *h*, extending inwardly in pairs, said journal bearing portion *h* having a ball race *i* arranged on the periphery thereof.

j are rollers having the outwardly projecting annular flange *k* at their inner end and the inner annular projection *l* from their journal surfaces at the outer end forming the curved shoulder *m*. The rollers *j* are mounted on the pins *g*, the balls *n* being inserted in the ball races *i* and abutting the curved shoulders *m* of said rollers. *o* are retaining washers adjoining said ball races to the inner sides thereof.

It will be thus seen that in the plates *d* of each bracket there are two pairs of rollers each pair being in horizontal alinement and that said plates are placed far enough apart to leave a central space between said rollers.

p are channel bars of a length substantially the same as the depth of the wardrobe.

q are blocks having the reduced ends *r* inserted into the channels of the bars *p*, the said blocks being arranged at each end of said bars. The said blocks *q* space the bars *p* apart to the extent of the central portions *s* in each of said blocks, and *t* is a bolt passing through corresponding orifices in the bars *p* and the blocks *q* and firmly secured by the nuts *u*, thus forming an interior track-way on the inwardly extending flanges of the channel bars.

The bars *p* are inserted between the rollers *j* and slide inwardly and outwardly therebetween.

v is a rod having the hangers *w* extending upwardly therefrom, one hanger being at the inner end thereof and the other intermediate of its length. Said hangers are formed of two upwardly extending strips riveted at their lower ends to a central metal portion *y* of the rod *v* and at their upper ends having the pins *z* riveted therein and extending outwardly therefrom having the journal portions 2 of precisely similar construction to the journal bearing portions *h* of the pins *q*.

3 are rollers of similar formation to the rollers *j* and mounted on the pins *z* in the same manner as the rollers *j* are mounted on the pins *g*, the flanges 4 of the rollers *j* adjoining the hangers *w*. The rollers 3 run in the track-ways formed on the interior of the channel bars, the hangers 4 passing through the central spaces allowed between the channel bars *p* and the pairs of rollers *j*.

The heads of the bolts *t* and the nuts *u* form the stops for the extreme inner position of the angle bars *p* and

the extreme outer position thereof, said heads of the bolts and the nuts striking the outer and inner brackets respectively.

The spacing blocks *q* joining the angle bars together at their ends form the stops for the lower rod as the hangers *w* strike said blocks at their extreme outer and inner positions respectively.

In Fig. 6 a modified form of construction is shown in which the channel bars *p* are in a reversed position being spaced apart by the blocks 5 placed between the ends of the channel bars and secured together by suitable bolts through said blocks. In this construction one pair of rollers 6 is journaled on pins 7 fixedly secured towards the lower ends of the bracket plates 8, the said rollers rolling in the channels or inner surfaces of said channel bars in place of on the outer surface as shown in Fig. 5. The hangers in this construction have the pairs of rollers 9 in horizontal alinement, the said rollers traveling on the outer surfaces of the said channel bars in place of on the inner surfaces as in Fig. 5.

In Fig. 7 another modified form of construction is shown in which the channel bars are to all intents and purposes brought together forming an I-bar 10. In this construction, the upper flange 11 of the I-bar 10 forms the surface on which the rollers 12 roll, the said rollers 12 being arranged in substantially the same manner as the rollers *j* in Fig. 5, though closer together. In this construction, the hangers 13 are formed with their upwardly extending pieces 14 spread and the rollers 15 journaled on pins 16 fixedly secured to said pieces 14 and extending inwardly therefrom, the said rollers 15 being in pairs in horizontal alinement and traveling on the inner and outer surfaces of the lower flange of the said I-bar 10.

In Fig. 8, a horizontal arrangement of rollers is shown in which the bracket plate is spread apart considerably more than the forms already described. 17 is a pair of I-bars suitably joined at the ends thereof and having the rollers 18 rolling in the outer channel thereof, the said rollers being journaled on pins 19 fixedly secured in horizontal alinement in said brackets. 20 are rollers journaled on pins 21 fixedly secured in horizontal alinement in the hangers 22 and traveling in the inner channels of the I-bars 17.

In Fig. 9, 23 are horizontal parallel bars vertically arranged in relation one to the other and joined at the ends thereof by the pieces 24 preferably forming part therewith. In this construction the bracket plates 25 are close together and 26 are rollers journaled on pins 27 extending through said bracket plates and said rollers.

The rollers 26 are in vertical alinement and roll on the upper and lower edges of the top parallel bar of the parallel bars 23, while the rollers 28 in vertical alinement travel on the lower of the parallel bars 23, the said rollers 28 being journaled on pins fixedly secured in the upwardly extending pieces of the hangers 29. The rods *v* are shown as of the same construction in each form of this invention, though it must be understood that the rods may be made in any suitable manner, in fact in any part of the construction any re-arrangement of the rollers, rods or bars may be made without departing from the spirit of the invention as long as the salient features are retained, that is by the rollers in the fixed brackets rolling on the supporting bars and the rollers from the hanger bars traveling on said supporting bar.

It may be pointed out that the great feature of strength in this invention is the use of the supporting bar as a sliding extensible element in the construction and as a track-way for the rod on which the clothes or other articles are hung. Besides, the great extensibility of the lower rod without affecting the rigidity of the device in its extended position, is a great advantage, for it will be seen by reference to Fig. 1, that the lower rod forming the hanger portion of the device is well outside the wardrobe at its inner end, and in this position it is just as firm as when resting in its closed position inside the wardrobe and providing the said rod is strong enough in itself any reasonable weight can be suspended from the extreme outer end.

The smoothness of operation of these rods may also be emphasized here as the upper supporting bar in every instance either engages an upper guiding roller or provides an upper guiding surface and has no rollers attached thereto for the lower and hanger rod, but forms parallel track-ways thus preventing any oscillating motion of the rod and adding to its durability.

The rods as before stated in this specification may be changed about as regards the several parts according to the purposes to which they may be applied and it is not absolutely necessary that they should be fixed in the positions herein shown for in some uses they may be reversed.

What I claim as my invention is:

1. In an extensible rod, the combination with a fixed support, of a plurality of brackets rigidly secured to said support, a plurality of rollers journaled in each of said brackets, metal lengths suitably joined and traveling on said rollers and forming track ways, a rod having hangers extending upwardly therefrom and rollers journaled in said hangers and traveling on said track ways, substantially as described.

2. In an extensible rod, the combination with a fixed support, of a plurality of brackets having plates extending outwardly therefrom in a parallel direction, one to the other, journal bearings extending inwardly from and supported by said plates, rollers mounted on said bearings, metal lengths suitably joined and forming channels and track ways supported by and traveling on said rollers, a rod having a plurality of hangers extending therefrom, journal bearings extending from said hangers, and a plurality of rollers journaled on said journal bearings and traveling on the said track ways, substantially as described.

3. In an extensible rod, the combination with a fixed support, of a plurality of brackets having the base thereof rigidly fastened to said fixed support and orifices arranged in pairs horizontally through their extending portions, journal bearings formed on pins secured in said orifices, rollers journaled on said bearings, channel bars securely joined and traveling between said rollers, a rod having hangers extending therefrom and orifices through said hangers, journal bearings formed on pins secured in said orifices, and a plurality of rollers journaled on said bearings and traveling on track ways formed on said channel bars, substantially as described.

4. In an extensible rod, the combination with a fixed support, of a plurality of brackets having their bases rigidly secured to said support and orifices through their extending portions, journal bearings formed on pins rigidly secured in said orifices, rollers journaled on said bearings, channel bars rigidly secured together at each end thereof and forming track ways on which said rollers roll and forming a second set of track ways, a rod having hangers extending therefrom, and an orifice through said hangers, journal bearings formed on pins secured in said orifices,

rollers journaled on said bearings and traveling on said second set of track ways, substantially as described.

5. In an extensible rod, the combination with a fixed support, of a plurality of brackets having their bases fixedly secured to said support and orifices through their extending portions, journal bearings secured in said orifices, rollers journaled on said bearings, channel bars, blocks spacing said channel bars, bolts and nuts thereon securing said channel bars at each end thereof and extending through said blocks said channel bars forming track ways on the inner and outer surfaces thereof limited by said blocks, and traveling on the aforesaid rollers, a rod having hangers extending therefrom, journal bearings supported from said hangers and rollers journaled on said bearings and traveling on one set of said track ways, substantially as described.

6. In an extensible rod, the combination with a fixed support, of a plurality of brackets having extending portions from the base thereof, journal bearings supported from said extending portions, channel bars supported by said brackets and forming track ways, rollers journaled on said bearings and spaced apart in pairs, a rod having hangers passing between said rollers journal bearings supported from said hangers at their outer ends and rollers mounted on said bearings and traveling on said track ways formed on said channel bars, substantially as described.

7. In an extensible rod, the combination with a fixed support, of a plurality of brackets rigidly secured to said support having plates extending therefrom in a parallel direction one to the other and holes in said plates in pairs in horizontal alinement, journal bearings formed on pins riveted in said holes and having an annular groove forming a ball recess, a plurality of rollers journaled on said bearings having an annular outwardly extending flange from their inner edges and an inward projection from their outer edges forming a grooved annular surface, balls in said recess and a washer to the inner side of said balls, channel bars having their channels opposing one another, blocks having reduced outer ends inserted in said channels and spacing said bars, bolt and nut fastenings extending through said blocks in said channel bars, said channel bars traveling between said rollers, a rod having hangers extending therefrom intermediate of its length, said hangers being rigid with said rod and having holes therethrough at their upper ends, journal bearings formed similarly to the aforesaid journal bearings and rigidly supported from said hangers in said holes, rollers similarly formed to the aforesaid rollers and journaled on said bearing and traveling on the tracks formed in the inner surfaces of said channel bars, substantially as described.

8. In a device of the class described, in combination, a fixed support, journal bearings supported from said fixed support, rollers journaled on said journal bearings, metal lengths in channel formation, forming two sets of track ways, one of said sets traveling on said rollers, a hanger rod supporting suitable journal bearings and rollers journaled on said bearings and traveling on the other set of track ways, substantially as described.

Signed at the city of Montreal, in the district of Montreal, in the Province of Quebec, in the Dominion of Canada, this 24th day of November, 1906.

JOHN ERVINE LLOYD BLACKMORE.

Witnesses:

C. F. NELSON,

D. W. COTTON.