

No. 719,764.

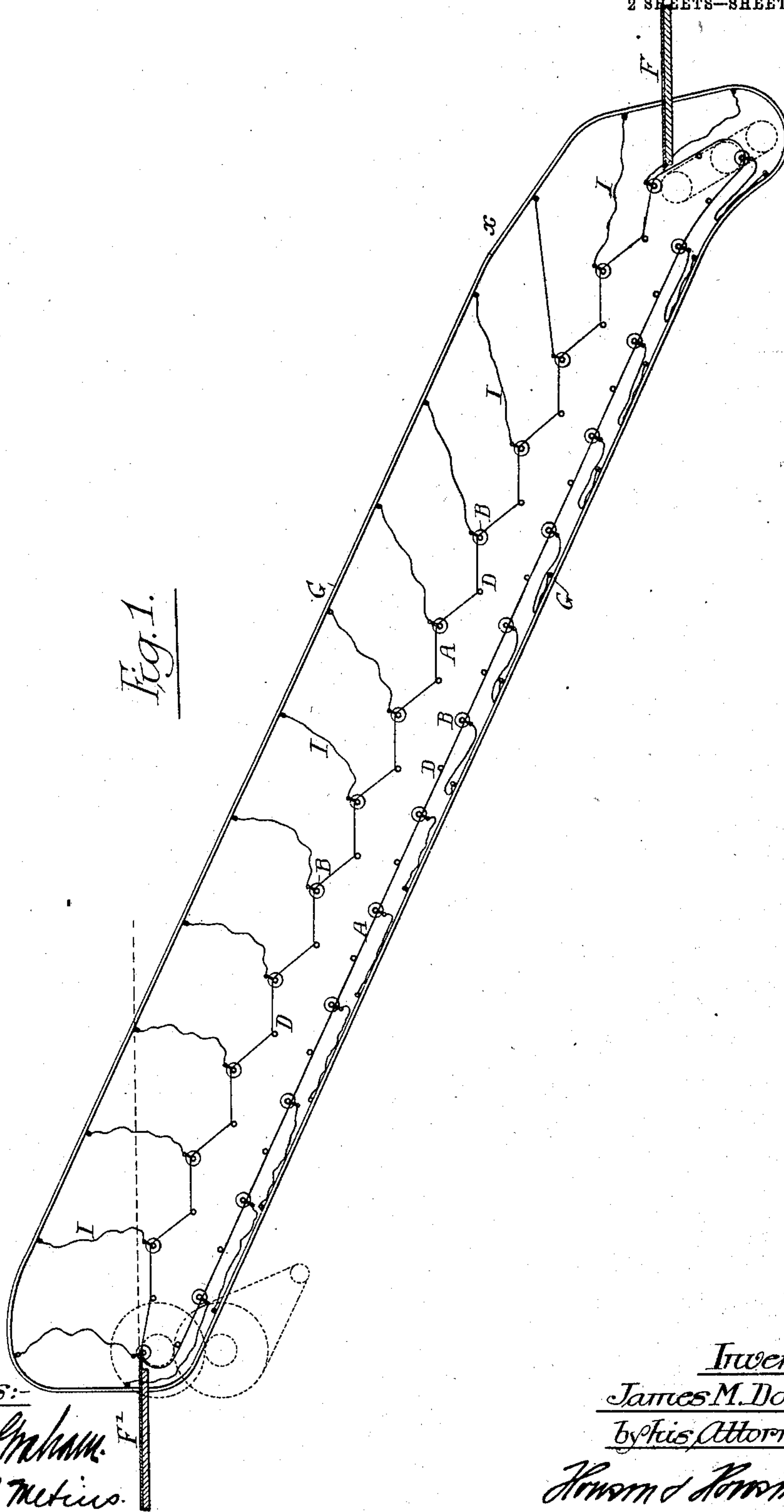
PATENTED FEB. 3, 1903.

J. M. DODGE.
HAND RAIL FOR MOVING STAIR LIFTS.

APPLICATION FILED OCT. 25, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

Frank L. Graham.
Herman E. Metcalf.

Inventor:

James M. Dodge,
by his Attorneys:

Harmon & Harmon

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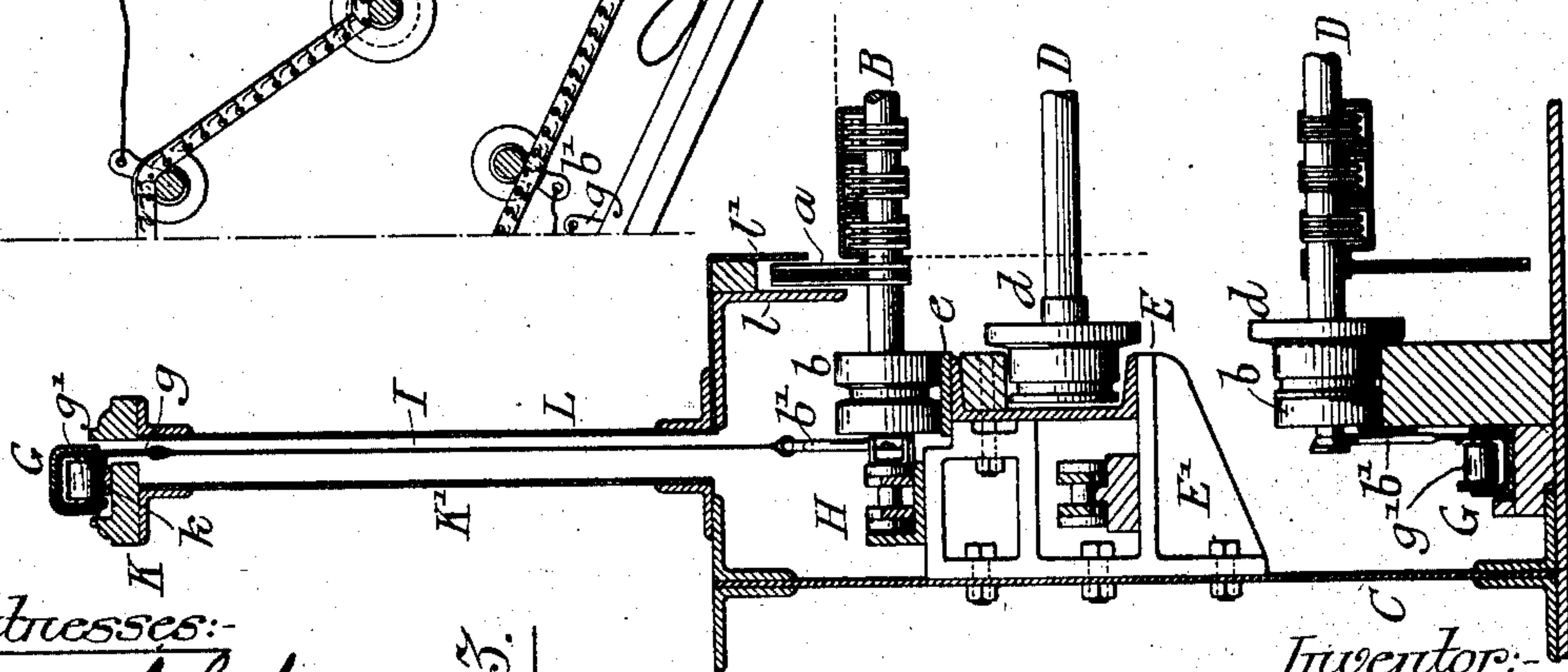
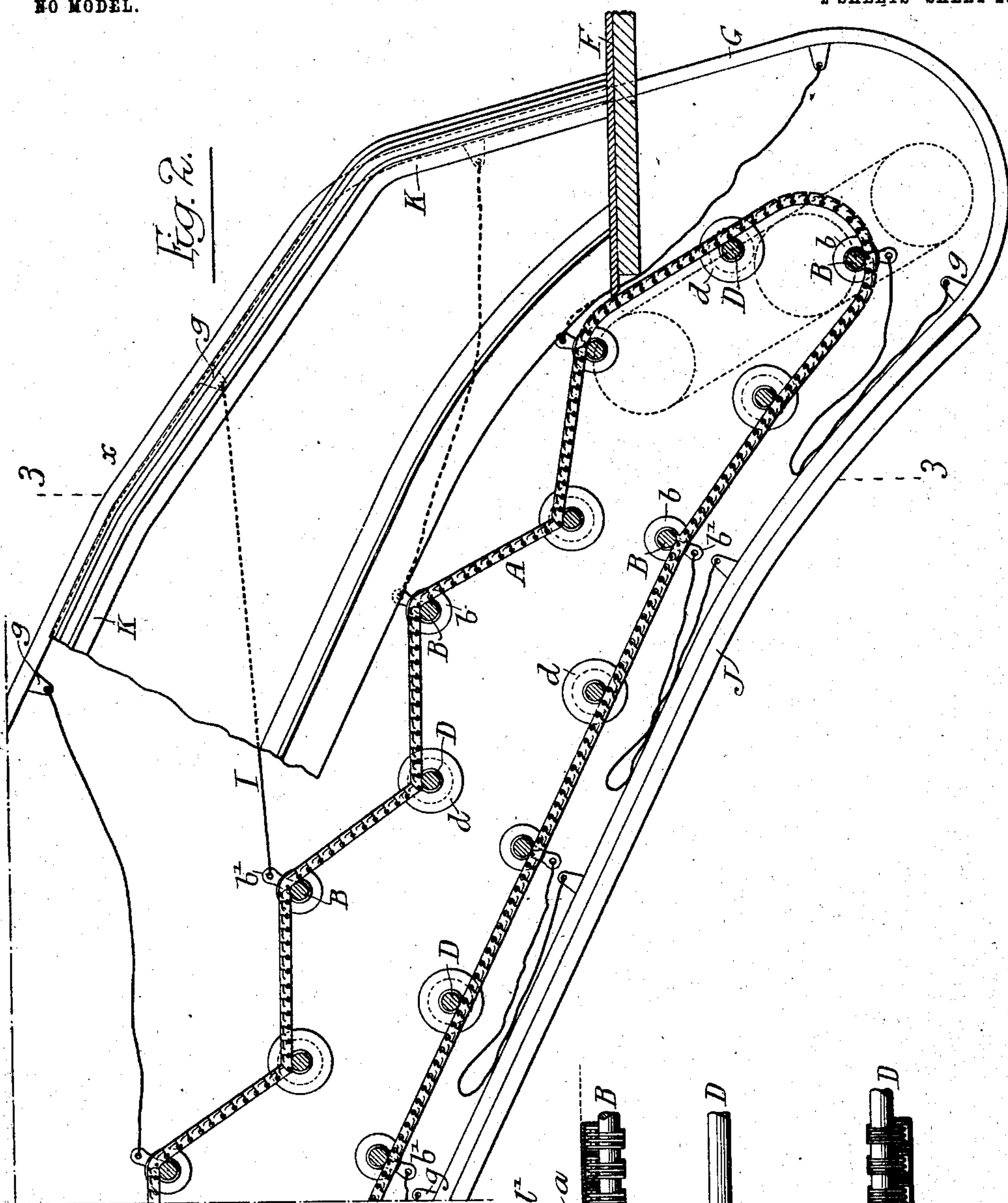
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2 SHEETS—SHEET 2.



Witnesses:-

Frank L. Mahan.

Norman E. Metcalf.

Fig. 3.

Inventor:-

James M. Dodge,

by his Attorneys, *Horn & Horn*

UNITED STATES PATENT OFFICE.

JAMES M. DODGE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
STAIR LIFT COMPANY, OF CAMDEN, NEW JERSEY, A CORPORATION OF
NEW JERSEY.

HAND-RAIL FOR MOVING STAIR-LIFTS.

SPECIFICATION forming part of Letters Patent No. 719,764, dated February 3, 1903.

Application filed October 25, 1902. Serial No. 128,777. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. DODGE, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Hand-Rails for Moving Stair-Lifts, of which the following is a specification.

My invention relates to certain improvements in moving stairways or inclined planes
10 in which there is a moving hand-rail or support within reach of the person being carried by the moving portion of the stair-lift.

The object of my invention is to move the hand-rail at the same speed as the moving
15 portion of the stair-lift; and this object I attain by connecting the hand-rail or support directly to the moving portion of the stair-lift, as illustrated in the accompanying drawings, in which—

20 Figure 1 is a diagrammatic side view illustrating my invention. Fig. 2 is an enlarged sectional view of the base portion of the stair-lift; and Fig. 3 is a transverse sectional view on the line 3 3, Fig. 2.

25 In the present instance I have shown my invention applied to a moving stair-lift in which an endless band is formed into treads and risers, as fully illustrated in the patent granted to me on the 12th day of December,
30 1899, No. 639,154; but it will be understood at the outset that my invention can be applied to other types of moving stairways or can be applied to moving inclined planes without departing from my invention.

35 A is an endless flexible band forming the treads and risers and alluded to hereinafter. The endless band is supported at intervals by cross-shafts B and D, which carry rollers *b* and *d*, respectively. The shafts D in this
40 instance do not support the band on the elevating run, but simply travel in ways E, formed in the present instance by a channel-bar, as shown clearly in Fig. 3, while the rollers *b* travel on the rail *e*, supported by the
45 channel-bar. The channel-bar E is supported in turn by a bracket E', attached to the I-beam C, forming the main support for the stairway. This construction may be modified without departing from my invention. The

shaft B is at the intersection of the outer 50 edge of the tread and the riser below it, while the shaft D is at the intersection of the inner edge of the tread and the riser above it.

F is the lower platform of the stairway, and F' is the upper platform of the stairway. 55 These platforms are so arranged that a person can step onto the stairway from the lower platform and readily step off at the upper platform.

It will be noticed that while the treads and 60 risers are formed on the elevating run of the conveyer the band on the return run is a simple straight band in the present instance.

The endless band A passes around suitable guideways on each end of the apparatus and 65 is driven in the present instance by means of drive-chains H at each side of the stairway. These chains travel on guides carried by the brackets E' and pass around suitable driving and guide rollers. (Shown by dotted lines in 70 Fig. 1.) The chains are coupled at intervals to the ends of the shafts B, as illustrated in Fig. 3. This construction is shown and claimed in an application for patent filed December 27, 1902, Serial No. 136,815.

75 G is an endless band forming a hand-rail. This band is driven at the same speed as the moving band A and is connected to it at intervals, as shown in the drawings. Flexible ropes or cords I are coupled to the hand-rail 80 band G at *g* and coupled to an arm *b'* on the shaft B.

I preferably attach a rope or cord I to the band A at each shaft B and connect it to the hand-rail band G. In the type shown only 85 one or two of the ropes or cords I are taut during the travel of the band. First one rope and then another takes the strain, so that the hand-rail band is driven from the stairway through the ropes I. These ropes are taut 90 near the lower end of the stairway in the present instance, as shown at *x*, Fig. 1, as it has been found that this connection is sufficient to drive the hand-rail or support at the same speed as the stair-lift. As soon as the 95 hand-rail band passes the point *x* the ropes slacken, and they are slack until they again reach this point on the return run. The slack

rope is taken care of in any suitable manner, and the band is guided on the return run by a rail J, and a guide K forms a support for the hand-rail band as it travels with the carrying portion of the stairway. This support K is connected by a plate K' to the I-beam C in the present instance; but it may be otherwise supported without departing from my invention.

10 I preferably make the grip portion of the band G U shape, as shown in Fig. 3, and provide a series of friction-rollers g' , which travel on the rail k on the guide K.

In order to protect the person carried by the moving stair-lift, I provide a shield L, which is suitably supported in front of the ropes or cords, and on the stair-lift are plates a , which extend upward between two flanges l' of the shield L, so as to make the joint 20 complete.

In some instances my invention may be applied to a moving sidewalk or a horizontal conveyer without departing from the invention; but it is especially applicable for use in connection with moving stairways having steps and risers or moving inclined planes.

I claim as my invention—

1. The combination in a moving stairway or plane, of the endless carrying-section, with 30 an endless hand-rail or support connected directly to the moving carrying-section, substantially as described.

2. The combination in a moving stairway or plane, of an endless carrying-section, means 35 for driving said section, and an endless hand-rail or support, with connections coupling the

hand-rail at intervals to the movable carrying-section, substantially as described.

3. The combination in a moving stairway or plane, of the carrying-section, means for 40 driving the carrying-section, an endless band forming a hand-rail or support, ropes connecting the hand-rail to the carrying-section, said ropes being so arranged that the major portion of the cords during the travel of the 45 hand-rail will be slack, substantially as described.

4. The combination in a moving stairway, of an endless band, means for flexing the band on the elevating run to form treads and risers, 50 shafts for supporting the band at the nosing of the treads, an endless hand-rail or support, ways for the said hand-rail, and connections extending from the shafts at the nosings of the stairway to the hand-rail, substantially 55 as described.

5. The combination in a moving stairway, of an endless carrying-band, means for flexing the band on the carrying run to form 60 steps and risers, an endless hand-rail or support connected directly to the moving portion of the stairway, a support for the hand-rail, and a shield inclosing the connecting mechanism between the hand-rail and the carrying-section, substantially as described. 65

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

JAMES M. DODGE.

Witnesses:

WILL. A. BARR,
JOS. H. KLEIN.