(No Model.) 3 Sheets—Sheet 1.

J. FRIBORG.

FIRE ESCAPE.

No. 346,540. Patented Aug. 3, 1886.

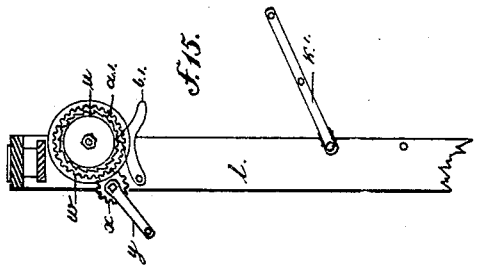

Fig. 15.

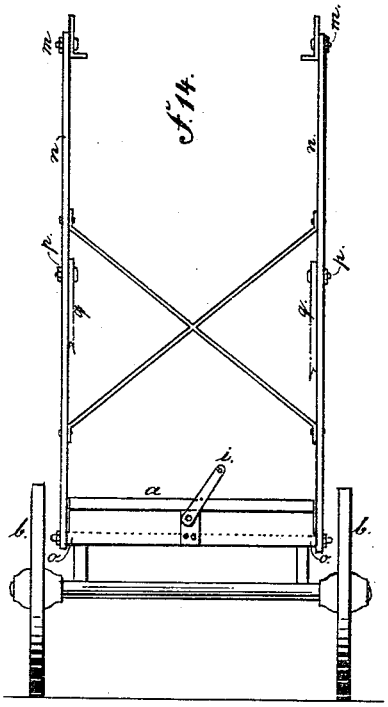

Fig. 14.

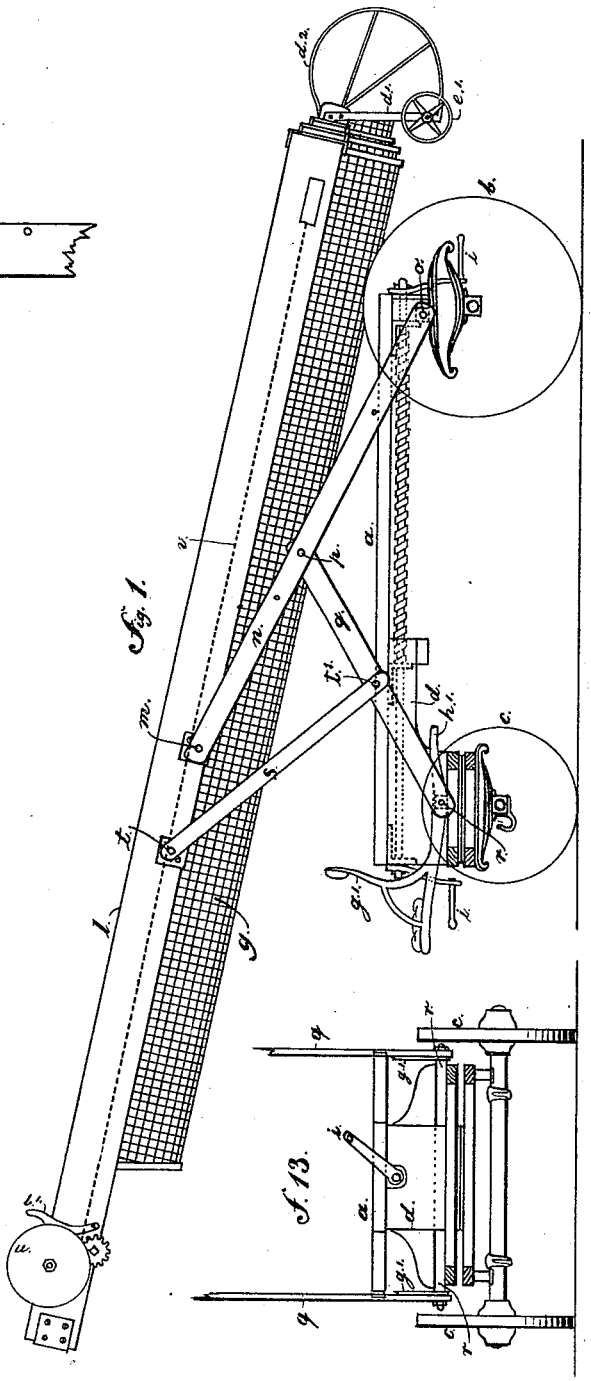

Fig. 1.

Fig. 13.

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(No Model.) 3 Sheets—Sheet 2.

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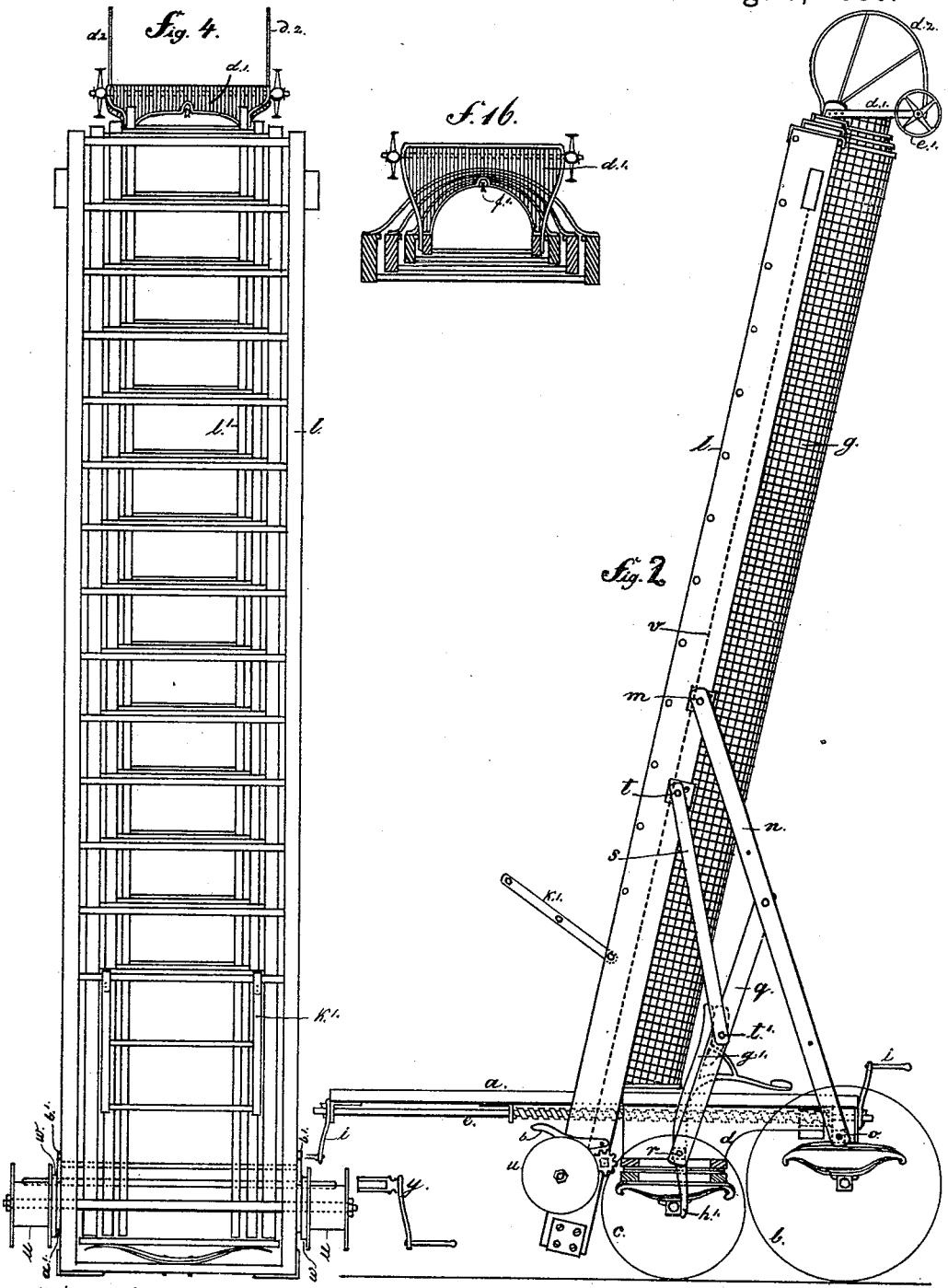
Fig. 4.

Fig. 16.

Fig. 2.



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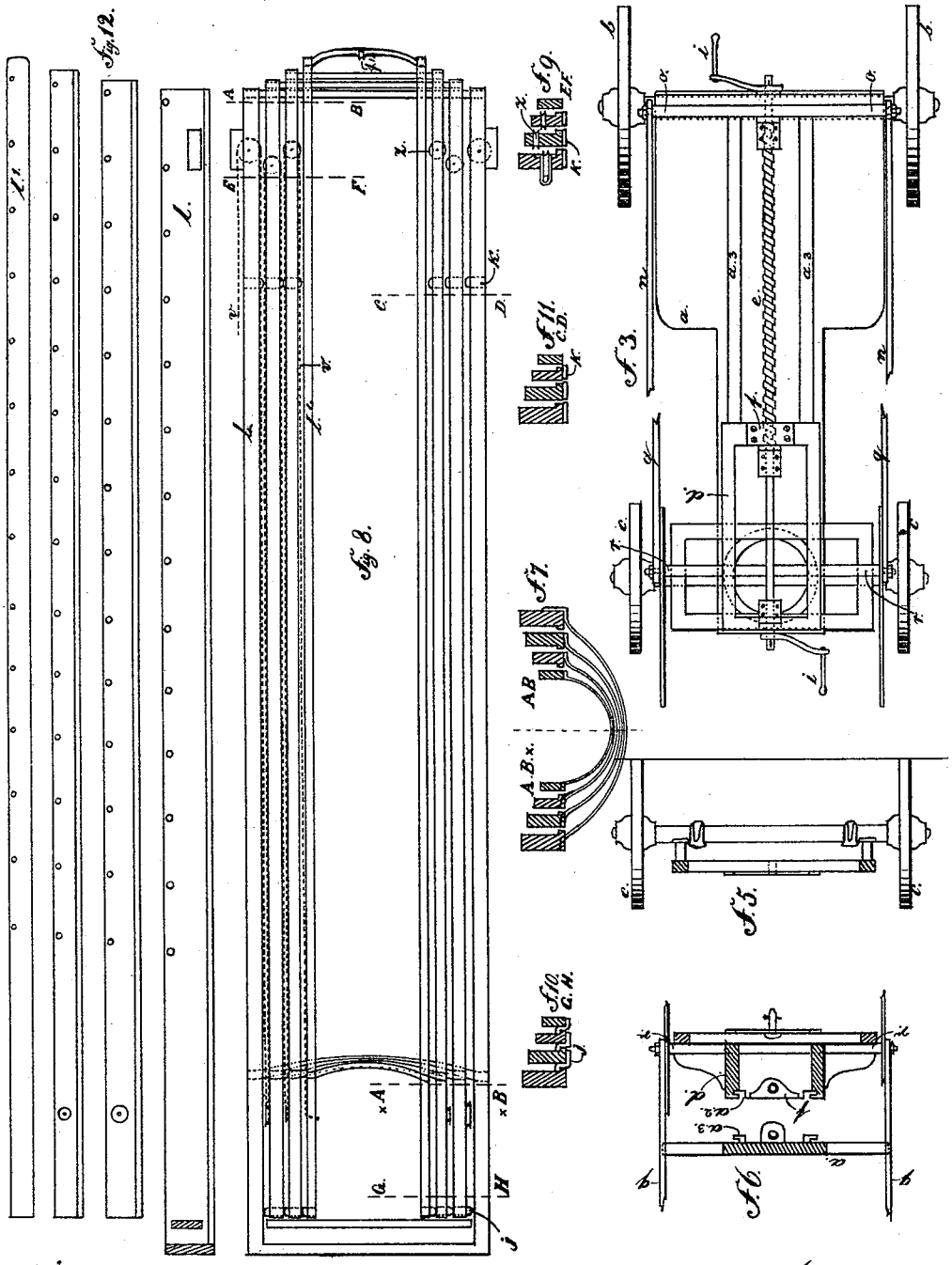

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UNITED STATES PATENT OFFICE.

JOHN FRIBORG, OF LONDON, ENGLAND.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 346,540, dated August 3, 1886.

Application filed February 17, 1885. Serial No. 156,179. (No model.) Patented in England February 26, 1884, No. 3,956; in France, December 9, 1884, No. 165,828; in Germany December 11, 1884, No. 32,398; in Belgium February 6, 1885, No. 67,778; in Italy, March 31, 1885, XIX, 18,012, XXXV, 402, and in Austria-Hungary July 9, 1885, No. 4,345 and No. 33,701.

To all whom it may concern:

Be it known that I, JOHN FRIBORG, a subject of the Queen of Great Britain, residing at London, England, have invented new and useful Improvements in Fire-Escapes, of which the following is a specification.

This invention relates to the construction of an improved fire-escape.

In carrying out my invention I provide a carriage with which I combine a telescopic ladder of the construction hereinafter described, and means for raising and extending the ladder in a simple and expeditious manner.

In order to enable my invention to be fully understood, I will describe the same by reference to the accompanying drawings, in which—

Figure 1 represents a side elevation of my improved fire-escape, the parts being in the position they occupy when traveling. Fig. 2 is a similar view, but showing the apparatus in its raised position ready to be extended. Fig. 3 is a plan of the carriage of the apparatus. Fig. 4 is a plan of the ladder. Figs. 5 to 16 are detached details of various parts of the apparatus.

Similar letters in all the figures represent similar parts.

The carriage of the apparatus, as shown in Figs. 1 and 2, is constructed of a platform, *a*, of suitable dimensions, and which serves for carrying the men and the gear. The platform is mounted on two pairs of wheels, *b b* and *c c*. The axle of the pair of hind wheels, *b b*, is fixed to the platform *a*, and the axle of the front pair of wheels, *c c*, is carried in a sliding bearing, *d*, shown in the detached sectional views at Figs. 5 and 6. The said sliding bearing is constructed with a groove, a^2, which receives a corresponding projection, a^3, forming a guide fixed to the under side of the platform *a*. A screw, *e*, and screw-nut *f* are provided, the nut being fixed to the sliding bearing *d* in such a manner that the turning of the screw *e* by means of a crank-handle, *i*, with which it is provided at each end of the platform *a*, or by other suitable means, will cause the sliding bearing *d*, and with it its pair of wheels *c*, to be moved toward or away from the other pair of wheels *b*, according to the direction in which the screw *e* is turned.

Figs. 13 and 14 are transverse sectional views of the carriage.

The improved ladder, which is clearly shown in Fig. 4, is made in lengths, each length being provided with a chute, *g*, Fig. 2, preferably constructed of wire-netting. The several lengths of the ladder are made of such dimensions that they may slide one within the other, telescopewise, as shown in Fig. 7, which represents a cross-section of the sides of the ladder, on the line A B of Fig. 8, which is a plan of the same. The sides of the ladders are provided with a rabbet, *h*, in which slide projecting pieces *j*, formed at each end of the lengths of the ladder. Such pieces *j*, when the ladder is lengthened, come against projections or stops shown at *k*, Fig. 9, which is a detached sectional view on the line C D of Fig. 8, the said stops serving to limit the outward play of the parts of the ladder.

Figs. 10 and 11 are cross-sections on lines E F and G H, respectively, of Fig. 8, and Fig. 12 is an elevation of the sides of the several lengths of the ladder.

To the lowest and largest length *l* of the ladder and chute, and near the center of each side thereof, are jointed at *m*, as shown in Figs. 1 and 2, one end of a pair of levers, *n*, the other ends of the two levers being jointed to an axle, *o*, provided above the axle of the larger wheels *b* of the carriage. To the centers of the said levers at *p* are jointed another pair of levers, *q*, the other ends thereof being jointed at *r* to an axle upon the sliding bearing *d*.

s is a stay, which is jointed to the length *l* of the ladder at *t* and near the center of the lever *q* at *t'*, which stay serves to bring the ladder into the required position when raising and lowering the same.

For extending the ladder, it is provided at the lower end of its lowest and largest length *l* with a pair of drums, *u*, as clearly shown at Fig. 4, and at Fig. 15, which shows a detached view of a portion of the said length of the ladder, round which drums are wound cords, chains, or their equivalents, *v*. On the drums *u* are fixed toothed wheels *w*, gearing with pinions *x*, which are operated by means of winch-handles *y*, Fig. 4. The said cords or chains *v*

pass over pulleys z, as shown in Figs. 8 and 12. The cords or chains v are in this manner connected with the several lengths of the ladder, so that the same can be easily and expeditiously extended by turning the handle y of the gearing. A ratchet, a', and pawl b', are provided for each drum to keep the ladder in its raised position. The upper end of the last length, l', of the ladder is provided with a platform, d', as shown in plan at Fig. 16, for the person in charge of the escape to stand upon and assist persons to be safely lowered down the chute, the said platform having rails d^2 at the sides thereof.

e' are wheels or rollers to enable the end of the ladder to slide against the walls of the building or the like.

When it is required to lower persons from the platform d', a rope is employed running over a pulley, f', Fig. 16, the travel of which rope can be regulated by any suitable means. When the person being lowered arrives at the bottom of the chute, the lower rungs of the ladder open outward, as shown at k' in Figs. 4 and 15, the said rungs being pivoted in the sides for that purpose.

When the escape is not in use, or is being moved from place to place, the ladder is in its closed position and lies horizontally, or nearly so, over the platform, as shown in Fig. 1.

To raise the ladder for use, the screw e is turned by its handle i, and the sliding bearing d being thereby moved forward, will operate the levers n and q and the stay s connected to the ladder, as described, and the ladder will thereby be raised into the required vertical or nearly vertical position, as shown in Fig. 2, and the lengths of the ladder may then be extended by the above-named gearing (shown in Figs. 4, 8, and 15) to the required height. To bring the parts back to their normal position, the pawl b' must be released from the ratchet-wheel a', and the gearing and screw are then turned in the opposite direction.

The bearing or fore carriage of the front wheels is arranged to turn horizontally on the body thereof in the ordinary manner, and in order to prevent this turning when the apparatus is brought to the place where it is required to raise the ladder the frame of the seat g' is extended backward on each side of the carriage, and is pivoted at r to the sliding bearing d, and also carries a tail-piece, h', which, by turning the seat g' upon its pivot r up over the platform a, as shown in Fig. 2, will be caused to bear against the axle of the front wheels and fix them in position.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is—

1. In a fire-escape, the combination, with a carriage having sliding bearings for one pair of wheels, of the described system of levers n q, arranged as set forth, and the stays s, for effecting the raising and lowering of the fire-ladder, substantially as hereinbefore described, and represented in the accompanying drawings.

2. In combination, a carriage having sliding bearings for one pair of wheels, a system of levers and stays for raising and lowering the fire-ladder, mechanism, substantially as described, for actuating the sliding bearings, a series of independent chutes, one for each length of ladder and arranged to slide one within the other, and mechanism for extending such lengths and chutes.

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Witnesses:
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T. W. PRICE.