No. 782,050. PATENTED FEB. 7, 1905.

D. D. D. PLUNKET.

TELESCOPIC CONVEYER.

APPLICATION FILED MAR. 3, 1904.

4 SHEETS—SHEET 1.

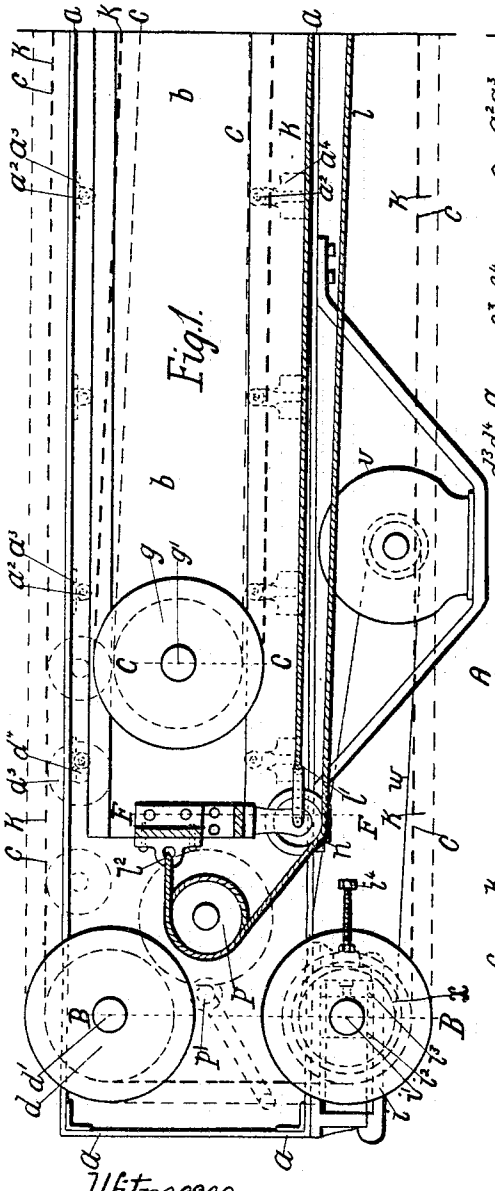


Fig. 1.

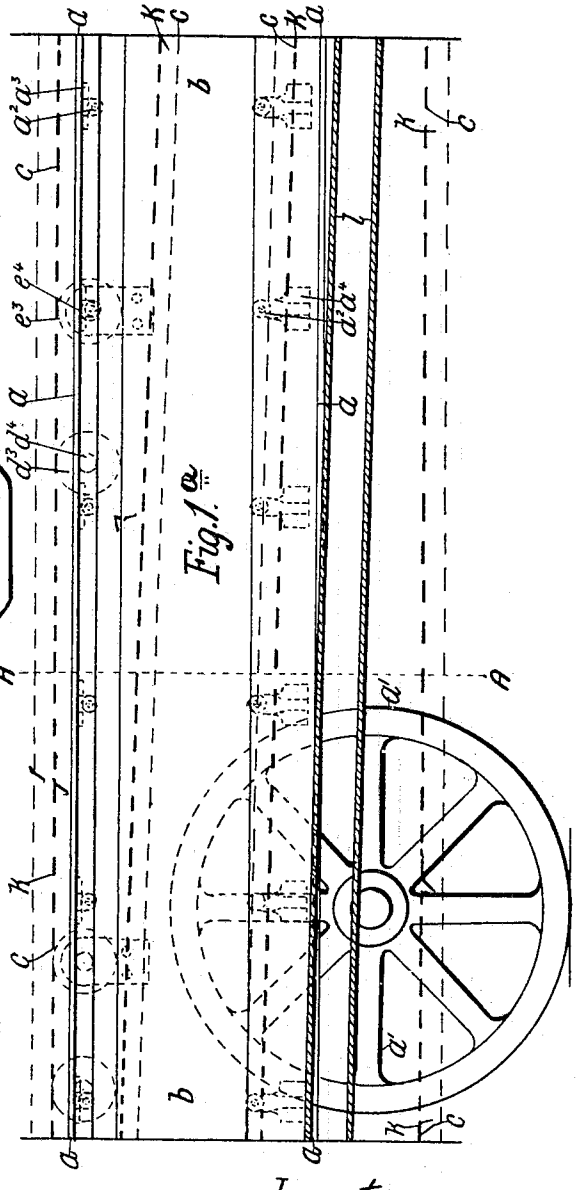


Fig. 1a.

Witnesses.

James L. Norris, Jr.

L. B. Kelly

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David D. D. Plunket

By James L. Norris.

Atty.

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4 SHEETS—SHEET 2.

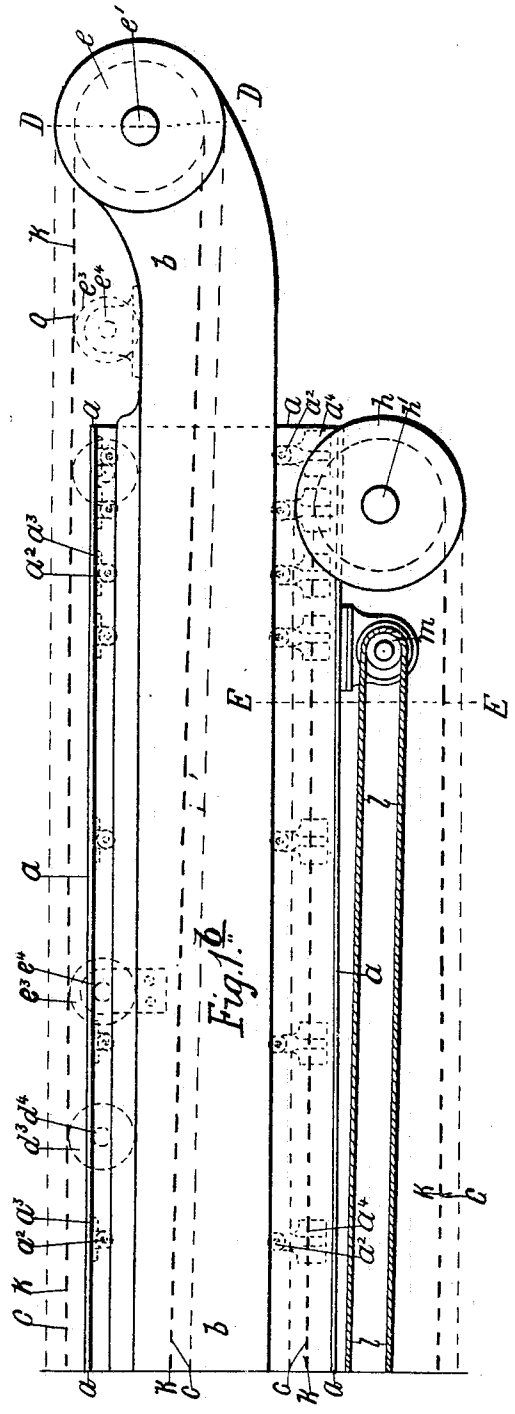


Fig. 1.

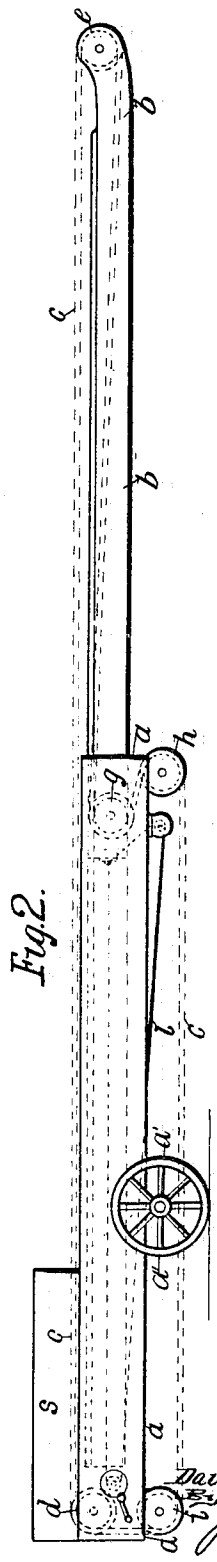


Fig. 2.

Witnesses.

James L. Norris, Jr.

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4 SHEETS—SHEET 3.

Fig. 3.

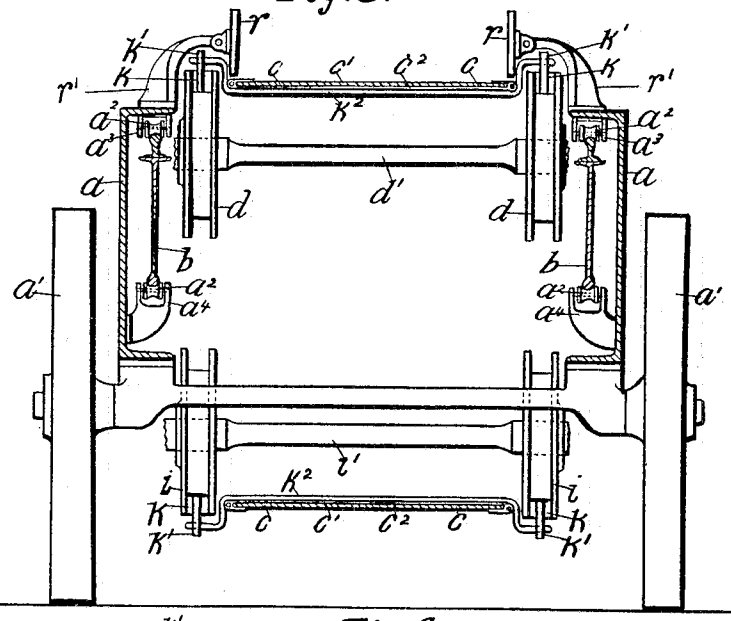


Fig. 4.

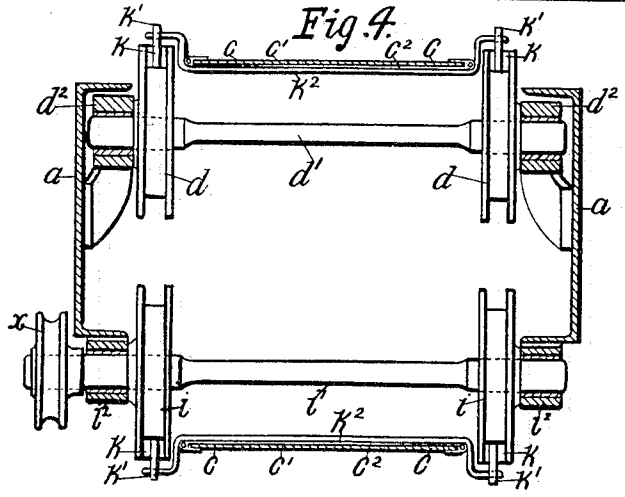
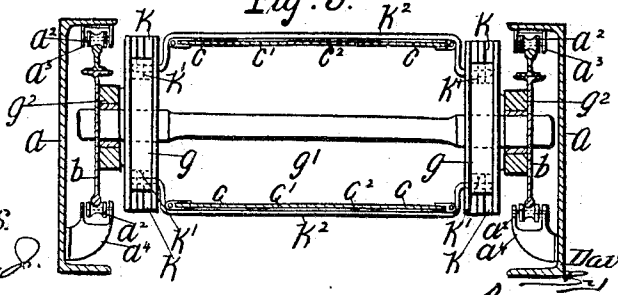


Fig. 5.



Witnesses.

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Attys.

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APPLICATION FILED MAR. 3, 1904.

4 SHEETS—SHEET 4.

Fig. 6.

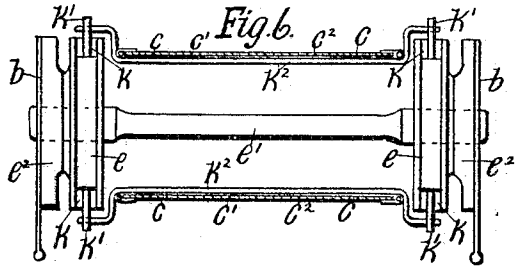


Fig. 7.

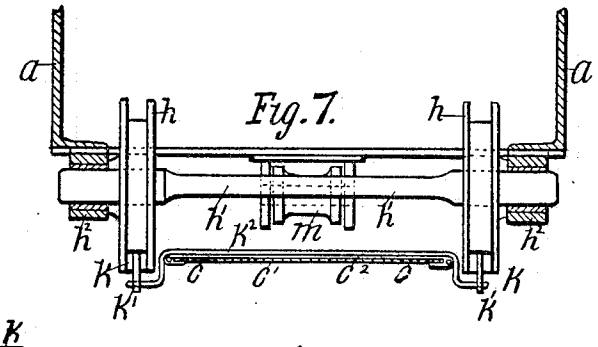


Fig. 9.

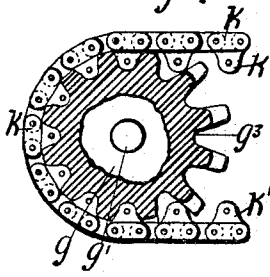


Fig. 8.

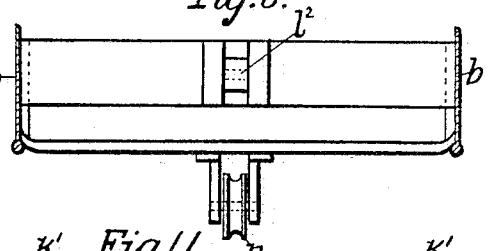


Fig. 10.

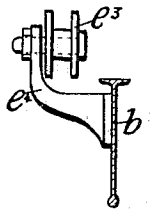


Fig. 14.

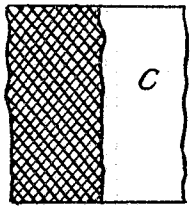


Fig. 11.

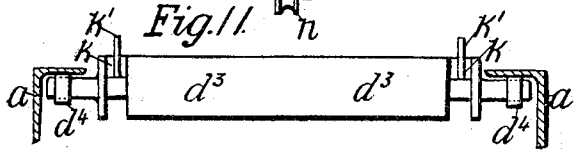


Fig. 12.

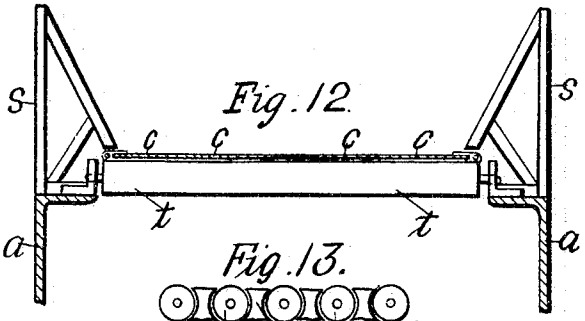


Fig. 13.

Witnesses.

James L. Norris, Jr.

Inventor.

David D. D. Plunket

By James L. Norris

Atty.

No. 782,050. Patented February 7, 1905.

UNITED STATES PATENT OFFICE.

DAVID D. D. PLUNKET, OF BITTERNE, ENGLAND.

TELESCOPIC CONVEYER.

SPECIFICATION forming part of Letters Patent No. 782,050, dated February 7, 1905.

Application filed March 3, 1904. Serial No. 196,439.

To all whom it may concern:

Be it known that I, DAVID DARLEY DONNYBROOK PLUNKET, representative of the Powell Duffryn Steamboat Co., Ltd., a subject of the King of Great Britain, residing at St. Rumons, Bitterne, in the county of Southampton, England, have invented certain new and useful Improvements in Telescopic Conveyers, of which the following is a specification.

My invention has reference to improvements in portable endless-band conveyers, and is particularly intended for use under conditions where a conveyer can be moved about from place to place—for example, for coaling ships or moving cargo or goods generally from or to a ship, railway-wagon, wharf, or other place or condition, and has for its object to provide a simple and convenient apparatus that can be easily moved from place to place and extended so as to be adjustable in length to accommodate different conditions of length or distance between receiving and discharging points.

The conveyer under my invention consists of a frame movable on wheels and provided with an extendible or telescopic frame whereby the length of the conveyer can be increased or reduced to suit circumstances. These frames carry mounted in suitable bearings chain-wheels or rollers arranged to carry an endless band which is so led or passed over the chain-wheels or rollers as to be extendible in tension with the extendible or telescopic frame at any extended length of the apparatus. I attain this condition of continuous tension of the extendible band by mounting the carrying-wheels or rollers as follows: At the back end of the apparatus I provide chain-wheels or a roller, and at the extreme outer end of the movable or extendible frame I provide chain-wheels or a roller, and at the inner end of the extendible frame I provide chain-wheels or a roller, and at the under side of the outer end of the carrying-frame I provide chain-wheels or a roller, and at the under side of the back end of the carrying-frame I provide chain-wheels or a roller. I thus have five sets of chain-wheels or five rollers, over which an endless band is passed—namely, starting from the back end of the apparatus the band is led to, say, the roller at the end of the extendible frame. It is then led back and passed round the roller at the inner end of the extendible frame, and is then led forward and round the roller at the under outer end of the carrying-frame, and is then led back and round the roller at the back or under inner end of the carrying-frame, and is then led to join itself at the point from which it started. Thus the inner roller of the extendible frame carries the bight or loop of the band, which allows for its extension or telescopic action, and the band is always in tension. Thus the length of band required by the telescopic extension of the extendible frame is provided for by the outer longitudinal travel of the roller on the inner end of such frame and is again taken up by the inner travel of such frame.

The full construction and details of a portable endless-band conveyer according to my invention is set forth in the accompanying drawings, which are marked with letters of reference, like letters denoting like or corresponding parts throughout the various views and which correspond with those used in the following explanation.

Figures 1, 1^a, and 1^b when taken together illustrate a longitudinal elevation of the portable endless-band conveyer, taken in section through the center of the apparatus, showing the conveyer in a contracted condition. Fig 2 is a longitudinal elevation of the conveyer apparatus, shown in an extended condition. Fig. 3 is a cross-section of the apparatus, taken at A A, Fig. 1^a. Fig. 4 is a cross-section of the apparatus, taken at B B, Fig. 1. Fig. 5 is a cross-section of the apparatus, taken at C C, Fig. 1. Fig. 6 is a cross-section of the apparatus, taken at D D, Fig. 1^b. Fig. 7 is a cross-section of the apparatus, taken at E E, Fig. 1^b. Fig. 8 is a cross-section of the extending frame, taken at F F, Fig. 1. Fig. 9 is a sectional elevation of the back or inner wheels of the extending frame, showing the band-carrying chain. Fig. 10 is an elevation showing the brackets attached to the extending frame for carrying the chain-

wheels. Fig. 11 is an end elevation showing the rollers for supporting the endless band. Fig. 12 is an end elevation showing the receiving-hopper and rollers at the inner end of the conveyer. Fig. 13 shows in side view the position of the rollers shown in Fig. 12. Fig. 14 is a detail view of the band, showing the construction thereof.

The invention as illustrated in the drawings has been chiefly worked out in connection with endless chains and chain-wheels, the endless conveying band being supported by carriers or stays connected on each side to the endless chains; but plain rollers and a band may be used and can be substituted, if desired.

With reference to the drawings, a designates the main frame, which comprises two members securely stayed together in a vertically-parallel position and mounted on wheels a', so as to be movable from one place to another. b denotes the extendible or telescopic frame, which also comprises two members securely stayed together and so adapted that its members will slide out and in on the members of the frame a, on which they rest, and are guided by antifriction-rollers a^2, carried by brackets a^3 and a^4, provided at the top and bottom of the side members of the frame a, respectively. The frame b is thus adapted to slide out and in on the frame a, so that the length of the conveyer can be increased or reduced to suit circumstances.

The frames a and b carry chain-wheels or rollers arranged to carry an endless band c, as follows, namely: Two chain-wheels d are mounted on a shaft d', running in bearings d^2 at the back ends of the side members of the frame a, and two chain-wheels e are mounted on a shaft e', running in bearings e^2 at the extreme outer ends of the side members of the extendible or telescopic frame b. On the inner ends of the members of the frame b I provide two chain-wheels g, mounted on a shaft g', running in bearings g^2, and at the under outer ends of the members of the frame a I provide chain-wheels h, mounted on a shaft h', running in bearings h^2, and at the under side of the back end of the frame a I provide chain-wheels i, mounted on a shaft i', running in bearings i^2. The wheels i are driving sprocket-wheels. The endless chains k, which carry the endless band c, are led (starting from the wheels d on the frame a the endless chains k, together with the endless band c, which they carry) onto and over the wheels e on the frame b and then back to and in a bight or loop over the wheels g, from whence they are led onto and over the wheels h, and then back to and under the wheels i on the frame a and then led to join itself at the point from which it started. In consequence of the bight or loop of the chains and band passing over the wheels g, which are carried on and telescope with the frame b, the chains and band are always in tension, no matter what length the extendible frame b may be out from the frame a. The bearings i^2 of the sprocket-wheels i are carried in guides i^3, one on each member of the frame a, and are adjustable by screwed spindles i^4, so that the position of the wheels i can be adjusted to put any desired tension on the chains k and band c.

I construct the endless chains k of the usual link form; but on the inner or connecting links I provide a projection k'. These projections serve to carry bars k^2, which connect the chains k from side to side of the apparatus. The bars k^2 also serve as supports to the endless band c, which is composed of chain mail or woven wire c', under which is a band c^2, of canvas or other suitable material. As the bight or loop of the chains k and band c pass round the wheels g in a reverse direction, I form the wheels g with recesses g^3, as shown in section in Fig. 9 of the drawings. To support the chains k between the wheels d and e when carrying a load, I provide supporting wheels or rollers e^3, carried by and running in bearings e^4, attached to the telescopic frame b, and wheels or rollers d^3, carried by and running in bearings d^4, attached to the frame a. Where the wheels or rollers e^3 would foul the wheels or rollers d^3 when telescoped, I make the wheels or rollers d^3 removable.

For the purpose of working the telescopic frame out and in I provide a rope l, which is attached at l' to the inner end of the frame b and led out and over a pulley m, fixed to the outer end of the frame a, and then back under a pulley n on the frame b and from thence round the barrel p of a hand-winch p' and then attached to the frame b at l^2.

The back end of the frame a may be provided with side boards r, carried on brackets r', or with a hopper s to receive the material to be conveyed. Rollers t, separated by blocks a^5, may also be provided to support the band when the material is thrown on. These rollers t may be carried by the hopper s, which can be adjustable on the frame a to receive the material. When an ordinary plain endless band is used, rollers are used on the shafts d', e', g', h', and i'.

The conveyer-band may be driven by any sutiable motor u, such as an electric motor, through a belt w and pulley x or by other driving means connected to the pulley x.

In the case of the employment of the conveyer for an approximal perpendicular hoist I provide division-plates to divide the band into spaces, so that the material will not fall back.

In use the apparatus can be wheeled to the required place and the back or receiving end adjusted to, say, the discharge part of a railway truck or wagon and the extendible end adjusted to the receiving opening in a ship,

suitable struts or supports being used, if required, or a rope or sling support may be employed from the mast or other part of the ship attached to the extended end of the apparatus.

I am aware that prior to my invention extendible frames have been used in elevating apparatus; also that extendible elevators have been constructed, with the elevator-band in a bight or loop carried by sliding weighted pulleys or rollers. I am also aware that portable non-extendible freight-conveyers on wheels have been used. I therefore do not claim extendible portable conveyers broadly; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. A portable extendible conveyer comprising a main frame, an extendible or telescopic frame mounted and free to telescope on said main frame, an endless conveyer band or belt mounted on said frames carried by endless chains and chain-wheels or by rollers placed as described so as to keep the endless band in tension, wheels or rollers on the main frame and the telescopic frame for supporting the endless chains or band on the conveyer and when the conveyer is extended, a winch-gear and endless rope for extending and contracting the telescopic frame, a hopper on said main frame for feeding, and rollers for receiving the first weight of the material on the band, and means for actuating the endless band, as described.

2. The combination, in conveyers, of a main frame, an extendible telescopic frame mounted and free to telescope on said main frame, chain-wheels carried on said frames, endless chains leading round said chain-wheels, bars or stays laterally connecting said endless chains, an endless band armored by a belt of chain-mail and supported by said lateral bars between said endless chains and adapted to travel round with, and in the path of, said endless chains, secondary wheels or rollers on said conveyer for supporting said endless band, a winch and endless rope for extending and contracting said conveyer, and means for actuating said endless band or belt as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

DAVID D. D. PLUNKET.

Witnesses:
FREDERICK J. CHEESBROUGH,
FRANK JOHNSON.