No. 882,795. PATENTED MAR. 24, 1908.

J. T. H. PAUL.

CONVEYER.

APPLICATION FILED DEC. 6, 1907.

3 SHEETS—SHEET 1.

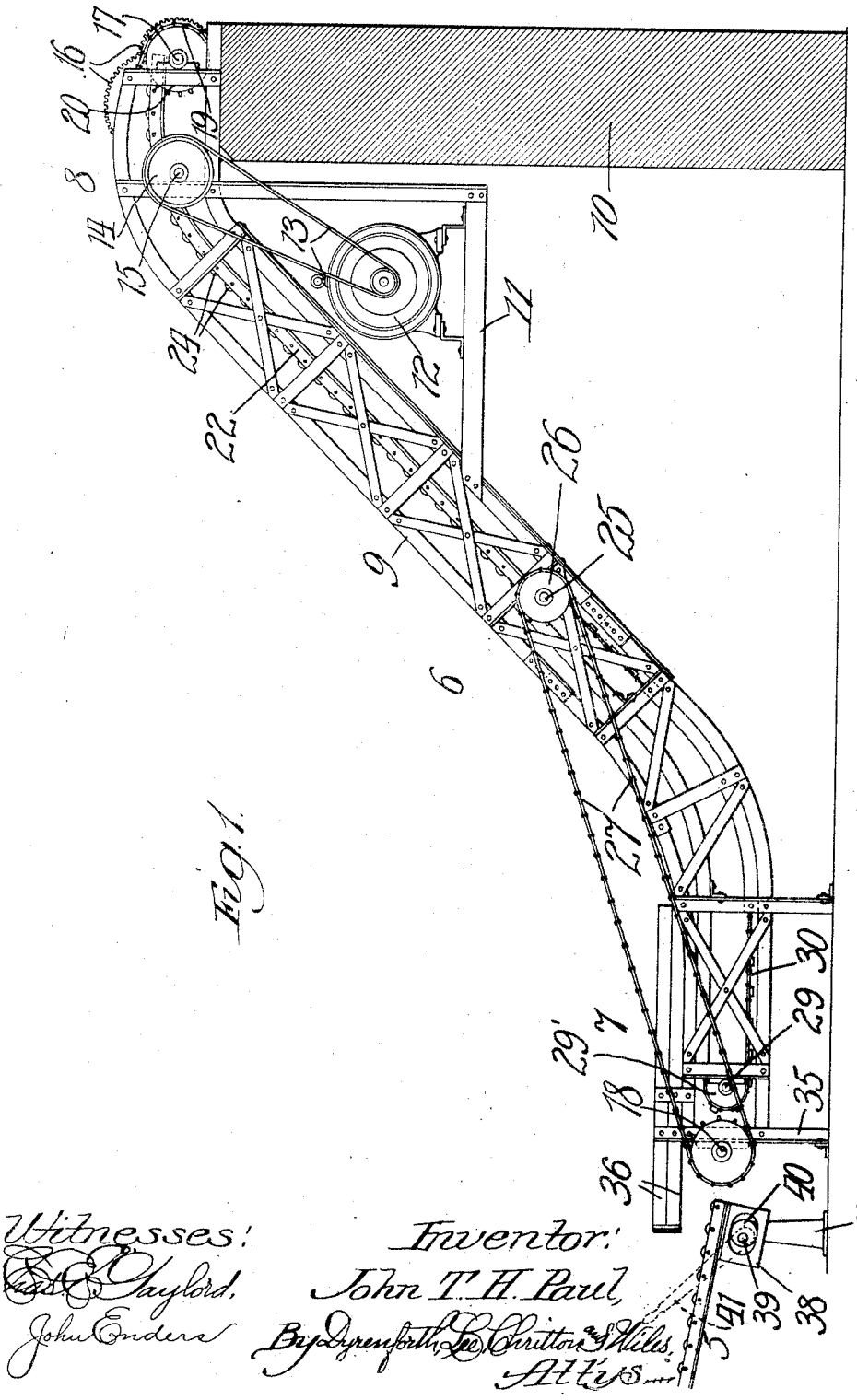


FIG. 1.

Witnesses:
Chas. E. Taylord.
John Enders

Inventor:
John T. H. Paul,
By Dyrenforth, Lee, Chritton & Wells.
Attys.

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3 SHEETS—SHEET 2.

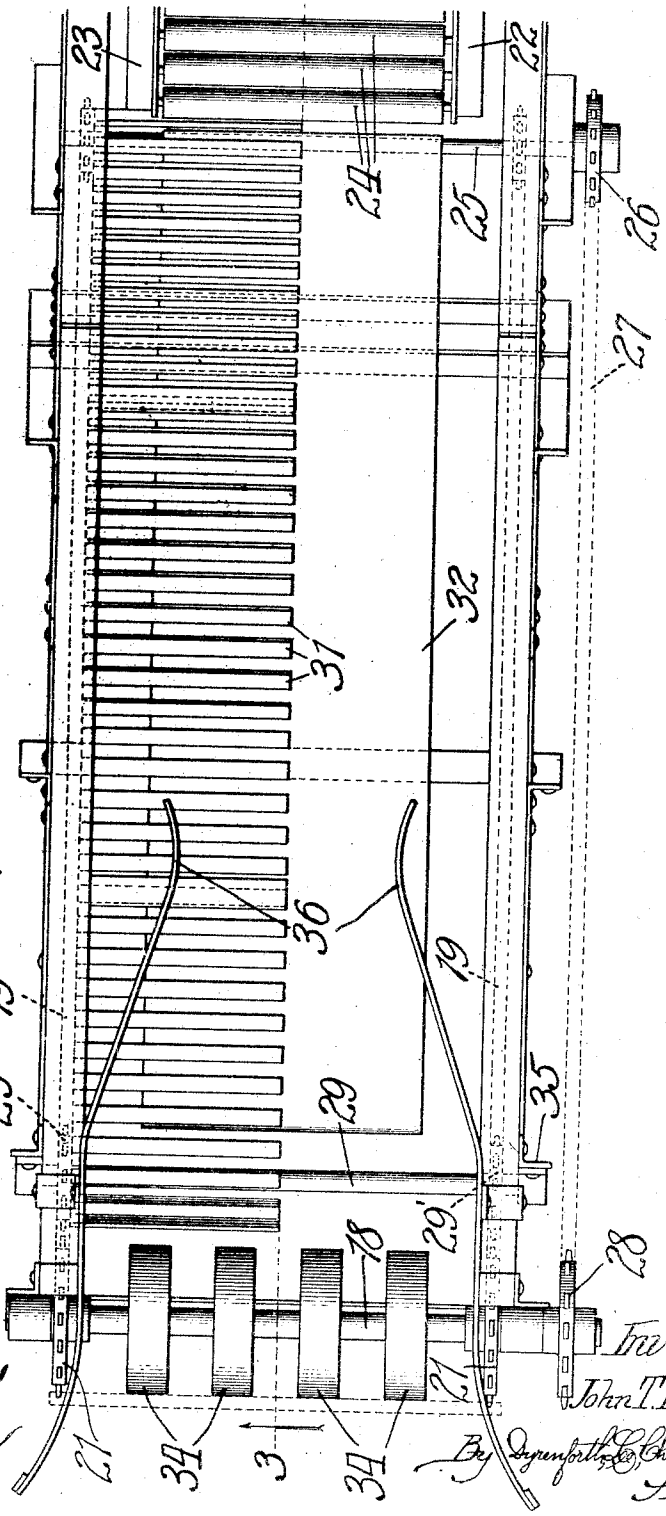


Fig. 2.

Witnesses:
Ed. E. Gaylord,
John Enders.

Inventor:
John T. H. Paul,
By Dyrenforth, Christy & Wills
Attys.

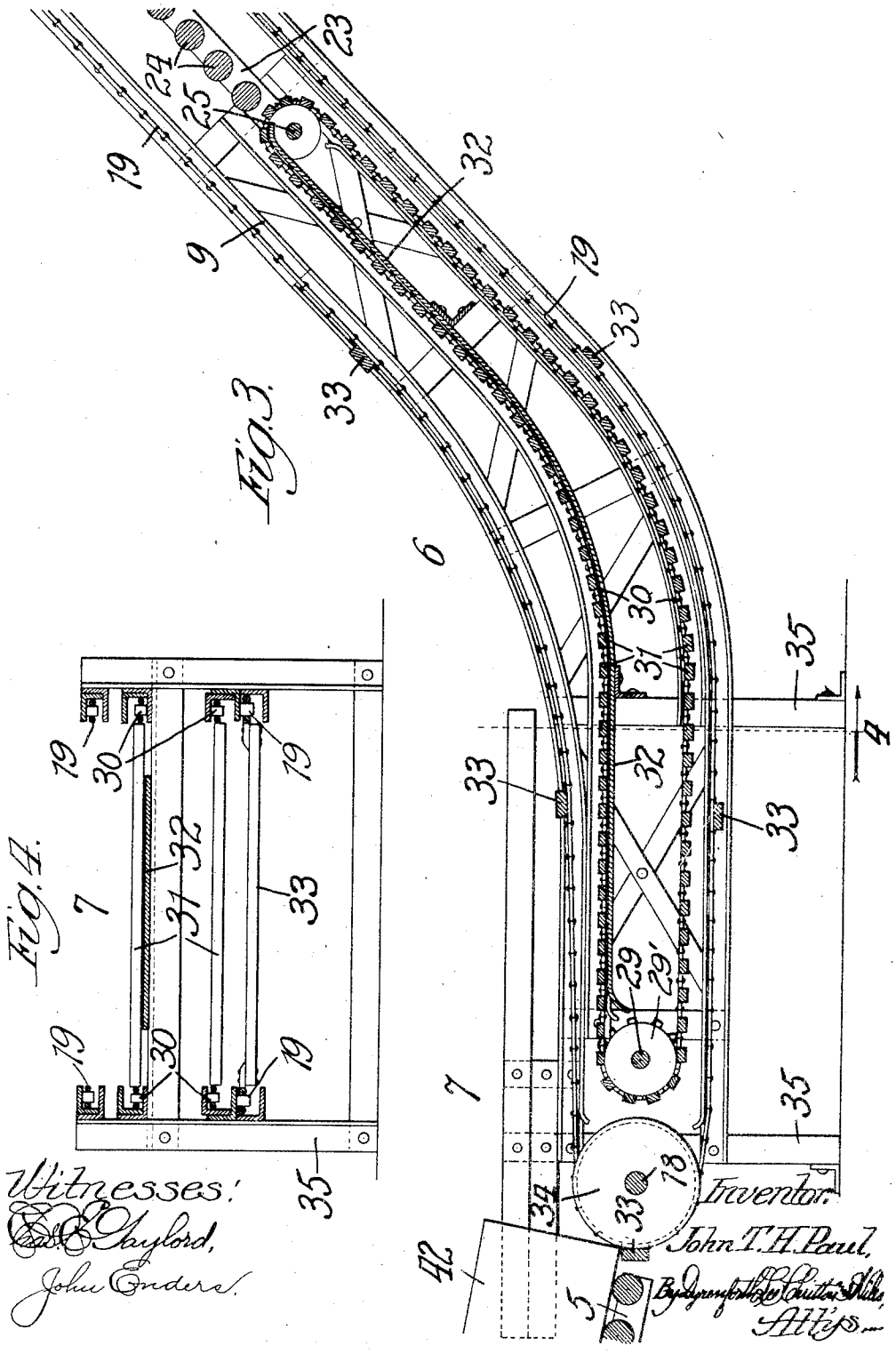
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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

JOHN T. H. PAUL, OF CHICAGO, ILLINOIS, ASSIGNOR TO E. GOLDMAN & CO., INC., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

CONVEYER.

No. 882,795. Specification of Letters Patent. Patented March 24, 1908.

Application filed December 6, 1907. Serial No. 405,319.

To all whom it may concern:

Be it known that I, JOHN T. H. PAUL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Conveyers, of which the following is a specification.

My invention relates, particularly, to improvements in those parts of a conveyer which serve for transporting packages from a lower to a higher plane, usually in a building, the generally-stated construction of such a conveyer involving a downwardly-inclined lower section delivering to the lower horizontal end of an upwardly-inclined section terminating at its upper end in a horizontal portion whence the delivery of the packages takes place to a section of the conveyer on an upper floor or plane.

In the accompanying drawings, Figure 1 illustrates my improved construction of conveyer by a broken view in side elevation; Fig. 2 is an enlarged broken plan view of the inclined intermediate section, with one-half of the traveling slat-apron removed to avoid obstructing details which should be shown; Fig. 3, a section taken at the line 3, on Fig. 2, and viewed in the direction of the arrow, and Fig. 4, a section taken at the line 4, on Fig. 3, and viewed in the direction of the arrow.

Interposed, as usual, between a downwardly-inclined lower delivery-section 5 and the ordinary upper receiving section (not shown) of the conveyer, is the inclined section 6, involving an inclined portion terminating at its lower end in a horizontal portion 7 to meet the section 5, and at its upper end in a horizontal portion 8 to meet the upper section, referred to, of the conveyer. The frame 9 of the intermediate section, which describes a curve, as shown, at its junction with the lower horizontal portion, may involve any suitable or usual construction, being commonly composed of upper and lower longitudinally extending angle-bars properly braced and tied together, the longitudinal members affording, in one way or another, confining-guides for the endless traveling chains carrying the package-propelling flights, as hereinafter described.

Adjacent to a wall 10, or other suitable support for the upper end 8 of the inclined section 6 is rigidly suspended from the frame 9 a platform 11 carrying a motor 12, conventionally represented as an electric motor. The motor has an endless-belt connection 13 with a pulley 14 on one end of a drive-shaft 15, journaled in the horizontal portion 8 and connected at its opposite end by suitable gearing, partially shown in Fig. 1 at 16, with the sprocket-carrying shaft 17 journaled on the end of the part 8 for driving that shaft and also a similar shaft 18 journaled at the end of the part 7, through the medium of endless chains 19 (shown dotted in Fig. 2) connecting these two shafts at sprockets 20 and 21 respectively on their opposite ends, these chains extending confinedly along the upper and lower side-members of the frame. In a pair of angle-bars 22 and 23 supported to extend lengthwise of the frame 9 between its sides and from the end of the portion 8 short of the curved portion of the section 9, are journaled rollers 24 to afford an anti-friction way, or roller-portion of the section 6, for packages. At the lower end of this way is journaled in the frame 9 a shaft 25 carrying on one end a sprocket 26 having an endless-chain connection 27 with a similar sprocket 28 on the adjacent end of the shaft 18. Adjacent to the shaft 18 is journaled in the frame 9 a shaft 29 carrying on its ends similar sprockets 29^1 which are connected with sprockets on the shaft 25 by endless chains 30 guided, like the chains 19, in channel-irons, as represented in Fig. 4, the chains 30 being connected at intervals by parallel slats 31 to form an endless traveling apron, which is reinforced against sagging by a platform 32, preferably of sheet-metal of the width of the aforesaid roller-way, and rigidly supported between the side members to conform to the shape of the section 6 and to extend between said way and the sprockets 29 beneath the upper section of the traveling apron. At suitable distances apart—say of four feet, more or less,—the chains 19 carry flights 33 for engaging the packages to be conveyed, as hereinafter described.

At intervals along the shaft 18 are secured thereon to rotate with it, similar wheels 34, which may be considered sections of a drum; and on opposite sides of the upper part of the framework 35, which supports the section 6 at its end-portion 7, are secured similar spring-arms 36, converging toward their forward free ends, be-

ing provided for the usual purpose of centering the packages in their movement upon the section 6.

The conveyer-section 5 is supported at its end adjacent to the wheels 34 to adapt it to be vertically adjusted on standards 37, means for effecting the adjustment being conventionally illustrated in Fig. 1 as slotted heads 38 depending from the end of the conveyer-section 5, with a shaft 39 journaled at its ends in the standards to pass through the slots in the heads, in which it carries eccentrics 40 to engage the heads, the shaft being provided upon one end with an operating handle 41.

With the motor 12 in action, the flight-chains 19 and the apron formed with the slats 32 are continuously driven. The advance-package being conveyed (one form of which is indicated at 42 in Fig. 3, though my improved device is adapted for conveying any of various forms of packages) on reaching the delivery-end of the conveyer-section 5, abuts against and is arrested by the wheels 34 until encountered by a flight 33. The first flight thus encountering the package in the travel of the chains 19 lifts its forward end over the wheels and clears that end. The frictional contact of the forward end of the package with the wheels 34 it thus surmounts causes their rotation to carry the package toward the apron; and when the next succeeding flight encounters the rear end of the package it pushes the latter, advancing it upon the apron, the speed of travel of which is the same as that of the flight-chains 19. Thus when a package becomes imposed upon the traveling-apron, while it is propelled by the pushing action of the flight it is carried by the apron, owing to the movement of the latter, without friction, as would ensue, were the apron stationary, to the detriment of the package. The flight sustains the package against backward slipping while it is riding up the inclined portion of the traveling apron and after it clears the latter to continue its progress over the rollers 24 to be delivered to the upper section of the conveyer to which the section 6 leads, as aforesaid.

An important feature of my improvement consists in the provision of the arresting members 34, particularly when the adjacent end of the conveyer section 5 is rendered vertically adjustable to coöperate with them, since by the provision of the arresting-members the packages are properly spaced apart on the section 6 and are smoothly transferred thereto from the section 5; while the adjustability of the last-named section adapts it to be raised to such a height with reference to the transfer-members 34 as to insure their transferring-action upon smaller packages and prevent the latter from being turned backward toward the sections 5 by engagement of a flight with their free ends. As will be apparent, the arresting function of the wheels 34 prevents more than one package at a time being introduced between flights upon the section 6. This section 6, which is essentially an elevator, though shown inclined, would, if vertical, be within my invention.

What I claim as new and desire to secure by Letters Patent is—

1. In a conveyer, the combination with a lower delivery-section, of a hoisting-section extending from the delivery-end of said delivery-section, traveling flight-carrying means on said hoisting section, and a package-arresting transfer-member interposed between said sections and coöperating with said flight-carrying means, for the purpose set forth.

2. In a conveyer, a rotary shaft carrying at intervals wheels and interposed between the adjacent ends of the intermediate elevator section of the conveyer and its lower delivery section, and traveling flight-carrying means coöperating with said wheels, for the purpose set forth.

3. In a conveyer, the combination with a lower delivery-section, of a hoisting section extending from the delivery-end of said delivery-section, traveling flight-carrying means and an endless traveling apron on said hoisting section, and a package-arresting member interposed between said sections and coöperating with said flight-carrying means, for the purpose set forth.

4. In a conveyer, the combination with the inclined intermediate section, of endless flight-carrying traveling chains, an endless traveling apron coöperating with said chains and extending throughout a portion of said section including the curved part thereof, and a roller-portion extending from the upper end of said apron, for the purpose set forth.

5. In a conveyer, the combination with the inclined intermediate section, of endless flight-carrying traveling-chains, an endless traveling apron coöperating with said chains and extending throughout a portion of said section including the curved part thereof, a platform interposed in the path of travel of said apron for reinforcing it, and a roller-portion extending from the upper end of said apron, for the purpose set forth.

6. In a conveyer, the intermediate section comprising, in combination, an inclined frame supported at its ends and describing a curve between them, a roller-way supported in the upper portion of the frame, shafts journaled in the frame and carrying sprocket-wheels, an endless apron formed of slats on chains engaging said sprocket-wheels and extending from the lower end of said roller-way, shafts journaled near the opposite ends of said frame and carrying sprocket-wheels, flight-carrying endless-chains passing about

the sprocket-wheels on said end-shafts, transfer-wheels on said lower shaft, and a driving connection between said apron and flight-carrying chains, for the purpose set forth.

7. In a conveyer, the combination of the intermediate elevator-section having a package-arresting transfer-member at its lower end, and the delivery-section of the conveyer vertically adjustable at its delivery-end relative to said transfer member, for the purpose set forth.

8. In a conveyer, the combination of the intermediate elevator-section having a shaft journaled on its lower end carrying wheels, endless flight-carrying traveling chains geared to said shaft, and the delivery-section of the conveyer vertically adjustable at its delivery-end relative to said wheels, for the purpose set forth.

JOHN T. H. PAUL.

In presence of—
RALPH A. SCHAEFER
W. T. JONES.