

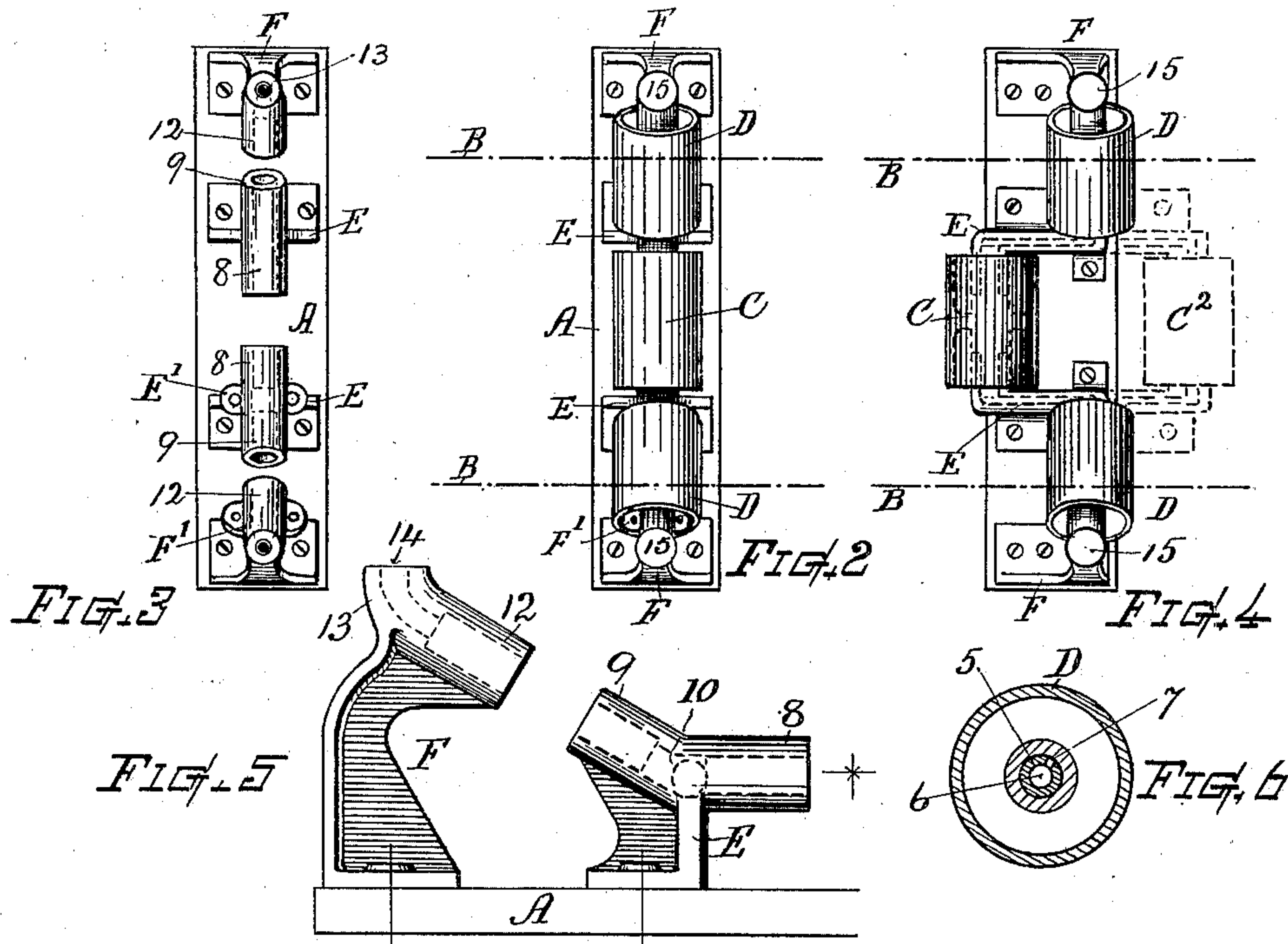
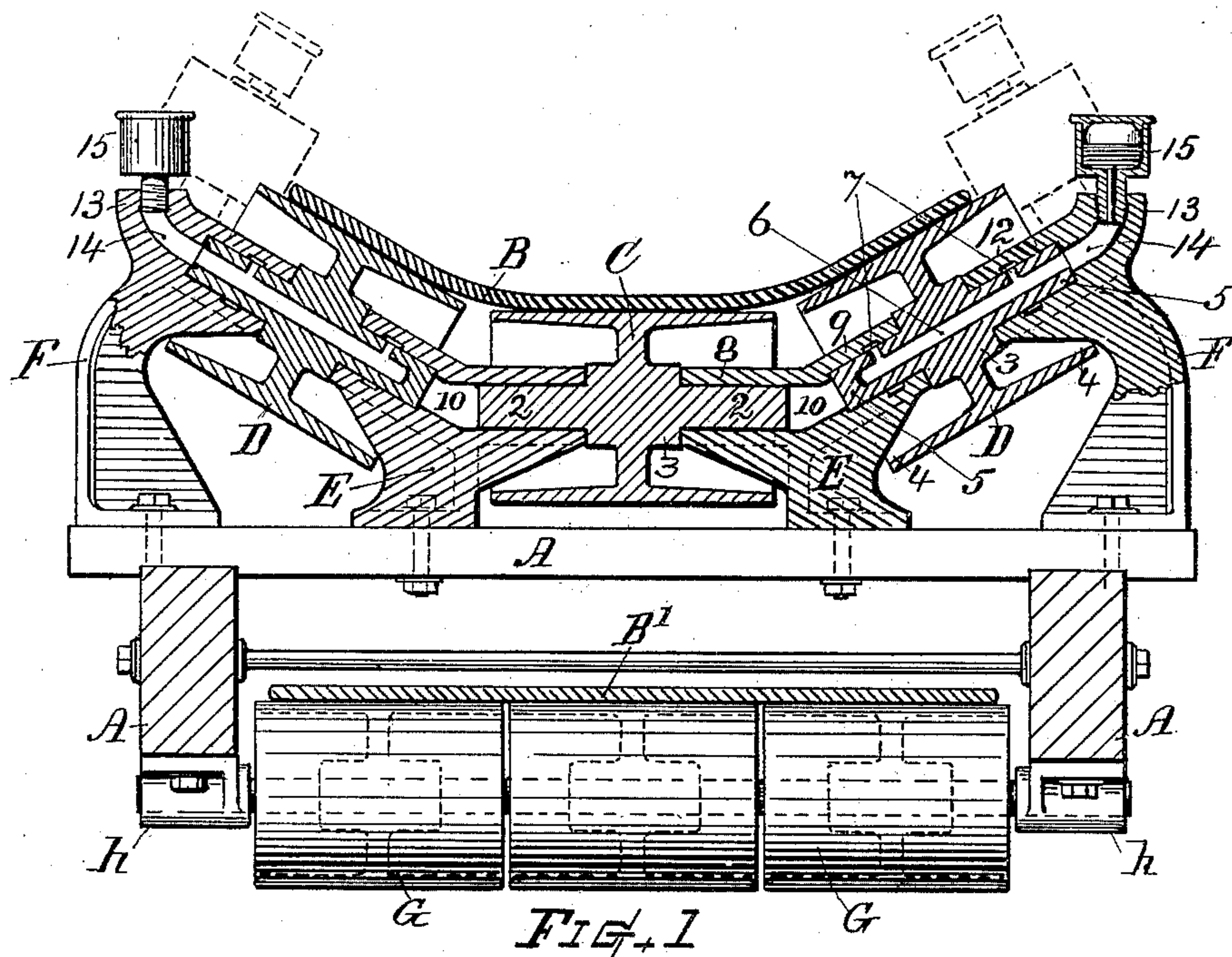
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E. S. PHILIPS.
CONVEYER BELT SUPPORTING MECHANISM.

(Application filed May 26, 1902.)

(No Model.)



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CONVEYER-BELT-SUPPORTING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 703,848, dated August 12, 1902.

Application filed May 26, 1902. Serial No. 108,904. (No model.)

To all whom it may concern:

Be it known that I, EDWIN S. PHILIPS, a citizen of the United States, residing at Kennett Square, in the county of Chester and State of Pennsylvania, have invented a new and useful Improvement in Conveyer-Belt-Supporting Mechanism, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

My present invention relates to the peculiar and improved construction of the pulleys and pulley-mounting devices in combination, as hereinafter explained, the objects being to provide, in a system of carrier rollers or pulleys for conveyer-belts, an efficient and stable construction and organization of the supporting parts, to enhance the free-running qualities and wearing capacity, and render the mechanism more convenient and durable.

Another object is to provide a conveyer-belt supporter of the character described wherein the pressure due to the weight and the load upon the conveyer-belt is borne upon the bottom portion of the pulley journals and bearings and in which the wearing action is sustained or exerted upon the bearing-castings instead of the interior of the pulleys, thus obviating any tendency toward heating and cutting of the bearing and an increasing looseness and irregular action of the pulleys when in use; also, to render the structure more thoroughly dust-proof and to afford an arrangement of parts in which the bearings form guards over the axle-journals, which are fixed and inclosed within their respective pulleys.

These objects I attain by the novel construction in detail and manner of combination of the several parts, as explained, and illustrated in the accompanying drawings, wherein—

Figure 1 represents a vertical section transverse to the conveyer-belt and showing a supporting mechanism comprising one set of carrier-pulleys and bearing devices constructed in accordance with my invention. Fig. 2 is a top plan view drawn to a smaller scale, show-

ing one set of carrier pulleys or rollers. Fig. 3 is a similar plan view with the pulleys omitted to show the bearing-standards. Fig. 4 represents a plan view showing the pulleys as disposed in offset relation—a modified construction. Fig. 5 is a side view of the bearing-standards for one-half of the supporter; and Fig. 6 represents a cross-section through the pulley, its journal, and the bearing.

The dot-and-dash lines on Figs. 2 and 4 indicate the position of the conveyer-belt, which in practice is of endless construction and may be of any desired length, and as many sets of supporters can be employed therewith as the length and character of the belt may require. All being of like construction, only one set is herein illustrated.

Referring to the drawings, A indicates the frame; B, the conveyer-belt; C, the horizontal central carrier-pulley, and D D the inclined or obliquely-disposed carrier-pulleys in a single supporter set, while E and F indicate the castings or standards, provided with bearings for supporting the said carrier-pulleys in the manner which I will now proceed to explain.

The pulleys C and D are formed with endwise-overhanging cylindrical rims 4, integral with an internal web and short hub 3 and provided with fixed axle-journals 5, projecting from the opposite ends of said hub and terminating at or near the same plane as the ends of the overhanging rims 4, the length of each axle-journal 5 being approximately one-third, more or less, of the length of the pulley-face, thus affording ample length of journal at each end of the pulley, and said journals are substantially all inclosed within the overhanging pulley-rims.

I provide each of the pulleys D with a central bore or opening 6, extending from the outer end of one journal along the axis nearly to the extremity of the opposite journal, but terminating with a solid abutment near the end of said opposite journal, (see Fig. 1,) and from said axial bore 6 there are formed for each journal one or more transverse holes 7, leading to the journal-surfaces. The journals 2 of the central pulley 3 may be formed either hollow or solid, as preferred. The

journals are integral with or rigidly fixed in their respective pulleys.

Each of the intermediate standards E E is provided with a hollow projecting T-head, one portion 8 of which is horizontal with the base, while the oppositely-projecting portion 9 is upwardly inclined. (See Figs. 1 and 5.) A hollow 10 extends through the head from end to end, and the projecting portions are respectively bored or internally fitted to receive the journals 2 and 5 of the pulleys C and D and form guards and bearings therefor, while the ends of said projecting portions are squared off to abut against the pulley-hubs within the interior of the pulleys, as indicated.

For upholding the outer ends of the inclined pulleys I provide outside standards F F, having inwardly-inclined hollow bearing-heads 12, disposed and fitted for receiving the outer end journals of the pulleys D. The bases of said standards are severally connected with and seated upon a frame-bar A, level with the foot of the standards E. The inner ends of the bearing-heads 12 extend into the outer ends of the inclined pulleys, covering and protecting the axle-journals from grit getting between the bearing-surfaces.

The outer portion 13 of the head of the standard F, with its interior hollow 14, is curved upward, as shown, and a horizontally-disposed grease-cup 15 is fixed or screwed into the top of the standard, from which the grease, oil, or lubricant substance can flow down into the hollow of the rotating pulley-journal 5 and through the holes 7 to the bearing-surfaces, thence to the hollow 10 and journal-bearing 8.

The interior of the bearings 9 and 13 are best slightly grooved or chambered in circles at positions corresponding to the holes 7, so that a free and thorough lubrication of the bearing-surfaces is attained.

As the journals 5 are fixed in and turn with the pulleys, it may be noted that when in operation the pressure due to the weight of the pulleys and belt and load carried upon the latter is borne by the bearings upon the bottoms thereof, the wear being upon the bearing-castings at the invert curve or at that part to which the lubricant naturally gravitates and not within a pulley-eye. Hence there is no tendency to heating and rapid grinding out of the bearings and an increased enlargement and looseness of pulleys as occurs from a poor method of lubricating where the pulley turns upon a stationary shaft.

The carrier-pulleys C and D can be arranged with their longitudinal axes all in the same vertical plane, or when preferred said pulleys can be disposed in offset order, the inclined pulleys being disposed with their axes at positions in advance or in rear, or at both, of the plane of the axis of the central pulley, as illustrated in full lines in Fig. 4, or, again, in some instances the horizontal carrier-pulleys

are placed in dual arrangement or at both front and rear of the axis-line of the inclined pulleys D, one disposed as illustrated by the pulley position at C in full lines and another at the pulley position C², (indicated by dotted lines on Fig. 4.) In these latter instances the inner bearing-standard is made with its bearing portions spread or offset, as indicated.

The several bearings can, when desired, be made separable or with screw-attached caps, as indicated at E' and F' on Fig. 3.

For the return run B' of the conveyer-belt ordinary pulleys G in horizontal alinement may be employed in well-known manner. Said pulleys are best fixed on their shaft, which rotates in the bearings h, secured to the frame.

I am aware that it is public practice to give the working run of an endless conveyer-belt a trough-like transverse curvature by means of obliquely-disposed carrier-pulleys and that prior patents disclose differently-constructed pulley mechanisms wherein the pulleys or some of them revolve upon inclined axes. It will therefore be understood that I do not herein broadly include the idea of inclining the pulleys as of my invention.

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

1. In combination, with a traveling conveyer belt or apron, and a set of carrier-pulleys therefor comprising a horizontal and two obliquely-disposed pulleys, said pulleys having integral or fixed axle-journals arranged within their overhanging end rims; the intermediate bearing-standards between said pulleys, each provided with a hollow T-head consisting of a horizontally-projecting portion and an upwardly-inclined projecting portion, said projecting portions internally fitted for supporting the rotating pulley-journals within the rims of the adjacent pulley ends, and a pair of outside supporting-standards having oblique inwardly-projecting hollow bearing-heads that respectively extend into the overhanging rims, and sustain the journals within the outer ends of said obliquely-disposed pulleys, substantially as set forth.

2. In a conveyer-belt supporter, the carrier pulleys or rollers provided with internal short hubs and integral or fixed journals arranged within their endwise overhanging rims, the inclined pulley-journals having a central bore or passage therein partially, but not entirely, through their axis, with radial outlets from said passage to the journal-surface; in combination with the bearing-standards, having projecting hollow-head portions within which said pulley-journals are rotatably inclosed, in the manner set forth.

3. In a conveyer-belt supporter, a series of carrier-pulleys comprising a plurality of inclined pulleys provided with internal axis-journals fixed in the pulley and turning therewith, and having a hollow or bore extending from the end of one journal partially through said axis, with lateral holes therein; in com-

5 bination with inner end bearing-standards, and outside end bearing-standards, said standards provided with head portions that project into the pulley ends and form bearings for the journals, and having hollow space within the heads, communicating with the bearing-surfaces and said axis-bore, for the purpose set forth.

10 4. In combination with the endwise-movable conveyer-belt, a set of carrier-pulleys comprising the horizontal pulleys, and two oppositely-inclined pulleys respectively provided internally with axle-journals centrally fixed within the pulley and turning there-
15 with, each of said inclined pulleys having an axial bore or opening from the end of one journal nearly to the end of its opposite jour-

nal, with lateral outlets therefrom, a pair of intermediate standards provided with horizontal and inclined projecting portions with bearings therein, said bearings united by a hollow space within the standard-head, and a pair of separate outside standards each having an inwardly-projecting bearing, and an outwardly-upturned portion forming a seat for the lubricator-cup, and a passage from said seat to the open upper end of the pulley-journal, all substantially as shown and described.

Witness my hand this 15th day of May, 1902.
EDWIN S. PHILIPS.

Witnesses:

S. JONES PHILIPS,
WILLIAM T. RUTH.