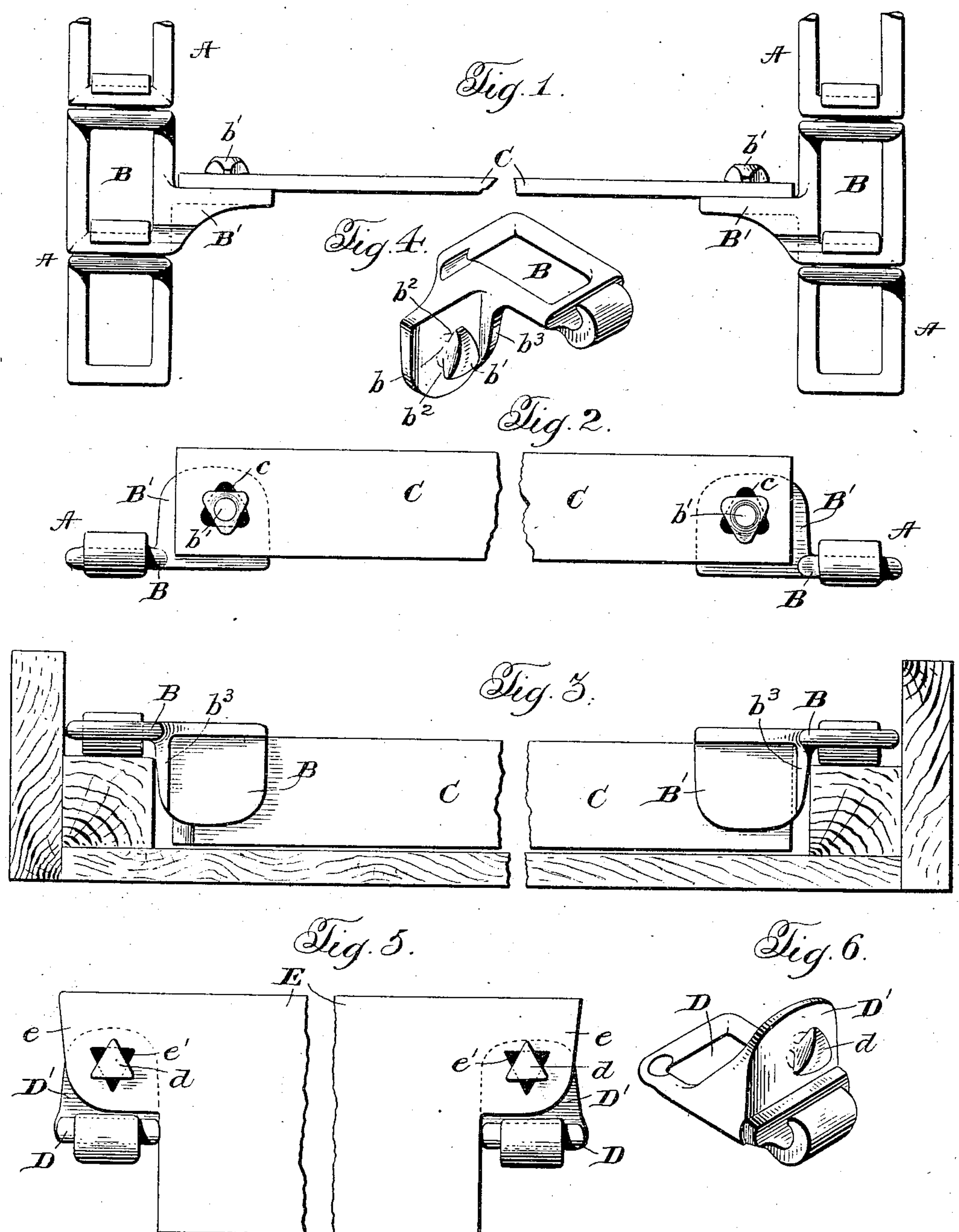
J. F. WHITE.

FLIGHT CONVEYER.

APPLICATION FILED DEC. 18, 1909.

1,016,190. Patented Jan. 30, 1912.



Witnesses:

Jas. E. Hutchinson.

Thos. R. Heath.

Inventor:

John F. White,

By [illegible] Attorneys:

UNITED STATES PATENT OFFICE.

JOHN F. WHITE, OF BLOOMINGTON, ILLINOIS.

FLIGHT CONVEYER.

1,016,190. Specification of Letters Patent. Patented Jan. 30, 1912.

Application filed December 18, 1909. Serial No. 533,829.

To all whom it may concern:

Be it known that I, JOHN F. WHITE, a citizen of the United States, residing at Bloomington, in the county of McLean and State of Illinois, have invented certain new and useful Improvements in a Flight Conveyer, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in conveyers and more particularly to the type of conveyers known as flight conveyers.

The principal object of the present invention is the provision in a conveyer of this character of improved means for attaching the flights to the chains or other members which carry the same.

A further object of the invention is the provision of attaching means for the conveyer flights of such a character that they may be readily attached and detached from the carrying means therefor and readily secured thereto at any desired interval according to the character of the work to be performed, and which will render accidental displacement of the flights impossible.

Other objects of the invention will be apparent from the detailed description hereinafter when read in connection with the accompanying drawings forming a part hereof wherein a convenient embodiment of the invention is illustrated and wherein like characters of reference refer to similar parts in the several views.

In the drawings, Figure 1 is a fragmentary plan view of a flight conveyer showing one of the flights and the manner of securing the same to the carrying chains, Fig. 2 is a side elevation of the same, Fig. 3 is a side elevation taken from the opposite side of the flight, the supporting conveyer trough being shown in section, Fig. 4 is a perspective view of one of the links adapted for engagement with one end of the flight, Fig. 5 is a side elevation of a modified form of the invention, and Fig. 6 is a perspective view of one of the links shown in Fig. 5.

Referring now more particularly to the drawings, A A designate the carrying chains, which are adapted to be supported in the usual manner and are formed of a plurality of detachably connected links. Interposed in the chains A A at any desired intervals are specially formed links B to which the ends of the conveyer flights are adapted to be secured. In the embodiment of the invention illustrated in the drawings, each link B comprises a body portion which is similar in construction to and is adapted to be secured between any two of the ordinary links of one of the chains A A, and a portion B′ which is formed integral with the body portion of the link B and projects inwardly from one side thereof. The portion B′ extends for a substantial distance below the upper portion of the body of the links B and is provided with a flat face which lies in a plane at right angles to the plane of the body of the link which constitutes a seat upon which one end of a conveyer flight is adapted to rest. Projecting from the flat face of the portion B′ of each of the links B is a stud which comprises a shank *b* and an enlarged head *b′* of irregular contour, such head in the form illustrated being shown as triangular in form.

C designates one of the conveyer flights which is in the form of a flat metal plate, the ends of which are adapted to be secured upon the flat faces of the portions B′ of the links B in the chains A A. The ends of the flight are provided with openings *c* therein which correspond in size and shape to the heads *b′* of the studs which project from the flat faces of the portions B′ of the links B heretofore described, such openings being in the form illustrated shown as triangular in form. The openings *c* in the ends of the flight C are normally out of alinement with the heads *b′* of the stud which project from the flat faces of the portions B′ of the links B secured to the ends thereof, so that such links cannot be detached from the flight or attached thereto in the first instance without twisting the chains or shifting the parts transversely to an abnormal position relatively to each other. In assembling the flight and links each link is attached thereto by inserting the head *b′* of the stud projecting from the portion B′ thereof through one of the openings *c* in the flight and turning the link angularly in a transverse position to its normal position, which causes the head *b′* to overlie the solid portion of the flight, thereby interlocking the flight and link. The shanks *b* of the studs which project from the portions B′ of the links B are just long enough to pass through the openings in the ends of the flight and the adjacent faces of the head and flight are conveniently provided with coöperating portions which

as the head is turned to normal position serve to draw the parts tightly together. In the form illustrated in the drawings, this is accomplished by providing the undersides of the heads b' of said studs with inclined faces b^2 which as the heads are turned engage the solid portions of the flight C at the sides of the openings c therein and serve to tightly clamp the flight and links together. The portions B′ of the links B are provided at one side thereof with flanges b^3 which are adapted to lie alongside of the ends of the flight C when said links have been interlocked therewith. After the links B are secured to the ends of the flight C in the manner heretofore described, such links are secured in the chains A A at any desired points and it is obvious that as many flights as desired may be used to make up the conveyer and that such flights may be spaced at any desired distance apart.

In the form of device just described the carrying chains A A will when attached to the flights be positioned laterally beyond the ends of the flights and in planes adjacent the tops of the flights and when the conveyer is used in the usual trough, suitable cleats or blocks are secured in the corner of the trough upon which the carrying chains run, as is shown in Fig. 3 of the drawings.

In Fig. 4 of the drawings is illustrated a modified form of the invention which is particularly adapted for use with large sized flights where it is desirable that the pull of the carrying chains shall be directed from the center of the flights. In this construction specially formed links D D are employed which are adapted to be interlocked with the ends of a flight E and to be secured in the carrying chains in the same manner as the links B B heretofore described. The flight E comprises a metal plate, the upper portion of which is extended beyond the ends thereof to form extensions e in which are formed openings e' similar in form to the openings c in the flights C heretofore described. The links D D are each provided with a portion D′ which projects upwardly from one end thereof and is provided with a flat face upon which is adapted to be secured one of the extensions e of the flight E. The flat faces of the portions D′ of the links D D are each provided with studs which terminate in heads d which are similar in construction to the heads b' heretofore described and are adapted to coöperate with the openings e' in the flight to permit the links D D to be interlocked therewith or removed therefrom in the manner heretofore described with reference to the links B B and the flight C. The lower corners of the projecting portions e of the flight E are rounded to permit of the necessary angular movement of the links D D to insure their engagement with or separation from the flight E.

From the above described construction it will be seen that a flight conveyer is produced, the flights of which are securely held in position without the necessity of bolts, nuts, rivets, and analogous fastening devices, and which can be at any time readily disengaged. As the flights are interlocked with the chain links under normal conditions and cannot be separated therefrom except by a relative abnormal movement of the flight and chain links, it will be apparent that accidental disengagement of the flights is impossible as in use the tension of the carrying chains is such that neither the flight nor the links interlocked therewith can be shifted a sufficient distance to permit their separation.

While several convenient embodiments of the invention have been illustrated in the accompanying drawings, it will be obvious that many changes may be made to the forms therein shown and that the flights and links may be interlocked in many different ways without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. The combination with a conveyer flight provided with an opening therein, of a carrying member for said flight engaging one face of the flight and provided with a rigid projection extending therefrom through the opening in the flight and terminating in a rigid head adapted when the carrying member is in its normal position to overlie the rear face of the flight, said head and the opening in the flight being so formed that when the carrying member is shifted transversely in a plane parallel to the plane of the flight the head will be moved to a position permitting its passage through the opening in the flight.

2. The combination with a conveyer flight, of a carrying member arranged to abut the face of the flight, the adjacent portions of said flight and carrying member being provided one with an irregular shaped opening therein, and the other with a stud arranged to project through said opening and provided with an enlarged head corresponding in shape and size to the shape and size of the opening, said head and opening being out of alinement when the flight and carrying member are in normal position.

3. The combination with a conveyer flight having an irregular shaped opening therethrough, a carrying member provided with a stud adapted to engage said opening and terminating in a head corresponding in shape and size to the shape and size of the opening, said opening and head being out of alinement when the flight and carrying member are in normal position.

4. The combination with a conveyer flight provided with an irregular shaped opening therethrough, a chain link provided with a portion integral therewith adapted to overlie one side of the flight, and a stud projecting from the portion of the link overlying the flight through the opening in the flight and provided with an integral head adapted when the parts are in normal position to engage the opposite face of the flight.

5. The combination with a conveyer flight having an opening therein, of a carrying member for the flight arranged to engage one side of the flight and provided with an integral stud projecting through the opening in the flight and terminating in an enlarged integral head adapted to normally engage the opposite face of the flight, the adjacent portion of said head and flight being provided with coöperating surfaces adapted to draw the flight and carrying member tightly together when the head is turned.

6. The combination with a conveyer flight, of a carrying member therefor, said flight and carrying member being provided with coöperating interengaging portions interlocking said flight and carrying member upon a movement of one of said parts relatively to the other in the plane of the flight and movable to positions permitting the separation of the flight and carrying member upon a reverse movement of said part in the plane of the flight.

7. The combination with a conveyer flight having an irregular shaped opening therein, of a carrying member for the flight arranged to engage one side of the flight and provided with a rigid stud projecting through the opening in the flight and terminating in an enlarged integral head corresponding in shape to the opening in the flight, said head and opening being out of alinement when the parts are in their normal positions and the adjacent portions of said head and flight being provided with coöperating surfaces arranged to draw the flight and carrying member tightly together when the head is turned.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. WHITE.

Witnesses:
J. F. HEFFERMAN,
ELIZABETH SMITH.