

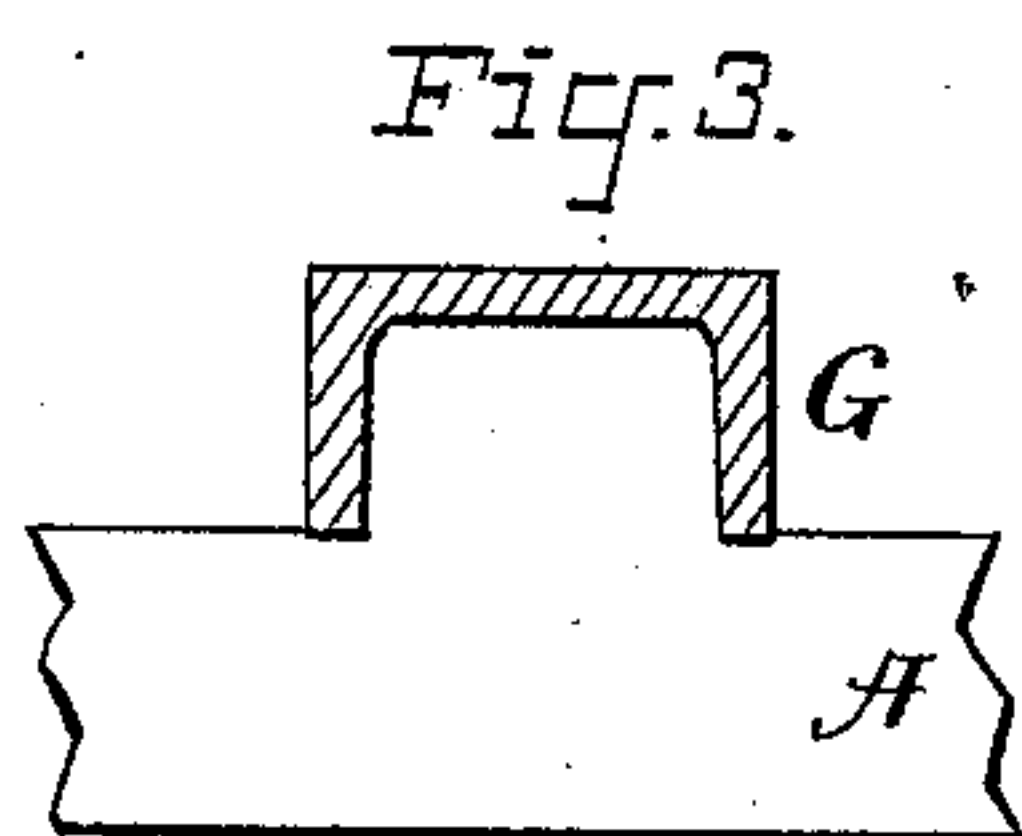
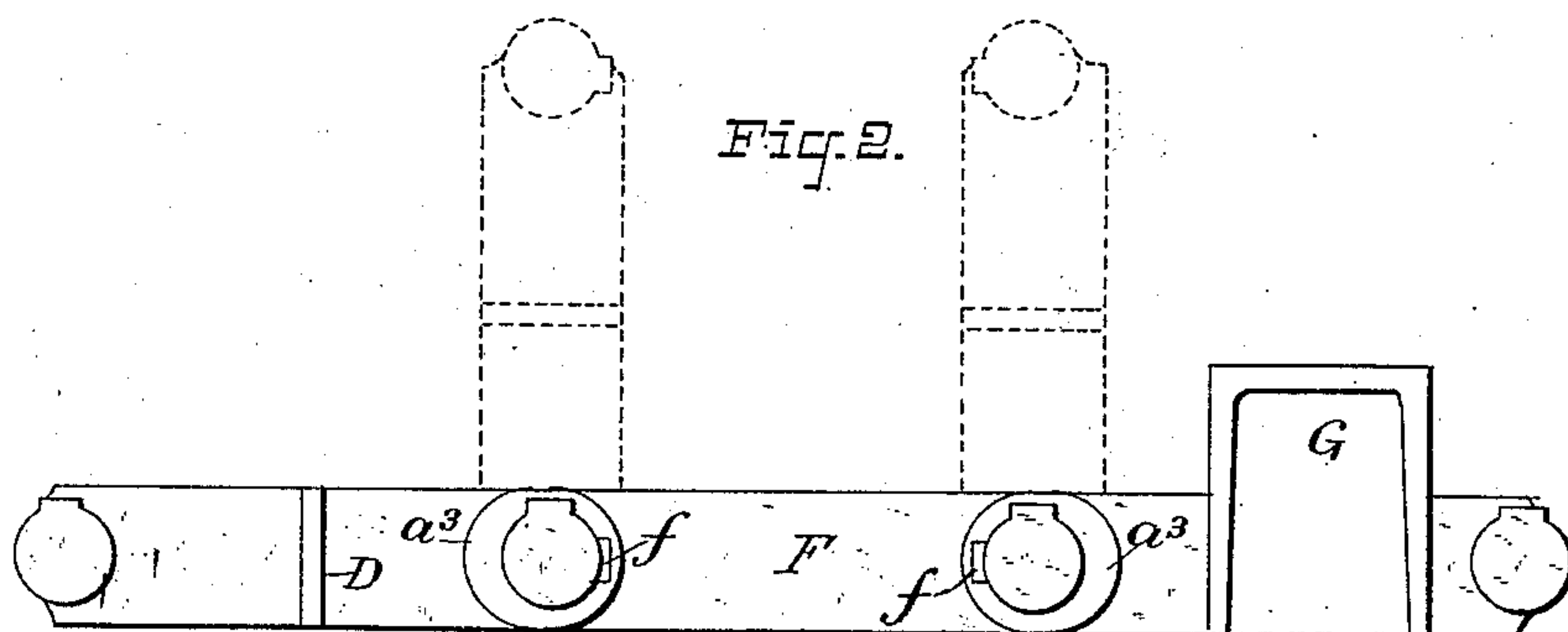
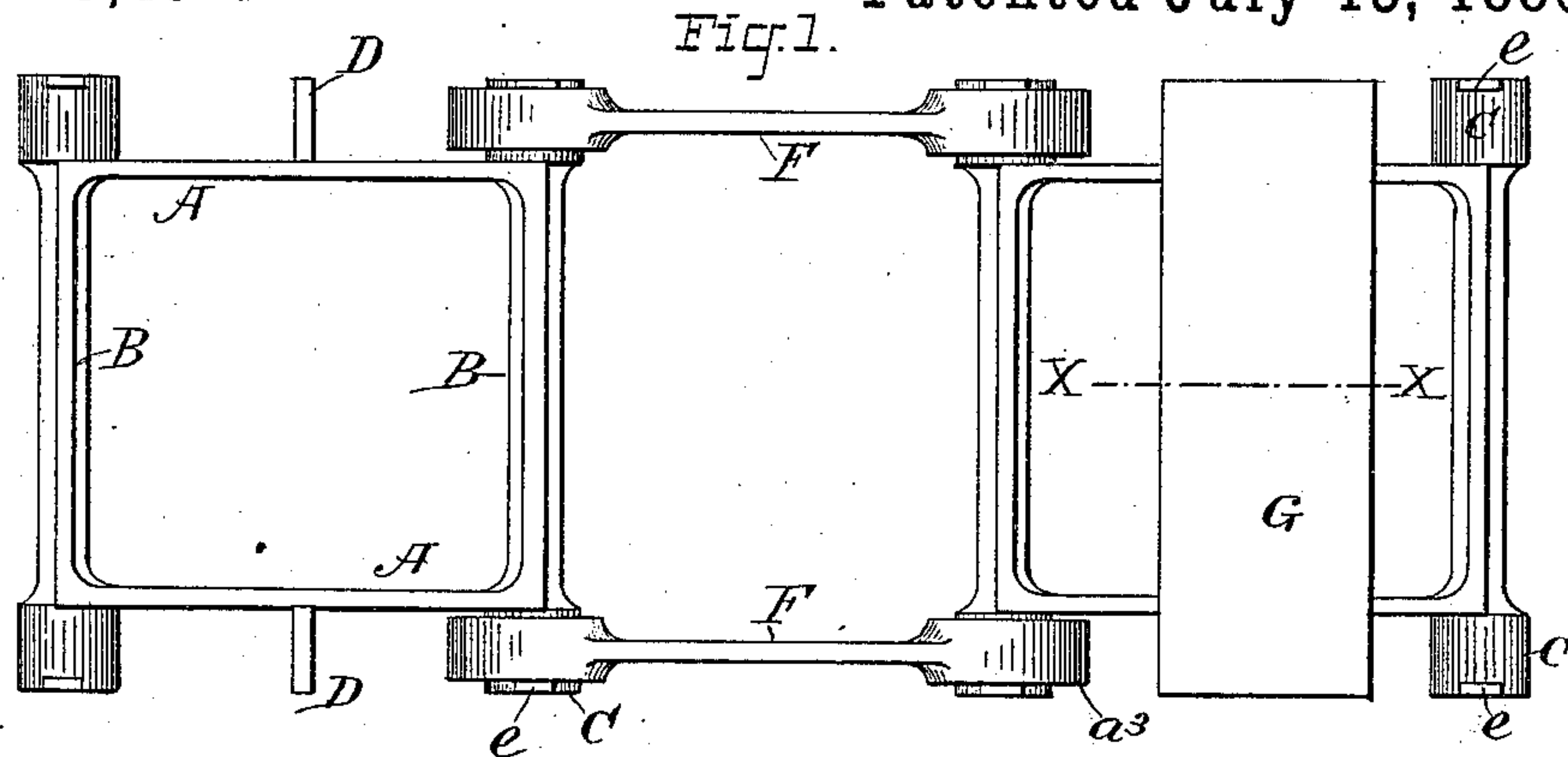
(No Model.)

2 Sheets—Sheet 1.

M. GARLAND.  
CHAIN CONVEYER.

No. 345,497.

Patented July 13, 1886.



ATTEST:

*J. A. Hurdle*  
*A. M. Williamson*

INVENTOR:

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By

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Attorney

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Fig. 4

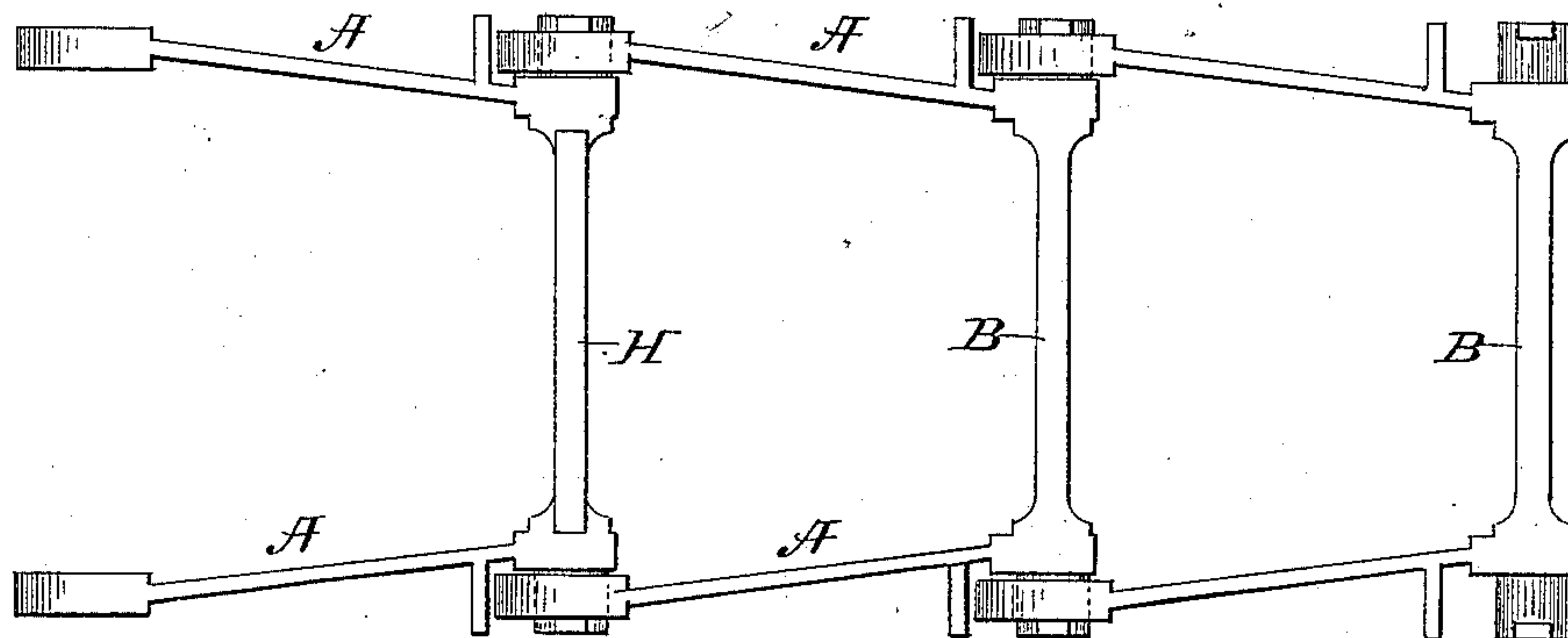
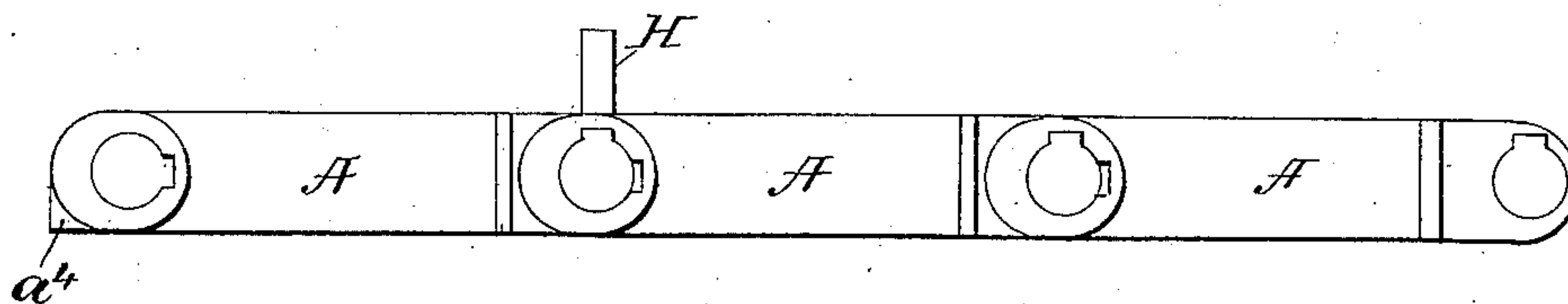


Fig. 5.



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# UNITED STATES PATENT OFFICE.

MICHAEL GARLAND, OF BAY CITY, MICHIGAN.

## CHAIN-CONVEYER.

SPECIFICATION forming part of Letters Patent No. 345,497, dated July 13, 1886.

Application filed March 2, 1886. Serial No. 193,782. (No model.)

*To all whom it may concern:*

Be it known that I, MICHAEL GARLAND, of Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Chain-Conveyers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this application.

My invention relates to certain new and useful improvements in what are known as "chain-conveyers," in which are employed, in connection with some sort of trough, case, or conduit, within which the material or stuff to be conveyed is carried along, some sort of chain provided with flights or carriers, which push or drag along the contents of such trough or case; and my invention consists in the several novel devices and combinations of devices which will be found fully described hereinafter, and which forms the subjects-matter of the several claims of this specification.

To make those skilled in the art to which my invention relates to fully understand and practice the same, I will now proceed to further describe the construction and operation of my improved chain-conveyer, referring by letters to the accompanying drawings, which form part of this specification, and in which I have shown my invention carried out in the forms in which I have so far successfully practiced the several features thereof, and which are about the best forms now known to me.

In the drawings, Figure 1 is a face view of a conveyer-chain made according to my invention. Fig. 2 is an edge view of the same. Fig. 3 is a detail central section at *x x*, Fig. 1, showing better the form of one of the elevated flights. Fig. 4 is a face view of another form of chain embodying my improvements. Fig. 5 is an edge view of the same.

In the several figures the same part will be found designated by the same letter of reference.

At Figs. 1, 2, and 3 the chain is shown composed of alternately-arranged four-sided or box-like links, each of which has two side bars, A, and two end bars, B, and parallel connecting-bar links F, the said bar-links F being coupled or connected at their ends, by means of holes or eyes therein, with pintle-like pro-

jections or studs C on the side bars, A, of the box-like links. Each of these pintle-like devices C is formed with a small lug or projection, at *e*, as clearly shown, which is adapted to pass freely within a recess or cut-out, *f*, in the eye of each of the bar-links F, (in the operation of coupling and uncoupling the parts of the chain,) and by means of this construction the bar-links F may be readily coupled to and disconnected from the box-link whenever (in this purpose) the different parts of the chain shall be turned out of a working condition, or into the relative positions indicated by the dotted lines at Fig. 2.

From the outer surfaces of some or all of the side bars, A, project plate-like clearers or conveyer-lugs D, which, as shown, are equal in height to the side and end bars of the link, and which act to carry along the stuff outside of the links, which otherwise might crowd under the laterally-projecting coupler devices and connected bar-link ends, and either cause undue resistance to the designed movements of the conveyer or make the chain climb or rise on top of portions of the stuff in the case or trough, or both. The sides A of the box-links, as well as the bar-links F, are of course all made as thin in cross-section as may be commensurate with a sufficient degree of strength in the structure, and the cross-bars B of the box-links are made thin, and are of the proper height to act as flights to the chain to carry along the material in the conveyer trough or case.

At G is shown a sort of box-like upward-projection or H-shaped device, which, preferably, is about twice the height of the flights or cross-bars B, and which (unlike said cross-bars) extend widthwise of the chain to an extent equal to the extreme width of the box-like links plus the lateral projection of the devices D at either side of said link. These H-shaped devices act as auxiliary carriers of greater height than the flights B, and serve to convey along any excess of sawdust, offal, or other matter fed or dumped into the trough of the conveyer that otherwise would overcharge the conveyer-chain and be left behind. Furthermore, these devices or auxiliary flights when located, as I prefer, at localities about four or four and a half feet apart throughout



the length of the chain, serve to efficiently carry along endwise slabs and sticks of wood that may be discharged into the receiving end of the trough, and also act perfectly to catch hold of and convey such sticks or other solid matter as would not be acted on by the flights B in case of the use of the chain, as sometimes occurs in a conveyer-trough in which the stuff to be carried off has to be conveyed upwardly at an angle of thirty or forty degrees, more or less. I consider these supplemental flights G as very essential and important devices in my improved contrivance. By making them so as not to extend down within the body of the box-like links they do not interfere with said links taking in their full complement of stuff, and by extending them beyond the outer sides of said links, as shown, they act upon the mass of stuff or sticks to be conveyed at all points within the width of the trough to which the chain may be fitted to work. Of course these devices might in some cases be formed on or applied to a set of the bar-links F; but I deem that arrangement shown the best, and of course other variations may be made in the precise forms and arrangements of parts so far shown and described herein.

As usually made heretofore, the ends of the bar-links F have been shaped so that the thickness of metal at the ends and partially surrounding the eyes or pintle-holes has been about evenly distributed around said eyes—that is to say, the stock has been arranged so that the ends of the link metal lie in a semi-circle concentric to the circle of the eye or hole in the bar. This disposition of the metal was proper and the best, so long as the links remained materially unweakened by wear; but in practice I have found that the eyes soon become worn, assuming an elliptical form, and thus reducing the thickness of metal in the immediate vicinity of the end of the bar, and so weakening the link that it soon becomes incapable of longer standing the draft-strain for which the chain was, at the outset, perfectly competent. This serious defect I have overcome by making the ends of the bar-links F, as shown, with an enlargement or increase of stock at the locality marked  $a^3$ , so that when the eyes and pintles of the chain parts shall have worn away to the maximum extent allowable before rendering the chain unfit for use the ends of the links F will still be sufficiently strong to withstand the draft-strain.

To render the chain still more competent to clear its way through the trough or case piled with the material to be carried along, (be the stuff sawdust or other matter,) I make some or all of the ends of the side bars of the chain with the lowermost portions squared out, as shown at  $a^4$ , which form or construction acts to overcome any tendency there may be in rounded lower corners or ends to slide over or become wedged upward by the crowding beneath the leading ends of the side bars of any of the fine stuff in the conveyer, trough, or case.

At Figs. 4 and 5 the chain shown is composed of links made each of two side bars and one end bar, the side bars being arranged to diverge as they extend away from the cross-bar, and the duplicate parts of the chain being adapted to be coupled and uncoupled (then turned out of a working condition) by springing apart the free ends of the side bars. In these figures, A A are the side bars, and B the end bars, of the links, and H represents another form of auxiliary flight of greater height than the flights composed of the cross-bars of the chain-links. At intervals—say about at every eighth or tenth link of the chain—I employ a link having its cross-bar or end bar extended up, as shown at H, to form a flight to operate as and for the purposes explained of the flight or device G in the previously-explained figures of the drawings. This device H does not, as will be seen, like the flight G in the other form of chain, extend out to the full width of the chain; but it is thinner and lighter, and is formed integrally with the cross-bar of the link. This form of supplemental flight is simpler, and requires less additional metal in the chain than the form shown at Figs. 1, 2, and 3.

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

1. In combination with the links of a conveyer-chain, one or more supplemental flights, which extend up beyond the elevation of the conveyer devices of the links, substantially as and for the purposes set forth.

2. In combination with the links of a conveyer-chain, a series of supplemental flights of greater carrying capacity than the cross-bars of the links, and a series of flight-like projections on the outer portions of the sides of the links, substantially as hereinbefore set forth.

3. In combination with the links of a conveyer-chain, a series of supplemental flights that project above the main flights, and which also extend laterally to the full width of the chain, as and for the purpose set forth.

4. As a specific form of supplemental flight, the upward extension of some of the cross-bars or main flights of the links, as hereinbefore described.

5. In a conveyer-chain, side bars having the lower portions of their ends made square, as at  $a^1$ , in the manner and for the purpose specified.

6. A chain for conveyers, having its side bar-links formed with an increased quantity of stock at the points  $a^3$ , substantially as and for the purpose set forth.

In witness whereof I have hereunto set my hand this 27th day of February, 1886.

MICHAEL GARLAND.

In presence of—

HEZEKIAH M. GILLET,  
MORRIS L. COURTRIGHT.