

(No Model.)

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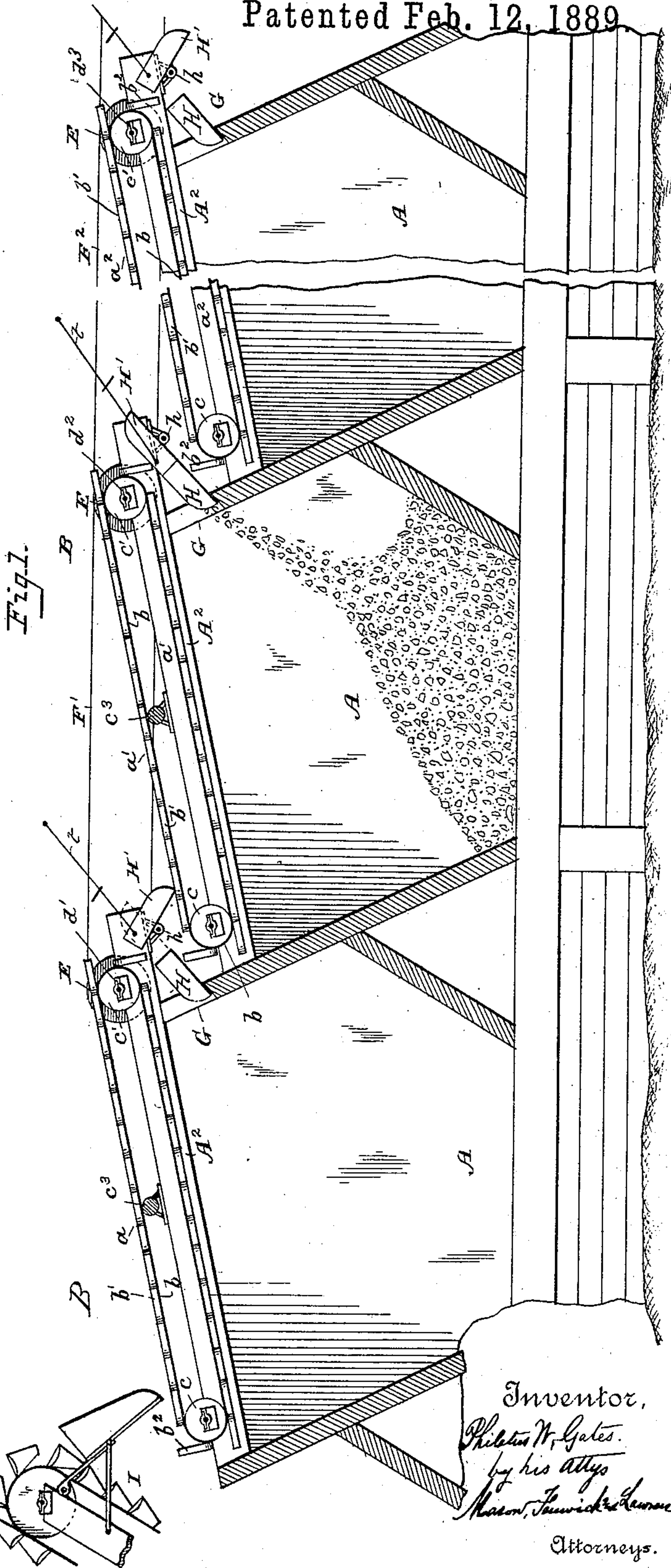
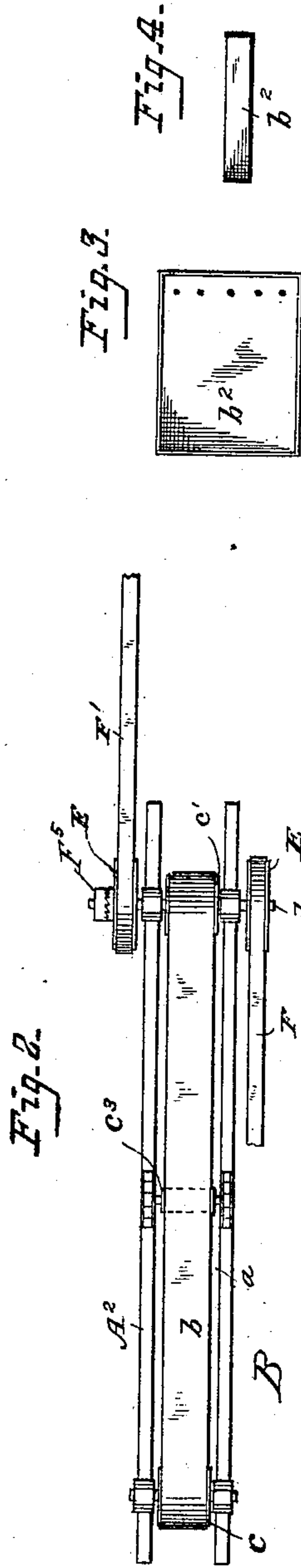
P. W. GATES, Dec'd.

R. I. GATES, Administrator.

STONE OR ORE CONVEYER.

No. 397,849.

Patented Feb. 12, 1889



Witnesses,
Courtney A. Cooper,
Edward Taylor Fenwick

Inventor,
Philatus W. Gates.
by his Attys
Mason, Fenwick & Lawrence
Attorneys.

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2 Sheets—Sheet 2.

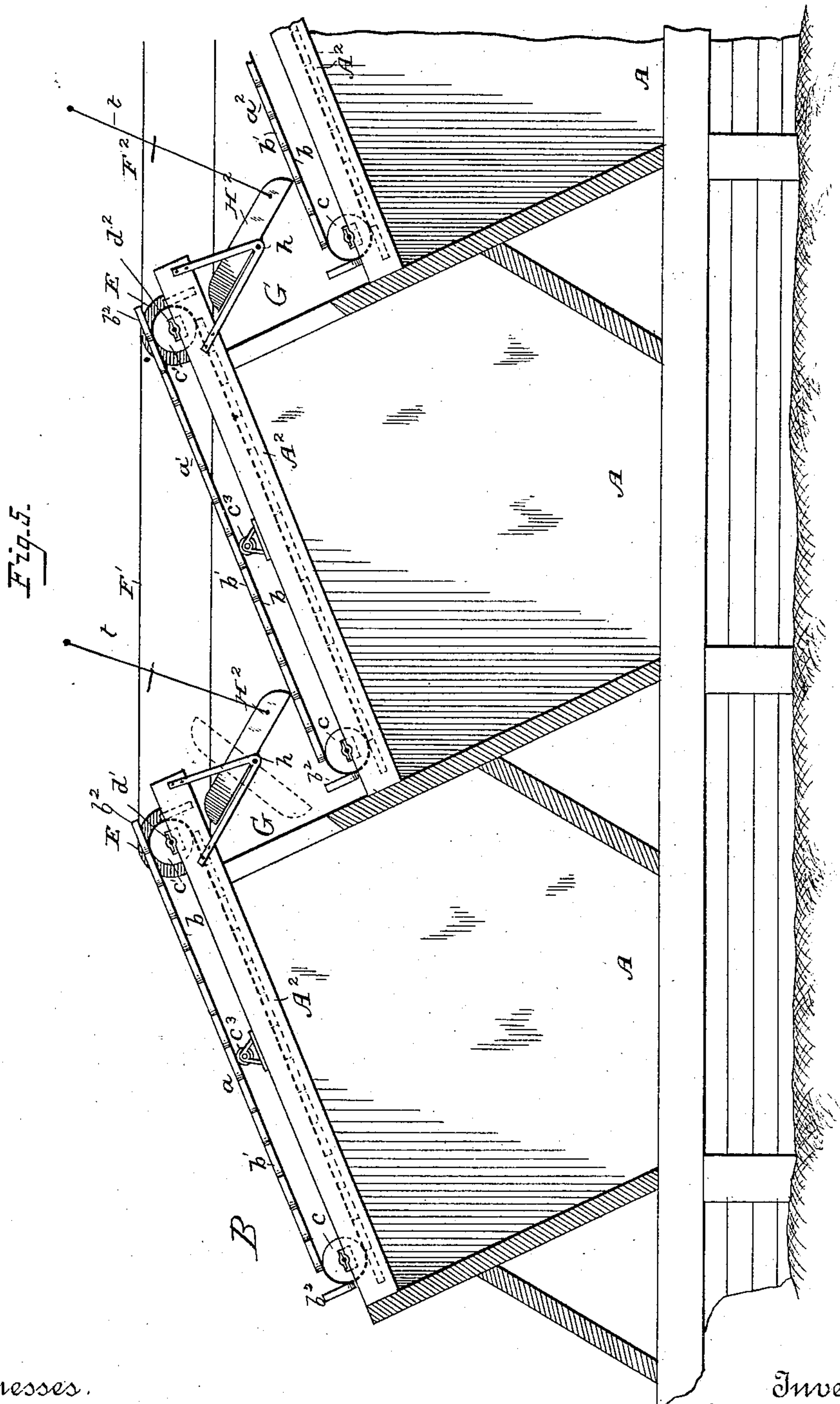
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UNITED STATES PATENT OFFICE.

PHILETUS W. GATES, OF CHICAGO, ILLINOIS; RALPH I. GATES ADMINISTRATOR OF SAID PHILETUS W. GATES, DECEASED.

STONE OR ORE CONVEYER.

SPECIFICATION forming part of Letters Patent No. 397,849, dated February 12, 1889.

Application filed March 5, 1888. Serial No. 266,154. (No model.)

To all whom it may concern:

Be it known that I, PHILETUS W. GATES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stone or Ore Conveyers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to endless sectional conveyers for either broken stone, ore, or other substances; and it consists in certain constructions, combinations, and arrangements of parts, whereby a series of independently-revolving endless sections of the conveyer, which form different incline planes, and are arranged for discharging at will the substances being conveyed into each or any one of a series of separated bins, are connected or disconnected by pivoted adjustable chutes arranged, respectively, between the lowest end of one conveyer and the highest end of another and thus by swinging the chutes partly around on the pivots by which they are hung the stone, ore, coal, or other substances can be discharged and properly guided into any of a series of adjoining bins, or successively into all of such bins.

My invention is specially designed for supplying a want felt by railroad companies, who break, for storage in bins, large quantities of stone and other material—say hundreds and thousands of tons—and ship the same by bringing their cars alongside or under the bins and loading them in a few minutes. Heretofore for conveying coal troughs and scrapers combined with endless conveyers, ranging from ten to several hundred feet in length and adapted for depositing in such bins at intervals of every ten or twenty feet, (more or less,) have been employed; but while these conveyers when, say, of a length two hundred feet, do well enough for coal, which is slippery and more easy to move, they do not answer for broken limestone, as this substance packs, and unless the belts are reduced to, say, about fifty feet in length the wear and tear would be very great; and if used for trap-

rock quartz and the like they would soon be worn out, and if made several hundred feet in length the substances would move very sluggishly, if at all. Another style of conveyer bearing more resemblance to my conveyer, but not provided with swinging, connecting, and guiding chutes, has been used for sugar-refineries, (see Letters Patent granted to Joseph Stillman January 4, 1881, No. 236,192,) and on this particular construction of conveyer my invention is an improvement.

In the accompanying drawings, Figure 1 is a broken side elevation and partial section illustrating my invention in one mode of its use in connection with bins, the full black lines of the pivoted connecting-chute of the first and intermediate sections of the conveyer showing said chute as adjusted for a discharge of the conveyed substances into a bin next to the last represented section of the endless sectional conveyer, and the dotted lines of the first section showing them adjusted for discharging the conveyed substances into the first bin, while the full lines of the first section, as well as of the last, show the chute in position for discharging upon a section beyond the first and last represented section. Fig. 2 is a plan view of a portion of a conveyer, showing a section of an endless belt, pulleys, a clutch and connecting-belts, the buckets being omitted.

The platform on which the conveyed substances are supported is not shown. Figs. 3 and 4 are details of the buckets which are to be attached to the endless belt or belts and with the same form the platform of the conveyer. Fig. 5 is a side elevation of my invention, illustrating another form of connecting chutes and another mode of using the invention in connection with bins.

A in the drawings represents a series of adjoining bins or receptacles, which may be of the construction shown in either Fig. 1 or Fig. 5, or of any other suitable construction.

B is the endless sectional conveyer, formed of any appropriate number of endless sections, as a a' a^2 , and each section may be composed of an endless belt, b , (or two or more endless belts may be used,) passed around pulley c c' , either round or polygonal in cross-

section. On the belt or belts *b* a supporting-platform, *b'*, formed of shallow adjoining buckets, as *b*², Figs. 3 and 4, may be applied, as illustrated in the drawings, for supporting or containing the stone, ore, coal, or other substances being conveyed; or any other suitable, flexible, supporting-platform may be applied upon the belt or belts, and about midway between the pulleys *c* *c'* rollers *c*³ are placed for keeping the platform from sagging. The higher pulleys, *c'*, of the belts are arranged on shafts, as *d'* *d*² *d*³, and each shaft is provided on one of its ends with a loose driving-pulley, *E*, provided with a suitable clutch, *F*⁵, Fig. 2, by which it may be made a fast or loose pulley, and all the higher pulleys, *c'*, are connected by belts, as *F* *F'* *F*². The sections *a* *a'* *a*² are arranged, respectively, in an inclined position, as illustrated in either Fig. 1 or Fig. 5, a higher pulley, *c'*, of one section being a considerable distance above a lower pulley, *c*, of another section of the conveyer. This arrangement leaves a large discharging-space, *G*, between each pair of the sections of the conveyer, and the same leads into a bin *A*. In the space *G* connecting and guiding chutes, either as *H*, *H'*, or as *H*², are placed, as shown respectively in Figs. 1 and 5. The chute *H* *H'* comprises a stationary inclined portion, *H*, suitably fastened by brackets or other ordinary means to the frame-work of the conveyer, and a pivoted inclined portion, *H'*, the latter being pivoted by the pins of the said brackets, as at *h*. The part *H'* forms nearly a right angle with the part *H*, as shown by full black lines; when a pair of the sections of the conveyer are so connected that the conveyed substances are carried across the space *G*, so as to be deposited by one section upon another; but when any two of the sections are separated and the space *G* not closed by the chute, and the conveyed substances can be conveyed through the space *G* into a bin *A*, the part *H'* of the chute forms with the part *H* a straight chute, as illustrated by dotted as well as full lines in Fig. 1, and the part *H'* arrests the substances coming over a higher pulley, *c'*, and, in conjunction with the part *H*, guides and conducts them into a bin *A*. On the pivot of the part *H'* of the chute, or attached to the chute, a rod, as *f*, may be applied for making the adjustments just described; or, if preferred, an attendant may tilt the part *H'* to the proper position by hand or otherwise.

I is an ordinary endless bucket-elevator at the receiving end of the conveyer for elevating and depositing the substance to be conveyed upon the conveyer.

From the drawings and foregoing description it will be seen that either the first or the last or an intermediate bin, *A*, can be filled as occasion may require, it only being necessary to adjust the part *H'* of chute *H* *H'*, or the entire chute *H*², so as to disconnect or connect the respective sections of the conveyer, and thereby discharge the substance into the first bin, or continue the movement of the

same beyond a space or spaces, *G*, until they arrive at the point of discharge desired, which may be either at the first bin or any one of the succeeding bins, as circumstances require.

The chute shown in Fig. 5 is not made in two parts, as *H* *H'*, but is constructed in one piece and straight, as *H*², Fig. 5, and hung on a pivot, as *h*, supported in brackets fastened to the conveyer-frame *A*²; but the same result of connecting and disconnecting the pairs of sections of the conveyer is produced when it is used. This construction, however, requires that the spaces *G* shall be greater than when chute *H* *H'* is used, and that a greater inclination shall be given to the respective sections of the conveyer. I regard the two kinds of chutes described as equivalents of one another, so far as connecting the conveyer-sections and the guiding of the substances into the bins are concerned.

In operating with the conveyer the sections of the belting beyond the first section may be made loose during the time the first bin is being filled and only the first pulley, *E*, kept in motion, and so any one of the pulleys and belts not required to be in action while other bins are being filled may be kept idle. This will avoid unnecessary wear of the machinery.

The swinging chutes can be operated very easily and conveniently, and they are not so liable to bind as are sliding gates or cut-offs—such as have heretofore been devised for use in connection with sectional conveyers—and at the same time they form a perfect guiding and conducting means from one belt to another, or into the bins. These guiding-chutes also admit of the bins being constructed under the whole of the conveyer and insure the guiding of the substances into the same, thus economizing room for storage.

What I claim is—

1. A conveyer comprising endless inclined sections, every two having a discharging-space between them, and a guiding-chute arranged to swing on pivots or pins placed cross-wise of the sections, said chute being adapted to close a discharging-space between two of the sections, when it is desired to carry the substances being conveyed beyond the first section of the conveyer, and adjustable on its pin or pivot to an inclined position, so as to open the discharging-space between two of the sections, and turn, guide, and discharge the said substances between and below the sections, substantially as described.

2. The combination, with a series of adjoining bins arranged beneath an endless conveyer, of a series of endless sections having a discharging-space between every two, and a series of swinging, separately-adjustable, connecting, and directing chutes constructed to lie longitudinally with the sections and occupy positions between the said sections, whereby they are adapted to close the said discharging-spaces, and also to be adjusted to backwardly-inclined positions, and thereby open

said spaces and discharge the substances into bins beneath the sections, substantially as described.

3. The connecting and guiding chute formed
5 of two parts, H H', one of which is hung on a pivot and swings and is adjustable thereon, in combination with the endless sections of a conveyer, having a space between their lower and higher pulleys, c c', which space is occu-

pied by a connecting and guiding chute, substantially as described.

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

PHILETUS W. GATES.

Witnesses:

GEORGE VAN ZANDT,
D. W. BUCHANAN.

It is hereby certified that Letters Patent No. 397,849, issued February 12, 1889, upon the application of Philetus W. Gates, of Chicago, Illinois, for an improvement in "Stone or Ore Conveyers," was erroneously granted to "Ralph I. Gates, as administrator;" that said Letters Patent should have been granted to said *Ralph I. Gates, as executor*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 19th day of February, A. D. 1889.

[SEAL.]

D. L. HAWKINS,
Assistant Secretary of the Interior.

Countersigned:

BENTON J. HALL,
Commissioner of Patents.