

(No Model.)

J. M. DODGE.  
CONVEYER FOR PILING COAL.

No. 409,604.

Patented Aug. 20, 1889.

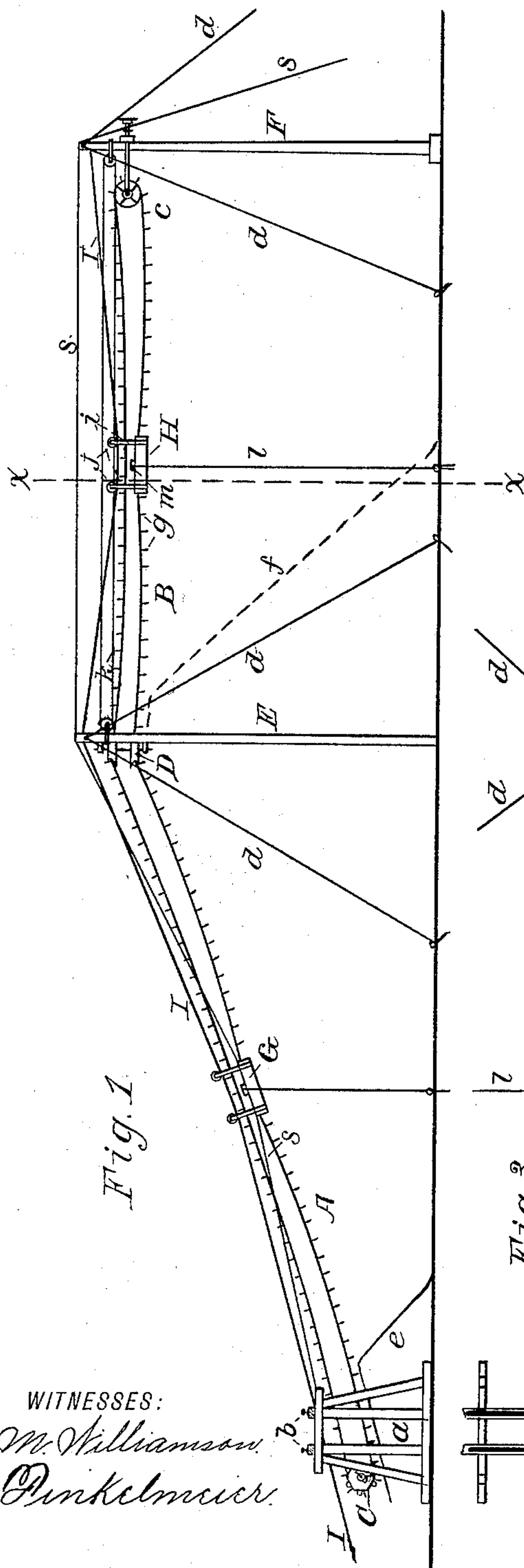


Fig. 1

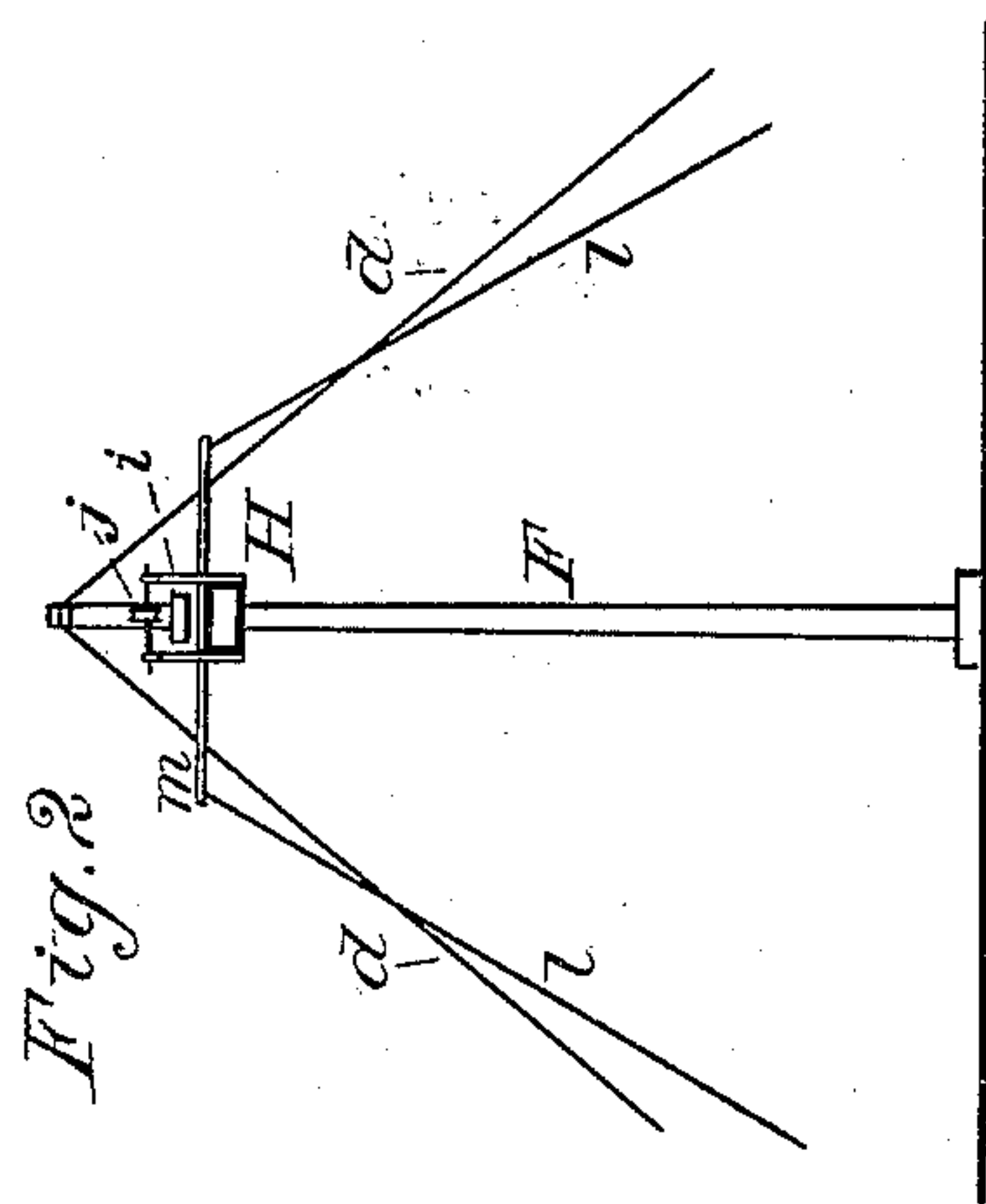


Fig. 2

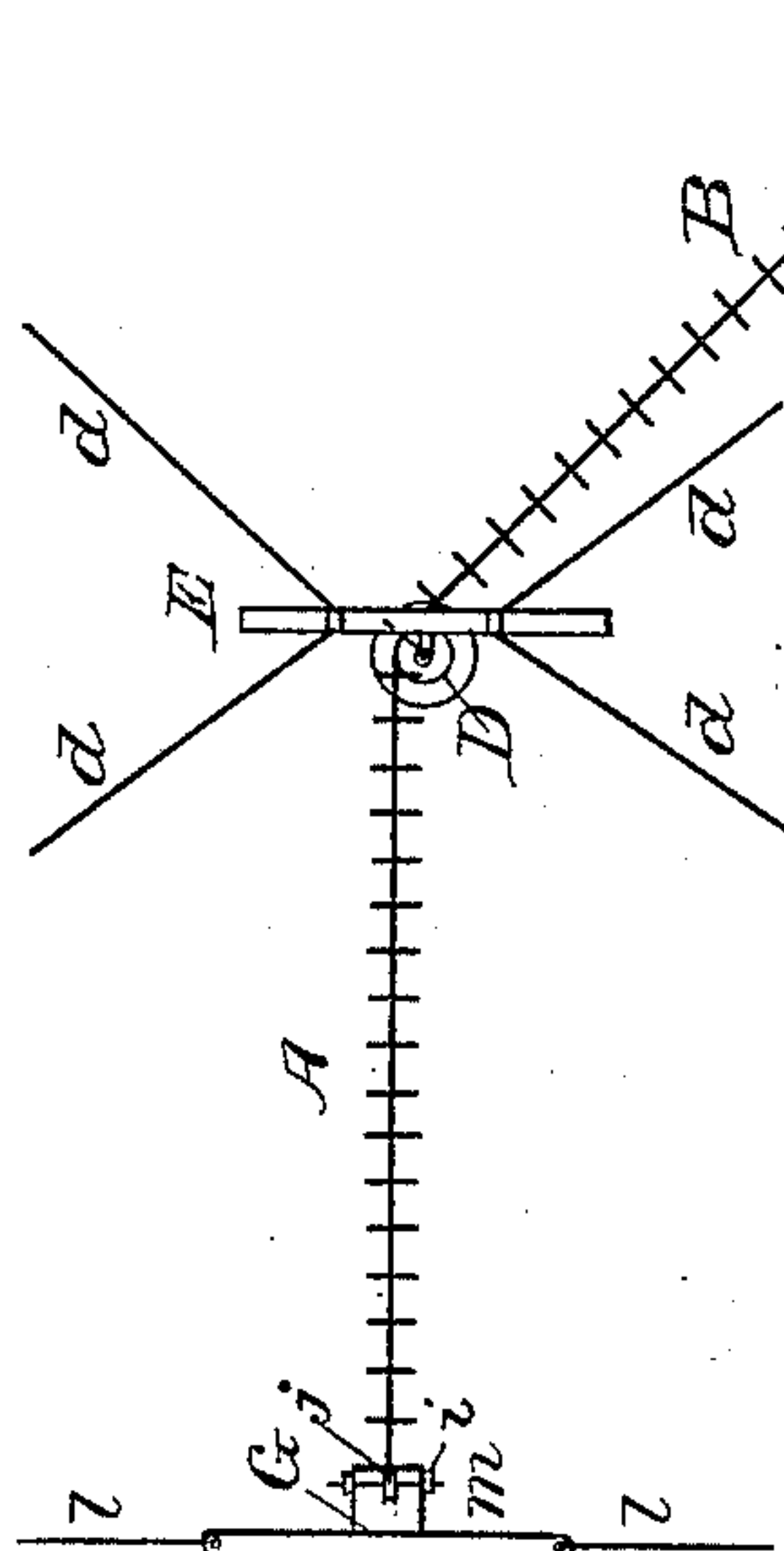


Fig. 3

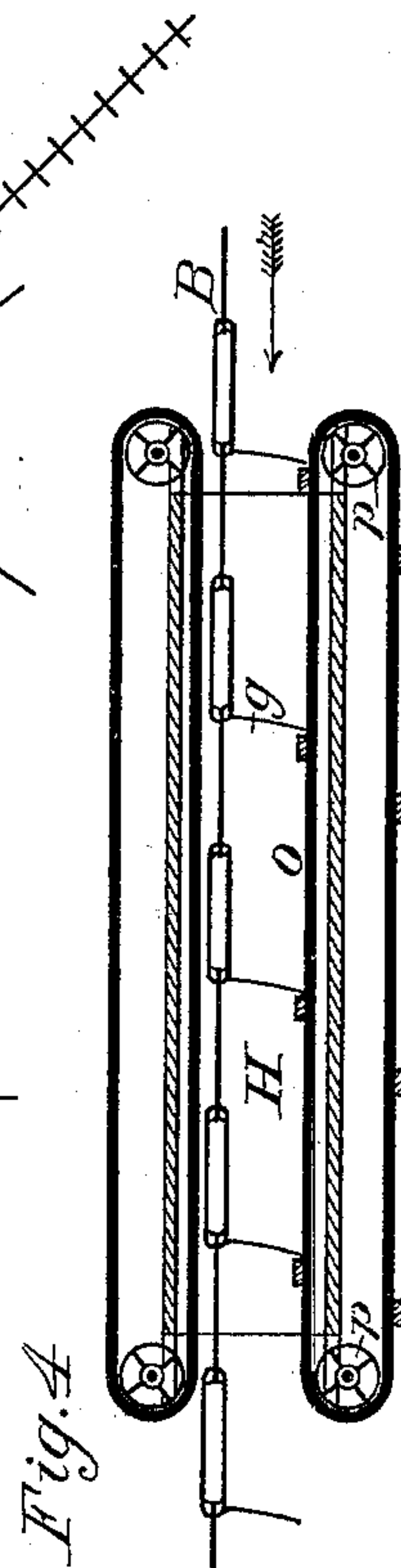
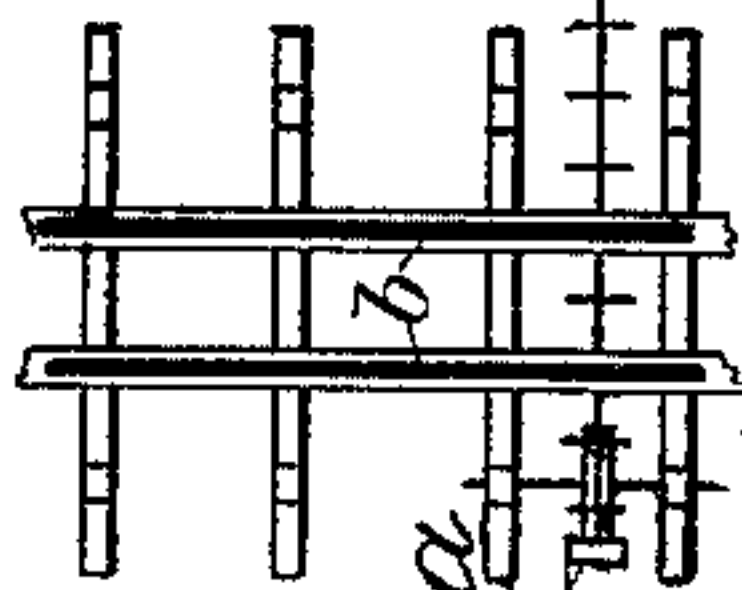


Fig. 4

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## CONVEYER FOR PILING COAL.

SPECIFICATION forming part of Letters Patent No. 409,604, dated August 20, 1889.

Application filed December 17, 1887. Renewed March 20, 1889. Serial No. 304,051. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES M. DODGE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a  
5 new and useful Improved Conveyer for Piling Coal; 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 applica-  
10 tion.

My present invention relates to that type of chain conveyer which is used for the purpose of conveying coal, culm, or other material away from a given locality of supply and  
15 forming it into piles or heaps of considerable magnitude, a sample or instance of which type of conveyer is shown and described in another application for Letters Patent by me, numbered 250,316.

20 As is well known, in this species of conveyer apparatus, especially when made of such proportions as are necessary for the handling of large quantities of material and for the heaping up of the latter into piles of  
25 considerable magnitude, there is always a very long and very heavy lower run to the endless conveyer-chain, to sustain the gravity of which and to keep which in a sufficiently-taut condition for successful operation not  
30 only requires great strength in the chain and its connections, but also renders necessary a tremendous draft strain or pull on the conveyer, with a proportionately large expenditure of motive power in the running of the  
35 machine or apparatus. I propose to overcome in a very great degree this objectionable peculiarity of all conveyers of the type alluded to as they have heretofore been constructed, and provide for use an apparatus of  
40 this species in which less draft-power is requisite for the performance of a given amount of work, and in which at the same time the chain and other parts of the conveyer are subjected to less strain; and to these main ends  
45 and objects my present invention may be said to consist, essentially, in the combination, with the lower run of the conveyer-chain, of a supporting or sustaining device which is suspended by suitable means in a manner to be  
50 adjustable lengthwise of the chain, and which affords a surface on which rest and along over

which travel the working-edges of the depending flights of said lower run of chain, all as will be hereinafter more fully explained, and as will be more particularly pointed out and  
55 specifically defined in the claims of this specification.

To enable those skilled in the art to understand and practice my said invention, I will now proceed to more fully describe it, referring  
60 by letters to the accompanying drawings, which form part of this specification, and in which I have shown my improvement carried into effect in that precise form of coal-conveyer in which I have so far practically used  
65 it, though it may of course be carried out under various modifications.

In the drawings, Figure 1 is a side elevation of a chain conveyer adapted to take coal or culm from a given locality of deposit (from  
70 the dumping-cars of an elevated railroad) and convey it away, forming it into a heap or pile of considerable magnitude. Fig. 2 is a vertical cross-section of the same at the line  $x x$  of Fig. 1. Fig. 3 is a partial top view of  
75 the same, showing only one of the chain-supporting guide boxes or tubes. Fig. 4 is a partial vertical central section through said one of the tubes, on an enlarged scale, and showing an endless carrier on which the flights of  
80 the conveyer-chain ride while traveling through the said supporting-tube.

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

A is the obliquely-arranged or ascending run of the chain conveyer, and B a nearly horizontal run forming an extension for building out the pile, the ascending portion of the conveyer running, as usual, from a drive-  
90 wheel C, the shaft of which is mounted in the lower part of the trestle-work  $a$  of the railroad  $b$  up to the elevated chain-wheel D, that has its shaft properly supported by the pole or frame E, all as clearly shown. The nearly  
95 or quite horizontal extension B of the chain conveyer runs, as usual, from the vicinity of the wheel D to and around a wheel  $c$ , the shaft of which is supported by or mounted on another pole F, which (as well as the pole E)  
100 is maintained in an erect position by suitable guys or cables  $d$ , all as fully illustrated.



I have indicated at Fig. 1 by full lines at *e* the first-formed portion of the pile of material and by the dotted lines at *f* the boundary of the pile enlarged.

5 G and H are similarly-constructed chain-supporting devices, that, as shown, are arranged, respectively, in connection with the lower run of the ascending portion A and with the lower run of the horizontal portion  
10 B of the chain conveyer, in a manner and for a purpose to be presently explained. As these devices G and H are substantial duplicates in structure, a description of that one marked H will suffice to convey a correct idea  
15 of the construction of both of them. This device, as will be clearly seen by reference to the drawings, is in form a tube of rectangular form in cross-section, and of a size in cross-section such as to easily accommodate  
20 the rectangular flights *g* of the conveyer that have to travel or pass bodily through said tube.

*i* are upwardly-projecting arms or suspender-rods, that are provided, preferably at the  
25 upper ends, with anti-friction wheels or sheaves *j*, which rest and ride on a cable tramway I, from which the device H is thus suspended and supported. From each end of H extends an endless cord or rope *k*, by means  
30 of which the said device H may be moved in either direction and then secured in place endwise or lengthwise of the conveyer-chain B, and by means of the holdfast cables or guys *l*, extending obliquely down from the  
35 opposite ends of the cross-bar *m* of the device H to suitable anchorages at the surface of the ground, the said device H may be held rigidly in place against any tendency to swing or shift laterally to any slight extent during the  
40 running of the conveyer. The means or devices for thus holding the device H in place laterally are not, however, indispensable, and therefore are not important parts of the improved apparatus made the subject of this  
45 application.

To facilitate the passage of the conveyer through the tubular device H, which, as already explained, serves to support the flights *g* and the chain from which they depend, I  
50 provide said sustaining device H with an endless carrier device *o*, which is mounted on and runs around or over two pulleys or wheels *p p* (see Fig. 4) in such a manner as to carry the supported flights and their chain through the  
55 device H without any undue frictional impediment. I prefer to have the endless carrier *o* made in the form of an ordinary chain belt with depressions or seats for the reception or accommodation of the lower (or working) edges of the flights *g*; but the details of structure of this endless carrier *o* may of course be varied without departing from the spirit of my present invention, and so far  
60 as may concern the main part of said invention it is not essential that the tubular device have any carrier device. The lower edges of the flights may rest on the upper

surface of the bottom of said device, which latter should have its open ends somewhat flared to insure the easy entrance of the  
70 flights.

In the use or operation of my improved contrivance when made precisely as shown the lower run of the obliquely-arranged portion A of the conveyer takes the coal or other  
75 material dumped at the vicinity of the base of the trestle-work *a*, (from cars that travel on the track *b*,) and, carrying it off as fast as supplied, builds it up into an oblong heap or pile in the manner now well known and after  
80 the fashion shown at *e*, where I have illustrated the initial portion of a pile just being built up; but instead of the lower run of this portion A of the chain conveyer being supported, as usual, at the points only  
85 where the wheels C and D are located (so that great draft-strain on the chain is necessary to keep the latter sufficiently taut) the lower run of the chain rests upon and is supported by the floor (or the endless carrier *o*)  
90 of the device G, the said chain-sustaining device G being in turn supported by the cable tramway I, from which it depends, as hereinbefore explained. It will be understood of course that this supporting device G, with its  
95 carrier attachments, is adjusted to or set in the first place at a point midway between the two chain-wheels C and D, so as to sustain the lower run of the conveyer-chain at about the middle of its length, and that as the accumulation of coal or other material increases,  
100 as indicated by the initial pile at *e*, this sustaining device G is periodically or frequently moved or adjusted by pulling up on the retaining cord or cable *s*, and then making fast  
105 said cord, so as to always have said tube substantially midway between the upper chain-wheel D and that point at which the lower portion of the lower run of the conveyer-chain moves or runs out of contact with the top surface  
110 of the pile of material being formed or accumulated. In this manner by adjusting the said supporting device G (on its suspending cable tramway I) with sufficient frequency for all practical purposes the lower run of  
115 the conveyer-chain always has its gravity properly supported at a point about midway between the support afforded by the chain-wheel D at the upper end of the double run of chain and the top surface of the pile of  
120 material at the points where the said lower run of chain and its flights ceases to be supported by the material being operated upon. Of course after the pile *e* shall have been built out considerably, and so as to have its  
125 highest and outermost point nearly approach the locality of the chain-wheel D, then the supporting device G becomes practically useless. After this point shall have been passed and the farther end of the pile or heap  
130 begins to assume about the position or condition indicated by the dotted line *f f*, then the nearly or quite horizontal double run of conveyer-chain at B comes into play or opera-



tion, and the suspended device H is then utilized in the manner similar to that described of G for the purpose of properly supporting the gravity of the lower run of the portion B of the chain conveyer, and in like manner this supporting device H is then periodically adjusted in substantially the same manner as already explained of G, and for substantially the same purpose.

By the use of one or more of such conveyer-chain-supporting devices as seen at G and H, and hereinbefore described, I am enabled, it will be understood, to make the double runs of conveyer-chain, both as to the oblique portion and as to the horizontal portion, or as to either one, (where only one portion may be used,) of much greater length than it would be possible to otherwise use such chain conveyers, and hence am enabled to convey away much larger quantities of material and form the latter into heaps of very much greater magnitude without any hand labor than it has been possible to do heretofore with contrivances constructed substantially after the fashion of that herein shown and described, but not having any such means for supporting the lower run or working portions of the conveyer-chains.

Having now so fully explained the nature and results of my improved conveyer apparatus, and wishing it to be understood that the chain-sustaining device may be used either on an obliquely-ascending chain conveyer or on a horizontal pile-forming conveyer, or on both, and that many variations in the mere details of the structure shown

and described may be made without departing from the pith of the main feature of my invention, what I claim herein as new, and desire to secure by Letters Patent, is—

1. In combination with a chain conveyer composed wholly of an endless chain provided with flights and arranged and operating either to form into a heap or pile coal or other material supplied to the lower end or portion of said chain conveyer, or to remove the pile of material, an adjustable chain-supporting device arranged in connection with the lower run of the flighted chain and adapted, as specified, to support the gravity of the chain and its flights at various points intermediate of the points at which the end portions of the conveyer-chain are permanently supported by the usual sprocket-wheels, all in substantially the manner and for the purposes hereinbefore set forth.

2. The combination, with a chain and its flights, of a tubular or centrally-open adjustable supporting or sustaining device arranged in connection with the lower run or portion of said flighted chain, and provided, as specified, with suitable means for facilitating the travel through it and along over the upper surface of its bottom or lower side of the attached flights of the chain without undue friction, all as hereinbefore fully set forth.

In witness whereof I have hereunto set my hand this 23d day of November, 1887.

JAMES M. DODGE.

In presence of—

GEO. M. BAKER,  
A. J. B. BERGER.