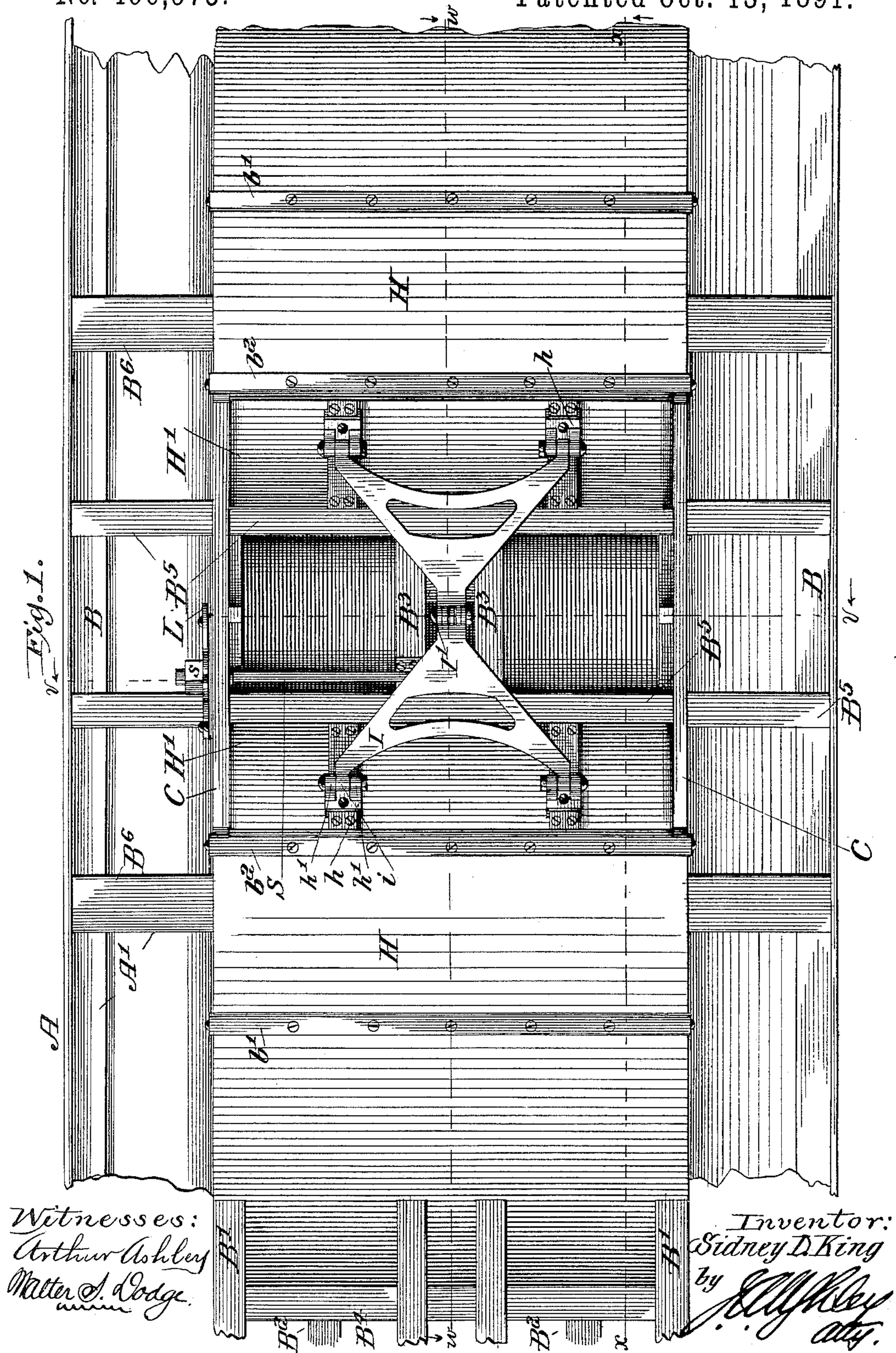


No. 460,975.

Patented Oct. 13, 1891.



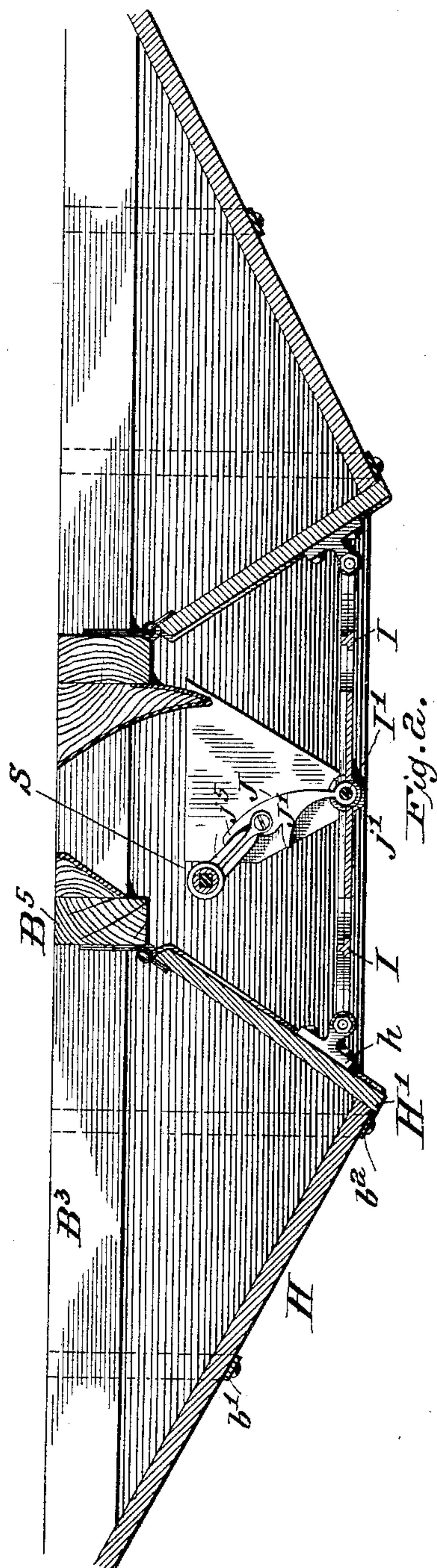
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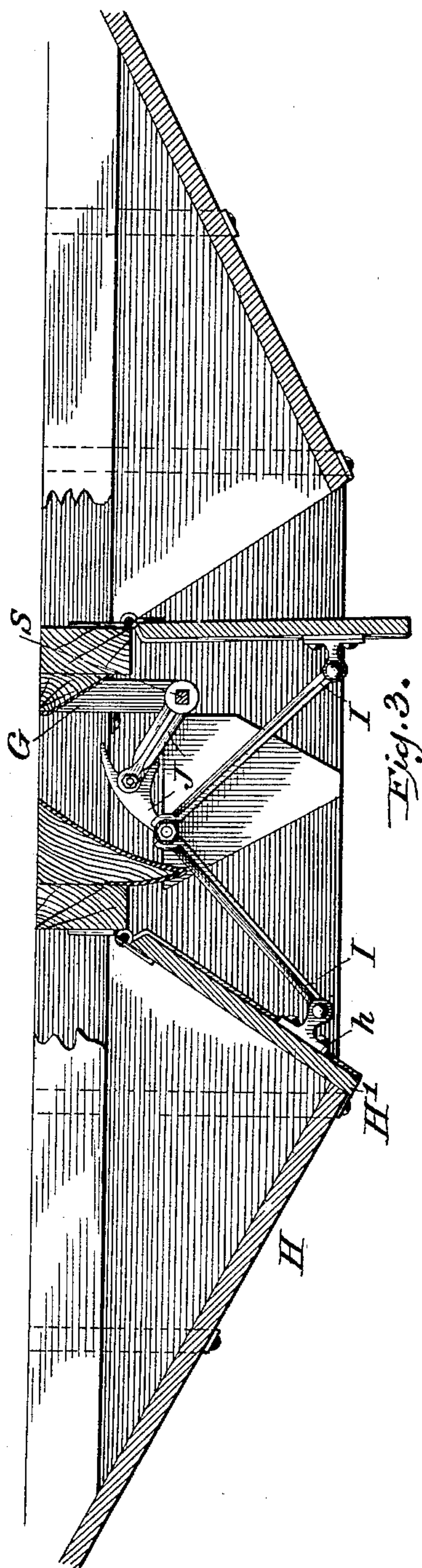
S. D. KING.
DUMPING CAR.

No. 460,975.

Patented Oct. 13, 1891.



Witnesses:
Arthur Ashbery
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Inventor:
Sidney D. King
by *[Signature]*
Attorney

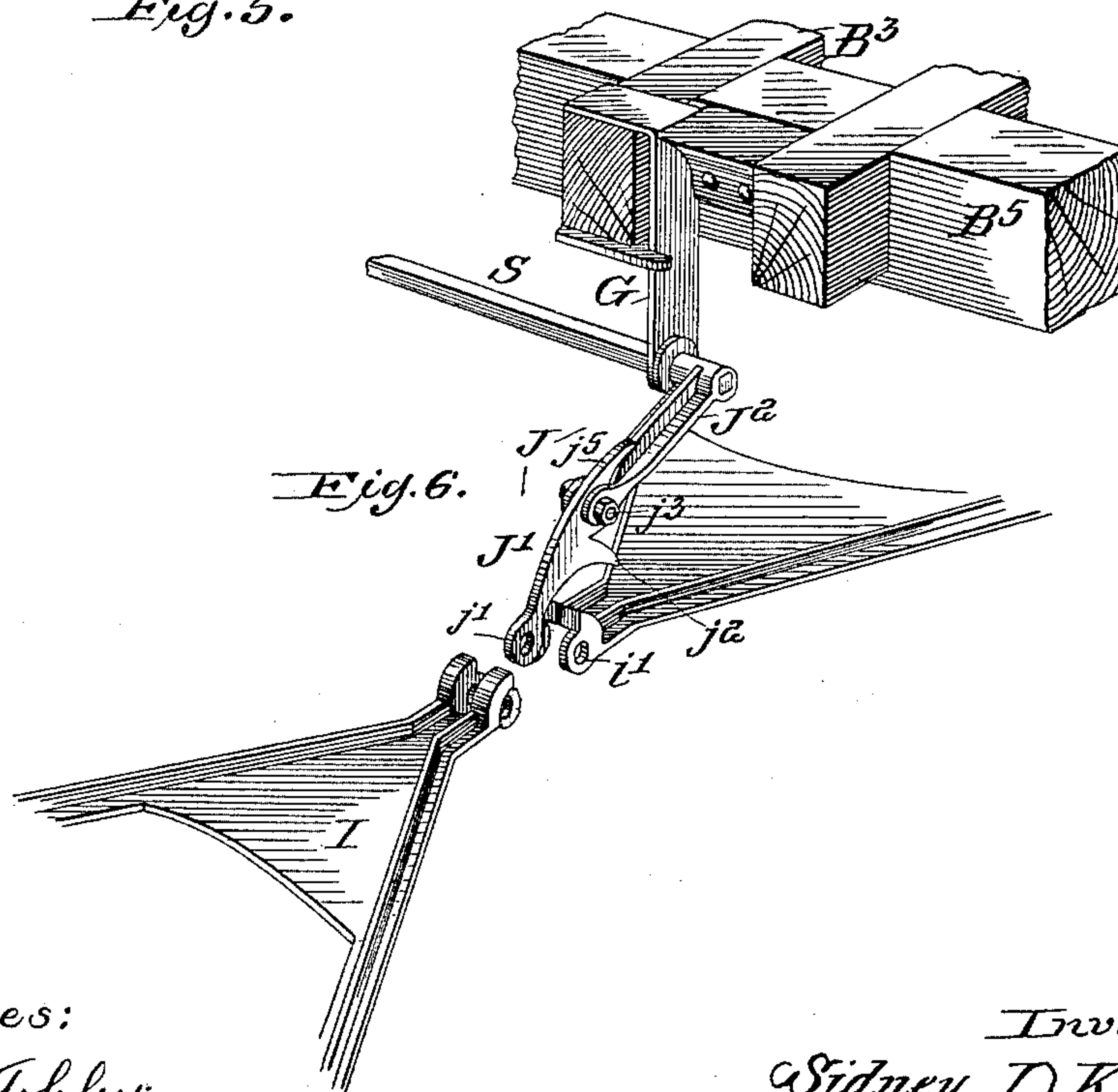
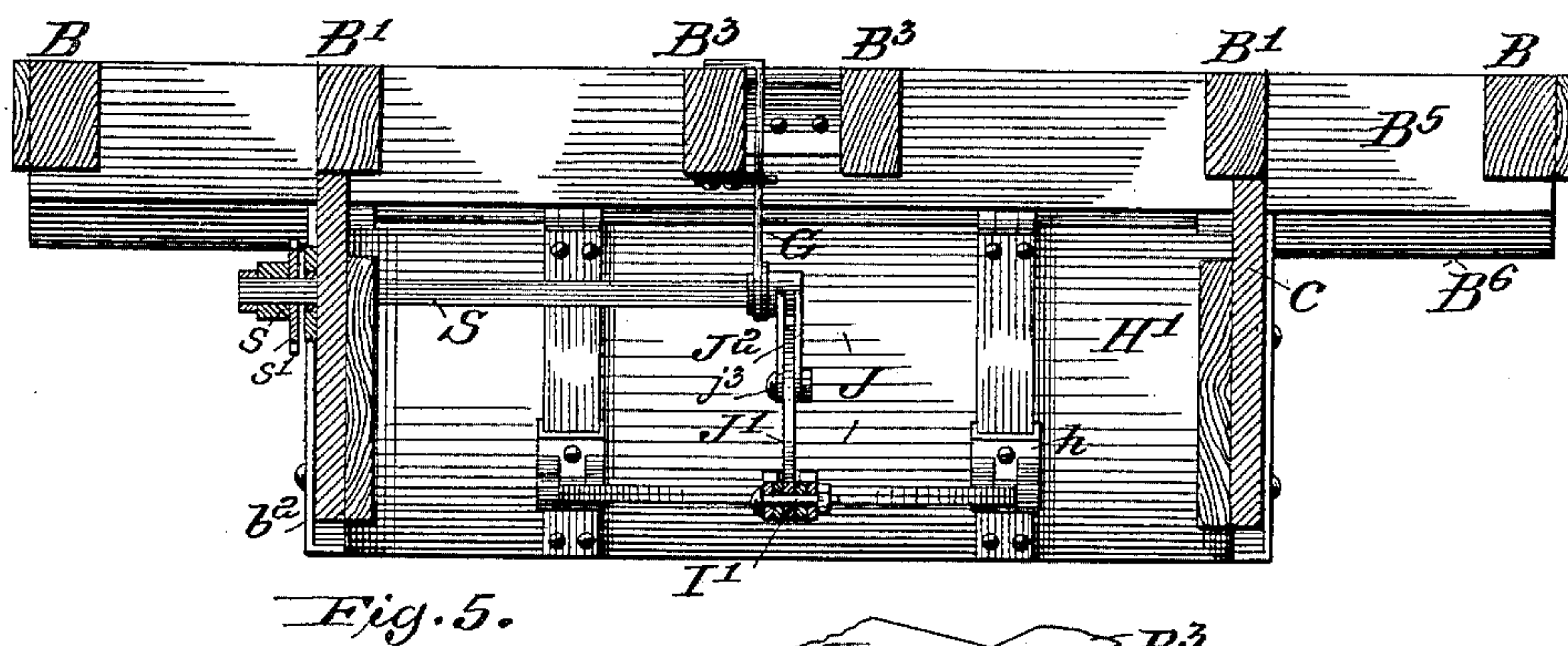
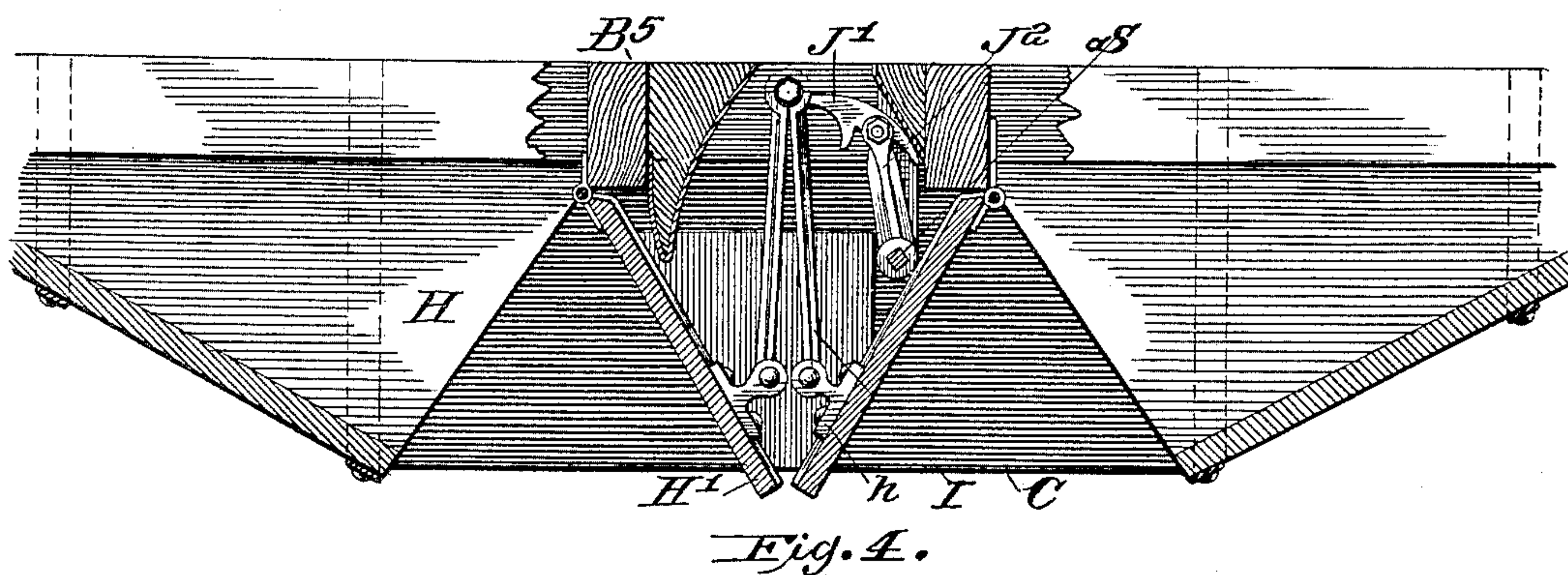
(No Model.)

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S. D. KING.
DUMPING CAR.

No. 460,975.

Patented Oct. 13, 1891.



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(No Model.)

4 Sheets—Sheet 4.

S. D. KING.
DUMPING CAR.

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Patented Oct. 13, 1891.

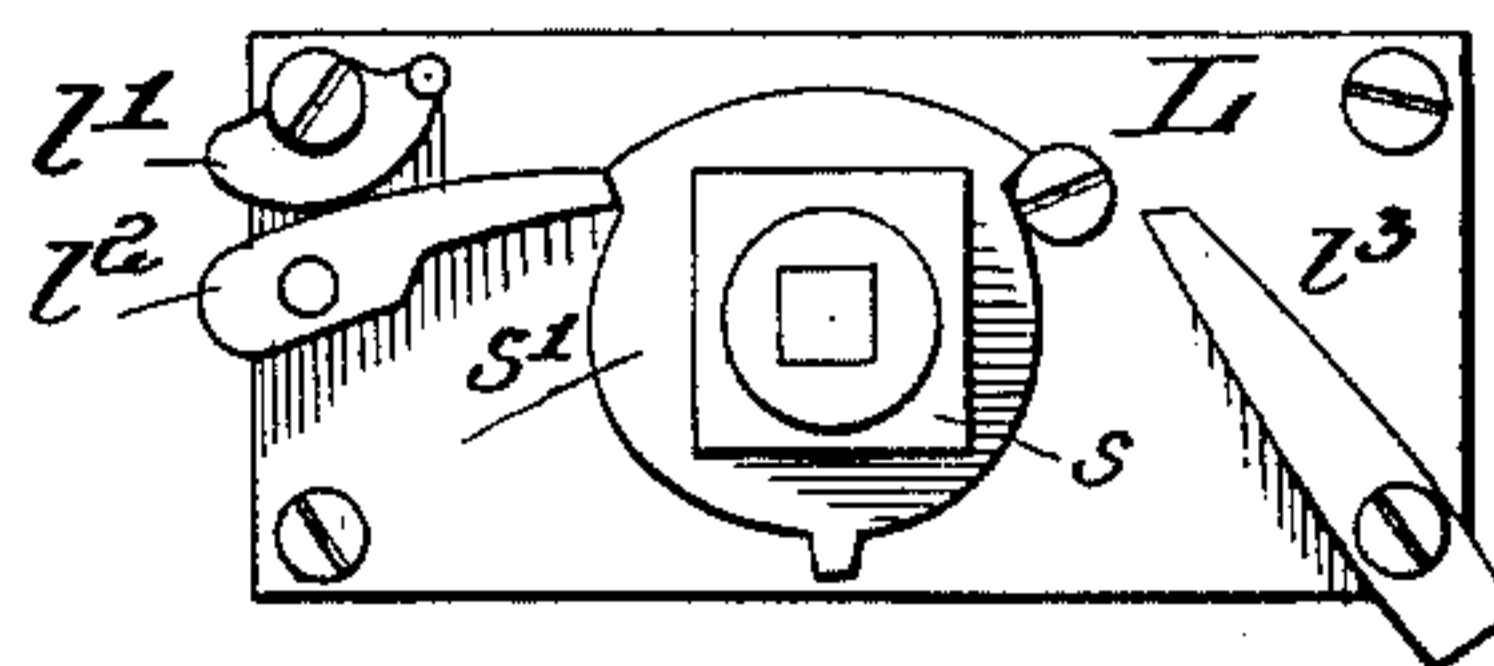
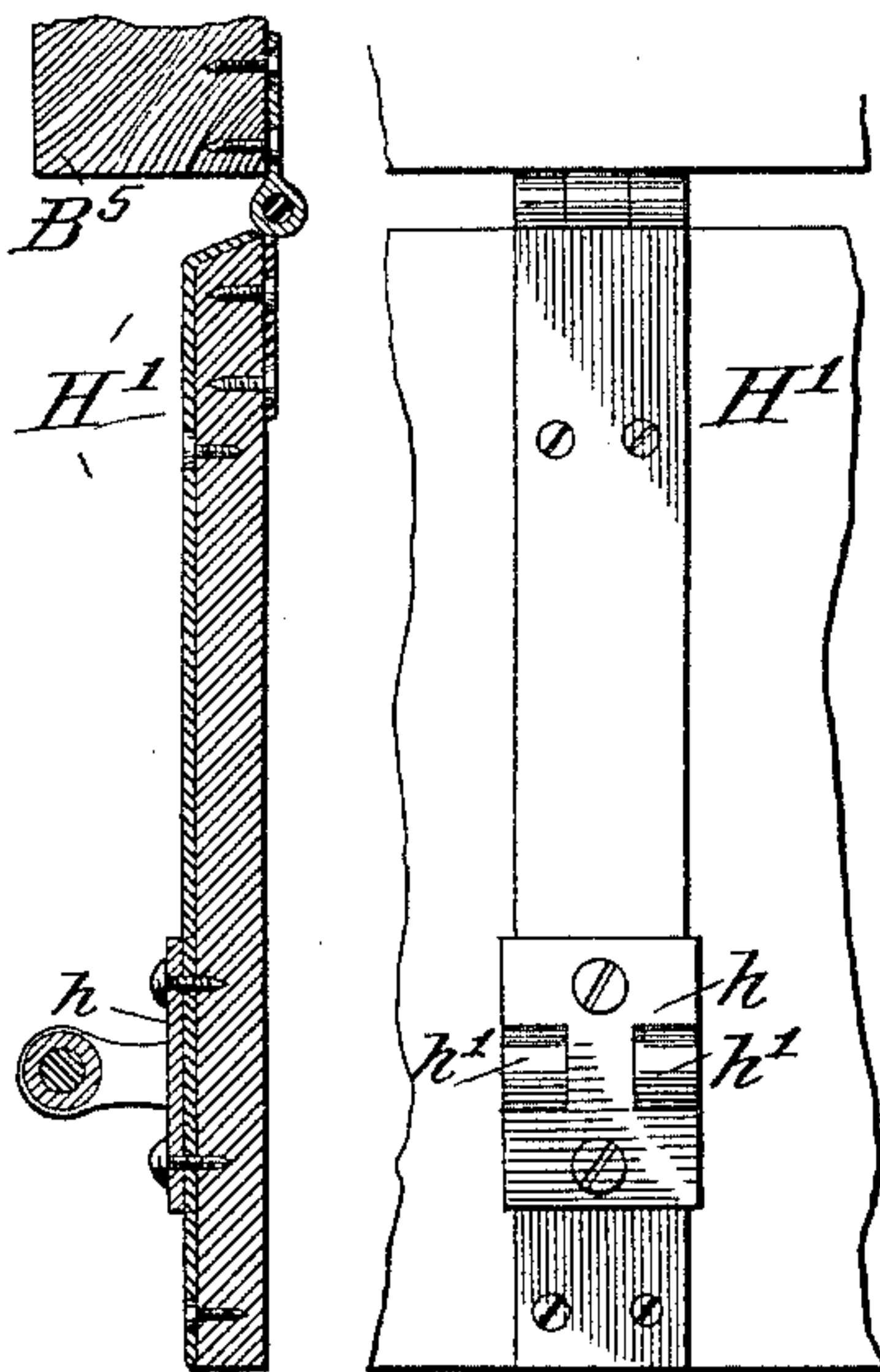
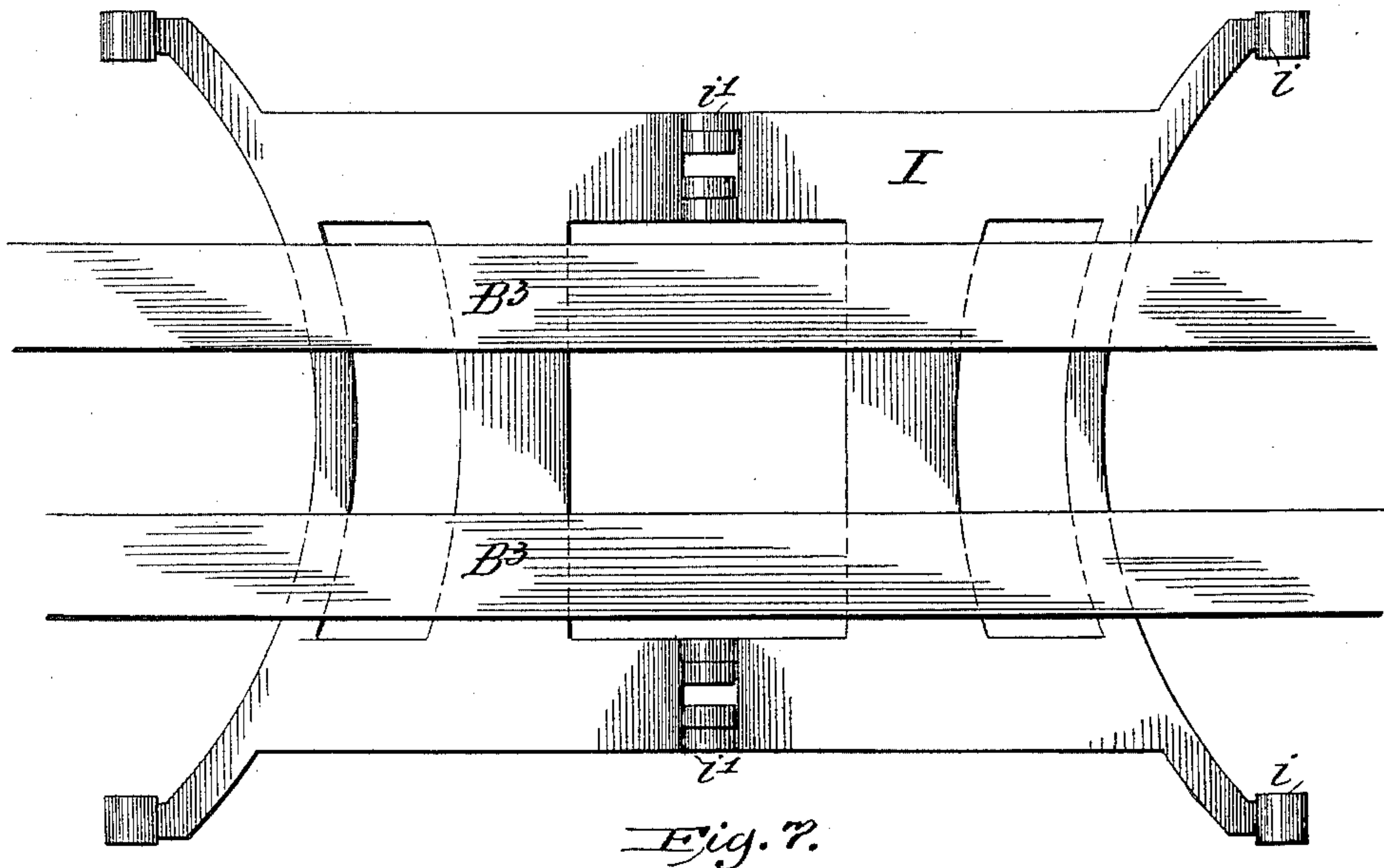


Fig. 10.

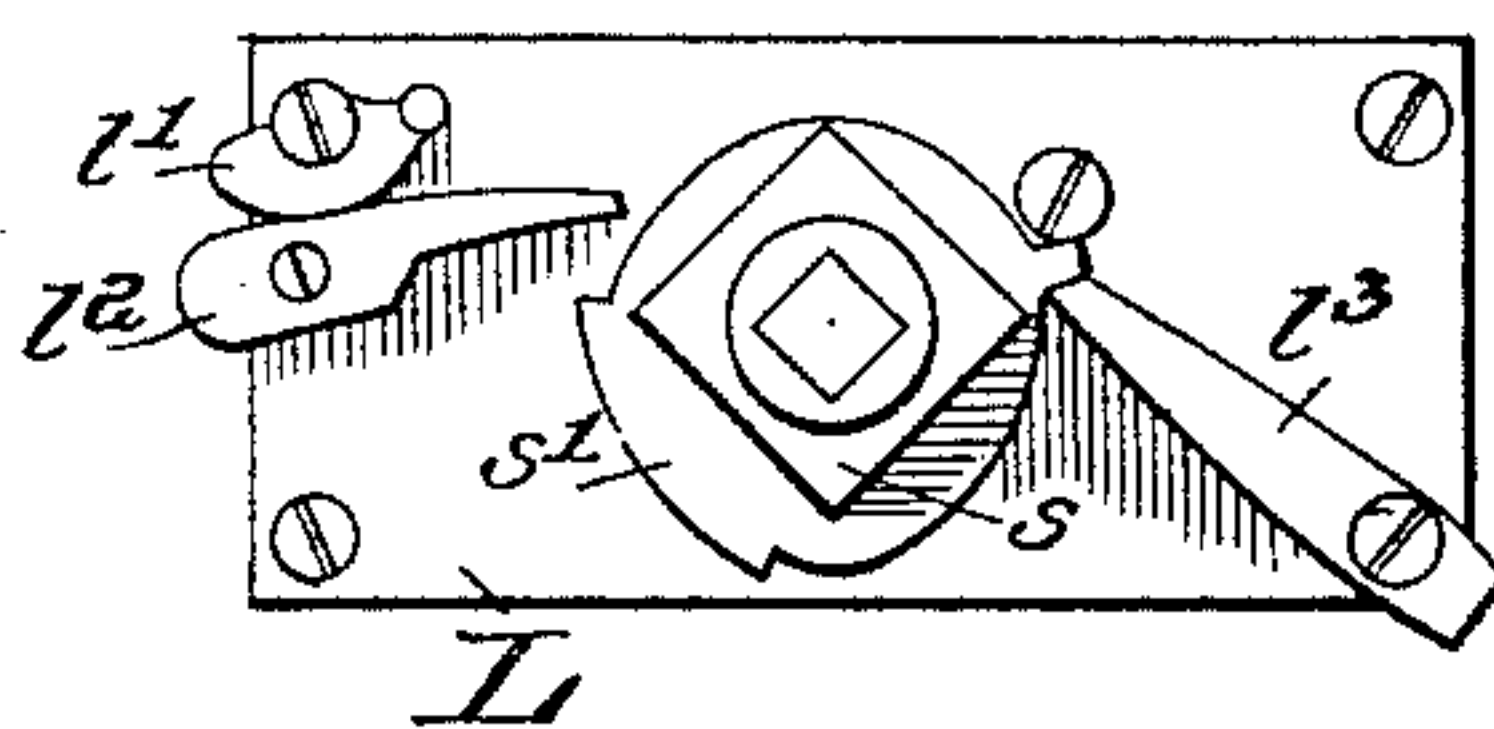


Fig. 10a.

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UNITED STATES PATENT OFFICE.

SIDNEY D. KING, OF PITSTON, PENNSYLVANIA.

DUMPING-CAR.

SPECIFICATION forming part of Letters Patent No. 460,975, dated October 13, 1891.

Application filed April 29, 1891. Serial No. 390,964. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY D. KING, a citizen of the United States, and a resident in the borough of Pittston, in the county of Luzerne, in the State of Pennsylvania, have invented a new and useful Dumping-Car for Railways, of which the following is a description.

In United States Patent No. 278,343, issued to me on the 29th day of May, 1883, I described and claimed a dumping-car for the transportation of coals or other granular material in bulk, in which the body or main chamber of the car was by a transverse partition divided into two longitudinally-extending compartments, each of which was provided with a hopper which inclined from the end of the car and discharged toward the center thereof, and each of which was provided with a closing door which depended in a nearly vertical line from a cross-frame tie-timber or needle-beam, which was secured underneath the bed-frame proper of the car, the two oppositely-placed doors being provided with counterweighted connecting-arms which were attached to the doors and which outwardly were connected in common to a cross-bar or hinge-rod, the arms serving, when the hopper has been discharged of its contents, as weights to close the doors, and afterward, when they have been closed, as braces locked in place by suitable appliances to prevent them from being forced open under any pressure that may be exerted by the contents of the car. Subsequently, in United States Patent No. 336,119, issued to me on the 16th day of February, 1886, I described and claimed certain improvements in or modifications of the above generally-described construction, the object being, as stated, to provide more simple and convenient means for transmitting the motions of the doors to the shaft which carries the spur-wheel for securing the doors in their proper adjustment, such means embracing, among other elements, a movable pintle, a crank-shaft connected with the pintle, and locking devices connected with the crank-shaft.

The present invention while embodying centrally and oppositely discharging hoppers,

as in the former constructions above referred to, embraces various important improvements thereon, which will now be briefly indicated.

In the accompanying drawings, which constitute a part of this specification, Figure 1 represents a detail bottom plan view of the car to which my improved hopper and closing doors are applied, such doors being shown in their closed position. Fig. 2 is a side sectional elevation, the section being in the line *ww* in Fig. 1, the doors being closed as in that figure, and the view being in the direction indicated by the arrow. Fig. 3 represents a partial vertical longitudinal section in the line *xx* of Fig. 1, the view being in the direction opposite to that seen in Fig. 2, and one of the doors being represented as partially open. Fig. 4 is a detail elevation partly in vertical section in the line *xx* in Fig. 1, representing the doors in their open adjustment. Fig. 5 is a view in part in elevation and in part in section on the irregular line *vv* in Fig. 1. Fig. 6 is a view in perspective showing the manner in which the hinged braces are attached, the shaft and jointed arm for operating the same, and the hanger in which the inner extremity of the operating-shaft is supported. Fig. 7 represents a detail bottom plan view showing a modification of the door attachments under which the parts are hinged at two points, each of the hinged joints being capable of passing upwardly between the sills into the bed-frame space. Fig. 8 is a detail section, and Fig. 9 is a detail elevation, of the exterior face of one of the hopper-doors and appliances. Fig. 10 is an elevation of the locking-plate and appliances, as when the doors are in their closed position; and Fig. 10^a is a like view, as when the hopper-doors are locked in their most open position.

Instead of flaring from the side of the car continuously inwardly and downwardly, as in the construction above generally referred to, the exterior of the hopper is vertical at its sides, which are formed in common with oppositely-placed solid vertically-arranged trusses or narrow beams *C*, which extend from a point near the upper end of each hopper to a point in a plane with the lower extremity

of the same, and extend in an unbroken line across the space between the discharging ends of the two hoppers.

From the outer intermediate longitudinal sills $B' B'$ securing-bars $b' b^2$ extend downwardly along the sides of the trusses or beams C and across the bottom of the hopper H, which, it will be observed, is wholly below the plane of the floor of the car, to the corresponding sill upon the opposite side of the car. In this connection it may be noted that the bed-frame A' of the car A, in addition to the exterior longitudinal sills B B and the outer intermediate sills $B' B'$, has central longitudinal sills $B^3 B^3$, which extend from end to end of the car, and intermediate short longitudinal sills B^2 and B^2 , the reduced inner ends of which are received in short transverse sills $B^4 B^4$. Additionally, the bed-frame embraces the central transverse sills $B^5 B^5$, which are formed of several sections which are "let in" between the longitudinal sills and the quarter needle-beams $B^6 B^6$, which by preference extend merely from the exterior of the outer face of the hoppers to the outer face of the exterior longitudinal sills B B.

The provision of the vertical plate or truss C, which, as will be seen, is essentially an integral downward continuation of the intermediate longitudinal sill B' , is designed to supply an additional element of strength at the very point where strength is indispensable and where the pressure upon the hopper is greatest, and it is for this reason that its vertical extent is made so great as to render the provision of a longitudinal truss-rod beneath it wholly unnecessary.

Another object sought to be accomplished in the present construction has been the provision of an enlarged discharging-opening or hopper-mouth, without any corresponding increase in the horizontal area through which the contents of the hoppers are discharged. This end has been attained by dispensing with the cross-bar and the pintle employed in my former constructions, and by substituting therefor a short hinge-pin, which, in the unclosing movements of the doors, enters the bed-frame space between the two longitudinal central sills $B^3 B^3$, and thus permits the doors to be swung open until they come in contact back to back. By this simple expedient the discharge-opening is increased in transverse extent from sixteen inches to twenty-four inches, the distance across the space between the lowermost point of the two hoppers remaining unchanged. Referring now, in this connection, more particularly to the details of the drawings, the doors $H' H'$ of the hopper H are hinged to the central transverse sills $B^5 B^5$. At a short distance above their lower extremity, upon their exterior face, at a suitable distance from each end, each door is provided with a hinge-plate h , which has two perforated lugs or bifurcations $h' h'$, between which is received the extremity i of one of the braces I. At their opposite

extremity the braces I are themselves bifurcated or formed with hinge-openings $i' i'$ to receive hinge-pin I' , which receives also the lower perforated extremity j' of the lower member J' of a connecting-arm J. The member j is provided at one side with a spur or stop j^2 and upon its opposite side with an overlying stop j^5 , and at a point between these two stops it is perforated to receive a pivot-pin j^3 , by which it is secured between the jaws or bifurcations $j^4 j^4$ of the upper member J^2 of the connecting-arm J, the opposite extremity of which is rigidly secured upon the inner extremity of the transverse horizontal operating-shaft S, the outer extremity of which, extending through the plate or truss C, and through the locking-plate L, is there provided with a fixed enlargement s , and with a suitable stop s' , while the inner extremity is journaled in a stout hanger G, which is, by its upper extremity, rigidly secured to the bed-frame.

The locking-plate L is at the left provided with a cam l' and with pivoted arm for engagement with a projection or recess upon the stop-plate to lock the doors in their closed position and at its left with a similar pivoted stop to lock the doors when in their open adjustment.

It will be perceived that in the operation of the shaft, when closing the doors, the body of the upper member J^2 of the connecting-arm will, through a portion of the movement, act positively in connection with the spur j^2 upon the lower member of the arm to move the doors toward their closed position, and that the overlying stop j^5 of the lower member by its contact with the body of the upper member prevents such close closure of the joint as might, when the hoppers were heavily loaded, render it difficult to effect the unclosing of the doors. Through this provision, which is analogous to that of the joint of a buggy-top, a very slight movement of the shaft is sufficient to effect the upward movement of the braces, while, on the other hand, until such movement is actually initiated, no weight which it would be possible to supply to the hoppers would be sufficient to force their doors open.

It will be understood that in operation any suitable arm or winch may be applied to the enlarged end s of the operating-shaft S.

The invention having been thus described, what is claimed is—

1. A dumping-car which is provided upon the bottom surface of its bed-frame with parallel vertical rigidly-attached longitudinally-extending strengthening-plates, each of which forms in effect a downward continuation of a superposed intermediate sill and constitutes the vertical exterior side wall of a conveying and discharging hopper and extends from end to end and from top to bottom of the same.

2. A dumping-car which is provided with intermediate longitudinal sills which have subjacent downwardly-extending strengthening beams or plates, which constitute oppo-

site sides of two coincident discharging-hoppers, the hoppers being below the plane of the floor of the car and having strengthening-bars which extend vertically along the
5 strengthening-plates and horizontally across the bottom of the inclined portions of the hoppers.

3. A dumping-car which has oppositely-placed hopper-doors which are provided upon
10 their coincident exterior faces with braces which at one extremity are pivoted to the door and which at their opposite extremity are hinged together by a joint which is movable from its most depressed position to a point
15 within the plane of the bed-frame of the car, whereby the area of each discharge-opening is increased, while the aggregate horizontal area of the discharging-space remains unchanged.

20 4. A dumping-car which has oppositely-placed hopper-doors and connected braces which operate in connection with such doors,

a horizontal operating-shaft which extends transversely of the bed-frame of the car, and a compound connecting-arm which extends 25 from the operating-shaft to the central joint of the braces, conjoined for operation substantially as described.

5. In a dumping-car, oppositely-placed hopper-doors, jointed braces which are pivoted 30 to such doors, a horizontal operating-shaft, and a compound arm which connects the operating-shaft with the jointed braces and which is provided with an overlying spur or stop, whereby the intermediate of the three 35 pivotal points of the connecting-arm is thrown outside the plane of a line which is drawn between the two extreme points, united for operation substantially as set forth.

SIDNEY D. KING.

Witnesses:

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C. C. KING.