

(No Model.)

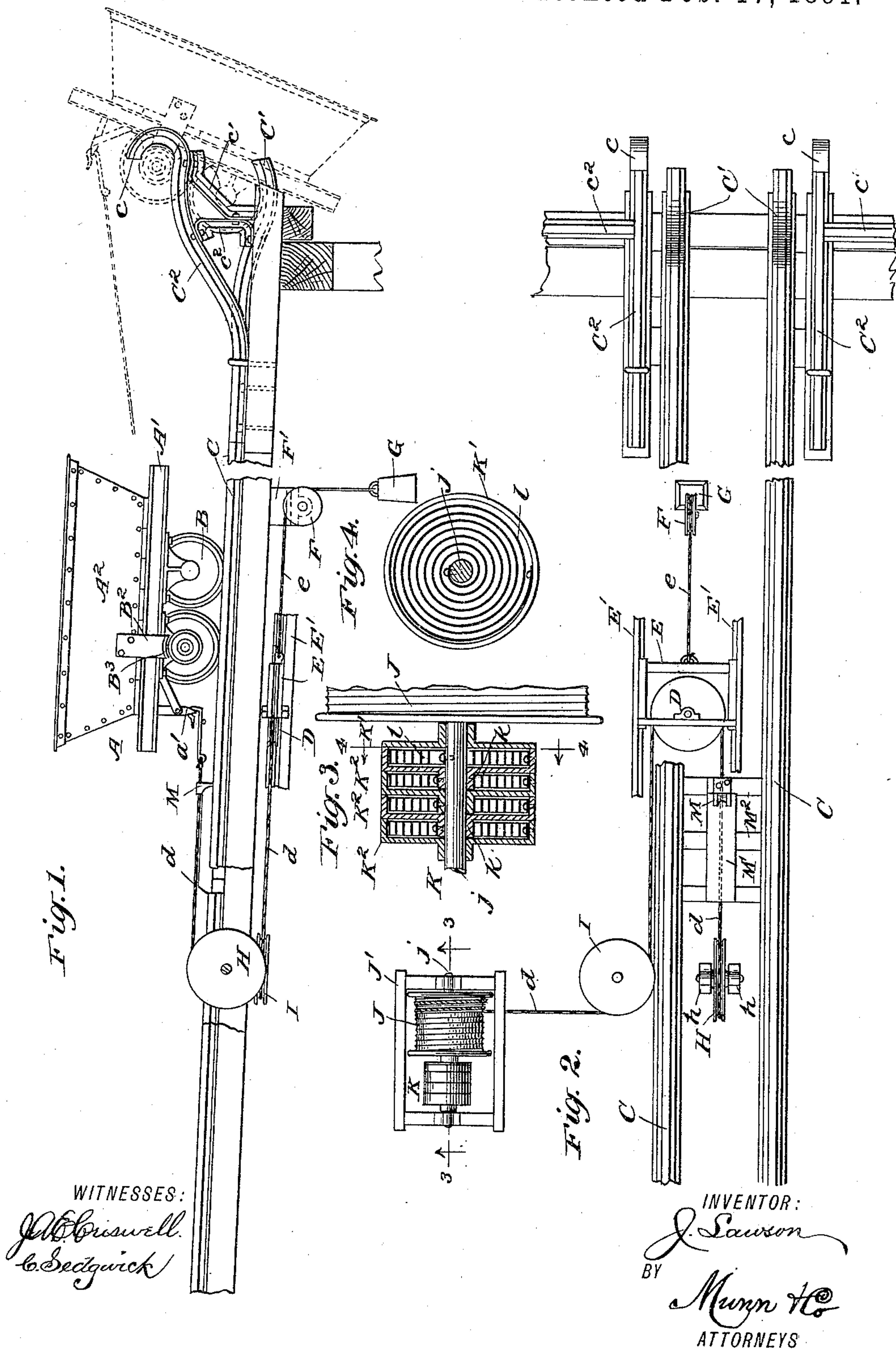
2 Sheets—Sheet 1.

J. LAWSON.

DUMPING CAR AND OPERATING MECHANISM THEREFOR.

No. 446,758.

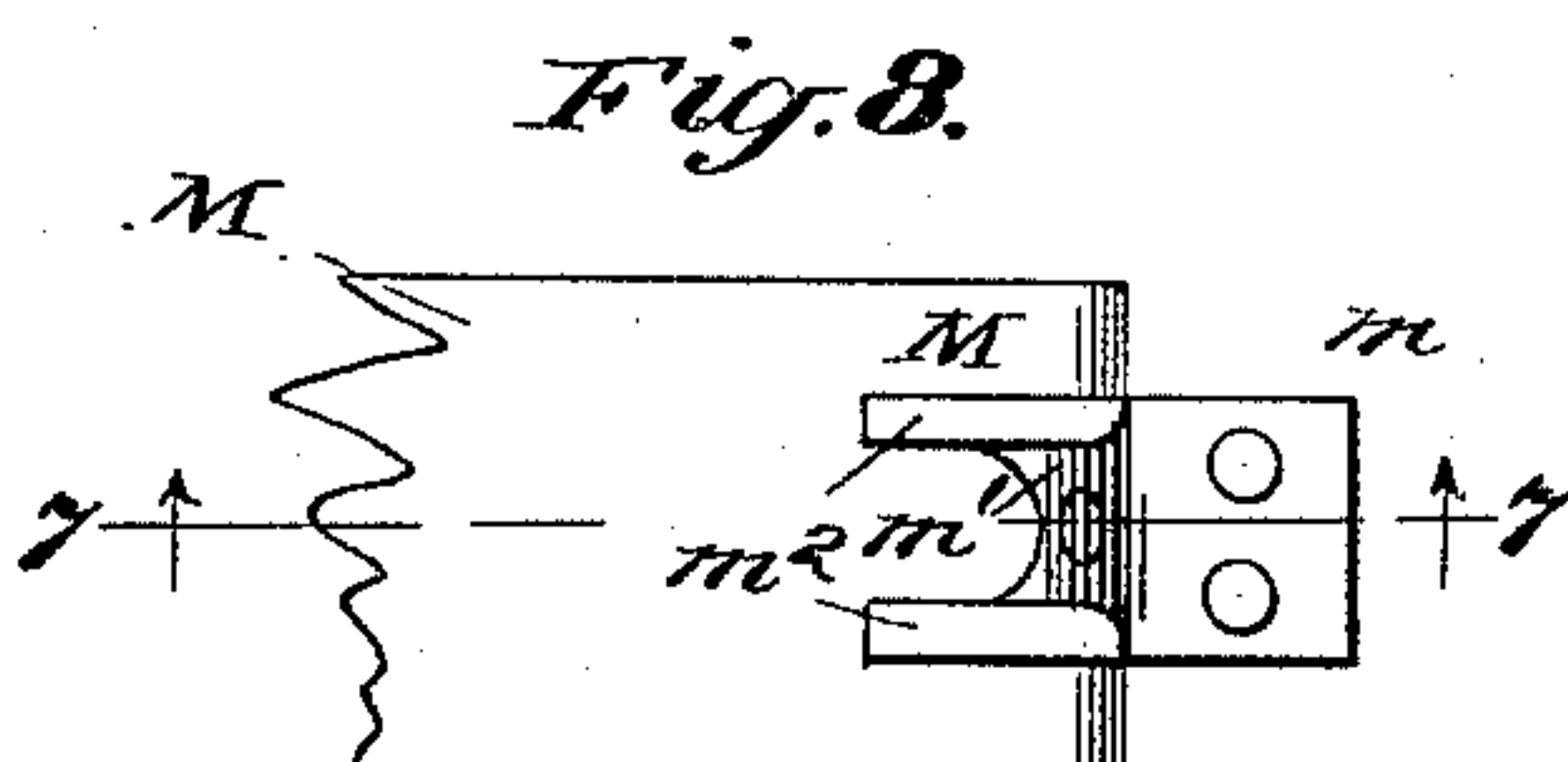
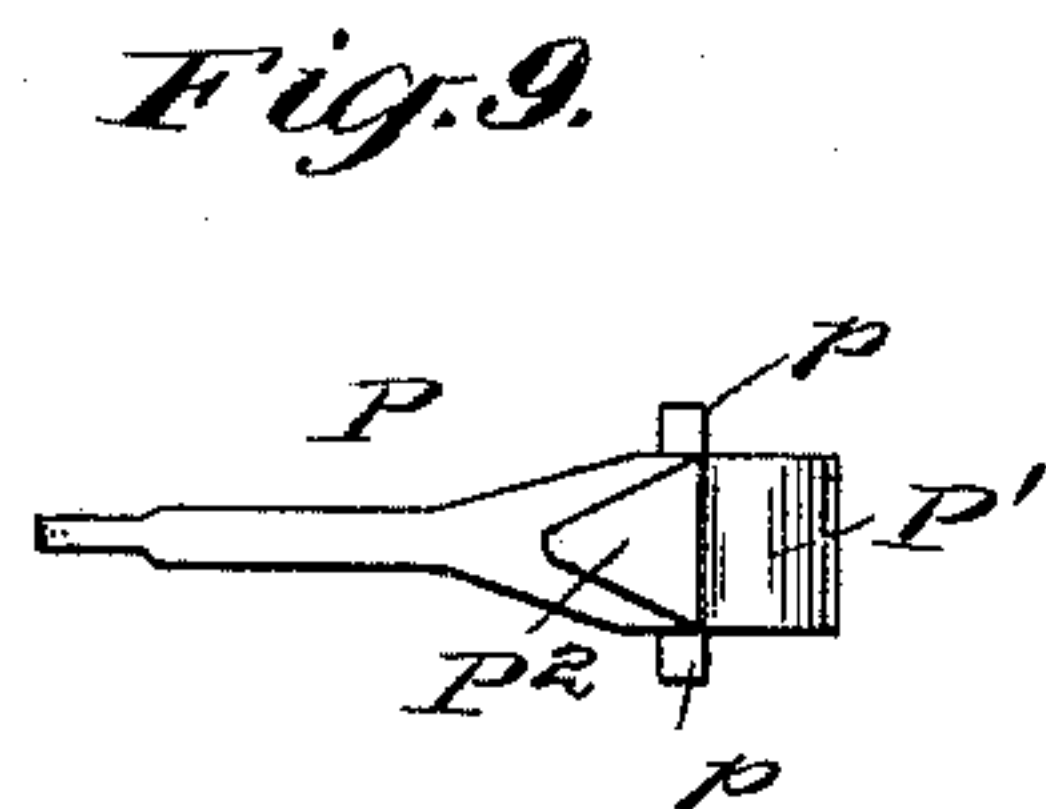
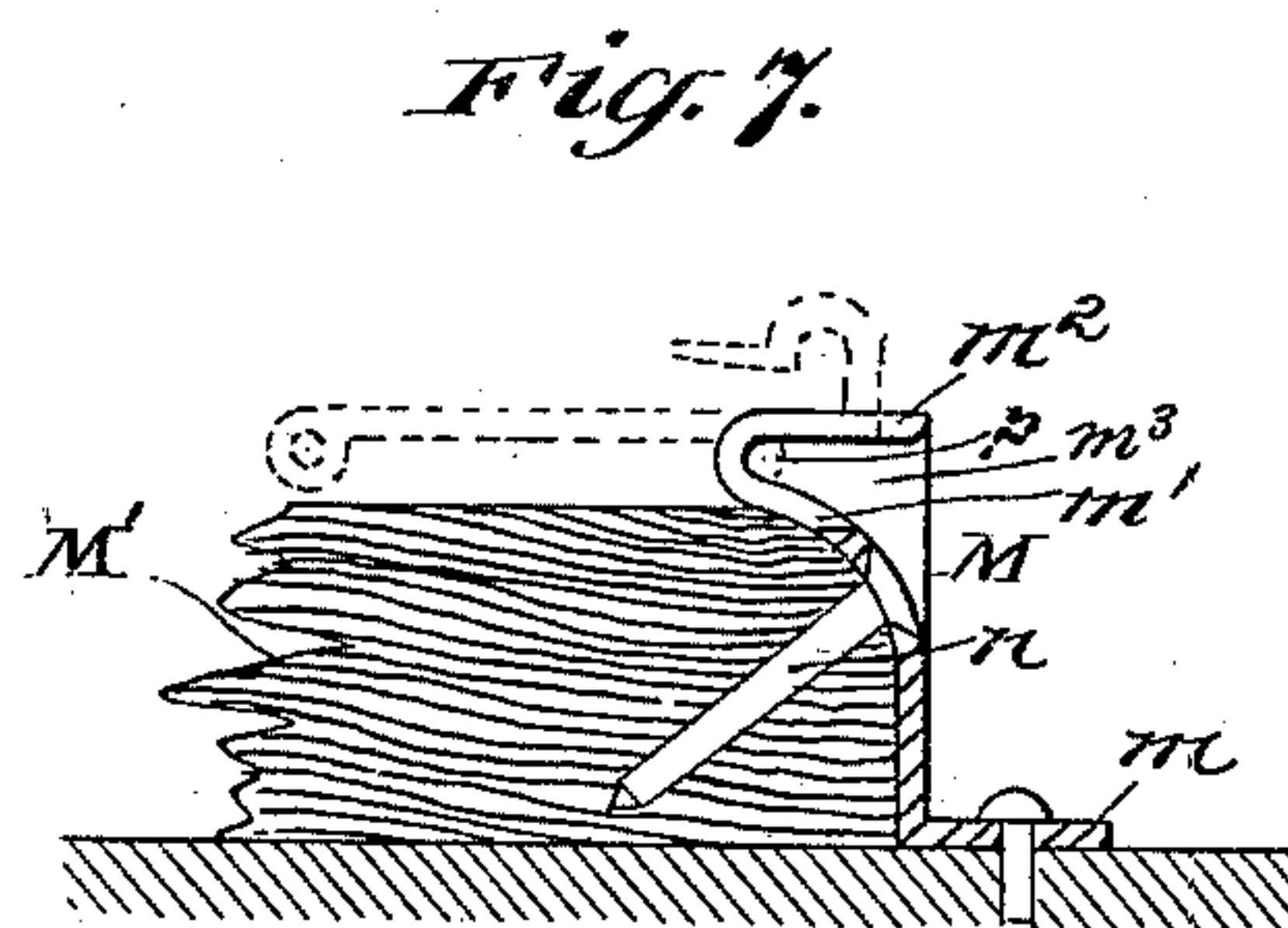
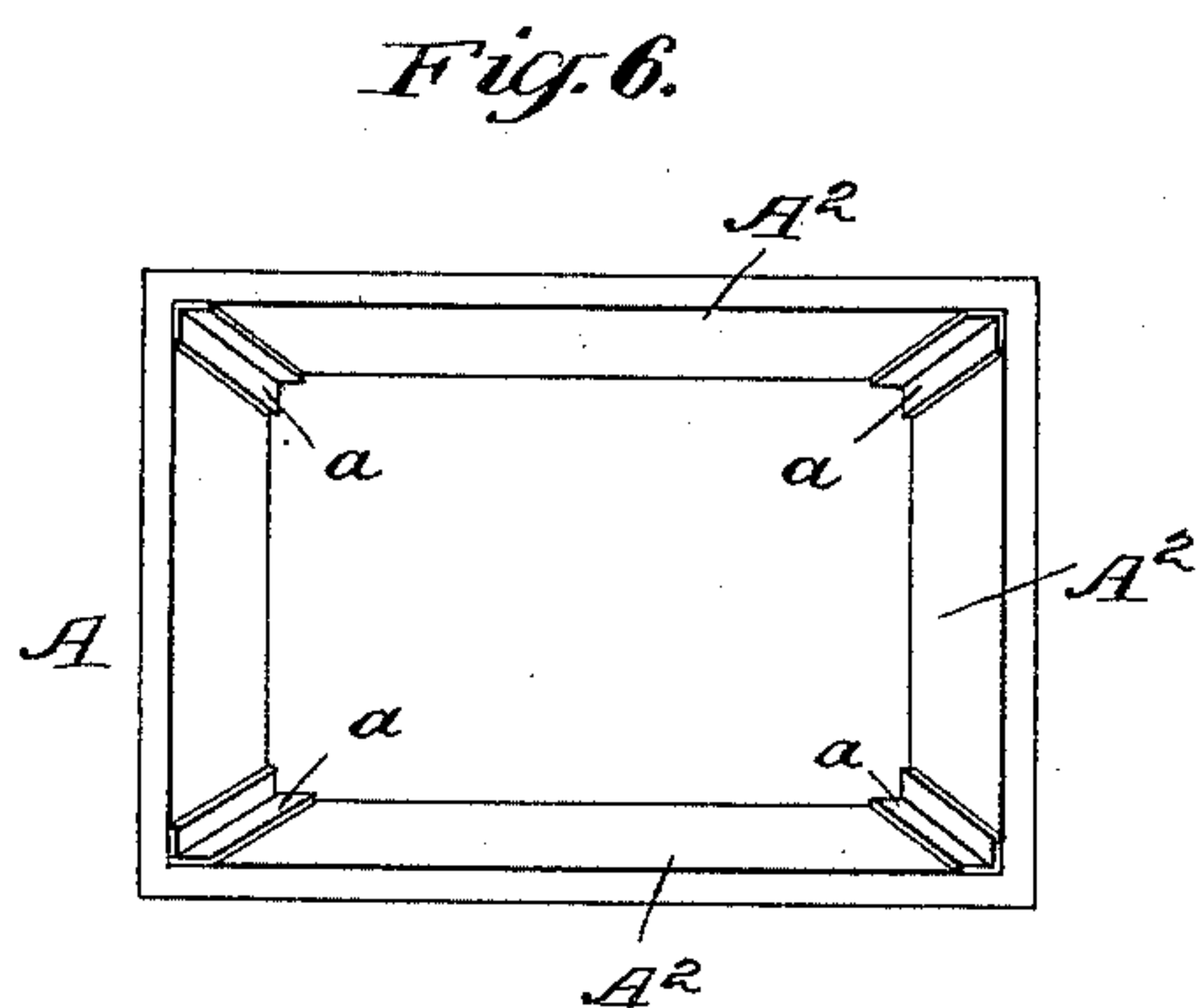
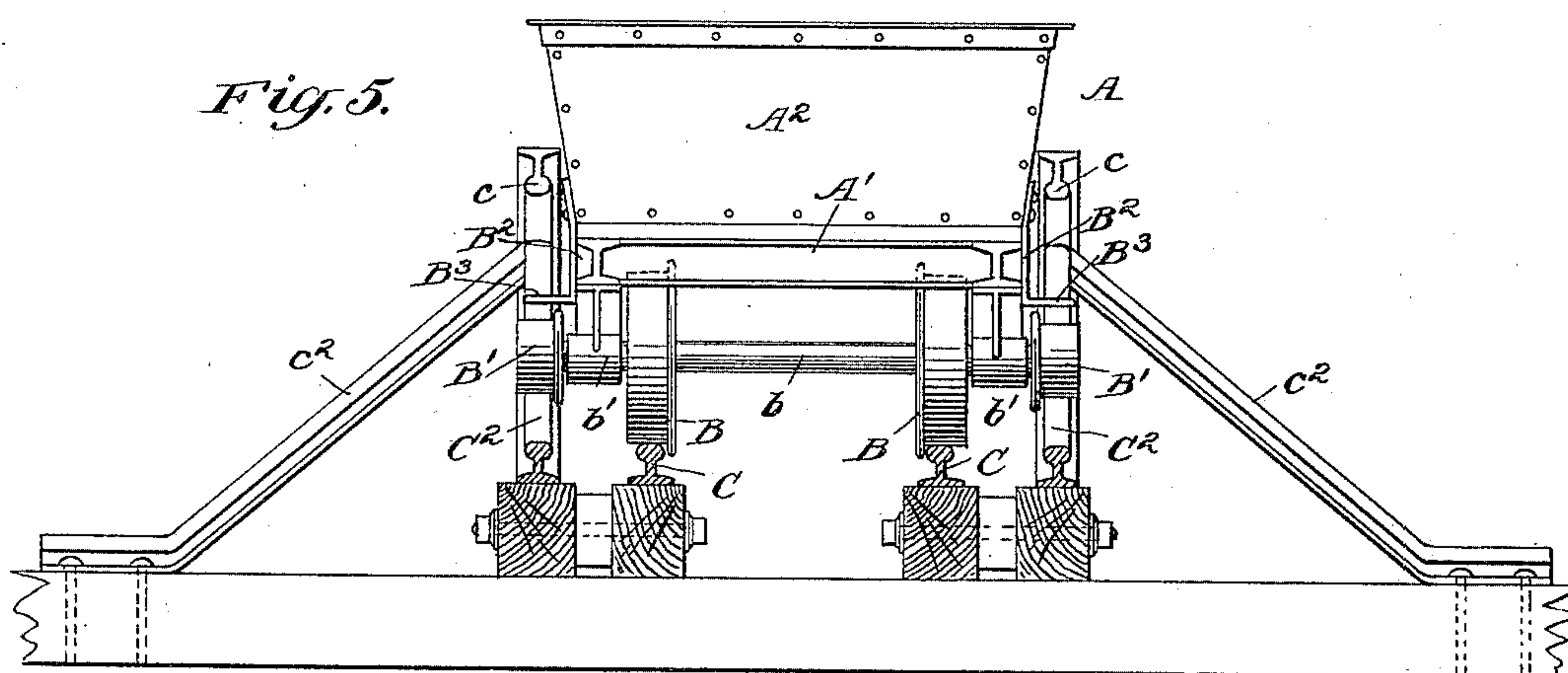
Patented Feb. 17, 1891.



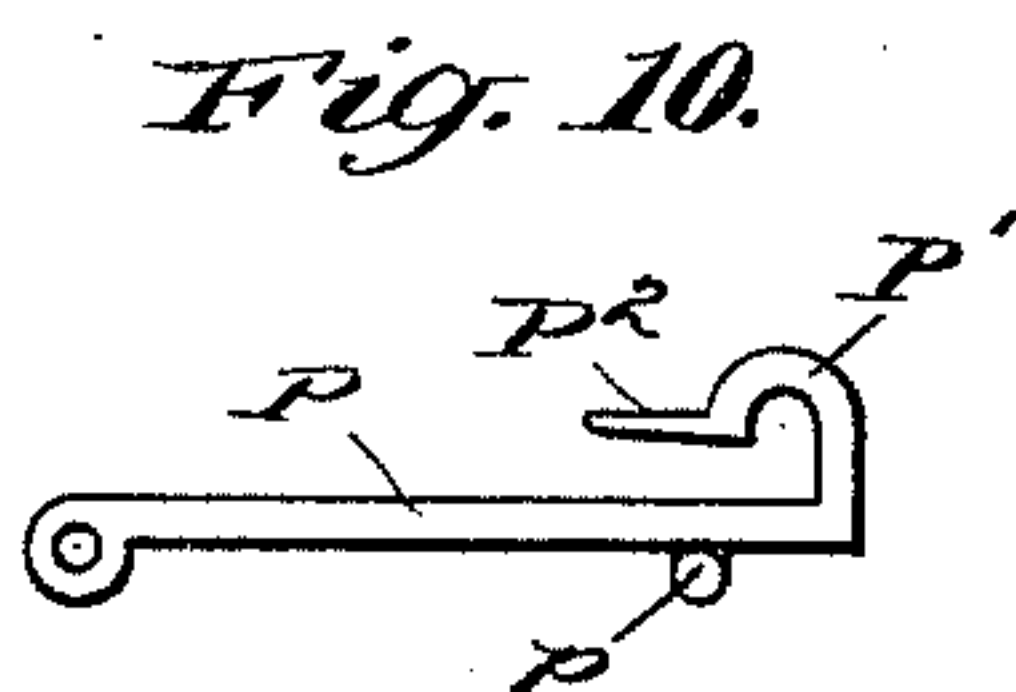
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2 Sheets—Sheet 2.

J. LAWSON.
DUMPING CAR AND OPERATING MECHANISM THEREFOR.
No. 446,758. Patented Feb. 17, 1891.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JOHN LAWSON, OF MICHIGAMME, MICHIGAN.

DUMPING-CAR AND OPERATING MECHANISM THEREFOR.

SPECIFICATION forming part of Letters Patent No. 446,758, dated February 17, 1891.

Application filed August 27, 1890. Serial No. 363,166. (No model.)

To all whom it may concern:

Be it known that I, JOHN LAWSON, of Michi-
gamme, in the county of Marquette and State
of Michigan, have invented certain new and
5 useful Improvements in Dumping-Cars and
Means for Dumping and Returning the Same,
of which the following is a full, clear, and ex-
act description.

My invention relates to improvements in
10 dumping-cars, means for dumping the same,
and to means for returning the car to the
loading-point. Dumping-cars as ordinarily
constructed are provided with doors which
open in various ways and which permit the
15 load in the car to be deposited, and in con-
structing cars with any of the various forms
of doors it is necessary to build the car of
very heavy material to give it the requisite
strength, and moreover the cars of this kind
20 wear out very rapidly.

The object of my invention is to obviate
these difficulties by providing a dumping-car
having a rigid flaring top and providing suit-
able means for dumping the car and for re-
25 turning it to the point at which it is loaded.

To this end my invention consists of certain
features of construction and combinations of
parts which will be hereinafter described and
claimed.

30 Reference is to be had to the accompanying
drawings, forming a part of this specification,
in which similar letters of reference indicate
corresponding parts in all the figures.

Figure 1 is a side elevation of the car and
35 its dumping and returning mechanism ac-
cording to my invention, parts being broken
away. Fig. 2 is a plan view of the dumping
and the returning mechanism with the car re-
moved and parts broken away. Fig. 3 is an
40 enlarged diametrical section of the spring-case
which regulates the tension of the rope which
checks and returns the car. Fig. 4 is a trans-
verse section of the same on the line 4 4 of
Fig. 3. Fig. 5 is an end view of the car in
45 position to ascend the dumping-incline, the
track-rails being shown in cross-section. Fig.
6 is a detailed plan view of the car. Fig. 7
is a vertical section on the line 7 7 of Fig. 8,
showing in detail the support for disengaging
50 the hook from the car. Fig. 8 is a plan view
of the same. Fig. 9 is a plan view of the

hook which engages the car and checks its
speed, and Fig. 10 is a side elevation of the
hook.

The car A is provided with a stationary 55
horizontal platform A', and with a rigid top
mounted thereon, said top having slightly-
flaring sides and ends, the ends being similar,
so that the top may be turned end for end
when desired, and the ends and side pieces 60
are united by suitable angle-plates *a*, which
fit the corners of the car-top.

At the rear end of the car is a depending
rod *a'*, which is formed into a staple at its
lower end adapted to engage a hook for check- 65
ing and drawing the car, as hereinafter de-
scribed, and said rod is supported by a suit-
able brace connecting with the body of the
car. The car is provided with suitable axles
b, which turn in the boxes *b'*, said boxes being 70
supported from the car-body in the usual
manner, and attached to the axles are the
wheels B, which carry the car. The rear axle
of the car projects through the wheels B and
is provided on each end with smaller wheels 75
B', adapted to run upon the inclined rails, as
described below.

Fixed to opposite sides of the car above
the wheels B' are angle-plates B², the hori-
zontal portion B³ of the plates extending out- 80
wardly above the wheels B', so as to engage
the hooks at the end of the inclined rails and
prevent the strain from coming upon the
wheels or axles.

The car is mounted on suitable rails C, 85
which are supported in the usual manner,
said rails being usually arranged upon an
inclined trestle and having bent and depressed
ends C', adapted to form a support for the
forward car-wheel when the car is dumped. 90
Arranged adjacent to the ends of the rails C
and parallel therewith are the inclined rails
C², said rails being placed just outside the
rails C, so as to align with the wheels B' of
the car, and the upper ends of said rails are 95
formed into hooks *c*, adapted to receive the
wheels B' and engage the angle-plates B²
when the car is dumped and prevent the car
from being tipped entirely over. The in-
clined rails are provided with suitable sup- 100
ports *c'*, and are braced by the side braces *c*².

A pulley D is pivoted in a frame E, so as

to turn flatwise beneath the track, and the inner edge of the pulley is vertically below a central point between the rails C. The frame E slides in the ways E', which are arranged parallel with the track-rails, and fixed to the lower end of the frame E is a rope *e*, which extends over a pulley F, pivoted in the supports F', and which has at its lower end a weight G, adapted to serve as a counterbalance for the car when it is dumped, as described below, and the weight normally holds the frame E and pulley D therein in proper position, as described hereinafter.

A pulley H is pivoted between suitable supports *h* centrally beneath the track and so as to align with the inner edge of the pulley D, the said pulley H being perpendicular to the pulley D. A pulley I is pivoted in a suitable support opposite the pulley H, but outside the track, and arranged adjacent to the pulley I, and aligning or nearly aligning with the pulleys I and H is a drum J, which is pivoted in the frame J' on the shaft *j*. A rope *d* is fixed to the drum and is adapted to be wound thereon, the said rope extending over the pulley I, around the pulley D, and over the pulley H, the free end of the rope having a hook attached thereto to engage the car, as described below.

The shaft *j* has a spring-case K mounted thereon, the said spring-case being made up of a series of pulleys K' and K². The pulley K' is mounted loosely on the shaft next the drum J, and coiled around the shaft within the pulley is a spiral spring *l*, one end of the spring being fixed to the shaft and the other end to the pulley K'. The pulley K' has a hub *k*, which extends into the pulley K², said pulley being mounted loosely on the shaft next the pulley K', and each of the pulleys K² having similar hubs, the hub of one projecting into the hollow portion of the next pulley, and any number of these pulleys may be used. Each of the pulleys has a spring *l*, one end of the spring being fixed to the hub of the adjacent pulley and the other end to the outer portion of the pulley in which it is contained. The abutting pulleys will thus form a spring-case, so that when the shaft *j* is turned in one direction the pulleys will be wound up and tightened and will have a tendency to turn the shaft back in the opposite direction.

A support M is mounted centrally between the track-rails, said support being fixed to a beam M', which rests upon the cross-ties M², the said support being fixed to the beam by a suitable spike *n*, and the lower portion of the support is bent at an angle and spiked or otherwise fastened to one of the cross-ties M². The support M is curved rearwardly at *m'* and then bent to extend horizontally forward, and has its upper portion centrally and horizontally cut away, forming side flanges *m*² of the upper forwardly-extending part, which are supported by side braces *m*³. The said support is adapted to support the hook P, which engages the staple-rod *a* of the car, and

the height of the support is such as to hold the hook in position to automatically engage the car-staple. The hook P is attached to the free end of the rope *d*, and is provided with an upwardly-curved portion P', the extreme point P² of which is pointed and extends nearly parallel with the shank of the hook. The body of the hook is provided on its under side with laterally-extending lugs *p*, the lugs being adapted to engage the flanges *m*² of the support M, and said flanges being adapted to hold the shank of the hook flush with the upper portion of the support M, as indicated by the dotted lines in Fig. 7.

The checking and returning mechanism, comprising the pulleys D, H, and I, the spring-actuated drum J, the weighted frame E, and the support M, is located near the mouth of the shaft from which the ore is taken, and the rope *d* is long enough to extend to the dumping end of the track.

The car is operated as follows: The loaded car is started down the rails C, and when it reaches the support M the staple of the rod *a'* engages the hook P, thus disengaging the hook from the support M and unwinding the rope *d* from the drum J. When the car reaches the inclined rails C², the wheels B' travel up the rails, the car being propelled by the momentum which it has already attained, and the wheels will continue to travel up the inclined rails until they reach the hooks *c* at the ends of the rails, thus raising the rear end of the car and dumping the material therein, as indicated by the dotted lines in Fig. 1. When the wheels B' reach the hooks *c*, the angle-plates B² will engage the hooks, thus stopping the car and preventing any strain from coming upon the car axle or boxes. The rope *d* is just long enough so that it will be stretched to its full length just before the wheels B' reach the hooks *c*, and the weight from the car will then cause the pulley D and frame to slide upwardly in the ways E', and the weight G will check the speed of the car so that it will be easily stopped by the hooks *c*, and there will be but little strain upon any portion of the car. As the loaded car travels down the inclined track, it unwinds the rope *d* from the drum J, thus tightening the springs in the spring-case K, and when the car is dumping, the tension of the springs in the case turns the shaft *j* and drum J and rewinds the rope upon the shaft, thus drawing back the empty car. When the hook P reaches the support M, the lugs *p* travel up the inclined portion *m'* of the support and are engaged by the flanges *m*², thus raising and stopping the hook and disengaging it from the staple-rod *a*, and the hook and car are ready for another operation. As the flaring ends of the car are alike, when one end of the car is become worn from constant use the staple-rod *a'* may be attached to the opposite end of the car and the car reversed. The car is intended chiefly for use in mining; but it may be used for any other purpose, and

from the foregoing description it will be seen that the car is very inexpensive, that it may be very strong without increasing its weight, that it will easily discharge every piece of ore or other material that can be put into it, that it is operated in such a manner that it cannot break loose, and that it occupies the smallest possible space.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the downwardly-inclined main rails, the upwardly-inclined rails parallel with the main rails at the lower end of the main incline and terminating in hooks, and a checking mechanism between the main rails, of a dump-car traveling on the main rails and having outer wheels to engage the upwardly-inclined rails, and a depending projection to engage the checking mechanism before the car reaches said upwardly-inclined rails, substantially as set forth.

2. The combination, with the downwardly-inclined main tracks, the upwardly-inclined rails parallel with the lower end of the main track and terminating in hooks, and the car checking and returning mechanism having an operating-hook projecting between the main rails, of a car traveling on the main track and having outer wheels to ride up the upwardly-inclined rails, and a depending projection or staple to engage and be automatically disengaged from said hook, substantially as set forth.

3. A dumping-car having an axle projecting through the main wheels and provided at each end with smaller wheels to engage an inclined track, and angle-plates fixed to the body so as to extend outwardly above the smaller wheels to engage the hooks at the end of the track, substantially as described.

4. A car-dump consisting in the main rails curved downward and upward, as at C' , and the upwardly-inclined parallel rails C^2 , curved upward and inward above parts C' to form hooks c , substantially as set forth.

5. The combination, with the main rails and inclined rails having their ends formed into hooks, of a car having one of its axles projected and provided with small wheels align-

ing the inclined rails, and angle-plates fixed to the car-sides to extend above the small wheels, substantially as described.

6. The combination, with a dumping-car mounted upon a suitable track and provided with a depending staple, of a support fixed between the track-rails, a detachable hook adapted to rest in the support and engage the staple of the car, and a rope fixed to the hook, a suitable pulley over which the rope passes, and a counter-balance to which the rope is secured, substantially as described.

7. The combination, with a dumping-car having a depending staple thereon, of a support mounted between the car-track rails, a detachable hook mounted in the support and adapted to engage the car-staple, a sliding weighted frame mounted adjacent to the car-tracks, a pulley pivoted centrally beneath the car-tracks, a pulley pivoted horizontally adjacent to the car-tracks, a drum mounted upon a spring-pressed shaft, and a rope fixed to the drum and extending over the above pulleys, the free end of the rope being attached to the hook, substantially as described.

8. The combination, with the slotted support fixed between the track-rails and provided with an inclined portion and inwardly-extending flanges, of the hook adapted to engage the car-staple, said hook having depending lugs to engage the support, as shown, and a suitable counter-balance connected with the hook, substantially as described.

9. The combination, with the main rails having depressed curves C' , and the upwardly-inclined parallel rails, hooked at c , of the car having front and rear axles provided with wheels traveling on the main rails, the smaller outer wheels on the rear axle to travel up said inclined rails, and the curved plates B^3 , projecting outward from the car over the said smaller wheels and rotating in the said hooks c when the car dumps, the forward main wheels resting at this time in the curved portion C' of the main rails, substantially as set forth.

JOHN LAWSON.

Witnesses:

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THOMAS CAMERON.