

(No Model.)

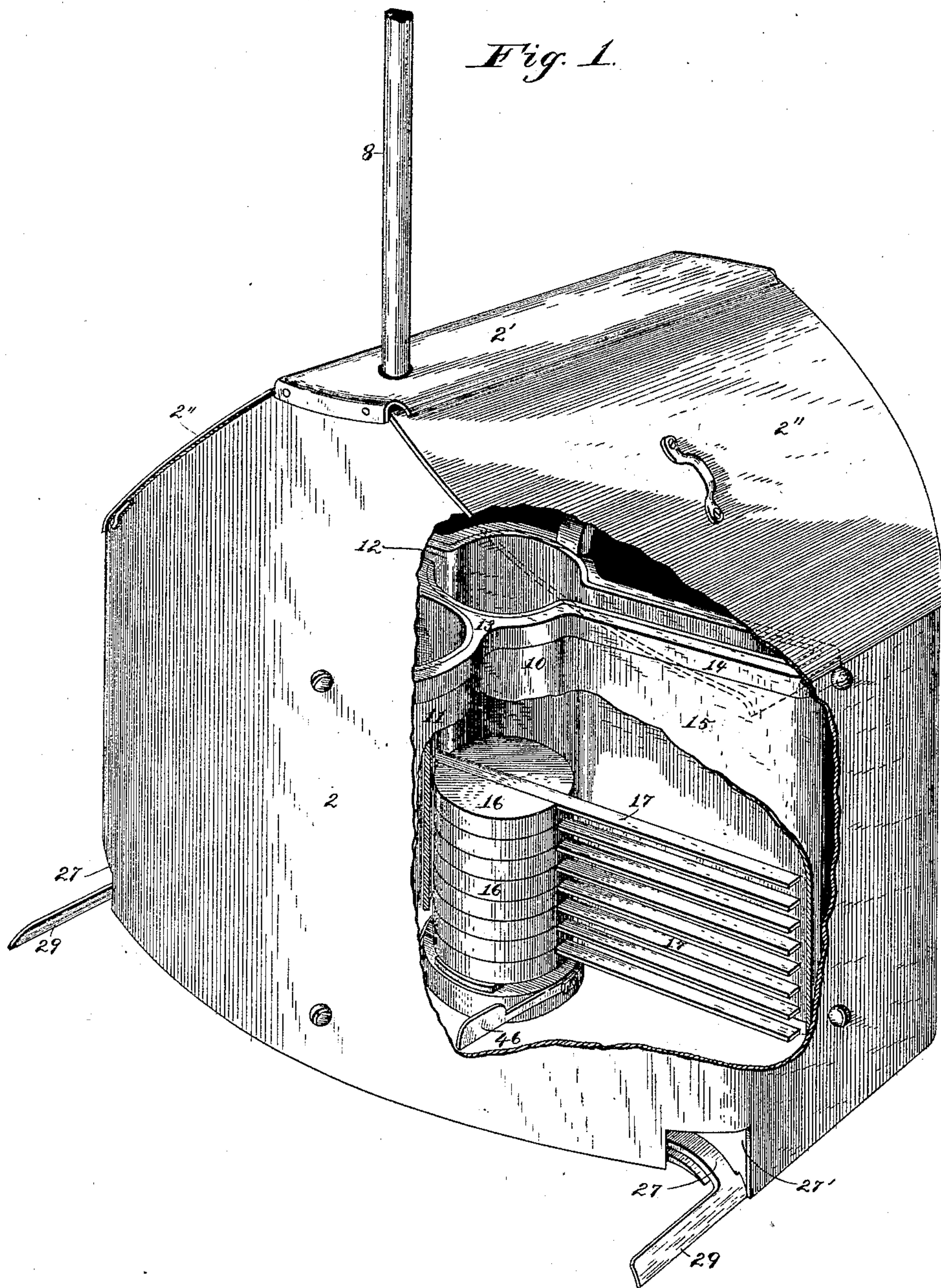
4 Sheets—Sheet 1.

J. F. McLAUGHLIN.

APPARATUS FOR DEPOSITING TORPEDOES UPON RAILWAY TRACKS.

No. 397,378.

Patented Feb. 5, 1889.



WITNESSES,

Gregory Bowen.
Fannie Wise.

INVENTOR,

James F. McLaughlin.
By *Joseph Lyons.*

Attorney.

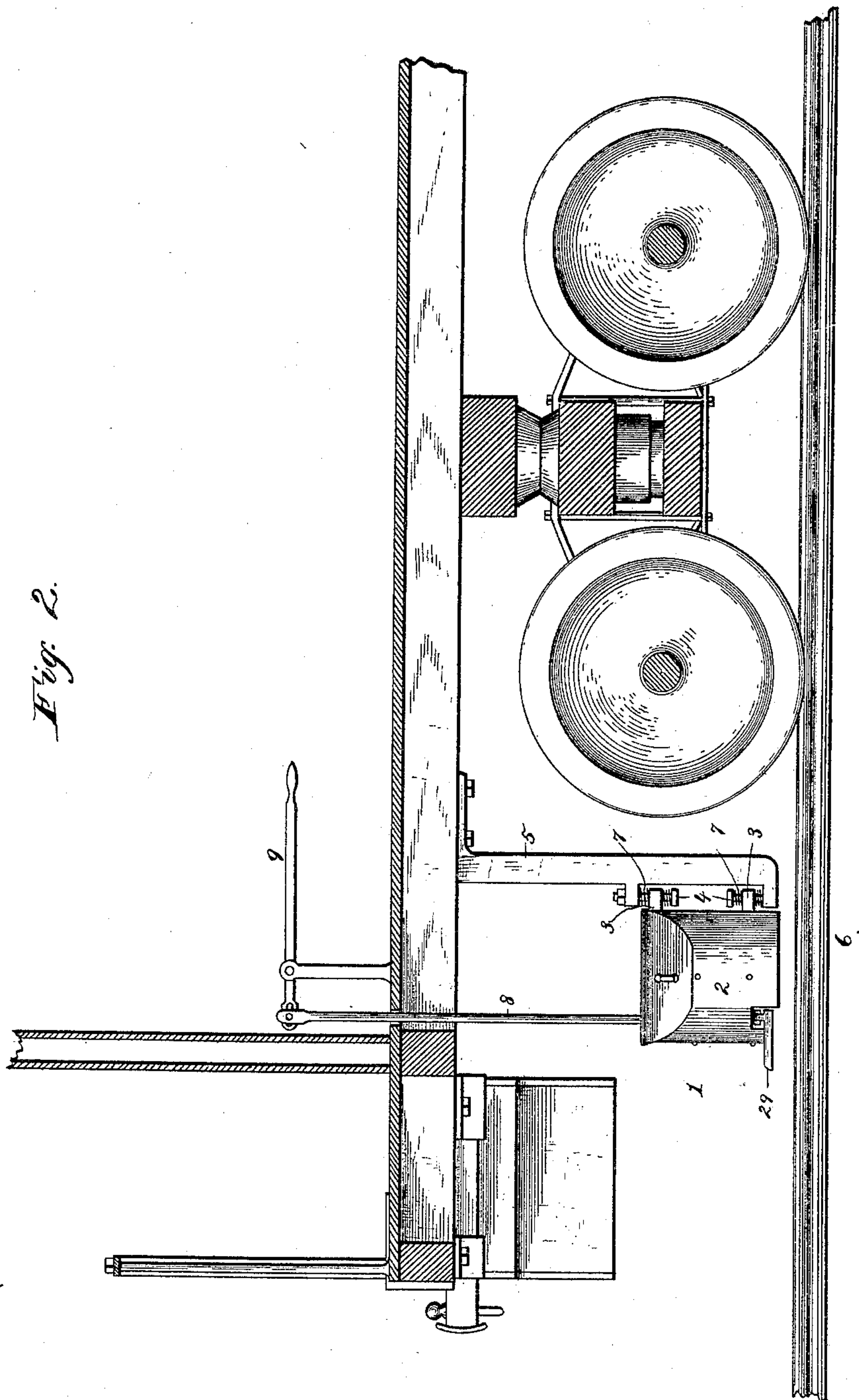
(No Model.)

4 Sheets—Sheet 2.

J. F. McLAUGHLIN.

APPARATUS FOR DEPOSITING TORPEDOES UPON RAILWAY TRACKS.
No. 397,378.

Patented Feb. 5, 1889.



WITNESSES,

Rey C. Bowen.
Fannie Wise.

INVENTOR,

James F. McLaughlin.
By *Joseph Lyons.*
Attorney.

(No Model.)

4 Sheets—Sheet 3.

J. F. McLAUGHLIN.

APPARATUS FOR DEPOSITING TORPEDOES UPON RAILWAY TRACKS.

No. 397,378.

Patented Feb. 5, 1889.

Fig. 4.

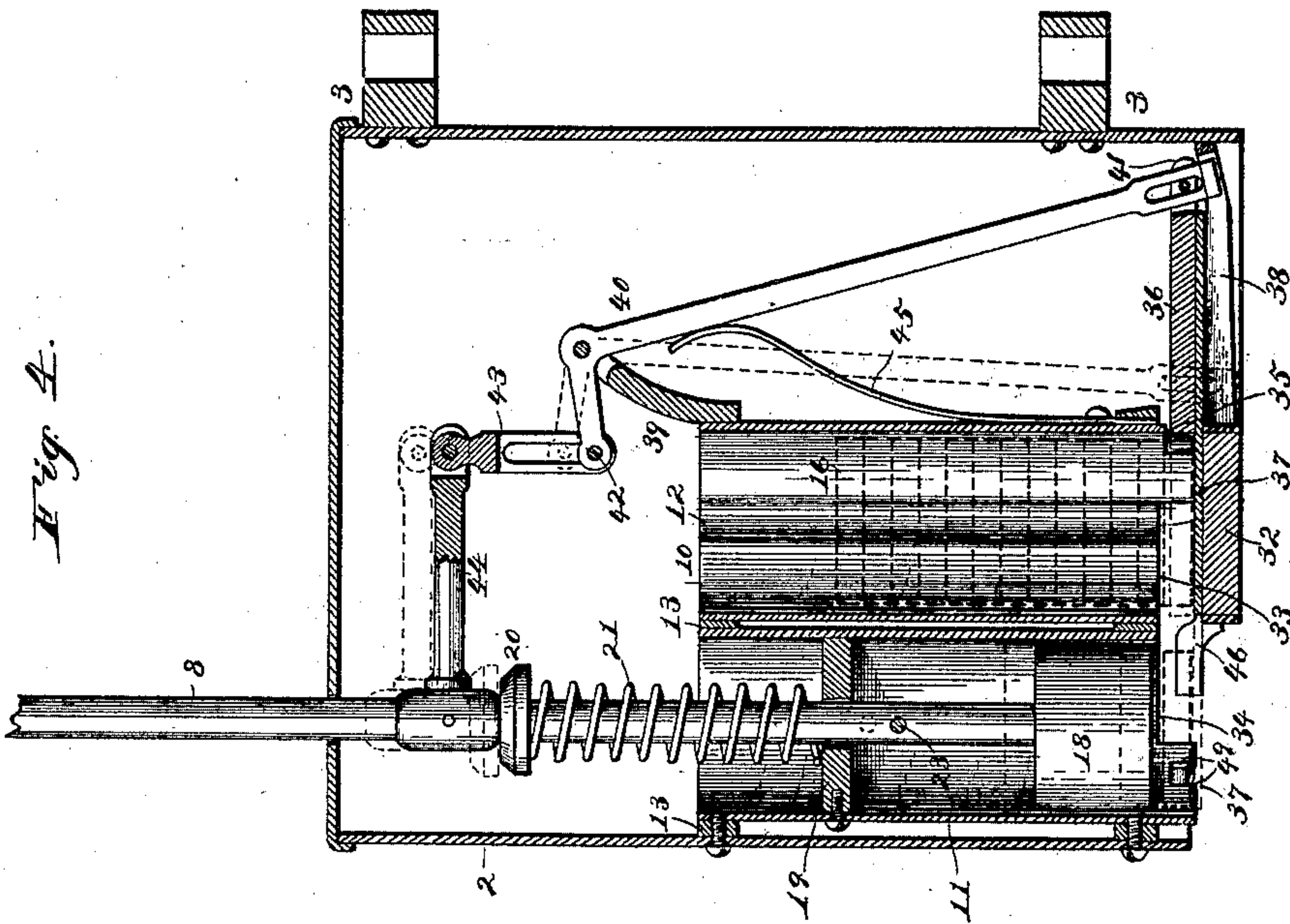
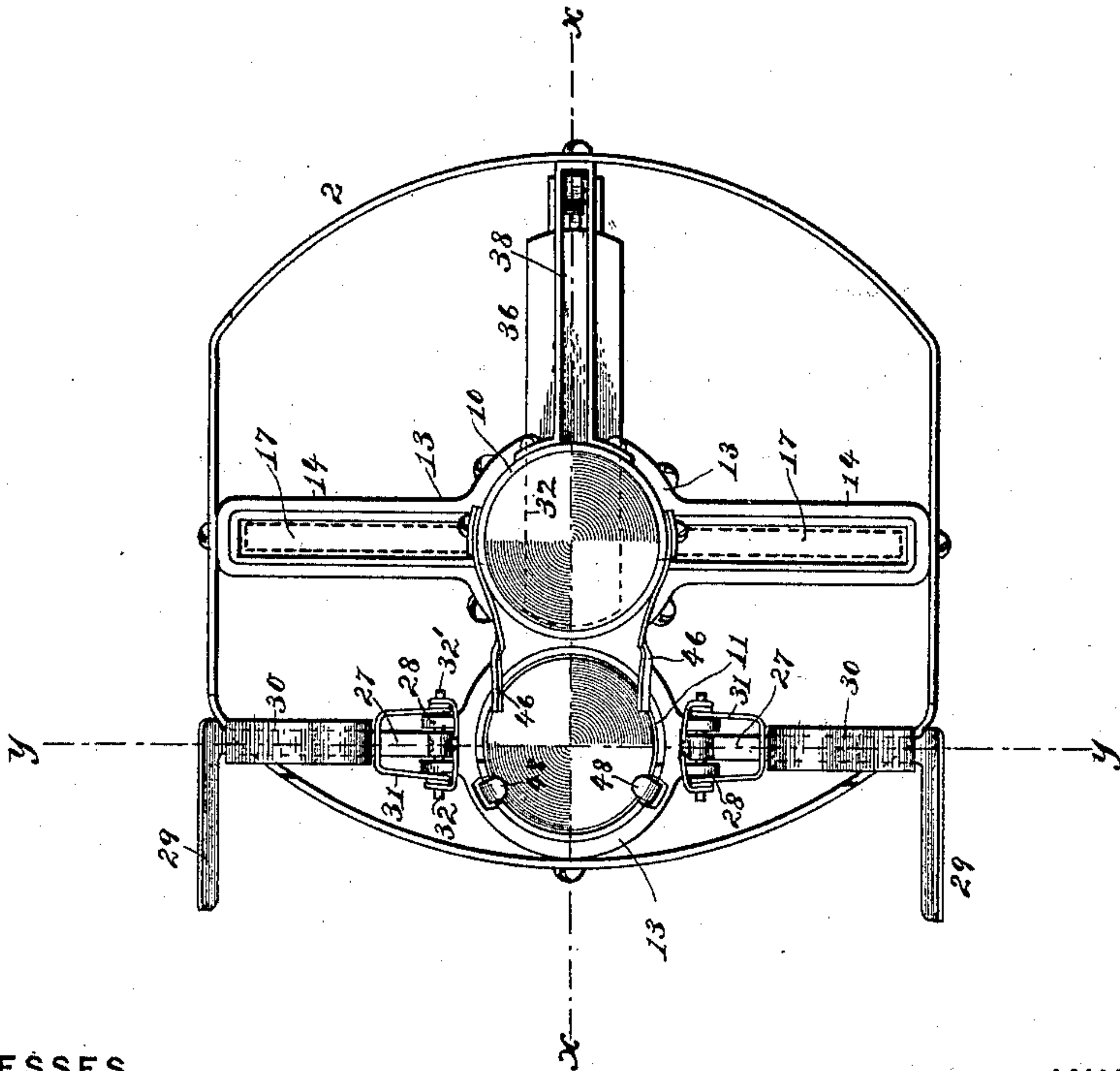


Fig. 3.



WITNESSES,

Grey C. Bowen,
Fannie Wise.

INVENTOR,

James F. McLaughlin,
By *Joseph Lyons,*
Attorney

(No Model.)

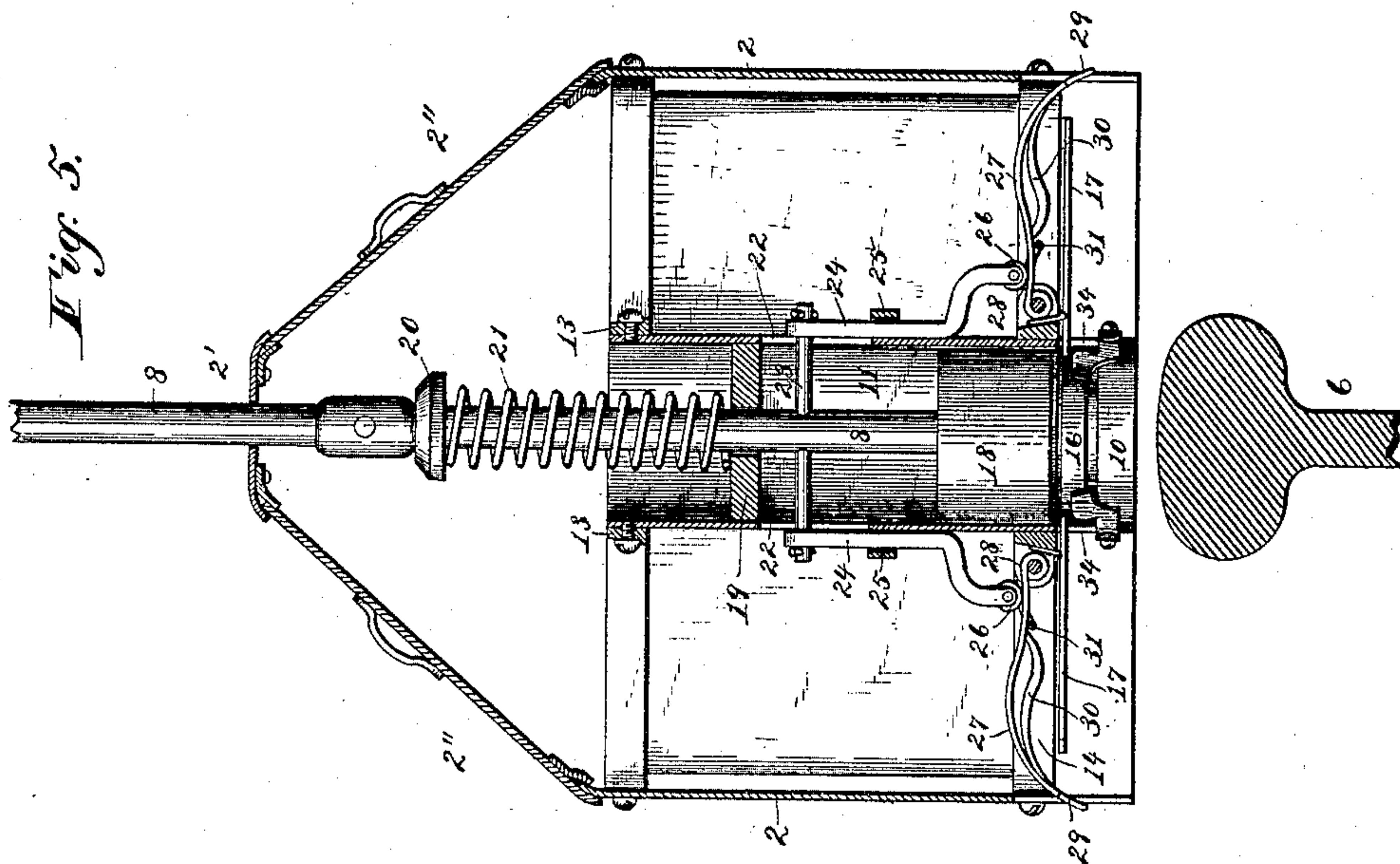
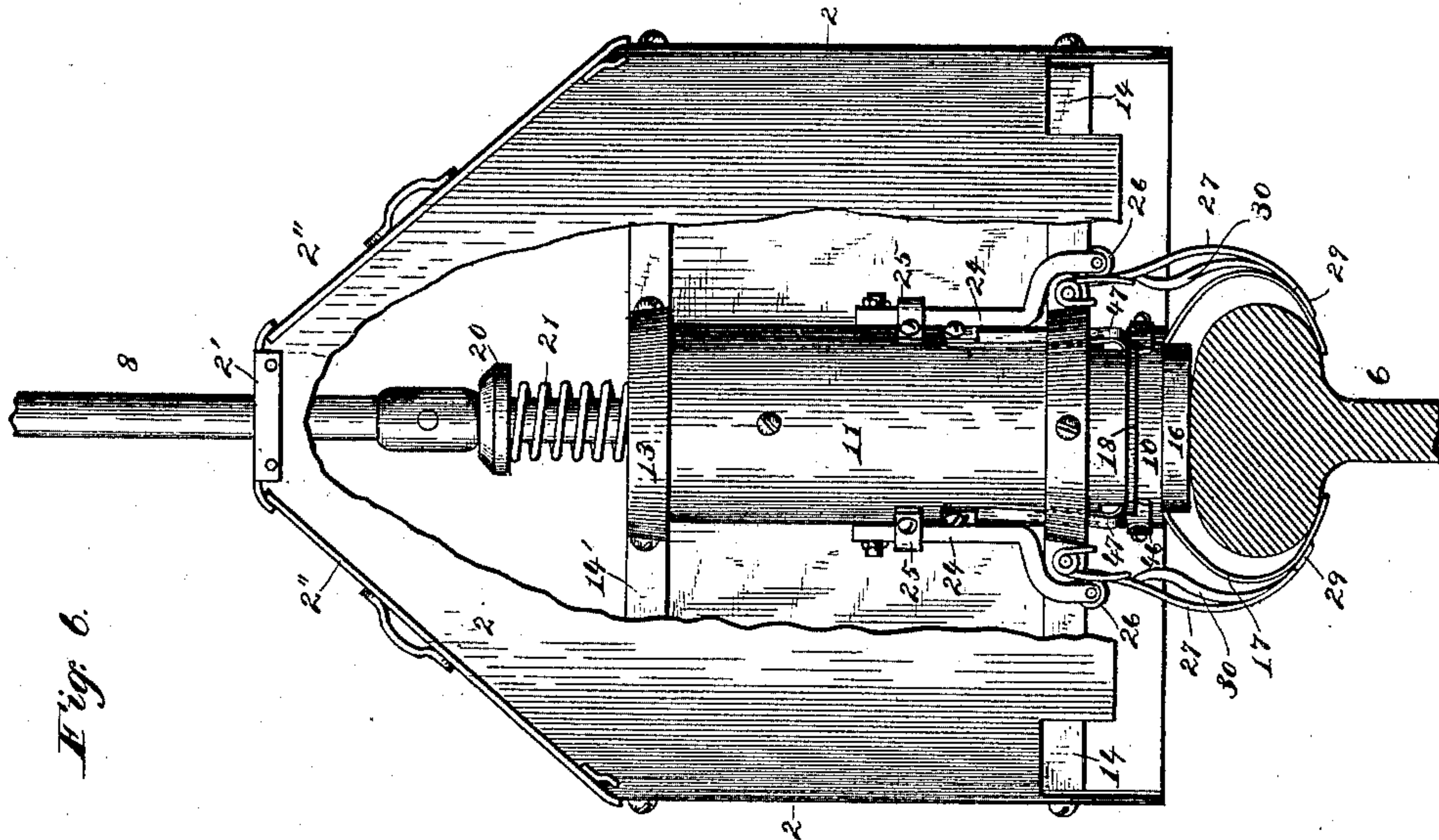
4 Sheets—Sheet 4.

J. F. McLAUGHLIN.

APPARATUS FOR DEPOSITING TORPEDOES UPON RAILWAY TRACKS.

No. 397,378.

Patented Feb. 5, 1889.



WITNESSES,

Rey C. Bowen.
Fannie Wise.

INVENTOR,

James F. McLaughlin,
By *Joseph Lyons.*

Attorney

UNITED STATES PATENT OFFICE.

JAMES F. McLAUGHLIN, OF PHILADELPHIA, PENNSYLVANIA.

APPARATUS FOR DEPOSITING TORPEDOES UPON RAILWAY-TRACKS.

SPECIFICATION forming part of Letters Patent No. 397,378, dated February 5, 1889.

Application filed November 15, 1888. Serial No. 290,912. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McLAUGHLIN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Apparatus for Depositing Torpedoes upon Railway-Tracks, of which the following is a specification.

My invention relates to apparatus for depositing upon the rails of the track of a railway signaling-torpedoes, which are left behind the train and are intended to be exploded by a following train, whereby the conductor of the latter is warned that on the same section of track there is a train ahead, and that the speed of his own train must be reduced or that it must be stopped entirely, according to the number of torpedoes deposited by the advance train.

The apparatus which I have constructed for this purpose, and which is illustrated in the accompanying drawings, and hereinafter described in detail, is mounted behind the rear wheels of the last car of the train in close proximity to one of the rails of the track, and is connected by a suitable system of levers with the interior of the car, so that it may be operated from this protected position with great convenience and without stopping the train.

All this will more fully appear from the following detailed description with reference to the accompanying drawings, in which I have illustrated, in—

Figure 1, a perspective view of my torpedo-planting machine with a part of the protecting-housing broken away; Fig. 2, a longitudinal section of a part of a railway-car with my torpedo-planter in operative position thereon; Fig. 3, an inverted plan view of the torpedo-planter; Fig. 4, a sectional view of the same, the section being taken on line $x x$, Fig. 3; Fig. 5, a sectional view of the same, the section being taken on line $y y$ of Fig. 3; and Fig. 6, a front elevation of the torpedo-planter with a portion of the protecting-housing broken away.

Like numerals of reference indicate like parts throughout the drawings.

Referring now more particularly to Fig. 2, the torpedo-planter proper, 1, is there shown

in a housing, 2, by which it is protected against rain and snow. From the housing project two perforated lugs, 3 3, (shown also in Fig. 4,) which are received upon pins 4 4, mounted upon a bracket, 5, secured to the under side of the car, and projecting therefrom downwardly to within a short distance of one rail, 6, of the track. Helical springs 7 7 are placed upon the pins 4, bearing upon opposite sides of the lugs 3 3, and in this manner the torpedo-planter is elastically mounted; but the springs 7 7 will be comparatively strong, so that the apparatus will not vibrate freely.

As shown in Fig. 2, a piston-rod, 8, extends from the planter 1 upwardly through the bottom of the car, and is there connected with a hand-lever, 9, by the operation of which the torpedoes are discharged from the apparatus, deposited upon one of the rails, and securely fastened thereto, as will hereinafter more fully appear.

The frame-work of the torpedo-planter consists, principally, of two hollow cylinders, 10 11, placed vertically side by side, one of which, 10, has slots 12 on diametrically-opposite sides, which run from the upper end down nearly the whole length of the cylinder, and the two cylinders are rigidly connected at the top and at the bottom by castings 13 13, which surround both cylinders, and which at the slots 12 12 extend into a loop, 14, as is best shown in Figs. 1 and 3. Between the upper and lower loops there is an interior housing, 15, of sheet-iron or other material.

From this construction it follows that long narrow spaces extending from diametrically-opposite sides of cylinder 10 and communicating with the interior of the latter are provided, while there is no direct communication between the two cylinders, except at their lower ends, as will hereinafter more fully appear.

The cylinder 10, with its long narrow diametrically-opposite extensions, serves as a hopper for storing the torpedoes 16 16, and for convenience of description it will hereinafter be referred to as a "hopper," pure and simple. The torpedoes themselves have the shape of disks which loosely fit the cylindrical portion of the hopper. They may be constructed in

any well-known or approved manner, which it is unnecessary to describe, since this forms no part of my invention. They are, however, provided with long strips 17 of metal, preferably lead, and these strips, which are fastened to the upper faces of the torpedoes, run diametrically across and beyond the same, and when the torpedoes are in place in the hopper these strips extend into the side chambers formed by the loops 14 and the housings 15, as is clearly seen in Figs. 1 and 3. Any number of torpedoes thus constructed are stored in the hopper 10, and the hopper may for this purpose be made as long as desired. In the drawings this hopper is shown as of the same height as the cylinder 11; but in practice it may sometimes be found preferable to make it longer.

Within the cylinder 11, which will hereinafter be referred to as the "discharge-cylinder," there is a piston, 18, actuated by the piston-rod 8, which is guided by a perforated diaphragm, 19, secured within the discharge-cylinder, as shown in Figs. 4 and 5. Between the diaphragm 19 and a collar, 20, upon the piston-rod there is placed upon the latter a helical spring, 21, which tends to normally keep the piston within the discharge-cylinder in a slightly-elevated position, which position is indicated in Fig. 4 in solid lines. Below the diaphragm 19, on diametrically-opposite sides of the discharge-cylinder, there are longitudinal slots 22 22, which serve as guides for pins 23, projecting from the piston-rod 8, so that when the piston is moved up and down said pins will move up and down within the slots 22 22. At the free ends of these pins, where they project through the slots, are hung the reciprocating rods 24 24, which are guided in staples 25 25, and these rods are bent near their lower ends outwardly and downwardly at right angles, or nearly so, and are provided at their free ends with anti-friction rollers 26 26, which when the piston is in its elevated position barely bear upon the upper surfaces of pivoted arms 27 27, which will presently be more fully described.

From the foregoing description it will be seen that normally the piston 18 is held in a slightly-elevated position by the spring 21, and when forced downward against the tension of said spring the reciprocating rods 24 24 will also be forced downward and the anti-friction rollers 26 26 will impinge upon the pivoted arms 27 27 and will actuate the same, as will presently appear. These arms are pivoted in lugs 28 28, projecting from the lower casting, 13, on diametrically-opposite sides of the discharge-cylinder, the arms being shaped upon an ogee curve, or nearly so, and have at their free ends fingers 29 29, extending at right angles therefrom. On the under side each of the arms 27 27 is provided with a re-enforce, 30, which approximately conforms to the shape of one side of the head of the rail of the track. Instead of constructing the arms 27 with a separate re-enforce, as

shown, they may be cast in one piece with the latter.

A wire loop or staple, 31, formed into a coiled spring at each end, is placed under each arm, the coiled springs being supported upon pins 32', projecting from the lugs 28; or any other form of spring may be employed for normally holding the arms 27 in the elevated position shown in Fig. 5, as will be readily understood by those skilled in the art.

From the foregoing it will be seen that when the piston 18 is depressed the anti-friction rollers 26 26, impinging upon the upper surfaces of the arms 27 27, will force the latter down against the action of the loop-springs 31 31 to the position indicated in Fig. 6, and when the piston is again raised the arms 27 27 will be returned to their approximately-horizontal position shown in Fig. 5.

As will be seen by reference to Fig. 4, the hopper extends a short distance below the discharge-cylinder, and is there closed by a plug, 32. Above said plug and on the side facing the discharge-cylinder the hopper-cylinder is cut away a little more than half its circumference, as indicated at 33, and a corresponding portion of the discharge-cylinder is also cut away, as is clearly seen in Fig. 4 at 34, so that a communication is thereby established between the two cylinders at their lower ends, for a purpose which will presently appear. On the other side of the hopper-cylinder, and also just above the plug 32, there is a rectangular slot, 35, and a plunger, 36, formed with a ledge, 37, either in one or in two pieces, is movable within the slot 35, and is of such length that in one of its positions—say the position indicated in solid lines in Fig. 4—the ledge only of the plunger will be within the hopper-cylinder, while in the other position, which is indicated in dotted lines in Fig. 4, said ledge will be within the discharge-cylinder, while the main body of the plunger will then be within the hopper-cylinder.

A bracket, 38, which in the drawings is shown as a long loop, but which may be a solid casting with a longitudinal slot produced therein, is secured to the hopper-cylinder just underneath the plunger 36, so that the same may lightly rest upon the upper face of the bracket, which is in the same plane with the upper face of the plug 32. Preferably the outer end of the bracket 38 is bent or curved upward, as shown.

The plunger, with its ledge 37, is actuated by connections from the piston-rod 8, as follows: To a bracket, 39, rising from the upper end of the hopper-cylinder, is pivoted a bell-crank lever, 40, the downwardly-extending long arm of which is slotted near its free end, and is there connected by a pin, as shown, with a lug, 41, at the outer end of the plunger. The short arm of the bell-crank lever is connected by a pin, 42, with a slotted forked link, 43, which is pivotally connected with a rigid arm, 44, extending from the piston-rod. A spring, 45, secured at one end to the hop-

per-cylinder, bears against the bell-crank lever 40, forcing the lower end of the long arm of the same, and thereby the plunger 36, outwardly to a position indicated in solid lines in Fig. 4; but when the piston-rod is raised above its normal position the arm 44 and the bell-crank lever will assume the positions indicated in dotted lines, whereby the plunger will assume the position above referred to, with its ledge extending into the discharge-cylinder and its main body within the hopper-cylinder, all of which is indicated in dotted lines in Fig. 4.

The operation of this part of the machine will be readily understood. The torpedoes 16 being piled up in the hopper, the bottom torpedo will rest upon the ledge 37 of the plunger 36, and if now the piston-rod is raised the plunger will carry the lowermost torpedo over into the discharge-cylinder, where it will be held by means hereinafter described before it is discharged. If now the piston-rod is depressed, the bell-crank lever will be free to be actuated by the spring 45 to assume its original position, whereby the main body of the plunger is withdrawn from within the hopper-cylinder, and the next lowermost torpedo falls down and rests upon the ledge of the plunger. Thus it will be seen that by reciprocating the piston-rod one torpedo after the other is moved from the hopper-cylinder into the discharge-cylinder, and it only now remains to be explained how these torpedoes are expelled or discharged from the discharge-cylinder and planted on the rail of the track.

To the hopper-cylinder, at the portion filled by the plug 32, are secured two springs, 46 46, one on each side, the free ends of which extend over to the discharge-cylinder, one on each side of the cut-away portion 34 of the latter. The free ends of these springs, which are flat, are slightly inclined toward the axis of the discharge-cylinder, their upper edges flaring outwardly, and when a torpedo is transferred from the hopper to the discharge-cylinder, in the manner hereinbefore described, it has to pass between these two springs, and will be held by them gently in position, as is indicated in Figs. 4 and 5. Two other springs, 47 47, are secured to the discharge-cylinder and extend down to the lower edge of the same, where they are bent inwardly, as shown at 48 48, under the edge into small recesses 49 49, provided for this purpose, so that when a torpedo is being moved from the hopper into the discharge-cylinder it will be guided by the springs 46 46, and when completely moved over into the discharge-cylinder it will rest upon the downwardly-converging faces of these springs and upon the inwardly-bent free ends 48 48 of springs 47 47. A torpedo in this condition will have thus four supporting-points; but it will be understood that these springs 46 and 47 are rather weak, so that when the piston 18 descends it will easily expel the torpedo from between these springs. While this is

being done the arms 27 27, or, rather, the reinforcements 30 30 of the same, will bear downwardly upon the lead strips 17 17, projecting from the upper face of the torpedo, and will bend the same over and around the head of the rail. At the moment when the torpedo itself or any part of the lead strips come into contact with the rail the moving train will carry the arms 27 27 past the lead strips, with the projecting fingers 29 29 still bearing upon the ends of the same, so as to bend them still farther around the head of the rail, and thus fasten the torpedo with its attached lead strips loosely to the rail. In the next instant the moving train carries the fingers 29 29 past the lead strips, and the torpedo is left behind in position upon the rail to be exploded by the wheels of the next succeeding train passing over the same. Thus it will be seen that at each reciprocation of the piston-rod one torpedo is transferred from the hopper into the discharge-cylinder, is expelled from the same, and planted upon the rail without requiring the train to stop for this purpose, and this operation is repeated as often as required, at short intervals of time, according to the code of signals adopted in the management of the railway system.

In Fig. 4 one torpedo is shown in dotted lines transferred from the hopper to the discharge-cylinder, and held in the latter between the springs 46 46 and upon the turned ends 48 48 of springs 47 47. The piston is about to expel the torpedo, during which operation the free ends of the springs will spread out, so that the torpedo will gently pass between the same. The same condition of the apparatus is represented in Fig. 5, only that in this latter the lower plugged end of the hopper-cylinder appears in elevation.

In Fig. 6 that condition of the apparatus is represented in which the torpedo has just been expelled and the fastening-strips 17 17 bent around the head of the rail. The fingers 29 29 are still bearing upon the fastening-strips and must be supposed to be carried past said strips in the next instant. The lower end of the piston 18 still projects beyond the lower edge of the discharge-cylinder, and between the end of the piston and the upper edge of the torpedo the plugged end of the hopper-cylinder is visible. It will be noticed that the distance between the free ends of springs 47 47 and the upper edge of the torpedo when it rests upon the rail is quite short, and this short distance the torpedo has to fall freely without any support. This, however, is no disadvantage, since torpedoes for railway alarm-signals are so prepared that a very heavy blow—such as is imparted by the wheels of a moving train—is required to explode the same. There is therefore no danger of an explosion to be caused by the drop of the torpedo from between the supporting-springs to the top of the rail.

The external housing, 2, may be constructed in any suitable manner, its only object being

to protect the apparatus against rain, snow, and dirt. The top plate, 2', has an opening for the piston-rod to pass through, and the two inclined roof-plates 2'' 2'' are constructed
 5 as sliding gates, as shown, whereby access can be had to the hopper to charge the same with torpedoes. The lower edge of the housing is notched in two places, 27' 27', so that the arms
 27 27, with their fingers 29 29, may project be-
 10 yond the housing, as shown.

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

1. In an apparatus for planting alarm-tor-
 15 pedoes upon a railway-track from a moving train, the combination of a hopper containing suitably-shaped torpedoes, a discharging-cylinder parallel with the hopper, and a plunger for transferring a torpedo from the hop-
 20 per into the discharge-cylinder, with a piston for expelling the torpedo from the discharge-cylinder, and pivoted arms actuated by the piston or piston-rod for fastening the dis-
 25 charged torpedo to the head of the rail, substantially as described.

2. In an apparatus for planting alarm-tor-
 pedoes upon a railway-track from a moving train, the combination of a torpedo-hopper se-
 30 cured behind the rear wheels of a railway-car, and a discharge-cylinder parallel with said hopper extending within close proximity of a rail of the track, with a piston fitted into the discharge-cylinder for expelling torpedoes therefrom, spring-supported binding-arms
 35 pivoted to diametrically-opposite sides of the discharge-cylinder, and reciprocating rods carried by the piston-rod for actuating the

binding-arms to secure the discharged tor-
 pedo to the head of the rail, substantially as
 40 described.

3. In an apparatus for planting alarm-tor-
 pedoes upon a railway-track from a moving train, the combination of a torpedo-hopper and a discharge-cylinder parallel therewith
 45 and in close proximity to one rail of the track, with mechanism for transferring the torpe-
 does one by one from the hopper to the dis-
 charge-cylinder, and mechanism, substan-
 50 tially as described, actuated from the car to expel the transferred torpedoes from the dis-
 charge-cylinder and to bind them to the head
 of the rail, substantially as described.

4. In an apparatus for planting alarm-tor-
 pedoes upon a railway-track from a moving train, the combination of a torpedo-hopper 55
 and a discharge-cylinder parallel therewith, both being cut away near their lower ends, whereby communication is established be-
 60 tween the same, with a plunger for transfer-
 ring torpedoes from the hopper into the dis-
 charge-cylinder, springs for supporting the
 torpedo during the transfer and sustaining
 the same in the discharge-cylinder, and means,
 65 as described, for actuating the plunger and
 for expelling the torpedoes from the discharge-
 cylinder, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two sub-
 scribing witnesses.

JAMES F. McLAUGHLIN.

Witnesses:

JULIUS HIRSHFELD,
 FRANK M. MILLER.