No. 615,321. Patented Dec. 6, 1898.

C. A. & H. F. STRAUB.

SHOT ANCHOR FOR OIL WELLS, &c.

(Application filed Jan. 25, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

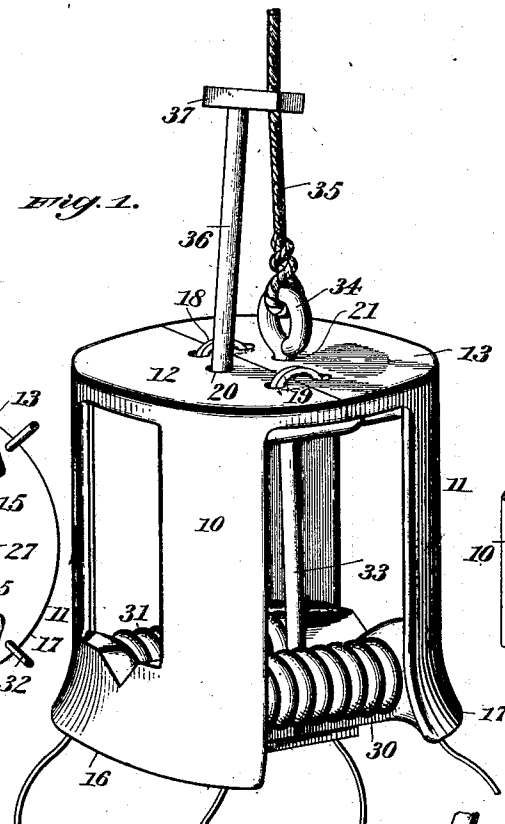


Fig. 4.

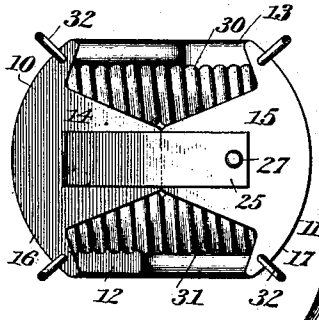


Fig. 5.

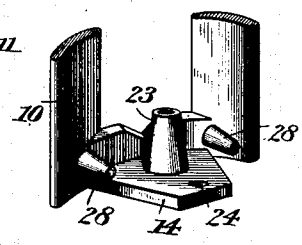


Fig. 2.

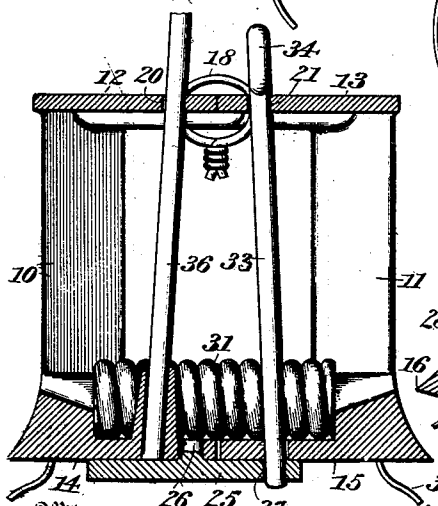


Fig. 3.

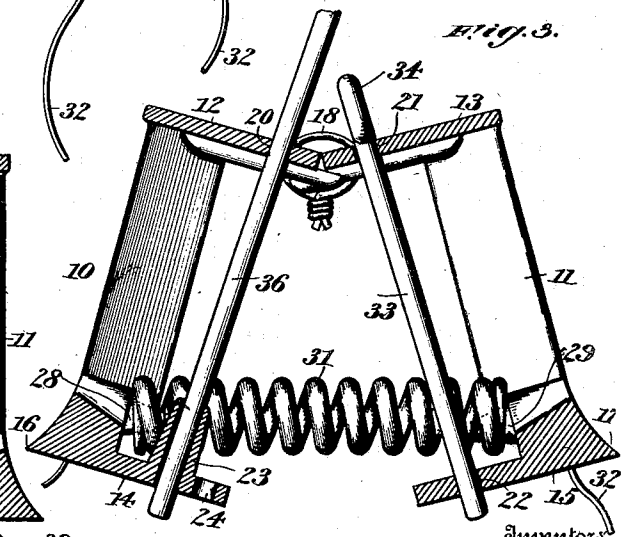
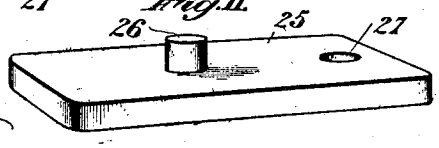


Fig. 11.



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Fig. 6.

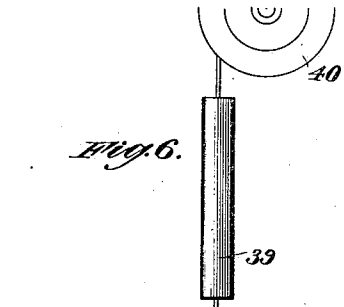


Fig. 8.

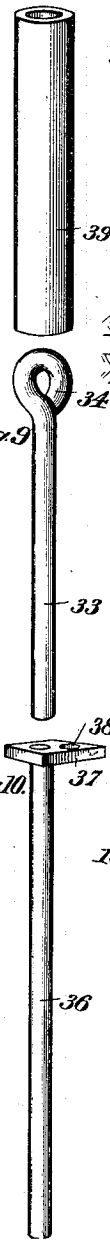
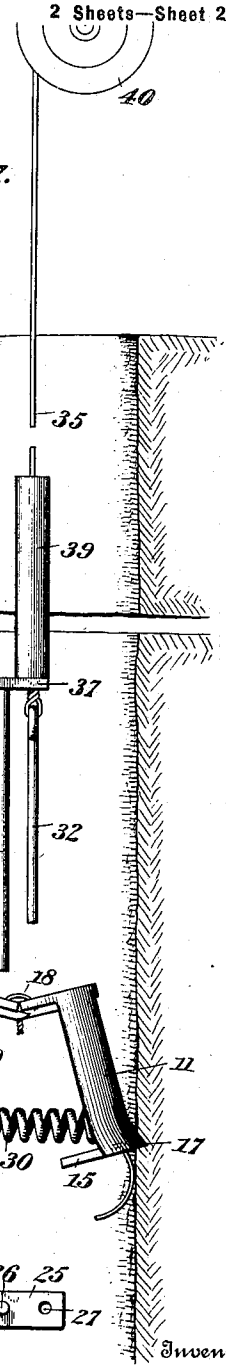


Fig. 9.

Fig. 10.

Fig. 7.



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UNITED STATES PATENT OFFICE.

CHARLES AUGUSTUS STRAUB AND HENRY FRANK STRAUB, OF ROUSEVILLE, PENNSYLVANIA.

SHOT-ANCHOR FOR OIL-WELLS, &c.

SPECIFICATION forming part of Letters Patent No. 615,321, dated December 6, 1898.

Application filed January 25, 1898. Serial No. 667,942. (No model.)

To all whom it may concern:

Be it known that we, CHARLES AUGUSTUS STRAUB and HENRY FRANK STRAUB, residing at Rouseville, in the county of Venango and State of Pennsylvania, have invented a new and useful Shot-Anchor for Wells, of which the following is a specification.

This invention is in the nature of what is termed a "shot-anchor" for use in blasting in oil or other deep wells.

The object of the invention is to provide a suitable device which can be lodged or anchored at any point in a well to receive and support a shot, cartridge, or bomb at the depth at which it is to be discharged until such time as it is discharged, the device to be of such a nature that it will be destroyed by the discharge and drop to the bottom of the well.

With this object in view the invention consists in a shot-anchor comprising two members pivoted together at their upper ends, their lower ends being flat and with straight abutting edges and a hole through each flat lower end adjacent to said straight edges, a latch-plate adapted to overlap said abutting edges and having a lug to enter the hole in one member and a hole registering with the hole in the other member when the anchor is closed, springs adapted to expand the members, a latch-pin adapted to pass through the registering holes of one member and the latch-plate to hold the members closed together on the springs, and means for withdrawing the latch-pin to permit the springs to expand the members.

The invention further consists in the improved construction, arrangement, and combination of parts hereinafter fully described and afterward specifically pointed out in the appended claims.

In order to enable others skilled in the art to which our invention most nearly appertains to make and use the same, we will now proceed to describe its construction and operation, having reference to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view illustrating the invention complete, the members being closed together in position to be lowered into a well. Fig. 2 is a central vertical sectional view through the same, the upper end of the trip-pin and the lower ends of the guides being broken away and the lowering-rope omitted. Fig. 3 is a similar view of the same parts, the two members of the anchor being shown in their expanded positions. Fig. 4 is a bottom plan view of the anchor with the members in their closed position. Fig. 5 is a detail perspective view showing the interior construction of one of the members. Fig. 6 is a vertical sectional view of a well, showing a shot-anchor therein in the act of being lowered. Fig. 7 is a similar view, the shot-anchor being shown expanded and lodged in the well, the rope with attached latch-pin, trip-pin, and trip-weight being raised and the latch-plate dropped. Fig. 8 is a perspective view of the trip-weight detached. Fig. 9 is a similar view of the latch-pin, and Fig. 10 is a similar view of the trip-pin. Fig. 11 is a detail perspective view of the latch-plate.

Like numerals of reference indicate the same parts wherever they occur throughout the various figures of the drawings.

Referring to the drawings by numerals, 10 indicates one member, and 11 the other member, of our improved shot-anchor. These members are formed with their outer sides curved in the arc of the same circle and are provided with flat upper ends 12 and 13, having straight abutting edges, which lie in the line of the diameter of the circle completed by bringing the two members together. The bottoms 14 and 15 of these two members are also flat and provided with straight abutting edges, which when the members are brought together are directly in line with the abutting edges of the flat upper ends 12 and 13. The greater portion of the sides and bottom is cut away to lighten the structure, and their lower edges are flared outward, as at 16 and 17, to form sharp edges to more readily engage the sides of the well when expanded. The two members 10 and 11 are pivotally connected together at the abutting edges of their upper ends by rings 18 and 19 or by any other suitable means. Holes or perforations 20 21 are formed in the upper ends of the members 10 and 11, respectively, while a similar hole 22 in the bottom 15 of the member 11 registers

with the hole 21, the sleeve 23, formed upon or attached to the bottom 14 of member 10, registering with the hole 20. A hole 24 is also formed in the bottom 14 near its abutting edge.

25 is a latch-plate which is provided with a lug 26 to engage in the hole 24 and a hole 27 to register with the hole 22 when the two members are in their closed position.

Projecting inward from the members 10 and 11 are lugs 28 and 29, there being two lugs on each member, and the lugs of the two members being opposite to each other when the members are in position.

30 31 indicate two strong spiral springs adapted to be placed between the members with their ends engaging the lugs 28 and 29.

32 indicate wire fingers or guides secured to the lower ends of the members and projecting downwardly and outwardly, whereby their normal position is beyond the line of circumference of the circle formed by bringing the two members together.

33 is the latch-pin, which is provided with an eye 34 at its upper end to engage a cord, rope, or cable 35, by means of which the whole anchor is suspended while being lowered into position, the cord, rope, or cable being usually marked to indicate feet or other length units.

36 indicates a trip-pin which is secured at its upper end to a plate 37, having a perforation 38, through which the rope or cord 35 is passed.

39 indicates a tubular weight which is also to be strung upon the suspending rope or cord.

In operating the device any suitable windlass or hoisting mechanism may be used, as indicated at 40.

In assembling the parts for use the lug 26 of the latch-plate 25 is placed in the hole 24 in the bottom 14 of the member 10 with the end of the latch-plate containing the hole 27 extending toward the opposite member. The members at this time are in the position shown in Fig. 3, and the latch-pin 33 and trip-pin 36 have not been inserted. The members are now brought together by squeezing them in a vise against the action of the springs 30 and 31 until the inner edges of their bottoms abut against each other, in which position the hole 27 in the latch-pin 25 will register with the hole 22 in the bottom 15. The latch-pin 33 is now passed downward through the hole 21 in the top 13, the hole 22 in the bottom 15, and the hole 27 in the latch-plate 25, as shown in Fig. 2. The outward pressure of the springs 30 and 31, tending to throw the members apart into the position shown in Fig. 3, will cause the edges of the holes 22 and 27 to bear against the pin in opposite directions sufficiently hard to create friction enough to sustain the weight of the whole device. The trip-pin 36 is now placed in position through the hole 20 in the top 12 and into the sleeve 23 with its lower end resting upon the upper face of the latch-plate 25. With the parts in this position, as clearly illustrated in Fig. 6, the complete structure is lowered into the well into any desired position indicated upon the measuring-rope 35, by which it is suspended, the guards 32 preventing the main body of the structure from coming in contact with the sides of the well. During the lowering of the anchor the tubular tripping-weight 39 is held at the top of the well, as shown in Fig. 6, and when the anchor has reached the proper depth at which it is desired to discharge the shot, bomb, or cartridge the tripping-weight 39 is released, when it will slide downward on the suspending rope or wire until it strikes the plate 37, to which the tripping-pin 36 is secured. The force of this blow upon the plate 37 will force the tripping-pin 36 downward into the position shown in Fig. 3, which will force the latch-plate off the end of the latch-pin 33, leaving the members 10 and 11 free. The springs will immediately force the members apart and cause their sharp edges 17 to be embedded in the sides of the well, thus anchoring the whole structure at the desired depth. The latch-plate will drop to the bottom of the well and the latch-pin, tripping-pin, and tripping-weight will be withdrawn from the well on the cord or rope. The shot, cartridge, or bomb which it is desired to explode is now lowered into the well until it rests upon the upper end of the anchor, where it can be exploded by any approved means. The explosion of the shot will break the anchor into small pieces, which will drop to the bottom of the well out of the way of future operations.

By means of this construction, which being mostly of cast metal and therefore comparatively inexpensive, we are enabled to fix an anchor at any point in a well at which it is desired to explode a charge of dynamite or other explosive for the usual purposes.

While we have illustrated and described the best means now known to us for carrying out our invention, we do not wish to be understood as restricting ourselves to the exact constructions shown and described, but hold that any slight changes or variations such as might suggest themselves to the ordinary mechanic will properly fall within the limit and scope of our invention.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. A shot-anchor for wells comprising two members pivoted together at their upper ends, a latch-plate adapted to connect them together at their lower ends, springs tending to separate the lower ends, a latch-pin passing downward through the top and bottom of one of the members and through the latch-plate, and a cord or wire connected to the latch-pin for suspending the whole structure, substantially as described.

2. A shot-anchor for wells comprising two members pivoted together at their upper ends,

a latch-plate adapted to connect them together at their lower ends, springs tending to separate the lower ends, a latch-pin passing downward through the top and bottom of one of the members and through the latch-plate, a cord or wire connected to the latch-pin for suspending the whole structure, and a tripping-pin strung on the suspending rope or wire, projecting through one of the members and having its lower end resting upon the top of the latch-plate, substantially as described.

3. A shot-anchor for wells comprising two members pivoted together at their upper ends, a latch-plate adapted to connect them together at their lower ends, springs tending to separate the lower ends, a latch-pin passing downward through the top and bottom of one of the members and through the latch-plate, a cord or wire connected to the latch-pin for suspending the whole structure, a tripping-pin strung on the suspending rope or wire, projecting through one of the members and having its lower end resting upon the top of the latch-plate, and a tubular weight strung upon the suspending rope or wire and adapted to engage with the upper end of the tripping-pin when dropped, substantially as described.

4. A shot-anchor for wells comprising two members pivoted together at their upper ends, a latch-plate adapted to connect them together at their lower ends, springs tending to separate the lower ends, a latch-pin passing downward through the top and bottom of one of the members and through the latch-plate, a cord or wire connected to the latch-pin for suspending the whole structure, a tripping-pin strung on the suspending rope or wire, projecting through one of the members and having its lower end resting upon the top of the latch-plate, a tubular weight strung upon the suspending rope or wire and adapted to engage with the upper end of the tripping-pin when dropped, and a flexible guard extending downwardly and outwardly from the lower edge of the anchor to properly center it in its lowering movement, substantially as described.

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