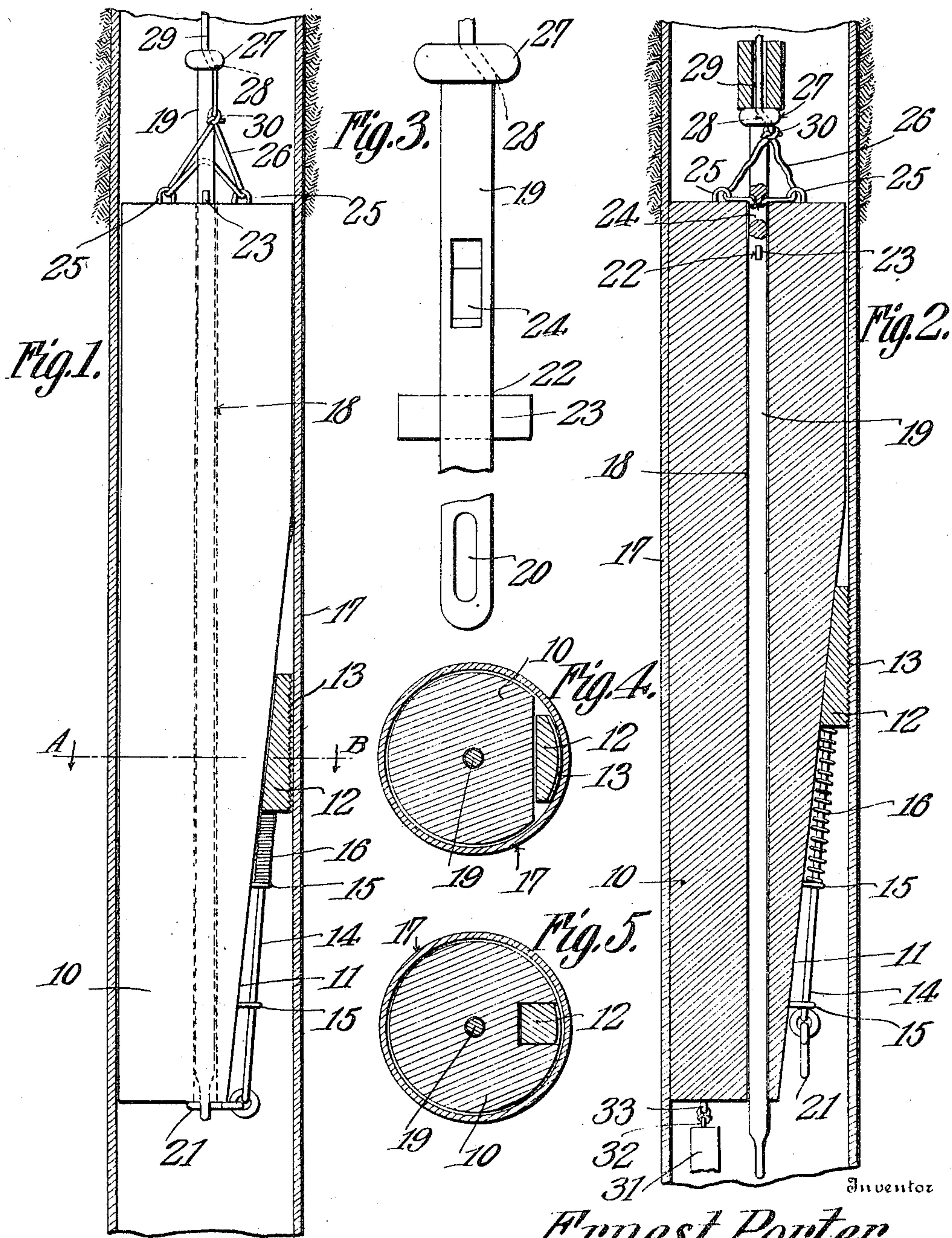


E. PORTER.
OIL WELL PLUG.
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903,314.

Patented Nov. 10, 1908.



Witnesses

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UNITED STATES PATENT OFFICE.

ERNEST PORTER, OF MONTICELLO, KENTUCKY.

OIL-WELL PLUG.

No. 903,314.

Specification of Letters Patent.

Patented Nov. 10, 1908.

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To all whom it may concern:

Be it known that I, ERNEST PORTER, a citizen of the United States, residing at Monticello, in the county of Wayne and State of Kentucky, have invented a new and useful Oil-Well Plug, of which the following is a specification.

This invention relates to plugs for oil wells and the like, and has special reference to plugs to be used in sealing abandoned wells.

The object of the invention is to provide a plug which may be lowered to any desired depth in the well and securely locked at that depth.

A further object of the invention is to provide a plug having means by which the lowering wire or rope may be detached when the plug has been placed in position.

The invention consists in certain novel features of construction, arrangement of parts, and combination of details, hereinafter fully described, illustrated in the accompanying drawings, and specifically claimed.

In the accompanying drawings:—Figure 1 shows the invention in a position for lowering into a well the device being in elevation and the parts in the position for lowering within the well. Fig. 2 is a similar view showing a well plugged with the invention the device being shown in section and the parts in the position assumed when the plug is locked in the well, the rod being shown at the instant of severing the cord. Fig. 3 is a detail of the supporting rod in elevation. Fig. 4 is a section on the line A—B of Fig. 1. Fig. 5 is a sectional view of a modification of the device.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The numeral 10 indicates the body of the device. In the form shown here, the body portion is beveled off, as at 11, a wedge 12 preferably provided with transverse serrations 13 being held to slide upon this beveled portion. It has been found sometimes advisable to replace the beveled portion 11 with a channel guide or slot, the bottom of which is similarly beveled and as the portion 11 is for the purpose of a guide, it will be so referred to hereinafter. A rod 14 is attached to the wedge 12 and passes through loops 15 which serve to guide said rod. Be-

tween one of the loops 15 and the wedge 12 is a coiled spring 16. This spring normally tends to force the wedge along the guide, and as the latter is beveled in the direction shown, the wedge will, also, move outward from the axis of the body portion as it moves along said guide. It will now be plain that if the wedge is retracted and the device inserted in a well, it will readily be moved up or down said well. If, however, the wedge be allowed to slip forward, it will project a small distance beyond the body portion and will be adapted to engage the side of the well.

It will be observed that the device may be used either with cased or uncased wells, but it is here shown in a well provided with a casing, as indicated by the numeral 17. Through the center of the body portion is made a hole 18 in which is fitted a rod 19. At the lower end of the rod 19 is formed an elongated eye 20, and at the lower end of the rod 14 is carried a loosely hung latch pin 21. The rod 14 is of such a length that when the wedge is retracted and the spring 16 compressed, the lower end of said rod will just clear the bottom of the body portion and permit the pin 21 to lie transversely thereon.

Now, if the pin 21 be inserted in the eye 20 of the rod 19 and the rod drawn up in the body, the eye 20 will hold the inner end of the pin 21 and the wedge will be held in the retracted position. If, however, the rod 19 be allowed to slip down through the hole, the pin 21 will free itself from the eye 20 and the wedge will be forced along the guide by the action of the spring 16. At the upper end of the rod 19 is an eye 22 and the distance between the eye 20 and the eye 22 is such that when the pin 21 is held in the eye 20 and the rod drawn up as far as it will go, the eye 22 just comes above the upper surface of the body portion. Through this eye there is then inserted a shearing piece 23, which I preferably make of some brittle wood. A third eye 24, the upper edge of which is beveled to form a knife, is formed in said rod 19, a short distance above the eye 22. Ears 25 are formed on the upper surface of the body portion 10 to act as a means of attachment for a cord 26 which is secured to said ears and passes through the eye 24, as shown in Fig. 1. These ears may be made in the form of staples or eye screws, as

desired. The rod 19 is provided with a broadened head 27 having a hole 28 there-through adapted to receive a suspending rope or wire 29 which is passed through the hole 28 and prevented from being with-
 5 drawn therefrom by a knot 30.

I preferably form the body portion above referred to of wood, but where the hole is full of water, or a large flow of gas is to be shut off, it is found better to make the plug
 10 of some heavier material, such as iron or steel.

It is further found that where there is a certain amount of water in the hole, it is necessary to provide means for sinking the
 15 wooden plug in the water, and to this end there is shown in Fig. 2, a weight 31 attached to said plug by a cord 32 secured to a staple 33 on the lower end of the plug.

In the operation of the device, the wedge
 20 is retracted along the guide, the rod inserted, and the pin 21 passed through the eye 20 thereof. The rod is then drawn up and the shearing piece 23 inserted in the eye 22.
 25 The cord 26 is then passed through one of the ears 25, the knife-edge eye 24, the other ear 25, and the ends are then knotted together in connection with the knot 30 of the wire 29. The device is then lowered into
 30 the well by means of the cord 29 until the point is reached at which it is desired to plug the well. The weight, preferably made of a piece of pipe, having a smaller diameter than the head 27 of the rod 19,
 35 is then allowed to fall down the cord 29. This weight moving rapidly down the cord strikes the head 27 of the rod and sets the rod in motion with reference to the body
 40 10, inasmuch as the body 10, being at rest, the inertia of rest of said body will not be overcome, but the rod 19 will be forced downward through the body breaking the shear-
 45 ing piece 23 and cutting the cord 26, this being accomplished by reason of the long bevel of the knife edge permitting the cord to be
 50 drawn down into the opening until it is stretched across the edge of the knife, which then severs the cord. At the same time the pin 21 will slip out of the eye 20 and the
 55 wedge 12 be forced into locking position against the casing of the well. It is to be observed that as the cord 29 is of comparatively great length it will have a certain amount of extension due to the shock of the
 60 falling weight, and will thus permit the motion of the rod in reference to the body. It is further to be observed that owing to the action of the spring, and the shearing and release of the rod, taking place before the
 65 inertia of rest of the body 10 is overcome by the force of gravity, the body 10 will remain in practically the same position as that in which it was when the weight was dropped. After the release and wedging actions have
 65 taken place, the rod 19 will be readily with-

drawn from the body portion and may be hauled to the top of the well for use another time.

What is claimed is:—

1. In a device of the kind described, a
 70 body portion having a guide thereon disposed at an angle to the axis thereof, a wedge arranged to move longitudinally of said guide, a spring tending to move said wedge
 75 along said guide and thereby to force the same outward from said axis, locking means mounted on said wedge adapted to hold the same in the retracted position, and other means carried by the body to coact with said
 80 locking means.

2. In a device of the kind described, a
 80 body portion having a guide thereon disposed at an angle to the axis thereof, an eyed rod extending therethrough, means for attaching said rod to said body, a wedge ar-
 85 ranged to move longitudinally of said guide, a spring adapted to force the same along said guide and outward from said axis, locking means carried by said wedge adapted to hold the same against the action of said
 90 spring, said locking means being arranged for insertion within the eye of the rod when the parts are to be locked together.

3. In a device of the kind described, a
 95 body portion, having a guide formed thereon disposed at an angle to the axis thereof, and an aperture therethrough, a rod extending through the aperture in the body, severable means for attaching said rod to
 100 said body, a wedge arranged to move longitudinally of said guide, a spring adapted to force the same along said guide and outward from said axis, locking means carried by said wedge adapted to hold the same
 105 against the action of said spring, and an eye formed at the lower end of said rod arranged to receive said locking means when in locked position.

4. In a device of the kind described, a
 110 body portion having a guide thereon, a headed rod extending therethrough provided with a cutting eye and a second eye below the same, a cord passing through said guiding eye connecting said rod and body, a shear-
 115 able member arranged in said second eye and supported on said body portion, a wedge arranged to move longitudinally of said guide, a spring adapted to force the same along said guide and outward from said
 120 axis, locking means carried by the wedge adapted to hold the same against the action of said spring, and a third eye formed at the lower end of said rod arranged to engage said locking means.

5. In a device of the kind described, a
 125 body portion, a headed rod extending there-through, a yieldable means for suspending said rod thereto, an eye formed in said rod, a shearable member in said eye to secure said
 130 body portion to said rod, a weight sliding on

said suspending means adapted to strike said rod and cause said member to shear and release the rod from the body.

5 6. In a device of the kind described, an elongated body portion provided with a guide arranged at an angle to the axis of said body portion, a wedge slidably mounted on said body portion adapted to be directed by said guide, a spring to force said wedge
10 along said guide and cause the same to move outward from the axis of the body, a rod provided with an enlarged head and having a knife edged eye near said head, a second eye immediately below said cutting eye
15 adapted to receive a shearing piece, and a third eye of elongated form at the lower end thereof, said rod passing through said body

portion, a shearable piece held in said second eye, a second rod attached to said wedge, arranged to compress said spring, a latch 20 pin loosely attached to the last mentioned rod adapted to enter the elongated eye of the first mentioned rod and hold said spring compressed, a cord passing through said cutting eye connecting said rod and body portion, and means for suspending the first mentioned rod. 25

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ERNEST PORTER.

Witnesses:

W. C. JONES,
BROOKS FOSTER.