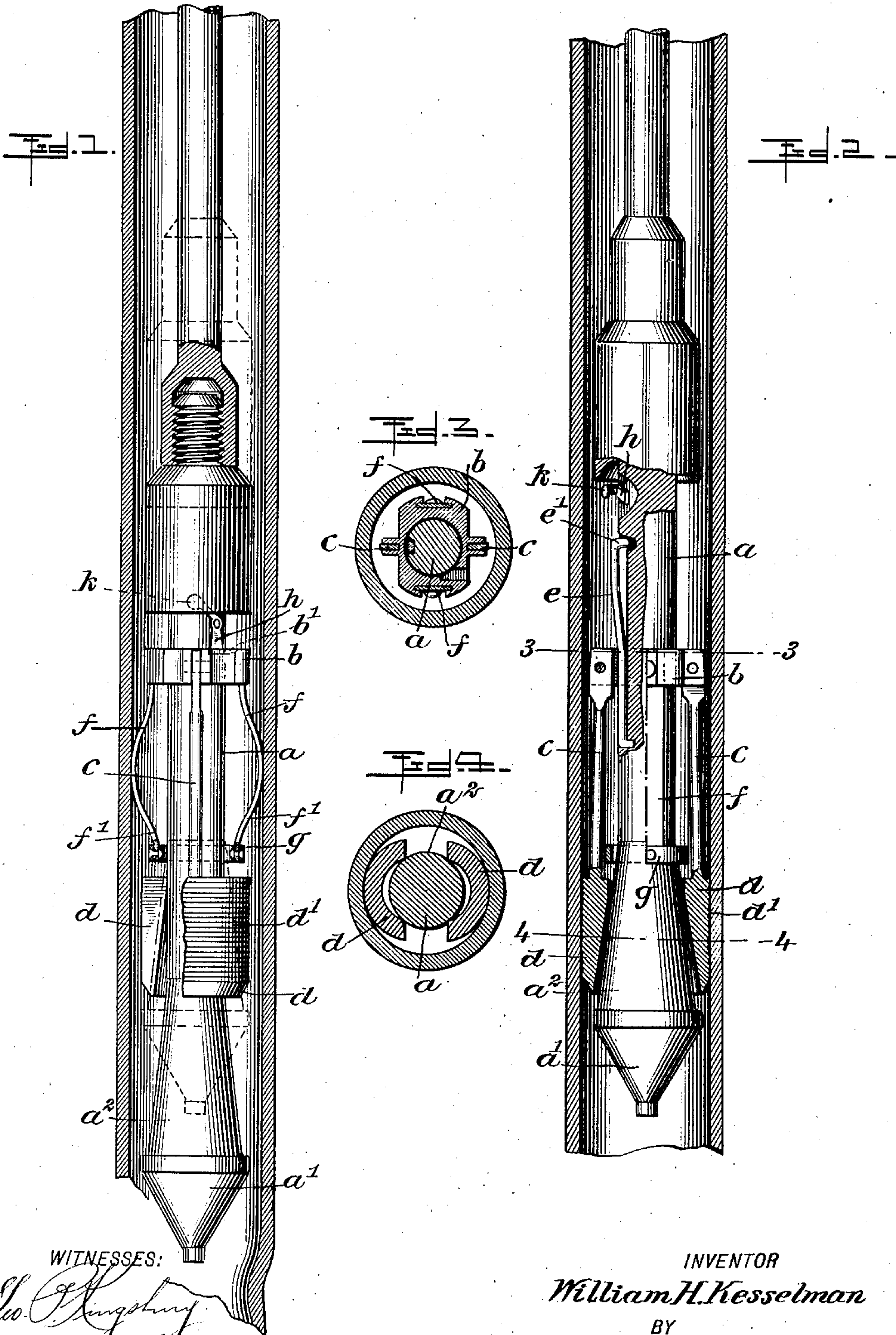


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W. H. KESSELMAN.
TRIP CASING SPEAR.

APPLICATION FILED OCT. 19, 1905.



WITNESSES:

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WILLIAM H. KESSELMAN, OF PARKERSBURG, WEST VIRGINIA.

TRIP CASING-SPEAR.

No. 812,569.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed October 19, 1905. Serial No. 283,433.

To all whom it may concern:

Be it known that I, WILLIAM H. KESSELMAN, a citizen of the United States, and a resident of Parkersburg, in the county of Wood and State of West Virginia, have invented a new and Improved Trip Casing-Spear, of which the following is a full, clear, and exact description.

My invention relates to a trip casing-spear for use in oil-wells and the like.

Casing-spears as heretofore constructed have been in general of two kinds: first, those in which jaws are forced against the inner wall of a casing along ways or a groove, and, second, those in which the so-called "bull-dog" grip is used. In the first form the ways or grooves are liable to become stopped by dirt or the like, the jaws thus being prevented from operating properly. In the second form the grip is of such a nature that when it once takes hold it cannot be loosened, and if the device fails to lift the casing it must either be left in the well or something must break.

It is the principal object of my invention to provide means whereby the jaws can be forced into engagement with the inner walls of the casing in a very simple manner and in such a way that no accumulation of dirt and other obstacles will prevent their operation, and, furthermore, to provide for loosening the device from the walls of the casing when it appears to be impossible to raise the casing with the spear.

Further objects of the invention will appear below.

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

Figure 1 is a vertical central sectional view of a well-casing, showing in full lines the positions of the parts of the device when being lowered and in dotted lines the positions when being raised, parts being broken away. Fig. 2 is a similar view at right angles to Fig. 1, showing the parts in the position represented by dotted lines in Fig. 1; and Figs. 3 and 4 are sectional views on the lines 3-3 and 4-4, respectively, of Fig. 2.

I have illustrated a rod *a* of the usual construction and adapted to be moved up and down in a well-casing by any ordinary means.

This rod is provided at its lower end with a conical surface *a'*, which constitutes a swage for striking the walls of the casing when they are forced inwardly by outside pressure. This construction permits the spear to be lowered in wells which are injured in this manner without the employment of a separate tool. Immediately above the conical section *a'* is a conical surface *a''*, the function of which will be explained below.

Located on a portion of the rod *a* some distance above the surface *a''* is a support or ring *b*. To this support are pivotally connected two or more oppositely-disposed links *c*, which support jaws *d* at their lower ends. These jaws are provided with corrugations *d'* upon their outer surfaces and may be formed of wrought-iron. It will be observed that these jaws hang freely from the support and that no ways or other guides are necessary to insure their movement in the proper direction. Ordinarily the ring *b* is supported in the position shown in full lines in Fig. 1 and the jaws hang freely in inoperative position therefrom; but when the spear has been lowered to the proper depth and then again raised it is designed to have the jaws remain in operative stationary position with respect to the rising spear, so that the conical surface *a''* will engage the inner edges of the jaws and force them outwardly against the casing. This gives the gripping action which is necessary in order to raise the casing. In order to provide for this operation, I employ a spring-catch *e*, mounted on the rod and engaging the support *b*. This catch has a shoulder *e'* at its top for holding the support *b* at certain times. It also has a convex shape near its top below the shoulder. This convex part holds the support during the downward motion of the spear; but any material resistance to the rise of the support when the spear is raised will cause the support to ride down over the catch, thereby permitting the jaws to engage the conical surface *a''*. In order to provide for exerting the proper resistance upon the support to prevent its rising with the spear, I have located springs *f* upon it. These springs are bowed outwardly, so as to normally engage the inner surface of the casing, and then are drawn inwardly at *f'* to prevent their edges from engaging the edges of the sections of the casing and stopping the apparatus in its de-

scent. For the purpose of adding rigidity to this feature I have provided a frame *g*, which is connected with the lower ends *f'* of the springs and is located inside of the links *c*.

5 It will be seen, therefore, that any force tending to move the projecting portions of the spring inwardly will force this frame downwardly with respect to the support, and consequently the springs bear with considerable
10 force against the sides of the casing. For the purpose of preventing the support from moving up while the spear is descending on account of the continual friction of the springs *f* on the casing I have pivoted a dog
15 *h* to the rod *a*. This dog bears in a notch *b'* in the upper surface of the support *b* and has a counterweight *k*.

The operation of the device is very simple. When it is to be lowered into the well, the
20 support *b* is located on the convex part of the catch *e* and is held up thereby. This places the jaws *d* in a position above the conical surface *a'*. The dog *h* holds the support *b* against any action tending to force it up-
25 wardly on the spear. The springs *f* bear against the casing throughout the length thereof. As it is lowered the swage *a'* remedies any defect in the walls of the casing caused by outside pressure and makes a clear
30 opening through which the remainder of the instrument may be lowered. When the device has been lowered sufficiently, it is suddenly drawn up. The friction of the springs *f* against the walls of the casing is sufficient
35 to cause the resistance of the catch *e* to be overcome and to allow the main body of the spear to be drawn up, leaving the parts attached to the support *b* in a lower position than before. This disengages the notch *b'*
40 from the dog *h* and permits the counterweight to swing the dog up out of the way. As the spear is drawn up the conical surface *a'* engages the inner edges of the jaws *d* and forces them outward into such a position as
45 to grip the inner surface of the casing. The further upward movement of the support usually results in the withdrawal of the casing from the well. If this does not happen, however, and if it is found that the casing
50 cannot be withdrawn, the spear can again be lowered, which will move the catch *e* below the support *b*, (the dog now being out of the way.) The support *b* now rests on the shoulder *e'* and the jaws are withdrawn from en-
55 gagement with the walls. The instrument can then be readily withdrawn and the disadvantages of the well-known bull-dog grip are thus overcome. By constructing the device in accordance with this principle the jaws can
60 be made of wrought-iron, which makes them more durable than those ordinarily used.

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

65 1. A casing-spear comprising a rod, mov-

able jaws connected therewith, a catch on the rod for holding the jaws, and means for engaging the casing to retard the upward motion of the jaws when the rod is raised and to release them from the influence of said catch. 70

2. A casing-spear comprising a rod, movable jaws connected therewith, a catch on the rod for holding the jaws, and means for engaging the casing to retard the upward motion of the jaws when the rod is raised; and to 75 release them from the influence of said catch, said means comprising a spring connected with the jaws and adapted to bear on the wall of the casing.

3. A casing-spear comprising a rod, a support mounted thereon, jaws connected with said support, a catch on the rod for engaging the support, and means for engaging the casing, said means being connected with said 80 jaws. 85

4. A casing-spear comprising a rod having a conical surface tapering upwardly, a support mounted thereon, jaws connected with said support, a catch on the rod for engaging the support, and means for engaging the casing 90 to retard the upward motion of the jaws when the rod is raised and release them from the influence of said catch. 95

5. A casing-spear comprising a rod having a conical surface tapering upwardly, a support mounted thereon, jaws connected with said support, a catch on the rod for engaging the support, and means for engaging the casing 95 to retard the upward motion of the jaws when the rod is raised and release them from the influence of said catch; said means comprising a spring connected with the support and adapted to bear on the wall of the casing. 100

6. In a casing-support, the combination of a rod having a tapering surface on the lower 105 part thereof, a catch on said rod, a ring adapted to be held in elevated position on the rod by said catch, links pivotally connected with the ring, jaws connected with said links and located in a position to be engaged by said 110 conical surface when the rod is raised with respect to the ring, and springs mounted on said ring and adapted to bear on the wall of a well-casing, said springs having inwardly-projecting ends. 115

7. A casing-spear comprising a rod having a conical surface thereon tapering upwardly, a spring-catch on the rod having a shoulder thereon, a support movably mounted on the rod and adapted to be held in an elevated position by said catch, links pivotally connected with said support, jaws connected with said links and adapted to be engaged by said conical surface, and means for normally preventing the support from moving above said 120 shoulder. 125

8. A trip casing-spear having a rod, a spring provided with a convex portion and a shoulder above the convex portion, a jaw-support adapted to be held by the convex 130

portion of the spring, and means for preventing the support from moving above the shoulder.

5 9. A trip casing-spear having a rod, a spring provided with a convex portion and a shoulder above the convex portion, a jaw-support adapted to be held by the convex portion of the spring, and means for preventing the support from moving above the
10 shoulder; said means comprising a movable dog adapted to engage the support, and means for moving the dog out of engagement with the support when the latter is moved downwardly with respect to the rod.

15 10. A casing-spear, comprising a rod, a movable jaw-support thereon, means for holding the support in a certain position on the rod, a pivoted dog bearing on the sup-

port when held in said position, and a counterweight for moving the dog out of engagement with the support when the latter is lowered from said position.

11. A casing-spear comprising a rod, a spring-catch on the rod having a shoulder, a support movably mounted on the rod and
25 adapted to be held in an elevated position by said catch, jaws movably connected with said support, and means for preventing the support from moving above said shoulder.

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

WILLIAM H. KESSELMAN.

Witnesses:

WM. HORN,

S. M. FLANEGIN.