

Sept. 3, 1946.

L. C. HUDSON

2,407,010

ADAPTER HEAD FOR WELLS

Filed Aug. 8, 1945

2 Sheets-Sheet 1

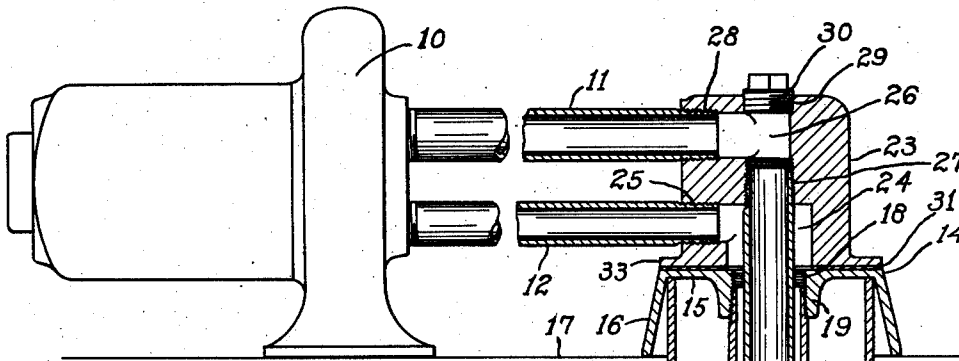


Fig. 1

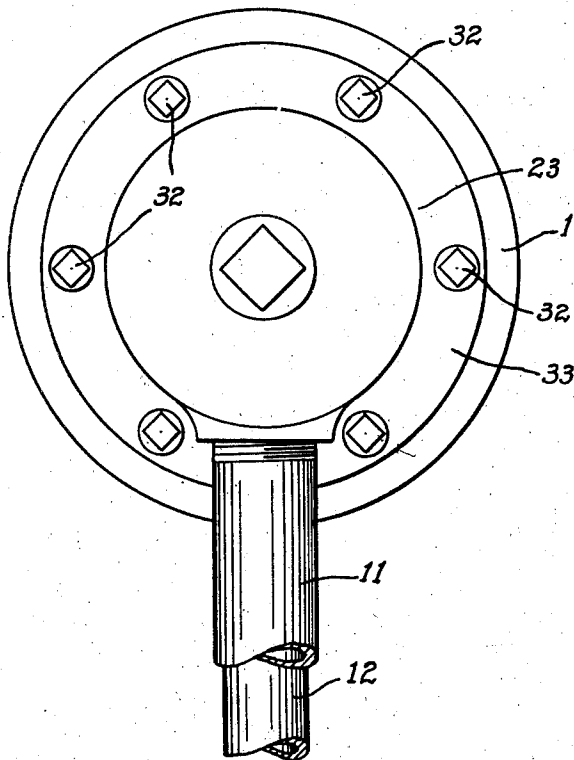
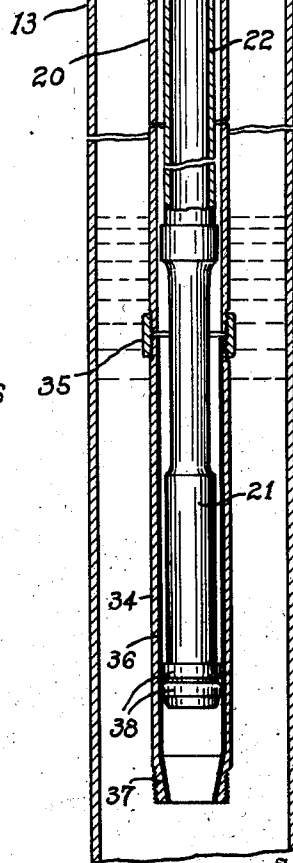


Fig. 2



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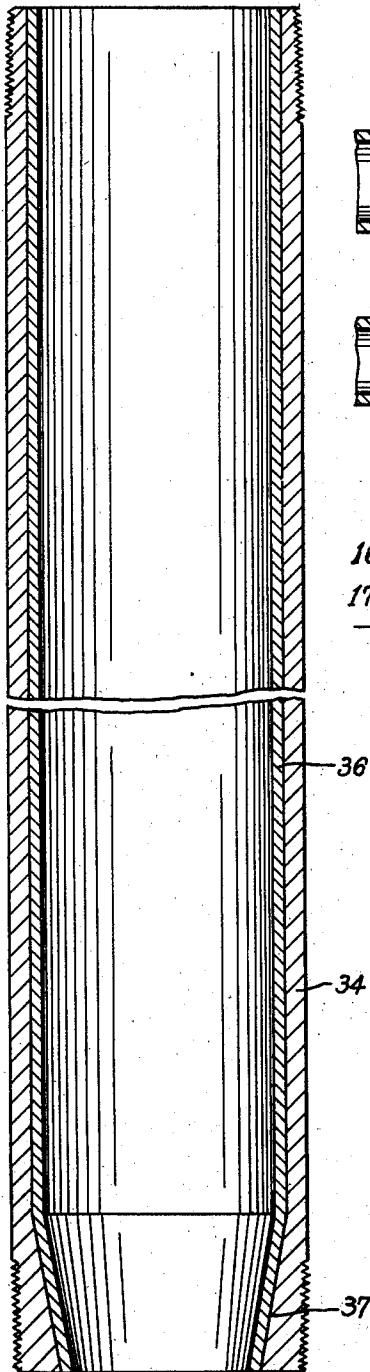


Fig. 4

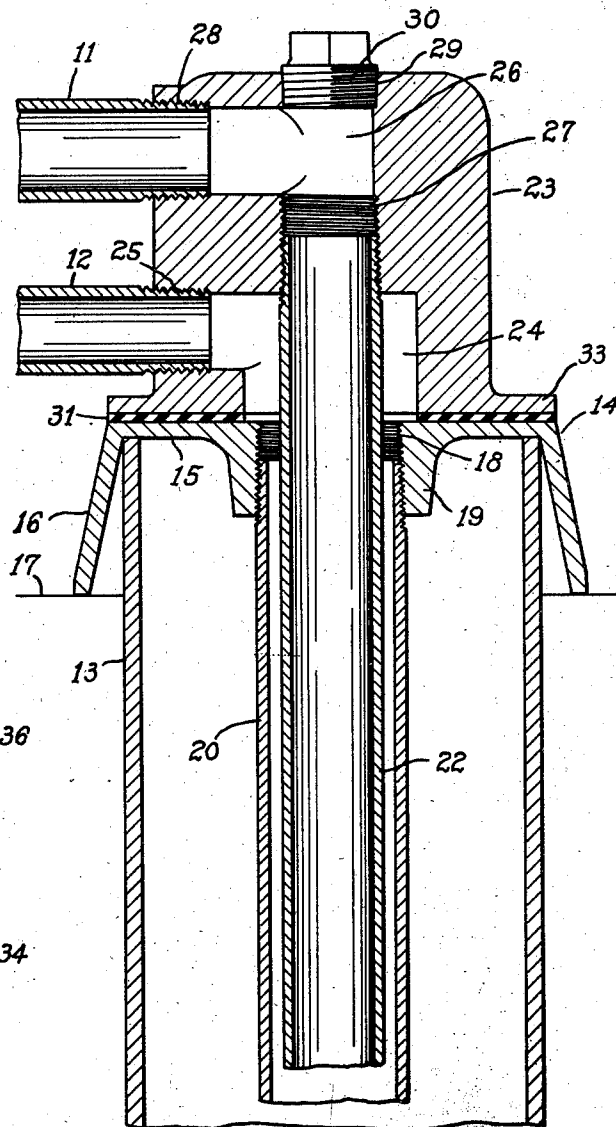


Fig. 3

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UNITED STATES PATENT OFFICE

2,407,010

ADAPTER HEAD FOR WELLS

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10 Claims. (Cl. 103—5)

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The invention relates to wells, and more particularly to an adapter head for covering the well casing and supporting the well pipes and connecting the same to a pump.

The object of the invention is to provide a simple, inexpensive and easily operated head which materially facilitates the dependable suspension of the pipes within the well casing.

Another object is to provide such a head with means for easily and readily connecting the same to a pump located at any angle around the adapter head.

A further object is to provide an adapter head formed of two parts comprising a base for covering the casing and supporting the outer well pipe and a head mounted upon and detachably connected to the base for supporting the inner well pipe.

A still further object is to provide a combination adapter head of this character in which the head may be adjustably mounted in various positions upon the base.

Still another object of the invention is to provide an adapter head of this character in which the upper ends of the outer and inner well pipes are screw threaded into the adapter.

A further object is to provide a brass lined packer seal upon the lower end of the outer well pipe supported by the adapter head.

A still further object is to provide such a brass lined packer seal having a tapered lower end which will prevent the conventional jet, containing the nozzle and Venturi tube, carried by the inner well pipe from falling through the same and down into the well.

It is still another object of the invention to provide a combination adapter head for use in connection with a two-pipe, jet, deep well pump.

A further object is to provide a combination adapter head of the type referred to which facilitates both the installation and servicing of deep well jet assemblies.

A still further object is to provide such an adapter head in which no pipe fittings are required at the top of the well to connect the down pipes in the well, or to connect the pipes leading from the adapter head to the pump.

Another object is to provide an adapter head of this character in which the head proper, to which the inner or smaller well pipe is connected, can be turned to six different positions to align with the pump without raising or moving the lower or base casting to which the larger or outer well pipe is attached.

Still another object is to provide such an

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adapter head with a removable, threaded plug, in the top of the upper casting or head proper, by means of which the well pipe may be filled with water for priming the pump.

It is a further object of the invention to provide such an adapter head which eliminates the use of packing glands, brass fittings and well caps at the top of the well.

The above objects, together with others which will be apparent from the drawings, and following description, or which may be later referred to, may be attained by constructing the improved combination adapter head and packer seal in the manner illustrated in the accompanying drawings, in which;

Figure 1 is a vertical sectional view of the improved adapter head showing the manner in which the same is connected to the well pipes and to the pump;

Fig. 2 is an enlarged top plan view of the improved head;

Fig. 3 an enlarged vertical sectional view through the adapter head and portions of the casing and well pipes, and pipes to the pump; and,

Fig. 4 an enlarged vertical sectional view of the improved brass lined packer seal used with the combination adapter head.

A two pipe jet, deep well pump of any conventional design is indicated generally at 10 and provided with the usual suction or delivery pipe 11 and pressure pipe 12. In ordinary practice these pipes are connected by elbows, fittings and the like to the usual inner and outer pipes respectively of the well.

This requires an accurate cutting and fitting of the pipes and couplings and is objectionable because there is always danger of one or both of the well pipes being accidentally dropped into the well during the installation. Furthermore it is found that when such wells need servicing it is much more difficult to service the jet assembly than to install it.

The present invention contemplates an adapter head which overcomes these objections, being of simple construction so that it may be readily installed without danger of either of the well pipes dropping into the well, and so constructed that the jet assembly may be easily serviced when necessary.

The well casing is indicated at 13, and the improved adapter head to which the invention pertains includes the base, indicated generally at 14 and comprising a top wall 15 and conical skirt 16 adapted to fit over and cover the upper end of the casing 13 and rest upon the ground line

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17 preventing dirt, insects and the like from getting into the top of the casing.

A central opening 18 is formed in the top wall 15 of the base and surrounded by the depending, annular, internally threaded flange 19 into which the upper end of the larger or outer well pipe 20 is screwed.

After the pipe 20 has been connected to the base and lowered into the well and the base of the adapter has been positioned over the upper end of the casing, as shown in the drawings, the jet 21 of any conventional design such for instance as shown in Conery Patent No. 2,077,213 dated April 13, 1937 may be assembled upon the lower end of the inner or smaller well pipe 22 and the upper end of the pipe 22 connected to the upper casting 23 of the adapter head.

This upper casting or head proper, has a central passage 24 communicating with the larger or outer well pipe 20 and with the angularly disposed threaded bore 25 into which the adjacent end of the pressure pipe 12, leading to the pump, is screwed.

In the upper portion of the head 23 is located a central passage 26, communicating at its lower end with a threaded bore 27, into which the upper end of the inner or smaller well pipe 22 is screwed and communicating with the angularly disposed tapped bore 28 to which the adjacent end of the suction pipe 11, leading to the pump, is adapted to be attached.

A threaded opening 29 in the top of the head 23 is arranged to be normally closed by a screw plug 30 and is provided for priming the pump by removing the screw plug and filling the entire assembly with water.

By removing this screw plug and replacing it with a pipe nipple and pipe T-fitting, a hoist can be connected to the T-fitting for raising or lowering the inner or smaller pipe 22 out of or into the larger pipe.

When the pipe 22 has been connected to the head 23, a gasket 31 is placed upon the top of the base casting 14 and the pipe 22 is lowered into the outer pipe 20 and the head rotated to the proper position to line up with the pump 10, bolts 32 being located through the flange 33 of the head casting 23 and into the base 14.

As there are six of these bolts around the head it will be seen that six different adjustments of the head relative to the base are provided so as to assist in lining up the head with the pump. The pipes 11 and 12 are then screwed into place connecting the head with the pump.

Another feature of the invention is the brass lined packer seal 34 adapted to be attached to the larger or outer pipe 20 as by the coupling 35. This packer seal is in the form of a steel tube having brass lining 36 therein and having its lower end inwardly tapered as at 37 so as to prevent the jet 21 from falling through the lower end of the outer pipe.

The brass lining reduces the inside diameter of the jet seal tube and provides a smooth surface to insert the leather packer rings 38 of the jet, this making a good seal which will last for years and also permitting the jet, with the inner pipe, to be easily removed at any time without permitting the leather seals to touch the sides of the larger pipe thus not damaging the leathers or causing them to stick within the outer pipe when inserting or removing the jet.

When the adapter head is thus assembled on the well and the pump it will be obvious that the

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outer pipe 20 of the well is connected to the pressure pipe 12 of the pump, and the inner pipe 22 of the well, to which the jet 21 is attached, is connected to the suction pipe 11 of the pump.

Since the jet is connected to the lower end of the inner pipe 22 and provided with the packer rings 38 forming a seal between the lower ends of the well pipes, a flow passage is provided between the pipes for pressure fluid from the pressure pipe 12 of the pump to the jet.

In the normal operation of the pump as fluid is drawn into the pump through the suction pipe 11 to be discharged from the pump to the usual tank or the like, a portion of the fluid is returned from the pump through the pressure pipe 12 to the space between the well pipes 20 and 22, this pressure fluid entering the jet 21 in usual and well known manner, creating a suction therein which draws fluid from the casing 13 upward through the jet and through the inner pipe 22 and suction pipe 11 to the pump.

I claim:

1. In combination with a pump having a suction pipe and a pressure pipe, and a well having an outer pipe within the well and an inner pipe within the outer pipe and a jet unit upon the lower end of the inner pipe forming a seal between the lower end of the inner and outer pipes and providing a flow passage between the inner and outer pipes to the jet unit, an adapter head comprising a base member located upon the ground at the top of the well, an internally screw threaded portion in said base member into which the upper end of the outer pipe is screwed, an upper member detachably connected to the base member, and having a passage therein communicating with the upper end of the outer pipe, means connecting the pressure pipe of the pump to said passage, an internally screw threaded portion in said upper member into which the upper end of the inner pipe is screwed, there being a passage in the upper member communicating with the upper end of the inner pipe and means connecting the suction pipe of the pump to said last named passage.

2. In combination with a pump having a suction pipe and a pressure pipe, and a well having an outer pipe within the well and an inner pipe within the outer pipe and a jet unit upon the lower end of the inner pipe forming a seal between the lower end of the inner and outer pipes and providing a flow passage between the inner and outer pipes to the jet unit, an adapter head comprising a base member located upon the ground at the top of the well, an internally screw threaded portion in said base member into which the upper end of the outer pipe is screwed, an upper member detachably connected to the base member, and having a passage therein communicating with the upper end of the outer pipe, means connecting the pressure pipe of the pump to said passage, an internally screw threaded portion in said upper member into which the upper end of the inner pipe is screwed, there being a passage in the upper member communicating with the upper end of the inner pipe and means connecting the suction pipe of the pump to said last named passage, and means for selectively connecting the upper member to the base in a plurality of different positions.

3. In combination with a pump having a suction pipe and a pressure pipe, and a well having an outer pipe within the well and an inner pipe within the outer pipe and a jet unit upon the lower end of the inner pipe forming a seal be-

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tween the lower end of the inner and outer pipes and providing a flow passage between the inner and outer pipes to the jet unit, an adapter head comprising a base member located upon the ground at the top of the well, an internally screw threaded portion in said base member into which the upper end of the outer pipe is screwed, an upper member detachably connected to the base member, and having a passage therein communicating with the upper end of the outer pipe, means connecting the pressure pipe of the pump to said passage, an internally screw threaded portion in said upper member into which the upper end of the inner pipe is screwed, there being a passage in the upper member communicating with the upper end of the inner pipe and means connecting the suction pipe of the pump to said last named passage, there being a threaded opening in the top of the upper member communicating with said last named passage, and a screw plug for normally closing said opening.

4. In combination with a pump having a suction pipe and a pressure pipe, and a well having a casing, an outer pipe within the casing, and an inner pipe within the outer pipe and a jet unit upon the lower end of the inner pipe forming a seal between the lower end of the inner and outer pipes and providing a flow passage between the inner and outer pipes to the jet unit, an adapter head comprising a base member located upon the ground at the top of the well, and having a skirt covering the top of the casing, an internally screw threaded portion in said base member into which the upper end of the outer pipe is screwed, an upper member detachably connected to the base member, and having a passage therein communicating with the upper end of the outer pipe, means connecting the pressure pipe of the pump to said passage, an internally screw threaded portion in said upper member into which the upper end of the inner pipe is screwed, there being a passage in the upper member communicating with the upper end of the inner pipe and means connecting the suction pipe of the pump to said last named passage.

5. In combination with a pump having a suction pipe and a pressure pipe, and a well having an outer pipe within the well and an inner pipe within the outer pipe, an adapter head comprising a base member located upon the ground at the top of the well, an internally screw threaded portion in said base member into which the upper end of the outer pipe is screwed, an upper member detachably connected to the base member, and having a passage therein communicating with the upper end of the outer pipe, means connecting the pressure pipe of the pump to said passage, an internally screw threaded portion in said upper member into which the upper end of the inner pipe is screwed, there being a passage in the upper member communicating with the upper end of the inner pipe and means connecting the suction pipe of the pump to said last named passage, a brass lined tube with tapered lower end connected to the lower end of the outer pipe and a jet connected to the lower end of the inner pipe and located within said brass lined tube and means upon the jet forming a seal between the lower ends of the inner and outer pipes and providing a flow passage between the inner and outer pipes to the jet.

6. In combination with a pump having a suction pipe and a pressure pipe, and a well having an outer pipe within the well and an inner pipe within the outer pipe and a jet unit upon the

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lower end of the inner pipe forming a seal between the lower end of the inner and outer pipes and providing a flow passage between the inner and outer pipes to the jet unit, an adapter head comprising a base member located upon the ground at the top of the well, an internally screw threaded portion in said base member into which the upper end of the outer pipe is screwed, an upper member detachably connected to the base member, and having a passage therein communicating with the upper end of the outer pipe, there being a radially disposed, internally threaded portion of said passage into which the pressure pipe of the pump is screwed, a second passage in the upper member having an axial, threaded portion into which the upper end of the inner pipe is screwed and a radially disposed, internally threaded portion into which the suction pipe of the pump is screwed.

7. In combination with a pump having a suction pipe and a pressure pipe, and a well having an outer pipe within the well and an inner pipe within the outer pipe, an adapter head comprising a base member located upon the ground at the top of the well, an internally screw threaded portion in said base member into which the upper end of the outer pipe is screwed, an upper member detachably connected to the base member, and having a passage therein communicating with the upper end of the outer pipe, there being a radially disposed, internally threaded portion of said passage into which the pressure pipe of the pump is screwed, a second passage in the upper member having an axial, threaded portion into which the upper end of the inner pipe is screwed and a radially disposed, internally threaded portion into which the suction pipe of the pump is screwed, a brass lined tube with tapered lower end fixed upon the lower end of the outer pipe and a jet fixed upon the lower end of the inner pipe and located within said brass lined tube and means upon the jet forming a seal between the lower ends of the inner and outer pipes and providing a flow passage between the inner and outer pipes to the jet.

8. In combination with a pump having a suction pipe and a pressure pipe, and a well having a casing, an outer pipe within the casing and an inner pipe within the outer pipe and a jet unit upon the lower end of the inner pipe forming a seal between the lower end of the inner and outer pipes and providing a flow passage between the inner and outer pipes to the jet unit, an adapter head comprising a base member having a skirt covering the upper end of the casing and resting upon the ground at the top of the well, a central, depending internally threaded flange upon the base member into which the upper end of the outer pipe is screwed, an upper member detachably connected to the base member and having a passage therein communicating with the upper end of the outer pipe, there being a radially disposed, internally threaded portion of said passage into which the pressure pipe of the pump is screwed, a second passage in the upper member having an axial, threaded portion into which the upper end of the inner pipe is screwed, and a radially disposed, internally threaded portion into which the suction pipe of the pump is screwed.

9. In combination with a pump having a suction pipe and a pressure pipe, and a well having a casing, an outer pipe within the casing and an inner pipe within the outer pipe and a jet unit upon the lower end of the inner pipe forming a seal between the lower end of the inner and

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outer pipes and providing a flow passage between the inner and outer pipes to the jet unit, an adapter head comprising a base member having a skirt covering the upper end of the casing and resting upon the ground at the top of the well, a central, depending internally threaded flange upon the base member into which the upper end of the outer pipe is screwed, an upper member detachably connected to the base member and having a passage therein communicating with the upper end of the outer pipe, there being a radially disposed, internally threaded portion of said passage into which the pressure pipe of the pump is screwed, a second passage in the upper member having an axial, threaded portion into which the upper end of the inner pipe is screwed, and a radially disposed, internally threaded portion into which the suction pipe of the pump is screwed, and means for selectively connecting the upper member to the base in a plurality of different positions.

10. In combination with a pump having a suction pipe and a pressure pipe, and a well having a casing, an outer pipe within the casing and an inner pipe within the outer pipe and a jet unit

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upon the lower end of the inner pipe forming a seal between the lower end of the inner and outer pipes and providing a flow passage between the inner and outer pipes to the jet unit, an adapter head comprising a base member having a skirt covering the upper end of the casing and resting upon the ground at the top of the well, a central, depending internally threaded flange upon the base member into which the upper end of the outer pipe is screwed, an upper member detachably connected to the base member and having a passage therein communicating with the upper end of the outer pipe, there being a radially disposed, internally threaded portion of said passage into which the pressure pipe of the pump is screwed, a second passage in the upper member having an axial, threaded portion into which the upper end of the inner pipe is screwed, and a radially disposed, internally threaded portion into which the suction pipe of the pump is screwed, there being a threaded opening in the top of the upper member communicating with said last named passage, and a screw plug for normally closing said opening.

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