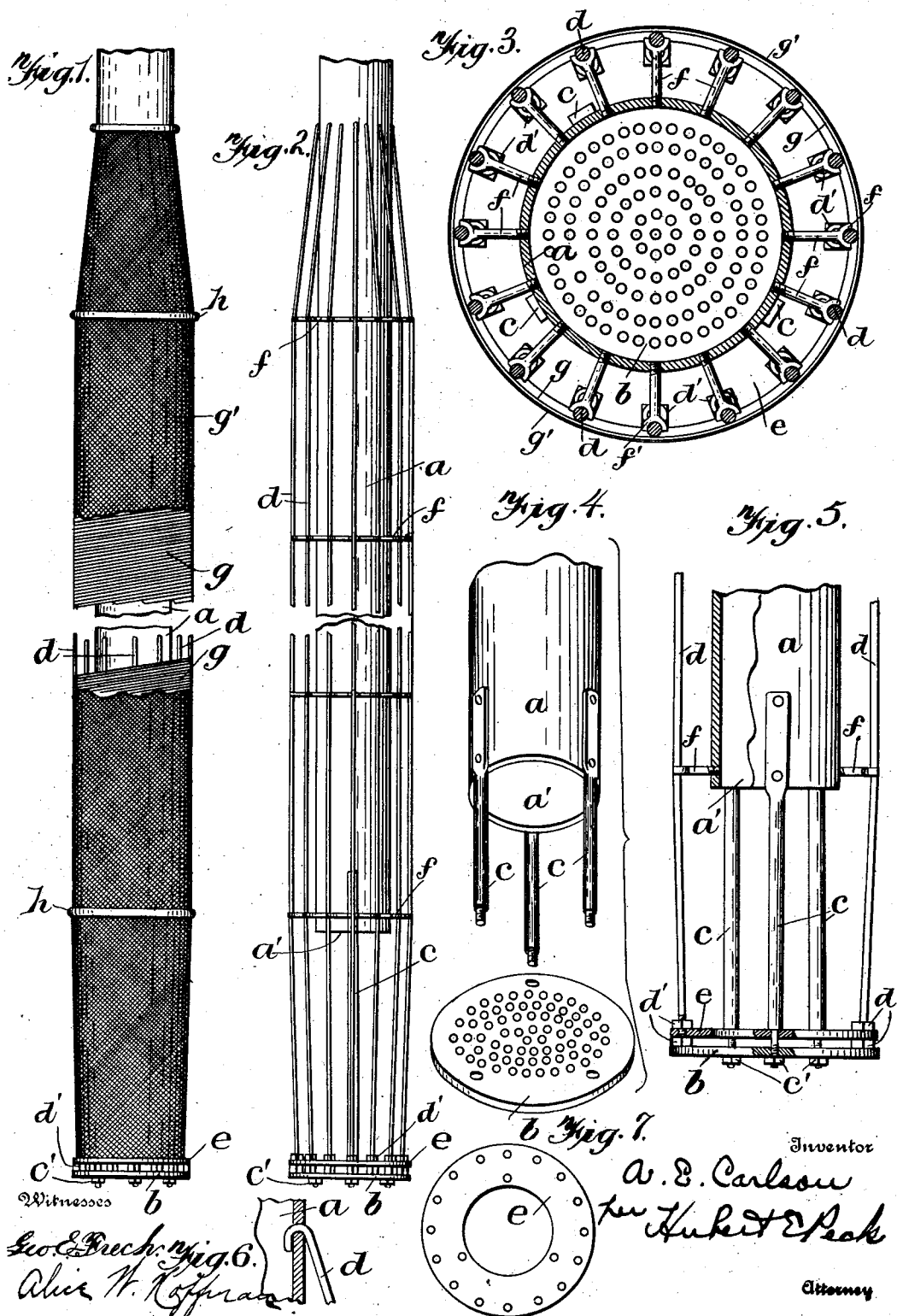


A. E. CARLSON.
CASING POINT OR STRAINER.

(Application filed Apr. 9, 1901.)

(No Model.)



UNITED STATES PATENT OFFICE.

ANDREW EDWARD CARLSON, OF ELCAMPO, TEXAS.

CASING POINT OR STRAINER.

SPECIFICATION forming part of Letters Patent No. 700,015, dated May 13, 1902.

Application filed April 9, 1901. Serial No. 55,040. (No model.)

To all whom it may concern:

Be it known that I, ANDREW EDWARD CARLSON, a citizen of the United States, residing at Elcampo, Wharton county, Texas, have invented certain new and useful Improvements in Casing Points or Strainers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in well-casing points or strainers, particularly adapted for use in oil and Artesian wells.

An object of my invention is to provide an exceedingly simple, durable, and economical casing point or strainer which will permit free circulation of the liquid around the lower portion of the casing and free and easy entrance of the same into the casing, and yet will prevent entrance of sand and gravel into the casing.

A further object of my invention is to provide certain improvements in casing points or strainers whereby such an article will be produced of high efficiency and possessing many features of advantage.

My invention consists in certain novel features in construction, in combination of parts and in arrangements of details, as more fully and particularly pointed out and specified hereinafter.

Referring to the accompanying drawings, which show, for the purposes of illustration and explanation, a construction as an example from among other arrangements within the spirit and scope of my invention, Figure 1 is a side elevation of the point or strainer, the wire netting or gauze covering being shown partially broken away to show the wire wrapping which can be employed and a portion of the wire being broken away to show the truss or stay rods and casing. Fig. 2 is a side elevation of the device without the wire wrapping and gauze. Fig. 3 is a cross-section, enlarged, through the point or strainer and the uptake or suction pipe or casing. Fig. 4 is a detail perspective view of the lower end of the point or strainer, the truss-rods being removed and the bottom strainer-plate shown separated from the depending legs. Fig. 5 is a detail elevation of the lower end

of the strainer and casing, the strainer-covering being removed, the casing and end plate and ring being partially broken away. Fig. 6 is a detail section through part of the casing, showing a means for attaching the upper ends of the truss or stay rods thereto. Fig. 7 is a detail plan view of the bottom ring.

In the drawings, *a* is the well pipe or casing, open at its lower end *a'*.

b is a perforated or reticulated plate, in the example shown constituting the lower end or extremity of the casing point or strainer and located opposite and a distance below the open end *a'* of the casing *a*. The plate *b* is spaced from and supported by the depending rigid legs *c*, at their upper ends rigidly secured to, as by rivets, the lower portion of the casing and at their lower ends suitably secured to said bottom plate. In the example illustrated I show three legs *c* equally spaced around the lower end of the casing and depending therefrom virtually in continuation thereof, each leg being preferably formed by a metal rod having its lower end reduced and threaded and passed through said bottom plate and provided on its lower end with a nut *c'*, screwing up against said plate. The upper end of each leg *c* can be flattened where it laps over the pipe or casing and perforated to receive the fastening means.

An open-work or strainer covering (sometimes eight or ten feet long) is provided extending from said bottom plate longitudinally of the pipe or casing to a point considerably above the lower open end *a'* thereof and forming a water-circulating chamber around the pipe and at its lower end opening into the water-collecting space or chamber between the bottom plate and open end *a'* of the pipe and within the said strainer-covering. Said strainer covering or casing can be composed of various materials and can be constructed or formed in various ways within the spirit and scope of my invention.

In the example illustrated I provide a supporting-framework for said strainer-covering comprising a series of parallel rods *d*, arranged longitudinally of the pipe. At their upper ends said rods *d* are secured to the pipe, as by hooked ends, (see Fig. 6.) and in a series extending around the pipe, so that the upper ends of all the rods are preferably secured in

the same plane transversely of the pipe and at the desired distance above the lower open end of the pipe. The rods extend along the exterior of the pipe and are preferably threaded at their lower ends, and said threaded ends of the rods d are passed transversely through a ring e , (see Fig. 7,) located above the bottom plate b . Each rod d is secured to said ring by one or more nuts d' , the nuts d' on the lower ends of said rods being located between the said ring and the bottom plate b . The legs c pass loosely through the ring, and the shoulders at the upper ends of the reduced portions of the legs abut against the top face of said ring.

The rods d are preferably equally spaced and form a series around the pipe, and means are provided to support the rods a suitable distance from the exterior of the pipe to form the water-circulating space around the exterior of the pipe.

f represents studs or projections at their inner ends secured in the pipe and projecting radially therefrom and each at its outer end f' forked or formed with a seat to receive a rod d and hold the same the desired distance from the outer surface of the pipe. These studs are arranged in series around the pipe, the studs of each series being preferably of the same length, and several series of the studs are provided, the series being located the desired distance apart to form the necessary supports for the rods. The first series of studs, at the upper end of the strainer, are located a distance below the transverse plane, including the points of attachment of the upper ends of the rods d to the pipe, so that the rods are inclined downwardly and outwardly from said points of attachment to said studs of the uppermost series, whereby the upper end of said framework, and consequently the strainer casing or covering, tapers upwardly to the circumference of the pipe. The lower series of studs is usually located around the lower end of the pipe, so that the rods are inclined inwardly and downwardly from said bottom series of studs to the ring e at the lower end of the strainer or point, whereby the framework formed by said series of rods tapers in opposite directions at its ends. The framework formed by said series of rods is usually cylindrical between said top and bottom series of studs.

The series of rods can be exteriorly wrapped with wire g from end to end, if desired, to form the strainer casing or covering, which permits free ingress of water or other liquid, and yet prevents entrance of sand or gravel. When the strainer-casing is thus formed by wire, the wire should be closely wrapped. If desired, the wire can be somewhat loosely or more openly wrapped and then covered by wire netting or gauze or wire-cloth or thin reticulated metal g' . If desired, the wire wrapping need not be employed, and suitable perforated metal or wire-cloth can be wrapped around the framework formed by rods d to

constitute a suitable strainer casing or covering.

h h are protecting and bracing rings exteriorly surrounding the strainer casing or covering and wedging on the tapered ends thereof to about the planes of the top and bottom series of studs for the purpose of bracing and strengthening the parts and to protect said covering from contact with the sides of the well as the point is being inserted or removed. These rings h are of sufficient thickness to project beyond the circle of the strainer-covering, and thus act as guards.

By reason of the tapered upper end of the strainer-casing the device can be easily removed from the well without sticking or wedging therein and without damage to the strainer.

The water is free to circulate around and longitudinally of a considerable length of the pipe above its lower open end and is free to enter the water collection-chamber below the open end of the pipe. The water is free to enter through the bottom plate of the strainer, which plate is usually covered with wire cloth or gauze if the openings or perforations therethrough are otherwise large enough to permit passage of sand and gravel. Gravel and sand and other foreign material is prevented from entering the pipe, yet the water is allowed free circulation around and entrance thereto both at the bottom end and through the side walls of the strainer.

Practical use has demonstrated the utility and many advantages of the strainer or casing point described herein.

It is evident that various changes and modifications might be resorted to in the forms, constructions, and arrangements of the parts described without departing from the spirit and scope of my invention. Hence I do not wish to limit my invention to the exact constructions shown.

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

1. A well-strainer comprising a pipe having a bottom inlet, a rigid frame depending below the pipe, trussed rods arranged longitudinally of the pipe and in a series around the same and at their upper ends secured to the pipe and at their lower ends secured to said frame, said rods between their ends arranged a distance from the outer surface of the pipe, and a strainer-covering arranged around the series of rods, substantially as described.

2. A well-strainer comprising a pipe having a bottom inlet and radial supports projecting beyond the outer wall of the pipe, rods arranged longitudinally of the pipe and in a series around the same and drawn inwardly and secured at their end portions, said rods between their end inclined portions being held away from the outer surface of the pipe by said supports, a strainer-casing around said series of rods and tapering oppositely at the end portions, substantially as described.

3. In combination, a pipe having an open lower end, the legs secured to and projecting below the pipe end, the strainer-plate secured to the lower ends of said legs, the ring on the legs above the strainer-plate, rods arranged longitudinally of the pipe and in a series around the same, said rods at their upper ends secured to the pipe and at their lower ends secured to said ring, the radial studs projecting from the pipe and engaging said rods between their ends and holding the same a distance from the surface of the pipe and forming the series of rods tapering inwardly and upwardly at the upper end, a strainer-covering around the series of rods, and exterior guard-rings around said covering, substantially as described.

4. A casing point or strainer comprising a well tube or casing, a framework secured thereto and arranged longitudinally thereof and extending below said tube and having a longitudinally-tapered end, a strainer-covering around said framework and conforming to the tapered end thereof, and a guard-ring slipped over and wedged on the exterior of said covering and located at the large end of said tapered portion, substantially as described.

5. A casing point or strainer comprising a well tube or casing, rods rigid therewith and projecting longitudinally beyond the end thereof, an end plate carried by said rods a distance beyond the end of the casing, a framework extending longitudinally of the casing and at the upper end secured thereto and at the lower end secured to said rods, and a strainer covering around and the length of said framework, substantially as described.

6. A casing point or strainer comprising a well-tube having an end inlet, a frame rigid with and projecting below said end of the tube and having a perforated bottom floor a distance below said tube end, a framework extending longitudinally of said tube and at its upper portion tapered inwardly and upwardly and secured to said tube and below its upper end held away from said tube and extending below the tube and at its lower portion secured to the lower portion of said frame, and a strainer covering around and the length of said framework and forming a water-space around and below the tube, substantially as described.

7. In combination, the pipe or casing having a lower inlet end, and a strainer movable into and out of the well with said pipe and comprising a framework surrounding said pipe and arranged longitudinally thereof from a point above said inlet end to a point below the same, said framework between its ends held away from the exterior of the pipe to form a water-circulating space around the same, and having its upper end tapered upwardly and inwardly to the pipe and secured thereto, means rigid with and projecting below the pipe, the lower end of said framework tapered inwardly and downwardly and se-

cured to said means below said inlet end of the pipe, a strainer-covering around said framework, and exterior guards around said strainer-covering and projecting beyond the same to prevent injury thereto as the pipe is inserted in or removed from the well, substantially as described.

8. In combination, a pipe having an inlet, rods arranged longitudinally thereof and in a series around the same and at their upper ends secured to the pipe a distance above said inlet, and at their lower ends projecting below the inlet, means rigid with said pipe and to which the lower ends of said rods are secured, the lower ends of said rods being threaded and provided with nuts screwing thereon for tightening the rods and securing the same at their lower ends, and a strainer-covering around said series of rods and forming a water-circulating chamber around said pipe, substantially as described.

9. In combination, a pipe having an inlet, an open framework arranged longitudinally of said pipe from a point above said inlet to a point below the same, said frame at its upper end secured to the pipe and at its lower end provided with means securing it to the pipe, spacing devices arranged between the pipe and intermediate portions of the framework and holding said framework, between its ends, away from the pipe, whereby the ends of the framework are tapered inwardly, in opposite directions, and a strainer-covering around said framework and forming an open water-space within the framework around the pipe, substantially as described.

10. In combination, a pipe having a lower inlet end, legs rigid with and depending below said end, a reticulated bottom plate secured to said legs, an open framework arranged longitudinally of said pipe and secured thereto and between its ends trussed therefrom and extending down to said plate and confined to said legs, and a strainer-covering around and throughout the length of said framework, substantially as described.

11. In combination, a pipe having a lower inlet, an open framework inclosing, secured to and arranged longitudinally of said pipe from a point above to a point below said inlet, said framework at one end fixedly secured and at the opposite end provided with longitudinally-screw-threaded portions and nuts thereon securing the frame and drawing the same longitudinally taut, an abutment for said nuts, and a strainer-covering around said framework and forming a water-space within the same, substantially as described.

12. In combination, the pipe having a bottom inlet, an open framework arranged around the pipe and extending longitudinally thereof, the upper end of said framework drawn inwardly on an upward taper to the exterior surface of the pipe and there secured to said pipe, means securing the lower end of the framework rigid with the pipe, the lower end of the framework drawn inwardly on a down-

ward taper, and a strainer-covering secured around said framework, substantially as described.

13. In combination, a pipe having a bottom inlet, a series of rods arranged around and extending longitudinally of said pipe and at their upper ends secured to the pipe, a plate through which the lower ends of said rods pass, means confining said plate to the pipe, the lower ends of said rods longitudinally threaded and provided with tightening and securing nuts, and a strainer-covering around said rods, substantially as described.

14. In a well-strainer, in combination, an uptake pipe or casing having a lower inlet end, and an open framework secured to and carried by said casing and arranged longitudinally of said casing and projecting a distance below the inlet end thereof, said framework comprising a series of rods arranged longitudinally of and in a series around the casing, means confining said rods at their ends, and intermediate spacing or supporting devices arranged within the series of rods and engaging the same, said series of rods having a diameter greater than the exterior

diameter of the casing, and a strainer-covering around the exterior of the series of rods, substantially as described.

15. In combination, in a well-strainer, an uptake pipe or casing having a lower inlet end, and an open framework secured to said casing above its inlet end and extending longitudinally thereof to a point below the same and comprising a bottom head or plate, a multiplicity of rods confined at their ends and arranged longitudinally of said pipe and in a series around the same and at their lower ends confined to said bottom head, and intermediate spacing or securing devices arranged at intervals within the series of rods and formed to fit the individual rods, and a strainer-covering wrapped around the exterior of the series of rods, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW EDWARD CARLSON.

Witnesses:

JNO. E. NORELIUS,

E. PERSSON.