

No. 686,733.

Patented Nov. 19, 1901.

P. E. HOULAHAN.
GRAPPLING DEVICE.

(Application filed Mar. 29, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

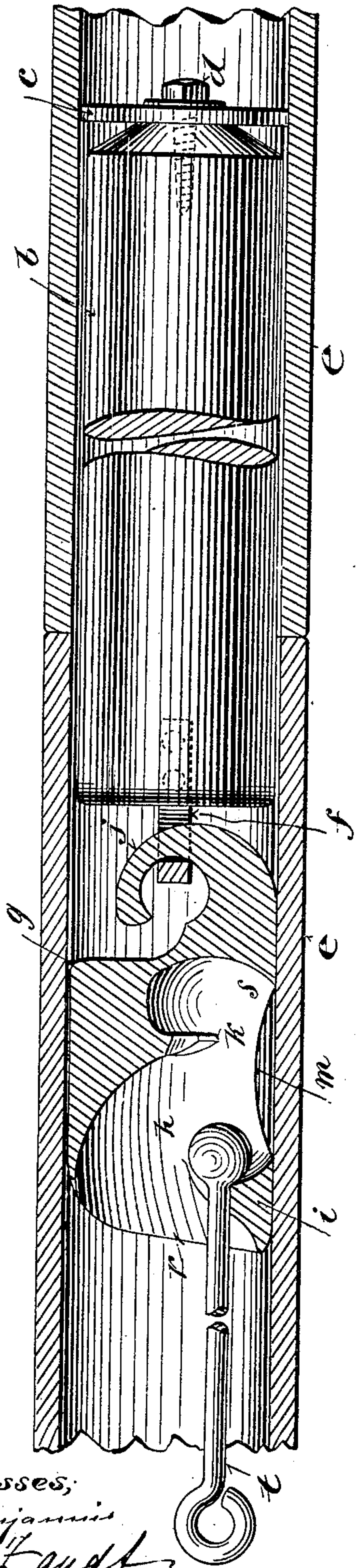
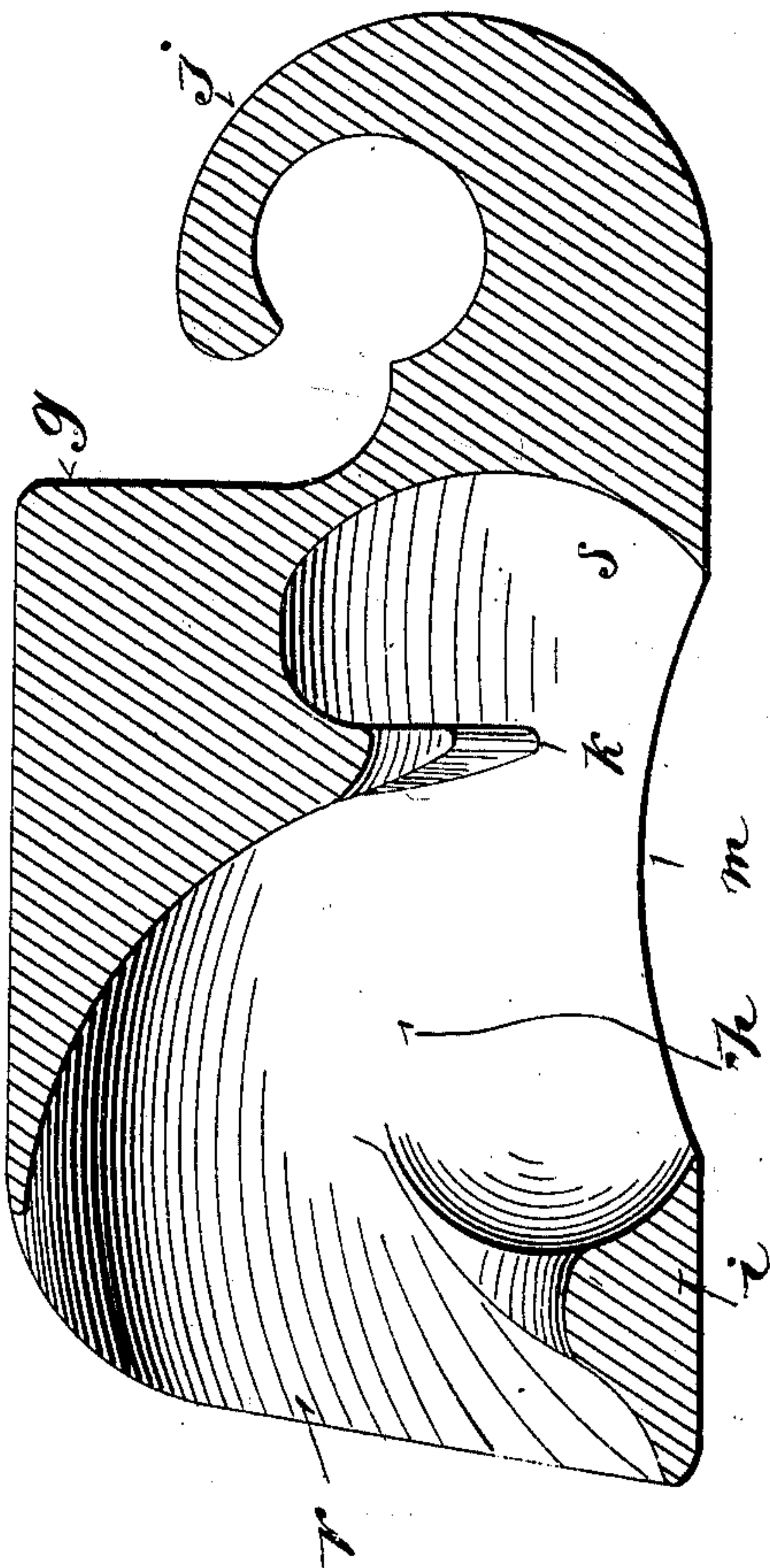


Fig. 2.



Witnesses;
C. W. Benjamin
C. Van Landt

Inventor;
Patrick E. Houlahan,
by Henry Samuel Morton.
att

No. 686,733.

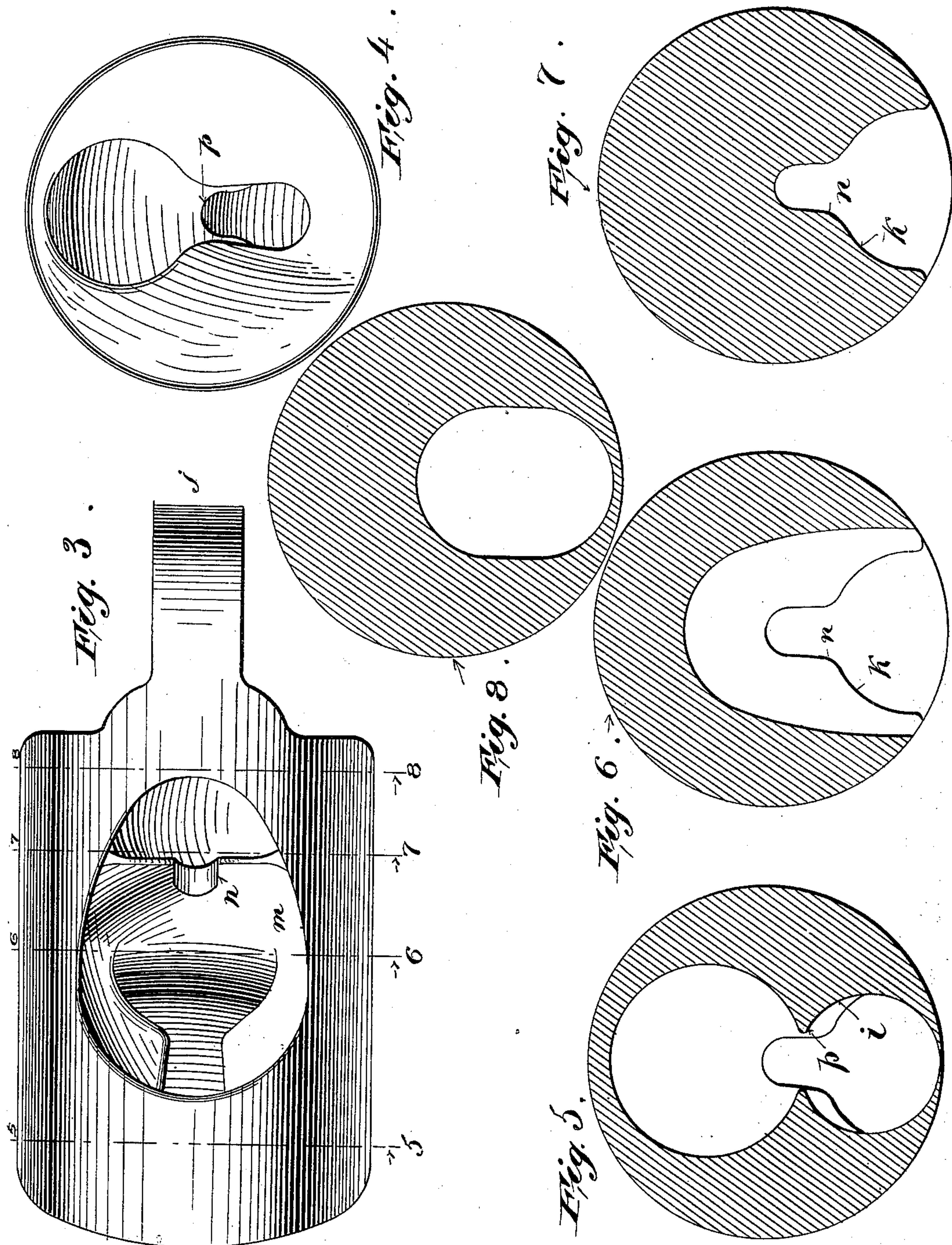
Patented Nov. 19, 1901.

P. E. HOULAHAN.
GRAPPLING DEVICE.

(Application filed Mar. 29, 1901.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses;
C. W. Benjamin
E. Van Land

Inventor:
Patrick E. Houlahan,
by Henry Samuel Morton
att'y.

UNITED STATES PATENT OFFICE.

PATRICK E. HOULAHAN, OF NEW YORK, N. Y.

GRAPPLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 686,733, dated November 19, 1901.

Application filed March 29, 1901. Serial No. 53,394. (No model.)

To all whom it may concern:

Be it known that I, PATRICK E. HOULAHAN, of the borough of Manhattan, in the city and State of New York, have invented certain new
5 useful Improvements in Grappling Devices, of which the following is a description, referring to the accompanying drawings, which together form a part of this specification.

When tubes or conduits for carrying electric lighting or other wires are placed in the cement in which they are embedded, one of the difficulties encountered in successfully placing them in the cement is to keep the short sections of conduit in alinement one
15 with another and also prevent the cement from blocking the conduit between these conduit-sections. It has been customary in some instances to pass through the conduit-sections after they have been placed in the cement a cylindrical block or mandrel of sufficient length to aline each succeeding section of conduit and so constructed that any cement
20 that has crept in between sections is scraped off, leaving the interior entirely clear of any extraneous matter. This mandrel is placed
25 in the first conduit-section laid, and after one or more succeeding sections have been placed in the cement the mandrel is pulled forward along the conduit and the operation indefinitely repeated.

The object of this invention is to provide a certain, rapid, and convenient means for grappling the mandrel and pulling it forward and out of the conduit and for similar uses. Most
35 of the devices heretofore in use for pulling the mandrel out of the conduit have been of such a nature that much valuable time has been wasted over this minor detail of the work.

In the drawings, Figure 1 is a view partly in section of the conduits, showing this device in operation. Fig. 2 is a vertical cross-section of the grappling device. Fig. 3 is a bottom view of the device. Fig. 4 is an end view
40 of the grappling device as seen from the left-hand side of Fig. 3. Figs. 5, 6, 7, and 8 are cross-sections on the planes 5 5, 6 6, 7 7, 8 8, respectively, of Fig. 3 as viewed from the left-hand end of Fig. 3.

In the drawings like reference-letters indicate like parts.

The grappling device in one of its best forms primarily consists of at least two separable connecting members, one of these members having differently-directed guiding and
55 deflecting surfaces and the other having an engaging device which is guided by and cooperates with the surfaces of the first member. The grappling member *g*, which may be made of cast-iron or any suitable material, is constructed with the two cavities *h*
60 and *s*, the cavities lying within the upper side of the device, as shown in Fig. 2. These two cavities are partially separated from each other by means of the web *k*, cut with a slot
65 *n*, as shown in Fig. 7. A portion of the surface of the grappling member *g* is cut away in a circular form, as seen at *m*. This opening does not extend all the way to the front
70 of the member, as the cavity *h* contains the web *i*, which rises from the inner wall of the member, as shown. This web *i* is also slotted with a groove *p*. It will be noticed that the interior cavities in member *g* are fashioned with smooth surfaces having no sharp
75 angles or edges, with the exception of the two webs and the slots through them.

At the opposite end of the device to the larger opening *r* is a hook *j*, for which may be substituted, however, any suitable construction which will interlock with the mandrel *b*. The mandrel may be constructed in any convenient form or manner, the preferred form, as shown in the drawings, having attached to it by means of a screw *d* a washer
85 *c*, which is preferably made of rubber.

The operation of the device is as follows: The mandrel, the grappling device having been hooked onto it by means of the hook *j*, is placed at the rear end of the first section
90 of conduit laid. One or more sections of conduit are then placed in approximate alinement with the first. A bar or rod *t*, its end terminating, preferably, in a spherical form or head, is then inserted in the conduits, the
95 smooth and contracting surfaces of the grappling device guiding it as it is pressed inward into either of the two pockets or recep-

tacles. The bar is then pulled forward, and falling into one of the slots it interlocks either with the web *k* or with the web *i*, as shown, depending on which side of the device *g* is turned up, and the device and the mandrel attached to it are then readily pulled forward and out of the open end of the conduits.

If desired, the two connecting members may be interchanged one for the other, the rod being loosely attached to the mandrel and the grappling device being thrust into the tube.

Having now specified the nature of my invention as embodied in the best form of construction known to me, I will, without attempting to enumerate the great variations of form of which it is capable, point out in the following claims the essential and distinguishing novel features:

1. A grappling device for the purposes described, consisting of at least two separable connecting members, one of said members having successive differently-directed guiding and deflecting surfaces, and the other having an engaging device shaped to be guided by the said surfaces, whereby at least one of the said guiding-surfaces shall cooperate with said engaging device, substantially as set forth.

2. A grappling device for the purposes described, consisting of at least two separable connecting members, each of which is provided with means rigid therewith for engaging and locking with the other at all angular positions, substantially as set forth.

3. A grappling device for the purposes described, consisting of at least two separable connecting members, each of which is provided with means for engaging and locking with the other at all angular positions, and

one of which is provided with a coupling device for coupling it to the object to be drawn by it, substantially as set forth.

4. A grappling device for the purposes described, consisting of at least two separable connecting members, one of which has a rounded head and the other of which has a rounded exterior guiding-surface for externally guiding its own movement, and two successive interior pockets for the said rounded head, each provided with deflecting guiding-surfaces leading to it, and a slot for engaging the neck of the said head, the two said deflecting-surfaces being differently inclined, substantially as set forth.

5. In combination in a grappling device, an object to be pulled, a grappling-iron, guides for directing the course of said grappling-iron, a plurality of receptacles adapted to engage the end of said grappling-iron and attached to said object to be pulled, substantially as set forth.

6. In combination in a grappling device, a mandrel, one or more receptacles attached to said mandrel, guides connected with said receptacle or receptacles, a grappling-iron adapted to engage with said receptacle or receptacles, substantially as set forth.

7. The combination in a mechanism for the purposes described, of a mandrel, a rod, a ball upon one end of said rod, a cavity in which said mandrel lies, guides and a receptacle affixed to the said mandrel cooperating with said rod, substantially as set forth.

Signed this 28th day of March, 1901, at New York, N. Y.

P. E. HOULAHAN.

Witnesses:

E. VAN ZANDT,
H. S. MORTON.