G. M. PETERS & M. F. LINDSLEY.

DEVICE FOR INTRODUCING ENERGIZING MATERIAL INTO THE CHARGE OF BLASTING CARTRIDGES.

APPLICATION FILED MAY 8, 1907.

999,396.

Patented Aug. 1, 1911.

2 SHEETS—SHEET 1.

Fig. 5.

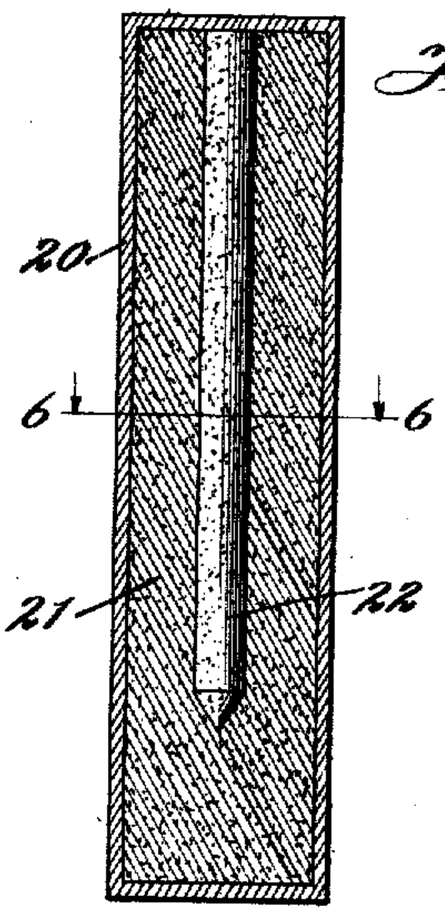


Fig. 6.

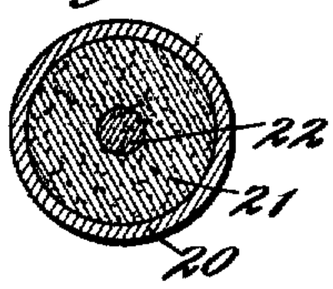


Fig. 7.

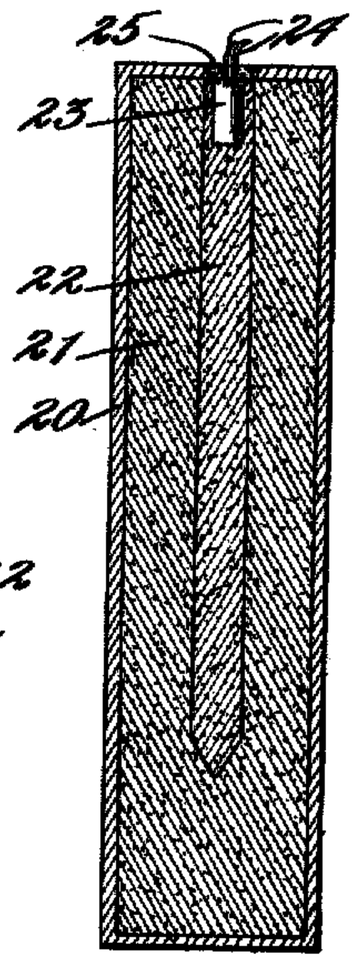


Fig. 8.

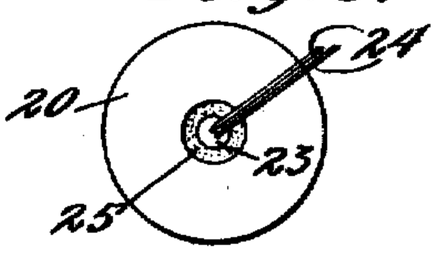
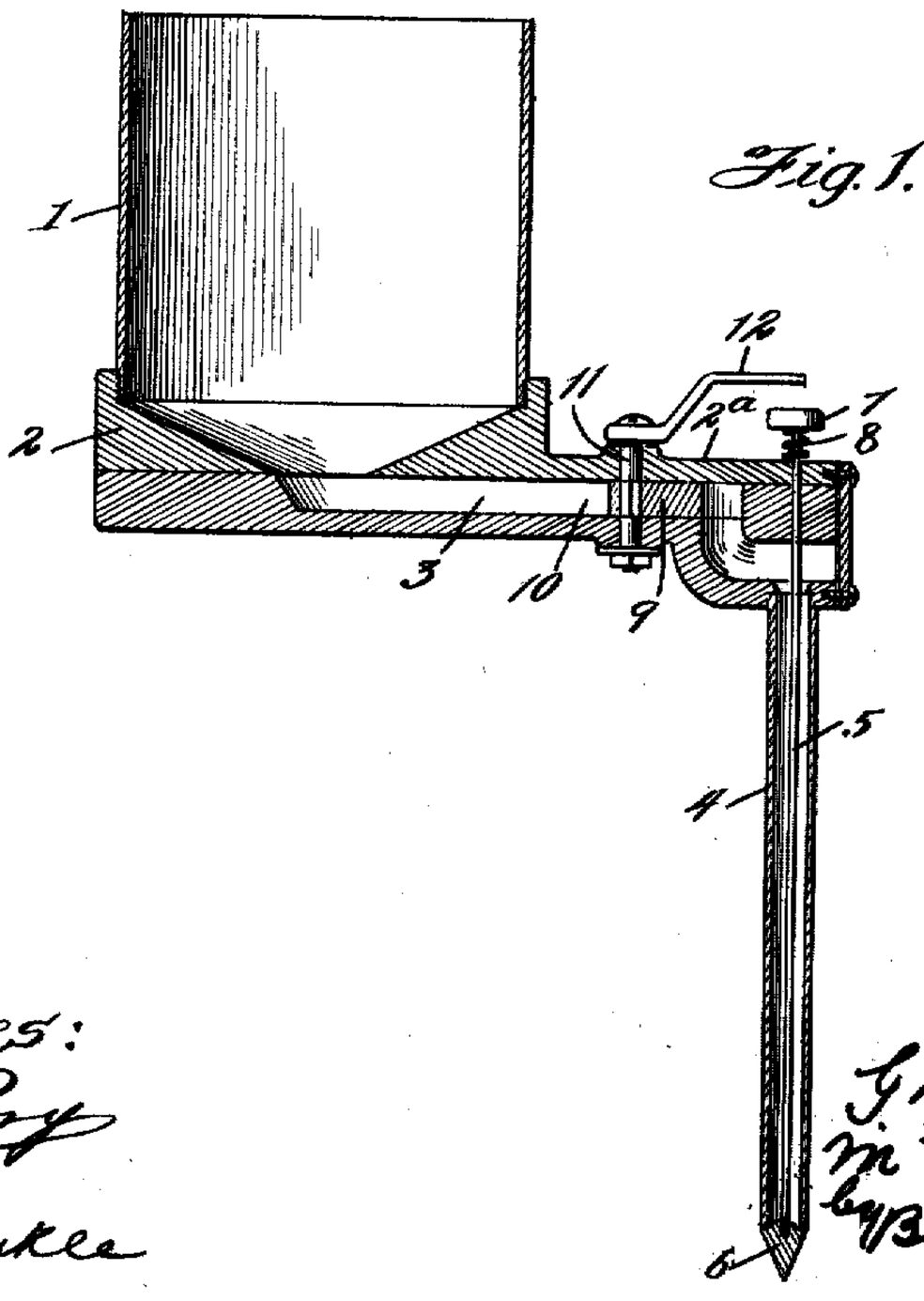


Fig. 1.



Witnesses:
Ira D. Perry
A. E. Sprinkle

Inventors
G. M. Peters
M. F. Lindsley
by Brown & Hopkins
Attys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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Fig. 2.

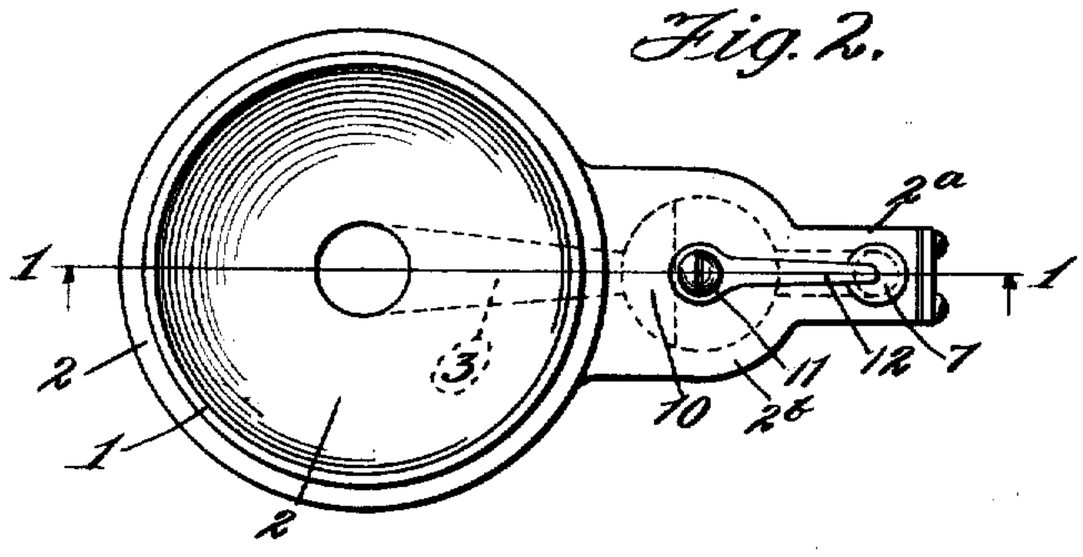


Fig. 3.

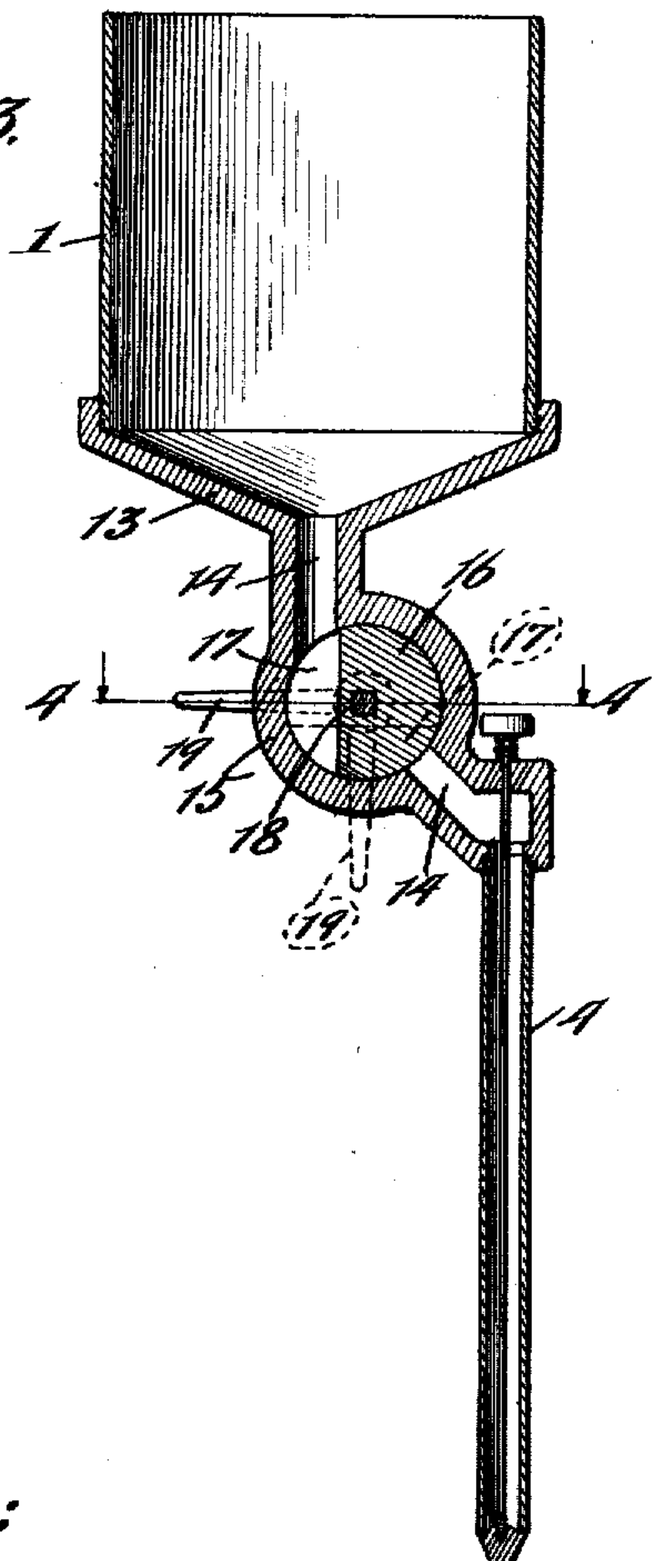
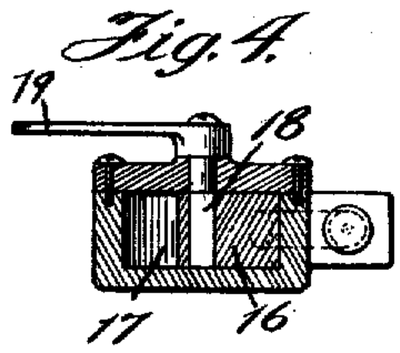


Fig. 4.



Witnesses:
Ira D. Landy
A. B. Sprinkle.

Inventor:
G. M. Peters
M. F. Lindsley.
by Brown & Hopkins
Attys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GERSHOM M. PETERS, OF CINCINNATI, AND MILTON F. LINDSLEY, OF KINGS MILLS, OHIO, ASSIGNORS TO THE KING POWDER COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

DEVICE FOR INTRODUCING ENERGIZING MATERIAL INTO THE CHARGE OF BLASTING-CARTRIDGES.

999,396. Specification of Letters Patent. Patented Aug. 1, 1911.

Application filed May 8, 1907. Serial No. 372,458.

To all whom it may concern:

Be it known that we, GERSHOM M. PETERS and MILTON F. LINDSLEY, citizens of the United States, residing, respectively, at Cincinnati, in the county of Hamilton and State of Ohio, and at Kings Mills, Warren county, Ohio, have invented certain new and useful Improvements in Devices for Introducing Energizing Material into the Charge of Blasting-Cartridges, of which the following is a full, clear, and exact specification.

The invention relates to a device adapted to introduce energizing material into the explosive material of blasting cartridges and the like.

Various compounds are now being used as substitutes for nitro-glycerin and gun cotton. Some of these compounds, while having many good qualities, are slow to ignite or detonate. In order to secure the best results with such materials, there is need of an additional energizing agent. To incorporate this energizing agent throughout the compound would not only be troublesome, expensive, and in many instances dangerous, but the scattering of the energizing material throughout the mass would cause it to lose much of its power. It is therefore desirable that the energizing material should be introduced into the cartridge after it is charged, in the manner shown and described in our application for Letters Patent of the United States of even date herewith, for improvements in blasting cartridges.

The object of the present invention is to provide an improved device that is simple and efficient for introducing the energizing material into the cartridge after it is charged.

A further object of the invention is to provide an improved device of the character described that may be used for introducing energizing material into charged cartridges when the material to be introduced is either in the form of a liquid, or in the form of a powder.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty, in the construction, combination and arrangement of the several parts hereinafter more fully described and shown in the accompanying drawings illustrating this invention.

In the said drawings,—Figure 1 is a sectional view in elevation of the device, said section being taken on line 1—1 of Fig. 2. Fig. 2 is a plan view of the device; Fig. 3 is a view similar to Fig. 1, showing a modified form of the invention adapted to use crushed or ground materials, such as powder, while the construction shown in Figs. 1 and 2 is adapted only to the use of liquid material; Fig. 4 is a sectional view on line 4—4 of Fig. 3; Fig. 5 is a sectional view of a cartridge into which energizing material has been introduced by the device after the cartridge is charged; Fig. 6 is a sectional view on line 6—6 of Fig. 5. Fig. 7 is a view similar to Fig. 5, showing the manner in which a primer may be inserted for the purpose of igniting or detonating the cartridge; Fig. 8 is a plan view of a cartridge of the form appearing in Fig. 7.

The part indicated by the numeral 1 is a receptacle of any convenient form for containing the energizing material to be introduced into cartridges, and is preferably provided with a suitable base 2, having an outlet 3, the said outlet communicating with a long slender tube 4, which has in the interior a small rod or wire 5. The tube 4 is open at its lower extremity and the wire or rod 5 is provided at its lower end with a conical shaped member 6, the upper portion of the said conical shaped member being adapted to form a closure for the lower end of the tube. The conical member 6 has its pointed portion projecting downwardly, thus enabling the tube to be readily inserted into the material with which the cartridge is charged. The upper end of the wire or rod 5 projects beyond the upper extremity of the tube 4 through the extension 2^a of the base member 2, and is provided at its upper extremity with suitable means, as a knob 7, for operating the rod 5 and the conical closure member 6. The rod 5 and the pointed member 6 are held in position to close the lower end of the tube 4 by suitable elastic means, as the spring 8 inserted between the base extension 2^a and the knob 7.

The outlet 3 is enlarged at the housing 2^b, and a suitable controlling gate or valve, as the member 9, is inserted within this housing to control the outlet. The member 9 may be provided with a cut-away portion 10, which construction it will be seen may be used to deliver a predetermined quantity of energizing material from the receptacle 1 into the tube 4. This valve or gate may be carried by a suitable pivot pin, as 11, and operated by means of handle 12, all as shown in Figs. 1 and 2.

Figs. 3 and 4 show modifications of the device adapted to the use of materials in solid form, crushed, or ground, as powder, while the form shown in Figs. 1 and 2 is well adapted only for liquids on account of the angle of the outlet 3. In Fig. 3 the receptacle 1 is provided with a modified form of base 13, provided with outlet 14 having an enlarged portion or housing 15, in which is mounted a suitable valve or gate, as the member 16, having also the cut-away portion 17 operating to discharge a given quantity into the tube 4, as already described in the device shown in Fig. 1; 18 is a pivot pin in the form shown in Fig. 3, pivotally supporting the gate or valve 16, and is operated by the handle 19.

When the charge of explosive material indicated by the reference character 21 (see Figs. 5, 6, 7 and 8) is in the cartridge casing 20 and is ready to be charged with the energizing material contained in the receptacle 1, the tube 4 of the device is inserted into the charge of the cartridge, as will be apparent by the position of the energizing material indicated by the reference character 22. During the time that the tube 4 is entering the cartridge, the material is kept from entering the tube by the pointed or conical closure member 6. When the lower end of the tube 4 is within a given distance, as for example, one inch from the bottom of the cartridge, the handle 12 is operated, and being connected with the pivotal pin 11 on which the valve or gate 9 is mounted, a given quantity of the charging material will be let into the tube 4, after which the knob 2^a is pushed downwardly, depressing the closure member 6 and opening the lower end of tube 4. The cartridge is then slowly pulled off the tube, and the charging material being released, it is distributed along the whole length of the opening made by the insertion of the tube 4. The shell or case 1 of the cartridge is then closed at the top, after which it is ready for use. In using the cartridge it is preferred that the end of the casing 20, which is adjacent the core or vein of energizing material 22, be pierced, as appears in Fig. 7, at the part indicated by the numeral 25. A suitable primer 23 may be inserted through the opening into the energizing material, and the wires 24 connected with a suitable outlet lead outwardly through the opening 25, or instead of wires a common fuse may be employed and the opening 25 is then closed with any suitable temporary closing material. The operation of the modified form of the device shown in Fig. 3 is the same, the construction of the tube, conical shaped closure member, and its operative means, being identical with the construction shown in Figs. 1 and 2. The outlet 14 is sufficiently inclined to the horizontal, as will be apparent, to permit the discharge of powders as well as liquids.

In order that the invention might be fully understood, the details of the embodiment thereof have been thus specifically described, but it is apparent that many modifications and changes may be made by those skilled in the art without departing from the spirit of the invention, and

What we claim is:—

1. In a device of the character described in combination, a receptacle, a tube, an outlet leading from the receptacle and communicating with said tube, a pointed closure member for one end of the tube whereby the said tube is adapted for insertion into the charge of a blasting cartridge, and means for operating the closure member to open the tube.

2. In a device of the character described in combination, a receptacle, a tube, an outlet leading from the receptacle to the tube, means for controlling the said outlet, a closure member adapted to close the forward end of the tube and provided with a pointed extension whereby the said tube is adapted for insertion into the charge of a blasting cartridge, and means for operating the closure member to open the tube.

3. In a device of the character described in combination, a receptacle, a tube, an outlet leading from the receptacle to the tube, means for controlling the outlet, a closure member for one end of the tube provided with a pointed extension whereby the said tube is adapted to be inserted into the charge of a blasting cartridge, an elastically controlled means for operating said closure member, said last mentioned means being accessible when the tube is inserted into the charge of the cartridge.

4. In a device of the character described in combination, a receptacle, a base therefor, a downwardly extending outlet in said base communicating with the receptacle, a tube connected at its upper end to the base adjacent the lower extremity of the outlet and communicating therewith, a pointed piercing closure member for the lower end of the tube whereby the tube is adapted for insertion into the charge of a blasting cartridge, and means for operatively controlling the closure member, said last mentioned

means being accessible when the tube of the device is inserted in the charge of the cartridge.

5. In a device of the character described, in combination, a receptacle for containing an explosive, a tube, a pointed valve normally closing the lower end of said tube, a member connecting the receptacle and said tube and provided with a duct or passage-way, a measuring device for directing a predetermined quantity of explosive material from the receptacle to said tube, and self-restoring mechanism for opening said valve.

6. In a device of the character described, in combination, a receptacle, a tube, a member having a passage-way between said receptacle and said tube, a rotary valve for controlling said passage-way and having a cut-away portion to deliver a predetermined quantity of material from said receptacle to said tube, a valve for closing the lower end of the tube, said last-named valve being pointed on its exposed side to serve as a means for readily introducing the lower end of the tube into an explosive material, and means for operating said pointed valve.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, on this 4th day of May A. D. 1907.

G. M. PETERS.
M. F. LINDSLEY.

Witnesses:
B. B. TUTTLE,
A. M. BEEKLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."