

F. C. VINEY.
GAS METER.

APPLICATION FILED DEC. 17, 1904.

971,705.

Patented Oct. 4, 1910.

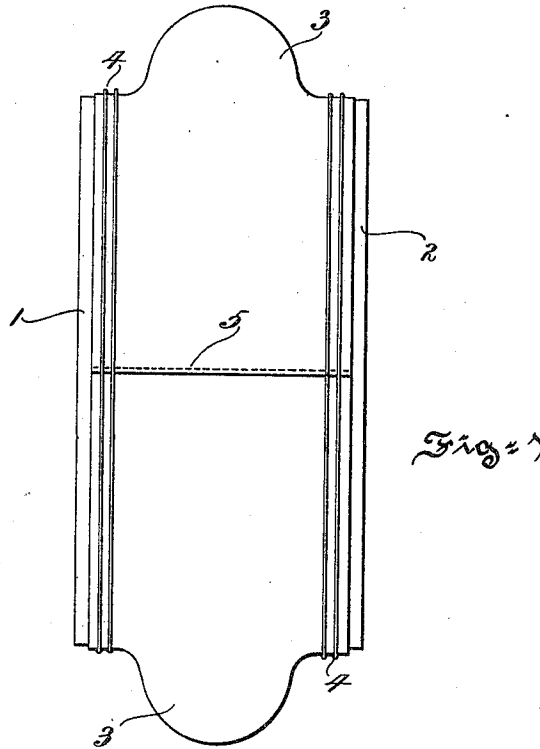


Fig. 1

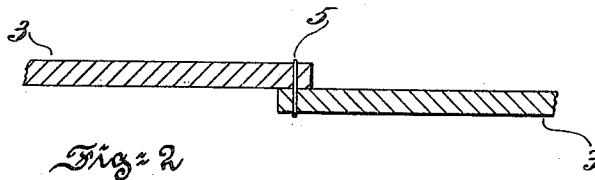


Fig. 2

Witnesses:
[Signature]
[Signature]

Inventor:
Frederick C. Viney.
By *[Signature]* Augustus B. Stoughton,
Attorney.

UNITED STATES PATENT OFFICE.

FREDERICK C. VINEY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE STANDARD METER COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

GAS-METER.

971,705.

Specification of Letters Patent.

Patented Oct. 4, 1910.

Application filed December 17, 1904. Serial No. 237,238.

To all whom it may concern:

Be it known that I, FREDERICK C. VINEY, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Gas-Meters, of which the following is a specification.

The flexible material which forms part of the bellows of gas meters is subjected to conditions which require it to resist not only mechanical strains and wear but also attacks of chemicals present in the gas while at the same time this material must be impervious to the passage of gas. Leather is the material almost universally employed for this purpose, and while fairly satisfactory, it is expensive, soon deteriorates, and requires exceedingly careful sewing at the joints so that the sewing thread may not pass entirely through it. Many attempts have been made to provide or discover a material which shall possess the advantages of leather in resisting chemical attacks and shall at the same time be more durable and less expensive and easier of manipulation, but so far as I am aware these attempts have not produced a commercial article.

By the present invention there is provided an improvement in gas bellows which consists in the provision of bellows which are comparatively inexpensive, exceedingly durable and easy of construction, and not stiffened by heat and cold.

In describing the invention reference may be made to the accompanying drawings in which—

Figure 1, illustrates gas meter bellows, and Fig. 2, illustrates in section and upon an enlarged scale one of the seams or joints of the bellows.

In the drawings 1 and 2, are the heads or ends of the bellows, and 3, is the flexible part secured to the heads or ends as, for example, by means of cords 4. The flexible part 3, consists of rubber material containing a relatively large proportion of mineral matter or clay and no appreciable amount of free sulfur uncombined with rubber. This material possesses the requisite qualifications for making it particularly adapted to gas bellows in the sense that it possesses the required flexibility, durability and resistance to attacks of such chemicals as are contained in or deposited from such gas or gases as

are usually supplied for illuminating purposes and measured by means of meters.

I believe that the foregoing description is sufficient to identify the character of the material, the substitution of which for such materials as are used for the flexible parts of gas bellows constitutes the present invention, but for the sake of further description the following analysis may be given:

Acetone extract, corresponding to vegetable and mineral oils, paraffins, etc.	9.88%	65
Alcoholic potash extract, corresponding to rubber substitutes and resins.	1.20	70
Cold nitro-benzene extract, corresponding to asphaltum	2.25	
Boiling nitro-benzene extract, corresponding to rubber with its sulfur and chlorin of vulcanization.	39.80	75
Residue, corresponding to mineral matter and lamp-black	46.80	80
Ash, corresponding to mineral matter	45.36	45.36
Difference as lamp-black	1.44	
Total	99.93%	85

The principal thing to be noted in this rubber material is the high amount of mineral matter which consists chiefly of silica, alumina, iron and magnesia, or in other words, some sort of clay. There is no appreciable amount of sulfur present uncombined with rubber. There is little or no rubber substitute present while there is present a comparatively high percentage of oils which are mostly mineral oils, so that the principal characteristic of the material compared with rubber goods in general is the high percentage of clay and the absence of free sulfur.

The chemical composition of the material which has been described adapts it to resist the attacks of such substances as are contained in illuminating gas. The physical properties of the material which especially adapt it for use as the flexible part of gas meter bellows are its flexibility, the fact that it remains unchanged by heat, cold and lapse of time, and the fact that it can be sewn through and through as indicated at 5, where

the stitches pass right through the lapped material. The described material is unlike leather in that oils and grease do not leave it so that freedom from greasy deposits is insured.

It will be obvious to those skilled in the art to which my invention appertains that modifications may be made in detail without departing from the spirit thereof, hence the invention is not limited other than the prior state of the art may require, but

What I claim as new and desire to secure by Letters Patent is:

1. Gas meter bellows consisting of flexible non-elastic strong vulcanized rubber material non-corrosive in respect to such ammoniacal and sulfur compounds as are pres-

ent in gas and said material containing not less than 40% of mineral matter or clay and substantially no free sulfur, for the purposes specified.

2. Gas meter bellows consisting of strong non-corrosive flexible non-elastic vulcanized rubber material containing not less than 40% of normal mineral matter or clay and no free sulfur and having seams of which the stitches penetrate the material and by it are made gas tight.

In testimony whereof I have hereunto signed my name.

FREDERICK C. VINEY.

Witnesses:

W. J. JACKSON,

K. M. GILLIGAN.