

J. L. CLARK.
 PIPE OR LAUNDER.
 APPLICATION FILED JUNE 9, 1911.

1,016,815.

Patented Feb. 6, 1912.

Fig. 1.

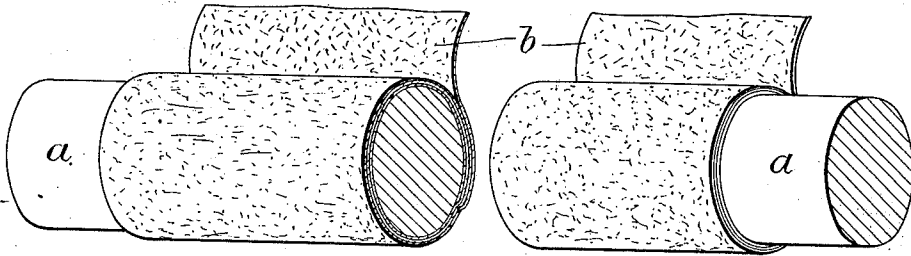


Fig. 2.

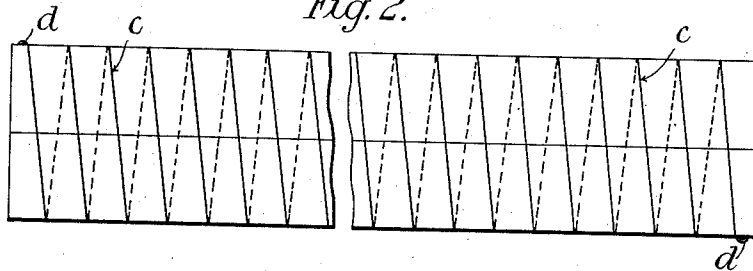


Fig. 3.

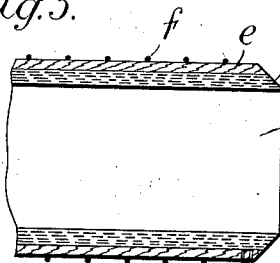
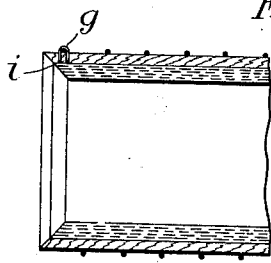


Fig. 4.

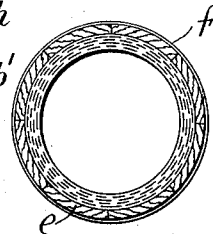
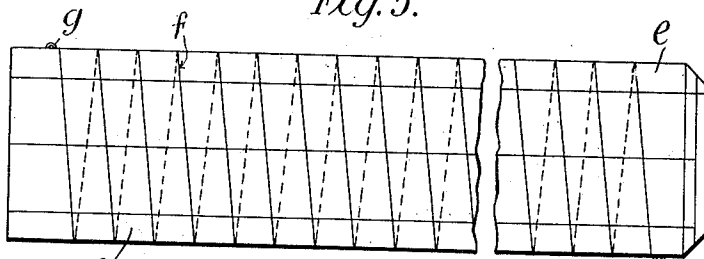


Fig. 5.



Witnesses.
~~John W. Clark~~
 By ~~John W. Clark~~

Inventor.
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UNITED STATES PATENT OFFICE.

JAMES LESTER CLARK, OF SOUTH KENSINGTON, LONDON, ENGLAND.

PIPE OR LAUNDER.

1,016,815.

Specification of Letters Patent.

Patented Feb. 6, 1912.

Application filed June 9, 1911. Serial No. 632,353.

To all whom it may concern:

Be it known that I, JAMES LESTER CLARK, a subject of His Majesty the King of Great Britain, residing at South Kensington, London, England, have invented a certain new and useful Improvement in Pipes or Launderers, of which the following is a specification.

This invention relates to pipes and launders particularly suitable for conveying abrasive or corrosive material; for example weathered pyritic sand pulp employed for stope filling in mines, which material is both abrasive and corrosive, or dry sand, acid water, or the like, or for conveying fluids where lightness is desirable, the pipes being for this purpose of the known class formed of wood pulp or paper, or like yielding and in part absorbent material treated with waterproof materials such as pitch. According to the invention, such pipes and launders are made of solidified wood pulp formed into sheets, or canvas or suitable textile or like yielding and in part absorbent material in sheets which is waterproofed with a suitable agglutinant to which an abrasion resisting material is added, the latter being introduced throughout and incorporated with the body of the pipe or the like before or while the sheets are being rolled upon a mandrel or otherwise shaped. Preferably the waterproofing is effected first, the sheets being then dried or partly dried so that their strength is somewhat increased after which there is incorporated with such sheets during formation into a pipe or the like the material adapted to resist abrasion to which is preferably added an agglutinant such as bitumen with the result that a pipe of a hard gritty abrasion resisting character, but flexible withal is produced the necessary strength being obtained by the first use of a formed sheet while the abrasion resisting quality is obtained by the addition of the abrasion resisting material. As the abrasion resisting material pulverized or finely crushed flint, or cement, or sand, emery, or carborundum as examples, may be employed. Thus in forming a pipe for example; the wood pulp made into sheets of the desired thickness, or canvas or the like is rolled upon a mandrel or otherwise shaped, during which operation an agglutinant such as bitumen, balata, rubber solution, or like material to which has been added for example, powdered flint or cement, is spread between the

layers as they are built up. The agglutinant saturates the material and with the aid of sufficient pressure sufficiently incorporates the abrasion resisting material therewith. The pipe or the like is then suitably dried.

The accompanying drawings illustrate some embodiments of the invention.

In such drawings: Figure 1 is a perspective view of a sheet treated as described being wrapped upon a mandrel. Fig. 2 is an elevation on an enlarged scale of a finished pipe. Fig. 3 is a longitudinal section of a protected pipe. Fig. 4 is an end view of same and Fig. 5 is an elevation of Fig. 3.

Referring first to Figs. 1 and 2 *a* is a mandrel *b* is the sheet of wood pulp or the like carrying the agglutinant and abrasion resisting material on both sides, such sheet being of a width equal to the length of the pipe to be made, and *c* is a wrapping of wire over the completed pipe such wire being secured at each end by staples *d*. In Figs. 3, 4 and 5 the pipe of wood pulp or like sheeting *b'* is covered by wood battens *e* served outside with wire *f* secured at the ends by staples *g*. The ends of the tube in Fig. 2 are cut straight or at right angles to their length but in Fig. 3 the combined tubes are formed with a spigot and socket ends *h* and *i* respectively. The wrapped abrasion resisting sheets made as described may carry in addition further agglutinant and abrasion resisting materials, such as bitumen and cement sand or flint as a lining where it is desired that this part of the materials of the pipe shall be most exposed to the action of the moving material while yet retaining the elastic effect of the wood pulp or canvas portion.

It has before been proposed to dip sheets of straw board or asbestos in pitch mixed with vitreous or silicious matter, which sheets are then rolled but the incorporation of the vitreous or like material thus obtained, is very slight and the quantity of the material only that which the surfaces can absorb.

Pipes constructed according to my invention are of an elastic nature and are capable of a certain amount of deformation which materially assists the internal surface in resisting abrasion as against a non yielding pipe lined for example with abrasion resisting material, though it will be understood that the pipe or material described by me may be used as a lining to a pipe of

either yielding or non yielding material, or it may be covered as described with wire to strengthen it or otherwise inclosed such for example by wood staves, or by other flexible
5 or yielding protecting means.

The preferable form of carrying out my invention as demonstrated by extensive experiments is to first waterproof a sheet *b* or *b'* of suitable thickness and width by thoroughly impregnating it with the bitumen or like substance; in the event of bitumen being employed as the waterproofing medium its impregnation is insured by partly dissolving the bitumen by means of spirit or
10 other suitable solvent or "float" of a like nature. When the waterproofed sheets are thoroughly dry they may be rolled on a supply or store mandrel and from thence they pass through a steam jacketed trough or
20 bath containing the anti-abrasive agglutinant in a fluid or molten state which is formed of bitumen, tar or like material mixed with cement and sand, or it may be cement or sand solely after which they are wound
25 while still hot onto a slip mandrel *a* Fig. 1 (protected if desired by a layer of untreated sheet) the outside diameter of such mandrel being equal to the bore of the required pipes.

While the wood pulp or canvas sheet is being wound upon itself on the slip mandrel
30 *a* a steam jacketed roller may be kept in compression by springs, weights or other suitable means against the sheets to insure the homogeneity of the pipes. The pipes
35 are then allowed to dry and if desired covered or served outside with wire *c* or otherwise protected as shown for example in Figs. 3 to 5.

As an example of the mixture of a suitable agglutinant for a material of a certain consistency of abrasion resisting effect, a mixture of two thirds of bitumen to one third of bitumen to one third of cement
40 may be used. As a medium for raising the melting point of the agglutinant in cases where the pipes are to be used in high temperature localities, a certain percentage of sulfur may be added to the bitumen.

What I claim is:—

50 1. A pipe or launder of the character designated composed of a sheet of yielding

and in part absorbent material rolled upon itself and carrying an added abrasion resisting material together with an agglutinant, such as bitumen, incorporated therewith whereby a hard gritty abrasion resisting but flexible article is obtained. 55

2. A pipe or launder of the character designated composed of a sheet of yielding and in part absorbent material rolled upon itself
60 and carrying an added abrasion resisting material together with an agglutinant, such as bitumen, incorporated therewith, and between the layers of same whereby a hard gritty abrasion resisting but flexible article
65 is obtained.

3. A pipe or launder of the character designated composed of a sheet of waterproofed and dried yielding and in part absorbent material rolled upon itself and carrying an
70 added abrasion resisting material together with an agglutinant incorporated therewith and between the layers of same, whereby a hard gritty abrasion resisting but flexible article is obtained. 75

4. A pipe or launder of the character designated composed of a sheet of yielding and in part absorbent material rolled upon itself and carrying an added abrasion resisting material together with an agglutinant, such
80 as bitumen, incorporated therewith, and having also a lining of similar abrasion resisting material and agglutinant whereby a hard gritty abrasion resisting but flexible article is obtained. 85

5. A pipe or launder of the character designated composed of a sheet of yielding and in part absorbent material rolled upon itself and carrying an added abrasion resisting material together with an agglutinant, such
90 as bitumen, incorporated therewith and between the layers of same, and a flexible protective covering whereby a hard gritty abrasion resisting but flexible article is obtained. 95

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES LESTER CLARK.

Witnesses:

ALLEN PARRY JONES,
EDWARD TRUMP FOSTER.