

## UNITED STATES PATENT OFFICE

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PROCESS OF MANUFACTURING BUILDING  
BLOCKSJoseph C. Roediger, Brooklyn, N. Y., assignor to  
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ration of DelawareNo Drawing. Application February 6, 1940,  
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5 Claims. (Cl. 106-277)

This invention relates to improvements in the methods of treating soils for the manufacture of blocks for use in curtain or bearing wall construction, or as flooring blocks. These improvements may also be applied to the monolithic laying of soil-asphalt mixtures for low cost roadways, now termed "soil stabilization."

It is well known that dwellings may be made of earth or clay earth which is perhaps the material used in the first buildings erected by man, but the objections to structures of such material were that they often washed away during long, rainy seasons, were susceptible to infestation by rodents, vermin, and the like, and in many cases developed cracks due to stresses set up by climatic changes. Bricks were later used which were prepared by mixing clay and straw and allowing the moulded mixture to harden by exposure to the sun. In the development of brick manufacturing methods, artificial heat was used in order to obtain a stronger material which would resist the effects of water and thereby be an improvement over the ordinary clay-straw brick.

Building blocks have been manufactured in recent years from a mixture of soil, selected or adjusted to have a satisfactory grading and a suitable content of clay, with the proper amount of cutback asphalt or emulsified asphalt. This mixture which generally contains water to facilitate the thorough incorporation of the asphaltic material is compacted into blocks of the desired size using known methods of compaction. The finished block is then cured by natural or artificial means so that it may obtain a suitable strength before use in construction.

It has been proposed in U. S. application Serial No. 301,777, that was filed October 28, 1939, by Joseph C. Roediger, to prepare building blocks by first mixing powdered asphalt and soil, after which a fluxing agent is added and the mixture shaped into blocks.

It is an object of this invention to manufacture building blocks using as the major proportion of the material clay or soil which is available close to the location where the building blocks are to be manufactured and thereby economizing as to the material used.

According to this invention, soil is subjected to a treatment with a water emulsion of cutback asphalt. After a good homogeneous plastic slurry mixture of the soil and water emulsion of cutback asphalt is obtained, a suitable amount of powdered hard asphalt is introduced into the mixture and the mixing continued until a homogeneous mixture results. This mixture is

thereafter poured into moulds in any desired shape and subjected to pressure or tamping for compaction whereby an amalgamation of the powdered hard asphalt and the cutback asphalt may result. The proportion of cutback asphalt used may be varied from 1% to 7%, while that of the powdered asphalt may be as low as 1% or 2% and as high as 10%. The relative amount of cutback-hard asphalt is based on: (1) obtaining satisfactory coating; (2) obtaining an asphalt of the desired consistency as a result of the complete fluxing of the asphalt base in the cutback with the hard asphalt. Powdered hard asphalt having a softening point from 190° F. to 450° F. may be used. A softer asphalt, that is, one having a softening point as low as 90° F., may be used in the cutback asphalt. Suitable wetting agents, such as heavy metal salts of oleic acid, naphthenic acid, sulfonic acid, etc., may be employed. The heavy metal soaps preferred are lead, iron, etc.

Alternately, the soil which may be tempered with water is mixed with an emulsified, low consistency flux oil. After the soil is thoroughly impregnated with the low consistency emulsified flux oil, powdered hard asphalt having a softening point of from 200° to 450° F. is added, after which the mixture is placed into moulds. It may be compacted by the application of pressure or by tamping. The pressure used may be as high as 3000 pounds per square inch, although lower pressures of a few pounds or 50 pounds per square inch may be used. The pressure of compaction does tend to amalgamate the powdered hard asphalt with the flux oil. However, the major portion of this amalgamation or fluxing may occur on aging or curing with or without first submitting to pressure. The flux oil used according to this invention is of low viscosity but having an initial boiling point of at least 300° F. Wetting agents, such as lead naphthenate, aluminum sulfonate, etc., may be added to obtain a better dispersion of the flux oil in the soil.

Another method of treating the soil is by mixing soil with a cutback asphalt until a plastic mixture of the cutback asphalt and the soil is obtained. Powdered hard asphalt is then incorporated in the plastic mixture to produce a higher consistency binder than would be obtained from cutback asphalt treatment within a given period of time. The block is finally formed by pouring the mixture of high consistency plastic mixture and hard powdered asphalt into moulds and compacting by the application of pressure

or by tamping. Wetting agents, such as lead naphthenate, aluminum sulfonate, etc., may be added to the soil together with the cutback asphalt in order to obtain a better dispersion of the cutback asphalt in the soil.

I claim:

1. A process of manufacturing building blocks, curtain wall blocks and floor blocks which comprises, mixing a soil with an emulsified cutback asphalt to obtain a thick plastic mass in which the said asphalt used has a softening point of at least 97° F., adding a powdered hard asphalt having a softening point from 190° to 450° F. to the plastic mass, molding into shape, and subjecting to pressure.

2. A process of manufacturing building blocks,

curtain wall blocks and floor blocks which comprises, mixing a soil with an emulsified cutback asphalt to obtain a thick plastic mass in which the said asphalt has a softening point of at least 97° F., adding a powdered hard asphalt having a softening point from 190° to 450° F. to the plastic mass, adding a heavy metal soap, molding the mixture into shape and subjecting to pressure.

3. A process according to claim 2 in which the heavy metal soap is lead naphthenate.

4. A process according to claim 2 in which the heavy metal soap is lead oleate.

5. A process according to claim 2 in which the heavy metal soap is lead sulfonate.

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