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(54) **Mortar mixing machine.**

(57) A mortar mixing machine comprising an outer sheet steel casing of semi-cylindrical configuration in its lower parts and of hopper configuration in its upper part, and in which the mortar is mixed by the operation of two helical surfaces in the form of opposing spirals of equal pitch mounted on a single shaft.

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MORTAR MIXING MACHINE

The machine according to the invention is designed for mixing mortar.

Currently known mechanical mixing systems are intended for preparing concrete and mortar in general, but in the specific case of mortar they have the drawback of machine emptying and cleaning difficulty due to the consistent adherence of the mortar to the inner walls.

Mortar is known to be a mixture of lime putty, sand, cement and water, which because of its plasticity and workability characteristics is widely used in finishing operations on curtain walls and load-bearing walls, and in the repair and restoring of surfaces after work resulting from the installation of electrical, hydraulic, heating and other systems.

It is apparent that all the aforesaid operations require only small quantities of mortar, which is still widely prepared in inevitable excess by manual mixing.

The present invention allows the true mechanical mixing of mortar in the required quantity.

It is also well known that the few mechanical means currently available in this specific field do not keep pace with the rate of manual application and finishing of the mortar by the operator,

so that the wastage of prepared mortar is high due to the fact that it can no longer be used because the hardnening process is already in an advanced stage.

It has now been found that the problem existing in the mixing and preparation of mortar, which is apparent from the aforesaid brief summary of the known art, is solved by a machine which forms the subject matter of the present invention, and which has the advantages of constructional simplicity, low energy consumption, low maintenance costs, easy transportability, and the ability to prepare in the shortest possible time the mortar quantity required at any instant for the work to be carried out, without tiring the operator.

The new mortar mixing machine is constituted essentially by an outer sheet metal casing, of which the lower part is of semi-cylindrical cross-section and the upper part is of hopper configuration, and is connected to the preceding part by a continuous connection.

Inside the cylindrical section there is housed an electrically driven shaft on which are disposed two helical surfaces mounted on suitably arranged supports and having a certain radius and a certain pitch, their purpose being to impress on the mass to be mixed an opposing helical movement, as the two spirals are in mutual opposition.

This system produces perfect mixing of the semi-fluid mass constituted by the lime putty, sand and water, in the required quantity and in a very short time.

At the top of the corners of the hopper-shaped outer casing section there are disposed supports for supporting a perforated baffle constituted by an electrically welded mesh which has the double purpose of supporting bags of material which are opened and emptied into the body of the machine, and at the same time to act as a safety baffle to prevent any possible contact between the machine operator and the rotating parts therein. Said perforated baffle is suitably connected to a switch system which if the baffle is opened in error

while the machine is in operation automatically disconnects the motor and thus stops the movement of the helical surfaces.

The prepared mortar is discharged through an aperture in a position corresponding with the lower part of that side wall opposite the one on which the electric motor is mounted.

One or more such machines can be mounted either on a wheel-mounted trolley of any form, or on a fixed or foldable support.

A possible embodiment of the mortar mixing machine according to the present invention is illustrated in Figures 1, 2, 3 and 4.

Figure 1 is a view of the machine on that side which comprises the finished mortar outlet 1, which is operated by the lever 2. The helical surfaces 3 and 4 mounted on the shaft 5 are shown by dashed lines.

Figure 2 is a section through the machine casing showing the characteristic dimensions; in particular it can be seen that the dimension E is greater than the dimension F in order to enable the helical surfaces 3 and 4 to agitate the mass contained in the zone above the connection between the hopper 7 and chamber 6.

Figure 2 also shows the corner supports 8 on which the protection mesh 12 rests, this being shown in Figure 3.

Figure 3 is a longitudinal section through the machine. In particular it shows the drive shaft 5 on which are mounted the helical surfaces in the form of mutually opposing spirals having a pitch chosen in accordance with the radius in such a manner as to obtain optimum mixing action without either the advancing action of the mixing mass prevailing, as would happen if the pitch were too large, or the hold-up action of the mass prevailing, as would happen if the pitch were too small.

The drive shaft is mounted on the supports 9 and 10. The support 10 is connected by a coupling to the electric motor 11, which is chosen ir accordance with the consistency of the mass to be mixed in the chamber 6 and in accordance with the radii and pitches of the helical surfaces 3 and 4.

Figure 4 is a plan view of the mixing chamber 6 and hopper 7.

The drawing also shows the shaft supports 9 and 10, the motor 11, and part of the protection mesh 12 which rests on the supports 8. The mixing machine according to the present invention can be constructed of any size, and advantageously can have a capacity of between 50 and 350 litres. Moreover, as stated, it can be in the form either of a fixed installation or a portable device.

PATENT CLAIMS

1. A mortar mixing machine comprising an outer sheet steel casing which is of semi-cylindrical configuration in its lower part and of hopper configuration in its upper part, and in which the mortar is mixed by the action of two helical surfaces having opposing spirals of equal pitch mounted on a single drive shaft.

2. A machine as claimed in claim 1, wherein the height of the connection plane between the lower semi-cylindrical surface and the upper hopper surface is less than the diameter of the semi-cylindrical section.

3. A machine as claimed in claim 1, wherein the upper hopper part is closed by a perforated baffle through which the components to be mixed in order to prepare the mortar are fed.

4. A machine as claimed in claim 3, wherein the perforated baffle is connected to a switch system which automatically cuts out the motor when the baffle is opened.

5. A machine as claimed in claim 1, wherein the shaft on which the opposing helical surfaces are mounted is driven, by way of a connection coupling, by an electric motor disposed externally to the machine casing.

6. A machine as claimed in claim 1, wherein the mortar prepared by mechanical mixing emerges from the door disposed in the lower side part of the semi-cylindrical casing, on opening by means of a lever.

FIG. 1

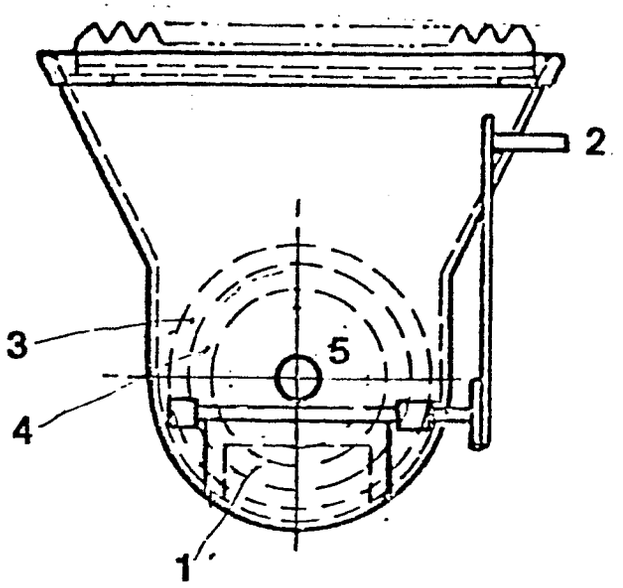

FIG. 2

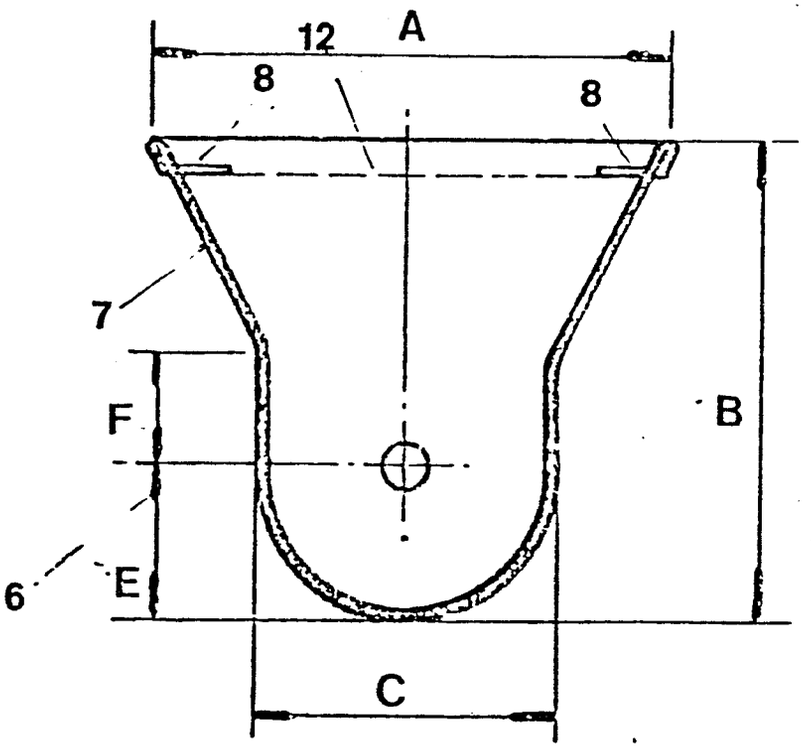

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FIG.3

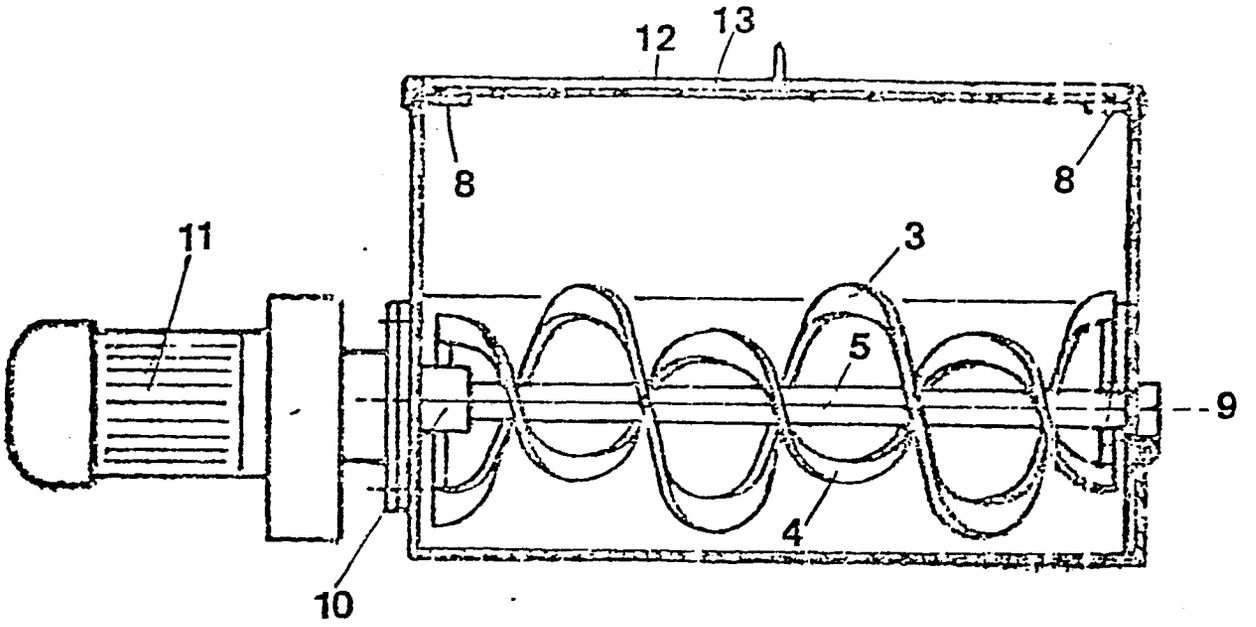

FIG.4