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To
The controller of patents,
The patent office,
At Mumbai

APPLICATION FOR PATENT ALONG WITH COMPLETE SPECIFICATION

APPLICANT(S)

Name	Nationality	Address
Ingole Vijay Tulshiram	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Ashutosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Paritosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602

Documents attached with the application:-

Number of Pages

Form 1	3
Form 2	14
Form 3	1
Form 26	1

TOTAL 19 pages

Fee paid along with the application:-

1. Form 1 Rupees 1000(one thousand only)

TOTAL AMOUNT RUPEES 1000(ONE THOUSAND ONLY)
Mode of payment in Cash/Cheque/bank conical bearing no

FORM 1

(FOR OFFICE USE ONLY)

THE PATENT ACT 1970

(39 OF 1970)

And

The patent rules, 2003

Application number:

Filing date:

amount of fee paid:

CBR NO:

APPLICATION FOR GRANT OF PATENT

[See sec 7, 54,135 and rule20 (1)]

1 APPLICANT(S)

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Ingole Vijay Tulshiram	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Ashutosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Paritosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602

2 Inventor(s)

Name	Nationality	Address
Ingole Vijay Tulshiram	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Ashutosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Paritosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602

2. TITLE OF INVENTION**Energy Saving Device for Centrifugal Pump****4. ADDRESS FOR CORRESPONDANCE OF AUTHORISED PATENT AGENT IN INDIA:-**

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5. DECLARATION:

(i) Declaration by the inventors

We the above named inventors are the true and first inventors for this invention

Dated this 25th day January 2011

Signature of the inventors

Name: (1) Ingole Vijay Tulshiram

(2) Ingole Ashutosh Vijay

(3) Ingole Paritosh Vijay

(ii) Declaration by the applicants

We the applicants hereby declare that:-

We are in possession of above mentioned invention.

The complete specification relating to the invention is filed with the application

There is no lawful ground of objection to the grant of patent to us.

Signature of the applicants

Name: (1) Ingole Vijay Tulshiram

(2) Ingole Ashutosh Vijay

(3) Ingole Paritosh Vijay

6. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

- (a) Complete specification in duplicate
- (b) Drawings in duplicate
- (c) Statement and undertaking on form 3 in duplicate
- (d) Abstract in duplicate
- (e) Form number 26 Power of authorization to patent agent.

Fee Rs in Cash/Cheque/bank draft bearing no

Date on Bank.

We hereby declare that to the best of our knowledge, information and belief the facts and the matter stated herein are correct and we request that the patent may be granted to us for the said invention.

Dated this 25th day January 2011

Signature:

Name :(1) Ingole Vijay Tulshiram

(2) Ingole Ashutosh Vijay

(3) Ingole Paritosh Vijay

FORM 2

THE PATENT ACT 1970
(39 OF 1970)
AND
The patent rules, 2003

COMPLETE SPECIFICATION
(See section 10: rule 13)

1. TITLE OF INVENTION

Energy Saving Device for Centrifugal Pump

2 APPLICANTS(S)

Name	Nationality	Address
Ingole Vijay Tulshiram	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Ashutosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Paritosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602

3. PREAMBLE TO THE DESCRIPTION

COMPLETE

Following specification particularly describes the invention and the manner in which it is to be performed.

4. DESCRIPTION.

Technical field of invention:

The present invention relates to a device to save energy in the operation of centrifugal pumps used for pumping water or liquids. More particularly relates to centrifugal water means liquid pumps having high manometric means total head but used for lower discharge heads.

Prior art:

Water lifting pumps especially centrifugal water pumps hereinafter referred to as pump are most popular. These are deployed in mostly for agriculture irrigation purposes and are designed to lift water having certain manometric head means total head having particular suction and delivery pipe diameters. For irrigation purposes water is lifted by such pumps from water wells, bore wells, lakes, water canals etc. In general application water discharge is required at ground level. In real situation water head of such installations varies with season due to varying water levels. In many cases the discharge head is much lower than the pump total head. The users are desirous of getting optimum discharge water volume to maximize irrigation at optimum power consumption. It is customary to procure centrifugal water pump with higher manometric head due to uncertainly of water levels. It is known that if actual water head is lesser than designed water head the water delivery discharge becomes much higher and pumps get overloaded and operate at poor efficiency. In certain regions electric tariff for agriculture is subsidized so the high power consumption may be less consequence. However, such high power consumption not only adds to higher power consumption but also to global warming. It therefore strongly felt to address aforesaid problem to reduce power consumption of such centrifugal water pump installations operating at lower discharge level without compromising on other performance parameters.

Problems to be solved:

In order to overcome such problem a necessity is felt for a device which will convert the ensuing high discharge by developing a back pressure to improve the efficiency means minimize power consumption without affecting the discharge from

the centrifugal water pump. A novel passive device which minimizes power consumption, improves efficiency and which is made suitable for standard pipe diameters and easy to install is proposed in the present invention.

These and other advantages will be more readily understood by referring to the following detailed description for a novel energy saving device for centrifugal water pump disclosed hereinafter with reference to the accompanying drawings and which are generally applicable to other centrifugal water pump to fulfill particular application illustrated hereinafter.

Object:

1. Primary object of the present invention is to lower electric power consumption or fuel consumption of the centrifugal water pump set or similar installation by saving power means to minimize global warming.
2. Another important object of the present invention is to keep the normal water discharge unaffected.
3. Another object of the present invention to convert the discharge head into useful static head.
4. Yet another object of the present invention to target the most popular ratings of the centrifugal water pump sets to maximize the scope of applications so as to maximize scope of energy saving.
5. A still further object of the present invention is to provide add on device with an ease of installation by providing an inbuilt standard pipe fitment thereby avoiding any need of additional accessories.
6. Further objective of the present invention is to provide such a profile to the device so as to minimize turbulences but to have laminar flow.
7. Still another object of the present invention is to have a passive device which is easy to manufacture.

Further objects and features can be readily understood by any person skilled in the art by referring to the detail description and appended claims of the invention.

STATEMENT:

Following specification provides the summary of an energy saving device for centrifugal water pump. When centrifugal water pumps are deployed to lift water from various sources they encounter serious problems of varying water head to a great extent. Water head may vary right from few metres to hundreds of metres according to the seasons. Hence centrifugal water pumps designed for high heads are preferred by farmers to cater for yearly worst case water level variations. It is known that the input power consumption is higher when water head is lower because lower head makes the pump to discharge much higher quantity of water. This attributes to overloading of the motor means prime mover causing undue losses and at time burn outs. According to the preferred embodiment of the present invention all aforesaid problems are solved by reducing the power requirements, improving the efficiency of installation and reducing the chances of motor burn outs.

According to a preferred embodiment of the present invention a centrifugal water pump installation is provided with delivery pipe of certain dimension for the discharge of water. For a particular centrifugal pump the discharged of water increases when water head encountered by the pump decreases because the difference between the manometric head and discharge head increases. The energy in discharge is proportional to the mass of the discharged quantity and head. In order to reduce the energy in such situation it becomes imperative to maintain the discharge quantity to the specific level. The preferred embodiment of the present invention is a device which is attached to the delivery pipe of the centrifugal water pump. The device provides a gradually reducing discharge area along its length means path. When water flows in the device from larger area to smaller area its velocity increases so an additional water head appears which acts as a back pressure to compensate the reduction in the discharge level so present. When water flows in a pipe with varying diameter and if the variation in diameter is very large the flow becomes turbulent causing additional frictional losses and also the water tries to separate from the wall which is known as cavitations hence half angle of the device is restricted in between 5° to 7° . However; 6° is preferred for most of the applications. To equalize atmospheric pressure a vent means opening is provided at the outlet opening.

According to the preferred embodiment of the present invention an energy saving device means a specially formed internal profile, hitherto referred to as device comprises a typically designed internal profile having generally an inlet diameter and outlet diameter where the inlet diameter is larger than outlet diameter and it further comprises pipe fitting arrangement formed on the inlet side to take up inlet pipe

whereas the outlet is provided with fitment arrangement to take up the outlet pipe. However, other cross sections of the device are equally effective.

These and other features and advantages will be more readily understood by referring to the following typical and detailed illustrations for a novel energy saving device for centrifugal water pump disclosed hereinafter with reference to the accompanying drawings and which are generally applicable to other centrifugal water pumps to fulfill particular application illustrated hereinafter.

BRIEF DESCRIPTION OF DRAWING:

The invention is described by way of example with reference to the following drawings:

Sheet 1/1 comprises Figure-1A illustrating sectional views of elevation and Figure-1B side elevation of the preferred device.

Detailed description:

Figure-1A shows cross section of elevation and plan of preferred device 1 used in centrifugal pump for fluid hereinafter referred to as water and where typically circular section parts are depicted. Water from pump flows in inlet direction 15 to preferred device 1 inlet diameter 10. The inlet diameter 10 decreases along the length (15) at a half angle 13 to outlet diameter 11. Water flows out from outlet 11 in the direction 16. A vent 12 open to atmosphere is provided near the outlet 11. A circular diameter 19 is provided at the outlet 11 to take up delivery pipe 20(not part of the said device). An inlet diameter 17 is provided at the inlet 10 to take up input pipe 18 (not part of the said device). Figure-1B shows the inlet diameter 10 and outlet diameter 11.

Further objects and features can be readily understood by any person skilled in the art by referring to the detail description and appended claims of the invention.

CLAIMS

We claim:-

1. An add on energy saving device for centrifugal pump which is passive, saves energy, does not affect normal discharge and converts reduction in discharge head in the form of back pressure, does not affect normal working of centrifugal pump, easy to install, easy to manufacture;
2. The first preferred embodiments of the device as claimed in claim 1 comprising:
 - a. A device having one end comprising a larger inlet cross section area and other end comprising a smaller outlet cross section area means than the inlet area;
 - b. The device having inlet and outlet sections to be circular is preferred to other cross sections;
 - c. The device having a thickness to sustain weight of water and pressure;
 - d. The device having length as per the water quantity and head;
 - e. The half angle of device preferably between 5° and 7° ;
 - f. A fixing arrangement to join inlet pipe (not part of the device) to the device larger area end;
 - g. A fixing arrangement to join outlet pipe (not part of the device) to the device smaller area end;
 - h. Discharge outlet openings for water discharge formed on the device near the smaller area end;
 - i. An air vent near smaller area end;
 - j. The device mounted in any position;
3. The material of cone as claimed in claim 2 is preferably thermo-plastic but can also be manufactured by any material which has capability of sustaining prescribed weight and water pressure.
4. The device as recited in claim 1 to 2 and as described and illustrated in preferred embodiments and ascertain the nature of this invention and the manner in which it is to be performed and revealed in Figure-1A and Figure1 B.

ABSTRACT

Centrifugal water pump and generally electric centrifugal water pump set employed in agriculture purposes are designed to lift water as standard equipments having certain delivery head means fixed manometric head with particular suction and delivery pipe diameters. The applications of such pumps are for irrigation wherein water is lifted from water wells, bore wells, lakes as well as from water canals. In general application water discharge is required at ground level. Total water head of such installations varies with season due to varying water levels however; there are situations where the water head is much lower than the centrifugal water pump manometric head. The users are desirous of getting specified discharged water volume to avoid overloading the centrifugal pump set. It is customary to procure centrifugal water pump with high head capacity due to uncertainty of water levels and further suction and delivery pipes with smaller diameter are preferred due to economical constraints. It is known that if actual water head is lesser than manometric water head the water discharge increases and pump set gets overloaded causing its failure means electric motor burn out. In certain regions electric tariff for agriculture is subsidized so many places high power consumption becomes of less consequence for the users. However, such high power consumption is not desirable where there are power shortages and further it adds to global warming. It therefore strongly felt to address aforesaid problem to reduce power consumption of such centrifugal water pump installations without compromising on other performance parameters.

In order to overcome such ground reality a necessity is felt for a device which will convert the high discharge in to useful water head to improve the efficiency means minimize power consumption without reducing the quantity of water discharged from the centrifugal water pump. A novel device which minimizes power consumption, improves efficiency, avoids electric motor burn out and suitable for standard pipe diameters, easy to install is proposed in the present invention.

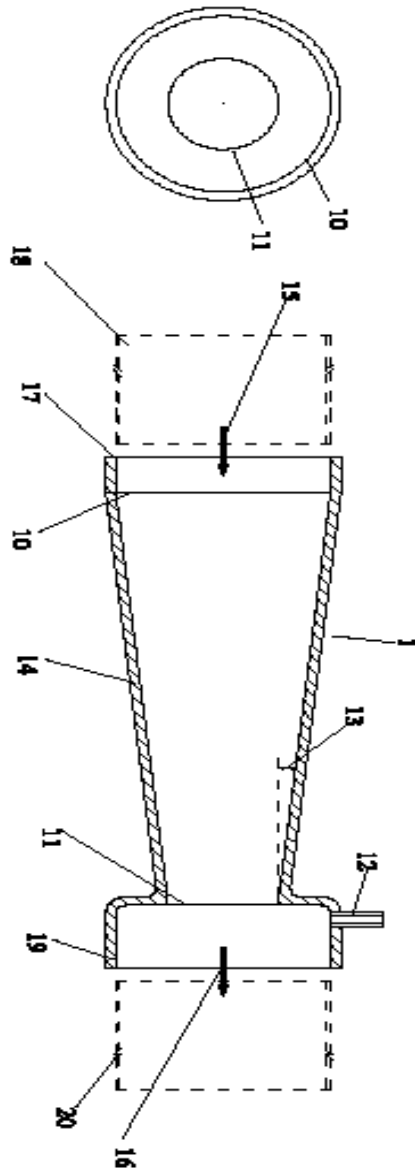


Figure-1 B

Figure-1 A

FORM 3
THE PATENT ACT 1970
(39 OF 1970)
AND
The patent rules, 2003
STATEMENT AND UNDERTAKING UNDER SECTION 8
(See section 8; rule 12)

We

Name	Nationality	Address
Ingole Vijay Tulshiram	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Ashutosh Vijay	Indian	104 Ganediwal layout,camp,Amravati- 444602
Ingole Paritosh Vijay	Indian	104 Ganediwal layout,camp,Amravati- 444602

Hereby declare:-

(i) That we have not made any this application for the same /substantially the same invention outside India.

Dated this 15th day August 2010

Signature

Ingole Vijay Tulshiram

To
The controller of patents,
The patent office,
At Mumbai

FORM 26
THE PATENTS ACT, 1970
(39 OF 1970)
&
THE PATENTS RULES, 2003

FORM OF AUTHORISATION OF A PATENT AGENT/ OR ANY PERSON IN A
MATTER OR PROCEEDING UNDER THE ACT

[Section 127 and 132 and Rule 135]

We,

Name	Nationality	Address
Ingole Vijay Tulshiram	Indian	104 Ganediwal layout,camp,Amravati-444602
Ingole Ashutosh Vijay	Indian	104 Ganediwal layout,camp,Amravati-444602
Ingole Paritosh Vijay	Indian	104 Ganediwal layout,camp,Amravati-444602

hereby authorize Swapnil J Gawande, Advocate and Patent Agent No. IN/PA 1587.of R-9 Harshnil,Eknath puram, nr yogakshem colony Amravati-444607,India to act on my behalf in connection with our patents, assignments, oppositions, rectifications, renewals and request that all notices, requisition and communication relating thereto may be sent to such person unless otherwise specified.

I hereby revoke all previous authorization, if any made, in respect of same matter or proceeding.

I hereby assent to the action already taken by the said person in the above matter.

Dated this 15th day August 2010

Name: Ingole Vijay Tulshiram

Ingole Ashutosh Vijay

Ingole Paritosh Vijay

To,
The Controller of Patents
The Patent Office
At Mumbai