

The invention relates to a method and a device for separating waste water and solid matters for waste waters containing solid matters, wherein the waste water is fed into a screw press separator, the solid matter contained therein is formed into a plug by virtue of a worm which is driven by a driving motor and which worm extends into a perforated basket and the solid matter is pushed in the form of a dewatered plug out of the mouth of the screw press separator, whilst the water which has been freed from the solid matter exits from the housing of the screw press separator.

In the case of a known method and of a known device of the type mentioned in the introduction (DE-A-34 28 381) both the press worm spiral and also the press worm shaft terminate at a considerable distance away from the mouth of the housing. The known device serves to compress and to dewater solid matter, not to dewater solid matters suspended in water. In the case of the known device, the solid matter is conveyed by virtue of the worm only over a part of the worm housing and subsequently moved into a worm free region, in which the solid material can be further dewatered. Finally, the solid material which has been dewatered in this way can be pressed out of the exit port without being contracted in width.

In the case of this known solution, the solid matter plug is stressed against the cylindrical outer wall of the housing with the result that the stress pressure of the solid matter plug is practically zero in the axis centre. This known solution is not suitable for dewatering solid matters suspended in water, because during such an application the solid matter plug softens from the centre axis outwards and is washed out.

The application of removing liquid from manure has been tried and tested in intensive animal farming and its use has increased. In a report from the Institute for Technology of

the Federal Research Institute for Agriculture, Braunschweig-Völkenrode, published in Basic Agriculture, Volume 37 (1987) No. 3, pages 98-107, R. Krause and R. Ahlers under the title "Method of separating liquid manure" illustrated the problems of removing liquid from manure and the importance of separating solid matters and liquid from the liquid manure.

Furthermore, the advantages and disadvantages of individual devices were illustrated and compared with each other.

The worm press or the screw press separator represents one of the simple machines for separating solid matters from liquid. At the same time, worm windings which become narrower towards the point of discharge are frequently the basis for the purpose of gradually compressing the separated solid matter. The method of building up pressure with the aid of narrowing portions is also illustrated in the German Patent 26 36 372 and in the German Offenlegungsschrift 29 11 899. The practical operation of these arrangements does, however, illustrate that all conically tapered regions have a disadvantage effect on the throughput rate, the range of application and the flexibility of the screw press separator. As soon as the added quantity of suspension or its consistency changes for example by changing the content of fibrous solid mass material the solid matter is compressed in the regions which are conical in shape or which are becoming narrower in a different-shaped manner, with the result that the press separator becomes blocked.

Conical parts were in fact omitted in the screw press separator illustrated in the German Offenlegungsschrift 27 00 542 and in the German Patent 29 02 432, the through-passage through the housing wall 14 to the perforated basket diameter 24b is merely illustrated smaller in the Fig. 2, so that this wall piece could build up a counter pressure. In this separator having this narrowing portion which is regarded as being ineffective, the suspension was in fact

dewatered by virtue of the worm which remains uniform as far as the discharge point, however a pressing effect, for the purpose of achieving a high dry substance for example of over 20% in the pig manure solid matter, is not achieved.

The object of the invention resides in extending the range of application and the flexibility of screw press separators illustrated in the patent applications as well as increasing the dry substance content in the solid matter. In so doing, the object relates to changing the formation and the form of the solid matter plug, in order, irrespective of the varying types of manure and fluctuations in consistency, to ensure that the machine functions without any interference.

The solution in accordance with the invention of the technical object with respect to the formation of the plug, the transportation thereof and the discharge of the solid matter resides in the fact that the solid matter cake is located in the perforated basket in all ranges of dewatering and the screw press separator is formed in such a way that it is not possible for the solid matter to build up between the conical or tapered parts.

In detail, the object is achieved by the fact that the necessary counter pressure is built up by virtue of the pressurised resilient solid matter being internally stressed by friction against the walls which extend parallel to the conveying direction and which delimit the plug. The plug starts to form in front of the perforated basket whilst the pressure is rising, the pressure continues to rise from the exit of the worm spiral of the press worm as far as the end of the perforated basket, in order then to reduce towards the mouth. This rise in pressure in the part of the perforated basket which is free from the worm spiral is essential for the continued dewatering of the solid matter retained on the perforated surface. For the purpose of forming the plug as desired and the intended dewatering, it

is favourable to have a pressure level in the screw press separator which is only slightly different from the pressure level of the surrounding atmosphere; in order to achieve the pressure compensation necessary for this, a pressure compensation is produced by way of a compensating duct, which returns to the waste water container in order to prevent the exit of waste water during the start-up process. The solid matter plug itself is formed in a cylindrical perforated basket made from axially disposed sieve bars having perforation gaps of 0.5 to 1.5 mm. The solid matter plug is transported from a cylindrical mouth piece adjoining the perforated basket and the cylindrical worm shaft protruding beyond the mouth piece as a hollow cylindrical body and discharged. At the same time, the hollow cylindrical space for the solid matter plug located between the last worm thread and the end of the perforated basket has a length which is at least one internal diameter of the perforated cylinder. In the case of suspensions which have a low dry substance content, it is possible to return dewatered solid matter for the purpose of improving the formation of the filter cake.

The forces caused by the pressing pressure in the resilient plug compress this plug between the walls of the cylindrical perforated basket, the mouth piece and the extended worm core to such an extent that the waste water cannot penetrate through the solid matter plug, nor can it push out this solid matter plug. The extended cylindrical worm core having a diameter which is one-times to two-times the thickness of the annular gap between the perforated basket and the worm core fills the plug centre and thus prevents liquid penetrating the axial region of the compressed plug which is otherwise subjected to a small amount of press stressing.

In order to prevent water from being pushed out towards the discharge point and thus the destruction of the plug, the

device is designed in such a way that the 70 to 95% of the length of the hollow cylindrical solid matter is plug is encompassed by the perforated cylinder. In this way, it is possible for the water which has been freed here to escape through the slits of the perforated basket and the stability of the solid matter plug is not endangered. The pressing pressure in the plug reduces again in the region where the solid matter exits the machine, so that the dewatering process ceases. The cylindrical mouth piece provided is therefore designed in such a way that it encompasses 5 to 30% of the length of the plug. It is possible by varying the length of this mouth piece to adjust simultaneously the stressing of the plug and thus the dry substance content in the solid matter being discharged.

The worm used to form the solid matter plug comprises in the region of the inlet as far as the beginning of the plug a uniform pitch comprising spirals which stand at right angles to the axis. This prevents the solid matter being discharged from jamming and forming blockages in the region of the worm windings.

The stability of the plug, in addition to its internal stressing, is to a great extent dependent upon the homogeneity of the plug itself. In order to achieve a mixed effect when forming the plug, the last of the worm spirals in advance of the solid matter plug is designed in such a way that it runs out approximately 180 to 360° relative to the worm core. Consequently, the compressing process in the region of the worm core is additionally increased. By virtue of the otherwise smaller amount of stressing in the plug, this region is in danger of being penetrated by moisture.

At the same time, the uniform distribution of the axial and radial forces is achieved with the design of the run out of the worm. Consequently, the worm core which is guided out

beyond the mouth piece and the solid matter plug can assume the function of the bearing at the discharge side.

Since there is no plug in the machine when the screw press separator commences to function, a temporary plug made for example from foam material (Styropor), is inserted from the discharge side prior to switching on the motor of the waste water pump and of the separator. The temporary plug is jammed in such a way that it is only pushed out of the screw press separator under the pressure of the solid matter which is pushing forwards.

The worm is guided 2 to 3 windings in a tube piece at the side where the separator is filled. Consequently, it is ensured that the perforated surface provided is fully loaded by virtue of the already concentrated but still circulating suspension.

The waste water is fed to the screw press separator in normal circumstances by a rotary pump, and in fact advantageously in excess. A run-back connection piece is disposed directly adjacent to the feed connection piece for the purpose of returning the excess waste water. The worm windings disposed between the inlet and the perforated basket in the inlet chamber define the region of the overflow and consequently prevent solid matter particles, which are being directed towards the perforated basket and which particles are concentrated in the wall region, from overflowing by way of the overflow of the separator. The feed rate is consequently automatically controlled by virtue of the screw press separator.

In order to be able to design the machine in a simple and robust manner, the worm core was plugged into the bearing of the drive by a plug-in coupling. Furthermore, the perforated basket is mounted within the screw press separator by virtue of holding rods which extend axial

parallel and which holding rods are disposed on the outer side of the perforated basket and these holding rods cooperate with holding projections on the inner side of the periphery of the separating chamber; the perforated basket can consequently be inserted into the mountings provided in the housing without any additional attachment. In addition to this, at least one holding rod is disposed for the purpose of absorbing the torsional forces, advantageously three holding rods are provided at an angular spacing of 120° from each other.

The ends of the sieve bars at the discharge side of the perforated basket are guided into an annular groove of the mouth piece flange. Consequently, the sieve bars are supported and centred between the mouth piece and the perforated basket.

For the purpose of manually adjusting the length of the mouth piece which influences the dry substance content of the solid matter, a thin-walled cylindrical extension piece which is axially displaceable and can be jammed, is pushed over the fixed mouth piece, this extension piece is selected from a number of rings of different lengths. If an extension piece is provided which can be displaced in a telescopic manner with respect to the tube of the mouth piece, it is possible to carry out a continuous adjustment; in addition to this, if this extension is provided with a drive, then an automatic control is possible.

The vibration in the screw press separator caused by the differences in the consistency in the waste water is also compensated by the fact that for the purpose of controlling the rate of discharge of the plug a discharge controller is provided outside the mouth in the lower region of the cylindrical mouth piece at the discharge point of the solid matter. This discharge controller is able to cover the discharge area between 0% on the one side and approximately

10% to 25% on the other side. To this end, a lever having surfaces which partially cover the discharge mouth is expediently disposed and a returning force is exerted on this lever. This returning force is advantageously produced by virtue of being weight-loaded, wherein this force can be adjustable by virtue of changing the weight and/or by virtue of changing the lever arm. When the solid matter is being discharged, the discharge controller is displaced and gradually opens the part of the discharge area which is covered by the discharge controller, until the entire annular area is opened when the solid matter is becoming firmer.

Upon possibly automatically adjusting the length of the mouth piece which influences the dry substance content of the solid matter, the thin wall cylinder is displaced by virtue of a drive, wherein the drive is controlled by virtue of the current consumed by the motor of the screw press separator.

If the plug is too soft owing to a malfunction there is the danger of the suspension breaking through at the solid matter exit side. This event is signalled by virtue of the amount of current consumed by the motor of the screw press separator falling below a predetermined value, so that the feed pump and the separator can be switched off automatically.

An embodiment of the screw press separator in accordance with the invention is illustrated in Figs. 1 to 8, in which:

Fig. 1 is a longitudinal sectional view of the screw press separator without the formed, transported and discharged plug,

Fig. 2 is a cross-sectional view of the screw press separator in the region of the waste water feed according to

II-II (Fig. 1),

Fig. 3 is a cross-sectional view of the screw press separator in the region of the perforated basket according to III-III (Fig. 1),

Fig. 4 is a cross-sectional view of the screw press separator in the region of the cylindrical extension piece according to IV-IV (Fig. 1),

Fig. 5 is a detail of the torsional means of securing the perforated basket,

Fig. 6 is a detail of the perforated basket, end bearing,

Fig. 7 is a detail of the discharge controller, lateral view,

Fig. 7a: discharge controller closed

Fig. 7b: discharge controller partially opened;

Fig. 8 is a detail of a discharge controller (frontal view).

The various ranges of the conversion of the suspension into a liquid and a solid phase are illustrated in Fig. 1 by A - F, wherein the individual letters represent the following ranges:

A: Inlet and overflow of the suspension,

B: Range of the feed rate control,

C: Circulating dewatering region,

D: Region where the pressing pressure builds up with the

mixing and homogenisation effect,

E: Region where the solid matter plug is dewatered,

F: Region where the solid matter is discharged.

The method proceeds as described as follows with reference to Fig. 1 for a liquid manure separation;

The liquid to be separated is fed into the annular inlet chamber 6 of the screw press separator 1 by the liquid manure pump by way of a corresponding duct which issues into the liquid manure inlet 2. The liquid manure is added in excessive quantities, the internal chamber 6 is filled and any excess liquid manure is returned to the liquid manure storage container. This returning liquid manure agitates the liquid manure in the storage container and prevents the solid matter contained in the liquid manure from forming a sediment. The press worm which is driven by the driving motor 24 by way of the gear 25 comes into contact with a portion of the liquid manure corresponding to the amount the press worm is able to accommodate and this way is self-regulated by means of the worm spirals 27 and fed to the separating chamber 7, wherein initially the fixed wall of the worm pre-run in the inlet chamber 6 enables the solid matter undisturbed to form a layer of solid matter close to the wall, which layer upon moving into the separating chamber 7 as a stiffened filter cake lies at the perforated basket 13 and finally forms a plug which fills the entire inner diameter of the annular space. The press worm 20 transports the solid matter plug to the discharge chamber 8, wherein the pressing pressure increases towards the end of the worm spiral 27 in the worm outlet 28 and the solid matter collected in the plug is dewatered by the pressing pressure. This plug is guided as far as the discharge mouth 5 on the outside by the perforated basket 13 and the cylindrical mouth piece 15 extending the perforated basket

13 and on the inside by the worm shaft 21 and the shaft end 21.1 thereof which shaft end protrudes beyond the discharge mouth. The plug produced in this way is finally pushed out of the discharge mouth 5 under the influence of the pressing pressure produced by the press worm. In a practical operation, a screw press separator of this type is used for the purpose of separating solid matter from pig liquid manure, which screw press separator achieves a through-put rate of $4 \text{ m}^3/\text{h}$ when the dry substance content of the pig liquid manure amounts to 5.2%. This screw press separator had a perforated basket of 500 mm long with a cylindrical through-passage from the perforated basket and the mouth piece amounting to 260 mm. The sieve comprises a gap 0.75 mm wide, the press worm has a worm pitch of 100 mm in the case of 5 spirals, and the diameter of the worm shaft amounts to 110 mm. The plug formed was a total 400 mm long, of which 280 mm was located in the part of the perforated basket adjoining the worm spiral and 120 mm in the mouth piece. The drive output required to operate the screw press separator is set at 2.2 kW with a worm rotational speed of 30 U/min. Under these operating conditions, 220 kg/h solid matter is separated with a dry substance content of 32%; the exiting water at $3.78 \text{ m}^3/\text{h}$ comprises a residual solid matter content of 3.7% with respect to the dry substance. This corresponds to a degree of separation of 32.7% with respect to the solid matter. The Styropor temporary plug required for the start-up had the corresponding hole diameter of 110 mm with an outer diameter of 260 mm and a length of 300 mm. The overflow was situated approximately 1.5 m above the machine inlet and guided a multiple of the inlet quantity by way of the waste water run-back 3 as an excess into the liquid manure channel, wherein the relatively large quantity was sufficient for homogenising the 10 to 20 m^3 large pump channel.

In order to simplify the structure of the screw press separator 1 which is also evident in Fig. 1, the press worm

20 is connected to the motor 24 and the gear 25 by way of a simple plug-in connection to the drive shaft 26 of the drive attached at the drive-side flange 11.1 of the screw press separator housing 10; to this end, the driven shaft 26 is provided with entrainers 26.1 which are provided in corresponding recesses at the drive-side end of the worm shaft 21 and the worm shaft 21 formed as the hollow shaft is pushed over the driven shaft 26. The worm spiral 27 has its beginning still in the inlet chamber 6, into which both the waste water inlet 2 and also the waste water run back 3 (Fig. 2) issue, wherein two spiral threads lie in advance of the separating chamber 7 which is provided with the perforated basket 13. The perforated basket 13 is itself encompassed on the outside by a separating chamber periphery 12, which divides an annular space in which the water separated in the sieve is collected for the purpose of being drawn off through the water outlet 4. This separating chamber periphery 12 is connected to its feed-side flange 12.2 at the inlet chamber 6 and to its inner ring 12.3 at the flange 15.1 of the cylindrical mouth piece 15. The worm spiral 27 terminates in advance of the end of the perforated basket 13, wherein the worm end is designed as a worm outlet 28. The solid matter which has been compressed by virtue of the water being removed is transported by the worm spiral towards the worm end, the solid matter is collected in the region of the last worm spiral and formed into a plug. The pressure which builds up causes further dewatering and causes the solid matter still being transported to accumulate at the worm-side end of the plug. By virtue of the last worm spiral 28 which is designed with a run out of 360° relative to the worm core, the solid matter is mixed prior to accumulating at the plug and further compressed in the proximity of the worm shaft, producing a uniform axial and radial pressure. Consequently, the solid matter plug can assume the role of centring and mounting the press worm 20. Corresponding to the continuously in-coming quantity of solid matter, the plug is pushed through the hollow

cylindrical region of the outlet chamber 8 between the mouth piece 15 and the protruding end 21.1 of the worm shaft 21 and the plug passes through the mouth piece 14 in the region of the outlet port 5, of the mouth 5 for the solid matter. In order to be able to adjust the length of plug to suit the circumstances, a displaceable and adjustable extension piece 16 is placed on the tube of the cylindrical mouth piece 15, which extension piece 16 is releasably attached on the tube to the clamping collar 16.1 by means of the screw connection 16.2.

Figs. 2, 3 and 4 illustrate cross sectional views through the screw press separator in accordance with the intersections II-II, III-III and IV-IV illustrated in Fig. 1. Fig. 2 illustrates the cross sectional view through the inlet chamber 6 at the height of the connection piece issuing therein for the waste water inlet 2 and the waste water run-back 3 as seen in the direction of the drive-side end flange 11.1. The worm shaft 21 is disposed, here still without the worm spiral, in a concentric manner in this inlet chamber 6. Fig. 3 illustrates a corresponding sectional view through the separating chamber 7. This is the part of the screw press separator provided with the perforated basket 13, wherein the perforated basket is formed by axial parallel sieve bars 13.1 (Fig. 5). The sieve bars are held by support rings 13.2, which can be attached as rings or also as a spiral. The outer side of these support rings 13.2 is provided with axial parallel holding rods 14, which can engage in the recesses in holding projections 12.1 disposed accordingly on the inner side of the separating chamber periphery 12, which holding rods can absorb the torsional moments and guide same into the housing. In the screw press separator illustrated, the performed basket 13 is provided with three axial parallel holding rods 14 which are disposed offset by 120° and which holding rods 14 are inserted into the recesses of the holding projections 12.1. In order to support the sieve

bars 13.1, the ends thereof are held centred at the press side in an annular groove of the mouth piece flange 15.1 of the mouth piece 15, simultaneously for the purpose of centring the perforated basket 13 with respect to the mouth piece 15. The worm shaft 21 which is provided here with the worm spiral 27 is located in the interior of the perforated basket 13. Fig. 4 illustrates a sectional view through the outlet chamber 8 as seen in the direction towards the mouth piece flange 15. The screw connections 12.4 illustrate the attachment of the mouth piece flange 15 at the inner ring 12.3 (Fig. 6). The mouth piece 15 lies in a concentric manner to the separating chamber periphery 12. In the internal diameter of the mouth piece 15 lies the worm shaft with its protruding shaft end 21.1, the spiral run out 28 of the worm spiral 27 is evident in the depth.

Figs. 5 and 6 illustrate details of the attachment of the perforated basket 13 in the region of the separating chamber. The perforated basket 13 formed from the axial parallel sieve bars 13.1 is encompassed by support rings 13.2 and at least one holding rod 14 is attached at the outer sides thereof. Corresponding to this, holding projections 12.1 are provided on the inner side of a separating chamber periphery 12, which holding projections are provided with recesses for the purpose of receiving the holding rods in a somewhat form-locking manner. These recesses are aligned as necessary for each holding rod. The sieve bars 13.1 are received with their outlet-side ends by an annular recess 15.2 in the mouth piece flange 15.1 of the mouth piece 15 which is to be put in place and compulsorily centred with respect to the mouth piece. The mouth piece flange 15.1 is at the same time flanged as one to an inner ring 12.4 fixedly connected to the separating chamber periphery 12, wherein the screw connections 12.5 produce a releasable connection. The inner ring 12.4 is positioned in such a way with respect to the mouth piece flange 15.1, that the holding rods 14 are likewise centred when received

therein.

In order to compensate the vibration of the screw press separator caused by differences in the solid matter content of the waste water this is connected downstream in the lower region of the outlet port 5 thereof, a flat bar having two lugs at a rotating element 17.3 is attached at the cylindrical mouth piece serving as a discharge controller 17 and is connected to a lever arm 17.1. Consequently, it is possible by way of the lever arm 17.1 to transmit the load, which is adjustable with a displaceable weight 17.1, to the flat bar and the lugs and thus to the discharge controller.



Claims

1. Method for separating waste water and solid matters for waste waters containing solid matters, wherein the waste water is fed into a screw press separator, the solid matter contained therein is formed into a plug by virtue of a worm which is driven by a driving motor and which worm extends into a perforated basket and the solid matter is pushed in the form of a dewatered plug out of the mouth of the screw press separator, whilst the water which has been freed from the solid matter exits from the housing of the screw press separator, characterised in that the solid matter which is compacting by virtue of the pressing force of the screw press, is pressed out of the mouth through a hollow cylindrical annular gap between the worm shaft and the perforated basket.
2. Method according to claim 1 characterised in that the waste water is fed in excess from a waste water container by way of a delivery pump and the excess is returned as a run back into the storage container for the waste water to be purified thereby this waste water is agitated.
3. Method according to claim 1 or 2, characterised in that the pressure in the screw press separator is held at the pressure level of the ambient atmosphere by way of a pressure compensating duct in the waste water container.
4. Method according to one of claims 1 to 3, characterised in that for the purpose of improving the formation of the plug, preferably in the case of waste waters with low solid matter contents, dewatered solid matter is returned to the input of the separator and added to the inlet.



5. Method according to one of claims 1 to 4, characterised in that the power drawn in by the driving motor is controlled and when the plug is not sufficiently dewatered and consequently when not achieving a minimum required power which presents the danger of the water containing the solid matter breaking through, the driving motor of the screw press is switched off.

6. A screw press separator for the purpose of carrying out the method in accordance with one of claims 1 to 5, having a housing (10) which comprises an inlet (2) for the waste water, an outlet for the separated water and a mouth for the dewatered solid matter, furthermore having a screw press (20) which is disposed in the housing (10) and which is driven by a driving motor (24) and furthermore a perforated basket (13) which is formed in a cylindrical manner encompasses the screw press (20) and is supported against the housing (10), wherein the screw press (20) comprises a worm shaft (21), which is encompassed by a worm spiral (27) whose edge is guided closely up to the inner side of the perforated basket, characterised in that the end of the worm shaft (21) protrudes beyond the mouth piece (15) and the diameter of the worm shaft is one-times to two-times the width of the annular gap between the worm shaft and the perforated basket (3).

7. A screw press separator according to claim 6, characterised in that the separator housing (10) comprises a cylindrical mouth piece (15) whose inner diameter is identical to the inner diameter of the perforated basket (13) and that the hollow cylindrical solid matter plug is enclosed up to approximately 70% to 95% by the spiral-free portion of the perforated basket (13) and up to 30% to 5% by the cylindrical mouth piece.



8. A screw press separator according to claims 6 or 7, characterised in that the worm spiral (27) which ends in the perforated basket (13) is formed in the region of its last thread (28) at least by 180° from the end of the worm spiral (27) onwards extending to the worm shaft (21).

9. A screw press separator according to one of claims 6 to 8, characterised in that the worm shaft (21) of the screw press (20) is connected to the driven shaft (26) of the driving motor (24) or of the gear (25) by means of a plug-in coupling (23) provided at the end at the driving side.

10. A screw press separator according to one of claims 6 to 9, characterised in that the perforated basket (13) is formed as a bar screen whose sieve bars (13.1) extend axially parallel, wherein the width of the gap of the bar screen amounts preferably to 0.5mm to 1.5mm.

11. A screw press separator according to one of claims 6 to 10, characterised in that the perforated basket (13) is provided with at least one, preferably three, holding rod/rods (14) which are provided on the outer side of the perforated basket (13) and which holding rod/rods absorb any torsional forces which occur and that holding projections (12.1) are provided on the inner side of the separating chamber periphery encompassing the separating chamber (7), these holding projections (12.1) are provided with aligned recesses and interact with the holding rod/rods (14).

12. A screw press separator according to claim 11, characterised in that the cylindrical mouth piece (15) is releasably attached by means of a mouth piece flange (11.3) on an inner ring (12.2) which closing the separating chamber (7), wherein the inner ring (12.2) comprises recesses which correspond to the holding rod/rods (14) and are aligned with the recesses of the holding projections (12.1) and



preferably the free end(s) of the holding rod/rods (14) engage therein.

13. A screw press separator according to one of claims 6 to 12, characterised in that the cylindrical mouth piece (15) guided out of the housing (10) is provided at its protruding end with an extension piece (16) which can be pushed on and fixed and which allows the length of the plug to be adjusted, preferably equipped with an setting actuator for carrying out automatic adjustments and consequently for regulating the length of the plug.

14. A screw press separator according to one of claims 6 to 12, characterised in that a pivotable discharge controller (17) is provided outside the mouth (5) of the cylindrical mouth piece (15) or of the extension piece (16), in such a way that the area of the mouth (5) for the dewatered solid matter is partially covered, wherein the maximum covered partial area of the mouth amounts to 10% to 25% of its entire area, and wherein the discharge regulator preferably having a lever (17.1) which pivots about a pivot axis (17.3) is provided with the means of producing an adjustable counterforce, preferably in the form of an adjustable counterweight (17.2).