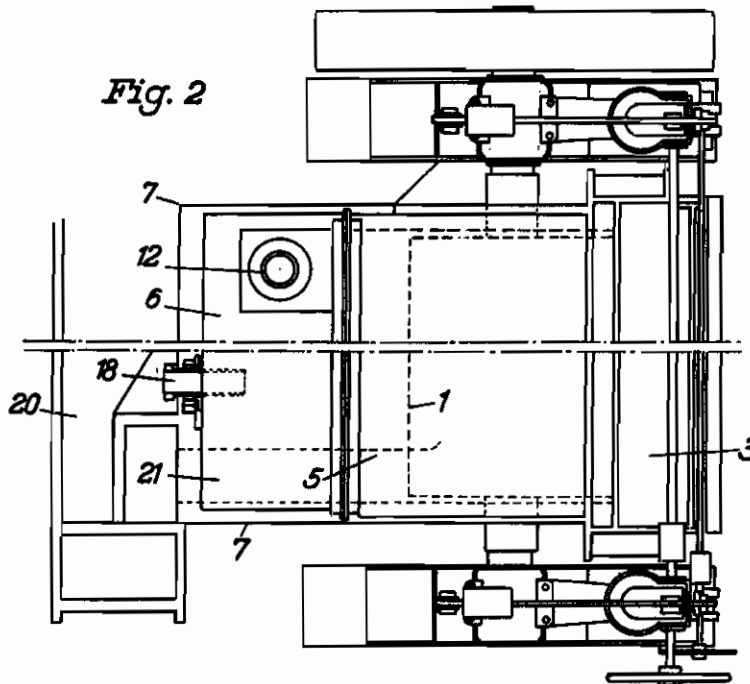
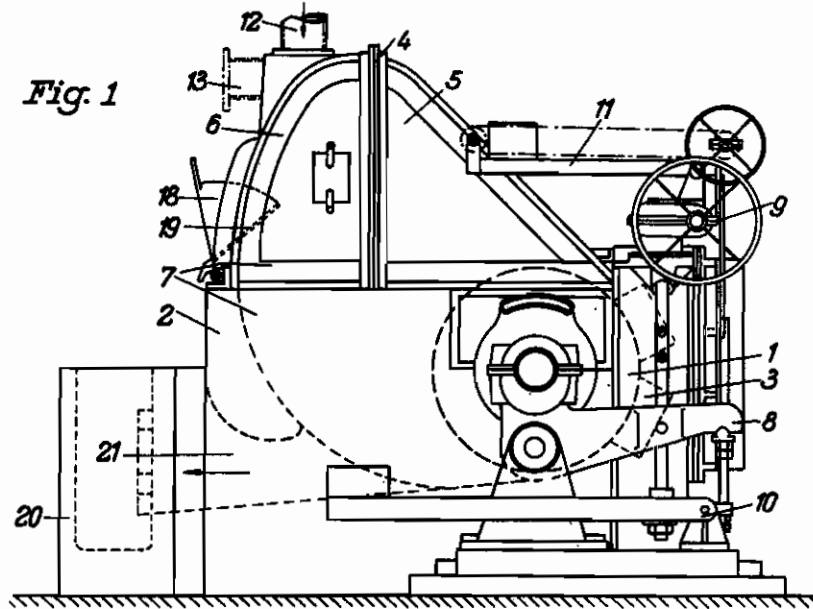


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PAPER PULP, CELLULOSE PULP OR THE LIKE
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366,764

2 Sheets-Sheet 1



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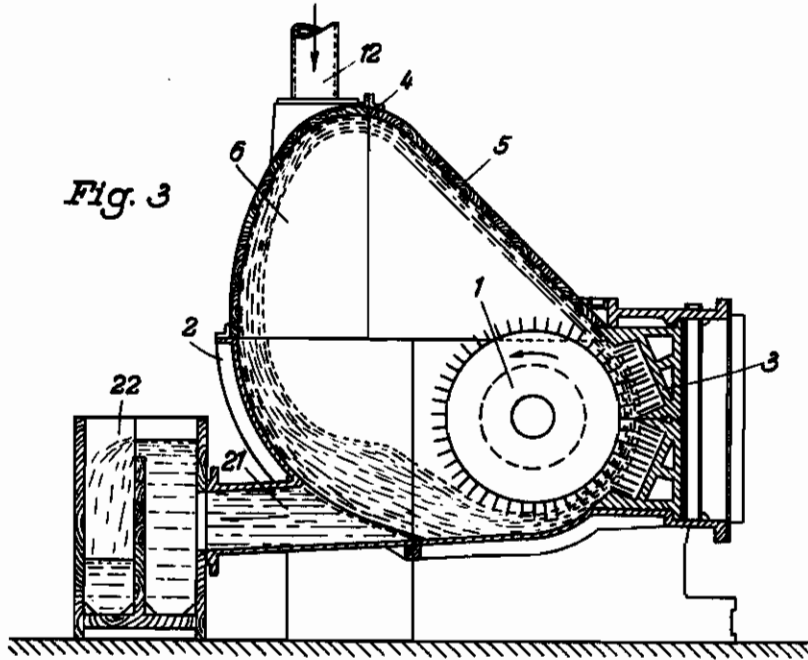
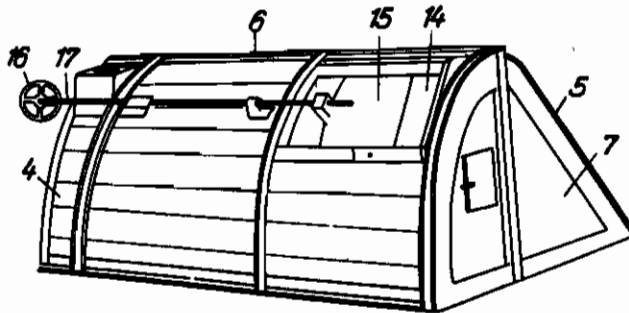


Fig. 4



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ALIEN PROPERTY CUSTODIAN

HOLLANDER FOR THE CONTINUOUS POUNDING OF PAPER PULP, CELLULOSE PULP OR THE LIKE

Helmuth Banning, Duren, Germany; vested in the Alien Property Custodian

Application filed November 22, 1940

The invention relates to a hollander for the continuous pounding of paper pulp, cellulose pulp or the like. On one end of the roll-casing, a narrow pulp inlet and at the other end a narrow outlet for the pounded pulp is provided which in the course of pounding is thrown several times over the roll and returned to the block.

The invention has for its object to produce a pounding arrangement which is simple and pounds rapidly and free from disturbances even substances of high density and coarse fibre structure.

Continuously working hollanders are known, in which the material is thrown over the pounding roll. In such hollanders the block is, however, arranged at the side of and deeply below the roll centre and the hood extends from the end of the block for a long distance concentric to the wall of the roll and is then not conducted upwards but downwards. The material can dam up, during the circulation about the roll, in the space between the hood and the roll on a long distance whereby the free circulating movement is disturbed and much driving work has to be done by the roll. The energy imparted to the material in the roll pockets is completely annihilated behind the hood extending directly over the apex of the roll at which point the pulp is thrown against an approximately horizontal face so that the pulp is lead away from the roll and into a narrow passage. At one circulation about the roll a pulp particle comes into contact with the roll, the deflecting face and the walls of the trough and of the passage, so that it is several times deflected as regards direction. The band-shaped pulp guiding around the roll often gets lost thereby and overlapping of the bands may occur, which leads to irregular pounding. This inconvenience is especially pronounced at the pounding of material of still coarse structure, such as for instance old paper, card board or pre-boiled wood cellulose, at the pounding of which the disintegration of the fibre has still to be completed.

A hollander especially suitable in this respect destined for the continuous pounding is produced according to the invention in that the block or bed plate is provided at the side extending to far beyond the roll centre and the hood extends approximately in the direction of the pulp jet thrown obliquely upwards from the block to far above the roll and curved downwards at its end so that the trough extends directly from this end of the hood uninterruptedly to the block or bed plate. It has been found, that this endless and uninterrupted guiding of the circulating pulp in

the inner space of the hollander free from built-in elements enables an accurate maintaining of the width of the pulp band from one end to the other end of the bed plate so that no overlapping of the pulp bands can occur or occurs only in a little measure, the bands being the one at the side of the other so that no partitions are required in or at the ends of the inner space for shifting the pulp along the roll in lateral direction. The smooth undisturbed circulation of the endless pulp band is ensured by a simple radial arrangement of the end walls of trough and hood.

The pulp inlet and outlet may be provided on the apex of the hood, the outlet aperture being wide and equipped with a slide at any desired point so that pulp can be taken.

An embodiment of the invention is illustrated diagrammatically by way of example in the accompanying drawing, in which

Fig. 1 shows a side elevation,

Fig. 2 a top plan view of a hollander with concrete trough,

Fig. 3 is a cross-section through a hollander with iron trough, and

Fig. 4 shows in perspective view the arrangement of a discharge slide on the hood.

The pounding roll is designated by 1 and the trough of the hollander by 2. The block or the bed plate 3 is guided in a closed box for one half above and for the other half below the horizontal central plane laid through the axle of rotation of the roll and adjustable relative to the roll. The hood 4 extends from the upper end of the bed plate 3 and rests at its other end on the short concrete trough 2. The hood 4 consists of a throwing off part 5 extending inclined in upward direction approximately tangential to the wall of the roll and of a deflecting part 6 strongly curved in downward direction and merging into a curve of larger radius. The end walls 7 of the hood and of the trough are directed perpendicularly to the axle about which the roll rotates. The coop of the trough, open at the top, is adapted to the part 6 of the hood on the inflow side of the roll and curved like this part. The hood and the trough have no elements mounted on the portions along which the thrown in material flows.

The roll is journalled in known manner in elbow-levers 8 and equipped with a loading and relieving device 9, the levers 10 of which loaded by weights are connected with a relieving pounding balance 11.

As shown in Fig. 2 an admission pipe 12 for the pulp is connected on the driving side of the roll on the apex of the deflecting part 6 of hood 4,

The pulp flows at great speed into the coop and under the roll directly to the bed plate 3 where it is gripped by the roll-knives and conveyed through the bed plate and pounded. The pounding roll throws the pulp continually fed into the hollander at high speed along the hood tangentially in upward direction where it is pushed aside by the pulp also flowing in at high speed in order to return then directly to the bed plate. Owing to this pushing aside the pulp thrown off by the roll is automatically shifted bandwise in the direction of the roll axle. With this object in view the wall of the hood part 8 might be arranged inclined to the roll axle, so that in the direction of the pulp flow it is slightly distant from the same. As it has been found in practical service, this is not necessary as the continually circulating band is shifted free from disturbance towards the outlet, a certain amount of pulp remaining in the coop. No guide walls or flaps are required as the thrown up pulp gets to the roll within the band width and shifted by such a band width. Coarse lumps fly in a short curve directly to in front of the roll and are thereby conducted more rapidly to the pounding mechanism and oftener thrown in the beginning as they do not participate in the band shifting. The band of pounding pulp arriving at the end of the roll is flung from the roll directly into an outflow tube 13 which is fixed in a horizontal plane relative to the apex of part 8 of the hood.

Instead of this outflow tube 13 a wide slot 14 may be provided as shown in Fig. 8 in which a slidable plate 15 is guided adjustable by a hand wheel 18 and a spindle 16 from the attendance side of the machine. When the opening is wide the band thrown up from the roll is soon conveyed out of the hollander and when the opening is small the pulp must make several additional circulations through the pounding point. The pounding of the material can thus be regulated or the time for the circulation of the pulp can be adapted to the pounding facility of the material. The pulp can flow from this opening situated at a high point through the horizontal tube 13 and conveyed, by a gutter not shown on the drawing, to a greater distance from the hollander to be treated in the same story in an other hollander of similar construction. In this manner

several hollanders can be mounted without loss in fall the one behind the other, no pump being necessary for conveying the pulp from one hollander to the next following hollander. The conveying is effected solely by rolls of the hollander.

For examination of the pounding properties of the pulp which has passed several times through the pounding mechanism, the pulp may be taken from the hollander with the aid of a simple arrangement. This arrangement consists of a flap 18 as shown in Figs. 1 and 2 which is oscillatably mounted on the deflecting part 6 of the hood and adapted to be folded into an opening of this part. When this flap is in the inward position a thin layer is peeled off the pulp thrown upwards by the roll and lead out of the hollander to be caught in a gutter 20 or in a suitable vessel. When the flap is oscillated into the trough a portion of the circulating pulp at low pounding degree may be continually removed, whereas the remaining pulp continues to circulate until it has been brought to a higher pounding degree. The coop may be connected with the gutter by a connecting passage 21 said gutter serving then as discharge for the completely pounded pulp or for discharging rinsing water from the coop. As shown in Fig. 4, the coop 2 may be made of iron and the pounded pulp may flow through a short pipe 21 into a gutter 22 in which it can be dammed up.

With the aid of this continually operating hollander, even if the roll is covered with stone, material of very high density, incompletely disintegrated fibre or of coarse structure can be maintained permanently in rapid circulation with little expense of driving power and in short time uniformly pounded, the pulp having no opportunity for an irregular circulation as may be caused by overlapping of the pulp band or by complicated guiding of the pulp. If the pounding degree of a pulp produced in a hollander according to the invention has to be especially high, the band shifting may be reduced or delayed in that the curved hood wall 6 is not curved away from the roll in the direction of the pulp circulation, but slightly inclined towards the roll, whereby the flow of pulp along this roll is dammed up in rearward direction.

HELMUTH BANNING.