

May 27, 1941.

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2,243,158

APPARATUS FOR TREATING SCREEN PLATES

Filed Oct. 26, 1937

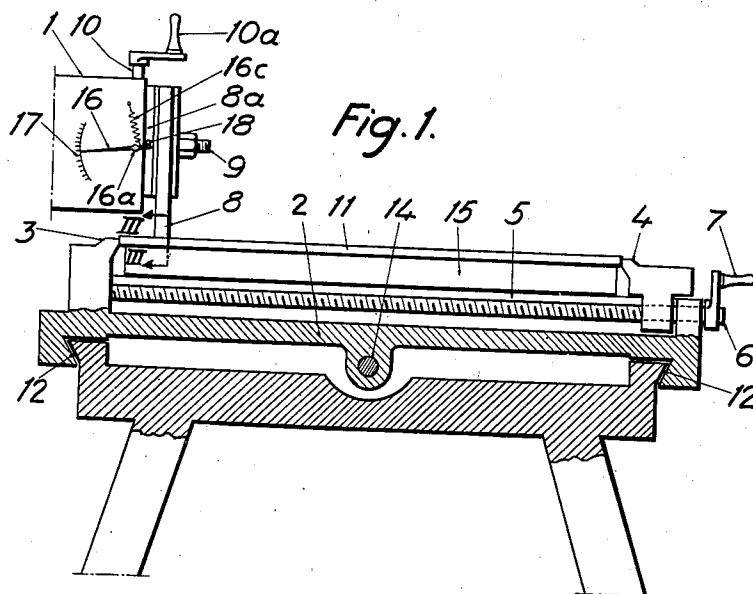


Fig. 5.



Fig. 2.

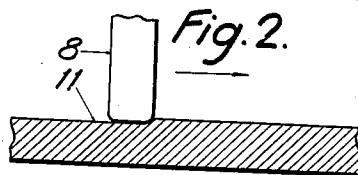


Fig. 3.

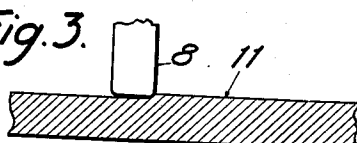
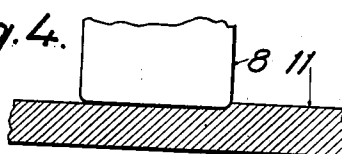


Fig. 4.



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UNITED STATES PATENT OFFICE

2,243,158

APPARATUS FOR TREATING SCREEN
PLATES

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Application October 26, 1937, Serial No. 171,174
In Sweden August 31, 1936

3 Claims. (Cl. 29—90)

My present invention relates to a method of increasing the hardness and thereby also the life of screening plates of pulp strainers. My invention consists substantially in compressing the plate material, at least the superficial layer thereof and this is effected by subjecting the plate to a special superficial treatment by which the superficial layer of the plate material is depressed some tenths of a millimeter.

One object of my invention is to impart to the superficial layer, which is particularly subject to stresses during the operation of the pulp strainer, a great hardness and thereby also an increased life. As you are aware such screening plates are, during the treatment of the material in the pulp strainers, subject to a considerable wear and tear by the sprigs and knots in the pulp, due to which the surface should possess a considerable hardness.

Another object is to give the plate a smooth, polished surface so as to reduce the friction between the surface and the particles passing on the same. The plates may, however, be used also for other purposes, in which a considerable hardness of the surface is required.

A further object is to provide for a degree of hardness that may be controlled according to the purposes for which the plate is to be used. This is effected by controlling the depth to which the plate material is depressed. At the same time also a control of the depth of the compressed layer is obtained.

The method is carried into effect in, for example, such a manner that the plate is fastened in a planing machine and is treated with a tool or some other suitable member with a rounded working surface, which has been applied in the part in which the tool is fixed. The planing table with the fastened plate is thus caused to run to and fro in the usual manner, the tool being depressed into the material some tenth or tenths of a millimeter while the tool is being fed in sideways direction between each stroke of the table. Thereby each surface element of the plate gradually will be subjected to pressure from the member in question, which effects a compression of the plate material over the whole surface of the plate. Of course, I may use a machine specially combined for the purpose and, if so is desired, I may cause the tool to move to and fro over the table.

The accompanying drawing illustrates diagrammatically how the method may be carried into effect with a reciprocating tool.

Figure 1 shows the part in which the tool is

fixed and it also shows the table of a planing machine or some other machine of a similar kind shown partly in section and serving to carry the plate.

Figure 2, on a larger scale, shows part of the plate and the tool, the former being shown in section cut along the direction of movement.

Figure 3 shows the same parts, viewed perpendicularly to Figure 2, i. e. the plate is shown when cut along line III—III of Fig. 2, perpendicularly to the section of Fig. 2.

Figure 4 shows the same section as in Figure 3 but with a broader tool than in Figure 3.

Figure 5 shows a modified detail.

In Figure 1 reference character 1 indicates the slide of the tool holder, 2 indicates the table and 3, 4 jaws between which the plate to be treated is fixed. The jaw 3 is stationary and the jaw 4 is movable as usual between guides, one of which 5 is visible in Figure 1. It is tightened by means of a screw spindle 6, which is rotated by means of a handle 7, which is applied to the free end of the screw spindle. The tool 8 is fixed in its holder 8a in the usual manner by the cooperation of screw means 9. The height position of the holder is controlled by means of the feed screw 10 with handle 10a. The plate 11 rests on a plate 15 so as not to bend. The table is movable in sideways direction along guides 12 in the frame of the machine as usual and is moved by means of a screw spindle 14.

At the beginning of the treatment the tool is moved by means of the feed screw 10 towards the plate at one edge thereof, so that the tool is depressed into the material to a suitable depth. Then the machine is started and the tool is moved to and fro while the table is being fed a little distance sideways between each stroke. As shown in Figure 2 the tool has somewhat rounded working edges by which it is prevented from cutting into the plate material. Instead it will depress the same according as it passes over the plate so that the thickness of the latter is reduced as much as the tool was at the beginning depressed into the plate. The size of the depression may be read on a control device, for example a pointer 16 and a scale 17. The pointer is rotatable on a pin 16a secured in the slide 1. By means of a spring 16c secured in the slide the rear end of the pointer is held pressed against a shoulder 18 on the tool holder, by which the pointer deflects when the slide moves. Of course, the tool is so arranged in relation to the pointer and the plate 11 that the pointer begins to move on the scale 17 at that very moment when the tool has

contacted with the plate. It is then possible, on a magnified scale, (see the different lengths of the pointer arms) to read the degree of the depression of the tool. By tests one may choose a graduation of the scale 17 responding to the various Brinell values obtained at the successive tightening of the tool 8. Figure 5 shows how the pointer, indicated at 19, may be mounted on the screw 10 and move on a circular scale 17a, which is provided on the upper side of the slide. The tool may have various widths according to the driving power at disposal. Thus, Figure 4 shows a considerably broader tool than the one shown in Figure 3. As already indicated the effect will, of course, be the same, if the tool is stationary and the table, instead, moves to and fro.

It has proved possible, by the treatment hereinbefore described, almost to double the Brinell value, a fact, which is of an extraordinary importance to the resistance against wear and tear. As already indicated in the preamble of this specification the degree of hardness may also be varied, i. e. by depressing the material to different depths in different plates to vary the Brinell value of the same in one and the same initial material. This method may be used both in cast and rolled plates of materials, for example, alloys.

Having now described my invention, what I 30

claim as new and desire to secure by Letters Patent is:

1. A method of increasing the resistance to wear and tear of a screening plate of a pulp strainer by the action on the surface thereof of a relatively movable non-cutting pressure-applying tool, which comprises producing rectilinear reciprocatory sliding relative movement between the tool and plate, and simultaneously regulably and non-yieldingly depressing the tool into the surface of the plate during said relative movement.

2. The method of increasing the resistance against wear and tear of a screening plate of a pulp strainer by compressing the surface layer of the plate by successively subjecting the said layer to repeated compressive pressure from a tool sliding over the plate.

3. A device of the character described for increasing the resistance against wear and tear of a screening plate of a pulp strainer, which comprises means for securely mounting the screening plate, a non-cutting pressure-applying tool, means for producing rectilinear reciprocatory sliding relative movement between said tool and said plate, means for regulably and non-yieldingly depressing said tool into the surface of said plate during said relative movement, and means for indicating the degree of depression of the tool.

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