

Dec. 3, 1940.

W. E. KASS

2,224,054

PRESS

Filed Sept. 6, 1938

3 Sheets-Sheet 1

Fig. 1.

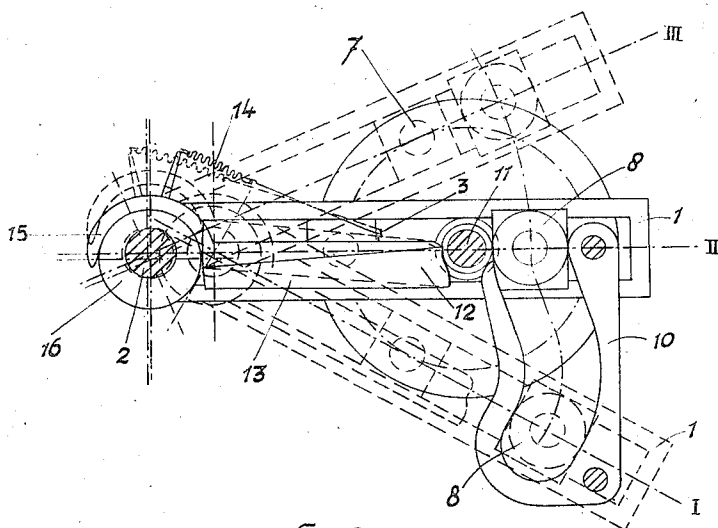
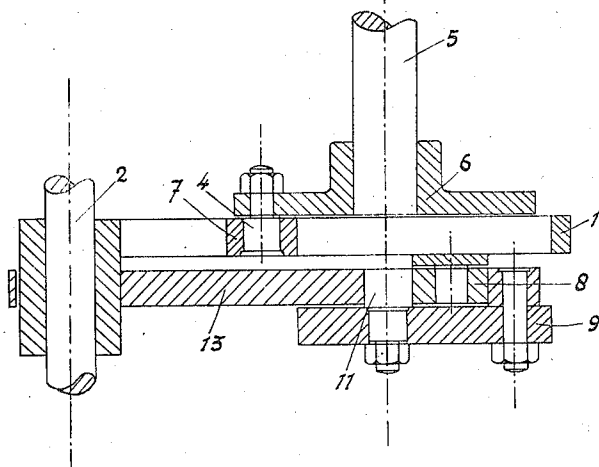


Fig. 2.



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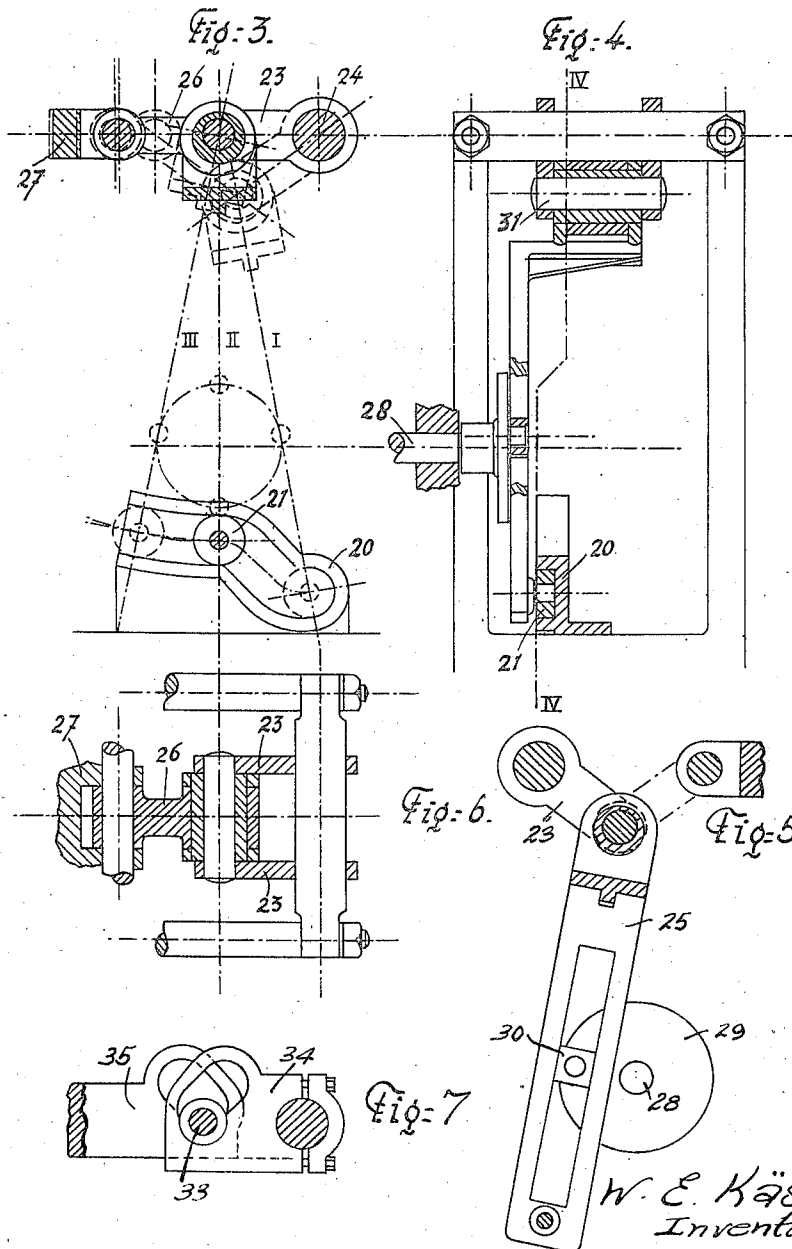
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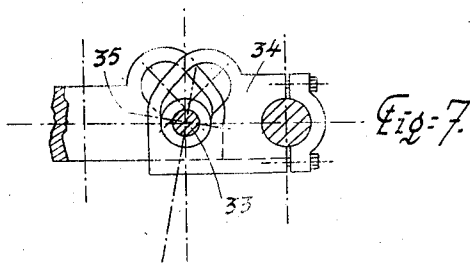
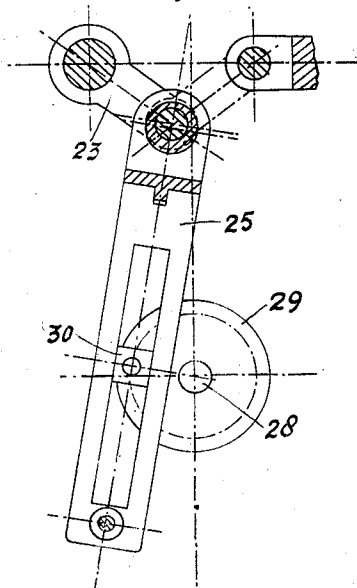
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PRESS

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3 Sheets-Sheet 3

Fig-5.



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UNITED STATES PATENT OFFICE

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PRESS

Walter Eduard Käss, Amsterdam, Netherlands

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In the Netherlands September 14, 1937

8 Claims. (Cl. 74—40)

The invention relates to a press, especially adapted to the pressing of fibrous articles such as trays or dishes destined for fruit or meat in which at least one guiding means is connected with the frame of the press or with another fixed part and at least one cooperating guiding means is connected with the driving means of the stamp.

The main object of the invention consists in obtaining a new apparatus by means of which from fibrous substances pressed articles of good quality may be rapidly obtained.

The invention, therefore, consists primarily in a pressing device comprising stationary guiding means and cooperating guiding means connected with the driving means of the stamp for opening and closing the stamp, cooperating guiding means for keeping the stamp in its closed position during some time, said cooperating means being independent of the cooperating means for opening and closing the stamp and means for driving the stamp, said stamp driving means being independent of the two sets of cooperating guiding means. In consequence of the independence of the cooperating guiding means and of the driving means of each other the time taken for opening and closing the stamp and for keeping the stamp in its closed position may be divided as desired over the whole revolution of the press. It is consequently possible to shape the guiding means pertaining to the opening and closing of the stamp in such a manner that the opening and closing of the stamp only takes a very short while so that a large part of each revolution of the press can be used to keep the pressure up. In order to obtain pressed fibrous articles of good quality a minimum of time is required at a certain pressure during which time said pressure must be kept up as otherwise the pressed articles do not keep their shape well. Owing to the fact that according to the invention a very large part of each revolution of the press is used to keep the pressure up very little time is lost in the opening and closing of the stamp, consequently the apparatus will function very rapidly.

According to the invention the apparatus may be so constructed that the cooperating guiding means, for opening and closing the stamp travel over a considerable course during the opening and closing of the stamp, whereas the cooperating guiding means for keeping the stamp in its closed position cover a course which is as short as possible. Thus, the losses due to friction are greatly reduced. Evidently, whilst the

stamp is being opened and closed, that is to say whilst a reduced power is required to drive the stamp, it travels over a long course, whereas during the time when great power acts on the cooperating guiding means, said means only travel over a small course with reference to each other.

Furthermore, the advantage is obtained of being able to put the pressing apparatus together in such a manner that the component of the power exercised on the stamp and lying in the direction motion of the stamp will be very great, which will allow the speed of the press to be further increased, or to manufacture better quality articles.

According to the invention, the cooperating guiding means, displacing the driving means, may consist of a slide, and a cam moving exteriorly or interiorly in it the one being movably or not adjusted to the driving means other to the frame or to another fixed part the cooperating guiding means for keeping up the pressure may consist of a cam and pawl said pawl bearing at one extremity against the cam and at the other against the hub of the driving means or to guiding means adjusted thereto.

Another favourable embodiment of the press according to the invention is characterised in that the bearing surface of the driving means and the pawl is eccentric with respect to the centre of rotation of the driving means of the stamp the cam and pawl being shaped in such a manner that the stamp after having reached the end of its stroke carried out by the cooperating guiding means for opening and closing the stamp still moves on a little so as to provoke the additional pressure, and remains for some time in that position. As the pressure is considerably increased its duration may be cut down.

The driving means of the stamp may according to the invention be also connected with the stamp by means of a crank the cooperating guiding means for driving it being made so that the crank may be put in or nearly in the production of the stamp and that it can remain for some time in said position said crank cooperating to the upkeep or causing the stamp pressure with one or more guiding means fixed to the frame. When the crank is placed in the production of the stamp and especially when the crank still moved a little further the driving means will not be called upon to exert any or only very little power on the crank and by that

very fact the losses due to friction will be very small.

Further owing to the suitable embodiment of the press according to the invention the guiding means cooperating with the crank may consist of a rotary rod connected with the crank said rod being also adjusted to the frame or to another fixed part.

According to the invention the crank may be eccentrically connected to the driving means of the stamp thereby obtaining that the stamp will move on a little so as to provide or increase the pressing pressure at the time when the one end of the driving rod of the stamp remains in its position.

According to the invention a simple apparatus with a reduced number of mobile parts is obtained owing to the fact that the driving means of the stamp is fitted with a cam roll or a suchlike means moving on the one hand in a sliding means adjusted to the frame or to another fixed part and on the other hand in a sliding means adjusted to the stamp-carrier.

In said embodiment the pressure on the article to be pressed carried out by the stamp-carrier, will only be kept up during the desired time. If, however, one wishes to increase said pressure, the press may be so constructed that the roll, cam, or suchlike means consist of several parts and that the sliding means being connected with the stamp-carrier is or are eccentric with regard to the other part or parts.

In order that the invention may be more fully understood there will now be described by way of example and with the aid of the accompanying drawings, three constructional forms which the invention may assume.

Figure 1 is a side elevation view partially in section showing a part of an embodiment of the invention.

Figure 2 shows a schematic section of the press according to Figure 1.

Figure 3 is a vertical view of a part of another embodiment of the invention seen to the right of the line IV—IV of Figure 4.

Figure 4 shows a section of this part of the press.

Figure 5 shows a vertical view of that part of the press seen to the left of the line IV—IV of Figure 4, and in which the connecting rod is in another position.

Figure 6 shows a detail.

Figure 7 shows a part of another embodiment of the invention.

The press shown in Figures 1 and 2 comprises a driving rod 1 being rotary connected in 2 with the stamp-carrier which is not shown. Said driving rod is provided with a slot 3 in which moves the crank pin 4 of the crank disc 6 said crank disc being driven by the shaft 5. Said crank pin is provided with a sliding block 7 so as to reduce the losses due to friction. The driving rod 1 is also fitted with a roller 8 which moves in a slide 10 fixed on the frame 9 serving as guiding means for the roller 8. During the motion of the roller 8 in the slide 10 the driving rod and the stamp-carrier are moved. It is clear that the slide 10 may be fixed to the driving rod 1 and the roller 8 to the frame 9 while for driving the press one is not tied to crank driving means.

The frame 10 is provided with a cam 11 against which the extremity 12 of a pawl 13 is pulled by a spring 14 fixed at the extremity of this pawl. This spring 14 is connected at its

other end with a movable point as for instance to a rod fixed to the hub of the driving rod. This pull of the pawl takes place when the driving rod is in position II. The other end 15 of this pawl 13 is hook-shaped and is hooked on over the hub 16 of the driving rod 1 or to another means connected with said driving rod.

The press works as follows:

When the driving rod 1 is in the position indicated in Fig. 1 by means of dotted lines the roller 8 will travel upwards in the slide 10 because of the rotation of driving shaft and as a consequence of this movement the end of the driving rod adjusted to the stamp-carrier will move towards the left. When the driving rod 1 is in position II that is to say after 90 degrees of the stroke of the crank the extremity 12 of the pawl 13 rests against the cam 11 of the frame 9 whilst the driving rod 1 has pressed the stamp-carrier against the article to be pressed operation by means of which the object has received the desired shape.

The driving rod 1 now moves from position II to position III. Owing to the fact that the bearing surface of the driving rod 1 and the pawl 13 is eccentric with respect to the centre of rotation of the driving rod 1 and the stamp-carrier the latter is still able to move a little. The extremity 12 of the pawl 13 is shaped in such a manner that it rolls along the cam 11 whilst the end 15 of the pawl 13 rolls on the hub 16 of the driving rod 1. This operation is performed simultaneously with the rolling of the end 12 along the cam 11. Owing to this construction the pawl 13 in cooperation with the hub 16 and the cam 11 will exert an additional pressure which will be kept up during the movement of the driving rod from position II towards position III and vice versa. Said pressure will therefore be maintained during 180 degrees of the stroke of the crank. Eventually one may shape the cooperating guiding means 8, 10, 12 and 13 in such a way that it is possible to maintain the pressure during a greater or smaller part of the stroke of the driving rod. It is clear that the bearing surface of the pawl 13 with the driving rod 1 need not necessarily be eccentric with respect to the centre of rotation of the driving rod. In that case no additional pressure is obtained.

As is clearly shown by the foregoing the roller 8 travels over a very long course during the opening and closing of the stamp. As the power required for opening and closing the stamp is very small the losses due to friction will be very small. The displacement of the cooperating guiding means with reference to each other is very small whilst the pressure is kept up owing to this fact notwithstanding the great power used the losses due to friction will be small. These will be further lessened owing to the fact that the cooperating guiding means roll the ones on the others.

When the driving rod 1 has returned to position II it draws with it by means of a cam or other means the pawl 13 to position I.

Figures 3, 4, 5 and 6 show a part of the second embodiment of the press according to the invention comprising cooperating guiding means consisting of a slide 20 in which moves a roller 21 the slide being adjusted to the frame or to any other fixed part and the roller to the driving rod.

The driving rod 25 is not directly connected with the stamp-carrier 27 but by means of a rod 26 which is joined on the one hand to the stamp-carrier which is guided between parallel slides

and on the other hand to the driving rod 25. Said connection of the driving rod 25 with the rod 26 will preferably be an eccentric one.

This press is driven by means of a shaft 28 and a crank disc 29 with the crank pin 30 or by any other known means.

In the position I of the driving rod 25 the roller 21 connected with said driving rod 25 is to be found at the lowermost part of the slide 20. As soon as the press is set in motion the roller 21 rises in the slide 20 by this movement it rises said extremity of the driving rod 25 which is connected with the rods 23 and 26. Owing to this movement in position II the rods 23 and 26 come in the production of each other or nearly so by which the article is pressed into the desired shape. Owing to the fact that the shaft 31 is eccentrically connected the movement of the driving rod 25 from position II towards position III will cause the stamp-carrier to move still somewhat towards the left thus exerting an additional pressure on the article to be pressed. The part of the slide between the lines II and III has the shape of an arc of a circle or nearly so because the additional pressure as well as its maintenance are effected by means of the rods 23 and 26. In this case the roller 21 moves freely in the slide 20. By increasing or diminishing the slope of the slide or of the guiding means between positions I and II indicated by dotted lines one can increase or diminish the opening and closing speed of the stamp with the result that a greater or lesser part of the stroke will be available for keeping up an eventually increased pressure.

It is clear that the shaft 31 need not necessarily be eccentrically connected and that the guiding means may also be of such a shape that the driving rod will be able to set the stamp in motion until the end of its course and consequently that the guiding means will keep the stamp in place during a greater or lesser time during the stroke of the driving rod so as to keep up the pressure for a time after the movement of the stamp being necessary to obtain the desired shape.

Should one wish to decrease the number of mobile parts of the above mentioned embodiment one can adjust a cam roller or other means 33—Fig. 7—to the driving rod said cam roller or other means will work on the one hand in a guiding means 34 being movably or not adjusted to the frame or to another fixed part and on the other hand to a sliding means 35 adjusted to the stamp-carrier.

By setting the driving rod in action by means 33 corresponding with the guiding-groove 20 and to the roller 21 shown on Figure 3 said means 33 will rise in the slot 34 and will carry with it the stamp-carrier which will open. The return movement of the driving rod will press the stamp-carrier back. The means 33 will remain in place in the guiding means for the upkeep of the pressure during a period of time previously determined.

The mobile parts of the means 33 which move in the guiding means may be separated owing to this fact one of these parts may be eccentrically connected with the driving rod. It will thus on the one hand be possible to decrease the friction and on the other hand to increase the pressure a little.

Having thus described my invention, what I claim is:

1. A press especially adapted to the pressing of fibrous articles such as trays or dishes destined

for fruit or meat comprising stationary guiding means and cooperating guiding means connected with the driving means of the stamp for opening and closing the stamp, cooperating guiding means for keeping the stamp in its closed position during some time, said cooperating means being independent of the cooperating means for opening and closing the stamp and means for driving the stamp, said stamp driving means being independent of the two sets of cooperating guiding means, the cooperating means for opening and closing the stamp comprising a slide and a cooperating cam and the cooperating guiding means for keeping the stamp in its closed position comprising a cam and pawl, said pawl bearing at one extremity against the cam and at the other against a part of the driving means.

2. A press especially adapted to the pressing of fibrous articles such as trays or dishes destined for fruit or meat comprising stationary guiding means and cooperating guiding means connected with the driving means of the stamp for opening and closing the stamp, cooperating guiding means for keeping the stamp in its closed position during some time, said cooperating means being independent of the cooperating means for opening and closing the stamp and means for driving the stamp, said stamp driving means being independent of the two sets of cooperating guiding means, the cooperating means for opening and closing the stamp comprising a slide and a cooperating cam and the cooperating guiding means for keeping the stamp in its closed position comprising a cam and pawl, said pawl bearing at one extremity against the cam and at the other against a part of the driving means, the bearing surface of said part of the driving means with the pawl being eccentric with regard to the fixing of the driving means to the stamp.

3. A press especially adapted to the pressing of fibrous articles such as trays or dishes destined for fruit or meat comprising stationary guiding means and cooperating guiding means connected with the driving means of the stamp for opening and closing the stamp, cooperating guiding means for keeping the stamp in its closed position during some time, said cooperating means being independent of the cooperating means for opening and closing the stamp and means for driving the stamp, said stamp driving means being independent of the two sets of cooperating guiding means, the cooperating means for opening and closing the stamp comprising a slide and a cooperating cam and the cooperating guiding means for keeping the stamp in its closed position comprising a crank capable of being brought by the driving means in the production of the stamp.

4. A press especially adapted to the pressing of fibrous articles such as trays or dishes destined for fruit or meat comprising stationary guiding means and cooperating guiding means connected with the driving means of the stamp for opening and closing the stamp, cooperating guiding means for keeping the stamp in its closed position during some time, said cooperating means being independent of the cooperating means for opening and closing the stamp and means for driving the stamp, said stamp driving means being independent of the two sets of cooperating guiding means, the cooperating means for opening and closing the stamp comprising a slide and a cooperating cam and the cooperating guiding means for keeping the stamp in its closed position comprising a crank capable of being brought by the

driving means in the production of the stamp, a rod being rotatably attached on one hand to said crank and on the other hand being also rotatably attached to a stationary part.

5 5. A press especially adapted to the pressing of fibrous articles such as trays or dishes destined for fruit or meat comprising stationary guiding means and cooperating guiding means connected with the driving means of the stamp for opening and closing the stamp, cooperating guiding means for keeping the stamp in its closed position during some time, said cooperating means being independent of the cooperating means for opening and closing the stamp and means for driving the stamp, said stamp driving means being independent of the two sets of cooperating guiding means, the cooperating means for opening and closing the stamp comprising a slide and a cooperating cam and the cooperating guiding means for keeping the stamp in its closed position comprising a crank capable of being brought by the driving means in the production of the stamp, a rod being rotatably attached on one hand to said crank and on the other hand being also rotatably attached to a stationary part, said crank being eccentrically attached to the driving means of the stamp.

6. A press especially adapted to the pressing of fibrous articles such as trays or dishes destined for fruit or meat comprising stationary guiding means and cooperating guiding means connected with the driving means of the stamp for opening and closing the stamp, cooperating guiding means for keeping the stamp in its closed position during some time, said cooperating means being independent of the cooperating means for opening and closing the stamp and means for driving the stamp, said stamp driving means being independent of the two sets of cooperating guiding means, the cooperating means for opening and closing the stamp comprising a slide and a cooperating cam and the cooperating guiding means for keeping the stamp in its closed position comprising a crank capable of being brought by the driving means in the production of the stamp, a

slide being attached to a stationary part and guiding the connecting point of the crank and the driving means.

7. A press especially adapted to the pressing of fibrous articles such as trays or dishes destined for fruit or meat comprising stationary guiding means and cooperating guiding means connected with the driving means of the stamp for opening and closing the stamp, cooperating guiding means for keeping the stamp in its closed position during some time, said cooperating means being independent of the cooperating means for opening and closing the stamp and means for driving the stamp, said stamp driving means being independent of the two sets of cooperating guiding means, the cooperating means for opening and closing the stamp comprising a slide and a cooperating cam and the cooperating guiding means for keeping the stamp in its closed position comprising a part moving on the one hand in a slide of a stationary part and on the other hand in a slide of the stamp carrier.

8. A press especially adapted to the pressing of fibrous articles such as trays or dishes destined for fruit or meat comprising stationary guiding means and cooperating guiding means connected with the driving means of the stamp for opening and closing the stamp, cooperating guiding means for keeping the stamp in its closed position during some time, said cooperating means being independent of the cooperating means for opening and closing the stamp and means for driving the stamp, said stamp driving means being independent of the two sets of cooperating guiding means, the cooperating means for opening and closing the stamp comprising a slide and a cooperating cam and the cooperating guiding means for keeping the stamp in its closed position comprising a part moving on the one hand in a slide of a stationary part and on the other hand in a slide of the stamp carrier, said part being subdivided, one of said subdivided parts being eccentric with regard to a remaining part.

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