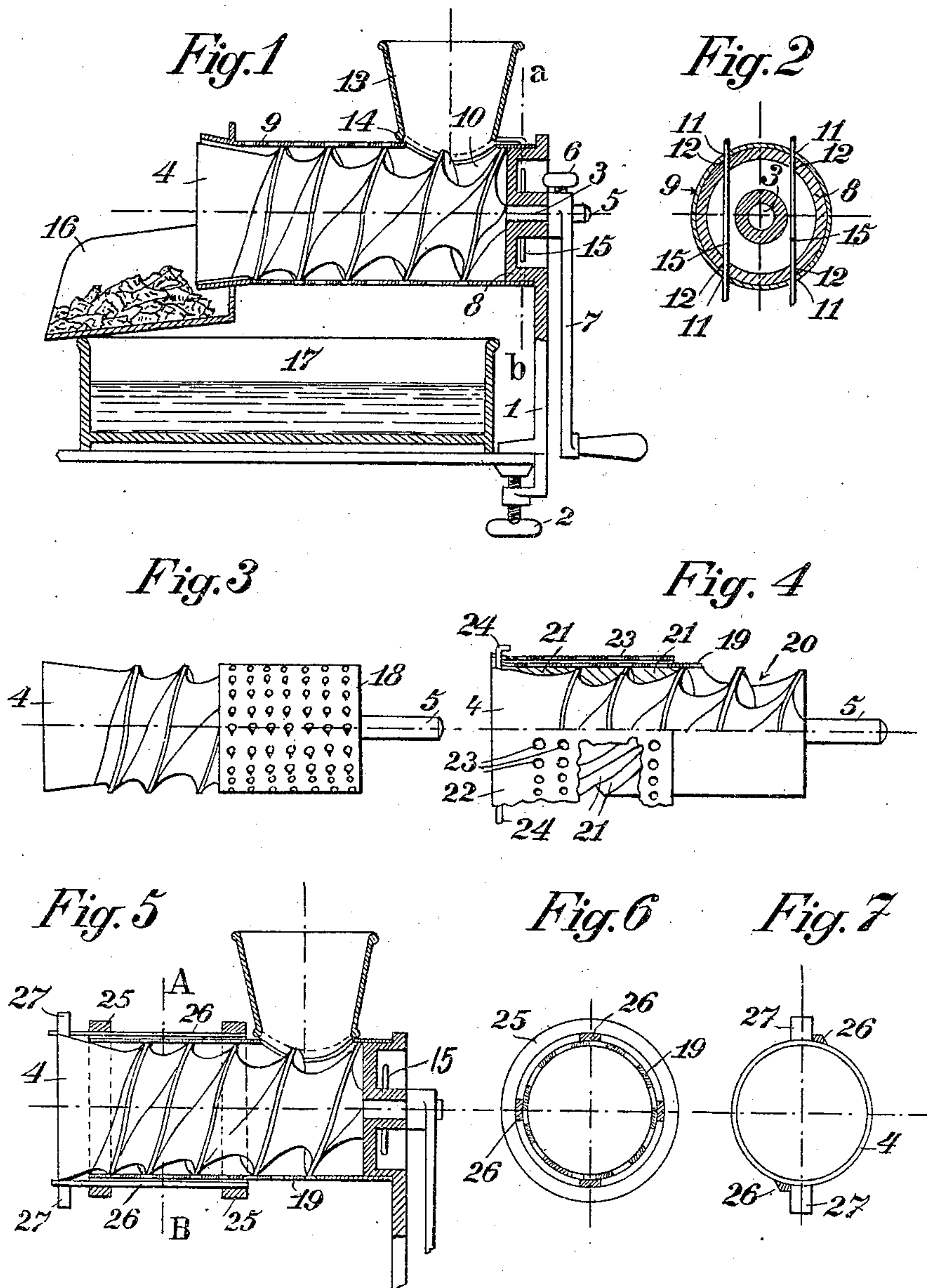


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MACHINE FOR STRAINING, MASHING, GRATING, AND CHOPPING.

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WITNESSES:

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# UNITED STATES PATENT OFFICE.

EMIL HUBERT, OF BUDAPEST, AUSTRIA-HUNGARY.

MACHINE FOR STRAINING, MASHING, GRATING, AND CHOPPING.

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Specification of Letters Patent.

Patented Nov. 2, 1909.

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*To all whom it may concern:*

Be it known that I, EMIL HUBERT, subject of the King of Hungary, and residing at Budapest, Austria-Hungary, have invented  
5 new and useful Improvements in Machines for Straining, Mashing, Grating, and Chopping, of which the following is a description.

The present invention has for its object an apparatus which, by utilizing simple means,  
10 renders it possible to effect all the operations of straining, mashing, grating and chopping which have to be carried out in the household in one and the same machine. These operations are carried out with but slight  
15 variation in the arrangement of the mechanism, very thoroughly, in a continuous operation and with constant and perfect separation of the wastes such as skins, cores and the like. All these results are attained  
20 moreover with the expenditure of but little force.

An embodiment of the invention is illustrated by way of example in the drawing filed with my provisional specification in  
25 which:—

Figure 1 is a longitudinal section of the apparatus with the cylinder for straining and mashing operations. Fig. 2 is a section on the line *a—b* in Fig. 1 illustrating the  
30 method of fixing the cylinder to the frame. Fig. 3 shows the worm ready for grating, in side elevation. Fig. 4 shows the cylinder ready for chopping with the worm arranged therein. Fig. 5 illustrates a modification of  
35 the device shown in Fig. 4. Fig. 6 is a section on the line *A—B* in Fig. 5, and Fig. 7 is an end elevation of the worm shown in Fig. 5.

The straining device consists broadly of  
40 the frame 1, provided with the fixing screw 2 which serves for fixing the entire apparatus to the table as is usual in the case of meat chopping machines. The journal 5 of the worm 4 is inserted in the bore 3 in the  
45 casting 1 and can be fixed by means of the screw 6. The worm, which can be rotated by means of the crank 7, is left-handed its pitch gradually becoming smaller away from the journal 5. The core of the worm flares  
50 conically from the journal 5 and the edges of the worm thread are turned cylindrically so that the annular space existing between the core of the worm and the edge of the thread is greatest at the journal 5, the annular surface constantly decreasing away from the  
55 journal and disappearing entirely at the last

convolution of the thread. The worm 4 is however continued even after this last thread as a turned conical surface. On the turned part of the casting 1 the perforated strain-  
60 ing cylinder 9 is passed; at its upper part it is provided with an opening for the admission of the material to be strained. On its end directed toward the part 8 of the casting 1 the straining cylinder is provided with  
65 four holes 11 which register with four holes 12 on the part 8 and, in the manner described below serve for attaching the cylinder 9 to the casting 1. The other end of the straining  
70 cylinder 9 flares conically and this cone corresponds with that of the worm 4. As shown in Fig. 1, the cylinder 9 surrounds the worm 4, so that the threads of the worm exactly fit the tapering end of the cylinder. The tapering end of the cylinder and the end  
75 fitted to the casting are not perforated.

Another part of the apparatus is the feed hopper 13, to the lower part of which the wire 14 is soldered. The ends of this  
80 wire 14 form a fork 15, 15 which on the one hand fixes the hopper 13 and on the other hand the straining cylinder into the casting 1 merely by its insertion in the holes 11, 11 in the straining cylinder and in the holes in the casting which register therewith, as  
85 shown in Figs. 1 and 2.

The discharge channel 16 is suspended from the end of the cylinder 9 its other end resting on the receptacle 17 for the strained  
90 material such for example as tomatoes, potatoes, chestnuts and so forth; the channel serves for carrying off the waste such as skin, pips and the like.

The apparatus acts in the following manner:—The material such as potatoes, apples,  
95 spinach, beans, tomatoes, turnips, chestnuts, sugar, coffee, pepper and the like which is to be strained, sifted or mashed, is carried through the hopper 13 and the worm 4 is rotated by means of the crank or handle 7.  
100 The worm forces the material helically forward in the cylinder 9: in the meantime the material is compressed laterally by the worm threads which constantly become narrower: this pressure is still further increased  
105 owing to the fact that the annular chamber existing between the worm and the cylinder 9 gradually becomes narrower. The material is, therefore, pressed with great force against the perforated cylinder 9 so that the  
110 soft portions are forced through the perforations and flow or fall into a receptacle



or plate 17 arranged beneath the machine. The constituents which do not pass through the perforations, such as skins, shells, pips and the like are forced forward on the inner face of the cylinder 9 until they pass through the slot between the cylinder 9 and the conical end of the worm 4, which may be made as narrow as necessary, on leaving which they fall as waste completely freed from material of any value and quite dry into the discharge channel 16.

The apparatus may be very readily taken apart for cleaning: The screw 6 is loosened, the crank 7 removed from the journal 5 of the worm 4 and the worm withdrawn from the cylinder 9. Then the hopper 13 is likewise removed by withdrawing the fork 15 of the wire 14 from the holes 11, 11 and 12, 12. The cylinder 9 can then also be removed from the part 8 and the apparatus taken completely apart.

Fig. 3 shows the worm 4 adapted for grating with the grating cylinder 18 arranged thereon. If it is desired to grate dry bread, nuts, almonds, chocolate or the like the straining cylinder 9 is entirely removed and a grating cylinder 18 is fixed to the worm 4 in any convenient manner so that this cylinder rotates with the worm. This cylinder 18 is perforated like the cylinder of the grating devices heretofore used. In this case the apparatus consists of the casting 1, the feeding hopper 13 and the worm 4 provided with the grating cylinder. As soon as the worm 4 is rotated together with the cylinder 18 and the material to be grated placed in the hopper 13 and pressed down, grating can be carried out with this apparatus in the same manner as with the known devices used for this purpose.

Fig. 4 illustrates the apparatus ready for chopping. In this case the straining cylinder 9 is replaced by the cylinder 19 which is fixed to the casting by the fork 15 of the hopper 13, like the cylinder 9. This cylinder 19 is provided with the charging opening 20 and with recesses 21, 21 on its periphery. These recesses are preferably helical in form. The cylinder 22, the entire surface of which is provided with perforations 23 is exactly fitted to the cylinder 19: the cylinder 22, which is outwardly flared at its rear end, can be turned upon the cylinder 19. In order that the worm 4 located in the cylinder 19 may rotate the cylinder 22 with it, a pin 24 is passed through the registering openings in the cylinder 22 and the tapering end of the worm 4. The material to be chopped, such as meat, is carried through the hopper 13, the worm 4 rotated by means of the handle 7 whereupon the chopping operation is effected in the following manner: The worm 4 presses the material forward in the manner already described and presses it with great force against the

periphery of the cylinder. During the rotation the perforations 23 in the rotating cylinder 22 and the recesses 21 in the stationary cylinder alternately register one with the other and again separate. When the holes 23 coincide with the recesses 21 the material to be chopped is forced somewhat through these openings. At the following moment the openings 23 separate from the recesses 21, however, and consequently cut off the material which has been caused to protrude. This is repeated continuously during the rotation so that the material leaves the apparatus through the perforations 23 in the cylinder 22 in a very small and finely divided state. The tough parts of the material such as skin or the like which are uneatable do not leave the cylinder 19 here but travel over its inner face and issue at the tapered end of the worm.

In the embodiment of the invention illustrated in Figs. 5 to 7, the rotatable cutting cylinder which surrounds the stationary straining cylinder is replaced by knives arranged between rings 25 and adapted to be rotated with the worm arranged inside the stationary cylinder. A cylinder 19 is arranged around the worm 4 in such a manner that it cannot rotate. The rotatable cylinder 22 is replaced by knives 26 which are clamped between rings 25. The knives consist of pieces of flat iron: it is not necessary to sharpen these knives as they merely have to exert a shearing action. The rings 25 and knives 26 are caused to rotate owing to the fact that some of the blades are extended over the ring 25 situated on the left hand side of the drawing and the worm 4 is provided with projections 27 which bear against these extended knives and so drive them. This form of cutting apparatus is simpler because the outer perforated cylinder is dispensed with and simply replaced by knives.

The special advantages of the present apparatus are:—cheapness, utility for many purposes, ease of operation, separation of the waste from the valuable material and large output owing to its continuous operation.

I claim as my invention:—

1. In a machine for straining, mashing, grating and chopping food, having a worm the thread of which is externally cylindrical and becomes gradually shallower and of shorter pitch toward the outlet end of the machine, the combination of a perforated cylinder to surround said worm, a detachable hopper to said cylinder and means for rotating the said worm within the said cylinder, a flared conical end to the said worm and a similarly shaped non-perforated end to the cylinder.

2. In a machine for straining, mashing, grating and chopping food, having a worm



the thread of which is externally cylindrical and becomes gradually shallower and of shorter pitch toward the outlet end of the machine, the combination of a perforated  
5 cylinder having a non-perforated flared end to surround said worm, a detachable hopper to said cylinder and means for rotating the said worm within the cylinder, a tray at the rear of the cylinder to receive the residue  
10 coming from the cylinder and a receptacle underneath the said cylinder to receive the treated substance.

3. In a machine for straining, mashing, grating and chopping food, having a worm  
15 the thread of which is externally cylindrical and gradually shallower and of shorter pitch toward the outlet end of the machine, the combination of a perforated cylinder having a non-perforated flared end to surround said  
20 worm, a detachable hopper to said cylinder and means for rotating the said worm within the said cylinder, a second perforated cylinder to move on said first mentioned one

and means for coupling the same to the worm substantially as described. 25

4. In a machine for straining, mashing, grating and chopping food, having a worm the thread of which is externally cylindrical and becomes gradually shallower and of shorter pitch toward the outlet end of the  
30 machine, the combination of a perforated cylinder having a non-perforated flared end to surround said worm, a detachable hopper to said cylinder a wire attached to the lower end of said hopper and having its forward  
35 ends bent downwardly, a front frame plate having holes to receive said wire ends, said wire ends being adapted to pass through corresponding holes in the said perforated  
40 cylinder substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

EMIL HUBERT.

Witnesses:

JOSEPH WIRKMANN,  
BÉNI GRUNWALD.