

(No Model.)

3 Sheets—Sheet 1.

D. A. SPRAGUE.
CHEESE PRESS.

No. 558,321.

Patented Apr. 14, 1896.

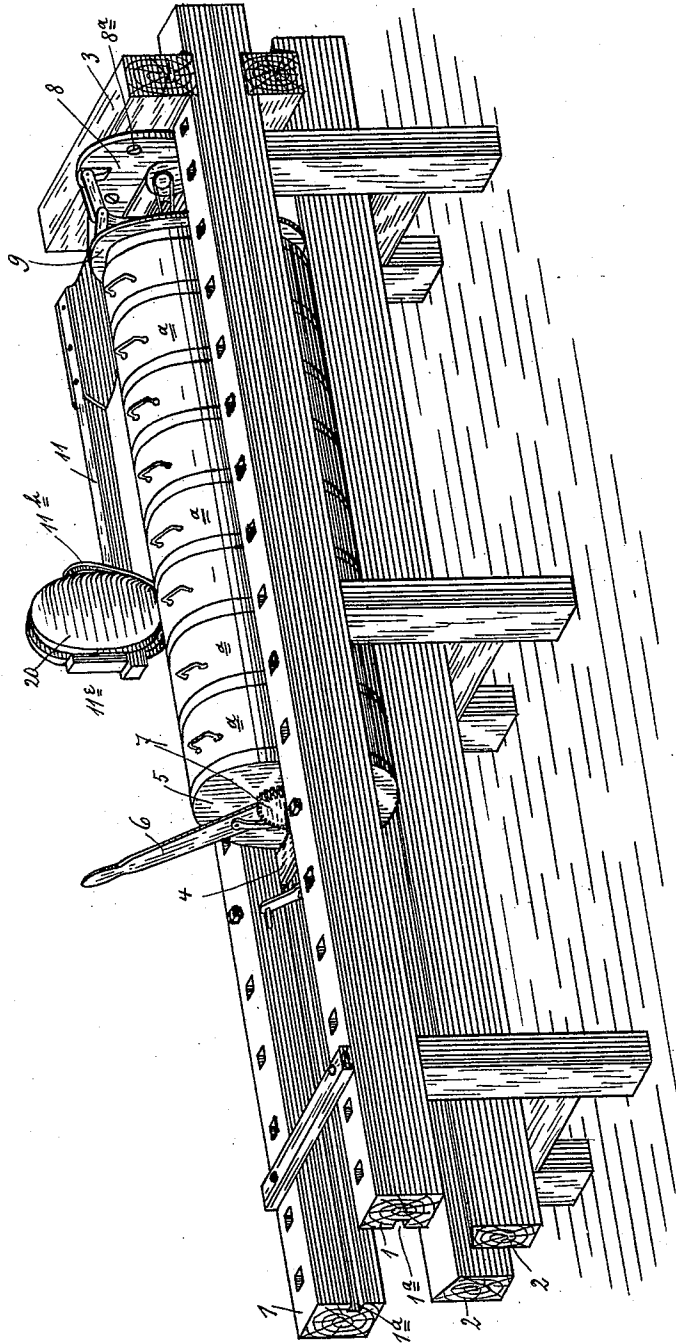


Fig. 1.

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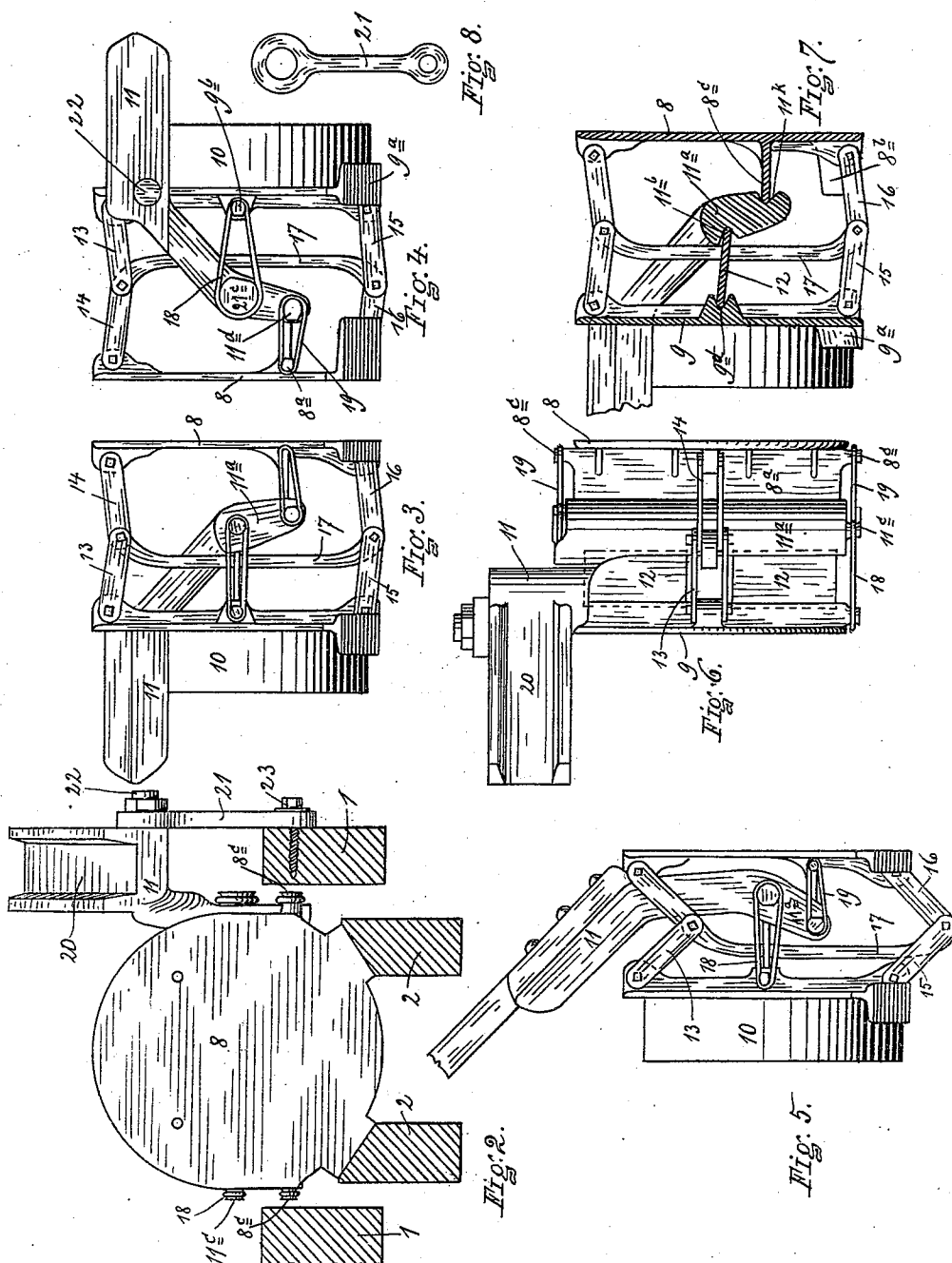
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3 Sheets—Sheet 2.

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(No Model.)

D. A. SPRAGUE.
CHEESE PRESS.

3 Sheets—Sheet 3.

No. 558,321.

Patented Apr. 14, 1896.

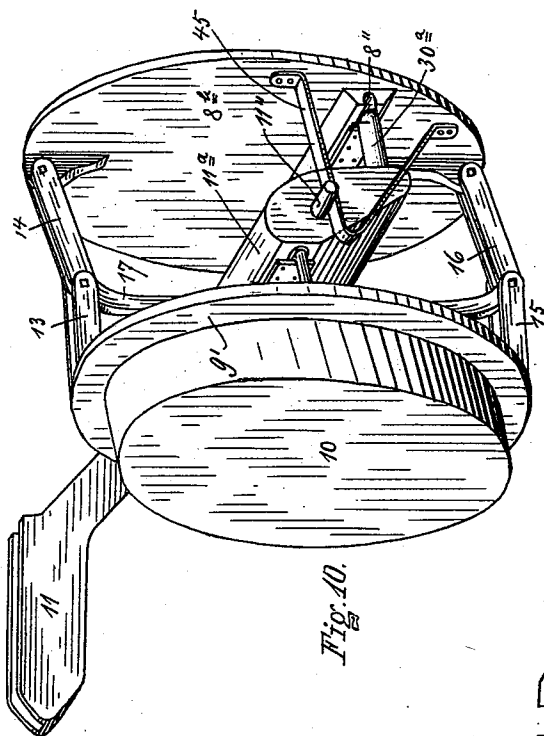


Fig. 10.

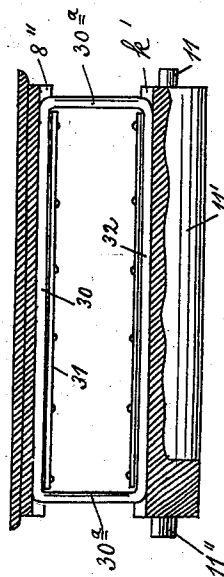


Fig. 11.

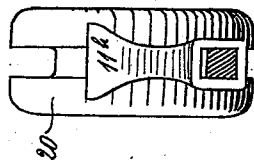


Fig. 13.

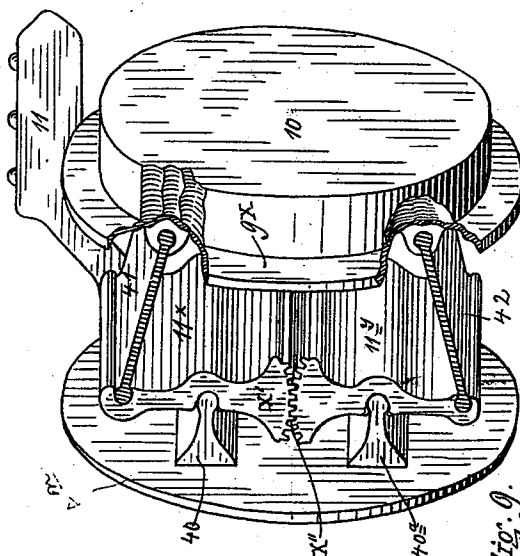


Fig. 9.

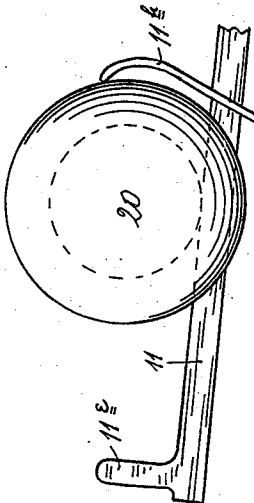


Fig. 12.

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UNITED STATES PATENT OFFICE.

DANIEL A. SPRAGUE, OF POLAND, NEW YORK.

CHEESE-PRESS.

SPECIFICATION forming part of Letters Patent No. 558,321, dated April 14, 1896.

Application filed September 25, 1895. Serial No. 563,642. (No model.)

To all whom it may concern:

Be it known that I, DANIEL A. SPRAGUE, of Poland, in the county of Herkimer and State of New York, have invented certain new and
5 useful Improvements in Continuous-Pressure Apparatus for Cheese-Presses; and I do hereby declare that the following is a full, clear, and exact description of the invention, which
10 it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to improvements in
15 cheese-presses and continuous-pressure apparatus therefor.

My apparatus is so constructed that as the apparatus operates the pressure increases within the limits of its operation.

20 In the drawings which accompany and form a part of this specification, and in which similar letters and figures of reference refer to corresponding parts in the several views, Figure 1 shows a perspective view of a cheese-
25 press having my continuous-pressure apparatus applied. Fig. 2 shows an end view of the continuous-pressure apparatus and a cross-section of the frame at the head. Fig. 3 is a side elevation of the continuous-pressure
30 apparatus removed from the frame in its extended position. Fig. 4 shows the opposite side of the apparatus from that shown in Fig. 3 in the same position. Fig. 5 shows the same as Fig. 3 with the apparatus retracted.
35 Fig. 6 shows a plan view of the apparatus. Fig. 7 shows a vertical section of the apparatus. Fig. 8 shows a link for steadying the lever portion of the apparatus. Fig. 9
40 shows in perspective a modified form of construction. Fig. 10 shows in perspective another modified form of construction. Fig. 11 shows details of construction, partially in section, of the construction shown in Fig. 10.
45 Fig. 12 shows a portion of the lever of the pressure apparatus and the rolling weight and means for securing the same mounted thereon. Fig. 13 is an end view of the construction shown in Fig. 12 from the right.

50 The press consists of four frame-bars 1 1 and 2 2, mounted on suitable legs and provided with suitable cross-bars and in which is firmly secured the press-head 3. The

cheese-hoops A A are adapted to be received in the press-frame between the bars 1 1 and resting upon the bars 2 2, and preferably project
55 above the tops of the bars 1 1, substantially as shown and as is common in this construction of press.

For effecting the pressure on the cheese there is provided, running in the guide-
60 grooves 1^a 1^a, a cross-head 4, in which engages a screw adapted to exert pressure by means of a follower-head 5 on the gang of cheese-hoops placed in the press, which screw
65 is operated by means of the ratchet-lever and ratchet 6 and the ratchet-wheel 7, as is usual in this construction of presses.

The continuous-pressure apparatus which forms the material part of this invention consists of a base-plate 8, which I prefer to
70 secure to the head 3 by means of screws 8^a and to the frame-bars 2 2 by means of screws or bolts passing through the feet 8^b of the base-plate 8, although the apparatus will work
75 quite satisfactorily if not secured in the press at all.

The continuous-pressure apparatus consists, further, in a movable head 9, on the face of which is provided the usual head-block
80 10, such as is usually fixed on the fixed head of gang-presses similar in construction to those heretofore in use. The movable head 9 is provided with feet or plates 9^a, which
85 rest upon the frame-bars 2 2, which form ways on which the movable head operates. Between the base-plate 8 and the movable head-plate 9 is introduced the transverse arm 11^a of the crooked lever 11. The fulcrum of the
90 lever is formed in the rigid projection 8^c from the face of the base-plate 8, and this fulcrum preferably extends across the full width of the plate 8 and the full length of the horizontal arm portion 11^a of the lever. Between
95 the arm 11^a of the main lever and the movable head-plate 9 are placed two plate-like blocks 12 12, which engage in a groove 9^a in the back of the head-plate 9 and in a groove 11^b in the side of the arm 11^a of the main lever. These blocks serve to transmit the power
100 from the lever to the movable head. For equalizing the movement of the upper and lower sides of the movable head as it moves from or toward the base-plate 8 there is provided a set of links 13 14 on the upper side

and 15 16 on the lower side, pivoted to lugs on the adjacent faces of the base-plate 8 and the movable head 9. These links are connected at the knuckle-joint between them by a connecting-rod 17, which causes the two sets of links to operate together or simultaneously, and this connecting-rod 17 is bent or crooked, as shown, so as not to interfere with the movement of the arm 11^a of the main lever. These devices constitute an equalizer between the head-block and movable head.

For coupling the parts of the apparatus together and holding it assembled in operative position there is provided at each side a pair of links 18 19, the link 18 passing around the projection 11^c on the end of the cross-arm of the main lever and a projection 9^b on the side of the movable head-plate. The link 19 passes around the projection 11^d on the end of the cross-arm of the main lever and a projection 8^c on the side of the base-plate 8. On the swinging or power end of the main lever 11 is mounted the rolling weight 20, which is grooved to straddle the lever, as shown, and capable of being rolled backward and forward along the arm portion of the lever and is limited in its movements by a fixed stop 11^e on the end of the lever-arm and an adjustable stop 11^h, provided thereon. The main lever 11 being located at the side of the press and not in the direct line in which its power is applied, it is desirable to provide some means for preventing the lever skewing or turning in the press, and for this purpose I provide a link 21, which engages at its upper end on a stud 22, projecting from the back side of the lever-casting, and at its lower end is engaged on a bolt or wood-screw 23, which is provided in the frame-bar 1 at a point opposite the projection 8^c on the base-plate 8.

In operation one or several cheeses are placed in the press in the position shown in the drawings and the cross-head 4 is adjusted to a position suitable for the number of cheese in the press and secured, when by operating the screw by means of the lever 6 pressure is applied to the several cheese in the press. When the pressure becomes greater than that which the weight 20 on the lever 11 will equalize, the lever is raised from the substantially horizontal position or a position somewhat below a horizontal position toward the position shown in part in Fig. 5. The press may be left to be operated by the continuous-pressure apparatus, and as the pressing of the cheese in the press is effected and the whey expressed therefrom the pressure will be kept up by the descent of the weight 20 on the lever 11. The amount of pressure which is affected by the apparatus will depend upon the point to which the weight 20 is adjusted and the adjustable stop 11^h fixed. As the weight descends the effective length of the lever is increased and the power of the apparatus increases as the lever approaches a horizontal position.

To more effectually accomplish the end of having the greatest pressure at the last, the lever 11 may be arranged in its cast-iron shank portion in such a way that the swinging end of the lever will hang below a horizontal plane. As the lever approaches its downward limit of movement and on account of the inclination of the lever as it nearly reaches its last movement the weight 20 will automatically roll from this position against the adjustable stop 11^h to the end of the lever against the top 11^e.

In the modified form of construction shown in Fig. 10 the links 18 and 19 with the projections on which they engage are omitted. In lieu of them two links are provided which serve the office of coupling the parts together, as well as thrust-blocks, through the medium of which the power of the lever is exerted. In lieu of the projection 8^c on the back of the base-plate 8 is provided a link 30, having cross ends 30^a, which link is received in a groove 8^g on the base-plate 8' on one side and in a groove in the back of the arm 11', corresponding with arm 11^a, which latter groove corresponds in position with 11^k of the main construction. Between the ends of the links 30 are provided strips 31 on one side and 32 on the other, which cover the grooves 8^g and K', respectively, and retain the link in position, and thereby couple the parts 8' and lever-arm 11', corresponding with 11^a of the original construction, together. In lieu of the plate-like blocks 12 12 is provided a link the same as 30 and similarly located and secured in position. To prevent the lever, and particularly the arm 11' thereof, from dropping down when in operation, there being no fixed fulcrum for the lever, there are provided the projections 11'' on the ends of the cross-arm 11^a, which rest and slide on the bracket 45, projecting from the base-plate 8'.

In the modified form of construction shown in Fig. 9 a combination-lever is employed. The arm 11^x of the lever proper is fulcrumed upon the long pivot or fulcrum block 40 upon the base-plate 8ⁿ, and the block 40 is provided with a rounded head which engages in a circular groove in the side of the arm 11^x, whereby the arm can be slid on from the end and will retain its position upon the fulcrum. The arm 11^x is provided with a toothed sector face X', which engages with a similar toothed face X'' of the supplemental arm 11^y. This arm is pivoted upon a fulcrum-block 40^a, provided with a rounded head engaging in a circular groove in the back of the supplemental arm 11^y, similar to that described with reference to arm 11^x. Extending from the upper side of the arm 11^x and the lower side of the arm 11^y and inclined inwardly toward each other are provided the thrust-blocks 41 and 42, which are coupled to the arms 11^x and 11^y respectively and to the back of the substituted head-block 9^x by being provided with headed ends engaging in grooves, substantially as shown. By this construction a com-

pound lever is provided and the parts are coupled together, so as not to become readily disassembled.

The operations of the constructions shown in Figs. 9 and 10 will be readily understood without special description, their operation being very similar to that heretofore described with reference to the main construction.

10 What I claim as new, and desire to secure by Letters Patent, is—

15 1. In a continuous-pressure press, a frame, a fixed head or end, a movable head, a pressure-exerting mechanism acting in opposition to the movable head and between which and the movable head the cheese-hoops are placed, a continuous-pressure lever operating on the movable head and an equalizer consisting of 20 jointed connections between the head or end and movable head and a cross connection between the joints of the connections combined, substantially as set forth.

25 2. In a continuous-pressure press, a fixed head, a movable head, a pressure-lever having an arm extending between the fixed head and movable head, a fixed fulcrum therefor

on the fixed head, a movable block between the lever and movable head and a rolling weight on the pressure-lever combined, substantially as set forth.

30 3. In a press a frame, a fixed head, a movable head, a lever having a projecting arm extending between the fixed head and movable head, a fixed fulcrum therefor, a movable block between the lever-arm and the 35 movable head and a weight on the lever combined, substantially as set forth.

4. In a press the combination of a fixed head, a movable head, a pressure-lever having an arm extending between the fixed head 40 and movable head and operating on the movable head, a movable weight on the lever, an equalizer consisting of two jointed connections between the movable head and fixed head, and a cross connection between the 45 joints, substantially as set forth.

In witness whereof I have affixed my signature in presence of two witnesses.

DANIEL A. SPRAGUE.

Witnesses:

E. WILLARD JONES,

DWIGHT H. COLEGROVE.