

P. BEER.  
VULCANIZER PRESS.  
APPLICATION FILED JAN. 30, 1912.

1,122,465.

Patented Dec. 29, 1914.  
2 SHEETS—SHEET 1.

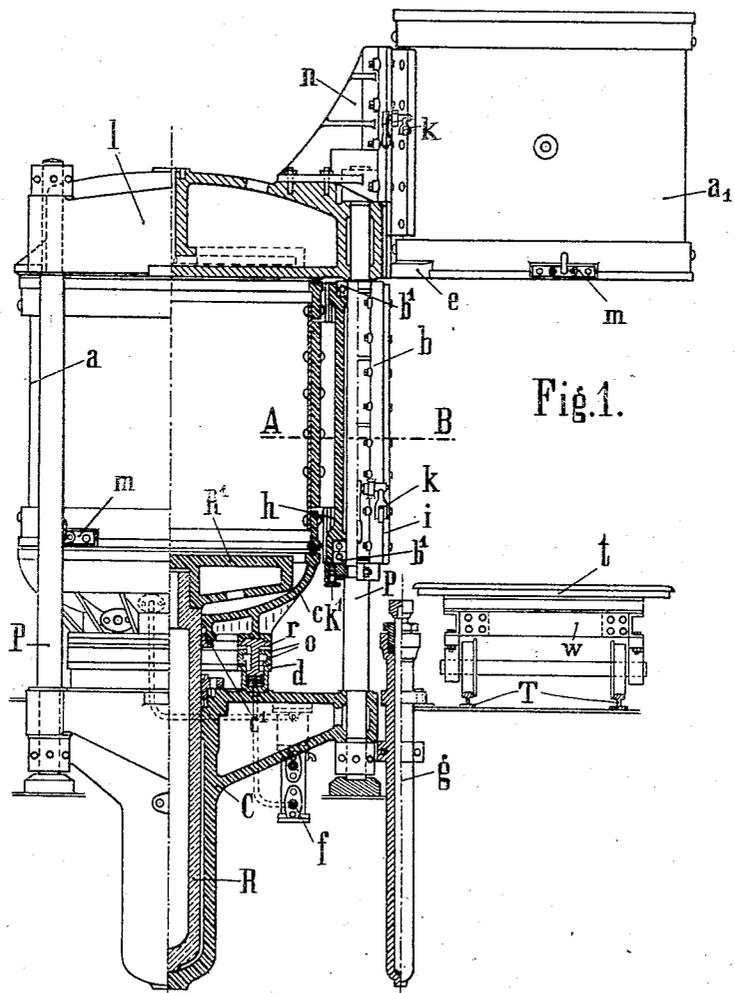


Fig. 1.

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Fig. 3.

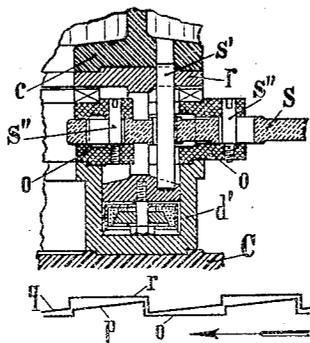


Fig. 4.

Fig. 2.

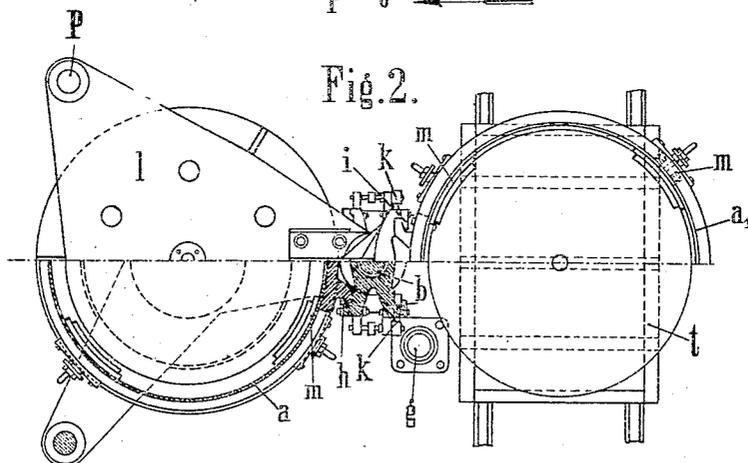
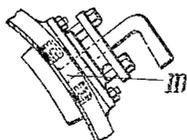


Fig. 5.



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# UNITED STATES PATENT OFFICE.

PAUL BEER, OF SCHÖNEBERG, NEAR BERLIN, GERMANY.

## VULCANIZER-PRESS.

1,122,465.

Specification of Letters Patent.

Patented Dec. 29, 1914.

Application filed January 30, 1912. Serial No. 674,286.

To all whom it may concern:

Be it known that I, PAUL BEER, a subject of the Emperor of Austria-Hungary, residing at Schöneberg, near Berlin, in the German Empire, have invented certain new and useful Improvements in Vulcanizer-Presses, of which the following is a specification.

The subject-matter of my invention is an improved vulcanizer-press particularly intended for vulcanizing india-rubber and arranged in such manner that the steam space can be readily charged and emptied. To this end, the shell of the vulcanizer chamber is arranged so that it can be removed out of the press without the top and bottom closures, preferably by swinging it about one column of the press.

In order rapidly to empty the vulcanizer chamber moved out of the press it is movable in a vertical guide on the collar by which it is swung about one column of the press, and over the place which the guide occupies when swung outward is fixedly mounted an additional guide for the shell. After being swung outward the shell can be elevated at this latter guide by means of a press and be lowered again after the charge has been changed.

A tight joint is made at the top and bottom edge of the vulcanizer chamber by a separate press; this is mounted in the press-frame independently of the main press and its piston or ram carries the bottom of the vulcanizer chamber. The pressure in this press is preferably made dependent, by means of a pressure regulator, on the steam pressure, in the interior of the shell in order constantly to adapt the pressure at the joints to the internal pressure of the shell.

One illustrative embodiment of my invention is represented by way of example in the accompanying drawings, wherein:—

Figure 1 is a side elevation, partly in section, showing the press, Fig. 2 a plan view, partly in section taken on the line A—B in Fig. 1, Fig. 3 a vertical section, enlarged, showing the separate press for closing the vulcanizer chamber. Fig. 4 a side elevation showing part of the press shown in Fig. 3. Fig. 5 is a fragmentary view showing on an enlarged scale the grippers.

Referring to the drawings, the press comprises, as usual, a cylinder C in which a piston or ram R can move up and down, and with which the head l of the press

is connected by columns P constituting the frame of the press. Between the head l of the press and the cylinder is the vulcanizing chamber whose cover is formed by the head l of the press, and whose shell a is independent of both the cover l and the bottom c. This bottom surrounds the end plate R' of the piston or ram and a tight joint is made between it and the piston R by a stuffing-box c', as clearly shown. It rests on the head r of the ram of another hydraulic press d which is mounted independently of the main press in the frame of the main press on the cylinder C. The shell a is movable up and down in a guide h on the collar b which is revoluble on ball-bearings b' about one column of the press. Preferably, the press does not comprise more than three columns. A second guide i is provided on the collar b opposite the guide h, and a second shell a' can move along this guide. Above the place where the guide i or h is located in its swung-out position is fixedly mounted on the head l of the press an additional guide n along which the shells a and a' can be pushed upward. Latches k consisting as shown of a handle, a small shaft in a bearing and a crank carrying a proper latch pin, are provided for securing the shells a and a' along the guides h, i and n. A spring-pressed pin k' also holds the guides h and i exactly under the guide n. Under the shell a' which is suspended on the guide n are arranged rails T on which a plate t can be run on a truck w. Two plates t belong to the machine. When the shell a' is lowered onto this plate t the latter can be seized by the spring-pressed grippers m and secured to the shell in whose opening it fits. Lugs e are provided on the shells a and a'. A small hydraulic press g for raising and lowering the shell a' is arranged corresponding to these lugs e, which are engaged by the press. The two shells a and a' are exactly like one another.

The press d for closing the vulcanizer chamber is operated with water at a low pressure. In addition, a pressure regulator f of known construction serves for regulating the pressure in this press. The high pressure side of this pressure regulator is connected with the interior of the press, while the low pressure side thereof is connected with the interior of the steam chamber so that it is always at the same pressure as the latter.

The following device shown in Fig. 3 is for locking the bottom *c* of the vulcanizer chamber in its highest position into which it is raised by the press *d*: Two concentric rotatable rings *o* are inserted between the annular cylinder *d'* of the press *d* and the head *r* of the ram or plunger of this press. These rings have projections *p* having slanting faces. The head *r* of the ram of the press *d* has similar projections *q* having slanting bottom faces. In the ram of the press *d* is journaled the pivot *s'* of a lever *s* through whose slot-like openings are passed two bolts *s''* each of which is secured to the two rings. By rocking the lever *s* the rings *o* can be displaced relatively to the head *r* of the plunger of the press *d*. The top faces of the projections *p* then shift on the bottom faces of the projections *q* so that the shell bottom *c* is held fast even when there is no pressure in the press *d*. Steam and cooling water can be supplied to the vulcanizer chamber of the press through pipes, not shown, connected to the head *l* of the press. The water of condensation which is produced and the cooling water can be led away through a pipe, not shown, detachably connected to the lowest part of the bottom of the vulcanizer chamber.

The press is operated as follows: One of the plates *t* is placed on the truck *w*, the molds containing the india-rubber pieces to be pressed are placed thereon, and the truck is run under a shell *a* or *a'* carried by the guide *n*. The shell is lowered by means of the press *g*, after the bolt *k* has been withdrawn, so that the plate *t* with the molds is inclosed by it. The plate *t* is then secured by the grippers *m* to the shell, said grippers, as shown in Fig. 5, comprising simple latches having fastened to them handles movable in small stuffing boxes and two loose spring pressed pins. The shell *a* in the press is now relieved from the internal steam pressure and from the pressure of the press *d*. By rocking the lever *s* the lock formed by the rings *o* is released. The piston of the main press is lowered. The shell *a* or *a'* in the press is thereby liberated and after the spring-pressed pin *k'* which holds the guides *h* and *h'* in their position has been withdrawn the collar *b* together with the two guides *h* and *h'* and the two shells *a* and *a'* suspended thereon is rotated 180°.

Water under pressure is then admitted into the press *d*. The bottom *c* of the vulcanizer chamber is thereby pressed against the fresh shell which is now in the press, and the shell is pressed against the head *l* of the main press. By rocking the lever *s* backward the rings *o* are rotated so far that they lock the bottom of the shell in its position. The admission of water under pressure to the press *d* is then cut off. The piston of the main press is then driven and steam is admitted

through the head *l* into the vulcanizer chamber of the press. Steam simultaneously flows into the low pressure side of the pressure regulator *f* and thereby increases the pressure of water in the press *d* according to the increase of pressure in the vulcanizer chamber of the press for the time being. The shell *a* or *a'* removed out of the press is pressed upward by the ram *g* along the guide *n* after the bolt *k* has been withdrawn and the plate *t* has been released from the grippers *m*. The molds containing the finished articles are then removed from the plate *t* which is thereupon charged with fresh molds, for which purpose it may be run on its truck under lifting gear. After the charge in the press has been sufficiently treated the cycle of operations is repeated. The purpose of the pressure regulator *f* is for protecting the packing at the top and bottom edges of the shell *a*. When the vulcanizer chamber is under pressure this tends to press the bottom *c* downward and to open the joint. Consequently, if the pressure in the press *d* were not gradually increased in proportion with the steam pressure, the pressure would have to be so great from the first that it could both oppose the action of the steam pressure on the bottom *c* and also form tight joints at the top and bottom edges of the shell *a*. The packings at these places would, however, be injured, because they would be exposed to the full pressure when there was no counter pressure in the vulcanizer chamber.

Without departing from the invention the press may comprise a collar *b* having only one guide *h*, and may comprise only one shell *a*; also, one plate *t* only can be used. The time requisite for emptying and charging the press is lengthened in this case only by the time required for lifting the shell and lowering it and for clearing the plate *t* and charging it again.

Some advantages of the press are that charging and emptying are simplified and accelerated and the packing of the vulcanizer chamber is protected. In addition, the ram and cylinder of the main press can be made very short as they have to compress the mold only and do not have to cooperate, as in other presses, with the charging and emptying of the press.

While I have described my invention as applied to a vulcanizer or vulcanizing chamber, it will be readily seen that the scope of the invention is such, that it may be readily applied to other purposes not specifically used for vulcanizing, and I so contemplate applying the same.

I claim:

1. A vulcanizer press or the like comprising a fixed frame, a shell cover secured to said frame, a vertically adjustable shell bottom mounted in the frame below the cover,

and a shell hingedly mounted on the frame and adapted to be swung between and into operative and steam tight relation with the cover and bottom, and from under the cover and out of the frame and away from the bottom.

2. A vulcanizer press or the like comprising a fixed frame, a shell cover secured to said frame, a vertically adjustable shell bottom mounted in the frame below the cover, a ram adapted to move vertically to said bottom, and a shell hingedly mounted on the frame and adapted to be swung between and into operative and steam tight relation with the cover and bottom, and from under the cover and out of the frame away from the bottom.

3. A vulcanizer press or the like comprising a fixed frame, a shell cover secured to said frame, a vertically adjustable shell bottom mounted in the frame below the cover, a ram adapted to move vertically to said bottom, a shell hingedly mounted on the frame and adapted to be swung between and into operative and steam tight relation with the cover and bottom, and from under the cover and out of the frame away from the bottom, and a pressure regulator having its low-pressure side in connection with the interior of the said shell and its high-pressure side in connection with the cylinder of the ram.

4. A vulcanizer press or the like comprising a fixed frame consisting of vertical columns, a shell cover fixedly mounted on said columns, a vertically adjustable shell bottom mounted in the frame below the cover, a collar mounted to rotate about one of said columns, a shell between said bottom and cover arranged to swing from under the cover and

mounted on and adapted to slide on said collar, a guide on the outside and top of said frame adapted to receive and guide the shell above the level of the lower edge of the top, and means for moving and raising said shell along said collar and guide.

5. A vulcanizer press or the like comprising a fixed frame, a shell cover secured to said frame, a vertically adjustable shell bottom mounted in the frame below the cover, a shell hingedly mounted on the frame and adapted to be swung between and into operative and steam tight relation with the cover and bottom, and from under the cover and out of the frame and away from the bottom, a plate adapted to fit loosely into the bottom of said shell, and grippers at the lower end of said shell for holding and releasing said plate.

6. A vulcanizer press or the like comprising a fixed frame, a shell cover secured to said frame, a vertically adjustable shell bottom mounted in the frame below the cover, a shell hingedly mounted on the frame and adapted to be swung between and into operation and steam tight relation with the cover and bottom and away from the bottom, and rotatable superimposed flat rings below and supporting the shell bottom, the contiguous faces of said rings provided with projections having inclined faces, whereby as said rings are oscillated in opposite directions said shell bottom is held in raised position.

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

ING. PAUL BEER

Witnesses:

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