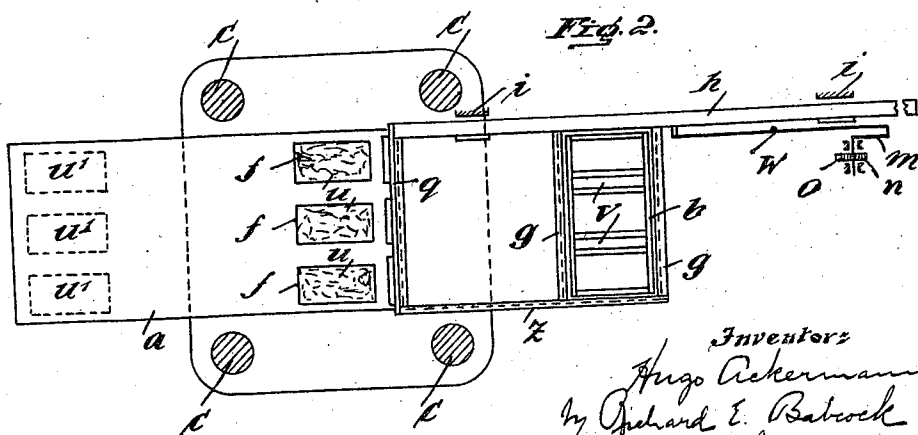
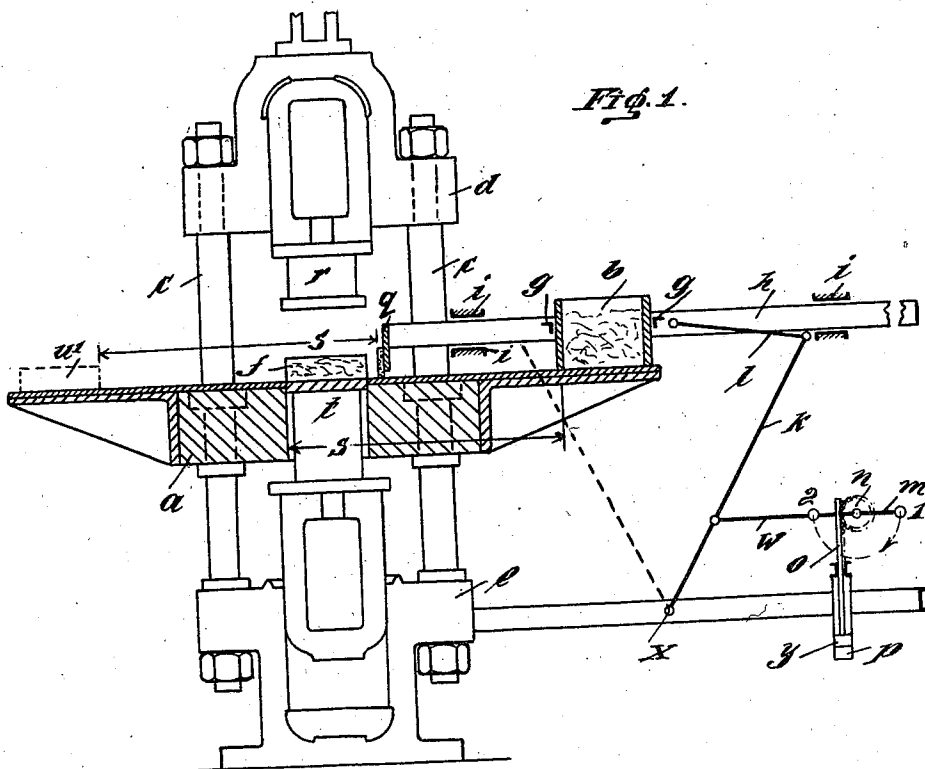


Dec. 13, 1927.

1,652,883

H. ACKERMANN
CHARGER FOR PRESSES
Filed March 17, 1927



Inventors
Hugo Ackermann
by Richard E. Babcock
Attorney

UNITED STATES PATENT OFFICE.

HUGO ACKERMANN, OF GODESBERG-ON-THE-RHINE, GERMANY.

CHARGER FOR PRESSES.

Application filed March 17, 1927, Serial No. 176,133, and in Germany March 17, 1926.

The invention relates to charger for presses for the manufacture of artificial stones, blocks, bricks or the like, such as refractory bricks, for instance, and in particular to charger for presses, the press table or moulding box of which is provided with a number of moulding openings which can be filled with pressing mass simultaneously by a charging box.

10 The object of the invention is to operate the charging box by mechanical means in such manner that the freshly filled charging box at the beginning of its course is at first driven with gradually increased velocity and
15 at the end of its course, when the box approaches the mould openings with gradually diminishing velocity.

Another object of the invention is to remove in time the pressed bricks lifted to the
20 plane of the press table, whereby the removal is also effected with gradually increasing velocity at first and with gradually diminishing velocity towards the end of the course.

25 A further object of the invention is to operate the charging box as well as the driver carrying off the bricks simultaneously by means of the same mechanical device.

The drawing shows a preferred form of a hydraulic press equipped with a mechanical charging device in accordance with the invention.

Fig. 1 is a view of the press, partially in section, the mechanism for running the
35 charging box and the driver being shown in outline.

Fig. 2 is a horizontal section of the press on a line slightly above the charging box.

The press table *a* is secured to the pillars
40 *c* which connect the upper press cylinder *d* with the lower press cylinder *e*. Three mould openings *f* are provided in the press table *a*. The charging box *b* rests in its extreme position of rest on a prolongation of the press table *a* on the right hand side. The charging box *b* is divided into three compartments by two transverse walls *v*, the said compartments corresponding to the
mould openings *f* of the press table. The compartments of the charging box are open at the bottom, being closed by the surface of the table on which the charging box *b* tightly rests. In order to ensure absolute tightness between the table *a* and the charging box *b*, the latter is vertically shiftable

between the frame parts *g* in such manner that it rests on the table *a* by means of its own weight.

The frame parts *g* are secured to the rod *h* which runs in a straight line in the guides *i, i*. The rod *h* is run by a crank gearing shown in outline with the help of the connecting rod *l* and the lever *k*. The crank gearing consists of the pinion wheel *n* on the crank shaft and the rack *o* driven by piston *y* of the hydraulic cylinder *p*. With the upward stroke of the rack *o* the crank *m* is turned at an angle of 180°, that is, from the rear dead center 1 to the front dead center 2. The crank *m* is operatively connected to the lever *k* with its fulcrum at *x*, by means of the connecting rod *w*. 70

The rod *h* extends to the left into the press, being provided at the extremity with a transverse arm *g* which at its front extremity is rigidly connected to the frame parts *g* by the ledge *z*. The transverse arm *g*, when the charging box *b* is in its extreme position of rest, lies as closely as possible to the mould openings *f* in such manner that the upper dies *r* can conveniently pass by and enter the mould openings. The transverse arm *g* serves as driver for the pressed bricks *u* ejected from the mould openings by the lower dies *t*. 75

In Fig. 1 the press is shown at the moment in which the pressed bricks *u* have been ejected from the mould openings by the lower dies *t* after the return of the upper dies *r*. During the pressing operation the charging box *b* in its extreme position of rest was filled with pressing mass, whereby each of the three compartments of the charging box contains just enough for one brick. As soon, now, in ejecting the pressed bricks the surfaces of the lower dies are flush with the press table, the piston *y* of the hydraulic cylinder *p* is moved upward by pressure water, the rack *o* causing the pinion wheel *n* to revolve, and the crank *m* of the crank gearing rotates from the rear dead center 1 to the front dead center 2. With the help of the connecting rod *w*, the lever *k* and the connecting rod *l* the rod *h* is shifted to the left into the press. Hereby the transverse arm *g*, just at the beginning of the forward stroke, strikes against the pressed bricks *u* and carries them along until they reach the position indicated by *u*₁ on the left-hand prolongation of the press table outside the 110

press. The stroke s of the rod h is arranged in such manner that, at the end of the stroke, when the crank m of the crank gearing is at the front dead center 2, the lower openings of the compartments of the charging box are exactly over the mould openings f .

The lower dies t are now lowered. The pressing mass resting on the lower press dies hereby follows the movement of the press 10 dies and glides out of the compartments of the charging box into the mould openings. After charging the mould openings the rod h is moved back again by the return of the crank m to the rear dead center 1 until the 15 charging box b has again arrived at its extreme position of rest and is ready to receive another charge of the pressing mass.

The further pressing operations until the pressed bricks are ejected are performed as 20 above described.

On account of the charging box b being run by a crank drive, the crank m of which is turned from one dead center to the other, the forward stroke of the charging box f as 25 well as of the pressed bricks begins with a very low velocity without jerks. The velocity then gradually increases, reaching its maximum approximately at the middle of the course and then diminishing until the stop 30 takes place, again without jerks, at the end of the course.

This method of propelling the charging box and the pressed bricks admits the use of 35 very high average speeds both for the charging box and the pressed brick driver and accordingly the shortest charging times ever attained.

In shoving the charging box by hand as heretofore practiced, it is impossible to avoid 40 sudden changes of speed during the course. The more the operator tries to accelerate the work, the more violent will be the movement at the beginning and the charging box will be suddenly stopped over the mould openings. 45 The pressing mass in the charging box is in this way first set in motion, and the sudden stop of the charging box at the end of the course brings about an accumulation of the pressing mass within the charging box at its 50 front wall. The jerk produced by the sudden stopping of the charging box further brings about a separation of the somewhat dry pressing mass composed of coarse and fine grains, whereby the coarse grains in particular 55 are thrown forward. The result is lack of uniformity of the charge and defective and unevenly pressed bricks.

Even in the above referred to propulsion of the charging box by means of a lever 60 mechanism, so well known in toggle-joint-lever presses, the same drawbacks may be found due to a sudden and jerky starting and stopping.

A gradually increasing velocity at the beginning and a gradually diminishing veloc-

ity at the end of the course may also be attained by connecting the driving rods with suitable curve discs, elliptical pinion wheels and the like, instead of using a crank gearing. The simplest and safest way, however, 70 of ensuring the results aimed at in the invention with respect to the propulsion of the charging box is the use of the crank gearing.

The pressed bricks as ejected from the mold openings may also be removed by hand. 75 The loss of time hereby incurred can, however, be avoided by having the pressed bricks resting on the lower dies shoved off from the press, as above described, by means of a special driver connected with the charging box, as in this case the pressed brick is moved with a gradually increasing velocity at the beginning and with a gradually diminishing velocity at the end of its course, whereby damage to the fresh and consequently sensitive pressed bricks despite the high average velocity cannot possibly take place.

In order to avoid jerks as far as possible when the movement first sets in, it is necessary that the pressed bricks be carried off just as the forward stroke begins. If, accordingly, the charging box is in the immediate vicinity of the mould openings in its extreme position of rest, the pressed bricks can in that case even be shoved off by the charging box itself. If, however, as assumed in the example illustrated in the drawings, there is a considerable distance between the mould openings and the charging box, the advanced charging box would strike with a shock against the pressed bricks. In this case it is accordingly necessary to provide a special driver arranged as near as possible to the mould openings, said driver being moved simultaneously with the charging box with a velocity gradually increasing at the beginning and gradually diminishing towards the end of the course.

As the upper dies must pass the driver with a certain amount of clearance, a certain intermediate space between the pressed bricks and the driver at the beginning of the driver stroke is unavoidable. The driver will, accordingly, have a certain, but nevertheless very low velocity, when striking the pressed bricks. Detrimental effects due to this very insignificant shock can, however, be altogether eliminated by providing the driver with a felt pad. At the end of the forward stroke the pressed bricks finally stop without jerks and can be conveniently removed during the further pressing operation.

What I claim is:

1. A device for charging brick presses, characterized by the combination of a press table or moulding box provided with mould openings, a charging box shiftable thereon and means for propelling the filled charging box with a gradually increasing velocity at

the beginning of its course and with a gradually diminishing velocity at the end of its course when the box approaches the mould openings.

- 5 2. A device for charging bricks presses, characterized by the combination of a press table or moulding box provided with mould openings, a charging box shiftable thereon, means for propelling the filled charging box
10 with gradually increasing velocity at the beginning of its course and gradually diminishing velocity at the end of its course over the mould openings and then back again to its original position of rest, and a driver carry-

ing the pressed bricks away from the mould 15 openings, said driver being propelled in precisely the same manner as the charging box.

3. A device for charging brick presses, characterized by the combination of a press table or moulding box provided with mould 20 openings, a charging box shiftable thereon, a driver for removing the pressed bricks and a crank gearing for moving the charging box and the driver to and fro.

In testimony whereof, I have signed my 25 name to this specification at Cologne, Germany, this 26th day of February, 1927.

HUGO ACKERMANN.