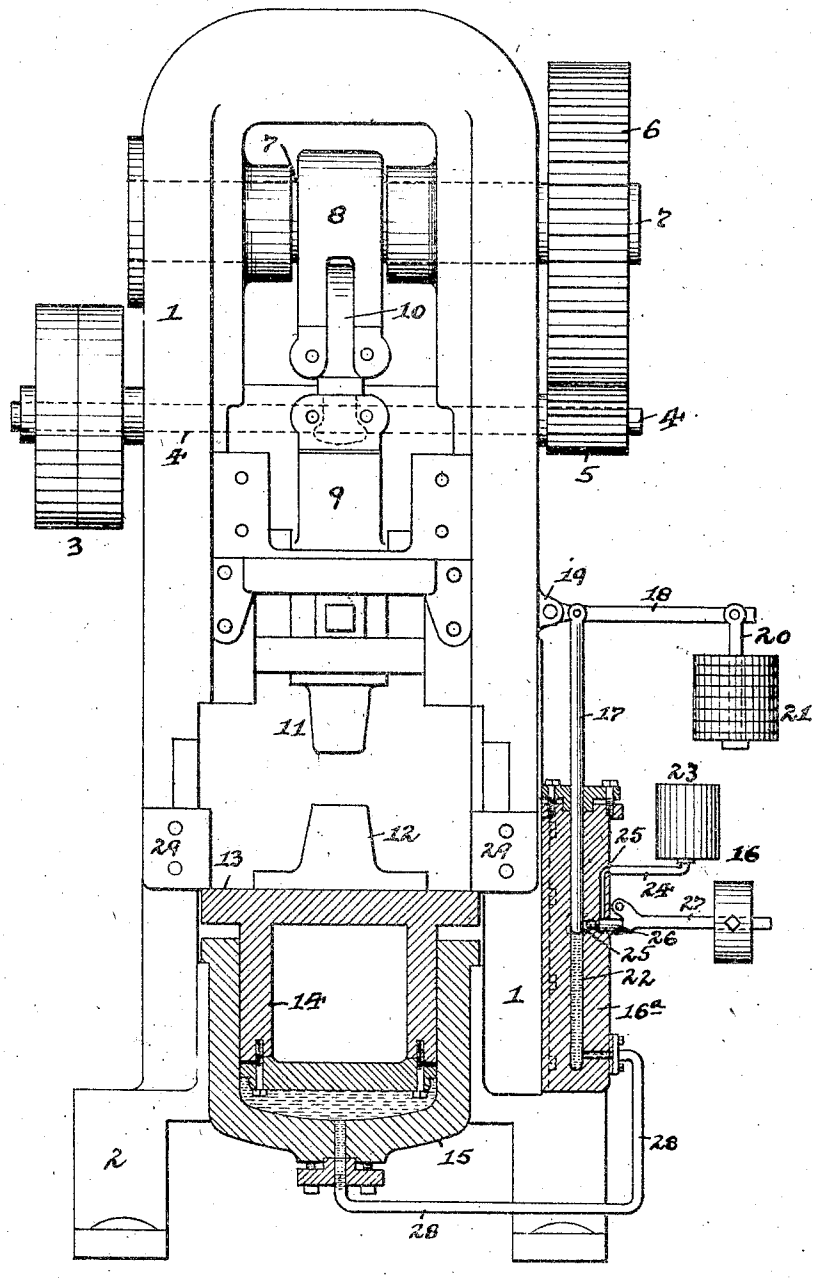
J. J. KINZER.

PRESS.

APPLICATION FILED OCT. 19, 1912.

1,077,840. Patented Nov. 4, 1913.



Witnesses
T. A. Humphries.
B. J. Brooks.

Inventor
John Jacob Kinzer
By J. N. Cooke,
Attorney.

UNITED STATES PATENT OFFICE.

JOHN JACOB KINZER, OF WILDWOOD, PENNSYLVANIA.

PRESS.

1,077,840. Specification of Letters Patent. Patented Nov. 4, 1913.

Application filed October 19, 1912. Serial No. 726,750.

To all whom it may concern:

Be it known that I, JOHN JACOB KINZER, a resident of Wildwood, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Presses; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to presses and more particularly to that class of machines known as geared presses or stamping machines having a positive stroke of their plungers and operated either continuously by power or by a foot treadle.

The object of my invention is to provide a cheap, simple and efficient form of geared press which when being used for stamping, pressing or punching will not be liable to be broken in some of its parts by reason of the excessive thickness or quantity of the material between the dies on the same.

In the class of geared presses being used at the present day the bolster plate carrying the lower die is perfectly stationary and the upper die moves downward by a cam or eccentric motion so as to reach a certain fixed distance above the lower die before starting to travel upward again. There is, therefore, just sufficient space between the respective dies for the material to be punched, pressed or stamped. In case the material happens to be too thick or there is an excessive amount of the same, in case of pressing, some part of the machine must give way or break in order to allow the cam or eccentric to complete its revolution and thus bring the upper die to its raised or upper position. The part broken is often a very expensive die or some part of the machine which is difficult to repair so that great expense is incurred and there is great danger of injury or loss of life from the flying of the broken die or parts of the machine. By making the bolster plate movable, *i. e.* adapted to be set at any pressure after which the same will yield to the action of the cam I prevent the breaking of the machine and injury to persons likely to flow from the same.

My invention consists, generally stated, in the novel arrangement, construction and combination of parts as hereinafter more specifically set forth and described and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to construct and use my improved geared press I will describe the same more fully referring to the accompanying drawing in which the figure shows a front elevation of my improved geared press with some of the parts in section.

As illustrated in the drawing my improved geared press is mounted in a housing 1 and is provided with a suitable base 2 for supporting the same. On one side of the housing 1 are the ordinary pulleys 3 for connection by belt to any convenient source of power and such pulleys are mounted on a shaft 4 which extends through the housing 1 and is provided with a small pinion 5 at its other end. The small pinion 5 meshes with a large gear 6 which is mounted on a shaft 7 above the shaft 4 and which is journaled in the housing 1. Between the sides of the housing 1 is a heavy cam or eccentric 8 which operates on the shaft 7 and is connected to the die mechanism 9 by means of a connecting rod 10 which allows for the cam motion of said parts. An upper die 11 is adjustably mounted in the die mechanism 9 and such die may be of any size or style, such as for punching, pressing, stamping or anything adapted to this particular style of machine. Below the upper die 11 is the lower die 12 which is mounted on the bolster plate 13; and in other machines such bolster plate is ordinarily stationary being securely fixed to the housing 1, while in my improved press such bolster plate is mounted on a plunger 14 which operates in a hydraulic cylinder 15. The hydraulic cylinder 15 is securely attached to the housing 1 and may be of any area desired in order to get the necessary pressure for the particular class of work contemplated.

On one side of the housing 1 is an accumulator mechanism 16 which consists of a cylinder 16^a which has a rod plunger 17 adapted to operate therein and such rod plunger is connected at its upper end to a lever 18 which lever is secured at its inner end to a lug 19 on the side of the housing 1 and has a weight bar 20 at its other end upon which any desired number of weights 21 may be hung in order to give the required pressure. The lever 18 may be of any length desired in order to multiply the pressure exerted at the lower end of the rod plunger 17. The cylinder 16^a has a water chamber 22 in the same and water is supplied thereto from a water tank 23 communicating therewith

by means of a pipe 24 and a passageway 25 in the side of said cylinder. The passageway 25 has a small valve 26 operating within the same and such valve is held in place by means of a weighted lever 27 bearing against the same in order to prevent the water in the water chamber 22 from being passed back into the tank 23 under ordinary circumstances as later explained. At the bottom of the cylinder 16ª and communicating with the water chamber 22 is a pipe 28 which extends around to the bottom of the hydraulic cylinder 15 and communicates therewith.

Immediately above the bolster plate 13 and secured to the side of the housing 1 are a pair of stop plates 29 which are adapted to limit the upward movement of the bolster plate, as later explained.

The operation of my improved geared press is as follows:—The upper and lower dies 11 and 12 are adjusted to position in the die mechanism 9 and on the bolster plate 13 respectively and are set so as to give the necessary clearance for the material when the bolster plate 13 is against the stop plates 29. Weights 21 are now placed on the weight bar 20, the water chamber 22, the pipe 28, and lower part of the hydraulic cylinder 15 having been filled with water. The number of pounds weight placed on the weight bar 20 will depend upon the number of pounds pressure that is desired to be exerted on the bolster plate 13 or lower die 12 as the length of the lever 18 will multiply the amount of pressure exerted at the lower end of the rod plunger 17 and as the area of the hydraulic cylinder is much greater than the area of the rod plunger 17 the pressure of the water in the said cylinder will be again multiplied. In this manner the pressure on the plunger 14 may be regulated as desired by the addition or withdrawal of the weights 21 on the weight bar 20. The machine is now set in motion and the cam or eccentric 8 will cause the upper die to be pushed downward so as to engage the material to be pressed, stamped or punched and such die must pass downward the entire distance to which the same is set in order to allow the cam or eccentric to make its complete revolution and thus raise the said die to its raised position. This action of the cam or eccentric 8 is exerted with a certain number of pounds pressure so that if a repelling force of greater pressure were exerted against the same some part of the machine must break in order to allow the eccentric or cam 8 to complete revolution. In my improved gear press the amount of pressure exerted against the bolster plate 13 by the hydraulic action against the bottom of the plunger 14 is slightly less than the pressure exerted by the cam or eccentric 8 so that in case the material being acted upon by the dies 11 and 12 is too thick or the quantity of the same is too great the lower die 12 on the bolster plate 13 will be pushed downward, the water in the hydraulic cylinder 15 will be pressed through the pipe 28 into the water chamber 22, will press the rod plunger 17 upward, enter the passageway 25, press the valve 26 outward and will pass through the pipe 24 into the water tank 23. The cam or eccentric 8 will thus be allowed to pursue its ordinary revolving course and the upper die 11 will thus be raised whereupon the defective material may be removed and the machine will not be injured in any way. After the water has been expelled from the hydraulic cylinder 15 and connecting parts the bolster plate 13 must be raised against the stop plates 29 and the hydraulic cylinder again filled with water before the machine is ready for operation.

The stop plates 29 will always limit the raised position of the bolster plate 13 and lower die 12 by extending outward and engaging with the upper surface of the same.

In cases where it is necessary to have some die mechanism immediately below the lower die 12 two or more hydraulic plungers may be used by being spaced at the corners of the bolster plate or one at each end of the same.

My improved geared press will be of special advantage in cases where it is desired to get a certain definite pressure upon the article being acted upon, as in such a case the weight may be regulated to give the desired pressure an excess of which exerted by the upper die will cause the bolster plate 13 to be lowered so that such pressure cannot be exceeded as against the material being acted upon.

In some cases it has been the practice to make one particular part of the machine weak so that when there was any opposition to the action of the dies such weak part would break and thus not injure any other part of the machine or the dies, but this practice is very unsatisfactory as it may require considerable time to make the repairs or the necessary new parts may not be at hand. It will, therefore, be seen that with the use of my improved gear press the likelihood of the gear parts being injured or broken by the action of the dies on the material being acted upon is entirely eliminated and the regulation of the accumulator pressure makes its use adaptable to all kinds of gear press work. The elimination of the possibility of breaking the machine will thus save considerable expense and annoyance and will render it safe to work around such machine without fear of serious injury or loss of life.

Various modifications and changes in the design, operation and construction of my improved geared press as also the substitution of compressed air, oil or other liquid

for the operating fluid, may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim as my invention and desire to secure by Letters-Patent is:—

1. A geared press having a die adapted to be raised and lowered, another die for cooperating with said first-named die, a bolster plate for supporting said last-named die, a plunger connected to said plate and operating within a cylinder, and an accumulator device consisting of a cylinder connecting with said first-named cylinder and having a rod plunger therein for multiplying the pressure exerted below said plunger to permit said bolster plate and last-named die to yield when the pressure of said first-named die becomes excessive.

2. A geared press having a die adapted to be raised and lowered, another die for cooperating with said first-named die, a bolster plate for supporting said last-named die, a plunger connected to said plate and operating within a cylinder, an accumulator device consisting of a cylinder connecting with said first-named cylinder and having a rod plunger therein for multiplying the pressure exerted below said plunger to permit said bolster plate and last-named die to yield when the pressure of said first-named die becomes excessive, and means for fixing the normal position of said bolster plate and last-named die.

3. A geared press having a die adapted to be raised and lowered, another die for cooperating with said first-named die, a bolster plate for supporting said last-named die, a plunger connected to said plate and operating within a cylinder, an accumulator device consisting of a cylinder having a rod plunger therein connected to a lever and weights on said lever at a distance from said rod plunger for multiplying the pressure exerted below said plunger to permit said bolster plate and last-named die to yield when the pressure of said first-named die becomes excessive.

4. A geared press having a die adapted to be raised and lowered, another die for cooperating with said first-named die, a bolster plate for supporting said last-named die, a plunger connected to said plate and operating within a cylinder, an accumulator device consisting of a cylinder having a rod plunger therein connected to a lever, and weights on said lever at a distance from said rod plunger for multiplying the pressure exerted below said plunger to permit said bolster plate and last-named die to yield when the pressure of said first-named die becomes excessive, and means for fixing the normal position of said bolster plate and last-named die.

5. A geared press having a die adapted to be raised and lowered, another die for cooperating with said first-named die, a bolster plate for supporting said last-named die, a plunger connected to said plate and operating within a cylinder, an accumulator device consisting of a cylinder of smaller diameter than said first-named cylinder, said last-named cylinder having a rod plunger therein connected to a lever, and weights on said lever at a distance from said rod plunger for multiplying the pressure exerted below said plunger to permit said bolster plate and last-named die to yield when the pressure of said first-named die becomes excessive.

6. A geared press having a die adapted to be raised and lowered, another die for cooperating with said first-named die, a bolster plate for supporting said last-named die, a plunger connected to said plate and operating within a cylinder, an accumulator device consisting of a cylinder of smaller diameter than said first-named cylinder, said last-named cylinder having a rod plunger therein connected to a lever, weights on said lever at a distance from said rod plunger for multiplying the pressure exerted below said plunger to permit said bolster plate and last-named die to yield when the pressure of said first-named die becomes excessive, and means for fixing the normal position of said bolster plate and last-named die.

In testimony whereof I, the said JOHN JACOB KINZER, have hereunto set my hand.

JOHN JACOB KINZER.

Witnesses:
T. B. HUMPHRIES,
J. N. COOKE.