

Sept. 8, 1925.

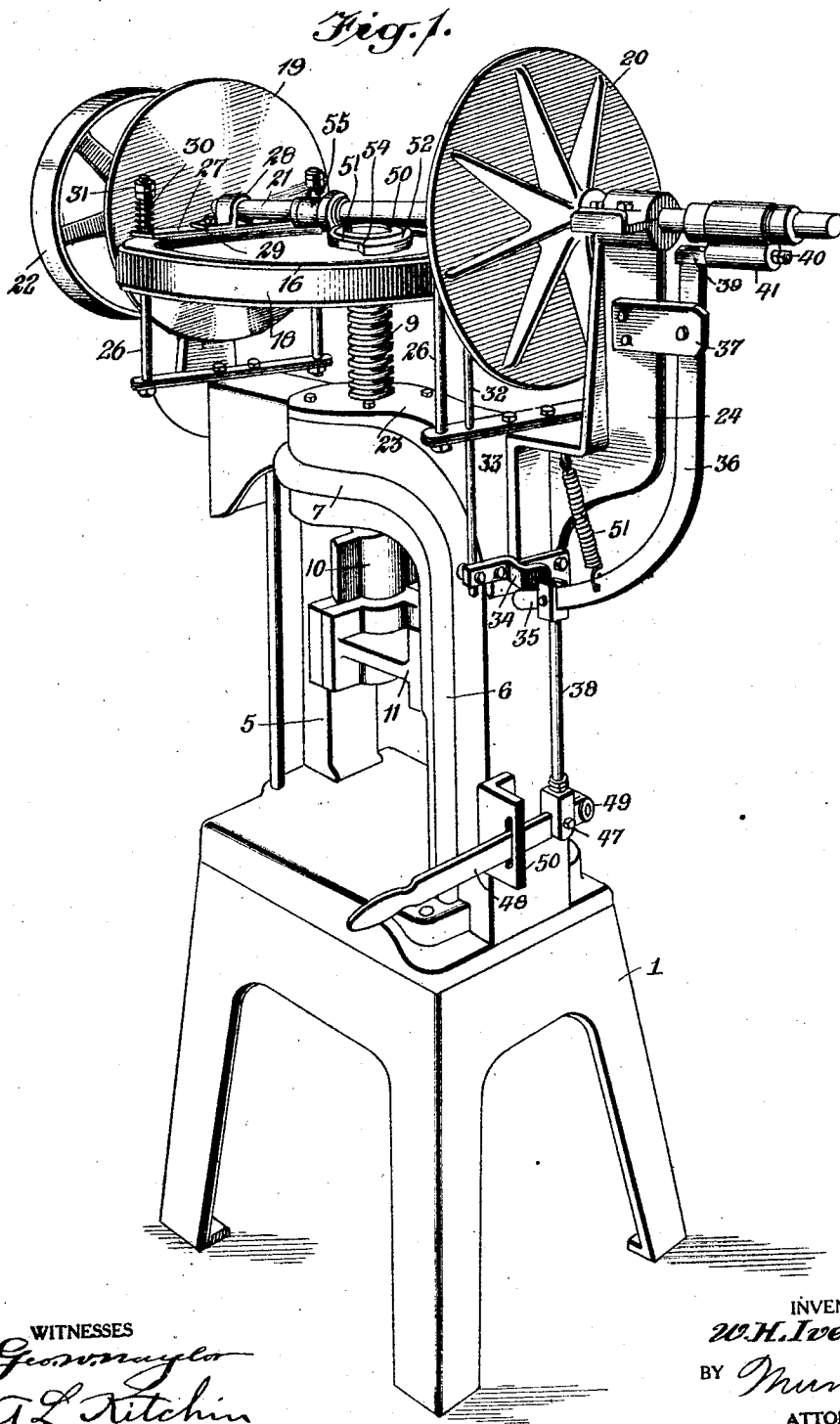
1,553,243

W. H. IVENS

TILE PRESS

Filed Jan. 17, 1925

3 Sheets-Sheet 1



WITNESSES
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3 Sheets-Sheet 2

Fig. 2.

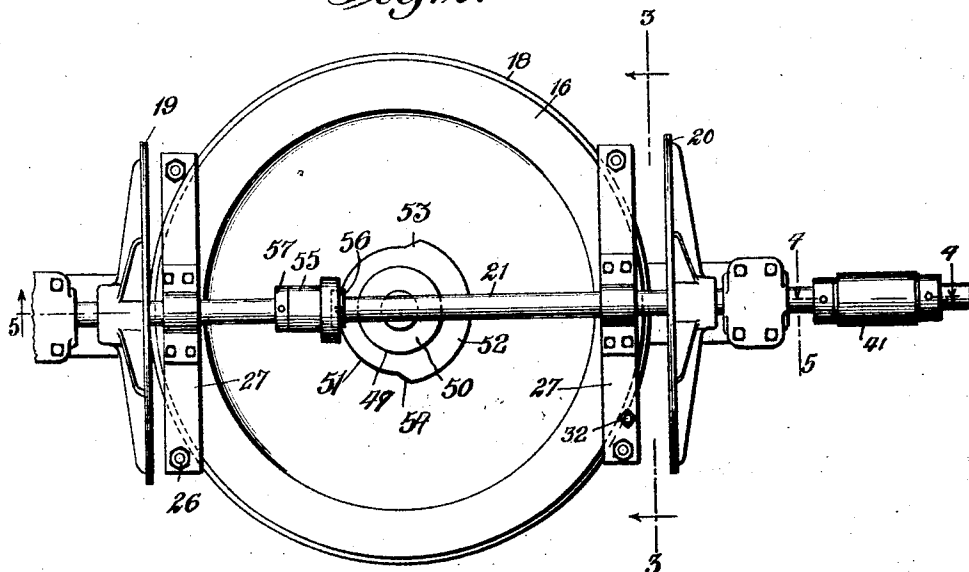


Fig. 3.

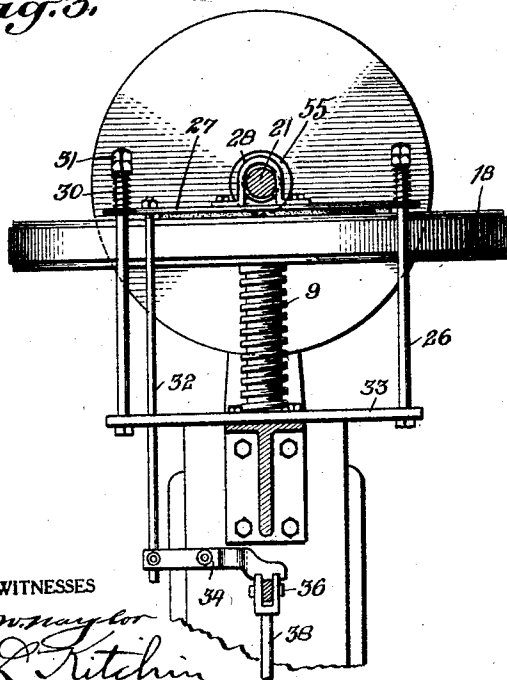
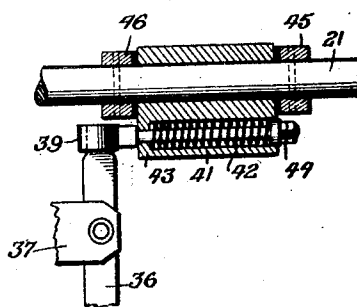


Fig. 4.



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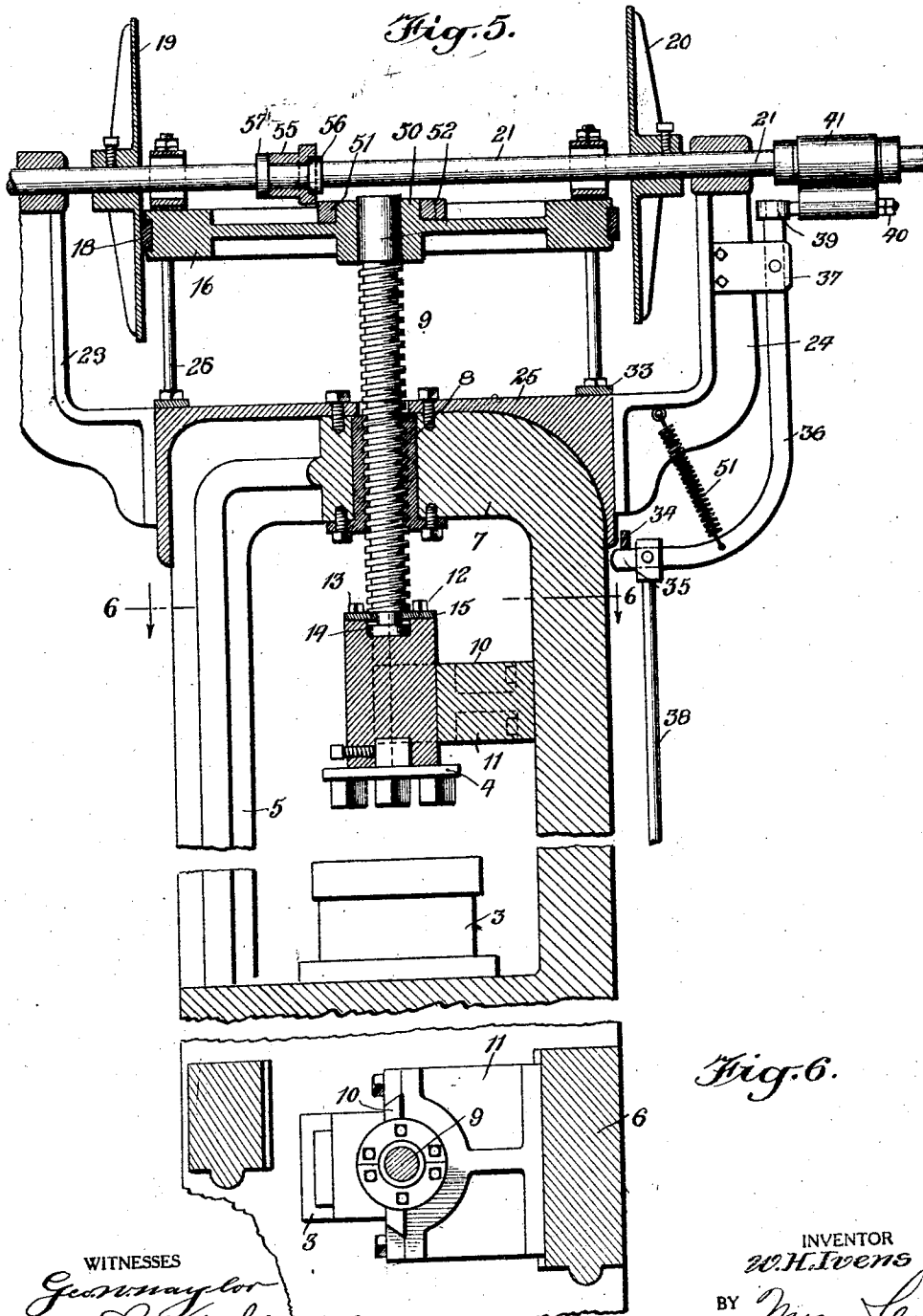
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3 Sheets-Sheet 3



WITNESSES

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Patented Sept. 8, 1925.

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UNITED STATES PATENT OFFICE.

WILLIAM HENRY IVENS, OF TRENTON, NEW JERSEY.

TILE PRESS.

Application filed January 17, 1925. Serial No. 3,157.

To all whom it may concern:

Be it known that I, WILLIAM H. IVENS, a citizen of the United States, and a resident of Trenton, in the county of Mercer and State of New Jersey, have invented a new and Improved Tile Press, of which the following is a full, clear, and exact description.

This invention relates to presses of a type known as "dust presses" for pressing tile, porcelain and other articles and has for an object to provide an improved construction wherein power may be used efficiently.

Another object in view is to provide a tile press which utilizes power and which is provided with controls for giving the desired blow when the press is on the compression stroke but which will not injure the parts thereby and also which will not injure the parts on the return stroke.

Another object in view is to provide a power attachment to hand tile presses wherein most of the hand press is used and power provided for operating the same efficiently.

A still further object, more specifically, is to provide power means for tile presses wherein efficient driving means is provided and an automatically actuated brake for stopping the moving parts of the press on the return stroke.

In the accompanying drawings—

Figure 1 is a perspective view of a press disclosing an embodiment of the invention.

Figure 2 is a top plan view of the structure shown in Figure 1.

Figure 3 is a sectional view through Figure 2 on line 3—3.

Figure 4 is a detail fragmentary sectional view through Figure 2, approximately on line 4—4.

Figure 5 is a longitudinal vertical sectional view through Figure 2, approximately on line 5—5.

Figure 6 is a transverse sectional view through Figure 5, approximately on line 6—6.

This application is a continuation in part of my co-pending application for Letters Patent on presses, filed February 10, 1922, Serial #535,557.

In tile presses now in common use, manually actuated means have been provided for operating the compression screw. This construction, therefore, necessitates very hard work and, consequently, it has been found difficult to find workmen who will operate

such presses for any length of time. Power presses have been provided but in view of the frequent reversal of the compression screw the action of the known power presses has not been entirely satisfactory as the stopping of the compression screw oftentimes results in injury to the mechanism. In the present invention, it is aimed to utilize, if desired, a known hand press and apply power thereto in such a manner as to properly operate the press without in any way injuring the power mechanism.

One embodiment of the invention has been shown in the accompanying drawings to which reference is now made by numerals. As indicated in Figure 1, the stand or platform 1 is provided in order that the base 2 may be at a proper elevation for the workmen to perform his work efficiently. On the base 2 is arranged a mold 3 which may be applied and removed as desired and which co-acts with a die 4 for pressing tile dust or other material to the desired shape. A pair of uprights 5 and 6 extends upwardly from the base 2 and is usually cast integral therewith, said uprights having a cross piece or top section 7 in which an internally threaded sleeve 8 is positioned as shown in Figure 5. This sleeve is adapted to receive the thrust or power screw 9 which is connected to the sliding head 10, said head sliding in a suitable bracket 11 rigidly secured to the up-standing upright 6.

As shown in Figure 5, there is a loose motion between the head 10 and the screw 9. This is produced by the head having a countersunk portion or bore 12 in which the restricted section 13 of screw 9 extends, said restricted section being provided with an annular flange 14 which flange is overlapped by the ring 15. The flange 14 is of less thickness than the bore 12 so that when the parts are moving downwardly, the flange 14 will cause the head 10 to press the die 4 in place and will then re-bounce through the resiliency of the various parts including the section 7 and threads of the screw 9. This re-bouncing action may also include a reversal of the screw though ordinarily this is not the case. It will be understood that this screw and the head 10 moves down with increasing rapidity and strikes a very heavy blow. As these parts are suddenly stopped, a re-bounce occurs which is of great advantage as it releases the head 10 from pressure momentarily and, consequently, al-

lows the head to escape from the die 3. Well known means now in common use have been provided to allow the air to escape from the die 3 as head 10 enters. Secured to the screw 9 at the upper end is a power wheel 16, said power wheel being provided with a web 17 whereby the hand of the operator cannot be passed through the wheel for any purpose. This results in less injury to the workmen.

On the periphery of wheel 16 is arranged a friction band 18 adapted to engage the friction disks 19 and 20, which disks are rigidly secured to a power shaft 21, said power shaft being driven by any suitable source of power through a pulley 22. This shaft is supported by bearings carried by the brackets 23 and 24, which brackets are secured to the cap or casting 25, said cap or casting being bolted or otherwise rigidly secured to the section 7 where the power member is mounted on a hand machine. Where a complete new machine is built, this cap or casting 25 is made integral with the section 7. A plurality of pairs of rods 26 are connected with the cap 25 and extend upwardly beyond the wheel 16 and through the brakes 27, which brakes carry U-shaped members 28 straddling the shaft 21. In the drawing, two sets of brakes 27 are shown and each set is provided with a brake shoe 29 for frictionally engaging the upper surface of the wheel 16 to produce a proper braking action. Springs 30 surround the rods 26 and rest against the nuts 31 and against the brakes 27 for resiliently holding the brakes in a given position. When the wheel 16 moves upwardly, it also is rotating and will be checked in its rotary movement by the shoes 29, which shoes will resist movement to a greater and greater extent as they are raised by reason of the compression of the springs 30. This resistance will produce a gradual increasing or braking action whereby the wheel is stopped before it can strike the shaft 21. By reason of the fact that the brake structure is connected to the frame through the cap 25, the upward thrust of the power wheel is transferred to the framework which is strong enough to withstand it. It will be noted that the brakes are loosely mounted on the power shaft but this is merely to stabilize the brakes in that the U-shaped members 28 will not permit the brakes to fall below a certain point. It will be evident that the U-shaped members could be eliminated as they do not function in any way to assist the brake in functioning as a brake.

In order to automatically disconnect the power from the wheel 16 as it approaches the shaft 21, a pull rod 32 is connected with one of the brakes 27 and extends downwardly through the bar 33 to a desired point where it is pivotally connected with a piv-

otally mounted lever 34 (Figures 1 and 3). This lever bears against the end 35 of the shift arm 36. The shift arm is pivotally mounted at 37 and near end 35 is connected with the link 38 while at the opposite end it is pivotally connected with the head 39 of rod 40. Head 39 normally bears against the sleeve 41 while a spring 42 (Figure 4) is arranged in this sleeve and bears against the end 43 and against the nut 44 whereby when the arm 36 moves in one direction it brings the spring 42 under tension and when it moves in the opposite direction it will press against the sleeve 41 for moving the same and also for moving the shaft 21 longitudinally. This sleeve is rotatably mounted on the shaft 21 between stops 45 and 46 whereby any longitudinal movement of the sleeve will be communicated directly to the shaft and as the friction wheels 19 and 20 are connected to the shaft, these wheels will be moved as the shaft is moved. When the power wheel 16 moves upwardly and raises the brakes 27, rod 32 will be pulled and end 35 of arm 36 depressed. This will cause the arm to bring the spring 42 under tension and, consequently, shift the parts from the position shown in Figure 5 towards the left until friction wheel 19 is out of engagement with the wheel 16. In this way the brakes 27 act in the double capacity of braking means for stopping the wheel 16 and also as actuating means for disconnecting the power from wheel 16.

The link 38 at the lower end is pivotally connected at 47 with a hand lever 48, said hand lever being in turn pivotally mounted at 49 and guided in a suitable bracket 50. When the hand lever 48 is swung upwardly, the power will be turned on for moving the screw 9 and associated parts upwardly. If the lever 48 is moved downwardly, the screw 9 will also be moved downwardly. A retractile spring 51 is connected with arm 36 and the bracket 24 and acts to automatically move certain parts so that the friction wheel 19 will engage the wheel 16 and cause the wheel 16 to move upwardly. It will thus be seen that if the workman should accidentally release the lever 48, the automatic action of the machine will be to move the power screw 9 upwardly and to then throw off the power completely as the rod 32 comes into action.

In order to provide an additional safety attachment which functions substantially simultaneously with the brakes, a cam wheel 49 is rigidly secured to the hub 50 of the power wheel 16 in any suitable manner, as for instance, by being keyed thereto. This cam wheel is provided with a narrow section 51 and a wide section 52 with inclined surfaces 53 and 54. This cam co-acts with a freely rotatable sleeve 55 mounted on the shaft 21 and held against independent lon-

itudinal movement by collars 56 and 57 pinned or otherwise rigidly secured to shaft 21. The parts are of a proper size and are so proportioned that when the power wheel 16 moves upwardly it will just begin to contact with the brakes as the inclined cam face 53 engages the vertical face of the sleeve or spool 55. As the power shaft 16 continues to rotate, the cam 52 acting through face 53 will push the spool 55 and shaft 21 longitudinally a short distance so as to move the friction disk 19 out of engagement with the wheel 16. It will thus be seen that the action of cam 49 is to positively throw off the power as the brakes begin to function and the section 52 of the cam acts to maintain the shaft 21 and associated parts in their shifted position so that there is no chance of disk 19 coming again into action. The section 52 is proportioned to hold the disk 19 out of contact with the wheel 16 until the wheel 16 has been stopped by the brakes. When the power is again turned on by shifting disk 20 into operative position, wheel 16 will naturally move downwardly but perform its proper function and when disk 19 is allowed to again function the wheel 16 will be caused to move upwardly and the cam 49 and associated parts caused to function again in the same manner.

In operation, the mold 3 is placed in position with the dust therein and the lever 48 depressed. This will cause the power from shaft 21 and disk 20 to be communicated to the wheel 16. It will be noted that the wheel 20 will be first brought into engagement with the wheel 16 near the center of the friction wheel 20, whereby the rotation of the wheel 16 will be slow at first and will gradually increase in speed as it moves downwardly by reason of the fact that the periphery of wheel 16 will approach the periphery of the friction wheel 20. This increase in speed will produce the desired blow necessary to compress the tile dust. After the compressing operation has been completed, the workman may need only release the lever 48 and the parts will quickly move upwardly and become idle as soon as the pull rod 32 operates. This operation is carried on as often as desired and, consequently, the amount of work produced in a given time will be greatly increased over hand operation while the power is always under control.

What I claim is:

1. In a tile press, a screw having a friction wheel on its upper end, a slidable power shaft above the wheel, friction disks on the shaft, a brake mounted on the shaft to engage said friction wheel, a pivoted lever, a rod connecting the brake with one end of the lever, a pivoted shift arm having one end extending under the free end of the

lever, manually operated means for operating the shift arm, a sleeve carried by the power shaft, and a spring pressed rod in the sleeve and to which the other end of the shift arm is pivoted.

2. In a tile press, a screw having a friction wheel on its upper end, a slidable power shaft above the said wheel, friction disks on said shaft, a brake loosely mounted on the shaft to engage the friction wheel, a pivoted lever, a rod connecting the brake with one end of said lever, a pivoted and spring pressed shift arm having one end extending under the free end of the said lever, an operating lever, a link connecting the lever with the shift arm, a sleeve loosely mounted on one end of the power shaft between collars thereon, and a sliding and spring pressed rod in the sleeve and to one end of which the other end of the shift arm is pivoted.

3. The combination in a tile press having a frame, an axially movable power wheel, a power shaft, and means for causing the power shaft to operate the power wheel, of a brake engageable by said power wheel, and connecting members secured to said frame and said brake whereby the exertion of the braking action upon the engagement of said power wheel with the brakes is transmitted to said frame.

4. The combination in a tile press having a frame, an axially movable power wheel, a power shaft and means for causing the power shaft to operate the power wheel, of a brake engageable by said power wheel, and resilient connecting means secured to said frame and said brake whereby the action of the power wheel as it engages the brake is transmitted to said frame with a gradually increasing tension.

5. In combination with the axially movable power wheel, power shaft and frame of a press; a brake engageable by the power wheel situated between the power wheel and shaft, and means by which the brake is mounted upon the frame so that the exertion of a braking action upon approach of the power wheel is transmitted to and spent solely upon the frame and is not imparted to the power shaft.

6. In combination with the axially movable power wheel, power shaft and frame of a press; a brake engageable by the power wheel situated between the power wheel and shaft, means by which the brake is mounted upon the frame so that the exertion of a braking action upon approach of the power wheel is transmitted to and spent solely upon the frame and is not imparted to the power shaft, and means on part of the brake loosely fitted over the shaft to check the tendency of the brake to follow the rotating power wheel during said braking action.

7. In combination with the axially movable power wheel, power shaft and frame of a press; a brake extending across the wheel between the shaft and power wheel, supporting means mounted upon the frame including rods extending through the brake, and yieldable abutment means on the rods transferring the exertion of the braking action of the wheel against the brake to the frame thereby protecting the power shaft.

8. In combination with the power wheel, power shaft and frame of a press; a brake situated between the wheel and the shaft, supporting means mounted upon the frame including a rod extending through the brake, yieldable abutment means on the rod transferring the exertion of a braking action of the wheel against the brake to the frame thereby protecting the power shaft, and a brake portion straddling the shaft to prevent side play of the brake.

9. Apparatus of the character described comprising a frame, a power wheel and screw; a power shaft, raising and lowering driving disks upon said shaft for contacting the power wheel, means including a shift arm for axially shifting the power shaft and disks, and a yieldable connection between the shift arm and power shaft including a rod with which the arm has engagement, a sleeve carrying the rod upon the shaft, and a spring bearing between the sleeve and rod.

10. A power attachment for mechanically driving a hand operated tile press comprising a frame having a screw and power wheel, a cap to be secured upon the frame, a power shaft journaled upon the cap, raising and lowering driving disks upon said shaft for contacting said power wheel, means including a shift arm having a fixed amount of movement for axially shifting the power shaft and disks, a yieldable connection between the shift arm and power shaft including a rod with which the arm has engagement, a sleeve carrying the rod upon the shaft, and a spring bearing between the sleeve and rod; and means adjustable upon

the rod against the spring to produce variations of pressure of the lowering disk against said substituted power wheel irrespective of the fixed movement of said shift arm.

11. In a tile press, a screw having a friction wheel at its upper end, a slidable power shaft above said friction wheel, a pair of disks rigidly secured to said shaft and spaced a further distance apart than the diameter of said wheel, manually actuated means for shifting said shaft for causing one of the friction disks to engage said wheel for rotating the wheel in such a direction as to cause the same to move downwardly, automatically actuated means for causing the other disk to engage said wheel for reversing the movement thereof and causing the same to move upwardly, and means including a cam operated by said wheel for moving said second mentioned disk to an inoperative position.

12. In a tile press, a vertically movable screw, a power wheel rigidly secured to the upper end of said screw, a pair of friction disks adapted to be brought into contact with said power wheel, one of said disks acting to rotate the wheel in such a direction as to cause the screw to move the wheel downwardly and the other disk acting on the wheel to cause the screw to move the same upwardly, a braking structure for stopping the upward movement of said power wheel, and a cam secured to said power wheel proportioned and positioned to move said second mentioned disk out of engagement with said power wheel as the power wheel engages said braking structure.

13. The combination of a pair of axially movable shafts, engaging driving and driven elements respectively carried thereby, means including a loose sleeve swiveled upon the driving shaft, and a cam fixed in relation to the driven shaft and elements engaging the sleeve upon advancement to axially move the driving shaft thereby to disengage said elements.

WM. HENRY IVENS.