ATTACHMENT FOR STEEL PLATES AND DIE PRESSES

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This invention relates to a new and useful improvement in means for printing or embossing on glass, china, porcelain, enamel or other frangible articles.

It is especially intended for attachment to an automatic steel die and plate press but it is not limited to use with an automatic press. The ordinary steel die and plate press is for a machine which is intended for printing or embossing cards and the like from an intaglio steel or copper die plate but it is not adapted for frangible articles.

The preferred method of printing or embossing on frangible articles of the kind above mentioned is to provide in combination with the steel or copper die a plunger having a pad of gelatin or other suitable resilient material provided with a surface adapted to take up ink from the metal die so that the design which is cut in the die may be transferred to the printing surface of the plunger by bringing said printing surface into pressing engagement with the die to take up the design after the die has been inked, then raising the plunger and withdrawing the die, then positioning the article which is to be embossed or printed under the plunger, then operating the plunger to bring the printing surface on to which the design has been transferred from the die into engagement with the article to be printed. By this process the printing or embossing member will do no injury to the work as would be occasioned if the hard die were brought directly into engagement with the work.

The broad idea of the use of the resilient pad or printing surface to first take up the design from the die and then to transfer the design to the work is not intended to be included in the present application. The object of the present invention is to provide a plurality of printing surfaces which may be operated in such manner that while one of the printing surfaces is operated to take up ink from the die, another printing surface previously inked may simultaneously therewith be brought into pressing engagement with the work and then at the next operation the pad which has just done the printing may be inked by contact with the die and a pad which has been inked at the same time with said previous printing operation by the first pad will print on another article placed in proper position therefor.

The invention will be fully understood from the following description when taken in connection with the accompanying drawings, and the novel features thereof will be pointed out and clearly defined in the claims at the close of this specification.

In the drawings:

Fig. 1 is a side elevation, partly in section, of a device embodying the invention.

Fig. 2 is a section on line 2—2, Fig. 1.

Referring to the drawings, there is shown at 10 a frame or casting to hold the working parts, said frame having an overhanging arm 11 provided with a head 9 formed with a guide opening through which a vertically reciprocable plunger 12 extends. Said plunger is connected with any suitable connection for giving it a vertical reciprocation. As shown in the drawings, it is connected by a crank 13 and crank pin 4 with an eccentric 15.

The said plunger 12 is hollowed out to receive the shank or stem 14 of the printing member. The said shank or stem 14 is provided at its lower end with two oppositely extending arms 15, 15, each of which carries a printing pad 16. The pad 16 is preferably composed of rubber or other resilient material provided on its under surface with a facing 17 of gelatine or other suitable yielding material adapted to take up ink from a die when brought into pressing contact therewith and to transfer the design to the work when the printing pad is brought into pressing engagement with the work.

The said shank or stem 14 is cylindrical and adapted to rotate in a cylindrical bore of the plunger 12. The said stem is formed with two diametrically opposite notches 18 which are engaged by the spring seated pins 19 which project from transverse apertures 20 in the wall of the plunger 12. The plunger 12 is formed with two tubular bosses 21 onto each of which is screwed a cap 22 thus forming a box in which is contained a spring 23, one end of which abuts against the head of the cap and the other end of which engages the head of the pin 19. The said springs normally press the pins 19, 19 into the notches 18, 18 in the shank 14. The said notches are bevel faced and the said pins have bevelled ends so that the pins will ride...
out of said notches when a slight force is applied to rotate the shank 14 on its axis. The printing member may easily be turned on its axis by hand or other means. As soon as the shank 14 has made a half rotation so as to bring the said pins again into registration with the notches in the stem, the springs will cause said pins to snap into the notches and hold the stem in its newly adjusted position until pressure is applied to again rotate it.

Mounted in a guide or track in a bed 24 is a die carrier 25 in which is mounted a die 26 on which is formed in intaglio the design to be embossed upon the work. Said carrier 26 is movable in said track to bring it out from under the printing member to be inked and then to be moved back into operative position beneath the printing pad for transferring its design to the pad. Any suitable mechanism may be employed for this purpose. As shown in the drawings, the die carrier 25 is connected with a rack 27 which is engaged by a pinion 28 mounted on a rotary shaft 29. A rotary inking roller 30 is mounted on a shaft 31 so located that when the die moves out from under the printing member, it will be engaged by the inking roller 30 which will fill the engraved depressions in the die with ink. On its return movement, it will pass under a wiper 32. As shown in the drawings, this wiper 32 is a band of paper running under guide rollers 33, 33, the lower run of said band being at the right elevation to wipe the surplus ink from the die as it passes under the wiper.

A work holder 34 is mounted in the bed 24 in position directly beneath one of the positions of the printing pads. This work holder is preferably adjustable so that it may be brought into proper relation to the printing member. The adjusting means shown comprise two adjusting screws 35, 35 which engage opposite ends of the work holder. The work is shown at 36 placed in position beneath one of the printing members 16, as shown in Fig. 1.

At each half rotation of the eccentric 15 the plunger 12 will be caused to descend carrying with it the printing press so that one of the printing pads will be pressed down against the die 26 and at the same time the other printing pad will come in contact with the work 36. At the next half rotation of the eccentric, the plunger will rise carrying with it the two printing members. Mechanism not herein shown is preferably provided for timing the movement of the die carrier with relation to the movement of the plunger to cause the die carrier to move to the right as viewed in Fig. 1, when the printing member rises so as to carry the die back under the inking roller 30 and then back again under the wiper and into position for the next printing operation.

During this reciprocating movement of the die carrier, the operative may easily rotate the printing press on its axis by a gentle pressure on one of the arms 15 as a lever. Any other suitable means may be employed to rotate the press. As soon as it has made a half rotation, the pins will snap back into the notches and bring it to a stop, thus properly positioning the printing members for the next inking and printing operation respectively. When automatic mechanism is employed for reciprocating the plunger and the die carrier, the operative should take care to time his rotating operation so that the printing members will be brought into proper position before the automatic mechanism causes the plunger to descend. He will also take care to remove the work which has already been printed from the work holder and replace it by a fresh article to be printed. The automatic timing and actuating mechanism is not essential to the present invention and it is therefore not deemed necessary to show the same in the drawings.

What I claim is:

1. In a machine of the character described, a vertically reciprocable plunger having connected therewith a rotatable holder for the printing members, a plurality of printing members carried by said holder, means for automatically stopping the rotation of the said holder after a predetermined fractional part of a rotation, means for actuating the plunger, a work holder and a die so positioned that when the plunger makes its down stroke one of the printing members will engage the die and another printing member will engage the work on the work holder.

2. In a machine of the character described, a vertically reciprocable plunger, a printing pad holder having a stem mounted in said plunger and rotatable therein, means for automatically stopping the rotation of the holder after a predetermined fractional part of a rotation, said holder carrying a plurality of pads having faces of resilient material adapted to take up ink from a die and to therewith print the same design upon another surface, means for actuating the plunger, a work holder and a die so positioned that when the plunger makes its down stroke one of the printing pads will engage the die, and the other printing pad will engage the work on the work holder.

3. In a machine of the character described, a vertically reciprocable hollow plunger, a holder for a printing member having a cylindrical Shank mounted within said plunger and rotatable on its axis therein, yielding stop mechanism adapted to stop the rotation of said holder after a predetermined part of a rotation of the plunger.
fractional part of a rotation, said holder having on its under side a plurality of pads provided on their under sides with a surface adapted to take up ink from a die, a work holder and a die holder respectively located so that one of said pads will be in alinement with the die and another of said pads will be in alinement with the work holder at the end of each predetermined arc of rotation of the pad holder, whereby when the plunger is depressed one of said printing pads will be brought into pressing engagement with the die and the other pad will be brought into pressing engagement with work mounted on the work holder.

4. In a machine of the character described, a vertically reciprocable hollow plunger, a holder for a printing member having a cylindrical shank mounted within said plunger and rotatable on its axis therein, yielding mechanism adapted to stop the rotation of said holder after a predetermined fractional part of a rotation, said holder having on its under side a plurality of resilient pads provided on their under sides with a surface adapted to take up ink from a die, a work holder and a die holder respectively located so that one of said pads will be in alinement with the die and another of said pads will be in alinement with the work holder at the end of each predetermined arc of rotation of the pad holder, whereby when the plunger is depressed one of said printing pads will be brought into pressing engagement with the die and another printing member will be brought into pressing engagement with the work mounted on the work holder, means for reciprocating the die so as to move it alternately out from under the printing pad and back to its position beneath the printing pad, and means for inking the die during its travel.

5. In a machine of the character described, a vertically reciprocable plunger, a holder for a printing member mounted within said plunger and rotatable on its axis, and yielding stop mechanism adapted to stop the rotation of said holder after a predetermined fractional part of a rotation, said holder carrying a plurality of printing members.

6. In a machine of the character described, a vertically reciprocable plunger, a holder for a printing member mounted within said plunger and rotatable on its axis, yielding stop mechanism adapted to stop the rotation of said holder after a predetermined fractional part of a rotation, said holder carrying a plurality of printing members adapted to take up ink from a die, a work holder and a die holder respectively located so that one of said printing members will be in alinement with the work holder at the end of each predetermined arc of rotation of the holder for the printing members whereby when the plunger is depressed one of said printing members will be brought into engagement with the die and another printing member will be brought into pressing engagement with the work mounted on the work holder, means for reciprocating the die so as to move it alternately out from under the printing member and back to its position beneath the printing member, and means for inking the die during its travel.

In testimony whereof I affix my signature.

SKIDMORE O'HARA.