

Jan. 13, 1942.

E. G. RIX

2,269,691

IMPRESSION MACHINE

Filed Aug. 24, 1939

2 Sheets-Sheet 1

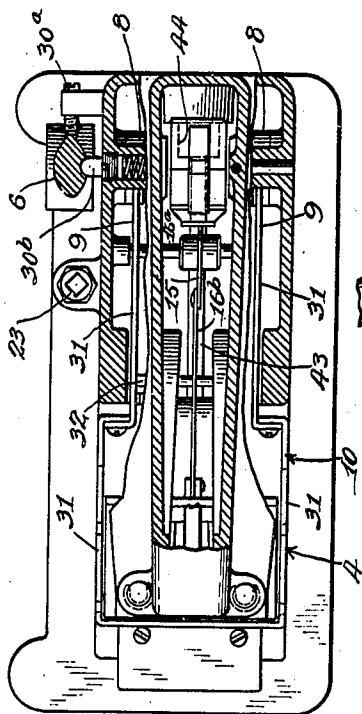


Fig. 3.

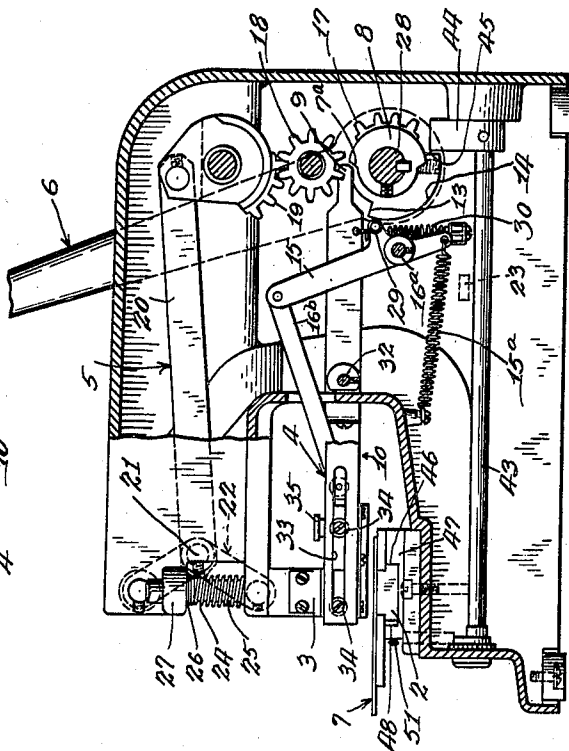


Fig. 1.

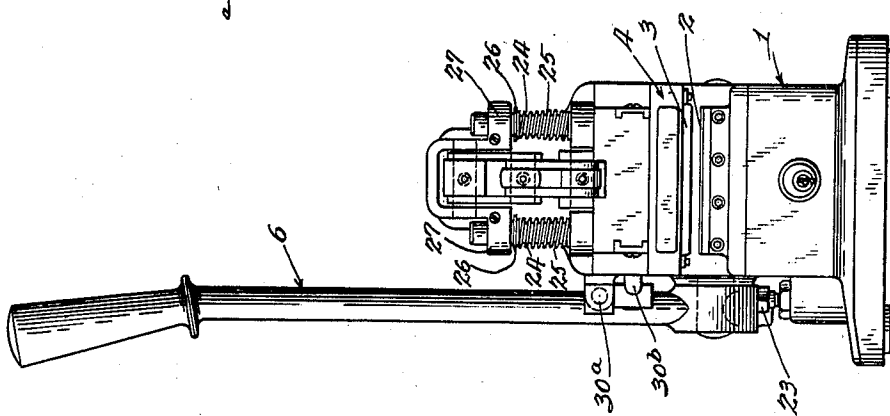


Fig. 2.

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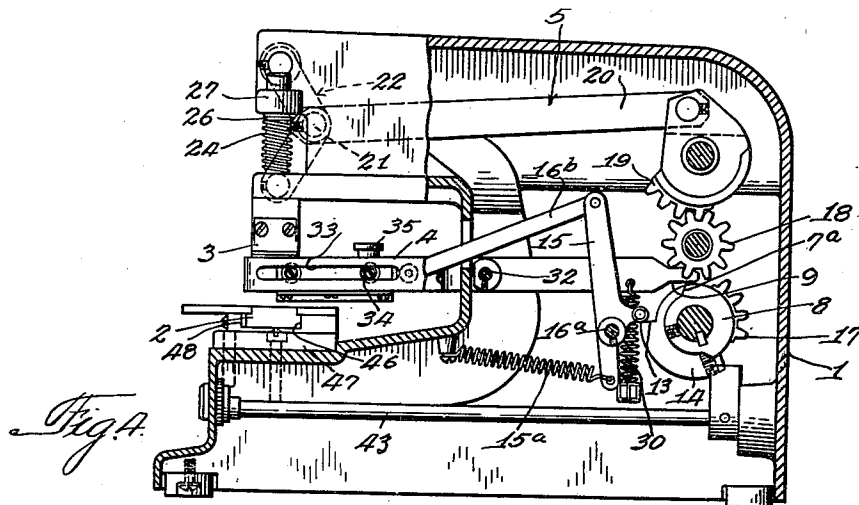
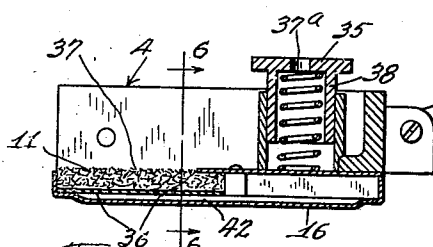
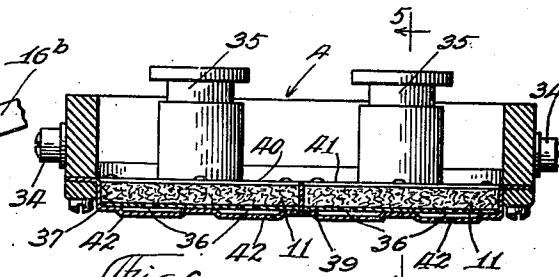
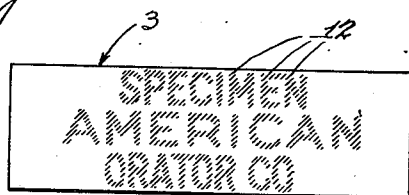
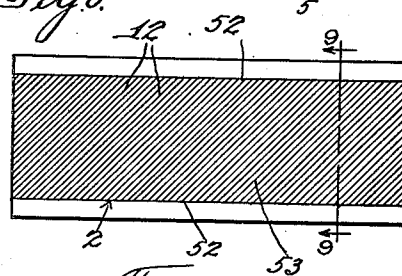
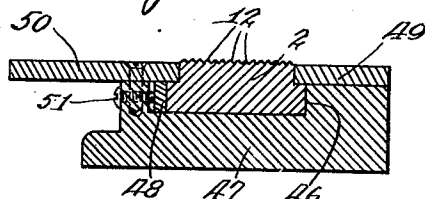
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2,269,691

IMPRESSION MACHINE

Filed Aug. 24, 1939

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,269,691

IMPRESSION MACHINE

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Application August 24, 1939, Serial No. 291,654

9 Claims. (Cl. 101—318)

My invention relates to impression machines.

One of the objects of my invention is to provide an impression machine having improved means for applying ink to one of the impression members.

A further object is to provide an improved impression machine in which the impression is effected by downward and forward movement of the operating lever.

A further object is to provide an improved impression machine in which the movement of the handle successively effects the movement of the ink applying means from the face of the die, then from the space between the dies, and then effects the impression movement of the dies.

A further object is to provide an impression machine in which the operating means include a segmental gear and in which the pinion with which the segmental gear meshes will be held in proper position to engage the segmental gear by the spring means which serve to return the die.

A further object is to provide an impression machine having improved means for locking the operating handle.

A further object is to provide an improved impression machine having parallel, intermeshing, shredding teeth which may be readily and accurately aligned.

Further objects and advantages of the invention will be apparent from the description and claims.

In the drawings, in which an embodiment of my invention is shown:

Figure 1 is a side elevational view of an impression machine, the parts being broken away to show the interior construction;

Fig. 2 is a front elevation of the machine shown in Fig. 1;

Fig. 3 is a plan view, parts being broken away;

Fig. 4 is a view similar to Fig. 1 but showing the parts in a different position;

Fig. 5 is a sectional view of the ink reservoir, substantially on the line 5—5 of Fig. 6;

Fig. 6 is a vertical section of the ink reservoir substantially on the line 4—4 of Fig. 5;

Fig. 7 is a bottom view of the upper die;

Fig. 8 is a plan view of the lower die; and

Fig. 9 is a section on the line 9—9 of Fig. 8, the die shoe also being shown in section.

The construction shown in the drawings comprises a combination base and casing 1, a fixed impression die 2 mounted adjacent the lower front end of the casing, a vertically reciprocable impression die 3 cooperating with the fixed mem-

ber, an ink applying mechanism 4, a jaw actuating mechanism 5, and an actuating lever 6 for controlling the movement both of the ink applying mechanism 4 and of the jaw actuating mechanism 5.

Before describing in detail the construction, I will briefly outline the operation.

A sheet 7 on which the impression is to be made is placed in position between the fixed and movable dies 2 and 3, and the actuating lever 6 is pulled forwardly and downwardly to effect the movement of the ink applying mechanism 4 and of the movable impression die 3. The first movement of the actuating lever 6 causes the sloping portion 7a of the cams 8 to engage the rear ends 9 of the rocking guide frame 10 to move the ink pad 11 away from the movable impression die 3. I have found that about a 7-degree movement of the operating handle 6 is satisfactory to accomplish this result. This movement of the ink pad 11 away from the impression die is necessary in order that the shredding corrugations or teeth 12 on the die may not cut the felt on the ink pad 11 as it is moved out of the way of the movable die 3. I find that about a one-sixteenth of an inch drop is sufficient to accomplish this. Figure 1 shows the position of parts when the ink pad 11 is moved some distance from the die 3.

As the operating lever 6 continues to move, the drop 13 in the cam 14 will permit a quick movement of the three-armed lever 15 by the spring 15a to move the ink pad 11 and the ink reservoir 16 out from between the two dies 2 and 3 to enable the succeeding impression movement of the upper die. I find that an additional 10-degree movement of the lever is sufficient to accomplish this result satisfactorily. The lever 15 is pivoted at 16a and pivotally connected with the ink reservoir 16 by the link 16b.

As the actuating lever continues its movement, the teeth of the segmental rock gear 17 engage the teeth of the idler pinion 18, which idler pinion engages the teeth of the segmental rock gear 19 which causes a forward movement of the link 20 which has a pivotal connection 21 with an intermediate portion of the toggle 22 which effects the impression movement of the upper die 3. Fig. 4 shows the position of parts when the ink pad 11 has moved away from the upper die 3 and has been partially withdrawn from between the dies 3 and 4. This forward and downward movement of the actuating lever continues until the lever 6 strikes the adjustable stop 23 on the base of the machine, at which time the movable

die will have moved to bring the desired pressure of the upper die against the lower die.

On the return movement of the lever 6, the movable die is moved upwardly, as fast as the gear transmission between the operating lever and toggle will permit, by means of the coil compression springs 24 surrounding the guide rods 25 of the movable die. This upward movement of the die is limited by the engagement of the spring-pressed collars 26 secured to the guide rods 25 which engage the under sides of the guide lugs 27 on the casing. The machine is so designed that the segmental rock gear 7 on the actuating lever shaft 28 will disengage the idler pinion 18 at the time that the coil compression springs 24 have moved the movable die 3 to its upper limit of movement so that further upward and rearward movement of the actuating lever 6 may be made without causing any movement of the movable impression die 3. This further movement of the actuating lever after the impression die has ceased to move brings the shoulder 13 on the cam 14 against the lift pin 29 on the three-armed rock lever 15, causing the ink pad 11 to move quickly into position between the two jaws and bringing the pad opposite the face of the upper movable die 3.

Further movement of the rock lever brings the sloping portions 7 of the cams 8 opposite the rear ends 9 of the rock frame 10, allowing the coil tension spring 30 to pull the rear end of the rock frame 10 downwardly, thus causing the front end of the frame to move upwardly to bring the ink pad 11 into spring-pressed engagement with the upper impression die 3. The extreme upward and rearward movement of the actuating lever is controlled by means of an adjustable stop 30a engaging an abutment on the lever. In order to hold the actuating lever yieldingly in open jaw position, a spring-pressed plunger 30b is provided which engages a recess in the actuating handle to hold the lever against the adjustable stop 30a.

The ink pad 11 is carried by the slidable ink reservoir 16 which is mounted to move back and forth in the U-shaped rock frame 10. This U-shaped rock frame comprises a pair of rock arms 31 mounted on a pivot shaft 32, the front ends of the arms being slotted at 33 to receive the anti-friction rollers 34 on the sliding ink reservoir. This ink reservoir, if desired, may be made large enough to hold a supply of ink which will last for two or three months in ordinary use.

In order to insure a proper supply of ink to the ink pad 11 in case the pad is allowed to become dry or if for any reason ink is not being supplied in sufficient quantities, I provide manually operable pump pistons or plungers 35 which place the ink in the reservoir 16 under pressure, causing it to flow upwardly through perforations 36 in the plate 37 on which the ink pad rests. If these plungers 35 are operated quickly, they cause fluid pressure to be exerted on the ink in the reservoir which forces the ink up into the pad 11. In order to admit air for the ordinary flow of ink, an opening 37a is provided in the upper part of the plunger through which air can enter. However, when it is desired to apply pressure to the ink, in pressing down on the plunger, the finger is placed so as to cover this opening to prevent the escape of air. A coil compression spring 38 returns the plunger. The ink reservoir may be divided by a partition 39 into two compartments 40 and 41, one for one color of ink and the other for ink of a different color. The ink reservoir is

provided with a number of channels 42 leading from the space underneath the plunger 35 to the openings 36.

It will be noted that on the upward movement of the die, the under side of the ink reservoir 16 serves as a stripping plate for the sheet 7 in case the sheet happens to stick to the upper die and be carried upwardly thereby. It will also be noted that the forward movement of the ink reservoir will further help to strip the paper from the upper jaw in case it should stick at the front edge of the die.

The jaws may be locked in open position by means of a key-controlled rock shaft 43, on the rear end of which is mounted a lock arm 44 which can be turned and locked in position to engage in an abutment 45 on the rock cam 14 keyed to the rock shaft 28 on which the actuating lever 6 is mounted.

As shown in Figs. 7 and 9, the impression portions of the dies 2 and 3 are formed with inter-engaging diagonal teeth or corrugations 42.

In order to enable adjustment to be made to bring about proper registration of the corrugations 12 in the upper die 3 with the corrugations 12 in the lower die 2, the upper die is first secured in fixed position in the jaw. The lower die 2 is then placed in the transverse guideway or recess 46 in the die block 47, a shim 48 being inserted between the lower die block and the front wall of the recess 46, and the cover plates 49 and 50 are secured in position. The screws 51, which are used for pressing the shim 48 against the die 2, are loosened so that the lower die has a nice slip fit in the transverse guideway 46. The lever 6 is then operated to bring the upper die 3 down on the lower die 2. Due to the angle at which the corrugations extend, this bringing-together of the dies will result in the lower die 2 adjusting itself transversely to whatever extent is necessary to cause the corrugations 12 in the lower die to register accurately with the corrugations in the upper die. When this accurate registration has been effected, the screws 51 controlling the shim 48 are tightened up to clamp the lower die securely in the position to which it has adjusted itself.

In order to enable adjustment to be made to bring about proper registration of the corrugations 12 in the upper die with the corrugations in the lower die, I have found it desirable to have these corrugations extend parallel to each other and at an oblique angle to the front and rear parallel boundary lines 52 of the rectangular corrugated area 53. This rectangular corrugated area is in general materially less in its fore-and-aft dimensions than in its side-to-side dimensions. If the corrugations extended parallel to the long sides of the rectangle, it would require relative fore-and-aft adjustment of the dies to effect perfect registration and a slight misadjustment of one end of the adjustable lower die would cause a decided misalignment of the corrugations in the upper and lower dies. If the corrugations extended parallel to the side edges of the rectangle, it would render unsightly the impressions of certain of the characters which extend in general from front to rear. By having the corrugations run diagonally, a pleasing impression is obtained and a slight misadjustment in one end of the die does not throw the corrugations materially out of alignment.

In the claims where the word "impression" is used, it is to be understood as broad enough to

include perforating, embossing, mutilating, and printing.

Further modifications will be apparent to those skilled in the art and it is desired, therefore, that the invention be limited only by the prior art and the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. An ink impression device comprising a pair of impression members mounted for relative movement toward and from each other, a pivotally mounted track member, an ink applying member reciprocable on said track member to move into and out of the space between said impression members, spring means acting on said track tending to tilt it to force the ink applying member into ink applying position, and actuating means for positively tilting said track against the action of said spring means to move the ink applying member away from ink applying position, for moving said ink applying member along said track to move it from between said impression members and for causing relative movement of said impression members to effect the printing operation.

2. An ink impression device comprising a pair of impression members mounted for relative movement toward and from each other, a pivotally mounted track member, an ink applying member reciprocable on said track member to move into and out of the space between said impression members, means acting on said track to tilt it to force the ink applying member into ink applying position, and actuating means for tilting said track to move the ink applying member away from ink applying position, for moving said ink applying member along said track to move it from between said impression members and for causing relative movement of said impression members to effect the printing operation, said pivotally mounted track member having a portion lying above the article to be impressed for stripping the article from the impression member as the impression members separate.

3. An ink impression device comprising a pair of impression members mounted for relative movement toward and from each other, a pivotally mounted track member, an ink applying member reciprocable on said track member to move into and out of the space between said impression members, spring means acting on said track tending to tilt it to force the ink applying member into ink applying position, and actuating means for positively tilting said track against the action of said spring means to move the ink applying member away from ink applying position, for moving said ink applying member along said track to move it from between said impression members and for causing relative movement of said impression members to effect the printing operation, said actuating means for moving the ink applying member away from ink applying position comprising a cam having an abrupt drop to enable the spring to cause rapid application of the ink applying member to the impression member.

4. An ink impression device comprising a frame, a pair of impression members mounted on said frame for relative movement toward and from each other, said frame having an open throat in the rear of said impression members, an ink applying device mounted on said frame comprising a flat sheet-like ink pad and an ink reservoir in the rear of the pad for supplying ink to said pad, said pad and reservoir being mounted

as a unit for reciprocating movement to cause the flat ink pad to move into the space between said impression members for applying ink to one of said members and to move out from the space between said impression members to enable the impression operation, said ink reservoir being reciprocable in the open throat in the rear of said impression members.

5. An ink impression device comprising a frame, a pair of impression members mounted on said frame for relative movement toward and from each other, said frame having an open throat in the rear of said impression members, an ink applying device mounted on said frame comprising a flat sheet-like ink pad and an ink reservoir in the rear of the pad for supplying ink to said pad, said pad and reservoir being mounted as a unit for reciprocating movement to cause the flat ink pad to move into the space between said impression members for applying ink to one of said members and to move out from the space between said impression members to enable the impression operation, said ink reservoir being reciprocable in the open throat in the rear of said impression members, said ink receptacle comprising a shallow pan lying in the general plane of the ink pad.

6. An ink impression device comprising a frame, a pair of impression members mounted on said frame for relative movement toward and from each other, said frame having an open throat in the rear of said impression members, an ink applying device mounted on said frame comprising a flat sheet-like ink pad and an ink reservoir in the rear of the pad for supplying ink to said pad, said pad and reservoir being mounted as a unit for reciprocating movement to cause the flat ink pad to move into the space between said impression members for applying ink to one of said members and to move out from the space between said impression members to enable the impression operation, said ink reservoir being reciprocable in the open throat in the rear of said impression members, said ink receptacle comprising a shallow pan lying in the general plane of the ink pad, and said ink applying device comprising also a perforated plate on which the pad rests, the perforations in said plate being in communication with the ink reservoir.

7. An ink impression device comprising a frame, a pair of impression members mounted on said frame for relative movement toward and from each other, said frame having an open throat in the rear of said impression members, an ink applying device mounted on said frame comprising a flat sheet-like ink pad and an ink reservoir in the rear of the pad for supplying ink to said pad, said pad and reservoir being mounted as a unit for reciprocating movement to cause the flat ink pad to move into the space between said impression members for applying ink to one of said members and to move out from the space between said impression members to enable the impression operation, said ink reservoir being reciprocable in the open throat in the rear of said impression members, said ink applying device comprising also a perforated plate on which the pad rests, the perforations in said plate being in communication with the ink reservoir.

8. An ink impression device comprising a frame, a pair of impression members mounted on said frame for relative movement toward and from each other, said frame having an open throat in the rear of said impression members,

an ink applying device mounted on said frame comprising a flat sheet-like ink pad and an ink reservoir in the rear of the pad for supplying ink to said pad, said pad and reservoir being mounted as a unit for reciprocating movement to cause the flat ink pad to move into the space between said impression members for applying ink to one of said members and to move out from the space between said impression members to enable the impression operation, said ink reservoir being reciprocable in the open throat in the rear of said impression members, said ink receptacle comprising a shallow pan lying in the general plane of the ink pad, said pan having an apertured cover, said ink applying device comprising also a cylinder in communication with the aperture in the cover, and a piston operating in said cylinder to force ink from said reservoir into said pan.

9. An ink impression device comprising a frame, a pair of impression members mounted on said frame for relative movement toward and from each other, said frame having an open

throat in the rear of said impression members, an ink applying device mounted on said frame comprising a flat sheet-like ink pad and an ink reservoir in the rear of the pad for supplying ink to said pad, said pad and reservoir being mounted as a unit for reciprocating movement to cause the flat ink pad to move into the space between said impression members for applying ink to one of said members and to move out from the space between said impression members to enable the impression operation, said ink reservoir being reciprocable in the open throat in the rear of said impression members, said ink receptacle comprising a shallow pan lying in the general plane of the ink pad, said pan having an apertured cover, said ink applying device comprising also a cylinder in communication with the aperture in the cover, and a piston operating in said cylinder to force ink from said reservoir into said pan, and said piston having an aperture therethrough to be closed by the hand of the operator when applying pressure to the piston.

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