

No. 634,658.

Patented Oct. 10, 1899.

C. E. BRINKWORTH.
PLATE PRINTING AND EMBOSING MACHINE.

(Application filed Dec. 8, 1898.)

(No Model.)

3 Sheets—Sheet 1.

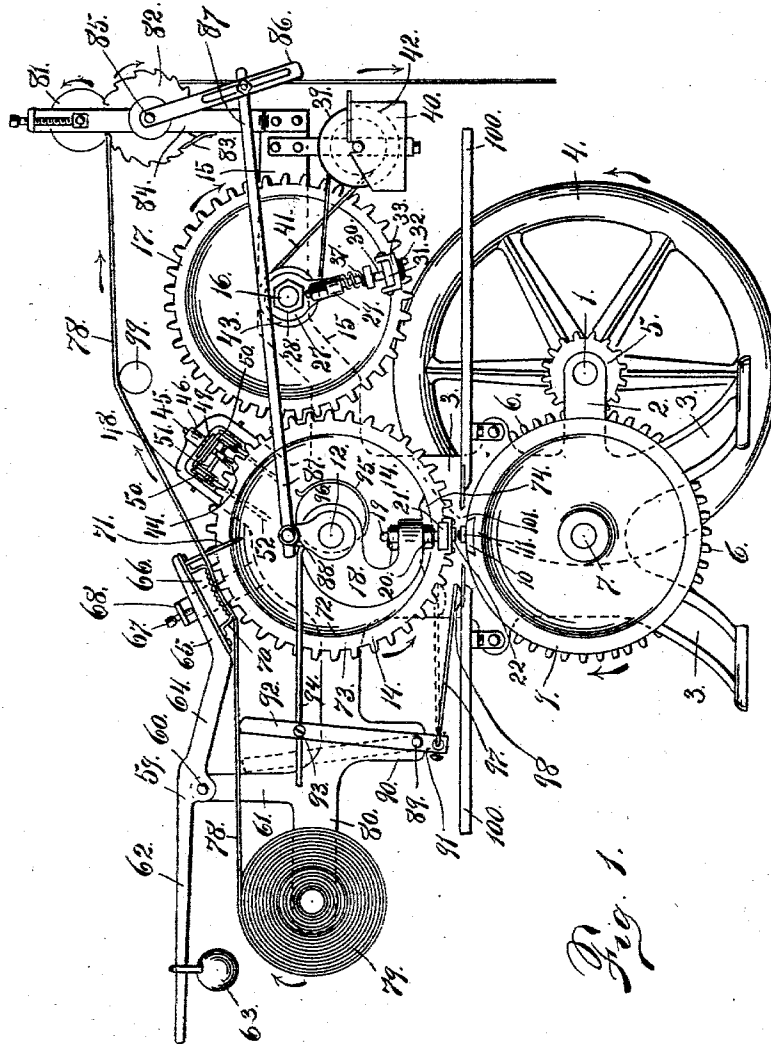


Fig. 1.

Witnesses:
C. Ransom
J. Sturley

Inventor
Charles E. Brinkworth
By W. T. Miller
Attorney.

No. 634,658.

Patented Oct. 10, 1899.

C. E. BRINKWORTH.
PLATE PRINTING AND EMBOSING MACHINE.

(Application filed Dec. 8, 1898.)

(No Model.)

3 Sheets—Sheet 2.

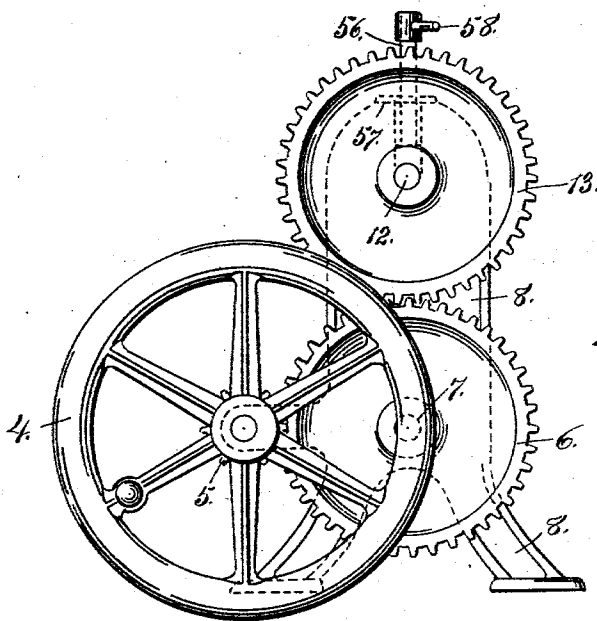


Fig. 2.

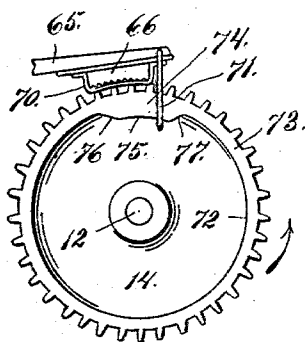


Fig. 9.

Witnesses:
E. C. Ransom
J. J. Hurley

Inventor:
Charles E. Brinkworth
By *W. T. Miller*
Attorney.

No. 634,658.

Patented Oct. 10, 1899.

C. E. BRINKWORTH.
PLATE PRINTING AND EMBOSSING MACHINE.

(Application filed Dec. 8, 1898.)

(No Model.)

3 Sheets—Sheet 3.

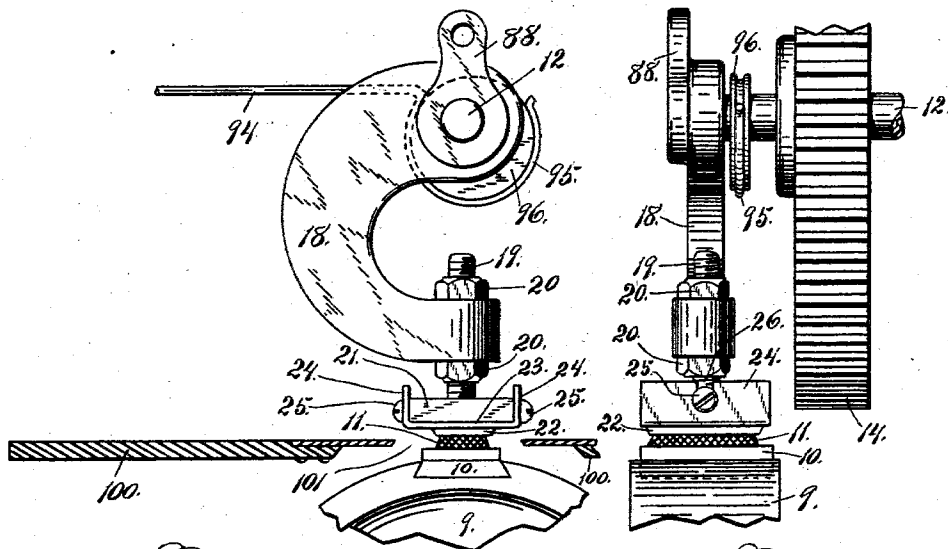


Fig. 3

Fig. 4

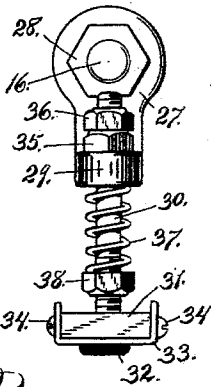


Fig. 5

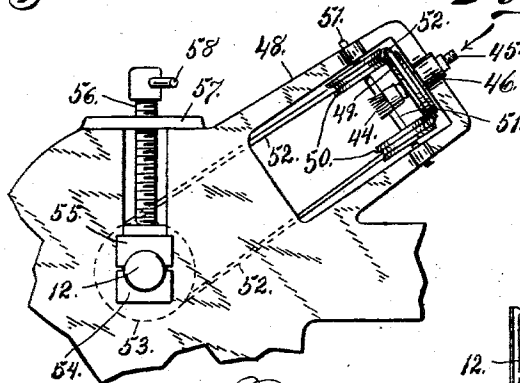


Fig. 6

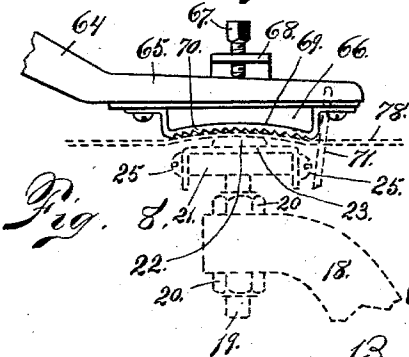


Fig. 7

Fig. 8

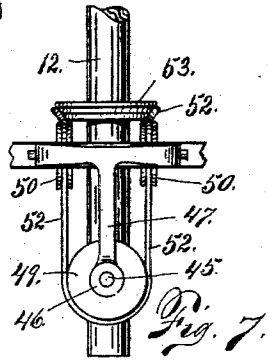


Fig. 9

Witnesses:
C. E. Brinkworth
J. H. Hurley

Inventor:
Charles E. Brinkworth
By W. T. Miller
Attorney.

UNITED STATES PATENT OFFICE.

CHARLES E. BRINKWORTH, OF BUFFALO, NEW YORK.

PLATE-PRINTING AND EMBOSsing MACHINE.

SPECIFICATION forming part of Letters Patent No. 634,658, dated October 10, 1899.

Application filed December 8, 1898. Serial No. 698,622. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. BRINKWORTH, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Plate-Printing and Embossing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in plate-printing and embossing machines, its object being to simplify the construction of parts, concentrate the same, and increase their effectiveness.

To that end my invention consists in an improved arrangement and combination of parts for holding and releasing the sheet to be printed or embossed, for providing a perfect impression, for inking the printing plate or die, for effecting a preliminary cleaning of the inked plate or die, and for subsequently wiping the same by a novel series of operations, all of which will be fully hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a front elevation of my improved plate-printing and embossing machine. Fig. 2 is a rear elevation of the motive gear. Fig. 3 is an enlarged detail front view of the rotary plate or die carrier. Fig. 4 is a side view of Fig. 3. Fig. 5 is an enlarged detail view of the rotary inking-pad holder. Fig. 6 is an enlarged detail front view of the revolving ink-removing brush. Fig. 7 is another view of the same device, taken in the direction of the arrow shown in Fig. 6. Fig. 8 is an enlarged detail view of the pivoted pressure-pad, showing in dotted lines the rotating printing plate or die in contact with the wiping-strip interposed between the pressure-pad and plate or die; and Fig. 9 is a detached detail of the device for effecting the proper contact of the pivoted pressure-pad with the printing plate or die and interposed wiping-strip.

Referring to the drawings, 1 is the power-shaft, journaled in an arm 2 on the front por-

tion 3 of the main frame. Upon the power-shaft 1 is rigidly mounted the large hand-wheel 4 for turning the same, although my improved machine can be operated by any other than hand-power, if desired.

5 is a small gear-wheel rigidly mounted on the power-shaft 1 and intermeshing with the large gear-wheel 6, which is rigidly mounted on the rear end of shaft 7, (see Fig. 2,) which is journaled in bearings in the front portion 3 and rear portion 8 of the main frame. Upon the front projecting end of this shaft 7 is rigidly mounted the wheel 9 for carrying the impression-bed, which consists of the metal socket 10 in removable dovetailed engagement with the periphery of the wheel and the flexible bed 11 seated thereon. The bed 11 may be of felt or any other analogous material which will produce the proper impression.

12 is another shaft journaled in the front and rear portions 3 and 8 of the main frame and above the shaft 7. Upon the rear projecting end of this shaft 7 is rigidly mounted the gear-wheel 13, (see Fig. 2,) which intermeshes with the gear-wheel 6 upon the rear end of shaft 7. Upon the shaft 12, just outside the portion 3 of the main frame, is rigidly mounted the gear-wheel 14. In the arm 15 of the main frame is journaled the short shaft 16, upon which is rigidly mounted the gear-wheel 17 of equal diameter with the gear-wheel 14 and intermeshing with the same. Upon the shaft 12 and in front of the gear-wheel 14 is rigidly mounted the plate or die carrier 18, which consists of a curved arm, as shown, to facilitate the adjustment thereon of the plate or die.

19 is a screw-threaded shank adjustable in a radial socket in the outer end of the curved arm 18 by means of the nuts 20 20. The outer end of the shank 19 has the attached block 21, to the outer face of which is removably and adjustably secured the printing plate or die 22, in which are cut or engraved the inscriptions to be printed or embossed.

The means which I employ to secure the printing-plate 22 upon its block 21 consists of the plate 23, having its ends 24 turned up at right angles thereto, so as to lie close against the ends of the block 21 and be adjustably se-

cured thereon by the screws 25 in the slots 26, which have open ends to facilitate the removal of the printing plate or die 22.

The means which I employ to ink the engraved plate or die are arranged as follows: 5
27 is an arm (see Fig. 5) which is rigidly secured against the gear-wheel 17 on the shaft 16 by the nut 28 and partakes of the rotary motion of the gear-wheel 17. A radial socket 10
29 in the outer end of the arm 27 is adapted for the sliding reception of the shank 30, provided with screw-threaded ends. The outer end of this shank 30 carries a rigid block 31, against the outer face of which is secured the inking-pad 32 by means of the plate 33 and screws 34, similar to those employed for securing the printing-plate 22.

The normal position of the inking-pad 32 is adjusted by means of the nut 35, which is 20
locked in its predetermined position by the nut 36. A spiral spring 37, interposed between the socket 29 and a nut 38, permits the inking-pad 32 to yield slightly under pressure. The pad 32 receives its ink by passing 25
contact with the roller 39, which is caused to revolve in an open receptacle 40, suspended from the arm 15 of the main frame and containing ink, through which the roller 39 passes. This roller is caused to revolve in the same 30
direction to that of the inking-pad by the crossed belt 41, which passes around a pulley 42, (shown in dotted lines,) rigid with the roller 39, and a pulley 43, rigid on the shaft 16.

The means which I employ for first removing a large portion of the surplus ink deposited on the printing plate or die 22 by the inking-pad 32, thus preparing it for a much more thorough action of the wiping-strip, are as follows: 44 is a brush having its shank 45 40
(see Fig. 6) journaled in a socket 46 at the outer end of an arm 47, (see Fig. 7,) secured to an open extension 48 of the frame and of such a length as to bring the brush 44 in line with the rotating printing plate or die. Rigid with the shank 45 of the brush 44 is the pulley 45
49. Two pulleys 50 50 are rigidly mounted on the shaft 51, journaled on opposite sides of the open frame 48 and at right angles to the revolving shank 45 of the brush 44. A 50
belt 52 passes around the front of pulley 49, then down around the rear sides of the pulleys 50 50, and around a pulley 53 (shown in dotted lines) on the shaft 12, by means of which a rotary motion is given to the brush 55
44. In Fig. 6 is also shown in detail the means for properly alining the shaft 12 to insure an even impression of the printing plate or die 22. The journals each consist of the separate sections 54 and 55 in removable engagement with each other, the upper section 60
54 being in screw-threaded engagement with the adjusting-bolt 56, which is raised or lowered in a screw-threaded socket in the plate 57, the bolt being turned by the pin 58 in its 65
upper end.

The pressure-pad for effecting the cleaning of the printing plate or die by means of the

wiping-strip before the impression is taken is constructed and arranged for operation as follows: 59 is a lever pivoted near its center, 70
as at 60, to the vertical arm 61 of the main frame. Its outer arm 62 is provided with the adjustable counterweight 63, and its inner arm 64 has its outer end 65 bent upwardly at an angle to make it practically parallel to a 75
tangent of the circle which the printing plate or die describes at the point of contact of the wiping-strip with the printing plate or die. Upon this outer end 65 of the arm 64 of the 80
pivoted lever is adjustably secured the pressure-pad 66, preferably of felt, held in position by the tightening-belt 67, working through the carrying-frame 68 against the upper side of the arm 65. The operative surface 69 of the 85
pressure-pad 66 is curved in a circle concentric to the circle described by the printing plate or die and is preferably covered by a strip 70 of a material with a slightly-roughened surface. To bring the pressure-pad 90
down toward the passing printing plate or die 22 for the cleaning operation, I have provided the rigid arm 71, secured to one side of the outer end 65 of the lever-arm 64. The lower 95
end of the arm 71 is turned inwardly and rides against the inner surface 72 of the rim 73 of the gear-wheel 14. Upon the surface 72 of the rim is the inwardly-projecting portion 74, (see Fig. 9,) having the long curved concentric central portion 75 and the inclined ends 76 and 77, the operation of which, in connection with the arm 71, will be fully explained hereinafter. 100

78 is a wiping-strip, preferably of tough paper, which is interposed between the pressure-pad 66 and the printing plate or die 22 105
to receive upon its lower surface the surplus ink wiped from the printing plate or die. This strip 78 is intermittently fed from a roll 79, mounted on the arm 80 of the frame at its right-hand side. It passes between two 110
feeding-drums at the right-hand end of the frame, the upper one of which is shown at 81. The lower drum is behind the ratchet-wheel 82, which operates in conjunction with the spring-pawl 83 on the carrying-frame 84, in 115
which the drums are mounted. To the axle 85 of the lower drum is secured the slotted arm 86 in adjustable engagement with the pitman-rod 87, the inner end of which is secured to the outer revolving end of the crank- 120
arm 88, rigidly mounted on the shaft 12.

I have provided my improved machine with an automatic device for holding the sheet in fixed position, so that when the printing plate or die and the impression-bed meet the interposed sheet in passing contact it will prevent the accidental displacement of the sheet and insure its perfect register. This device is constructed and arranged as follows: A lever is pivoted at 89 to the depending arm 90 of 130
the frame and consists of the lower short arm 91 and the upper long arm 92, which has pivotally secured to it at the point 93 the pitman-rod 94, the curved end 95 of which is in

loose engagement with the eccentric cam 96, rigidly mounted on the shaft 12. To the lower short end 91 of the lever is rigidly secured the spring-arm 97 at practically right angles to such lever and extending inwardly. Its extreme inner end has upon its under surface a flexible pad 98, which has bearing-down contact with the sheet at the proper instant.

The wiping-strip 78 is raised by the friction-roller 99 to carry it away from contact with the machine.

A table 100 is secured to the frame, provided with an opening 101, through which the printing plate or die and impression-bed operate and across which the sheet is laid which receives the impression.

My improved machine, which I have just described in detail, operates as follows: Power being applied, the wheel 9, carrying the impression-bed 10 11, has imparted to it a positive rotation, while the gear-wheel 14 and plate or die carrier have an opposite or negative rotation imparted thereto. The impression-bed and printing plate or die are so adjusted as to meet in bearing contact through the opening in the table 100. The sheet or card to be printed upon or embossed is placed across the opening 101, so as to receive the impression therethrough, it being held at the proper instant by the spring-pad 98, which prevents it from being accidentally thrown out of register as the printing plate or die and impression-bed swing together in bearing contact. As the shaft 12 continues to revolve, its attached eccentric cam throws the pitman 94 over to the left, carrying with it the long upper arm 92 of the pivoted lever, which causes its short lower arm 91 to be thrown to the left. This has the effect of raising the spring-pad 98 from bearing contact with the sheet immediately after the impression is made, so that it can be removed and the next sheet placed in position to be held by the again descending pad 98, as before. The gear-wheel 14 imparts to the intermeshing gear-wheel 17 a motion of positive rotation, which causes the inking-pad 32 to swing up into passing contact with the rotating printing plate or die 22 and ink the same, the pad 32 having received upon its surface a quantity of ink by its passing contact with the ink-roller 39, revolving in the same direction. As the now inked printing plate or die 22 continues its further rotary motion, it comes in passing contact with the revolving brush 44, which as the plate or die is passing removes a large proportion of the superfluous ink and prepares the plate or die for the effective action of the pressure-pad 66, which it next meets in passing contact. Just before such contact the revolving crank-arm 88 has pulled the pitman 87 over to the left, which carries with it the slotted arm 86, which in turn operates the feeding-drums and interposed wiping-strip 78 to present to the action of the pressure-pad a clean portion of such wiping-strip. As the gear-wheel 14 rotates in uni-

son with the printing plate or die—that is, in negative rotation, as indicated by the arrow in Fig. 9—the turned-in end of the rigid arm 71 strikes the inclined end 76 of the projecting portion 74 and serves to abruptly pull the pressure-pad (carried on the pivoted lever) down in bearing contact with the printing-plate or die which has now reached this point. As the rigid arm 71 rides along the concentric portion 75, it preserves an effective bearing contact of the pressure-pad against the interposed wiping-strip 78 during the entire contact of the printing plate or die. This arm 71 reaches the inclined end 77 of the projecting portion 74 just as the printing plate or die is passing away from contact with the pressure-pad, and as it rides down such inclined end 77 it releases the pressure-pad, which is then thrown upwardly by the action of the counterweight 63, ready for the next succeeding operation. This wiping action just described effectively removes from the face of the printing plate or die all of the ink except that which fills the engraved or cut lines thereon, and thus prepares it for the next succeeding printing or embossing in the manner already described. The operation of my improved machine as just described enables me to print or emboss in a rapid, accurate, and reliable manner. The proper impression can be quickly and accurately adjusted, and the improved means which I employ for cleaning the surface of the printing plate or die enables me to thoroughly remove all the superfluous ink, and thereby preserve the printed or embossed sheet or card free and clean of all blemishes. The action of the revolving brush 44 renders the wiping action much more complete than it would be were the revolving brush omitted. Then, too, the novel series of actions of the pressure-pad due to the rigid rod 71—viz., first, the abrupt contact; second, the uniform wiping contact; and, last, the abrupt release from contact—serve to make the wiping action as perfect and effective as is possible in a mechanical manner.

The devices which I employ to perform the cycle of operations from one printing or embossing to another—viz., the inking, the preliminary cleaning of the printing-plate, the final wiping of such plate, and then the printing or embossing—are all arranged in a compact form for effective and rapid operation, are exceedingly easy and simple of adjustment, and perform the work of printing or embossing from engraved plates or dies in a perfect manner.

I claim—

1. A plate-printing and embossing machine consisting of the following instrumentalities viz: a rotary printing plate or die carrier, a rotary impression-bed having passing contact with the printing plate or die in its rotary carrier, a rotary inking-pad having passing contact with the printing plate or die after its contact with the impression-bed, an in-

termittently-fed wiping-strip, and a pressure-pad with rigid arm in engagement with the rotary carrier for the printing plate or die for holding the wiping-strip against the printing plate or die in its passing contact therewith all combined and operating as and for the purpose stated.

2. A plate-printing and embossing machine consisting of the following instrumentalities viz: a rotary printing plate or die carrier, a rotary impression-bed having passing contact with the printing plate or die in its rotary carrier, a rotary inking-pad having passing contact with the printing plate or die after its contact with the impression-bed an intermittently-fed wiping-strip, a pressure-pad with rigid arm in engagement with the rotary carrier for the printing plate or die for holding the wiping-strip against the printing plate or die in its passing contact therewith and a spring-arm for holding the sheet or card in fixed position as the printing plate or die and the impression-bed meet the interposed sheet in passing contact, to insure its perfect register all combined and operating substantially as and for the purpose stated.

3. A plate-printing and embossing machine consisting of the following instrumentalities viz: a rotary printing plate or die carrier, a rotary impression-bed having passing contact with the printing plate or die in its rotary carrier, a rotary inking-pad having passing contact with the printing plate or die after its contact with the impression-bed, a radially-arranged revolving brush for removing a portion of the ink from the printing plate or die prior to its being wiped an intermittently-fed wiping-strip, and a pressure-pad for holding the wiping-strip against the printing plate or die in its passing contact therewith all combined and operating as and for the purpose stated.

4. A plate-printing and embossing machine consisting of the following instrumentalities viz: a rotary printing plate or die carrier, a rotary impression-bed having passing contact with the printing plate or die in its rotary carrier, a rotary inking-pad having pass-

ing contact with the printing plate or die after its contact with the impression-bed, a radially-arranged revolving brush for removing a portion of the ink from the printing-plate, an intermittently-fed wiping-strip, a pressure-pad for holding the wiping-strip against the printing plate or die in its passing contact therewith and a spring-arm for holding the sheet or card in fixed position as the printing plate or die and the impression-bed meet the interposed sheet in passing contact to insure its perfect register, all combined and operating as and for the purpose stated.

5. In a plate-printing and embossing machine, the combination with a printing plate or die and its rotary carrier, of a rotary inking-pad having passing contact with the printing plate or die a radially-arranged revolving brush for removing a portion of the ink from the printing plate or die prior to its being wiped, an intermittently-fed wiping-strip, and a pressure-pad for holding the wiping-strip against the printing plate or die in its passing contact therewith.

6. In a plate-printing and embossing machine the combination with the printing plate or die 22 and its rotary carrier 18 the intermittently-fed wiping-strip 78 and the gear-wheel 14 provided on its rim with the inwardly-extending portion 74 with its inclined ends 76 and 77 and curved intermediate portion 75, of the pivoted pressure-pad 66 provided with the rigid arm 71 for engagement with the projecting portion 75, 76, 77 to give to the pressure-pad 66 first an abrupt contact with the passing printing plate or die and wiping-strip, then a wiping contact, and finally a release of the pressure-pad from the same substantially as and for the purpose stated.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

CHARLES E. BRINKWORTH.

In presence of—

ARTHUR H. BRINKWORTH,
W. T. MILLER.