W. W. McCARROLL.

MACHINE FOR RECTIFYING ELECTROTYPES.

APPLICATION FILED APR. 6, 1911.

1,109,856.

Patented Sept. 8, 1914

2 SHEETS—SHEET 1.

Fig. 2

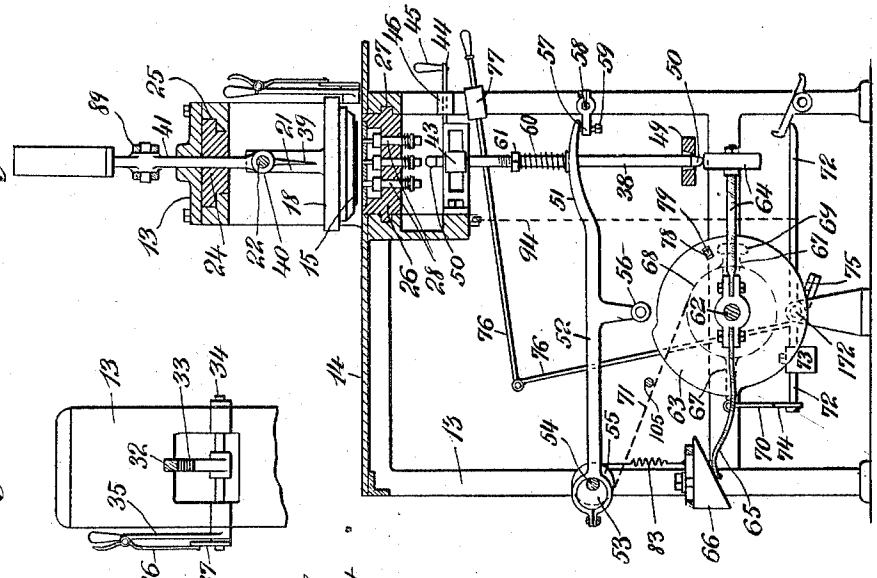
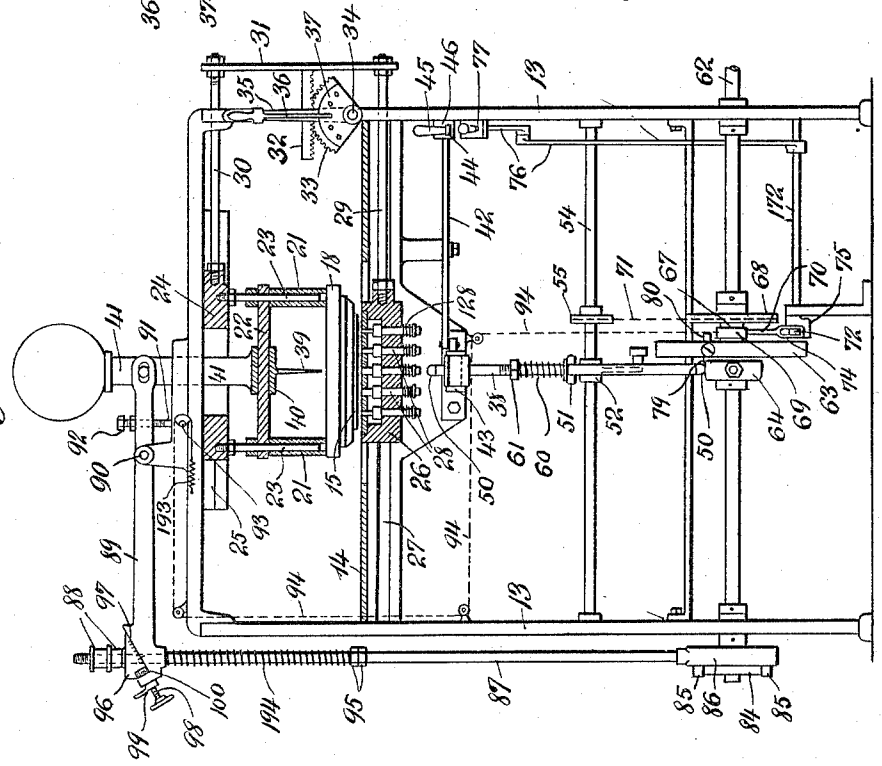


Fig. 3

Fig. 1



Witnesses:
L. Konigsberg
W. F. Callear

Walker W. McCarroll Inventor

By his Attorney
Ivan E. C. Konigsberg

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

W. W. McCARROLL.

MACHINE FOR RECTIFYING ELECTROTYPES.

APPLICATION FILED APR. 6, 1911.

1,109,856.

Patented Sept. 8, 1914.

2 SHEETS—SHEET 2.

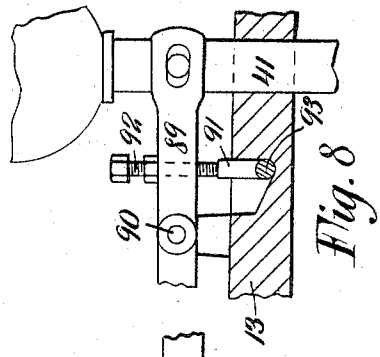


Fig. 8

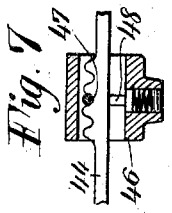


Fig. 7

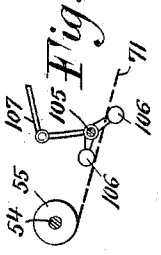


Fig. 12

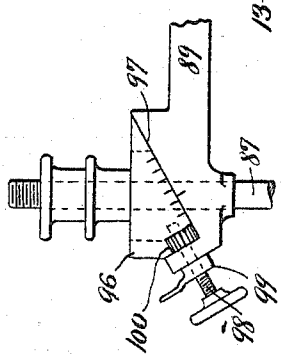


Fig. 9

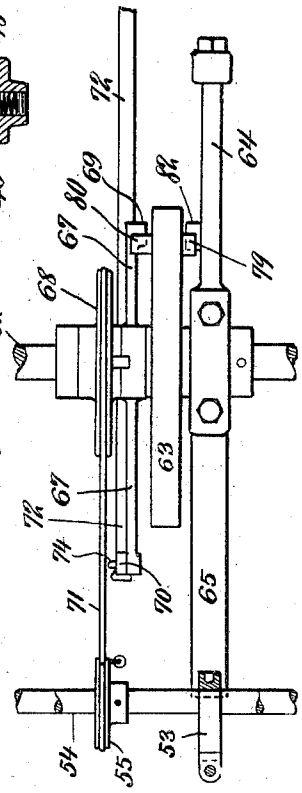


Fig. 4

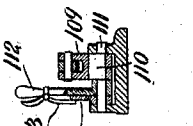


Fig. 11

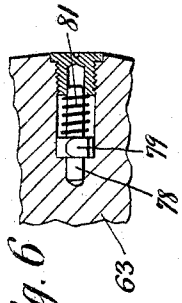


Fig. 6

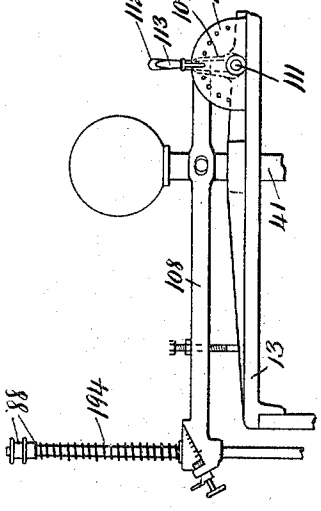


Fig. 10

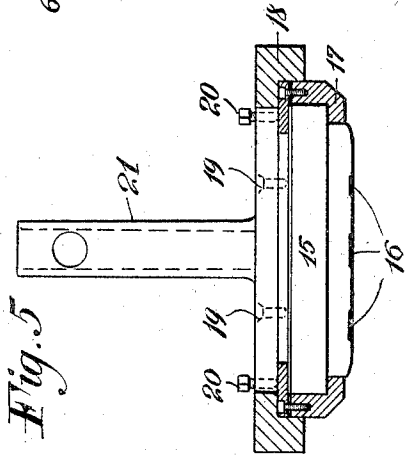


Fig. 5

Witnesses:
C. Honigsberg.
W. F. Callear.

Walker W. McCarroll Inventor
By his Attorneys
Chas. C. Honigsberg

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WALKER W. McCARROLL, OF ARLINGTON, NEW JERSEY.

MACHINE FOR RECTIFYING ELECTROTYPES.

1,109,856. Specification of Letters Patent. Patented Sept. 8, 1914.

Application filed April 6, 1911. Serial No. 619,203.

To all whom it may concern:

Be it known that I, WALKER W. McCARROLL, a citizen of the United States of America, and a resident of Arlington, Essex county, New Jersey, have invented certain new and useful Improvements in Machines for Rectifying Electrotypes, of which the following is a specification.

This invention relates to improvements in machines for rectifying electrotype plates and generally the objects of the invention are to provide a simple, practical and efficient machine for the purpose and one which can be produced at a reasonable cost.

To this end my invention comprises such elements, combination of parts and features of construction as is hereinafter set forth while reference is had to the accompanying drawings in which—

Figure 1 is a front elevation of a machine embodying my invention with parts in section. Fig. 2 is a vertical cross-sectional view of the machine with some parts removed. Fig. 3 is a detail view of parts of the tool setting mechanism shown in Fig. 1. Fig. 4 is a plan detail view of the hammer and adjacent parts. Fig. 5 is a view of the glass and frame. Fig. 6 is a detail view of the hammer tripping means. Fig. 7 is a detail view of the setting block. Fig. 8 shows the stop mechanism for the glass operating lever. Fig. 9 shows the setting means for said lever. Fig. 10 shows a modified construction of the glass operating lever. Fig. 11 is a detail view of parts shown in Fig. 10, and Fig. 12 shows a modified form of the hammer pressing mechanism.

Referring more particularly to Figs. 1 and 2 the reference numeral 13 denotes a suitable framework for the support of the various parts of the machine while 14 is the bed plate upon which the work is placed.

In rectifying electrotypes very fine, almost minute, adjustments and great accuracy in the construction of the machine are necessary because of the character of the work. The electrotype is finished by marking the places which need to be raised and then raising the same by the blow of a hammer upon a suitable tool which is set against the underside of the electrotype and at the same time providing a resistance on top of the plate against the blow of the hammer. For this purpose a glass block is supported above the plate and is provided with marks corresponding in arrangement and contour with the different tools, so that, by placing the electrotype with the marked portion under a certain mark on the glass—which the operator can observe through the glass—and operating the hammer on the tool the desired result is obtained, it being understood that the glass descends or is moved against the plate simultaneously with or a little ahead of the tool. It has been proposed to accomplish this result by means of a rotating glass block and tool turret, but great difficulties are met with in trying to keep the glass true or its lower surface level, inasmuch as, when the glass has been leveled in one position and is then rotated, it again gets out of level as will be easily understood. In the present instance I propose to employ a glass block and tool support adapted to travel together in a rectilinear direction whereby it is much easier to keep the glass leveled.

Referring to Figs. 1, 2 and 5 the numeral 15 represents a rectangular glass block having marks 16 placed thereon. These marks may be put on in any manner as long as they do not disturb the surface of the glass but leave it absolutely smooth. The glass is suitably held in a glass frame 17 mounted in the glass support 18 by screws 19. Other screws as 20 are for the purpose of leveling the glass within the glass support. 21, 21 are sleeves connected to and forming parts of the glass support, and said sleeves are tied together by a rod 22. Any other suitable means for connecting the sleeves 21 may be used. The glass support 18, the sleeves 21 and the rod 22 form a glass carriage mounted to slide vertically on posts 23 secured to a horizontal glass slide 24 guided in ways 25 on the frame 13. Below the bed plate 14 there is a tool slide 26 guided in ways 27 and carrying the tools 28 of which there are in this instance fifteen arranged in three rows of five each as shown. The tools are normally held down by springs 128. The tool slide and the glass carriage are tied together by the rods 29 and 30 joined by the rod piece 31 having a rack 32 meshing with a segmental gear 33 on a shaft 34. This latter is rocked by a handle 35 having a locking lever 36 coöperating with a locking plate 37. By operating the handle 35 the tools and the glass are moved

sidewise of the machine to bring the proper tool over the hammer rod 38 in the center of the machine. To further the positioning of the tools there is provided a pointer 39 representing the central vertical axis of the machine and which is carried by a sleeve 40 on the upright weighted member 41. The rod 22 passes through the sleeve 40 permitting the operating of the tool and glass slides independent of the member 41 as will be understood. The hammer rod 38 is positioned centrally of the machine but may be moved forward or backward to register with any one of the three rows of tools as will be understood from Fig. 2. The adjustment of the hammer rod is accomplished by means of a pivoted lever 42 the one end of which is pivoted to a bearing block 43 through which the hammer rod passes. The other end of said lever 42 is pivoted to a rod 44 having a handle 45. By pulling the handle in or out of the setting block 46 the hammer rod is adjusted. The setting block 46 may be of the construction shown in Fig. 7. The rod 44 passes through the block and has notches adapted to engage a pin 47. A spring seated pin 48 presses the rod 44 against said pin 47. Thus the hammer rod is set for each row of tools by simply pulling the rod 44 to cause the pin 47 to engage a particular notch. 49 is a bearing for the lower end of the hammer rod and the latter may be provided at the top and bottom with removable soft steel heads 50. The hammer rod is supported in the bifurcated end 51 of a pressure arm 52 journaled by means of an eccentric 53 on a shaft 54 upon which is fast a pulley 55. 56 is a cam roll on the arm 52. The end 51 rests on a lug 57 fast on a rod 58, an adjusting screw 59 being interposed between the arm 52 and the said lug. A spring 60 is coiled around the hammer rod and the upper end of said spring engages an adjusting nut 61. The hammer rod is used to put a pressure on the tools 28 before the hammer is operated with the advantage that a slight blow of the hammer will suffice for the operation of the tool, so that in the operation of the machine the noise and wear is considerably reduced, and the impressions of the tools on the electrotypes by the hammer blows may be better adjusted.

The operation of the hammer arm and the hammer rod is accomplished by the following means: 62 represents a constantly rotating shaft to which power may be applied in any suitable manner. 63 is a cam fast in the shaft and adapted to engage the aforesaid cam roll 56. On the shaft 62 is further mounted an arm bearing to one side the hammer 64, to the other side a hammer spring 65 engaging an adjustable spring block 66. By adjusting the latter the tension of the spring 65 may be varied. 67 is a trip arm loosely mounted on the shaft 62 and suitably connected to a pulley 68 so that the two move together. The trip arm carries a trip shoe 69 and a link 70. The pulley 68 is connected by a cable 71 to the pulley 55. A spring 83 pulls on the pulley 55 to keep the same normally in the position shown in Fig. 1. The link 70 is engaged by the treadle 72 pivoted at 172. 73 is an adjustable weight on the treadle and 74 is a loop on the end of the link 70 so that the first upward movement of the treadle does not affect the link. 75 is a treadle shoe for adjusting the distance of depression of the treadle. The treadle shoe is operated from levers 76 one of which passes through a setting block 77 similar to the block 46. 78 is the hammer trip which is carried in the cam 63—see Fig. 6—and has a projection 79 to the one side to engage the lug 82 on the hammer 64 and a projection 80 to the opposite side to be engaged by the trip shoe 69. The hammer trip slides radially in the cam 63 and is held inwardly by a spring 81. On the shaft 62 is fast a cam 84 on which run two cam rolls, 85, 85 carried by a fork 86 to which is secured a rod 87 bearing adjusting nuts 88 at the upper end which passes through the operating arm 89 pivoted at 90 and which engages the weighted member 41. The arm 89 is normally held at rest by a stop 91—see Fig. 8—engaging a set screw 92 in the arm. The stop 91 is carried by a short shaft 93 which may be rocked by a cable 94 connected to the treadle 72 to move the stop from under the set screw 92. A spring 193 normally keeps the stop 91 vertical. A spring 194 is interposed between the rod 87 and the operating arm 89 by means of lock nuts 95. A graduated adjusting block 96 is mounted on the rod 87 below the nuts 88—see Fig. 9. The said block is adapted to slide upon the inclined surface 97 of the arm 89 and is provided with graduations to register with a mark on the arm. The block is operated by rotating a shaft 98 which may be locked by a clamping nut 99. A nut 100 on the shaft 98 permits of adjustment in fractions of the distance between two register marks on the slide 96.

Before commencing the operation of the machine the operator adjusts the various elements according to the thickness of the electrotype and the character of the work to be performed. The stroke of the glass block is adjusted so that the block will just touch the surface of the electrotype in advance of the blow from the hammer. This adjustment is made by operating the slide block 96, the set screw 92 in the arm 89 and the tension of the spring 194 may be varied by turning the nuts 95 and 88. The treadle shoe 75 is set so as to permit a certain depression of the treadle 72 which in turn "sets" the trip shoe 69, the position of

which determines the point at which the hammer is tripped for the blow, and in connection herewith, the set screw 59 is adjusted to position the arm 52, and the tension of the hammer rod spring 60 is adjusted by the nut 61 so that when the arm 52 is lifted by the cam 63 the proper pressure is put upon the tools. Of course the farther down the trip shoe is set, the stronger will be the pressure on the tools because of the larger movement of the eccentric 53. The hammer spring 65 is adjusted by moving the block 66. During the operation it will be understood that the handle 35 is rocked to the right or to the left to position the proper tool centrally of the machine, and likewise, the handle 45 is pulled in or out to position the hammer rod under the proper row of tools, as will be clear from the drawings to those skilled in the art. During the operation the operator is constantly observing, by looking through the glass, whether he is placing the spot to be rectified under the proper mark 16. When the power is turned on the shaft 62 commences to rotate and through the cam 84 and cam rolls 85 the rod 87 is reciprocated. When the treadle is depressed to lift its inner end in the loop 74 only the stop 91 is moved down by the cable 94 which is connected to the treadle and as now the arm 89 is released the weighted member 41 is reciprocated to operate the glass, which may be used alone to straighten the edge or a large surface of the electrotype. During the rotation of the shaft 62 the cam 63 is of course also rotated with the hammer trip 79. The latter does not engage the hammer, however, but instead is forced radially outward by striking the shoe 69 and riding along the same. When the treadle is still further depressed,—as far as the treadle shoe will permit,—the pulley 68 is rotated which in turn rotates the pulley 55 to lower the eccentric 53 whereby the arm 52 is lowered until the cam roll 56 rests on the cam 63, the high part of which forces the end 51 upward to lift the hammer rod and the same is pressed against the bottom of the tools ready for the blow, simultaneously therewith the link 70 is pushed up and trip shoe 69 is lowered so that the trip 79 can engage the hammer 64, force the same down until the rotating trip 79 reaches the trip shoe whereby the trip is forced outward to release the hammer and the latter under the influence of the spring 65 strikes on the hammer rod which in turn forces the particular tool upward. If the operator keeps his foot on the treadle the trip 79 will engage the hammer during each revolution and force the same down until disengaged by the trip shoe, and the hammer blows follow in rapid succession together with the downward blow of the glass. The cams 63 and 84 are so timed that the glass descends first, then the arm 52 is lifted to put pressure on the tool and thereafter the hammer strikes the hammer rod.

If it is desired to put an extra heavy pressure on the hammer rod I may use the device shown in Fig. 12 in which 105 represents a rock shaft, also shown in Fig. 2, upon which is mounted two pulleys 106, one on each side of the cable 71. When the shaft 105 is rocked, as by levers 107, the cable is deflected to exert a stronger pull on the pulley 55 adjacent the eccentric 53 whereby the latter is pulled down to force the fork 51 more upward to exert a stronger pressure on the spring so as to press the rammer rod against the tools.

In Fig. 10 is illustrated a modified form for pivoting the operating lever 108 which reciprocates the member 41. In this figure the spring 194 is supported above the lever and the latter is pivoted to the right of the member 41 on a link 109 journaled on an eccentric 110 on a short shaft 111 which may be rocked by a handle 112 having a locking lever 113 engaging a plate 114. By setting the link 109 in various positions and locking it, the lever 108 is raised or lowered to vary the reciprocations of the member 41 carrying the glass block to accommodate various thicknesses of electrotypes.

It will be seen that this machine possesses several important features with respect to adjustability and ease of operation. Further, it will be remembered that in rectifying electrotypes for fine work the machine must be so constructed that very slight blows can be delivered when necessary. In this instance the construction of the pressure arm 52 and associated parts make this possible. Another feature is the absolute alinement and coöperation of the glass and the tools, with the advantage that there is no obstructing element to prevent the operator from at all times observing the work.

Various changes within the scope of the appended claims may of course be made within the principle of the invention.

The combination and operation of the glass carriage, the glass block, the tool slide, and the operation of the pressure means on the hammer rod before the blow is delivered on the tools is claimed in my pending application Serial Number 640,500, filed July 25, 1911.

I claim:—

1. The combination of rectifying tools, a hammer rod, a hammer for striking the latter to operate one of the said tools, a rotating member for operating the said hammer away from the said hammer rod and means for tripping said rotating member to release the said hammer.

2. The combination of a plurality of rectifying tools, a hammer rod, a hammer for striking the latter to operate one of the said

tools, a rotating member adapted to engage the hammer to move the same away from the hammer rod, means for tripping the said rotating member to release the said hammer and a spring for actuating the latter.

3. The combination of a plurality of rectifying tools, a hammer for operating the same, a member for operating the hammer a given distance in one direction, means for tripping the said member to release the said hammer and a spring carried by the latter for actuating the said hammer to strike an upward blow.

4. The combination of a glass block, a lever for reciprocating the same vertically, means for adjusting the stroke of the said lever at both ends thereof, rectifying tools supported below the said glass, means for operating any one of the said tools upwardly against the said glass and mechanism for adjusting the said tool operating means.

5. The combination of a glass block, means for operating the same, a plurality of rectifying tools, a hammer for operating any one of the said tools against the said glass, a movable member for operating the said hammer away from the said tools, means for tripping the said movable member to release the said hammer and a spring for actuating the latter.

Signed at New York, N. Y. this 3 day of April, 1911.

WALKER W. McCARROLL.

Witnesses:

IVAN KONIGSBERG,

K. G. LEARD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."