

M. A. McKEE.
 PRINTING PLATE SHAVING MACHINE.
 APPLICATION FILED JUNE 26, 1909.

1,054,130.

Patented Feb. 25, 1913.

3 SHEETS—SHEET 1.

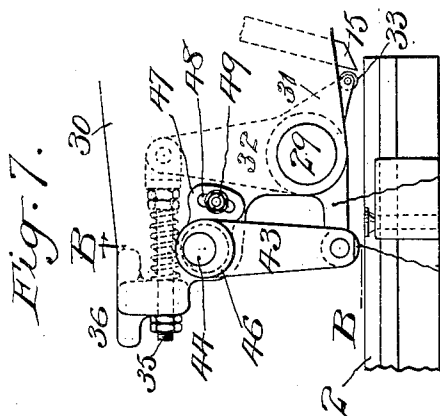


Fig. 7.

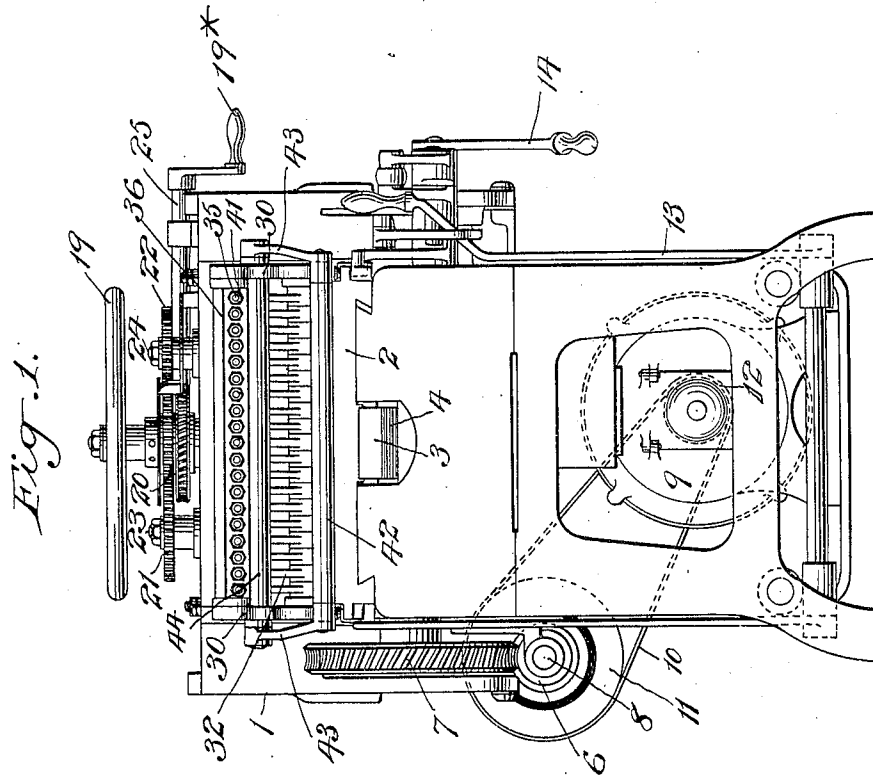
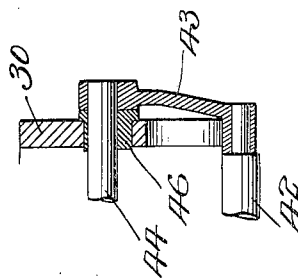


Fig. 1.

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 Henry Dine.

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Fig. 4.

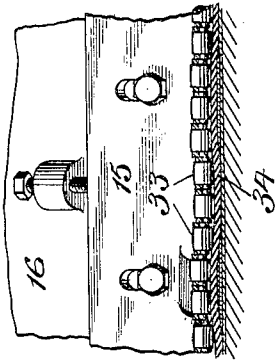


Fig. 5.

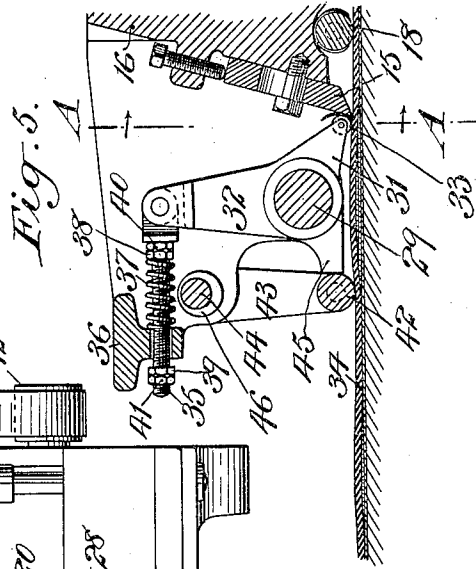
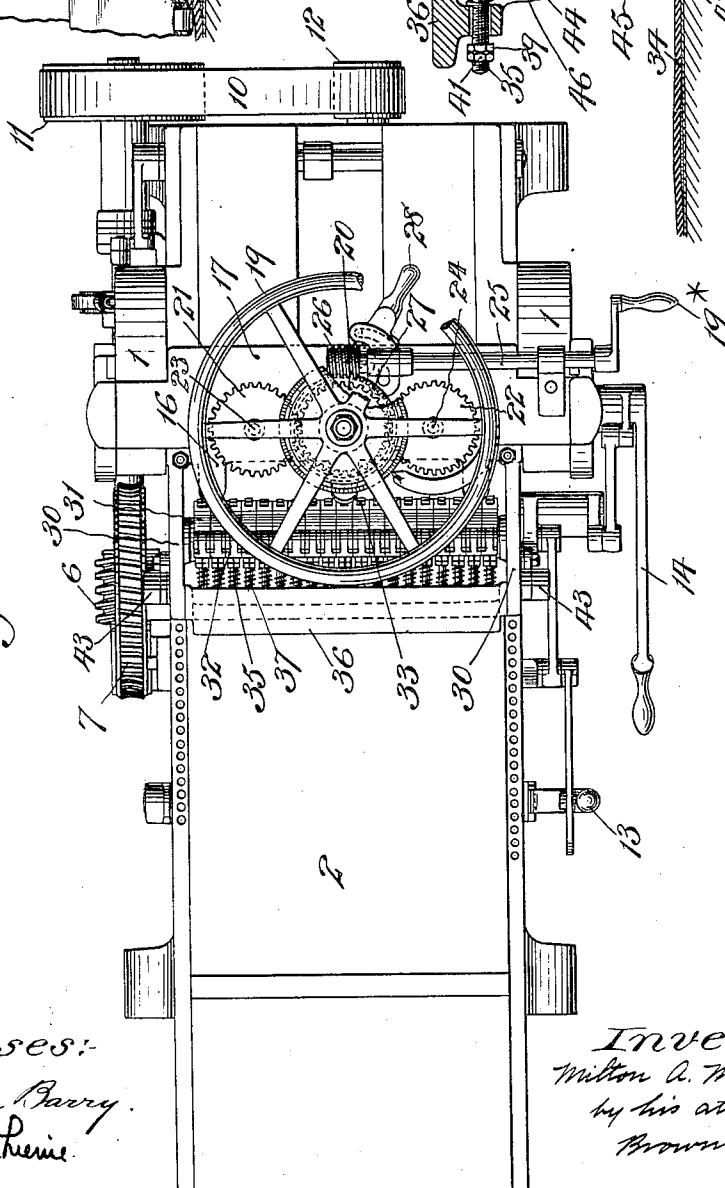


Fig. 2.



Witnesses:
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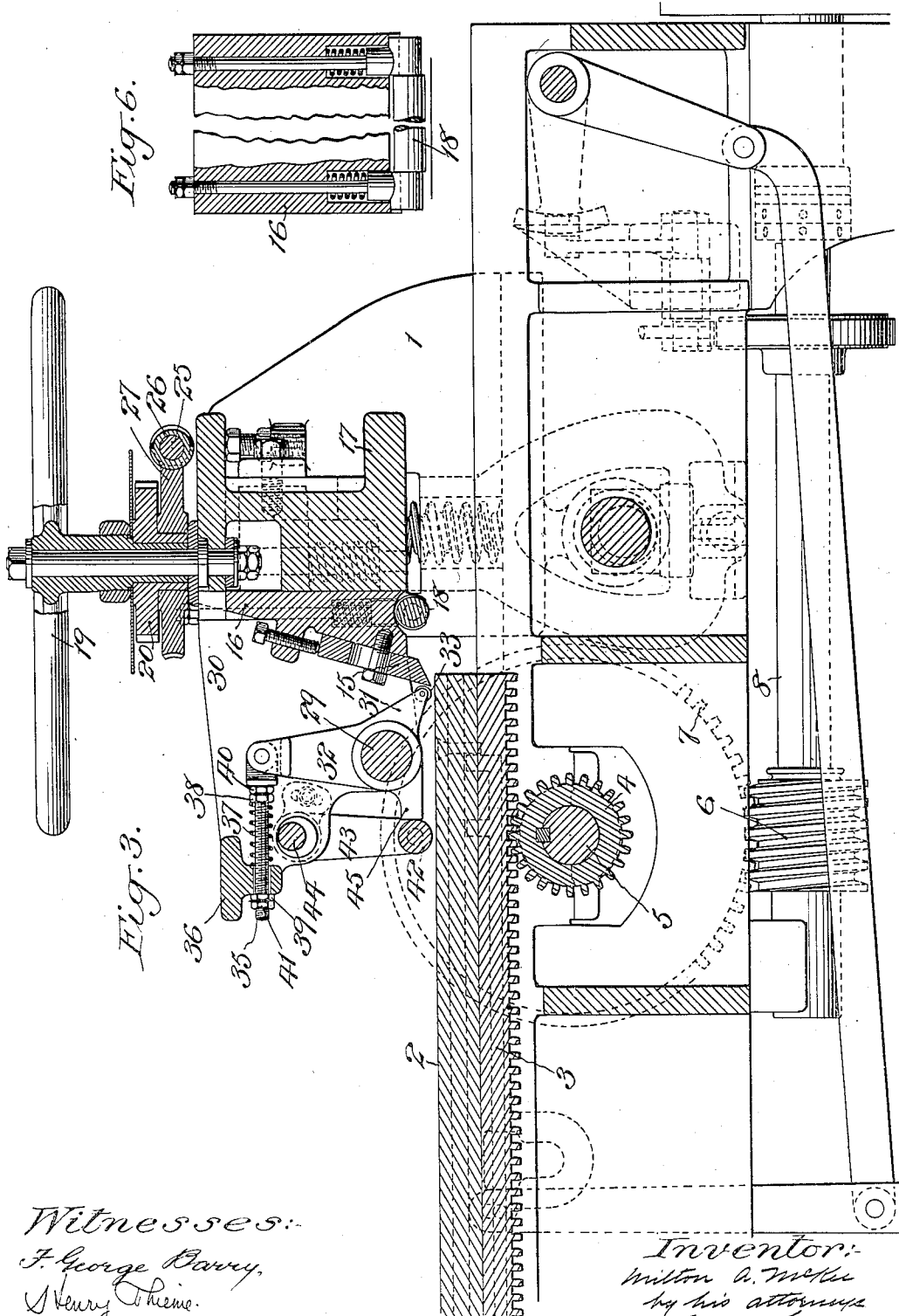
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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

MILTON A. McKEE, OF WESTERLY, RHODE ISLAND, ASSIGNOR TO C. B. COTTRELL & SONS COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

PRINTING-PLATE-SHAVING MACHINE.

1,054,130.

Specification of Letters Patent.

Patented Feb. 25, 1913.

Application filed June 26, 1909. Serial No. 504,490.

To all whom it may concern:

Be it known that I, MILTON A. McKEE, a citizen of the United States, and resident of Westerly, in the county of Washington and State of Rhode Island, have invented a new and useful Printing-Plate-Shaving Machine, of which the following is a specification.

In the treatment of printing plates it has been found that greater relief in the blacker printing parts of the plate could be obtained if a greater quantity of metal could be stored on the back of the plate opposite the part needing the greater relief. This result has been obtained by the process of preparing printing plates as described and claimed in United States Letters Patent No. 857,531 dated June 18, 1907, in which the following steps are employed: A matrix is prepared so as to predetermine just what changes shall be made in the printing face of the plate to produce the desired result. The matrix is then placed face up upon the bed of a shaving machine with the printing plate face down thereupon in such position that the high and low portions of the matrix are in register with those portions of the plate which are to be made respectively low and elevated. The plate and matrix are then held firmly in position upon the bed of the shaving machine and the shaving knife is actuated either by moving the bed beneath the knife or by moving the knife along the bed, until the back of the plate is shaved to the desired thickness. When the plate is released, it will spring back to its normal position, leaving elevations and depressions along its back opposite to the depressions and elevations previously formed or produced in the matrix. The plate while still in register with the matrix, may be subjected to heat and pressure to form permanently the desired depressions and elevations in the printing face of the plate. As the back of the printing plate is engaged by the shaving knife, the knife will tend to crowd the unsupported parts of the plate away from the edge of the knife, so that the metal will be removed from the back of the plate only at those portions opposite the high portions of the matrix.

This present invention is directed to the shaving machine and has for its object to provide means such as a plurality of independent spring-pressed fingers arranged to

exert pressure locally upon the back of the plate, in close proximity to the shaving knife, the said fingers serving to assist the knife in crowding or forcing the metal away from the edge of the knife at the unsupported portions of the plate for leaving a greater thickness or storage of metal at such unsupported portions.

A practical embodiment of my invention is represented in the accompanying drawings in which,

Figure 1 represents a printing plate shaving machine in end elevation with my invention applied thereto, Fig. 2 is a top plan view of the same, Fig. 3 is an enlarged detail longitudinal vertical section through the machine, Fig. 4 is an enlarged detail section taken in the plane of the line A—A of Fig. 5, Fig. 5 is an enlarged detail vertical longitudinal section at the shaving knife and spring-pressed fingers, illustrating the action of the knife and fingers with respect to the back of the printing plate, Fig. 6 is an enlarged transverse detail section of the inner spring-pressed plate holding roller, Fig. 7 is an enlarged detail view, showing in side elevation the device for adjusting the plate cramping roller, and Fig. 8 is an enlarged section taken in the plane of the line B—B of Fig. 7.

The main frame of the shaving machine is denoted by 1 and its reciprocating bed by 2. The bed rack is denoted by 3 and is driven backward and forward by a reversing pinion 4 mounted on a shaft 5 driven by a worm and gear connection 6, 7, from a drive shaft 8, which shaft in turn is driven from any suitable source of power, such, for instance, as a reversing motor 9, by a belt and pulley connection 10, 11, 12. The movement of the bed may be reversed automatically and may also be reversed manually by the starting and reversing lever 13. The movement of the bed may also be controlled by the starting lever 13. The knife controlling lever is denoted by 14. These levers are suitably connected to the parts which they control and as they form no part of the present invention, their operation will not be specifically described herein.

The shaving knife is denoted by 15, and it is adjustably mounted on a member 16 which in turn is adjustably mounted upon the frame 17 adjustable in the main frame 1.

The spring-pressed plate engaging roller 18 is mounted in the vertically adjustable knife carrying member 16. The vertical adjustments of the knife carrying member 16 are controlled by a hand wheel 19 mounted in the frame 17, which hand wheel has a gear 20 which meshes with the gears 21, 22, fixed on vertical adjusting screws 23, 24, engaging the knife carrying member 16. A micrometer adjustment of the knife carrying member 16 may be provided for by the use of a hand shaft 25 which has a worm and gear connection 26, 27, with the shank of the handle 19*. This shaft 25 and its worm may be moved into and out of operative position by a hand lever 28.

The above parts herein described also form no part of this present invention and their operation will not be specifically described herein.

The means which I have shown for exerting pressure upon the plate locally along the same, in close proximity to the knife, is constructed, arranged and operated as follows: A plurality of spring-pressed fingers are mounted upon a cross shaft 29 carried by brackets 30 forming a fixed part of the knife carrying member 16. Each of these fingers comprises a downwardly and inwardly extended arm 31 and an upwardly extended arm 32. The arm 31 is provided with a barreled roller 33 arranged to roll along the back of the printing plate 34 in close proximity to the shaving knife 15. A screw bolt 35 extends forwardly from the uprising arm 32 of each spring-pressed finger, which bolt passes through a cross piece 36 of the brackets 30. A spring 37 is interposed between the cross piece 36 and an adjusting nut 38 on the said screw bolt. An adjusting nut 39 on the screw bolt 35, in front of the cross piece 36, serves to limit the inward movement of the arm 32 of the spring-pressed finger and thereby the downward movement of the arm 31. The tension of the spring 37 may be adjusted by the nut 38. These nuts 38, 39, may be provided with lock nuts 40, 41, for locking the nuts 38, 39, in their adjusted position. A cramping roller 42 is carried by arms 43 supported upon a cross shaft 44 mounted eccentrically in bushings 46 rotatably mounted in the brackets 30. Stops 45 on the brackets 30 limit the inward movement of the roller 42. This roller 42 serves to hold the printing plate and its interposed matrix firmly down upon the bed 2 of the machine as the plate is passed beneath the shaving knife 15.

Means are provided for adjusting the cramping roller 42 toward and away from the bed 2, which means consists in the present instance, of flanges 47 on the eccentric bushing 46, which flanges have elongated slots 48 through which clamping bolts 49

extend for securing the flanges rigidly to the brackets 30 at any desired position within the limits of their rotative movements.

The plurality of independent spring-pressed fingers which exert their pressure upon the back of the plate as it passes beneath the shaving knife, serve to exert pressure locally along the plate, thus assisting the knife in crowding the unsupported parts of the plate away from the edge of the knife for permitting portions of the plate opposite the raised portions of the matrix to be removed in a series of shaving operations by the knife. The shaving operation is continued until a full shaving is made covering the entire area of the back of the plate, or until the plate has been shaved to the thickness desired.

While I have shown and described a plurality of independent spring-pressed fingers arranged to exert pressure upon the back of the plate being shaved, it is to be understood that any other means may be employed for exerting pressure locally upon the plate at this point, without departing from the spirit and scope of this invention; hence I do not wish to limit myself strictly to the means herein set forth, but

What I claim is:

1. In a machine of the character described, a shaving knife and means arranged to exert pressure locally upon the plate being shaved, along the same, in close proximity to the knife.

2. In a machine of the character described, a shaving knife and a plurality of independent devices arranged in close proximity to one another each arranged to exert pressure locally upon the plate being shaved, in close proximity to the knife.

3. In a machine of the character described, a shaving knife and a plurality of independent spring-pressed fingers arranged in close proximity to one another, each arranged to exert pressure locally upon the plate being shaved, in close proximity to the knife.

4. In a machine of the character described, a shaving knife and a plurality of independent devices arranged in close proximity to one another each including a roller, arranged to exert a rolling pressure locally upon the plate being shaved, in close proximity to the knife.

5. In a machine of the character described, a shaving knife and a plurality of independent spring-pressed fingers arranged in close proximity to one another, each having a roller arranged to exert a rolling pressure locally upon the plate being shaved, in close proximity to the knife.

6. In a machine of the character described, a shaving knife and means arranged to exert pressure locally upon the

plate being shaved, along the same, in close proximity to the knife, and means for regulating said pressure.

7. In a machine of the character described, a shaving knife, a plurality of independent devices arranged in close proximity to one another, each arranged to exert pressure locally upon the plate being shaved, in close proximity to the knife, and means for regulating the pressure on each of the devices.

8. In a machine of the character described, a shaving knife, a plurality of independent spring-pressed fingers arranged in close proximity to one another each arranged to exert pressure locally upon the plate being shaved, in close proximity to the knife, and means for adjusting the spring tension of each of the fingers.

9. In a machine of the character described, a shaving knife, a plurality of spring-pressed fingers arranged in close proximity to one another each arranged to exert pressure locally upon the plate being shaved, in close proximity to the knife, and adjustable means for limiting the downward movement of each of the fingers.

10. In a machine of the character described, a shaving knife, a plurality of spring-pressed fingers each arranged to exert pressure locally upon the plate being

shaved, in close proximity to the knife, means for adjusting the spring tension of the fingers, and adjustable means for limiting the downward movement of the fingers.

11. In a machine of the character described, a shaving knife, its support, a plurality of independent devices carried by said support, each arranged to exert pressure locally upon the plate being shaved, in close proximity to the knife, and a cramping roller carried by the knife support in front of the said independent devices.

12. In a machine of the character described, a shaving knife, its support, a plurality of independent devices carried by said support, each arranged to exert pressure locally upon the plate being shaved, in close proximity to the knife, and a vertically adjustable cramping roller carried by the knife support in front of said independent devices.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this 14th day of June, 1909.

MILTON A. MCKEE.

Witnesses:

FRANCIS W. FRIGOUT,
ALFRED NUTTING.