

R. MITCHELL.
EMBOSSING MACHINE.
APPLICATION FILED MAY 14, 1909.

994,686.

Patented June 6, 1911

2 SHEETS-SHEET 1.

Fig. 1

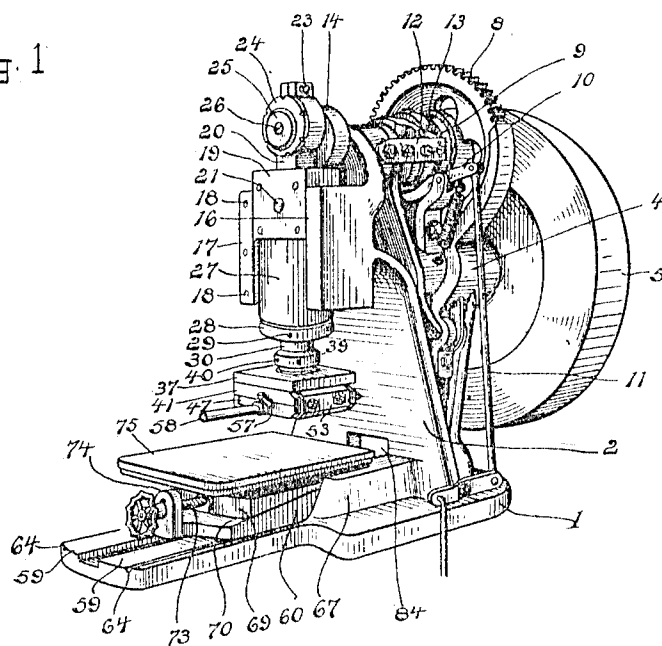
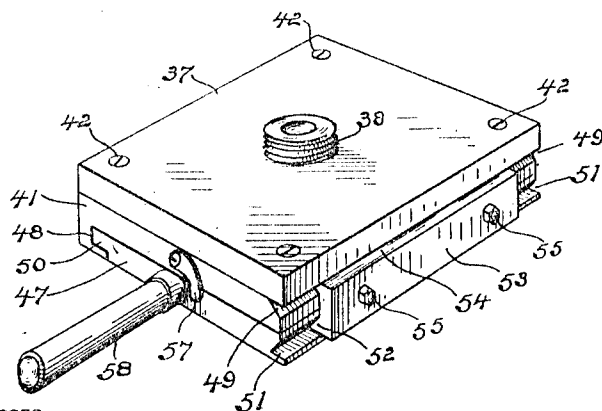


Fig. 5



WITNESSES:

A. M. Shannon
A. M. Low

INVENTOR

ROBERT MITCHELL

BY

Robert Mitchell
ATTORNEYS.

R. MITCHELL.
EMBOSSING MACHINE.
APPLICATION FILED MAY 14, 1909.

994,686.

Patented June 6, 1911

2 SHEETS-SHEET 2.

Fig. 4.

Fig. 3.

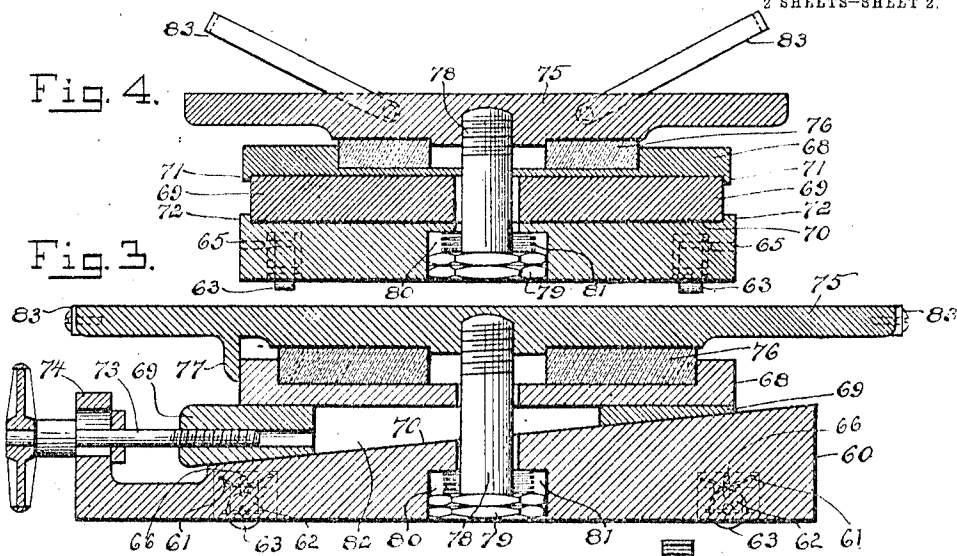
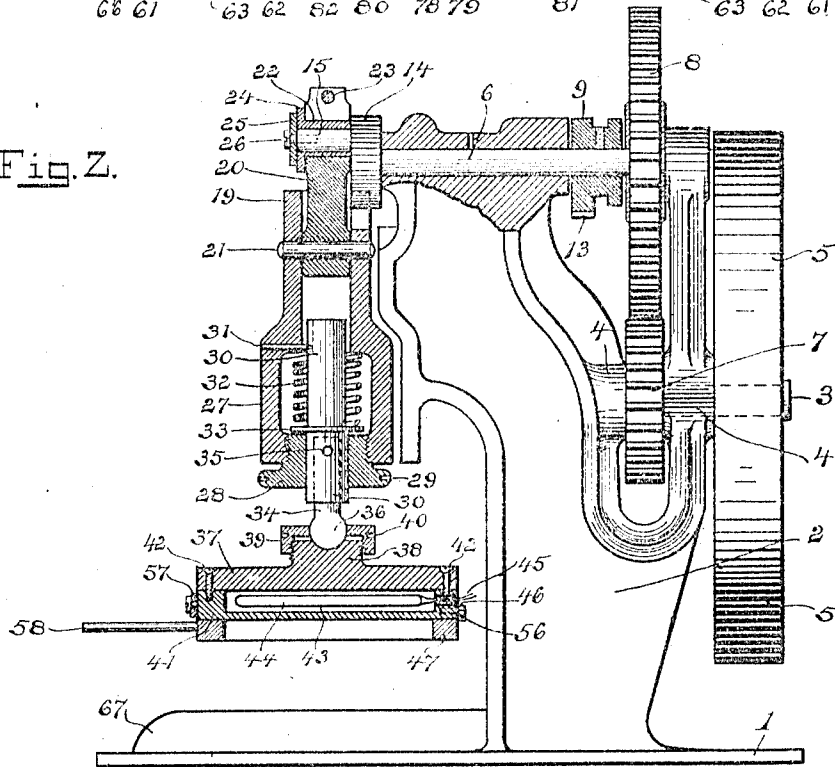


Fig. 2.



WITNESSES:

A. M. Shannon.
A. M. Low.

INVENTOR
ROBERT MITCHELL.

BY *[Signature]*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ROBERT MITCHELL, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-THIRD TO STEPHEN H. KNIGHT, OF DETROIT, MICHIGAN.

EMBOSSING-MACHINE.

994,686.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed May 14, 1909. Serial No. 495,964.

To all whom it may concern:

Be it known that I, ROBERT MITCHELL, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in an Embossing-Machine, of which the following is a specification, reference being had therein to the accompanying drawings.

In stamping or embossing paper, leather, light sheet metal, or the like, in ornamental work, it is desirable and necessary to gage the heat and pressure used with great accuracy in order to obtain uniform and good results.

This invention relates to an embossing machine wherein electrical heating of the die plate and adjusting features of the mechanism insure uniform excellence in the product.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

Referring to the drawings, Figure 1 is a view in perspective of an embossing machine embodying the features of the invention: Fig. 2 is a view, partially in side elevation, and partially in section, of the machine. Fig. 3 is a view in longitudinal section through a bed plate. Fig. 4 is a view in transverse section through the bed-plate. Fig. 5 is a view in detail of a die holder and heater.

In general form the embossing machine resembles a stamping press, having, as shown in the drawings, a pedestal or base 1 and a vertically disposed frame 2 preferably integral therewith, all of cast metal, and suitably flanged and ribbed to combine strength and lightness, and to afford compact arrangement of the running parts and suitable support thereof.

The driving mechanism comprises a horizontal main shaft 3 journaled in bearings 4, so as to give clearance above the base for a combined belt and drive-wheel 5 keyed thereon. A parallel counter or crank shaft 6 is journaled in the upper end of the main frame, and a pinion 7 keyed or otherwise secured to the main shaft meshes with a gear 8, that is journaled on the crank shaft. The gear and its shaft may be interlocked by a clutch 9 of any preferred standard knock-off type, that is intermittently operated by a knock-off trigger 10, controlled through

suitable lever link and pedal connections 11, by the operator, and that is provided with a spring brake stop 12, adjustably secured on the frame, engaging a lug 13 on the clutch collar rim. A crank disk 14 is secured on or made integral with the forward end of the crank shaft and carries a crank pin 15 offset from the shaft.

Ways 16 of suitable design are formed on or secured to the face of the frame, below and in vertical alinement with the crank pin and disk, the usual adjustment for wear being provided for by a gib 17 secured by set screws 18. A hollow rectangular cross head 19 is reciprocable in the ways, through the medium of a pitman rod 20 whose lower end is journaled on a cross-pin 21 in the head, and whose upper end is counterbored and split to receive a crank-pin bushing 22, which is clamped therein by a set screw 23 engaging the slotted rod-end. The bushing is eccentrically bored and a transversely slotted flange 24 on its outer end, admits of its being turned for fine adjustment of the crank thereon. A cap 25 secured by a set screw 26 prevents lateral movement of the rod.

The head is extended downward in the form of a hollow cylinder 27, which is interiorly screw-threaded near its lower end to receive a flanged, centrally apertured cap 28, radial apertures 29 in the flange periphery being provided for the application of a spanner bar or wrench. A spindle 30 is concentrically secured in the cylinder, its lower portion extending through and being reciprocable in the cap 28, and its upper portion being key-seated to engage a feather pin or screw 31 in the cylinder, which prevents inter-rotation of the parts. A spring 32 in compression between the upper shouldered wall of the cylinder and a flange 33 formed on the spindle, holds the latter normally projected through the cylinder cap. The tension of the spring may be varied by adjusting the cap 28. The lower part of the spindle is counterbored and a stem 34 is secured in the socket thus formed by a pin 35. The lower projecting end 36 of the stem is spherical. Obviously the stem may be integral with the spindle, but the construction illustrated is preferable.

An embossing die holder and heater is secured to the stem. This consists of a rectangular heating plate 37, having a central

boss 38 on its upper side, which is cupped to receive the spherical end 36 of the stem and is exteriorly screw-threaded for a central apertured cap 39, the cap and boss together forming a socket for the ball 36. By applying a spanner bar or wrench to suitable apertures 40 in the cap periphery, the latter may be set up so as to clamp the plate 37 in any desired position.

10 A heating plate 41 is secured, as by screws 42 on the under side of the socket plate 37. The upper side of the heating plate is hollowed out to form a chamber 44 in which is an electric heating coil 44, preferably oblong to correspond to the chamber, and built up in the usual way on an iron core with properly insulated wires 45 wound thereon and extended through an insulated bushing 46 in the heating plate to a suitable source of supply. Obviously the heating and socket plate may be integral with removable side for admitting the coil, but the construction above described is the preferred form. A rectangular embossing die holder or frame 47 is removably secured against the underside of the heating plate 41. Preferably, a rabbeted, depending flange 48 is integrally formed along one of the lower margins of the heating plate, and the opposite upper corner is chamfered off, forming a groove 49 parallel to the flange. One margin 50 of the die holder is rabbeted to interlock with the flange 48, and a groove 51 is formed in the opposite margin. This groove mates with and engages a rib 52 on a guide plate or gib 53, secured in alinement on the heating plate by a tongue 54 entering the groove 49, and by set screws 55. An adjustable stop 56, preferably in the form of a cap screw screwthreaded into the plate with its head overlapping the edge of the holder, and a latch 57 lock the holder against longitudinal displacement. A handle 58 is provided and the holder has the usual appurtenances for securing the die body.

The pedestal 1 extends well out below the press head, and a pair of broad horizontal ways 59 are formed or secured thereon. A carriage 60 is yieldingly supported over these ways on springs 61 interposed between the carriage and roller bearings 62 vertically movable in recesses on the carriage, whose rolls 63 run in parallel channels 64 in the ways, screws 65 entering vertical slots 66 in the bearings, retaining the bearings when the carriage is lifted. The carriage itself is further held in alinement by parallel wings 67 formed on the pedestal on either side of the ways. Normally, the springs hold the carriage clear of the ways to allow it to be freely moved. A horizontal table cushion block 68 is supported on the carriage, vertical adjustment being had by a parallel wedge construction afforded by a

supporting wedge plate 69, slidable on an inclined face 70 of the carriage between guide flanges 71 and 72 on the carriage and block. A horizontal hand screw 73 rotatably secured in a vertically elongated aperture in a lug 74 on the front of the carriage 60, engages and operates the wedge plate. A horizontal rectangular table 75 is yieldingly supported on the cushion block 68 by an annular block 76 of rubber or like resilient material, seated in the counterbored face of the block, a stop or guide 77 on the table engaging the front side of the block to prevent rotation of the parts. The carriage, wedge plate and table are further confined by a central stud 78, whose upper end is screwed into the table and whose lower end is provided with jam-nuts 79 in a recess 80 in the carriage bottom, a spring 81 between the carriage and nuts and an elongated aperture 82 in the wedge permitting longitudinal movement of the latter. Clips or clamping bars 83 are pivoted to either end of the table so as to close over the margins, and to retain layers of paper, cloth, felt, or other material which may be used for padding, backing or the like. As a further detail of construction, an aperture 84 is formed in the frame back of the carriage, to allow strips of stock to be passed through as they are being operated on. Suitable lubricating means are provided as well as the usual provisions for adjustment for wear.

One of the features of the invention is the universal joint connection of the die holder and heater to the head, by which the die may be accurately adjusted.

Another feature is the latitude of adjustment possible in the table, while at the same time, the table is firmly supported through the broad engaging surfaces of the carriage and its ways, when the pressure of the descending head compresses the roller springs.

Another feature of the invention is the method of heating the embossing die by electricity, which may be regulated so as to hold the die at any desired temperature, without danger of overheating or tarnishing the die face or injuring the product. This ease of control of the heat together with the fine and accurate adjustment possible because of the arrangement of the mechanism, insures uniformity and excellence of work.

Obviously, the details of construction may be varied without departing from the spirit of the invention, and I do not care to limit myself to any particular form or arrangement of parts.

What I claim as my invention is:—

1. An embossing machine having a vertically reciprocable head, a vertically yielding spindle therein, an electrically heated plate, a universal ball-and-socket connection

securing the plate to the spindle, guide flanges on the plate, a die holding frame on the underside of the plate engaging said flanges and a latch retaining the frame.

5 2. An embossing machine having a vertically reciprocable head, a spindle therein, a socket plate having a central upper boss, adjustable ball-and-socket connection between the boss and the spindle end, a heating plate with a recessed upper side, secured
10 against the under side of the socket plate, an electric heating coil in the recess, a marginal, depending rabbeted flange on one margin of the heating plate, a parallel gib adjustably secured to the opposite margin of
15 the heating plate, a die holding frame, whose opposite parallel margins have sliding engagement with the flange and gib, an adjustable stop limiting the backward movement of the frame, and a latch locking the frame
20 when against the stop.

3. An embossing machine having a vertically reciprocable rectangular head, a hollow cylinder integral therewith, an apertured cap screw-threaded into the lower end
25 of the cylinder, a non-rotatable, longitudinally movable flanged spindle in the cylinder, projecting through the cap, a spring in compression between the upper end of the cylinder and the spindle flange, a stem secured in the lower end of the spindle, and
30 die holding and heating means having an adjustable ball-and-socket connection with the lower end of the stem.

35 4. An embossing machine comprising a frame, a head vertically reciprocable therein, die holding and heating means on the head, a vertically yielding carriage horizontally movable in the frame, a table, and
40 vertical adjusting means yieldingly supporting the table on the carriage.

5. An embossing machine comprising a frame, a head vertically reciprocable therein, die holding and heating means on the
45 head, horizontally channeled ways on the frame beneath the head, rollers traversing the channel, a carriage yieldingly supported on the rollers over the ways, and a table yieldingly and adjustably secured on the
50 carriage.

6. An embossing machine comprising a frame, a head vertically reciprocable therein, die holding and heating means on the head, horizontally channeled in the frame

beneath the head, a carriage over the ways, 55 rollers engaging the channels, journaled in bearing blocks having limited, vertically yielding movement in the carriage, and a table yieldingly secured on the carriage.

7. An embossing machine comprising a 60 frame, a head vertically reciprocable therein, die holding and heating means thereon, a horizontal carriage way in the frame beneath the head, a carriage, rollers journaled in bearings having independent limited vertical movement in the carriage, springs between the bearings and carriage normally supporting the carriage above the ways, and
65 a table yieldingly secured on the carriage.

8. An embossing machine having a vertically reciprocable head, die holding and heating means thereon, a carriage horizontally movable below the head, having a longitudinally inclined face, an oppositely inclined longitudinally apertured wedge movable thereon, a cushion block on the wedge,
75 a cushion on the block, a horizontal table on the block, a depending stud passing through the supporting members and securing the table, jam nuts on the stud, and a spring in compression between the under side of the carriage and the jam-nuts on the stud.

9. An embossing machine having a main frame, a vertically reciprocable head, die 85 holding and heating means thereon, a carriage horizontally movable in the frame below the head, having a longitudinally inclined upper face provided with marginal guide flanges, a horizontal cushion block having depending marginal flanges mating
90 with the carriage flanges, a wedge slidable between the flanged faces of the carriage and block, a horizontal hand-screw engaging the carriage adapted to operate the wedge, a cushion on the block, a horizontal
95 table on the cushion, a stud secured to the table longitudinally movable in the block, wedge and carriage, and a spring in the carriage engaging the stud, adapted to oppose the wedge. 100

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT MITCHELL.

Witnesses:

OTTO F. BARTHEL,
ANNA M. DORR.