Sept. 4, 1934. J. J. BOSDAN 1,972,547

EMBOSSING MACHINE

Filed March 10, 1933 7 Sheets-Sheet 1

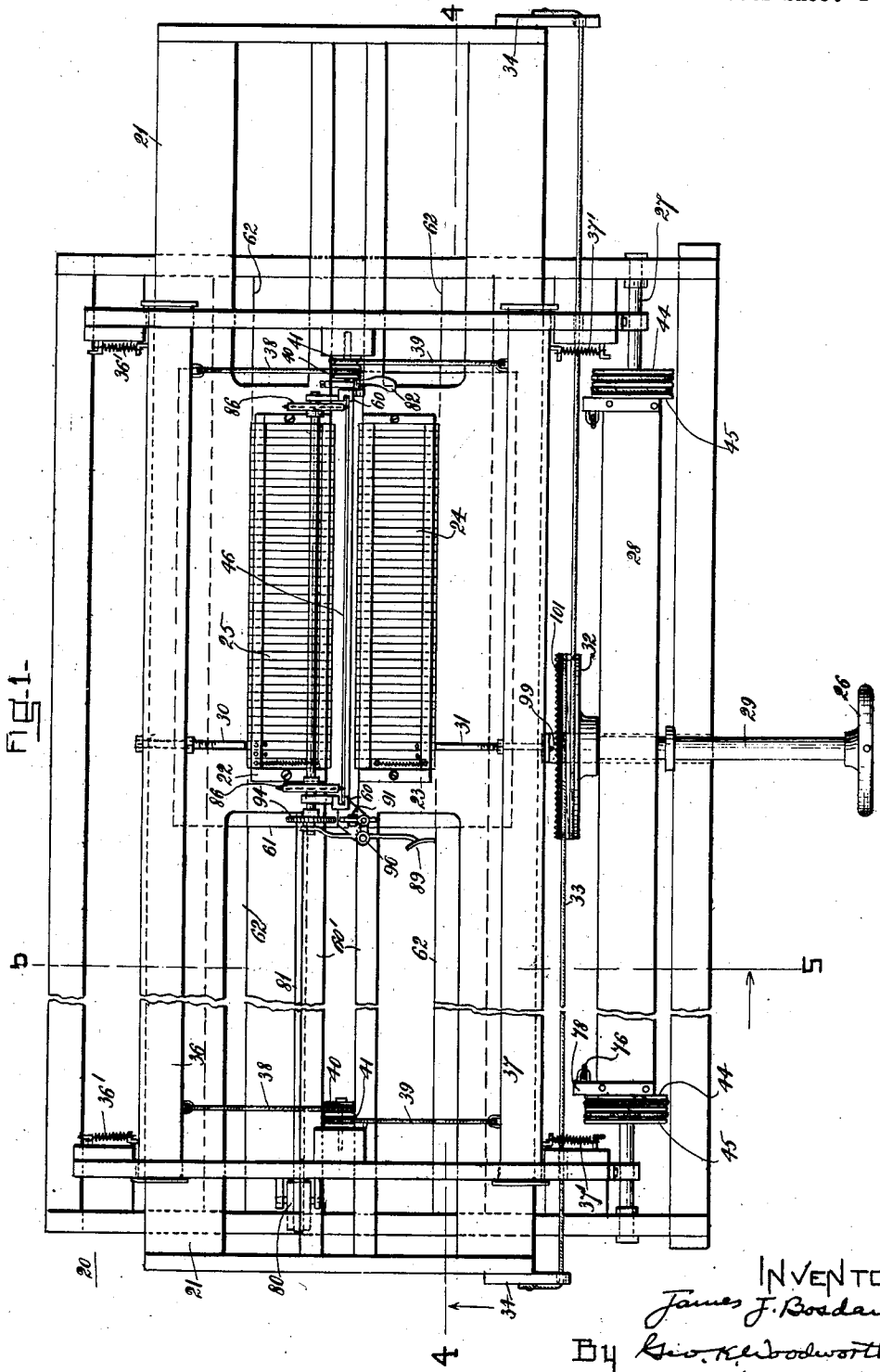


Fig. 1.

INVENTOR:
James J. Bosdan
By Geo. K. Woodworth.
ATTORNEY.

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EMBOSSING MACHINE

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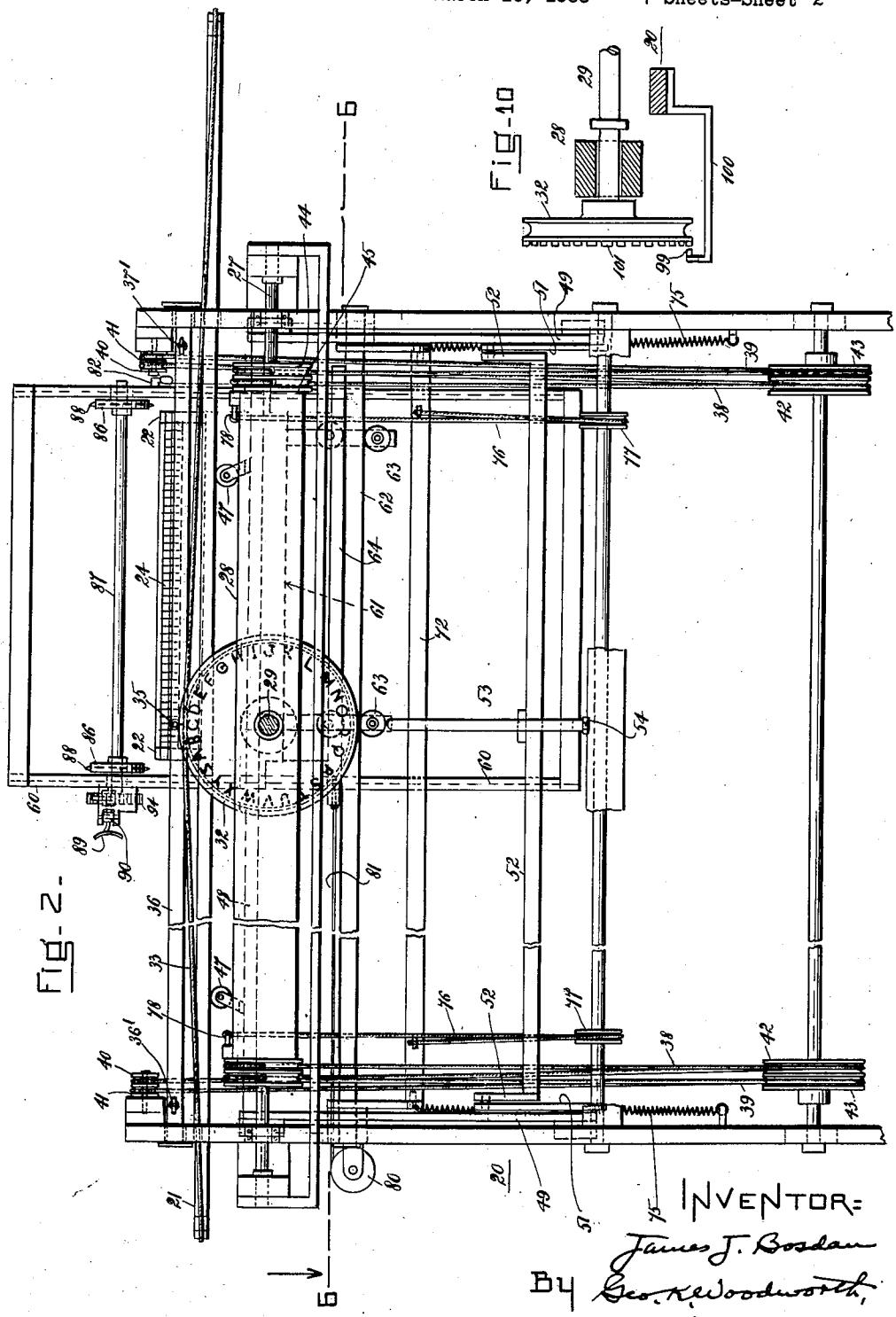


Fig. 2.

Fig. 10

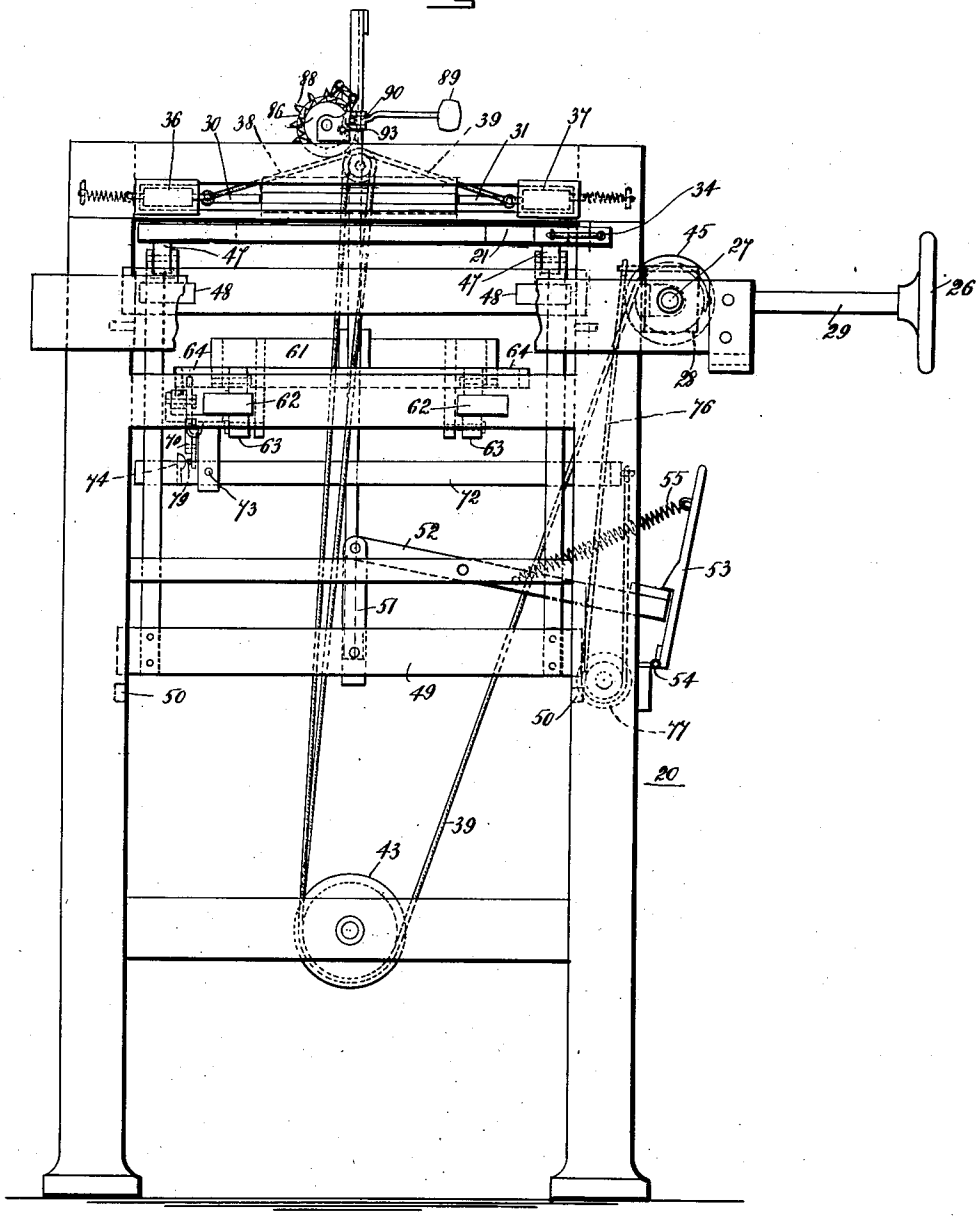
INVENTOR:
James J. Bosdan
BY Geo. K. Woodworth,
ATTORNEY:

Sept. 4, 1934. J. J. BOSDAN 1,972,547

EMBOSSING MACHINE

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Fig. 3.



INVENTOR:
James J. Bosdan
By Geo. K. Woodworth
ATTORNEY:

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EMBOSSING MACHINE

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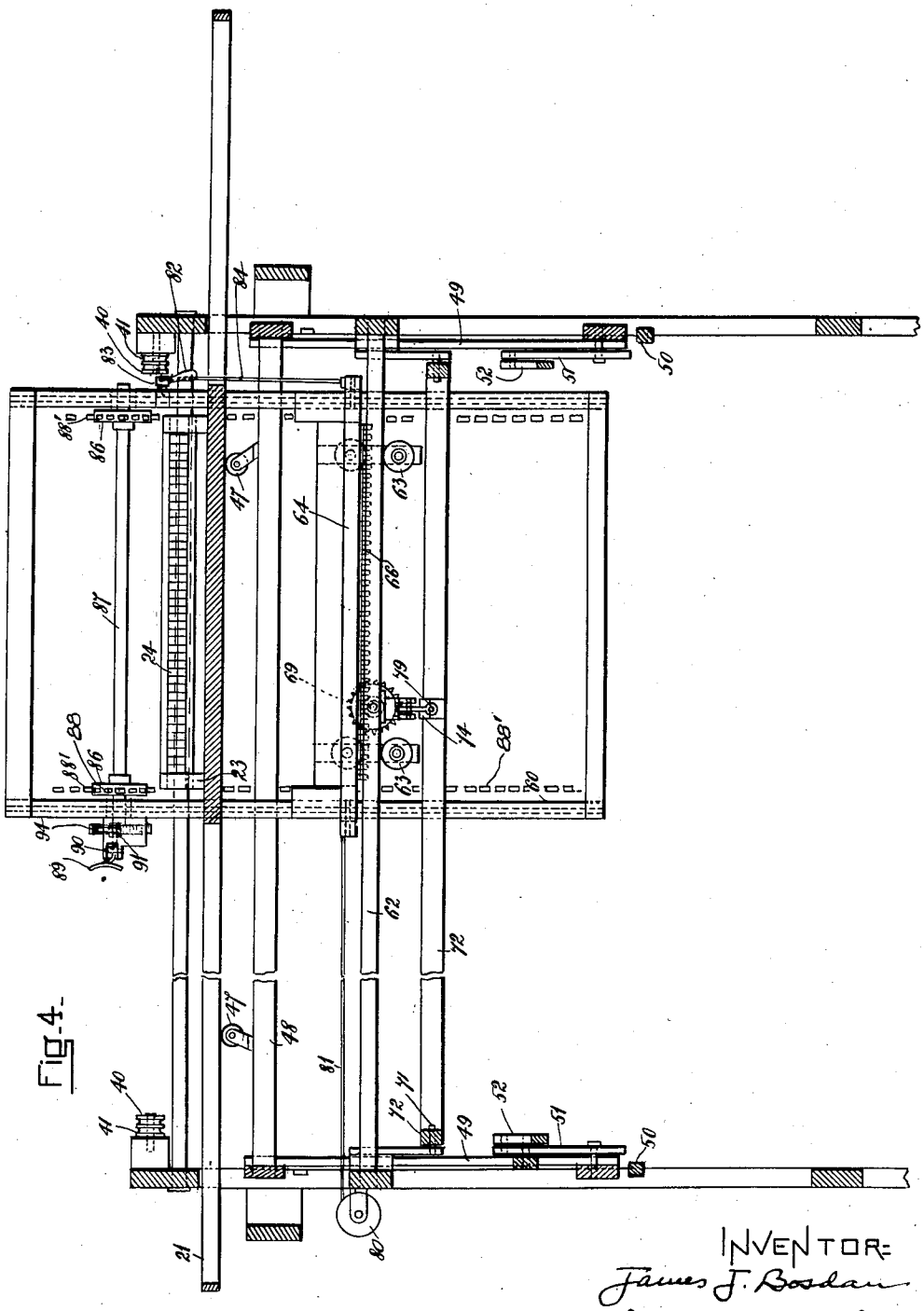


Fig. 4.

INVENTOR:
James J. Bosdan
By Geo. K. Woodworth.
ATTORNEY:

Sept. 4, 1934. J. J. BOSDAN 1,972,547

EMBOSSING MACHINE

Filed March 10, 1933 7 Sheets-Sheet 5

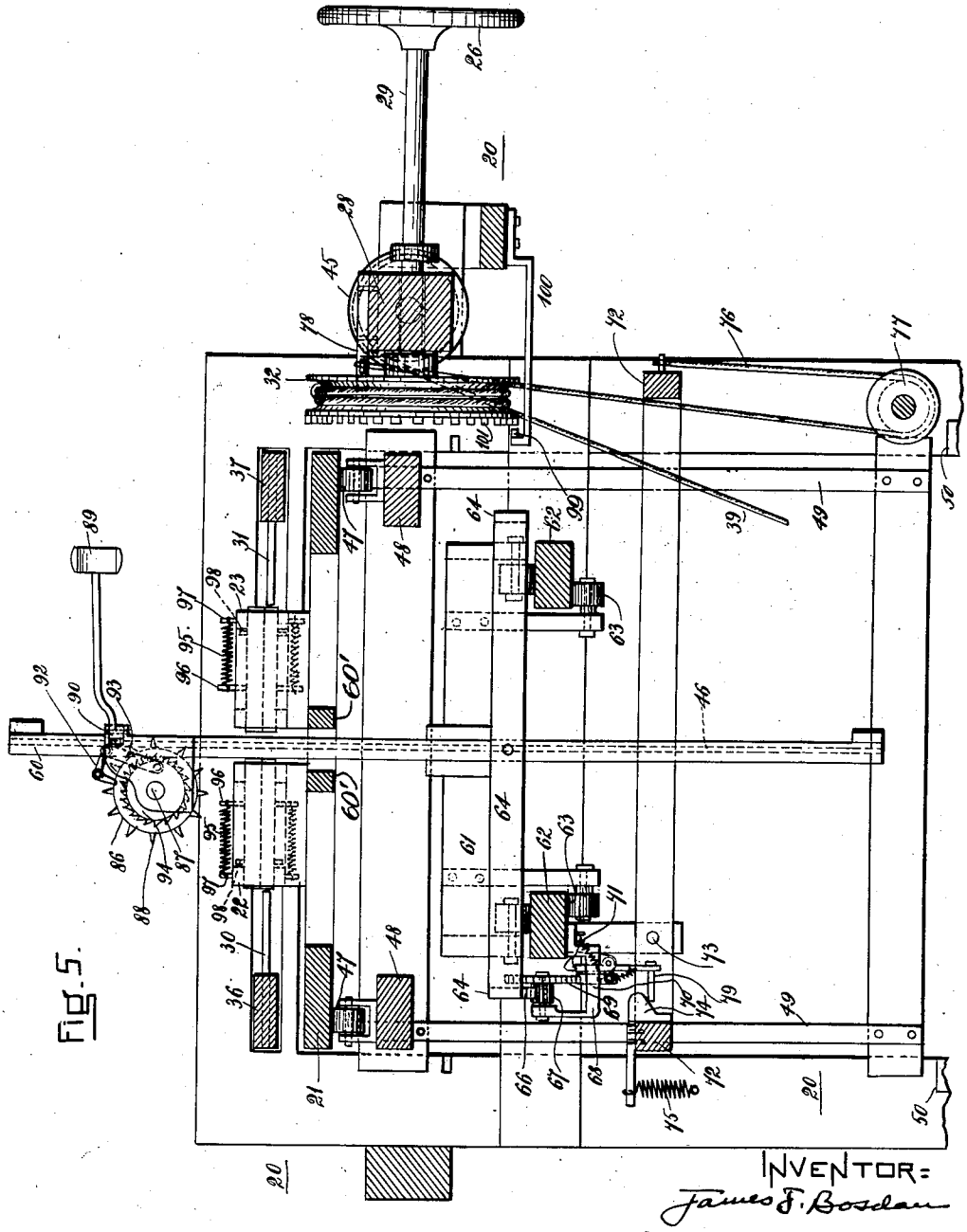


Fig. 5.

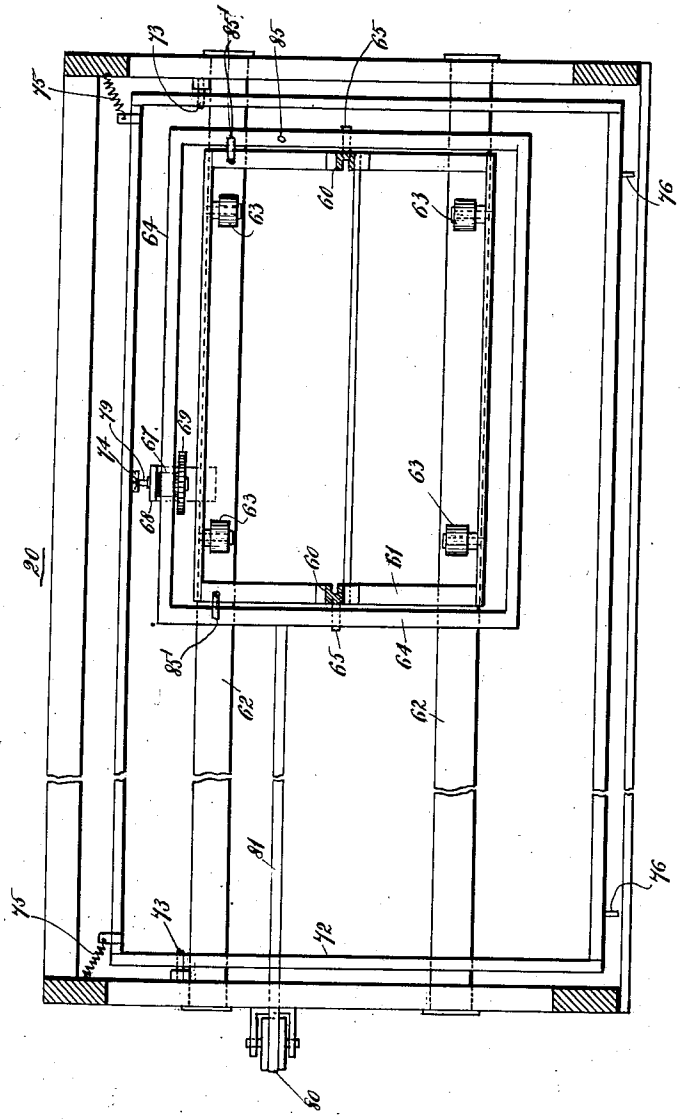
INVENTOR:
James J. Bosdan
By Geo. K. Woodworth
ATTORNEY:

Sept. 4, 1934. J. J. BOSDAN 1,972,547

EMBOSSING MACHINE

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Fig. 6.



INVENTOR:
James J. Bosdan
By Geo. K. Woodworth
ATTORNEY:

Sept. 4, 1934. J. J. BOSDAN 1,972,547

EMBOSSING MACHINE

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Fig. 7.

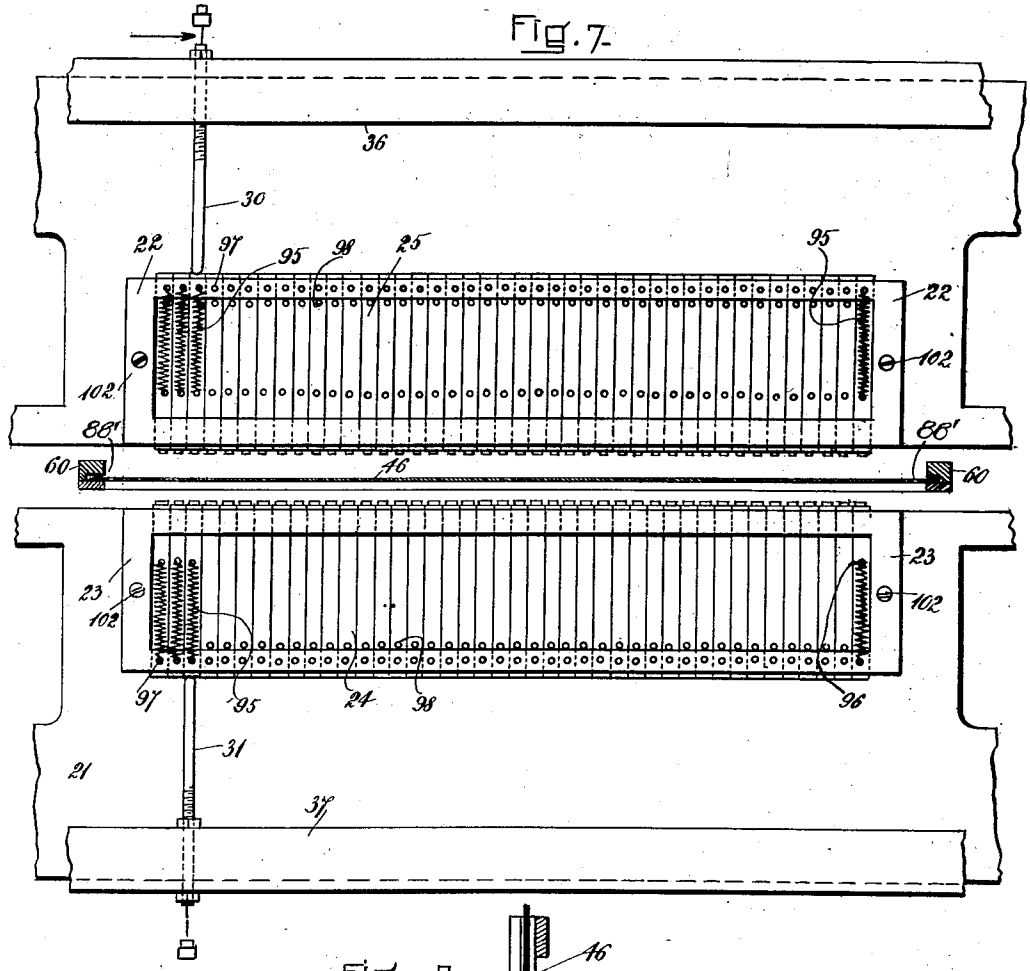


Fig. 8.

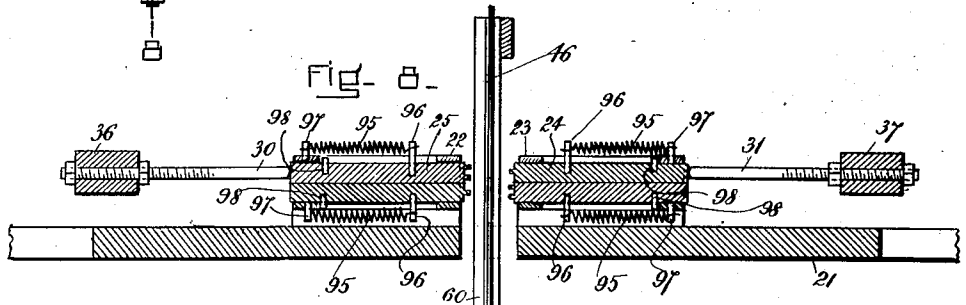
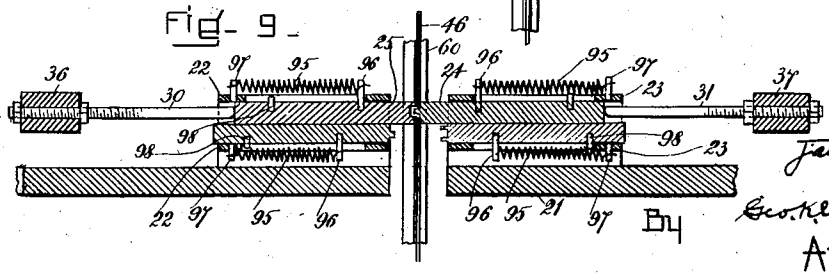


Fig. 9.



INVENTOR:
James J. Bosdan
Geo. K. Woodworth
By
ATTORNEY:

Patented Sept. 4, 1934 1,972,547

UNITED STATES PATENT OFFICE

1,972,547

EMBOSSING MACHINE

James J. Bosdan, Newton, Mass.

Application March 10, 1933, Serial No. 660,241

6 Claims. (Cl. 197—6.2)

The object of the present invention is to provide a machine for producing an embossed printing plate of substantial size as distinguished from the embossed strips or address-printing plates now used in addressing machines.

With this object in view my invention comprises a carriage movable longitudinally and supporting two oppositely-disposed frames in which are arranged a plurality of pairs of co-operating dies having raised characters and matrices having incised characters, the said dies and matrices being placed on opposite sides of a guide in which a sheet of tin-plate or other suitable material is movable vertically, together with rams or other suitable actuators disposed for co-operation with a selected pair of dies and matrices and manually-operable means for moving the carriage longitudinally to bring a selected pair of dies and matrices into register with said actuators by one movement and for moving said rams transversely into co-operation with the pair of dies and matrices so selected to emboss a character on said plate by another movement.

The salient feature of the invention consists of a unitary manually-operable device which brings the die and matrix bearing the selected letter into register with the rams by a movement of one character and then by a movement of a different character, forces said rams into contact with said die and matrix and causes them to move toward each other and against the plate to emboss said letter thereon. In the present instance the said manually operable means comprise a handwheel which, by a partial rotation about the axis of its shaft, moves the carriage so that a predetermined pair of dies and matrices are brought into register with the actuators and, by a movement about the axis of the member supporting said shaft, effects the co-operation of said rams with said die and matrix.

My invention further comprises the various parts and combinations of parts hereinafter more fully described and defined by the appended claims.

In the drawings that accompany and form a part of this specification,—

Figure 1 is a plan view of an embossing machine embodying my invention;

Fig. 2 is a front elevation;

Fig. 3 is an end elevation;

Fig. 4 is a longitudinal section on an enlarged scale taken generally on the line 4—4 of Fig. 1;

Fig. 5 is a transverse section on an enlarged scale taken on the line 5—5 of Fig. 1;

Fig. 6 is a plan view partly in section on an enlarged scale of the plateholder truck and associated parts, the plane of the section being indicated by the line 6—6 of Fig. 2;

Fig. 7 is a plan view on an enlarged scale of the die carriers;

Fig. 8 is a vertical section taken on the line 8—8 of Fig. 7 showing the dies and matrices in normal retracted position; and

Fig. 9 is a similar section showing said dies in co-operation with each other and the plate to be embossed.

Fig. 10 is a sectional view of a construction that may be employed to ensure the register of the actuators with a selected pair of dies.

In the particular drawings selected to illustrate more fully the principle underlying the invention, which drawings are to be considered as illustrative merely and not as restrictive, a supporting framework 20 of any suitable form and construction is provided to support in a manner hereinafter more fully explained a longitudinally movable carriage 21 to which are secured a pair of oppositely-disposed die carriers 22, 23 which house co-operating pairs of dies and matrices 24, 25, hereinafter referred to as dies. By manually-operable means such as the handwheel 26 and mechanism actuated thereby the carriage is moved along the frame until a selected pair of dies are brought into position for co-operation with the die actuators, whereupon by another movement of said handwheel in the present instance a downward movement about the axis of the shaft 27 carrying the block 28 which supports the shaft 29 of said handwheel, said actuators shown at 30 and 31 (Figs. 1 and 3) are moved inwardly to force the dies against the plate to be embossed. It will be noted that the movement of the carriage to selected position is effected by a handwheel movement of one character and that then by a handwheel movement of different character the dies are actuated. It will be obvious that a variety of mechanical arrangements and devices can be devised for effecting the functions above specified and that therefore I do not limit myself to the mechanical arrangements and devices herein specifically described.

In the present instance the inner end of the handwheel shaft 29 mounted for rotation as aforesaid in the block is provided with a pulley 32 around which passes one turn of the cord or cable 33, the ends of which are secured to the pieces 34, 34 attached to the respective ends of the carriage. It will be obvious that by the partial rotation of the shaft 29 to the right or left the carriage will be moved correspondingly. The front face of the pulley 32 may, as shown in Fig. 2, be provided with letters or characters and a zero mark 35 may be applied to any stationary part of the machine adjacent said pulley to enable the operator to ascertain when the carriage has arrived at the desired position. For example, the position of the letter C below said zero mark in Fig. 2 indicates that the carriage has been moved to such position that the pair of dies bearing the letter C are in position for co-opera-

tion with their actuators. Mounted in the frame 20 for transverse movement are a pair of bars 36, 37 to which the actuators 30, 31, respectively, are secured, said actuators being shown in the present instance as pins or rams. Secured to the juxtaposed edges of said bars 36, 37 and near the ends thereof are a pair of cables 38, 39 which pass transversely over the pulleys 40, 41, respectively, and then downwardly to the pulleys 42, 43, respectively, and finally upwardly over the pulleys 44, 45, to which they are secured. Obviously a partial rotation of the shaft 27 to which the pulleys 44, 45 are rigidly secured will cause the cables 38, 39 to draw the bars 36, 37 toward each other and force the rams 30, 31 against the particular pair of dies placed in co-operation therewith so that said dies will emboss the selected character on the metallic plate 46, as indicated in Fig. 9. It is to be understood that the particular mechanism herein disclosed for actuating the rams by the downward movement of the handwheel 26 and the consequent partial rotation of the block 28 and shaft 27 is merely one of many mechanical expedients that may be employed for operating the die actuators. Springs 36', 37' maintain said bars 36, 37 in normal position.

In the particular embodiment of the invention shown in the drawings the carriage 21 is supported on suitable anti-friction members such as the rollers 47 which in turn are carried by the frame 48 arranged for vertical movement to bring the dies of the upper or lower case into position for operation by the actuators. In the present instance this movement is effected by the following arrangements: A pair of frames 49, 49 normally resting on the stops 50 are attached at their upper ends to the carriage-supporting frame 48 and are pivotally connected by the links 51, 51 to the inner end of the bail 52 arranged as shown in Fig. 3 to be held in depressed position by the latch 53, in which position the carriage-supporting frame 48 will be elevated to bring one set of dies, for example, those bearing upper case characters into position for actuation by the rams 30, 31. When the latch 53 is moved outwardly about its pivot 54 against the tension of the spring 55, the frames 49, 49 and 48 will drop to their lowermost position whereupon the carriage which as aforesaid rests on the rollers 47 carried by the frame 48, will assume its normal position and the lower case dies will be so placed that the rams can co-operate with the same, as shown in Fig. 8. It is to be understood that a variety of mechanisms may be employed for the case shift and that my invention is not limited to the particular devices herein specifically described for effecting this result.

The plate 46 which is to be embossed by the dies is arranged for vertical line-spacing upon the completion of each line and for longitudinal step-by-step letter spacing, the means for effecting such letter spacing being operable manually or automatically.

In the particular form of the invention shown said plate is arranged within a plateholder 60 consisting in the present instance of a pair of oppositely-disposed grooved uprights disposed between the rails 60' and carried by a truck 61 which travels along the tracks 62, 62 and preferably is provided with four pairs of rollers 63 arranged on either side and near the ends thereof, one member of each pair being disposed to roll along the upper face and the other member of each pair along the lower face of said tracks, whereby vertical movement of said truck is prevented. Disposed on the rearward side of the frame 64 pivotally connected to said truck at 65, 65 is a rack 66 meshing with the pinion 67 which is carried by the bracket 68 secured to one of said tracks. Co-operating with a ratchet 69 connected for rotation with said pinion are a pair of spring-controlled pawls 70, 71. Arranged below said ratchets is a spacing-bar frame 72 pivotally connected to the framework at 73 and carrying a cam 74 at its outer end. The said spacing-bar frame is maintained in normal position by springs 75 each having one end connected to a projection on the inner side of said frame and the other to the framework 20. The outer side of said spacing-bar frame is connected to two cords or cables 76 passing around the pulleys 77 and attached at their upper ends to the fingers 78 projecting inwardly from the ends of the block 28. When the outer side of the frame 72 is depressed either manually or automatically the co-action of said cam 74 with the lever 79 will throw the pawl 70 out of engagement with the ratchet and the pawl 71 into engagement therewith. When the springs 75 bring the frame 72 to normal position the pawl 71 is disengaged from the ratchet and the pawl 70 re-engaged therewith, thereby permitting the spring wheel 80 through the intermediary of the strap 81 to move the truck a distance to the left equal to the width of a die.

It is to be understood however that any suitable means for imparting a step-by-step movement to the truck and to the plateholder carried thereby may be employed in place of the mechanism above described. It will be obvious that the downward movement of the shaft 29 about the axis of its supporting member 26 will automatically depress the outer side of the spacing bar frame through the cable 76. It is preferred to so adjust the several members effecting the transverse movement of the die actuators and the downward movement of the outer end of the spacing-bar frame that upon the retrograde movement of said actuators the spacing operation will be effected, although it will be understood that such operation can be effected immediately before such movement of said actuators.

It is convenient to provide means whereby the carriage may be moved longitudinally to any desired position quickly and at the will of the operator, and for this purpose any suitable means may be provided for rendering the aforesaid step-by-step mechanism inoperative. In the present instance such means consists of the lever 82 mounted on the plateholder at 83 (Fig. 4) and having its inner end connected by the link 84 to the frame 64 at the point 85 thereof (Fig. 6) inwardly of the pivotal connection of said frame with the truck 61, whereby the depression of said lever will swing the inner side of the frame 64 upwardly and move the rack carried thereby out of engagement with the pinion 67. By means of light plate springs 85' or other suitable resilient members attached to the upper face of the truck 61 and bearing on the frame 64, the latter is caused to resume its normal position when pressure on the lever 82 is released.

Any convenient means may be employed for line-spacing the metallic plate 46 and in the present instance such means consists in the pinwheels 86 mounted on the shaft 87 and provided with radial pins 88 arranged to take into apertures 88' (Fig. 4) in said plate near the vertical sides thereof. While a variety of mechanism may be employed to impart step-by-step rotation to said pinwheels, I have illustrated a device that has given

good results in practice, viz, a lever 89 (Figs. 1 and 5) pivoted to the plateholder by the vertical pintle 90 whereby the horizontal movement of said lever will actuate the pawl 91 through the links 92, 93 and thereby rotate the ratchet 94 rigidly connected to the shaft 87 that carries the pinwheels. It will be noted that after said lever has been oscillated about its pintle to move the plate upwardly, further pressure exerted on said lever will serve to move the plateholder to the right. Ordinarily after the completion of an embossed line the operator presses said lever to the right and moves the same together with its support until the plateholder is at its extreme righthand position, thereby effecting the line spacing of the plate and the return of the plateholder to its initial position by a single operation.

As shown in detail in Figs. 7, 8 and 9 the dies are maintained in normal position by the springs 95 having their ends attached, respectively, to the pins 96 rising from the dies and the pins 97 secured to the die carriers. Each die is provided with a stop 98 to limit the rearward movement thereof. Preferably means are provided to insure the register of the actuators with the die selected by the partial rotation of the handwheel 26 and in the present instance I have shown for this purpose a tooth 99 attached by the arm 100 to one of the frame members 20 and disposed for co-operation with crown teeth 101 on the inward face of the pulley 32.

When the desired die has been brought opposite the actuators the downward movement of the handwheel which, as aforesaid, forces the dies toward each other and against the faces of the metallic plate to be embossed, will effect the co-operation between the tooth 99 and a pair of teeth 101, thereby ensuring the exact register of the actuators with the selected dies and preventing the possibility of operating two dies simultaneously.

Preferably the die carriers are removably secured to the carriage, as by the screws 102 so that they may readily be replaced by another set of carriers containing dies of a different character.

The plate embossed by means of the machine disclosed herein may be used in various ways for printing. For example, it may be attached to a plane support and used in a plate press, or to a cylindrical support for use in a cylindrical press, or for stereotyping.

Having thus described an illustrative embodiment of my invention without however limiting the same thereto, what I claim and desire to secure by Letters Patent is:

1. An embossing machine comprising in combination a longitudinally movable carriage, a vertically disposed plateholder, a plurality of pairs of co-operating dies and matrices disposed on said carriage and arranged on opposite sides of said plateholder, actuators disposed for co-operation with a selected pair of dies and matrices, means for moving said carriage longitudinally to bring a selected pair of dies and matrices into register with said actuators, means for moving said actuators transversely into co-operation with such selected pair of dies and matrices, and a unitary manually-operable member constructed and arranged directly to actuate both of said means.

2. An embossing machine comprising in combination a longitudinally movable carriage, a vertically disposed plateholder, a pair of die carriers secured to said carriage and disposed on opposite sides of said plateholder, said die carriers housing co-operating pairs of dies and matrices, actuators disposed for co-operation with a selected pair of dies and matrices, means for moving said carriage longitudinally to bring a selected pair of dies and matrices into register with said actuators, means for moving said actuators transversely into co-operation with such selected pair of dies and matrices, and a unitary manually-operable member constructed and arranged directly to actuate both of said means.

3. An embossing machine comprising in combination a longitudinally movable carriage, a vertically disposed plateholder, a plurality of co-operating dies and matrices disposed on said carriage and arranged on opposite sides of said plateholder, actuators disposed for co-operation with a selected pair of dies and matrices, a unitary manually-operated member, mechanism connected to said member for bringing a selected pair of dies and matrices into register with said actuators by a movement of said member of one character, and manually-operable mechanism actuated directly by a movement of said member of different character for moving said actuators transversely into co-operation with such selected pair of dies and matrices.

4. An embossing machine comprising in combination a longitudinally movable carriage, a vertically disposed plateholder, a plurality of pairs of co-operating dies and matrices disposed on said carriage and arranged on opposite sides of said plateholder, actuators arranged for co-operation with a selected pair of dies and matrices, a rotatable shaft, a support for said shaft mounted for rotation, a handwheel rigidly secured to said shaft, mechanism disposed for actuation by the rotation of said shaft about its axis for moving said carriage longitudinally, and mechanism disposed for actuation by the movement of said shaft about the axis of said support for moving said actuators transversely into co-operation with such selected pair of dies and matrices.

5. An embossing machine comprising in combination a longitudinally movable carriage, a vertically disposed plateholder, a plurality of pairs of co-operating dies and matrices disposed on said carriage and arranged on opposite sides of said plateholder, actuators disposed for co-operation with a selected pair of dies and matrices, means for moving said carriage longitudinally to bring a selected pair of dies and matrices into register with said actuators, means for moving said actuators transversely into co-operation with such selected pair of dies and matrices, a unitary manually-operable member constructed and arranged directly to actuate both of said means, and means ensuring the register of said actuators with the die and matrix selected.

6. An embossing machine comprising in combination a longitudinally movable carriage, a vertically disposed plateholder, a plurality of pairs of co-operating dies and matrices disposed on said carriage and arranged on opposite sides of said plateholder, two transversely-movable bars, resilient means for maintaining the same in normal position, a ram carried by each said bar and disposed for co-operation with a selected pair of dies and matrices, and manually-operable means constructed and arranged directly to move said bars transversely toward each other and thereby bring said rams into co-operation with a selected pair of dies and matrices.

JAMES J. BOSDAN.