No. 684,989. Patented Oct. 22, 1901.

J. B. HOSTETLER.

CUTTING AND EMBOSSING MACHINE.

(Application filed July 24, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 2

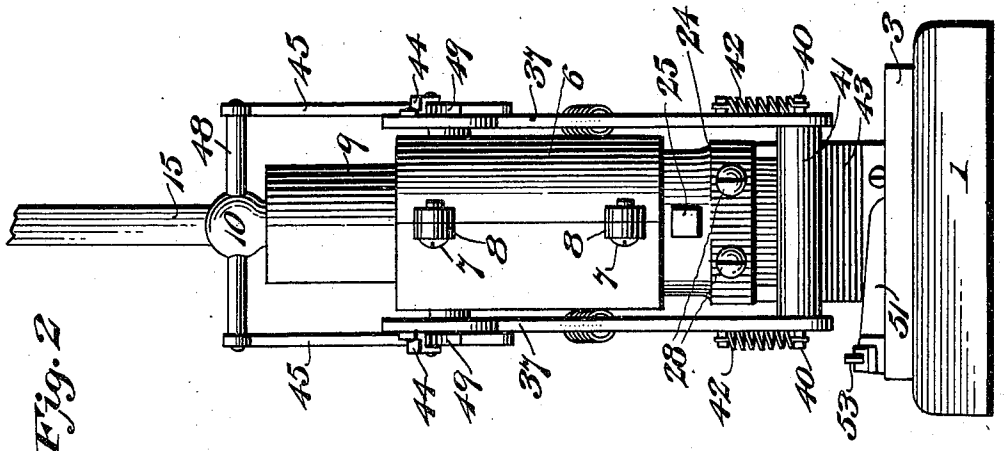
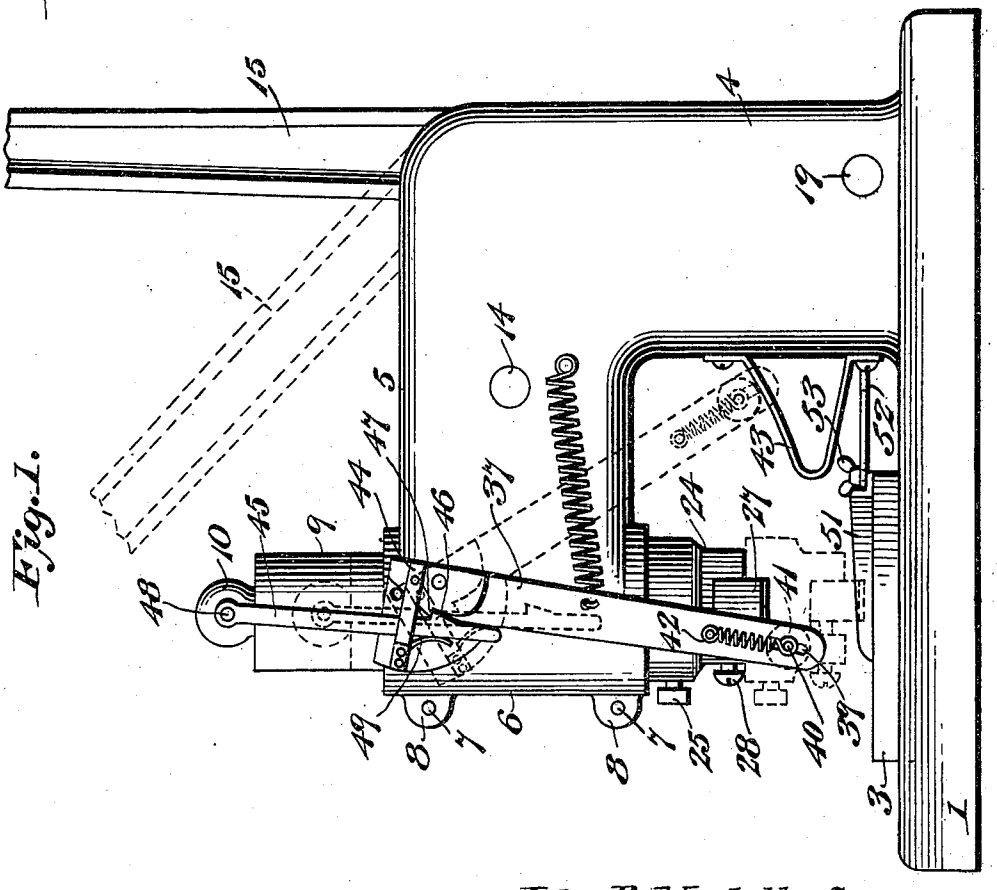


Fig. 1.



Witnesses
Edwin S. McKee
Louis G. Julihn

John B. Hostetler Inventor
By E. G. Siggers Attorney

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

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Fig. 5.

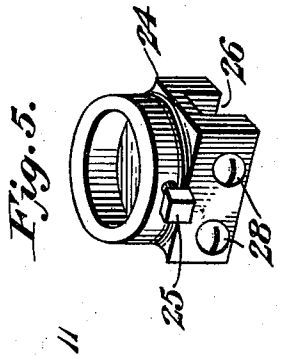


Fig. 6.

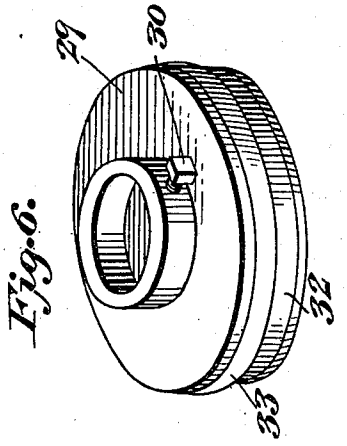


Fig. 4.

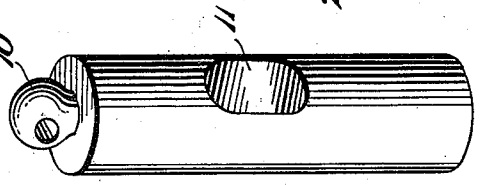


Fig. 3.

Witnesses
Edwin G. Mackee.
Louis G. Julihn

John B. Hostetler Inventor
By E. G. Siggers Attorney

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

UNITED STATES PATENT OFFICE.

JOHN BENTON HOSTETLER, OF DAVENPORT, IOWA.

CUTTING AND EMBOSSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 684,989, dated October 22, 1901.

Application filed July 24, 1900. Serial No. 24,737. (No model.)

To all whom it may concern:

Be it known that I, JOHN BENTON HOSTETLER, a citizen of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented a new and useful Cutting and Embossing Machine, of which the following is a specification.

My present invention relates to a novel cutting and embossing machine designed particularly for the use of photographers and adapted to be utilized for the cutting of oval or other forms of photographic paper or mounts and for the embossing of card-mounts.

The object of the invention is to produce a simple and inexpensive machine of the character specified comprehending a plunger and powerful operating mechanism for reciprocating the plunger to operate a cutter or an embossing-die, said die and cutter being arranged for interchangeable connection with the plunger with facility.

A further object of the invention is to provide the machine with inking mechanism to permit embossing in colors, said mechanism being controlled by a trip device operated by the plunger to cause the inking of the die upon the retraction of the latter and equipped with means for retaining the trip out of operative relation with the inker to prevent the actuation of the latter when the plunger is utilized in connection with the cutter.

A still further object of the invention is to economize the power necessary for the operation of the machine by providing a novel antifrictional connection between the plunger and the plunger lever or rocker and by embodying an operating-toggle in the operating or actuating mechanism to insure the effective operation of the plunger upon the application of minimum power to the outer end of an extended operating-lever.

Further and subordinate objects will hereinafter appear as the necessity for their accomplishment is developed in the succeeding description, taken in connection with the accompanying drawings, in which I have illustrated a preferred embodiment of the invention.

In said drawings, Figure 1 is a side elevation of my machine complete organized for embossing purposes, the plunger being shown retracted and the inking-roller presented to the face of the embossing-die and the position of certain of the parts at the opposite limit of their movement being illustrated in dotted lines. Fig. 2 is a front elevation of the subject-matter of Fig. 1. Fig. 3 is a sectional elevation of the machine organized for use in connection with the cutter, one side of the frame being broken away to disclose interior parts. Fig. 4 is a detail perspective view of the plunger. Fig. 5 is a similar view of the die-holder, and Fig. 6 is a detail perspective view of the cutter-head.

Referring to the numerals of reference employed to designate corresponding parts in the several views, 1 indicates the frame-bed of my machine, formed with a depression or seat 2 for the reception of a die-block 3 and supporting adjacent to one end a hollow standard 4, from the upper extremity of which extends a horizontal hollow arm 5, formed at its end opposite the standard with a cylindrical sleeve or plunger-socket 6, disposed vertically above the die-block 3.

The frame of the machine, comprising the structural features recited, with the exception of the block 3, is preferably produced in the form of a hollow casting made up of identical longitudinal sections bolted together after the assembling of interior parts by bolts 7, for the reception of which each section of the frame is provided with bolt lugs or ears 8, coincident with similar ears on the other section. Disposed vertically above the die-block 3 and mounted for reciprocatory movement in the plunger-socket 6 is a cylindrical plunger 9, formed with an apertured head 10 at its upper end and with a transverse recess or ball-socket 11 at a point intermediate of its length. The ball-socket 11 is located to move in a path coincident with the vertical diameter of the frame-arm 5 as the plunger is reciprocated and is designed for the reception of the spherical or ball end 12 of a plunger lever or rocker 13, fulcrumed medially upon a shaft or pintle 14 and having its rear end located adjacent to the upper rear corner of the frame. The plunger-lever 13 is designed to be oscillated to effect the reciprocation of the plunger by an operating-lever 15, of substantially bell-crank shape, inasmuch as its rear end 16 is angular for pivotal connection, as by a knuckle 17, with an upstanding swing-

ing link 18, mounted to oscillate upon a shaft or pintle 19, which, like the pintle 14 of the plunger-lever, extends between the side walls of the frame and serves as additional securing means for uniting the frame-sections.

The pivotal connection between the operating-lever 15 and the plunger-lever 13 is effected at the angle of the former by a pintle 20, which, like the knuckle-pintle 17, is disconnected from the frame and is free to move bodily as the parts are operated. This form of connection serves to incorporate a toggle in the plunger-operating mechanism, the bearing-points of the toggle being defined by the pintles 19 and 20 and the knuckle 17, the lateral movement of the knuckle of the toggle being effected by the oscillation of the operating-lever 15, which is extended a sufficient distance to obtain the desired leverage. For the accommodation of the operating-lever, which necessarily extends above the frame, the latter is provided with a more or less extended slot 21, and the retraction of the plunger after its actuation by the depression of the lever 15 is effected by a stout spiral spring 22, connected at its upper end to the link 18, adjacent to the knuckle 17, and at its lower end to a lug 23, integral with the frame and located a suitable distance in advance of the lower end of the link. It will now appear that as the operating-lever is depressed the toggle defined will be extended against the resistance of the spring 22 to rock the plunger-lever 13 and cause the depression of the plunger for the presentation of the tool to the face of the die-block, the ball-and-socket connection between the lever 13 and the plunger rendering the movement of the latter practically antifrictional.

The construction of the machine as described comprehends a complete embodiment of my invention in its broadest aspect, inasmuch as the plunger-operating mechanism constructed as shown may be employed in various connections other than that for which the present machine is particularly designed; but as my particular object is to equip the machine for the cutting of photographic paper and the embossing of card-mounts I have originated simple and efficient devices by the employment of which the machine may be quickly converted for cutting or embossing purposes, as the case may be.

In Fig. 1 of the drawings I have shown the lower end of the plunger fitted into the end of a die-holder 24, which is detachably secured to the plunger by a set-screw 25. The under face of the holder 24 is formed with a guide-channel 26 for the reception of the embossing-die 27, retained by abutment-screws 28, piercing one wall of the die-holder, as clearly illustrated in Figs. 1 and 5.

When it is desired to substitute the cutting-tool for the embossing-tool, the latter may be readily removed from the plunger by loosening the set-screw 25, and the cutter 29 (illustrated in Figs. 3 and 6 of the drawings (may be quickly substituted. The form of the cutter-head 29 will depend upon the desired contour of the cutter; but in any event it is provided, like the die-holder, with an annular flange pierced by a set-screw 30, detachably retaining the head of the plunger. The cutter-head 29, constructed in accordance with my invention, is provided with a depending flange 31, of oval or other form and of less diameter than the head, to provide a seat for the cutter or blade 32, of similar form, and retained securely against the flange 31 by a cutter-retaining ring 33, preferably shrunk into place.

For the purpose of insuring the detachment of the paper or mounts from the cutter when the plunger is retracted the cutter-head is formed in its under face with a spring-seat 34, preferably coaxial with the plunger and designed for the reception and retention of a spring 35, arranged to support and operate a presser-plate 36, normally disposed in a horizontal plane below the knife-edge of the cutter 32, but capable of being pressed to a plane above the knife-edge when the cutter is presented to the material placed upon the die-block.

It is contemplated to provide for embossing in colors when desired, and it is therefore necessary to provide the machine with an inking device for applying ink to the embossing-die before each presentation of the latter to the mount to be embossed. I have therefore devised a simple form of inking mechanism comprehending an oscillatory inker, composed of a pair of roller-carrying arms 37, pivotally mounted adjacent to their upper ends upon studs 38, projecting from the opposite sides of the plunger-socket and having coincident slots 39 adjacent to their lower free ends for the reception of the trunnions 40 of an inking-roller 41, yieldingly sustained by roller-sustaining springs 42, connected at their lower ends to the trunnions 40 and at their upper ends to studs extending from the arms 37 above the slots. The roller 41 is designed to be presented, through the oscillation of the arms 37, to an inking table or platen 43, having a curvature concentric with the axis of movement of the arms and extending forwardly from the front of the frame-standard 4. This inking table or platen may be formed in any suitable manner; but a simple embodiment of this feature comprehends a metal plate recurved, as shown in Figs. 1 and 3 of the drawings, and having its ends screwed or bolted to the frame.

The upper end of each roller-carrying arm 37 is enlarged and is provided with a transverse keeper 44, designed to receive and guide the trip-bars 45, designed to reciprocate with the plunger and to have oscillatory movement for the purpose of presenting the beaks 46 of said bars into or out of a path of movement obstructed by shoulders 47, formed upon the enlarged end of each arm 37 to one side of the axes of said arms. The shoulders 47 may

be formed in any suitable manner so long as they serve to effect an operative engagement between the trip-bars 45 and the roller-carrying arms 37 to swing the latter through the reciprocation of the plunger for the purpose of presenting the roller 41 to the face of the embossing-die. The mounting of the trip-bars is effected by passing a short shaft 48 through the apertured head 10 of the plunger, upon the ends of which shaft the trip-bars 45 are mounted to compel their longitudinal movement with the plunger, but permitting them to have lateral or oscillatory movement independent thereof. These bars are normally held in position to engage the shoulders 47 by springs 49, which may be of any form and mounted in any desired position; but I prefer to employ leaf-springs, as shown, depending below the keepers 44 and bearing against the front edges of the bars. Under the impulse of the springs 49 the tripping-bars will be yieldingly urged to present the beaks 46 under the shoulders 47 to cause the engagement of these elements when the plunger is elevated for the purpose of swinging the inking-roller into contact with the embossing-die, as shown in full lines in Fig. 1 of the drawings. It is evident, however, that means must be provided for throwing the inking mechanism out of operation when it is desired to emboss without printing or to employ the cutter. I have therefore devised means for retaining the trip-bars in positions out of operative relation with the roller-carrying arms when the machine is designed to be used for the purposes stated. A simple embodiment of this mechanism is comprehended by a pair of retaining-pins 50, designed to be removably inserted into openings in the enlarged ends of the arms 37 and in sliding contact with the rear edges of the trip-bars 45 to retain said bars in forwardly-deflected positions, as indicated in Fig. 3 of the drawings, and with the beaks 46 located beyond the vertical plane of the shoulders 47, so that the beaks will not engage the shoulders during the operation of the plunger.

For the purpose of retaining the paper or card-mounts in proper position upon the block I provide an adjustable gage or guide 51, of angular form, and adjustably retained upon the upper face of the block 3 by means of a slotted guide-adjusting arm 52, through whose slot is passed a set-screw 53, retained within a threaded socket at a convenient point in the die-block or in the base of the machine.

Assuming the device to be organized as illustrated in Fig. 1, the operation is as follows: The card-mount is placed upon the die-block 3 in a position determined by the gage or guide 51, and the operating-lever 15 is depressed to rock the plunger-lever 13 and to cause the reciprocation of the plunger for the purpose of presenting the embossing-die 27 to the mount, as indicated in dotted lines in Fig. 1. As the plunger begins its downward movement the trip-bars 45 will release the arms 37 and permit them to swing back under the impulse of the spring to the position shown in dotted lines in Fig. 1 to present the inking-roller 41 to the inking platen or table 43. The release of the operating-handle 15 will now cause the retracting-spring 22 to draw the knuckle 17 of the toggle to the left, depressing the rear end of the lever 13 and causing the plunger to be raised to its normal position. During the retraction of the plunger the trip-bars will engage the inking device, causing the inking-roller to be again swung into contact with the face of the embossing-die. If now it is desired to emboss card-mounts without printing in colors, the trip-bars 45 are swung forward to the positions indicated in Fig. 3 and are retained by the insertion of the pins 50 in their openings to prevent the engagement of the bars with the inking device as the plunger is reciprocated. When necessity arises for the use of the oval cutter for the purpose of cutting photographic ovals, the set-screw 25 is loosened and the die-holder is removed from the plunger. The cutter-head 29 is then attached to the lower end of the plunger, and the latter is reciprocated in the manner stated to present the oval or other form of cutter 32 to the paper laid upon the die-block, the detachment of the paper from the cutter as the latter is raised away from the block being insured by the movement of the spring-pressed plate 36.

From the foregoing it will be seen that I have produced a simple, powerful, and efficient cutting and embossing machine which may be quickly equipped for the simultaneous cutting of a large number of paper sheets or for the embossing of card-mounts and the like, either with or without colors; but while the embodiment of my invention illustrated and described appears at this time to be preferable I do not wish to limit myself to the structural details defined, as, on the contrary, I reserve the right to effect such changes, modifications, and variations as may be properly comprehended within the scope of the protection prayed.

What I claim is—

1. In a cutting and embossing machine, the combination with a reciprocatory plunger, of a plunger-lever, and a toggle mechanism arranged to operate said lever, one member of said toggle mechanism being extended to form an operating-lever.

2. In a cutting and embossing machine, the combination with a plunger and a plunger-lever, of an operating-lever pivoted to one end of the plunger-lever, and a swinging link having a stationary fulcrum and pivotally connected at its end to the operating-lever.

3. In a cutting and embossing machine, the combination with a plunger, of a rocker pivoted medially and connected at one end to the plunger, an upstanding swinging link having a stationary fulcrum located below the end of the rocker opposite the plunger, and an angular operating-lever pivoted at its

angle to the rocker and pivotally connected at its lower end to the upper end of the link.

4. In a cutting and embossing machine, the combination with a plunger and a medially-pivoted rocker, of an upstanding swinging link below one end of the rocker, an angular operating-lever pivoted at its angle to the rear end of the rocker and at one extremity to the swinging end of the link to form a knuckle, and a reactionary device connected to one of the last-named members adjacent to the knuckle to effect the retraction of the plunger.

5. In a cutting and embossing machine, the combination with a hollow frame comprising a standard, a horizontal arm and a vertical plunger-socket at the end of the arm, of a reciprocatory plunger in the socket, a medially-pivoted rocker in the hollow arm and connected at one end to the plunger, an operating-lever extending above the frame and pivoted to the rear end of the rocker, said lever having a short angular end extending below the rocker, an upstanding swinging link mounted in the standard and pivotally connected at its upper end to the short arm of the operating-lever to form a knuckle, and a spring connected to the link adjacent to the knuckle and to the frame in advance of the link and in the plane of its lower end.

6. In a machine of the character described, the combination with a plunger, and plunger-actuating mechanism, of an oscillatory inking device arranged for presentation under the plunger during the movement thereof, means for operating said inking device through the medium of the plunger, and means for placing the inking mechanism out of operation when desired.

7. In a cutting and embossing machine, the combination with a frame, a plunger and plunger-actuating mechanism, of an oscillatory inking device arranged for presentation under the plunger, and oscillatory trip-bars movable with the plunger and designed to be swung into and out of operative relation to the inking device.

8. In a cutting and embossing machine, the combination with a frame, plunger and plunger-actuating mechanism, of an inking-roll operated by the plunger for presentation thereunder, and means for effecting a coöperative or independent relation of the plunger with respect to the inking device, as desired.

9. In a cutting and embossing machine, the combination with a frame, reciprocatory plunger and plunger-actuating mechanism, of an inking device comprising a pair of oscillatory roller-carrying arms carried by the frame, a yieldingly-sustained inking-roller carried by the arms, and means operated by the plunger to swing said arms and means for preventing the swinging of the arms when the plunger is reciprocated.

10. In a cutting and embossing machine, the combination with a frame, a plunger and plunger-actuating mechanism, of a pair of oscillatory arms carried by the frame and supporting an inking-roller, a pair of oscillatory trip-bars carried by the plunger, means for effecting the engagement of said bars with the arms through the movement of the plunger and means for retaining the trip-bars out of operative relation with the arms.

11. The combination with a frame, plunger, and plunger-actuating mechanism, of a pair of oscillatory roller-carrying arms mounted on the frame, shoulders formed on said arms, and an inking-roller, of a pair of swinging trip-arms carried by the plunger for movement therewith and having beaks disposed for engagement with the shoulders of the roller-carrying arms to swing the latter as the plunger is retracted.

12. The combination with a frame, plunger and plunger-actuating mechanism, of a pair of oscillatory roller-carrying arms, an inking-roller, a pair of swinging trip-bars movable with the plunger and arranged to engage the roller-carrying arms, and means for retaining said bars out of operative relation with the arms.

13. The combination with a frame, plunger, and plunger-actuating mechanism, of a pair of oscillatory roller-carrying arms carried by the frame and having enlarged upper ends formed with shoulders and keepers, a pair of swinging trip-bars pendent from the upper end of the plunger and having beaks disposed for engagement with the shoulders of the arms, springs urging the trip-bars toward the arms, and removable pins extending from the enlarged ends of the arms to retain the bars out of operative relation therewith.

14. In a cutting and embossing machine, the combination with a reciprocatory plunger provided with a ball-socket defined by upper and lower parallel walls, of an oscillatory plunger-lever provided with a spherical head extended into the socket in the plunger, and a toggle mechanism arranged to operate the lever, one member of said toggle mechanism being extended to form an operating-lever.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN BENTON HOSTETLER.

Witnesses:
H. B. BETTY,
VICTOR L. LITTIG.