

G. W. MERRILL.
PRINTING APPARATUS.
APPLICATION FILED MAR. 26, 1908.

917,784.

Patented Apr. 13, 1909.

2 SHEETS—SHEET 1.

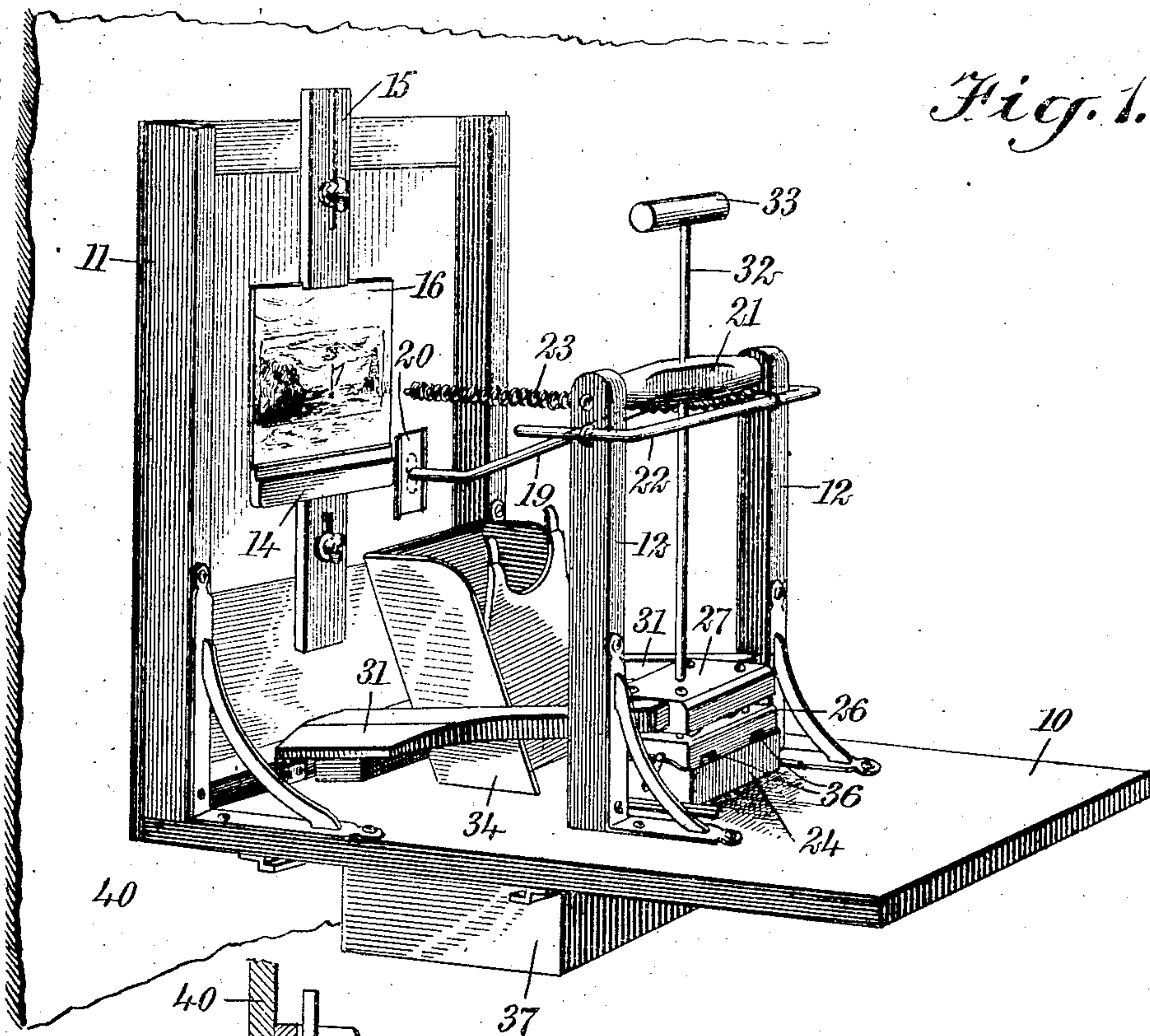


Fig. 1.

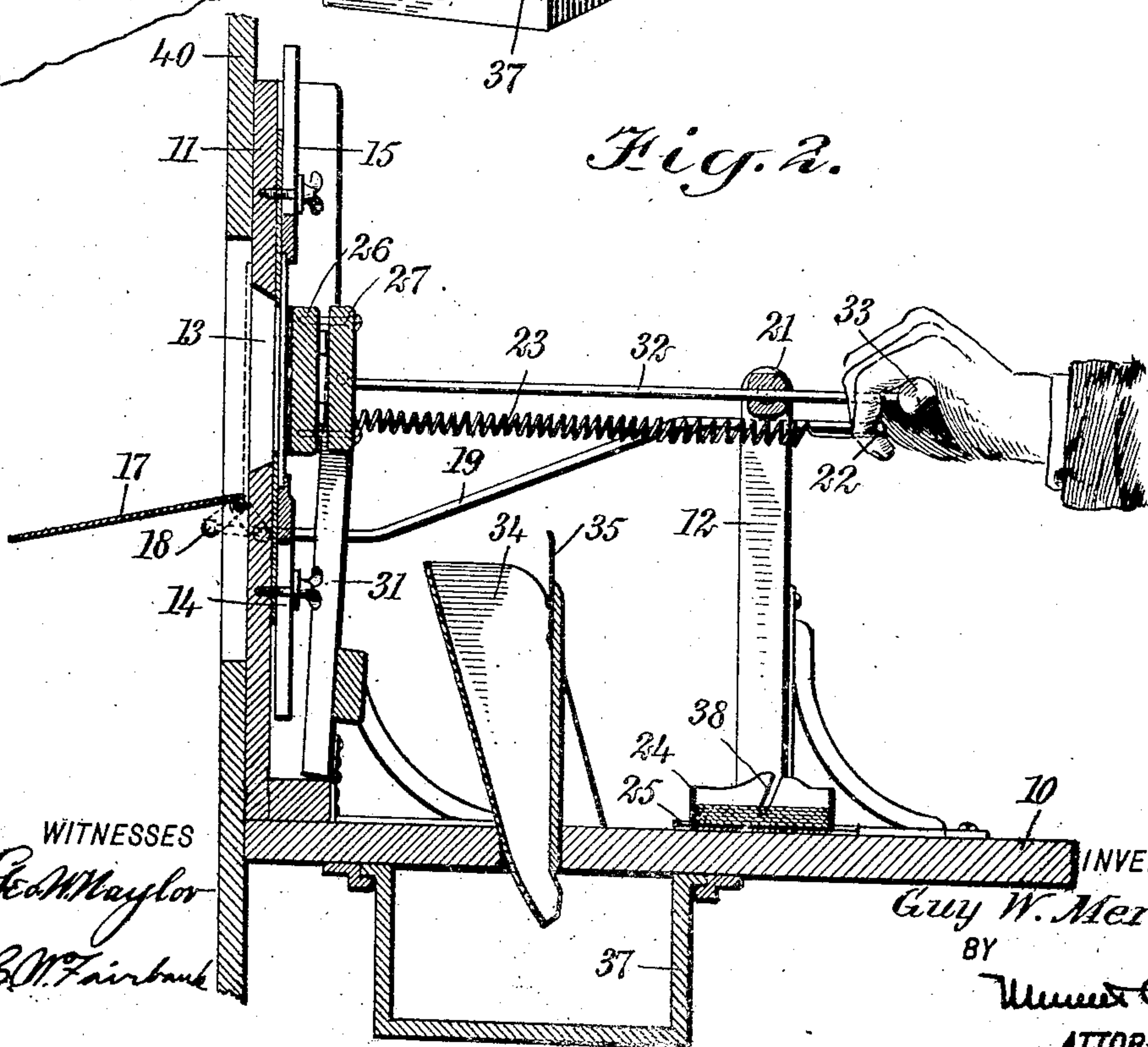


Fig. 2.

WITNESSES
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Fig. 3.

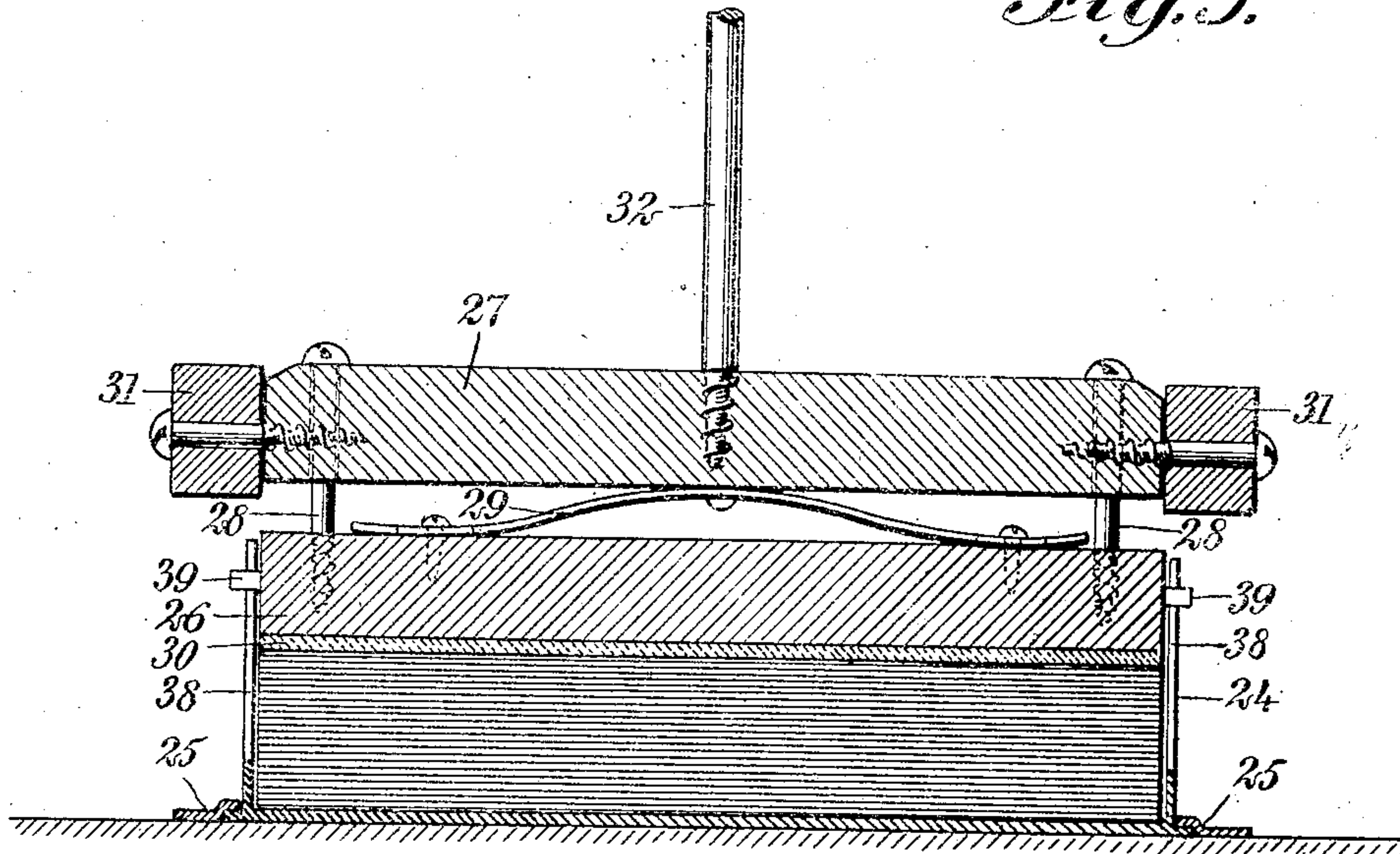
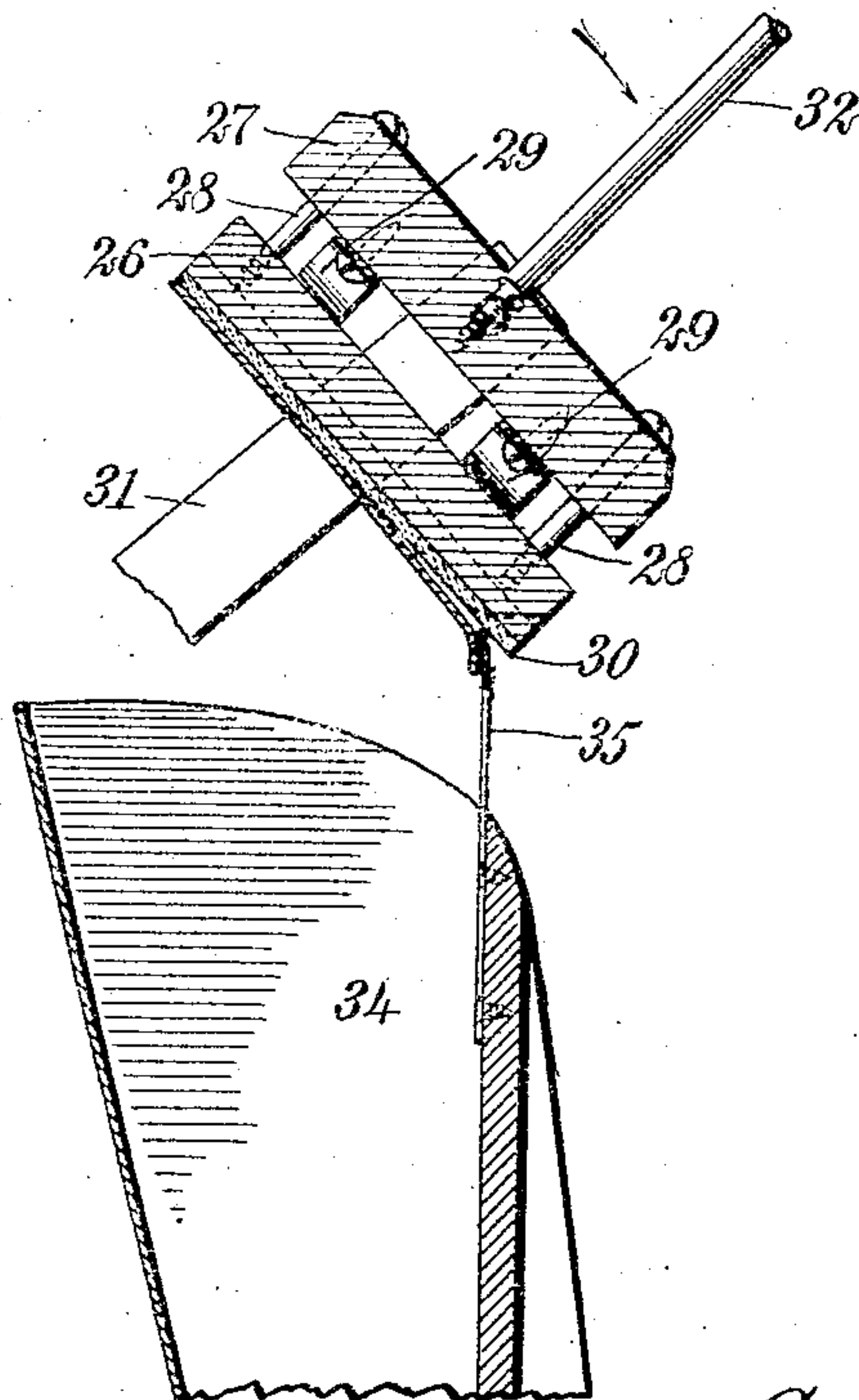


Fig. 4.



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UNITED STATES PATENT OFFICE.

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PRINTING APPARATUS.

No. 917,784.

Specification of Letters Patent.

Patented April 13, 1909.

Application filed March 26, 1908. Serial No. 423,337.

To all whom it may concern:

Be it known that I, GUY W. MERRILL, a citizen of the United States, and a resident of Lincoln, in the county of Penobscot and State of Maine, have invented a new and Improved Printing Apparatus, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in printing apparatus, and more particularly to that type of apparatus in which each one of a series of blanks is subjected to the printing action in succession.

The invention is adaptable for use in printing sensitized blanks by bringing them directly into engagement with a negative, through which rays of light pass, or by bringing them into engagement with a sheet of glass upon which the image is projected, or by bringing blank sheets of paper against a form presenting inked type for contact with the blanks.

The invention involves means for supporting a pack of blanks, which may be either sensitized or plain cards, or sheets of paper, a supporting surface, which may be a negative, a plain sheet of glass or a form of type and against which each blank is held during the printing action, and a blank carrier operating to successively remove the blanks separately from the pack and present them to the surface. The supporting surface and the pack of blanks are preferably in planes at an angle to each other, and the blank carrier is preferably mounted upon swinging arms, pivoted so as to permit of the desired movement of the blank carrier. The blank carrier preferably presents a gelatinous surface sufficiently adhesive to automatically retain a blank in engagement with the carrier and permit of its being transported to the proper distance after the printing action, but permitting the ready removal of the blank from the carrier after the printing action is completed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is a perspective view of one form which my invention may assume, and show-

ing the carrier in engagement with a pack of blanks; Fig. 2 is a central vertical section of the apparatus shown in Fig. 1 and showing the carrier holding a blank in position for printing; Fig. 3 is a central section through the carrier and supporting means for the blanks; and Fig. 4 is a sectional view showing the carrier on the return movement and in engagement with the blank-removing apparatus.

The specific form of my invention illustrated in the accompanying drawings is adapted for exposing sensitized cards to a negative through which rays of light may pass, but it is evident that the character of the cards and the character of the surface into engagement with which they are successively pressed, may be varied without departing from the spirit of my invention.

In the specific form shown, I provide a horizontal base 10, to which is rigidly secured a vertical front 11 and a frame formed of oppositely-disposed side bars 12. The front is provided with an opening 13 there-through, and adjacent the opening, upon the inner side thereof are suitable clamping members 14 and 15 for holding a negative 16 over the opening upon the inner surface of the front wall. A suitable shutter is provided for closing this opening and preventing the admission of light to the negative, said shutter being illustrated as a swinging plate 17, hinged adjacent the lower edge of the opening and having a link 18 adjacent the pivot and attached to an operating rod 19, extending through the front wall 11. For preventing the passage of light through the opening around the rod 19, a small slide 20 is preferably provided, having an aperture the size of the rod, and movable vertically to accommodate for the necessary movement of the rod in swinging the shutter to its open or closed position.

The frame having the oppositely-disposed side bars 12 is substantially parallel to the vertical front 11, and at the upper end of the bars there is provided a rock shaft 21 at substantially the same elevation as the center of the negative. The side bars also serve to support the rear end of the shutter-operating rod 19, which latter has a transverse portion 22 extending across from one

bar to the other, adjacent the upper end, and held in suitable eyelets on the sides of the bars. A coil spring 23 connects the vertical front with the transverse portion 22, and serves to move the vertical rod 19 to such a position that the shutter 17 will remain in its closed position. By pulling outward on the rod 19, the shutters may be opened against the action of the spring.

Directly between the side bars 12 is a tray 24 for receiving the cards to be printed upon. The tray is movable longitudinally of the base and between suitable guides 25 which hold it against lateral movement. The tray is preferably of substantially the same size as the cards, so that the latter will be held in a pack or series with their edges in vertical alinement. Different sized trays may be provided for different sized cards, or the tray itself may be made adjustable. The combined platen and card carrier comprises two blocks 26 and 27, held together by a plurality of screws 28, each of which is freely movable through the block 27 but is held against movement in respect to the block 26. Between the two blocks are a plurality of springs 29, which normally hold the blocks spaced apart to the maximum distance, but which permit of a rocking or side movement of one block in respect to the other. The under surface of the block 27 is so constructed that when brought into engagement with a card, the latter will adhere thereto. Preferably, the under side of the block carries a coating or layer 30 of a gelatinous material which is sufficiently adhesive to retain a card when brought into engagement therewith but which will not prevent the ready removal of the card. The block 27 is pivoted at its opposite ends to swing arms 31, which latter are pivoted to the case adjacent the intersection of the latter with the vertical front 11. The block 27 is also rigidly secured to an operating rod 32, which extends vertically from the upper surface thereof and through an opening in the rock shaft 21. The hinges or pivots upon which the arms 31 swing are at substantially the same distance from the tray 24 as they are from the negative 16, so that the under side of the card carrier may be lowered into the tray, as shown in Fig. 1, in order to pick up a card on the adhesive surface; or by lifting upward on the rod 32 by means of a suitable handle 33, the card carrier may be raised and moved in the arc of a circle having the arms for radii, until it comes adjacent the negative. At this time the rod 32 will have tilted the card carrier, so that the card assumes a substantially vertical position, and by moving the rod endwise, the card will be brought directly against the negative, as illustrated in Fig. 2. The handle 33 will then be adjacent the

transverse portion 22 of the shutter-operating rod, and by drawing the two together the shutter will be opened and the light rays permitted to pass through the negative onto the card.

Intermediate the tray and the base of the negative support or front wall, I provide a suitable apparatus for detaching the cards from the carrier and receiving them. This apparatus preferably includes a chute or hopper 34, having upwardly-directed fingers 35, adapted to enter into recesses 36 in the sides of the block 26 and separate the card from the gelatinous surface, as indicated in Fig. 4. The movement of the card carrier is not interrupted but it passes directly backward and down into the tray to receive the next successive card. The chute 34 may, if desired, lead through an aperture in the bottom of the base to a drawer or other container 37 beneath the same.

As the arms 31 are pivoted at one end, it is evident that the limiting position of the card carrier will vary with the height of the pack of cards in the tray 24, and I therefore provide means for moving the tray longitudinally of the base as the number of cards in the tray decreases. For accomplishing this result, the ends of the tray are preferably provided with inclined slots 38 and the ends of the block 26 of the carrier are provided with pins 39 adapted to enter the slots and move the tray along its guides 25 as the carrier descends toward the bottom of the tray. This insures each and all of the cards occupying identically the same position upon the carrier.

The light may be directed through the opening 13 and the negative from any suitable source. If desired, the entire apparatus may be inclosed in a cabinet, so that daylight may shine through the opening, or the apparatus may be formed open at its rear, as illustrated in the drawing and the front wall 11 may be placed against a wall or curtain 40 having an opening therein of as great, if not greater, size than the opening 13. In this case, the room at the side of the wall 40 containing said apparatus would be darkened, while the source of light would be located on the opposite side of the wall 40.

If desired, different sized trays or blank carriers may be provided for different sized cards, and the opening 13 may be enlarged, or reduced by suitable borders to correspond with the different sized cards. The card or blank carrier is illustrated as comprising two blocks, but it is evident that a single block may be employed in place thereof and rigidly secured to the rod. The gelatinous material is illustrated as covering the entire under surface of the block, but may be used only on a relatively small portion of the area, the remaining surface being covered to

the same approximate thickness with felt, soft rubber, or other yielding substance.

Having thus described one specific form of my invention, I claim as new and desire to secure by Letters Patent:

1. In combination, means for supporting a pack of blanks to be printed upon, a printing plate against which each blank is held during the printing action, and a combined platen and blank carrier operating to remove said blanks separately from said pack and present them to said plate.

2. In combination, means for supporting a pack of blanks to be printed upon, a printing plate against which each blank is held during the printing action, and a combined platen and blank carrier movable back and forth between said pack-supporting means and said plate and operating to remove said blanks separately and in succession from said pack and present them to said plate and hold them in engagement therewith during the printing action.

3. In combination, means for supporting a plurality of blanks to be printed upon, a supporting member against which each blank is held during the printing action, said supporting means and said member being in planes at an angle to each other, a blank carrier movable back and forth between said supporting means and said member, and pivoted arms for supporting and guiding said carrier.

4. In combination, means for supporting a pack of blanks to be printed upon, a supporting member against which each blank is held during the printing action, a combined platen and blank carrier operating to remove said blanks separately from said pack and present them to said member, said platen presenting an adhesive surface for temporarily retaining said blanks in engagement therewith.

5. In combination, means for supporting a pack of blanks to be printed upon, a supporting member against which each blank is held during the printing action, and a combined platen and blank carrier operating to remove said blanks separately from said pack and present them to said member, said platen presenting an adhesive surface for temporarily retaining said blanks in engagement therewith.

6. In combination, means for supporting a pack of blanks to be printed upon, a supporting member against which each blank is held during the printing action, a combined platen and blank carrier operating to remove said blanks separately from said pack and present them to said member, said carrier presenting an adhesive surface for temporarily retaining said blanks in engagement therewith, and means for automatically removing the blanks from said

carrier during the return movement of the latter.

7. In combination, means for supporting a pack of blanks, a carrier for removing said blanks separately therefrom, said carrier having a surface of gelatinous material, a receiver, and means above said receiver and adapted to engage with said carrier for removing the blanks therefrom and directing them into said receiver.

8. In combination, a support for a negative, a carrier for a sensitized blank, said carrier being movable to bring said blank into engagement with said negative, an operating handle for said carrier, a shutter for controlling the passage of light to said negative, and an operating handle for said shutter.

9. In combination, a support for a negative, a carrier for a sensitized blank, said carrier being movable to bring said blank into engagement with said negative, an operating handle for said carrier, a shutter for controlling the passage of light to said negative, and an operating handle for said shutter, said handles being adjacent each other and adapted to be simultaneously operated.

10. In combination, a support for a negative, and a carrier for a sensitized blank, said carrier comprising two blocks resiliently mounted in respect to each other, one of said blocks having a surface of gelatinous material adapted to retain the blank, and the other block having an operating handle attached thereto.

11. In combination, a tray for supporting a pack of blanks to be printed upon, a carrier for separately removing said blanks from said tray, arms, each having one end thereof secured to said carrier and having the opposite end pivotally mounted, and means for varying the position of the tray in accordance with the height of the pile of blanks therein.

12. In combination, a support for a negative, a combined platen and carrier for a sensitized blank, and a receiver adjacent said support and having an upwardly-extending spring member adapted to engage with the sensitized blank during the movement of the combined platen and carrier away from the support, to remove said blank from said platen.

13. In combination, a combined platen and blank carrier having a surface in part of adhesive material and having a recess therein, and a spring member adapted to pass over said blank during the movement of the platen and carrier in one direction and adapted to enter said recess to remove the blank from the platen during movement of the latter in the reverse direction.

14. In combination, means for supporting

a pack of blanks to be printed upon, a supporting member against which each blank is held during the printing action, a combined platen and blank carrier, a rod for moving said carrier, and a rock shaft having an aperture therein at an angle to the axis thereof, through which said rod may slide.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GUY W. MERRILL.

Witnesses:

ARTEMUS WEATHERBEE,
ASA F. RICHARDSON.