A. F. JONES.

FEEDING DEVICE FOR BLANKS.

APPLICATION FILED NOV. 24, 1906.

937,001.

Patented Oct. 12, 1909.

2 SHEETS—SHEET 1.

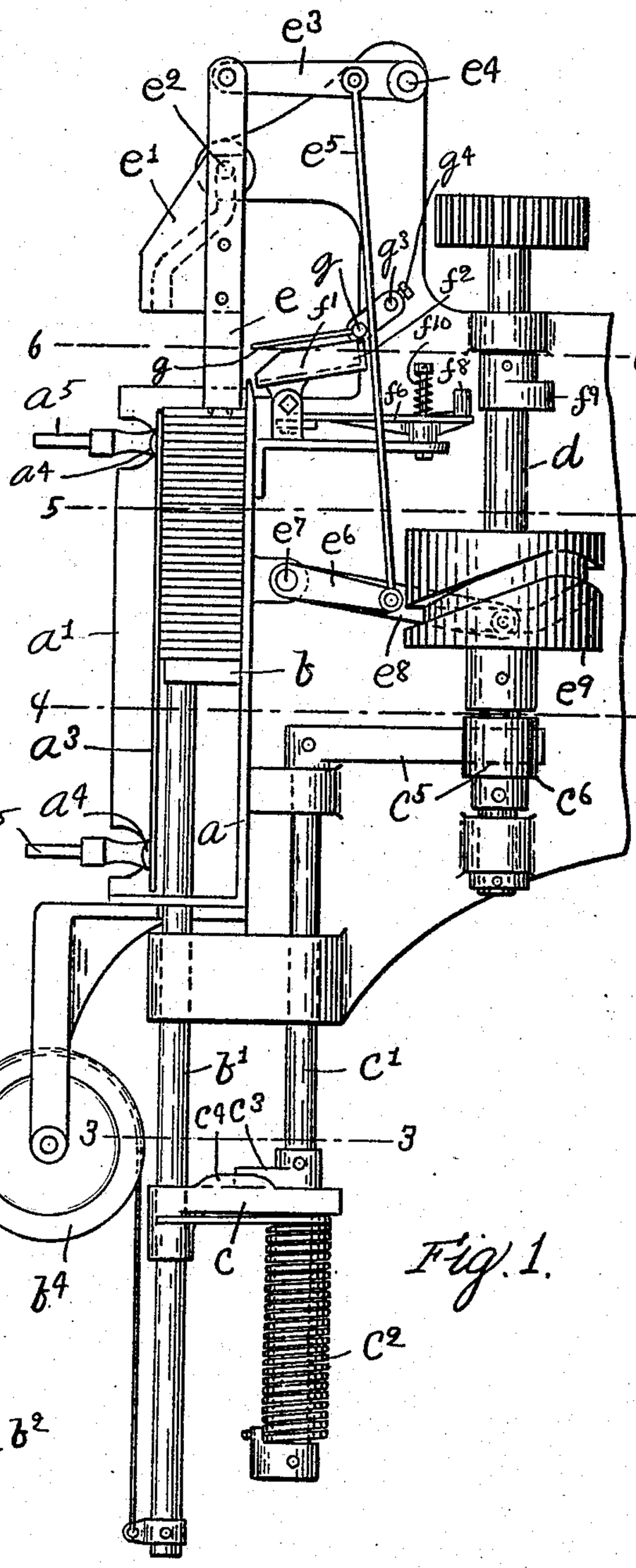

Fig. 1.

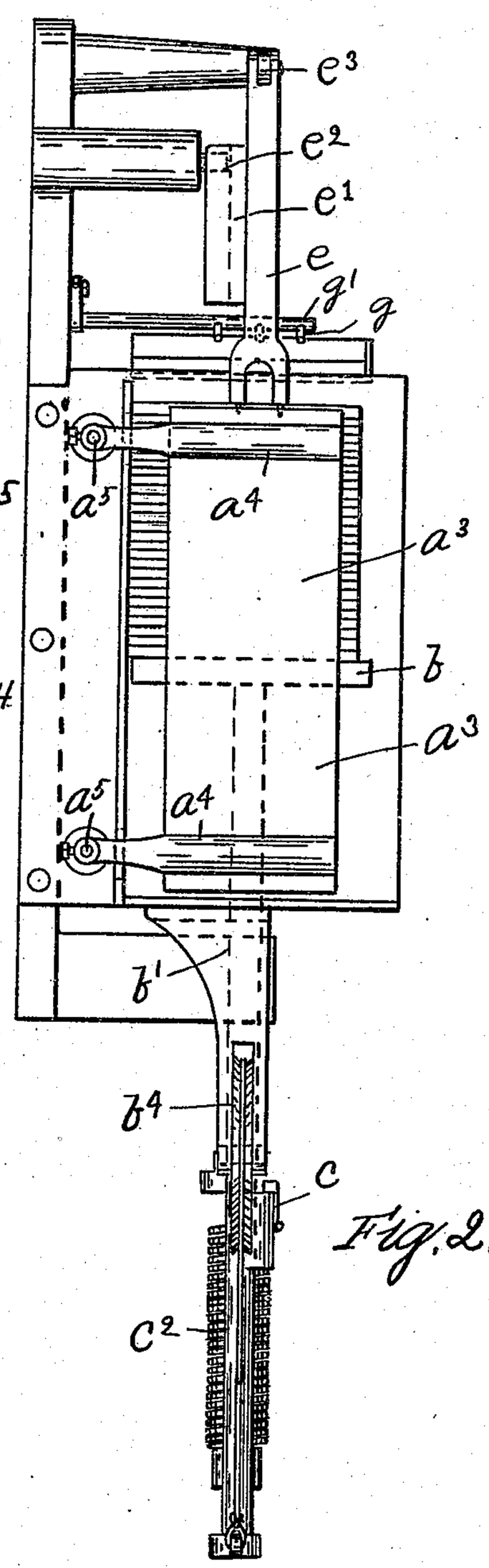

Fig. 2.

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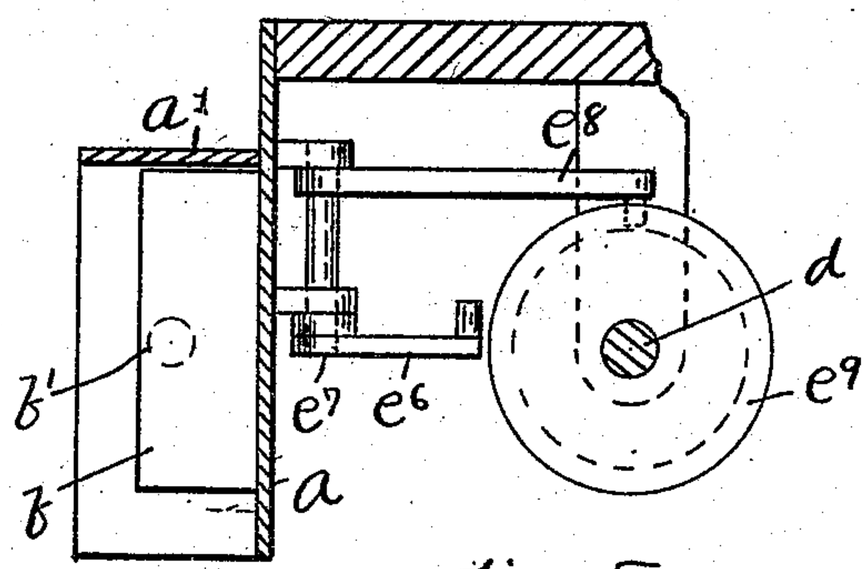

Fig. 5.

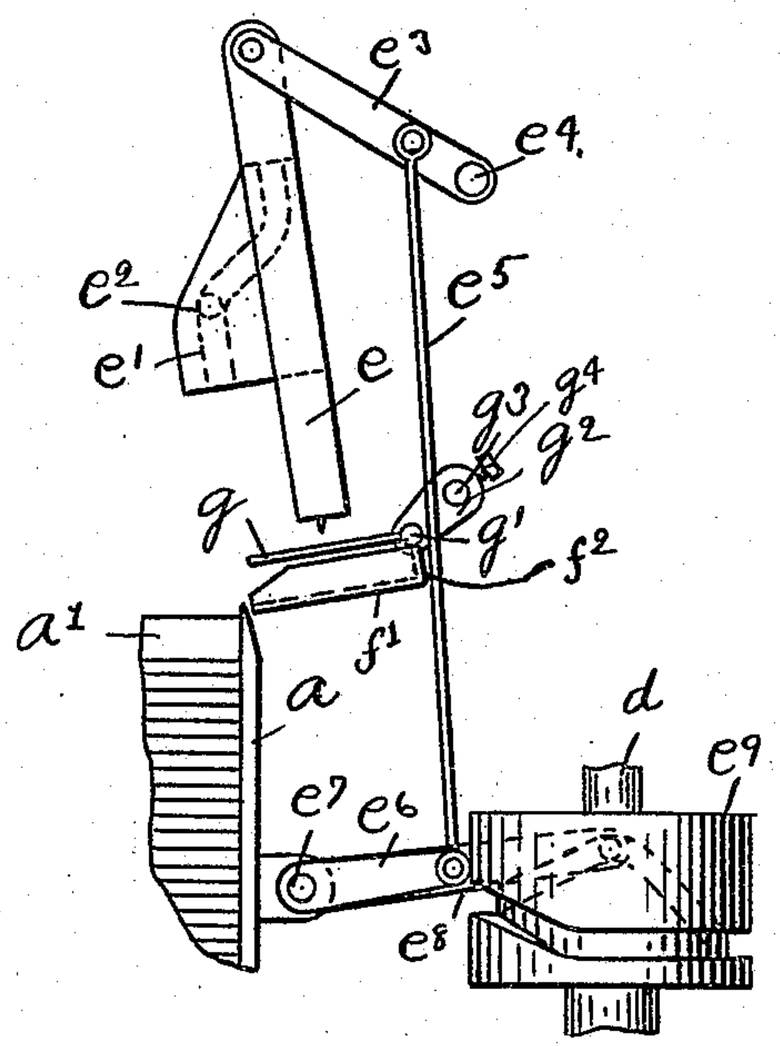

Fig. 4.

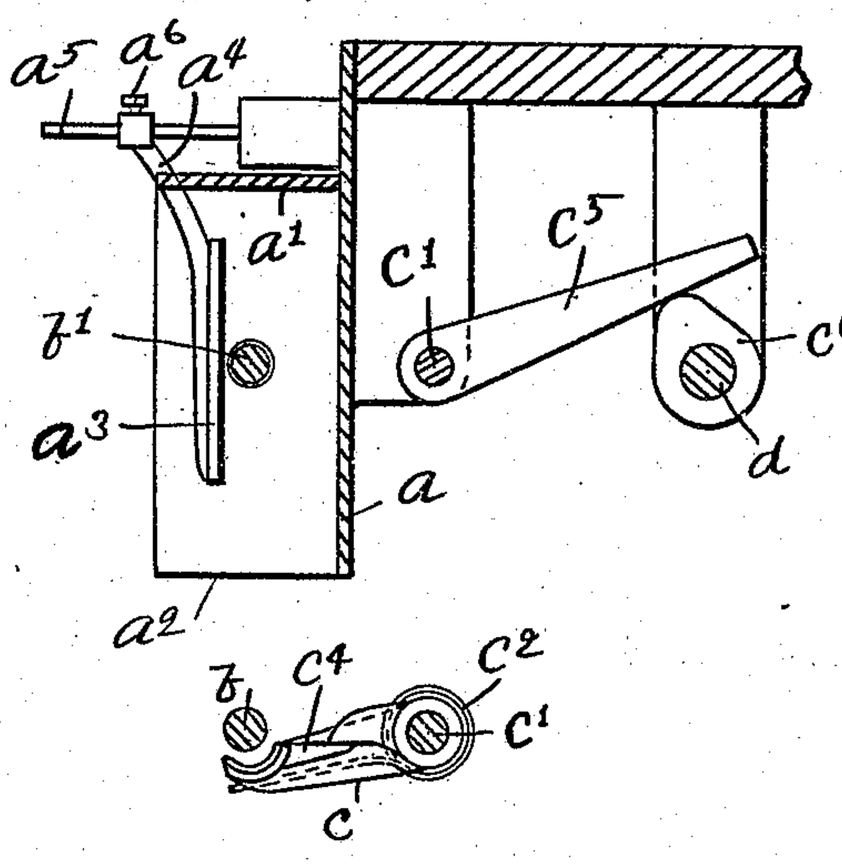

Fig. 3.

Fig. 7.

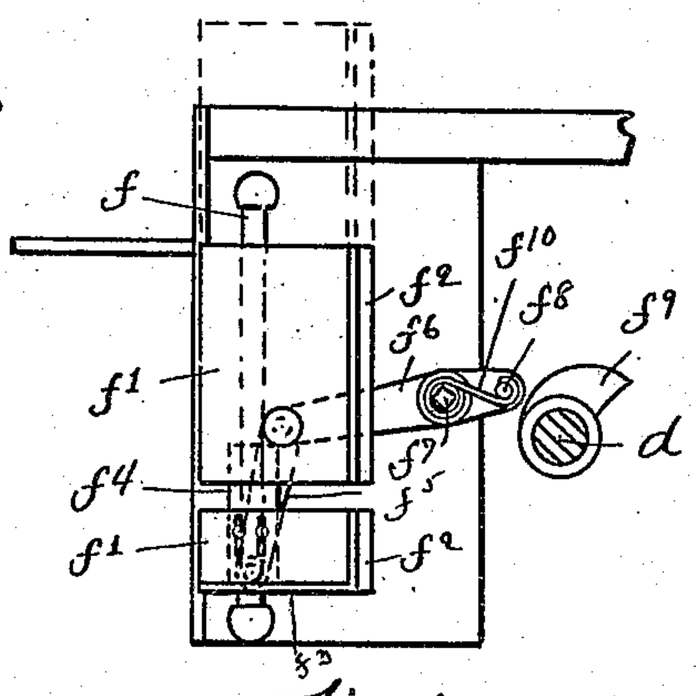

Fig. 6.

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UNITED STATES PATENT OFFICE.

ALBERT F. JONES, OF SALEM, MASSACHUSETTS.

FEEDING DEVICE FOR BLANKS.

937,001. Specification of Letters Patent. Patented Oct. 12, 1909.

Application filed November 24, 1906. Serial No. 344,992.

To all whom it may concern:

Be it known that I, ALBERT F. JONES, of Salem, county of Essex, State of Massachusetts, have invented an Improvement in Feeding Devices for Blanks, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to automatic feeding devices for blanks especially applicable to counter forming machines, such for instance, as shown in my application for Letters Patent #359,202, filed February 25th, 1907, and has for its object to provide means for engaging the top blank of a pile and for removing it from a holder containing a pile of blanks and for delivering it to any suitable means adapted to receive it; also, to provide means, as a plunger, for raising the pile of blanks in the holder and for forcing the top blank of the pile into engagement with the means provided for removing it; also to provide means for locking said plunger while the top blank of the pile is being removed, to thereby hold the pile of blanks at rest until the return of the means employed for removing them; also, to provide a discharging-device or carrier adapted to receive the blank, and means for operating it to present the blank to any suitable means adapted to receive it; also, to provide means for detaching the blank from the means employed for removing it from the holder, so as to properly place it in the discharging-device or carrier.

Figure 1 shows in side elevation a blank-feeding-device embodying this invention. Fig. 2 is a front elevation of the blank-feeding-device shown in Fig. 1. Fig. 3 is a sectional detail taken on the dotted line 3—3, Fig. 1, showing the locking-device for the plunger. Fig. 4 is a sectional detail taken on the dotted line 4—4, Fig. 1, showing the means for operating the locking-device for the plunger. Fig. 5 is a sectional detail taken on the dotted line 5—5 Fig. 1, showing the means for operating the blank-engaging-device. Fig. 6 is a sectional detail taken on the dotted line 6—6 Fig. 1, showing the discharging device or carrier and means for operating it. Fig. 7 is a detail showing the blank-engaging-device in its abnormal position, having just delivered a blank to the discharging-device or carrier.

The receptacle or holder for holding the pile of blanks, which are to be delivered one at a time to a discharging-device or carrier, or to other suitable means adapted to receive it, consists of a box-like structure, herein shown as vertically arranged, having side walls a, a', disposed at right angles to each other, and a bottom wall a^2, and a side plate a^3, also forming a side wall which is adapted to bear upon the pile of blanks. The plate a^3 has arms a^4, see Fig. 4, extended from it at one side, two being herein shown, the extremities of which are bored to receive horizontally arranged posts a^5 supported upon the frame. The plate a^3 is adjustable on said posts and is held in any adjusted position by means of set screws a^6; adjustment of the plate a^3 is provided for the purpose of enabling it to engage blanks of different widths which may be placed in the holder.

The pile of blanks is arranged in the holder, and is supported upon a vertically movable plunger b which is located at the bottom thereof. Said plunger consists of a plate, secured to the top of a plunger-rod b' which is adapted to slide in suitable bearings on the frame. A weight b^2 is connected by a cord, or chain b^3 or other means, with the plunger-rod b', which acts to raise said plunger-rod, and said cord or chain passes over an idle pulley b^4. Upward movement of the plunger is controlled by a suitable locking-device, which, as herein shown, consists of an arm c, see Figs. 1 and 2, loosely mounted on a shaft c', the extremity of which is constructed and arranged to frictionally engage and thereby hold the plunger-rod b'. The locking-arm c is moved into engagement with the plunger-rod by a strong spring c^2, which, for convenience, is supported on the shaft c'. The locking-arm is moved out of engagement with the plunger-rod by a tappet c, secured to said shaft c', which is adapted to engage a projection c^4 on the arm c. The shaft c' is rocked for the purpose of operating the locking-arm, and to this end an arm c^5 is secured to said shaft, see Figs. 1 and 4, which is adapted to be engaged by a cam c^6, secured to the main shaft d. The main shaft d revolves continuously, and during each revolution the cam c^6 temporarily engages the arm c^5 and rocks the shaft c' and positively moves the locking-arm c out of engagement with the plunger-rod b', against the action of the spring c^2. As soon as the cam c^6 disengages the arm c^5 the locking-arm

c is moved by its actuating spring into engagement with the plunger-rod. While the locking-arm disengages the plunger-rod said rod is free to rise and to raise the pile of blanks in the holder.

The blanks are moved upward against a blank-engaging-device, which is constructed and arranged to engage the top blank of the pile and to remove it from the holder and to deliver it to a suitable discharging-device or carrier, by means of which it is delivered to any suitable means not shown, adapted to receive it. The blank-engaging-device, as herein shown, consists essentially of an arm e having at its lower end a plurality of pointed spurs which engage the blank. The arm e is moved downward in a direction toward the pile of blanks, to a predetermined position, to engage the top blank of the pile. It is then moved upward, to remove the top blank from the pile and from the holder, and then laterally and upward to deliver said blank to the discharging-device or carrier, and after having performed these functions it is then returned, so as to engage the next blank. To thus move the arm e a plate e' is secured to it, having a cam groove, which receives a fixed pin e^2 projecting from the frame, and said arm is loosely connected to a lever e^3, pivoted at e^4, to the frame, which is connected by a rod e^5 with an arm e^6 secured to a pivot-shaft e^7, to which is also secured an arm e^8 having a stud at its extremity, with or without a roll thereon, which enters a peripheral cam groove formed in a hub e^9 which is secured to the main shaft d. As the main shaft revolves the arm e^3 will be moved up and down and the arm e will be moved by said arm e^3, but the movement of said arm e will be guided or directed by the cam grooved plate e', to carry out the above described functions. The parts are so timed that the plunger-rod is locked while the blank-engaging-arm e retreats, and will be unlocked, and moved by the weight, to raise the pile of blanks, when the blank-engaging-arm is in position to engage the top blank of the row, so that said top blank will be forced into engagement with said arm e or impaled thereon by the action of the plunger.

The discharging-device or carrier to which the blank is delivered by the blank-engaging-device is located close to but at one side of the holder, and as herein shown, consists of a suitably shaped receiver for the blank, made open at one side for the reception of the blank and also open at one end for the discharge of the blank. As herein shown, see Figs. 6 and 7, the receiver is made in two parts, which are adjustably connected together, and it is mounted to slide longitudinally on a bar f. Each part comprises a bottom wall f' having at each side an upwardly extended side wall, and one of said parts has an end wall f^3. The two parts are connected together by a plate f^4 which is rigidly secured to one of said parts and adjustably secured to the other part, thereby providing for longitudinal adjustment of the parts of the receiver.

The receiver is movable back and forth on the bar f longitudinally, for the purpose of receiving a blank and then presenting it to any suitable means adapted to receive it, and to thus reciprocate the receiver a link f^5 is loosely connected to it, which is connected to one end of a lever f^6, pivoted at f^7 to the frame, the other end of said lever having a pin f^8, which is adapted to be engaged by a cam f^9 secured to the main shaft d. As the main shaft revolves the cam engages and moves the lever f^6 and thereby moves the receiver and as soon as the cam disengages the pin f^8 a spring f^{10}, connected to said lever, acts to return the lever and receiver which is connected therewith, to normal position. Above the receiver a plurality of pins g are arranged, three being herein shown, which are secured to a horizontal bar g', secured to an arm g^2, mounted on a stud g^3, to which it is secured by a set screw g^4, thereby providing for adjustment of the pins g toward and from the receiver. These pins are provided for the purpose of detaching the blank from the blank-engaging-device. The extremity of the arm e is bifurcated, and as said arm e conveys the blank to the receiver one of the pins g will enter between the arms thus provided at the end of the arm e, above the blank, while the other pins will occupy positions at the sides of said arms, also above the blank, and then, as the arm e further retreats, these pins will engage the blank and detach it from the arm e. The arm e first moves upwardly, to remove the top blank from the holder, then laterally and upwardly to place the blank in the receiver and to detach the blank from the arm, and then returns to engage the next blank in the holder, but while it occupies a position more or less remote from or above the receiver, said receiver is moved longitudinally to present the blank thus delivered to it to the means provided for engaging it.

I do not desire to limit my invention to the particular construction of parts herein shown and described, as it is obvious that many changes may be made and yet the herein described functions, or their equivalents, subserved.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a blank-feeding-device, the combination of a holder adapted to receive a pile of blanks, a blank-engaging-device, means for advancing and retreating it to engage the top blank of the pile and remove it from the holder, a plunger, means for operating it to

raise the pile of blanks, and means for locking it while the blank-engaging-device retreats, substantially as described.

2. In a blank-feeding device, the combination of a holder adapted to receive a pile of blanks, a blank-engaging-device, means for advancing and retreating it to engage the top blank of the pile and remove it from the holder, a plunger for raising the pile of blanks in the holder, means for locking said plunger while the blank-engaging-device retreats, and means for moving said plunger when it is unlocked, substantially as described.

3. In a blank-feeding-device, the combination of a holder adapted to receive a pile of blanks, a blank-engaging-device, and means for advancing and retreating it to engage the top blank of the pile and remove it from the holder, a plunger and means for moving it to raise the pile of blanks in the holder and to thrust the top blank into engagement with the blank-engaging-device, and means for locking said plunger while the blank-engaging-device retreats, substantially as described.

4. In a blank-feeding-device, the combination of a holder adapted to receive a pile of blanks, a discharging-device or carrier, a blank-engaging-device, means for advancing and retreating it to engage the top blank of the pile and remove it from the holder and deliver it to the discharging-device or carrier, a plunger for raising the pile of blanks in the holder, and means for locking said plunger while the blank-engaging-device retreats, substantially as described.

5. In a blank-feeding-device, the combination of a holder adapted to receive a pile of blanks, a plunger for moving the pile of blanks in the holder, means for locking said plunger temporarily, and means for moving it when it is unlocked, means for removing the blanks from the holder one at a time while the plunger is locked, and a discharging device or carrier to which said blanks are delivered, substantially as described.

6. In a blank-feeding-device, the combination of a holder adapted to receive a pile of blanks, an upwardly moving plunger for raising the pile of blanks, a longitudinally adjustable reciprocating discharging-device or carrier, a blank-engaging-device, means for operating it to engage the top blank of the pile and remove it from the holder and deliver it to said discharging-device or carrier, substantially as described.

7. In a blank-feeding-device, the combination of a holder adapted to receive a pile of blanks, a plunger for moving the pile of blanks in the holder, means for locking said plunger temporarily, and means for moving it when it is unlocked, a blank-carrying member having means for engaging the blanks, and means for moving said member to engage the top blank of the pile, lift it therefrom and remove it from the holder, substantially as described.

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

ALBERT F. JONES.

Witnesses:
B. J. NOYES,
H. B. DAVIS.