(Model.)

F. P. SHELDON.

MACHINE FOR FEEDING FILLING DISKS TO BUTTON MAKING MACHINERY.

No. 245,410. Patented Aug. 9, 1881.

Fig. 1.

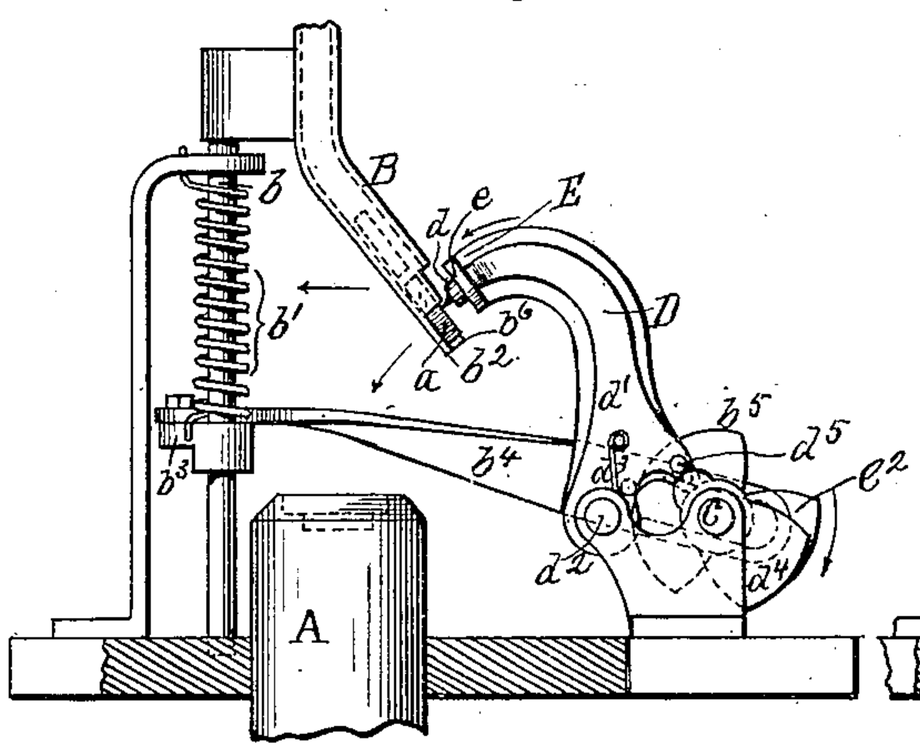


Fig. 2.

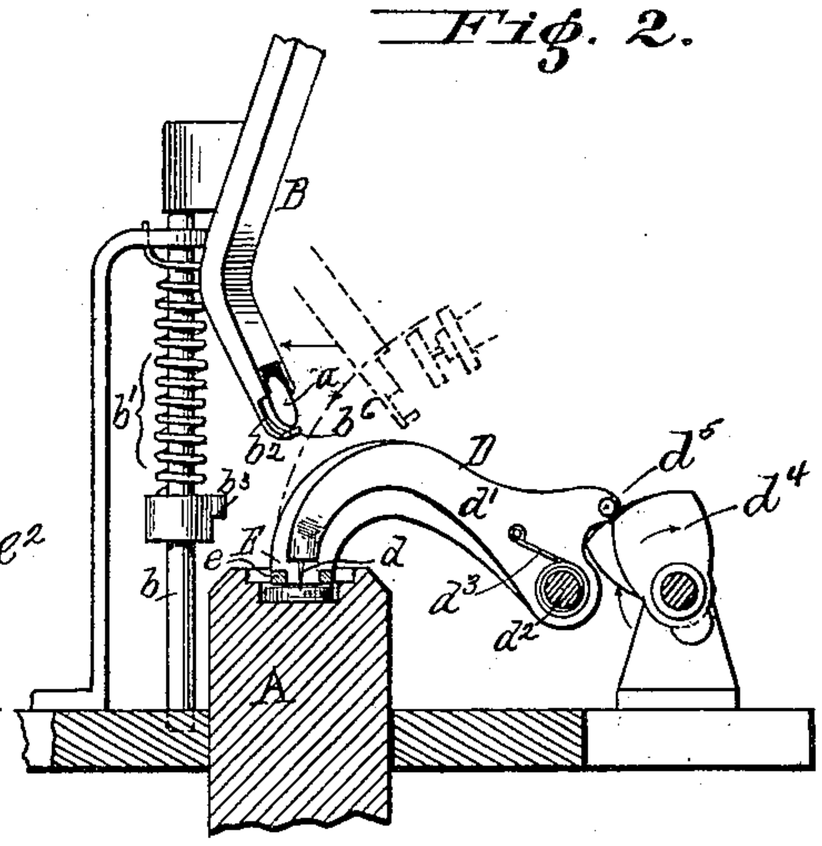


Fig. 3.

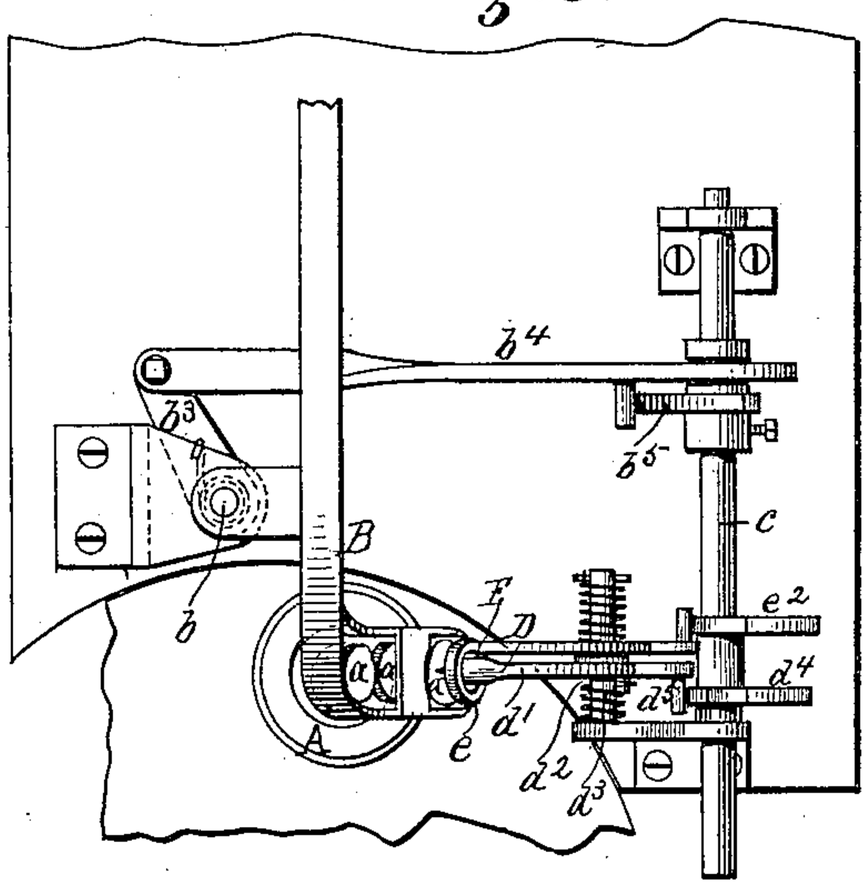


Fig. 4.

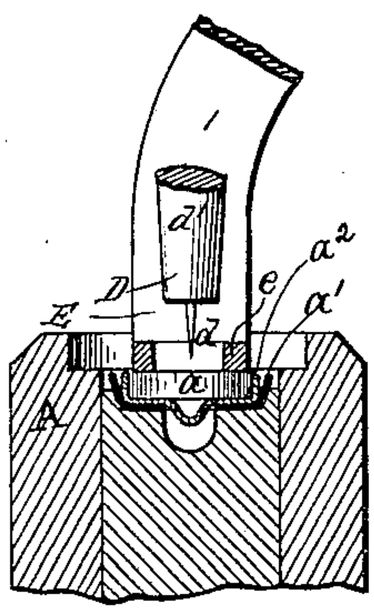
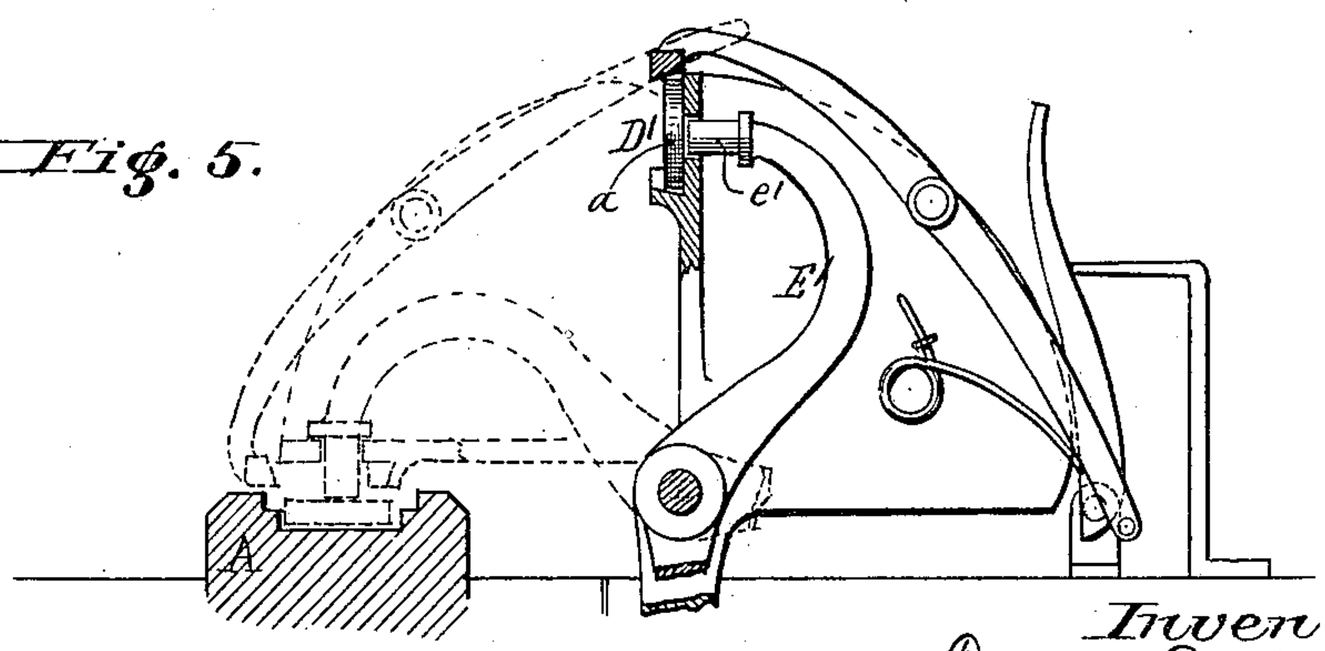


Fig. 5.



Attest:
H. L. Pennie
Philip F. Larned

Inventor.
Frank P. Sheldon.
By. Wm. McNovel Atty.

UNITED STATES PATENT OFFICE.

FRANK P. SHELDON, OF PROVIDENCE, ASSIGNOR TO HENRY B. METCALF, OF PAWTUCKET, R. I., AND WILLIAM McCLEERY, OF BOSTON, MASS.

MACHINE FOR FEEDING FILLING-DISKS TO BUTTON-MAKING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 245,410, dated August 9, 1881.

Application filed November 17, 1880. (Model.)

To all whom it may concern:

Be it known that I, FRANK P. SHELDON, of the city and county of Providence, and State of Rhode Island, have invented certain new and useful Improvements in Machines for Feeding Filling-Disks to Button-Making Machinery; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part thereof, is a clear, true, and complete description of my invention.

My improvements relate to the manufacture of that class of buttons which embody sheet-metal shells and "collets" and contain a filling composed of heavy pasteboard or similar material in the form of a disk.

The object of my improvements is to automatically feed the filling-disks from a mass to the dies of button-making machines.

Heretofore mechanism has been devised for the attainment of this end; but, so far as my knowledge extends, these filling-disks have always heretofore been taken from a stack or pile in a vertical chute by a sliding plate and by it permitted to fall by their gravity into holes in a feed-wheel, from which they were subsequently forced by plungers into the dies of the button-machine. The dropping of a disk-filling by its own gravity into the aperture of a feed-wheel involves a too frequent possibility of its falling edgewise therein and being carried downward into the dies in an edgewise instead of flatwise position, not only resulting in the ruin of the disk, but also in the ruin of the several other parts of which the button is composed, coupled also with the liability of injury to the delicate mechanism of the button-making machines.

My present improvements have been specially devised for use upon machines adapted to the manufacture of cloth-covered buttons which contain a collet and a cloth tuck or flexible shank to receive stitches, and this tuck is the central portion of a heavy cloth disk interposed between the collet and the filling-disk, and therefore the filling-disk should be very accurately delivered and forced into the collet while in the proper die and while the stiff and sometimes curled or crumpled cloth or canvas is interposed between the disk and collet. Moreover, during the union of the collet, canvas, and filling with the shell and cloth cover, it is desirable that the filling should occupy a precisely accurate central position in order to properly engage with portions of the protruding edge of the cloth cover and fold them more or less inward as it is forced within the shell, from all of which it will be seen that a positive and forcible delivery of the filling is of greater importance in the manufacture of buttons of this class than in making suspender-buttons composed of two perforated metal shells and a paper filling, in connection with the manufacture of which the before-referred-to automatic mechanism for feeding fillings has been employed.

My said improvements are capable of co-operation with any mechanism adapted to lift the disks from a mass within a receptacle and to fill a chute, down which they may descend to a point sufficiently adjacent to the dies of the button-machine to admit of the operation of the delivery mechanism.

In certain contemporaneous applications for Letters Patent I show hoppers, lifting mechanism, and chutes capable of co-operating with my delivering mechanism, and I therefore have not deemed it important to herein particularly show and describe more than delivery mechanism embodying novel features and a chute adapted to co-operate therewith.

I am aware that in machines for automatically applying primers or caps to cartridge-shells hoppers, chutes, carriers, and plungers have been so organized that a primer dropping edgewise from the chute is received into the open vertical jaws of the carrier, and kept from falling flatwise therefrom by an automatic retaining-gate until said jaws had so far moved on their course from the chute as to permit them to close peripherally upon the primer, the gate meantime retiring, and also so that after said carrier had completed its downward movement it would hold the primer above the recess in the cartridge-shell already in position. In such machines, however, the carrier has no releasing capacity, nor any capacity within itself to force the primer therefrom, but merely

holds it until the plunger of the capping-machine, descending to unite the primer with the cartridge-shell, passes between the jaws of the carrier and forces the primer therefrom. Such an organization would be impracticable in a button-making machine working on cloth-covered buttons, for the upper plungers used therein operate on cloth either in forcing the center of a tuft through the eye of a collet, or they are hollow complex plungers for finishing the buttons, and are much larger in external diameter than any of the rigid parts of which the button is composed, and therefore neither of said plungers could co-operate with a carrier as a device for freeing a button part from the custody of the carrier.

I am also aware that in machines for capping nails a laterally-vibrating pneumatic carrier (without vertical movement) has been employed for conveying a plate or disk from a recptacle to a point above a die, and that said carrier has been provided with a spring-plunger, automatically operated, for forcing the plate or disk from the custody of the pneumatic carrier, then permitting the disk to fall from said carrier into a die. Neither of these prior organizations of carrier and plunger could maintain control of the primer or the disk until it was accurately delivered and forced into a die by the carrier, and therefore it is obvious that neither of them was adapted to properly deliver fillings into a cloth tuft having the upturned annular edge, which results from the operation of the tuft-plunger in forcing the cloth tuft into and its central portion partially through the eye of the collet.

The several devices and combinations of devices believed to be novel will be specified in the claims hereunto annexed, and while I prefer their employment in one organization I am well aware that some of the features may be separately employed in connection with other mechanism adapted to co-operate therewith.

Referring to the drawings, Figure 1 is a side elevation of my delivering mechanism, a portion of a chute, and so much of a button-making machine as is deemed necessary for illustration. Fig. 2 is a similar view, showing the parts in the position occupied by them at the moment of placing a filling in the die. Fig. 3 is a plan view. Fig. 4 is an enlarged sectional view of a die containing a collet, canvas tuck, and a filling, and a portion of the delivery mechanism. Fig. 5 represents a modification of a portion of my invention.

The die A, it will be understood, is mounted upon the usual revolving die-table, and the delivery mechanism is mounted upon a platform adjacent to the path of the dies. Prior to receiving the filling a, the collet a' and the cloth tuck a^2 are placed within the die, as indicated in Fig. 4.

Very thick fillings may be delivered reasonably well by nippers which grasp the filling circumferentially, provided a portion of it so protrudes from the nippers as to admit of its being forced into a collet; or the nippers serving only as carriers may be supplemented, in accordance with my invention, by a forcing device which will operate to release the filling from the nippers and simultaneously force it into the collet.

The delivery mechanism devised by me embodies carrying and forcing devices, which may be largely varied in construction and arrangement, according to specific requirements.

I prefer to employ as a carrier a device which obtains control of a filling-disk by partially piercing it, and with such a piercing-carrier I employ a forcing device which also serves as a "stripper" for freeing the disk from the piercing-points of the carrier. Inasmuch as for accurate delivery the carrier should truly move in the arc of a circle to the die and in a vertical plane coincident with the axis of the die, the fillings must either be presented by the chute to the carrier at some point traversed by the carrier in its direct movement toward the die, or, in lieu thereof, the carrier must be capable of lateral movement toward and from the lower end of a chute, as well as the circular line of movement before referred to. I prefer, with the piercing-carrier, that it should be capable of the circular line of motion only, and therefore I provide for co-operation therewith a chute which at its lower end vibrates to and fro, so as to present a filling in the path of the carrier, and then to retire from said path, to admit of the onward movement of the carrier to the die. If, however, nipples be employed as a carrier the chute need not be vibrated, for then the path of the carrier toward and from the die would occupy a plane at right angles to or across the lower end of the chute, as shown and described in a certain contemporaneous application for Letters Patent filed by me, relating to mechanism more specially devised for feeding shells to the dies of machines adapted to the manufacture of cloth-covered buttons. If the carrier be arranged to grasp a filling circumferentially and to release it when deposited on the die, the forcing device need not operate as a stripper, as is necessary with the piercing-carrier.

The chute B (shown in the drawings) is mounted so as to swing or vibrate upon or with its vertical standard b, and a spiral spring, b', on said standard is so set as to maintain the lower end, b^2, of the chute at a somewhat rearward position with reference to the die A, as shown in dotted lines in Fig. 2. An arm, b^3, on the chute-standard has pivoted to its outer end a rigid link, b^4, which is moved longitudinally by a cam, b^5, on a revolving shaft, c. This cam is so shaped as to act against the spring b' in moving the lower end of the chute forward above the center of the die, then to rest, and then to permit the spring to return the chute to its normal rearward position. The lower end of the chute is so curved as to present the lowest filling therein in an inclined position and with its upper surface fully ex-

posed. A stud, b^6, at the bottom of the chute serves to support the column of fillings within the chute. The upper end of the chute may be placed in coincidence with a chute leading from a hopper containing suitable lifting mechanism; or a light hopper and lifting mechanism may be mounted upon the upper end of said chute, so as to vibrate with it, in which case the lifting mechanism can readily be made to rely for its movements upon the vibratory movement of the chute.

The filling-carrier D, as shown in Figs. 1 to 4, inclusive, has one or more piercing-points, *d*. One point would serve reasonably well; but two or more are preferable, as they prevent any undue rotation of the filling during its transit. Said carrier is composed, in part, of a lever, d', pivoted at d^2 to a vertical standard, and provided with a spring, d^3, so set as to force the carrier rearward from the die. Upon the rotating shaft *c* is a cam, d^4, which engages with a pin, d^5, projecting laterally from the rear end of lever d' and is so shaped as in each revolution to depress the front end of the lever, (from its highest position to force the points into a filling,) then to permit the spring d^3 to lift the front end of the lever, (to lift a filling from the chute,) then to move it downward into the die, and then to permit the spring to return it to its first or highest position.

The carrier D′, Fig. 5, is of the nipper variety, like that before herein referred to.

The finger E, when arranged to co-operate with piercing-points, has at its outer end an annular plate, *e*, surrounding the end of the carrier D and its points. When arranged to co-operate with nippers which circumferentially grasp a filling the end of the finger would be in the form of a plunger, moving to and fro centrally within the nippers, and at right angles to the plane occupied by the jaws thereof, as indicated at e' on the fingers E′, Fig. 5. However the carrier may be constructed or of whatever form the end of the finger may be, the end of the finger must be so far retired as not to obstruct the proper engagement of the carrier with the filling-disk, nor to interfere with the filling during its transit into the die. After the arrival of the filling in the die, the finger engages therewith and operates, according to circumstances, either as a forcing device or as a stripping device, or as a combined forcing and stripping device. In other words, if operating with a carrier having points, as shown, the finger operates as a forcing device in forcing the filling into a collet, and also as a stripping device in freeing the filling-disk from the points. If the grasping-nippers shown be used, and they automatically open after depositing the filling, then the finger would operate solely as a forcing device; but if the nippers did not so open automatically, then the finger would operate to strip or free the filling from the nippers, and also as a forcing device; and now, returning to the pointed carrier, if the points be so short that the flat end of the finger would be in contact with the filling, then the carrier would operate also as a forcing device and the finger solely as a stripper. The requisite movements of the finger and the time of its operation with reference to the movements of the carrier are readily attainable by means of the cam e^2 on the revolving shaft *c*, the finger being in the form of a lever, closely resembling lever d', and having a similar spring for inducting a rearward movement of the operating end of the finger.

It will readily be seen that as the shaft *c* is rotated in the direction indicated by the arrows the chute will swing around over the die, the carrier will pierce a filling and lift it from the chute, the chute will retire, the carrier descend into the die with the finger, and the latter will force the filling downward, and also free it from the points, after which the carrier and finger will rise, ready to repeat their movements.

Having thus described my invention, I claim—

1. The combination, substantially as hereinbefore described, with the die of a button-making machine and a chute or receptacle for fillings, of the filling-carrier, vibrating in a vertical plane into and from the die, and a forcing-finger connected to and moving with the carrier, which forces a filling downward into the die after said filling has been deposited in the die by the carrier, as set forth.

2. The combination, with the die and the forcing-finger, of a chute and a vibrating pointed filling-carrier, the chute and carrier being movable with reference to each other, substantially as described, whereby the carrier lifts a filling from the chute, carries it to the die, and forces it into a collet within the die, as set forth.

3. The combination, with the die of a button-making machine and a chute or receptacle for fillings, of a filling-carrier vibrating in a vertical plane into and from the die, and a finger connected to and moving and co-operating with said carrier for the proper delivery of fillings into the die, substantially as described.

4. The combination, with the die and chute, of a pointed filling-carrier and the finger operating as a stripper for detaching the filling from the points of the carrier, substantially as described.

5. The combination, with the vibrating chute, of the pointed filling-carrier and stripping-finger, substantially as described.

FRANK P. SHELDON.

Witnesses:
LEMUEL H. FOSTER,
DEXTER B. POTTER.