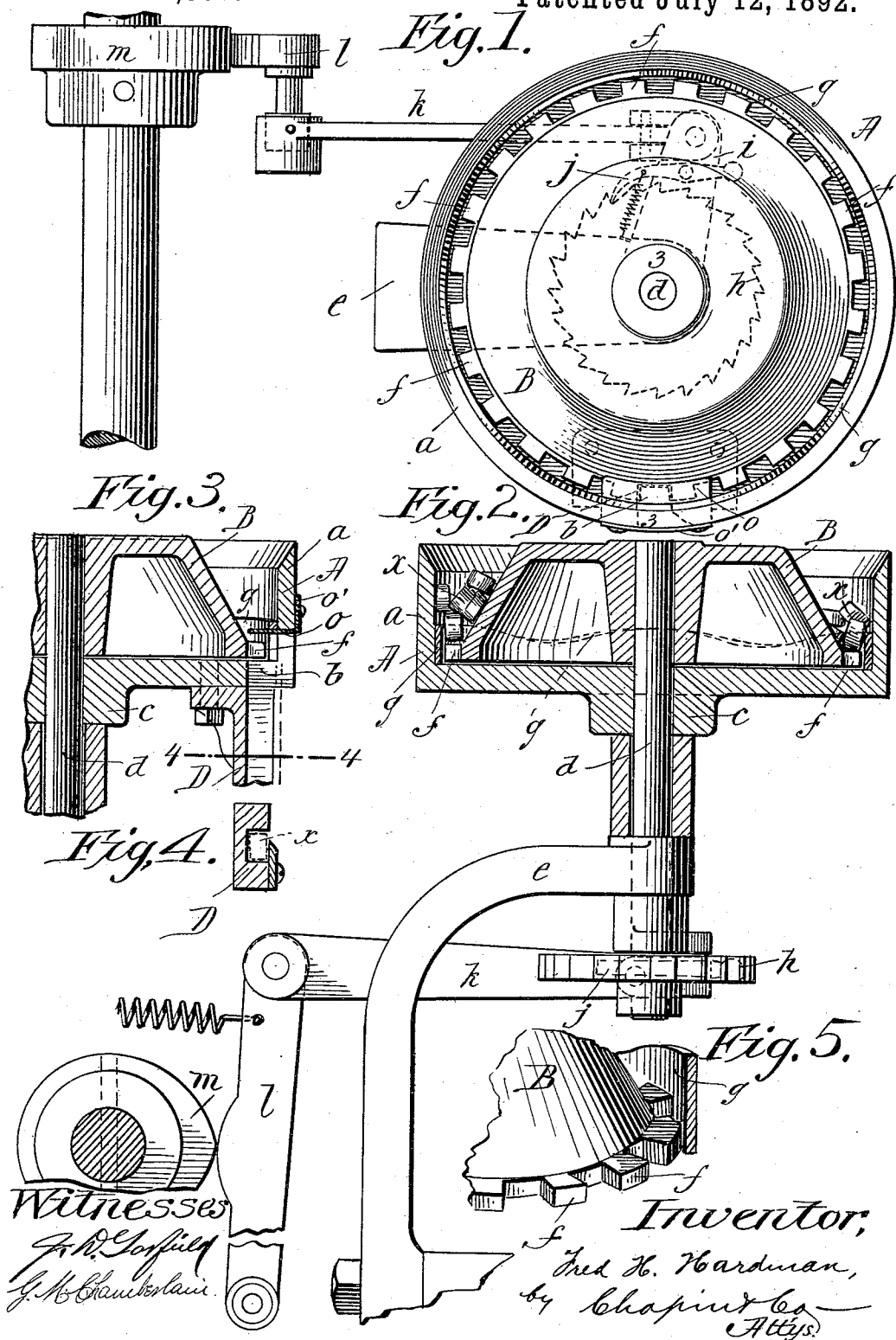


(No Model.)

F. H. HARDMAN.
BLANK FEEDING MECHANISM.

No. 478,597.

Patented July 12, 1892.



UNITED STATES PATENT OFFICE.

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BLANK-FEEDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 478,597, dated July 12, 1892.

Application filed August 21, 1891. Serial No. 403,367. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK H. HARDMAN, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Blank-Feeding Mechanisms, of which the following is a specification.

This invention relates to mechanism for automatically feeding disk-shaped parts supplied in a mass and without particular arrangement in a hopper to be presented successively all in suitable relations or positions at a proper distance from the hopper, so as to be operated on by suitable mechanism therefor.

The improved mechanism has been particularly designed for use for feeding or guiding blanks or wads of papier-maché or other stock material to the action of the button-forming mechanism of button-machines.

The invention consists in the constructions and combinations of parts, all substantially as will hereinafter more fully appear, and be set forth in the claim.

In the accompanying drawings in which this invention is illustrated, Figure 1 is a plan view of the feeding mechanism, and Fig. 2 is a sectional elevation of same. Fig. 3 is a sectional view of part of the mechanism, taken on the plane indicated by line 3 3, Fig. 1. Fig. 4 is a horizontal cross-section of the guide-chute as taken on line 4 4, Fig. 3. Fig. 5 is a view in perspective to illustrate certain features of construction with greater clearness.

In the drawings, A represents a hopper of cylindrical form, having its bottom closed, except as hereinafter specified, open at its top, and supported in a fixed position with its axis vertical. The hopper in its bottom near the inner vertical circular wall *a* is provided with an opening *b*, (indicated in Fig. 3 and also by the dotted lines in Fig. 1,) the said opening through the bottom being rectangular and having a length slightly greater than the diameter of the circular or disk-like blanks or articles which it is the purpose of this improved machine to automatically deliver. A shaft *d* passes vertically and centrally through and above the bottom of the hopper A, said bottom being provided with a hub *c* to form

a practical bearing for the said shaft, and the shaft has further supports and bearings below the hopper, more or less, as shown, the bracket *e* sustaining the parts.

B represents a body or shell, which is in the form of the frustum of a cone, the base portion of which is of less diameter than the internal diameter of the hopper, and said conical body is keyed or otherwise fixed to the upper extremity of the said shaft *d*. The said conical body B is provided at and surrounding its base with a circular series of teeth or cogs *f*, the spaces between which have an extent slightly greater than the diameter of one of the disks to be fed.

The circular wall *a* of the hopper is, near the bottom thereof, internally provided with the annular ledge or flange *g*, which has its upper edge undulating or gradually scalloped, as indicated particularly by the dotted lines in Fig. 2 and in Fig. 5.

A slow or intermittent rotational movement is imparted to the conical body B, the particular means here provided for effecting this movement consisting in devices as follows: A ratchet-wheel *h* is fixed upon the shaft *d*, and there is also mounted for oscillation thereon the arm *i*, which carries the spring-constrained pallet *j*. The oscillatory movement is imparted to the arm *i* by the connecting-rod *k*, which is linked to said arm by its one end and by its other is pivoted to the cam-lever *l*, to which a periodical swinging motion is imparted in one direction by the rotary cam *m*, the return swinging movement of said lever being secured by the retracting-spring *n*, Fig. 2.

Beneath the opening *b* in the bottom of the hopper (which opening, as will be noticed, is successively registered by the spaces or pockets between the teeth *f*) there is secured the vertical guide chute or tube, the vertical opening through which is practically rectangular and having a cross-sectional length slightly larger than the diameter of the disks to be fed, so that said disks may, when entered into the chute, freely pass down through same, being guided thereby, all disposed edgewise one above another in the same plane. The chute is particularly indicated at D in

Figs. 3 and 4, the relations of same with the other parts being also indicated by the dotted lines in Fig. 1.

o indicates a guard-plate, secured on and projected inwardly from the vertical wall *a* of the hopper over the opening *b* and at a height slightly above the top surface of the teeth *f*. In order to insure a convenient attachment of the said guard *o*, the hopper is recessed in its wall *a* near the lower corner thereof adjacent and as a continuation of said opening *b*, and the guard-plate *o* is formed angular, as shown, the horizontal member thereof projecting through the recess in the hopper-wall and the ledge-strip *g* within same, the vertical portion *o'* of the said guard-plate lying upon the outside of the hopper-wall being riveted or otherwise secured thereto.

The operation of the present feeding mechanism is very simple and quite apparent. However, it will be mentioned that as the blanks—some thereof being indicated at *x* in Fig. 2—are placed promiscuously in the annular space between the circular vertical wall *a* and the inclined sides of the conical body *B* they settle down into the contracted portion of the space at the bottom, and they ultimately become disposed in vertical planes at right angles to the radial directions of the teeth *f*, and are engaged by said teeth and moved into registry with the said opening *b* when they fall down into the chute *D*. The majority of the blanks will by the slant sides of the conical body *B* be brought into the vertical disposition stated; but such as are not so arranged, but which may lie more or less horizontally across the lower portion of the space in the hopper and which may have more or less engagement with and partial

support upon the undulating ledge *g* and also with the teeth or through friction with the slant sides of the cone *B*, whereby an agitation or revoluble movement is imparted to said blanks as the conical body rotates, will, as they are moved over a higher portion of the ledge, be tilted upright and finally fall into one of the pockets or spaces between the teeth. The said guard-plate *o* prevents blanks which are entered in the hopper over the exit-opening *b* from passing directly and perhaps in a slanted position into said opening *b*, whereby they might become lodged and prevent the passage of the blanks which have been brought into proper arrangement between the teeth and by the latter moved to positions for their discharge down through said discharge-opening.

What I claim as my invention is—

In a blank-feeding mechanism for button-machines, the combination, with a cylindrical hopper provided through its bottom with the discharge-opening and having at the lower portion of its internal circular wall the ledge *g*, with its upper surface undulating, of an upwardly-tapering conical body rotatable within said hopper and provided at its base, which is in a plane below the undulating upper surface of said ledge, with the series of teeth having intermediate pockets to be brought successively over said discharge-opening, and means for rotating the said conical body, substantially as described and shown, for the purpose set forth.

FRED. H. HARDMAN.

Witnesses:

H. A. CHAPIN,
M. A. BIGELOW.