(No Model.)

2 Sheets—Sheet 1.

A. DICKERMAN.

MECHANISM FOR CUPPING PAPER SHELLS FOR CARTRIDGES.

No. 347,165. Patented Aug. 10, 1886.

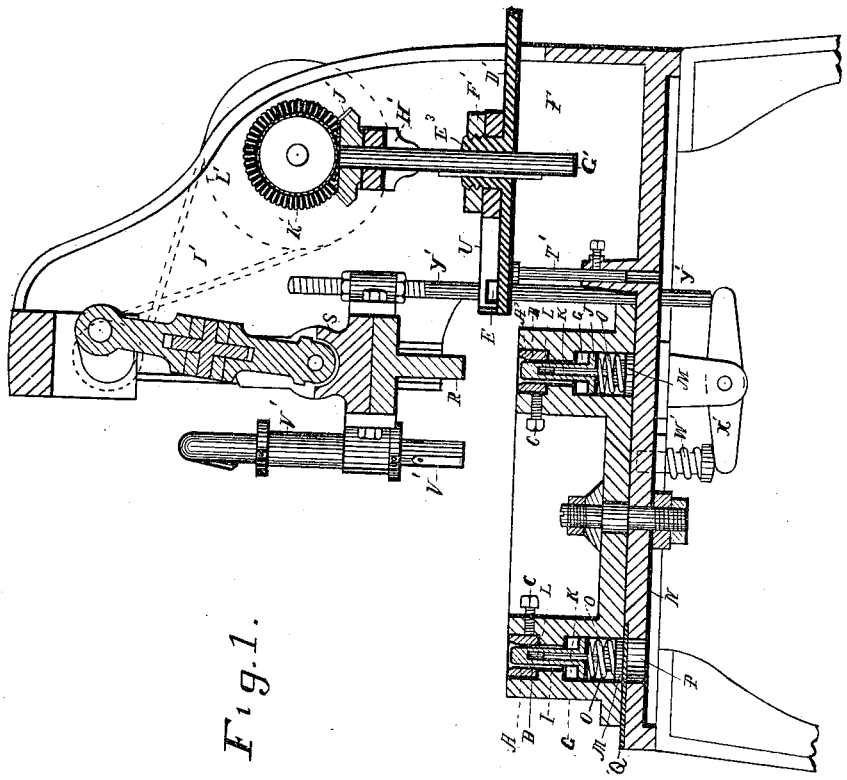

Fig. 1.

WITNESSES

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(No Model.)

2 Sheets—Sheet 2.

A. DICKERMAN.

MECHANISM FOR CUPPING PAPER SHELLS FOR CARTRIDGES.

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Fig. 3.

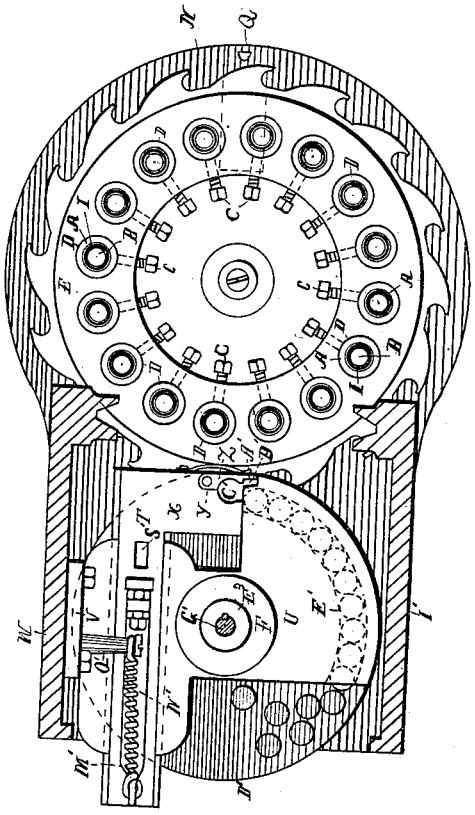


Fig. 5.

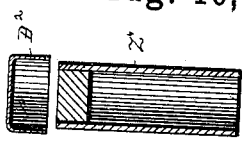


Fig. 4.

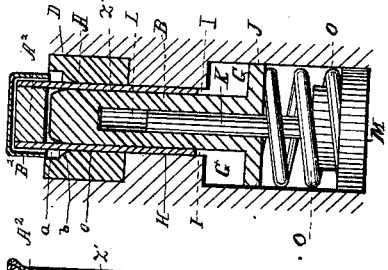


Fig. 6.

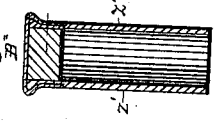
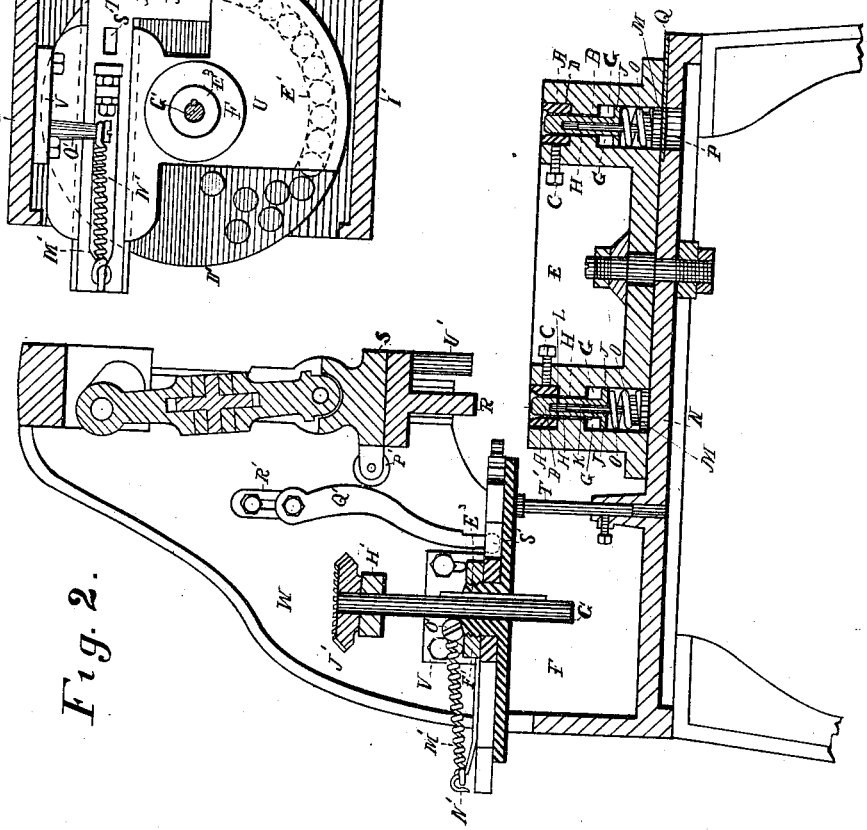


Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

AMOS DICKERMAN, OF NEW HAVEN, CONNECTICUT.

MECHANISM FOR CUPPING PAPER SHELLS FOR CARTRIDGES.

SPECIFICATION forming part of Letters Patent No. 347,165, dated August 10, 1886.

Application filed July 21, 1884. Serial No. 138,298. (No model.)

To all whom it may concern:

Be it known that I, AMOS DICKERMAN, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Process of and Mechanism for Cupping Paper Shells for Cartridges; and I do declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved mechanism for cupping paper shells for cartridges, the object being to secure the cups to the shells and to develop the heads of the cups at one and the same operation and without crimping the shells, whereby the expense of producing the cartridges is reduced, an article of uniform dimensions is secured, and the maximum percentage of perfect pieces obtained.

With these ends in view my invention consists in reducing the cups of cartridges onto the shells thereof, and thus securing the cups to the shells and developing the heads of the cups at one and the same operation.

My invention further consists in mechanism having certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in vertical longitudinal section of a machine embodying my invention, and showing the mechanism for running the cup-dial. Fig. 2 is a similar view of the opposite side of the machine, and showing the mechanism for reciprocating the carrier-block. Fig. 3 is a plan view of the dials. Fig. 4 is a view in section of the shell-dial of a die and pin and the parts associated with them, and showing a shell and cup properly assembled for being forced into the die. Fig. 5 is a detail view of a shell and cup prior to being combined, and Fig. 6 is a view of a cupped shell.

In the following description my improved mechanism will be first described, and afterward the improved process.

The essentially novel features of the mechanism are, the annular dies A, the pins B, means for supporting the latter until the cups and shells have been properly assembled, and devices for automatically bringing the shells and cups together. The said dies A are each provided with a central opening, including an enlarged portion, *a*, located next to the face of the die and adapted to receive an assembled cup and shell, a beveled portion, *b*, located next below the enlarged portion and adapted to reduce the cup onto the shell and develop the head of the cup, and a cylindrical main portion, *c*, located below the beveled portion and adapted to contain the shell and the reduced portions of the cup. The said dies are located and secured by set-screws C in cells D, formed in the upper face of the shell-dial E, which is mounted in a power-press, F, of any approved construction and revolved by any suitable mechanism. The pins, on the other hand, extend through the dies and to about the level of the upper face of the dial from a series of cells G, formed in the lower face of the same, corresponding in position to the cells D aforesaid, and connected with them by passages H, corresponding in diameter to the openings of the dies. In virtue of the described construction and arrangement of parts an annular space, I, of sufficient capacity to receive a shell, is formed about each pin, which is held in place and guided both by a follower, J, formed at its lower end, and by a guide-pin, K, extending into a counterbore, L, formed in it and secured to a block, M, filling the lower end of the cell G of the pin and traveling upon the bed N of the machine. For the purpose of insuring the proper assembling of the cups and shells before they are depressed into the dies, means are provided for supporting the pins until such assembling is effected in their elevated positions, in which their upper ends are about on a level with the upper face of the dial. As shown in the drawings, the means for the purpose consist of a spring, O, interposed between the follower and the block of the guide-pin of each pin. It is apparent, however, that the springs may be replaced by other devices answering the same purpose.

For enabling the pins and the contents of the lower cells to be removed for attention and repair, the bed of the machine is provided with an aperture, P, with which the respective cells are registered by revolving the dial,

and through which the said parts are withdrawn by removing a sliding plate, Q, sunk into the bed of the machine.

The shells are supplied to the shell-dial by an attendant, who thrusts them upon the pins as the dial revolves, and when in the revolution of the dial the respective shells are brought under the punch R, which is mounted in the cross-head S of the press, they are supplied with a cup from a carrier-block, T, mounted and reciprocating in a hanger, U, provided with an arm, V, through which it is bolted to its upright W of the press. The bolt-holes of the said arm are elongated, as will be observed by reference to Fig. 2 of the drawings, for permitting the hanger and the mechanism associated with it to be vertically adjusted for adapting the machine to cup-shells varying in length. The said carrier-block is provided with an arm, X, having a pivotal finger, Y, which is actuated in being closed by a spring, Z, secured to the said arm, and in being opened by engagement with the same, for which purpose the finger is provided with an extension, A^4, and the said arm with a shoulder, B', as shown. The arm and finger are cut away to form the opening C', into which the cups are introduced from and by the revolving cup-dial D', to which the cups are supplied by an attendant, and by which they are carried through a curved channel, E', formed in the under face of the hanger, and arranged to register with the opening C' when the carrier-block is retracted and the finger opened. The said dial is located beneath the hanger, in which it is journaled by means of the hub E' and the nut F', as shown, and actuated by the vertical shaft G', to which it is splined, and upon which it is vertically adjustable with the hanger. The said shaft, which is suspended from a bracket, H', secured to the upright I' of the press, is actuated through bevel-gears J' and K' and band-wheel L' or other equivalent means. The carrier-block is moved forward by means of a spring, M', attached to an adjustable arm, N', secured to the block and to a pin, O', projecting inwardly from the arm V aforesaid. On the other hand, the block is retracted by means of the cross-head S, which is provided with a roller, P', and operates through a lever, Q', pivoted to an adjustable plate, R', bolted to the upright W aforesaid, the lower end of the lever being flexibly connected with the block through an opening, S', formed therein. An adjustable support, located beneath the cup-dial, is designed to uphold the same and prevent injury to the machine in case of conflict between the punch and the carrier-block.

For the purpose of leveling the sheets preparatory to the application of the cups, the press is provided with a punch, U', which descends upon the shells and depresses them prior to their registration with the punch R, before referred to. After the said punch R has done its work, the cupped shells are partially ejected from the shell-dial, that they may be removed by the pick-off V' or an equivalent device.

The mechanism herein shown for ejecting the shells consists of a spring-actuated pin, W', arranged to be impinged upon the blocks of the pins, a lever, X', and an adjustable rod, Y', all as shown in Fig. 1 of the drawings. I would have it understood, however, that the described means for leveling the shells and for ejecting them after being cupped constitutes no part of this invention, being shown simply for the purpose of presenting a completely-equipped machine.

With more particular reference now to the shells and cups, they are shown in the last three figures of the drawings. The shells Z' used in my process are plain uncrimped cylinders made in the usual manner, and having the wad A^2 in position, while the cups B^2 are simple cylindrical figures, having one end closed and adapted to fit loosely over and rest upon the ends of the shells.

In Fig. 5 the shell and cup are represented prior to being assembled, in Fig. 4 after this operation has been affected, and in Fig. 6 after the cup has been reduced onto the shell, the head of the cup formed, and the edges of the shell crowded out into the open head of the cup. The head, it will be observed, is fully developed, but is yet to undergo a finishing operation in which its opposite walls are drawn together and the edge of the shell pinched between them.

Having thus described the mechanism for carrying out my improved process, I will now proceed to more fully set forth the latter and to unfold the advantages attendant upon its use.

Shells and cups are supplied to their respective dials and the several parts of the machine timed or set to operate in harmony. The revolution of the shell-dial first brings the shells under the leveling-punch, by which they are depressed as required, and then, as they are carried toward the assembling and operating punch, the carrier-block advances with a cup until finally the cup and shell are exactly registered with the said punch, which descends and dislodges the cup, which settles down upon the shell. The punch, continuing its descent, carries with it the cup and shell and forces the latter into the dial, the pin with which the shell is engaged remaining stationary until the parts are properly assembled, as shown in Fig. 4 of the drawings. It is proper to note in this connection that, if not before, the parts will necessarily assume their proper positions as soon as the wad strikes the pin. After the parts have been assembled the cup and shell are forced by the punch into the die, where the cup is reduced onto the shell by its simultaneous introduction with the same into the contracted part thereof. The described reduction of the cup develops its head, which consists of so much of it as is forced no farther than the flaring portion of the die. During the last part of the opera-

tion—or, in other words, when the cup and shell are in the die—the upper edges of the latter are forced into the head developed in the former, as clearly shown in Fig. 6 of the drawings.

By reducing the cup onto the shell and thus securing the cup to the shell and developing the head at one and the same operation the forming of the head as an independent operation is done away with; and, moreover, the crimping of the shell and the distortions consequent thereupon are avoided, as well as the expense which the crimping entails. Again, the invariably correct assembling of the cups and shells prior to the securing of the former to the latter insures a uniformity in the product as to length not before attained. Furthermore, by developing the heads as described, instead of expanding the cups for forming the heads, heads of uniform thickness and size are obtained, and the maximum of perfect cupped shells are secured.

It is apparent that some changes may be made in the mechanism shown and described, and I would therefore have it understood that I hold myself at liberty to make such alterations as fairly fall within the spirit and scope of my invention.

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

1. A die provided with a contracting or drawing face to reduce and develop the flange of a cup for a paper cartridge-shell, substantially as set forth.

2. In a machine for cupping tubes for paper cartridge-shells, a die provided with a contracting or drawing face to reduce a cup to develop its flange and to fit it to its tube, in combination with a yielding pin on which the cup and tube are assembled before the reduction of the cup in the die, and on which the wad in the tube is compressed after such reduction of the cup, substantially as set forth.

3. In a machine for cupping tubes for paper cartridge-shells, a die provided with a contracting or drawing face to reduce a cup to develop its flange and fit it to its tube, in combination with a yielding pin provided at its lower end with a flange and having a longitudinal bore, a guide-pin entering the bore of such yielding pin and secured to a block, and a spring interposed between the flange of the pin and the block, substantially as set forth.

4. In a machine for cupping tubes for paper cartridge-shells, dies provided each with a contracting or drawing face to reduce a cup to develop its flange and fit it to its tube, in combination with yielding pins on which the cups and tubes are assembled before the reduction of the cups in the dies, and on which the wads in the tubes are compressed after such reduction of the cups, and means, substantially as described, for carrying the dies and pins, feeding the cups to the tubes, and forcing the cups and tubes into the dies for the reduction of the cups and the compression of the wads in the tubes, substantially as set forth.

5. In a machine for cupping tubes for paper cartridge-shells, dies each provided with a contracting or drawing face to reduce a cup to develop its flange and fit it to its tube, in combination with yielding pins on which the cups and tubes are assembled before the reduction of the cups in the dies, and on which the wads in the tubes are compressed after such reduction of the cups, means, substantially as described, for carrying the dies and pins, a carrier for feeding the cups to the tubes, a revolving dial for supplying the cups to the carrier, and means for forcing the cups and tubes into the dies for the reduction of the cups and the compression of the wads in the tubes, substantially as set forth.

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

AMOS DICKERMAN.

Witnesses:
GEO. D. SEYMOUR,
M. S. SEELEY.