

No. 702,388.

Patented June 10, 1902.

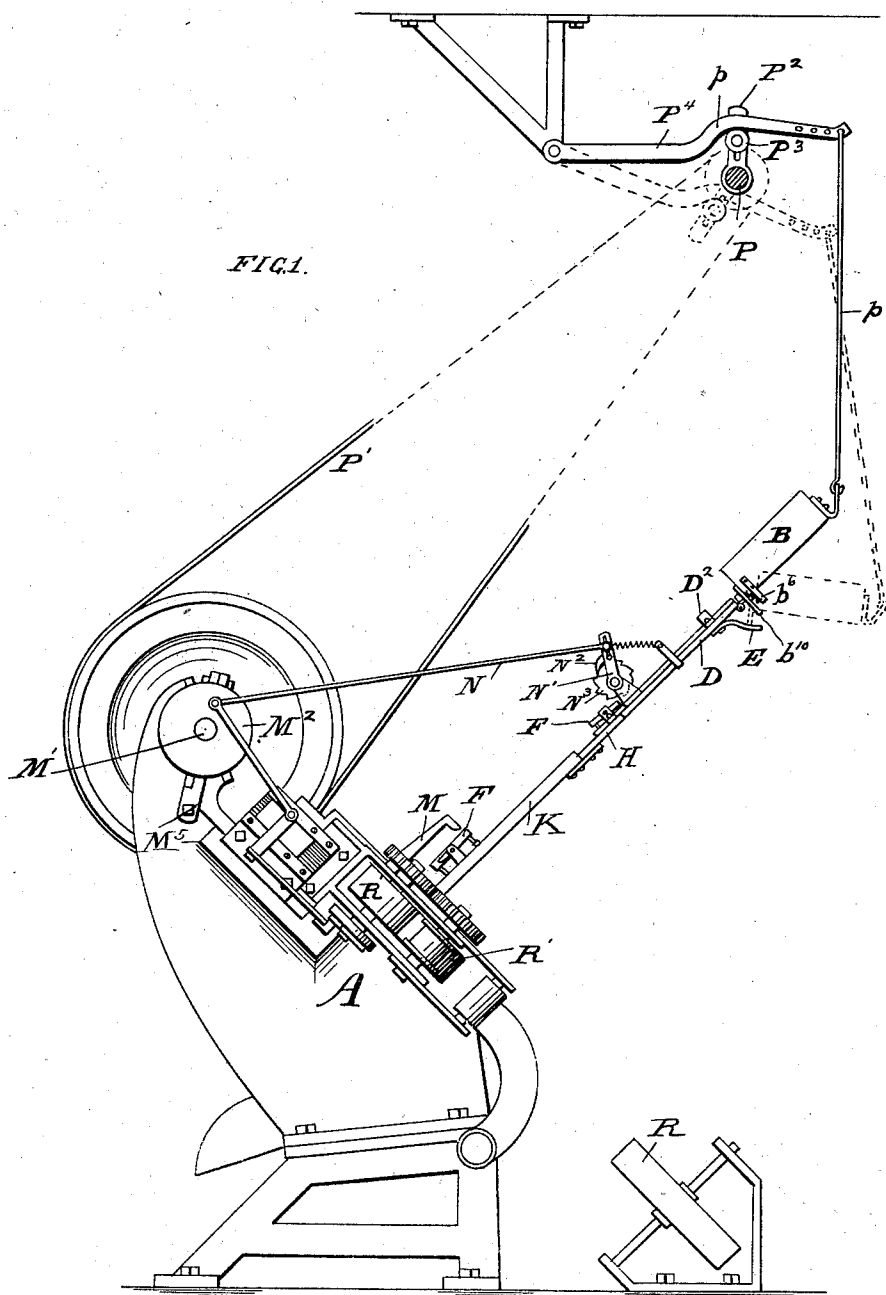
J. F. WING.

AUTOMATIC SHEET METAL DISK OR CAP FEEDING MACHINE.

(Application filed Oct. 22, 1900.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:
F. B. Townsend,
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John F. Wing
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His ATTORNEYS.

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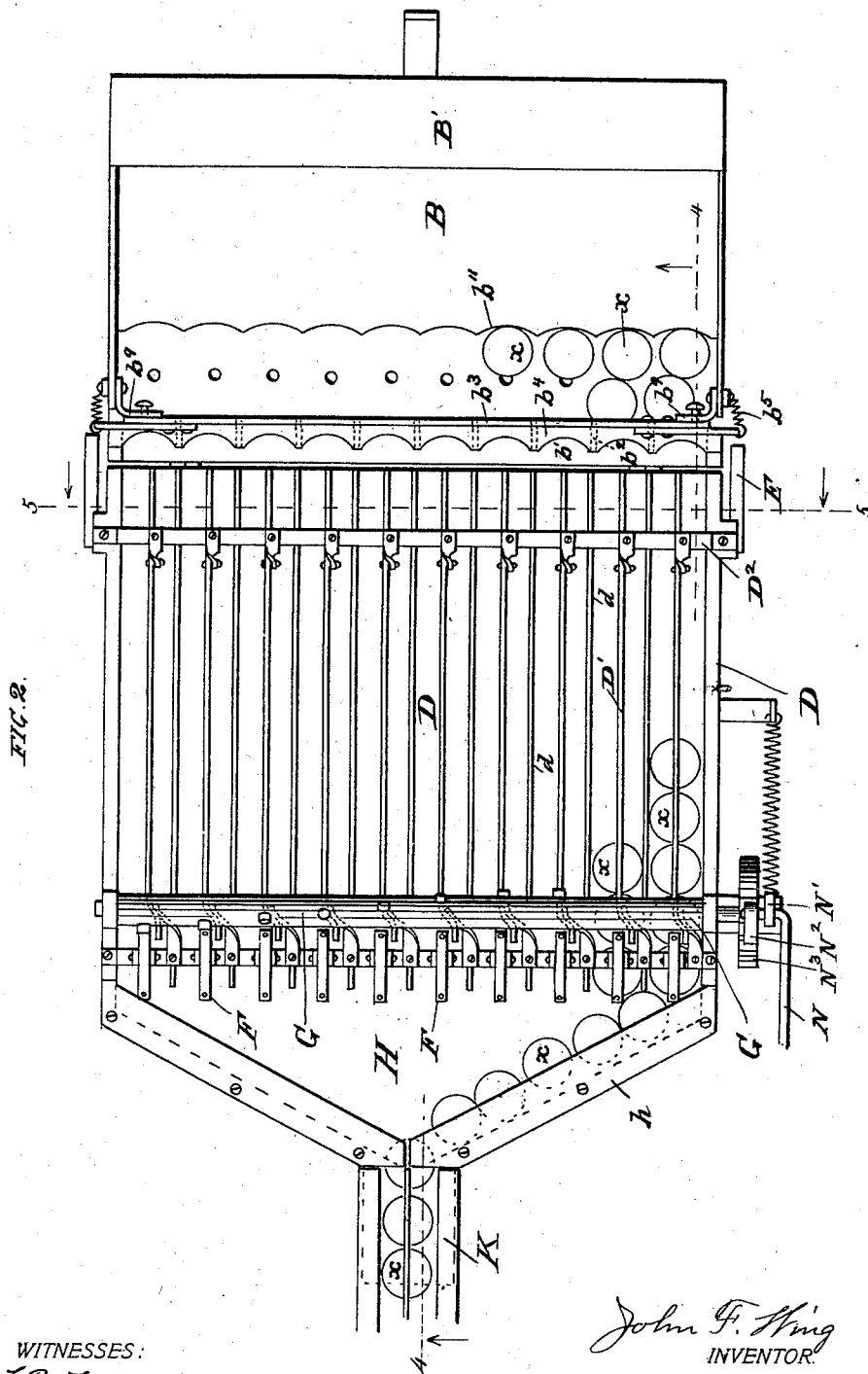
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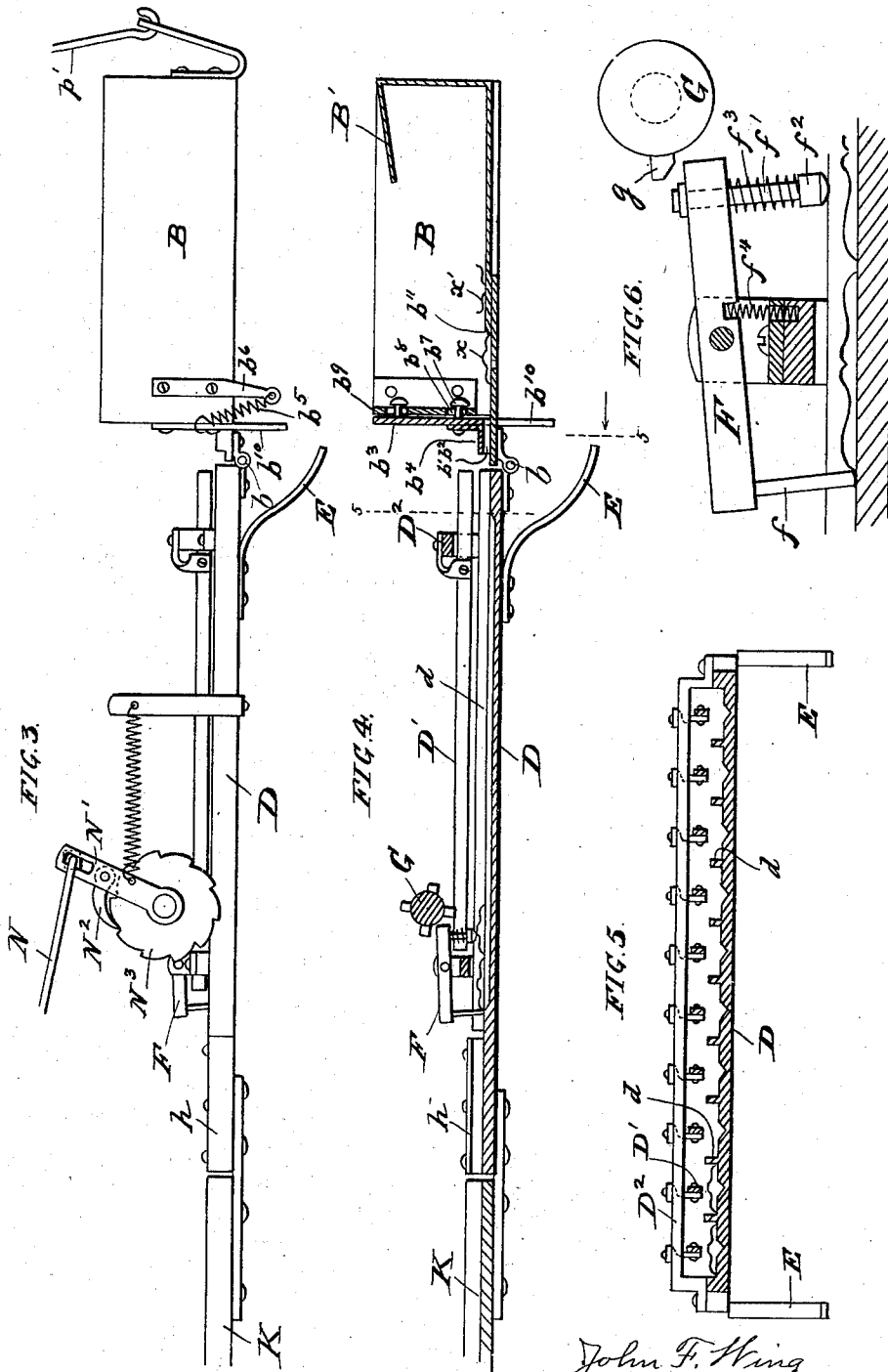
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UNITED STATES PATENT OFFICE.

JOHN F. WING, OF MAYWOOD, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO AMERICAN CAN COMPANY, OF JERSEY CITY, NEW JERSEY, A COR-
PORATION OF NEW JERSEY.

AUTOMATIC SHEET-METAL DISK OR CAP FEEDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 702,388, dated June 10, 1902.

Application filed October 22, 1900. Serial No. 33,939. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. WING, a citizen
of the United States, residing in Maywood, in
the county of Cook and State of Illinois, have
invented a new and useful Improvement in
Automatic Sheet-Metal Disk or Cap Feeding
Machines, of which the following is a speci-
fication.

This invention relates to machines or ap-
paratus for feeding or delivering disks or caps
of sheet metal.

The object of the invention is to provide a
machine or mechanism of a simple and effi-
cient construction by means of which sheet-
metal disks or caps which are used for clos-
ing the stud-holes or filling-openings in the
heads of tin cans may be automatically, regu-
larly, and properly fed one by one to the
automatic machine for hemming the edge of
the cap with a thin ring of solder. Hereto-
fore these caps have been fed to the hemmed-
cap machine by hand.

The machine or mechanism embodying the
invention comprises, first, a tilting or vibrat-
ing box or receptacle in which the caps or
disks are placed promiscuously in bulk, hav-
ing a discharge-orifice furnished with a mov-
able gate which operates to arrest all caps
that are wrong side up and permits only those
which are right side up to pass out, said gate
being slightly opened when the box or re-
ceptacle tilts back, thus releasing the arrested
caps which are wrong side up and permitting
them to slip back into the receptacle and mix
again with the general supply of caps therein;
second, a series of chutes or passage-ways for
the caps that have escaped from the feed-box
or receptacle, each provided with a vibrating
cap-feed-controlling device which permits the
caps to pass along one by one; third, mech-
anism for operating these cap-feed-control-
ling devices successively one after another,
one at each movement or stroke of the press,
and, fourth, a collecting chute or passage-
way having inclined guides leading to the
chute or passage-way by which the caps are
delivered to the press or mechanism for hem-
ming the cap with solder.

The invention consists in the novel con-

struction of parts and devices and in the novel
combinations of parts and devices herein
shown and described, and specified in the
claims.

In the accompanying drawings, forming a
part of this specification, Figure 1 is a side
elevation of a machine or mechanism em-
bodying the invention, showing the same ap-
plied to a press or mechanism for hemming
the edges of can-caps with solder. Fig. 2 is
a plan view of the invention. Fig. 3 is an en-
larged detail elevation. Fig. 4 is a central
vertical longitudinal section. Fig. 5 is a
cross-section on line 5 5 of Fig. 2; and Fig. 6
is a detail view, partly in section, showing one
of the cap-feed-controlling devices.

In the drawings, A represents a hemmed-
cap machine, mechanism, or press to which
the sheet-metal disks or caps are required to
be fed or delivered one by one and to which
the invention is specially designed to be ap-
plied. As the particular construction of this
press or cap-hemming mechanism A is not
material to afford a proper understanding of
the construction and operation of the auto-
matic cap-feeding mechanism embodying
this invention, it is of course not necessary
to describe said press or mechanism A.

B is the tilting or vibrating box or receptacle
in which the can-caps x are placed promiscu-
ously and from which they are to be fed or
delivered as required to the press or machine
A. The box or receptacle B is hinged or piv-
oted at b to the upper end of the series of cap
chutes or passage-ways D D, down which the
caps slide. The mouth of the tilting or vi-
brating receptacle B is furnished with a corre-
sponding series of cap-discharge orifices or
ways b' , formed by the division-ribs b^2 , which
register with the division-ribs d , separating
or forming the passage-ways D. The mouth
of the vibrating receptacle B is further pro-
vided with a movable gate b^3 , having a ledge
or lip b^4 parallel to the bottom of the box B
and which is normally held down by a light
spring b^5 , attached to the arm b^6 on the box,
leaving a narrow orifice just sufficient to per-
mit a cap or disk x to slip or pass through
under the light spring-held gate if said cap

is right side up—that is to say, if it has its curved rim edge downward—but which will operate to prevent the escape of the cap from the box if it is wrong side up, as indicated at α' in Fig. 4. The gate b^3 has pins b^7 , which fit in vertical slots b^8 in the front end piece b^9 of the box B, so as to permit a slight upward or opening movement of the gate sufficient to permit the reversed caps caught under or arrested by the gate to be released therefrom and slide back into the box when the same is tilted downward. The gate is thus opened or released when the box B is tilted downward by a projection b^{10} on the gate striking against the stop E on the chutes D. The bottom of the box is also preferably furnished with a shoulder or offset b^{11} at a distance back of the gate somewhat greater than the diameter of the caps, so that when the box is tilted downward caps which are right side up and near the gate will be held in this position by the shoulder, while those which are wrong side up will slide over the shoulder and mingle with the general mass of caps in the box when it tilts downward. To prevent the caps from falling out of the box when it tilts downward, it is provided with a partial top B' at its rear end. To prevent the caps from slipping or sliding over each other as they slide down the chutes or passage-ways D, said ways are each provided with an upper guard or guard-rail D', the same being secured to the cross-bar D², which extends transversely over the chutes D. Each of the chutes or passage-ways D is provided with a vibrating cap-feed-controlling device F, which permits the caps to feed or pass along only one by one. This controller F preferably consists of a vibrating lever or bar furnished at each end with a stop-pin. The stop-pin f at the lower end of the bar, which engages the front edge of one cap, as illustrated in Fig. 6, when the feed-controller F is in its normal position, while the other stop-pin f' , the lower end of which has a yielding or elastic head f^2 , and a spring f^3 , engages the back of the next succeeding disk, if one is in the passage-way, when the controller is vibrated to lift the stop-pin f and permit the cap resting against it to feed forward. A spring f^4 holds the feed-controller bar F in its normal position or with the stop-pin f down, and the feed-controller is vibrated at intervals as required by an arm or projection g on the rotating shaft or cylinder G striking against the upper end of the feed-controller bar F. The series of chutes are preferably, as illustrated in the drawings, ten in number, although the machine may be built with a greater or less number. This number is sufficient to insure the entrance of caps right side up into the chutes D by the vibrating movement of the box B as fast as the same may be required to supply the hemmed-cap machine with a cap for each stroke of the press A. To cause only one cap to be released at a time from the series of chutes or passage-ways D by the series of cap-feed con-

trollers F therein, the shaft G, which makes one-tenth of a revolution for each stroke of the press, has its arms or projections g for operating said controllers F arranged spirally around the shaft, so that only one of the several controllers F will be operated at each movement of the shaft G.

H is the collecting chute or passage-way which receives the caps or disks α as they leave the series of parallel chutes or passage-ways D. This collecting-chute has inclined lower edges h and connects with the delivery-chute or passage-way K, by which the caps are conducted to the hemmed-cap machine or press A. This chute or passage-way K is also provided with a vibrating cap-feed controller F' of the same construction as that already described. The cap-feed controller F' in the chute or passage-way K, however, is operated or vibrated at each stroke of the press, the same being thus operated by an arm M, rigidly attached to the movable slide of the press, which slide receives its motion from the revolving shaft M' on the hemmed-cap mechanism or press A through any suitable connections M². Motion is imparted to the shaft G from the hemmed-cap mechanism or press A through the wheel M³, connecting-bar N, pawl-lever N', pawl N², and ratchet N³ on said shaft G. The tilting or vibrating box B is tilted up and down as required by means of a revolving shaft P, driven from the press A through the belt P' and which is furnished with an arm P², having adjustably secured thereon a roller P³, which engages a hinged arm P⁴, having a curved or cam-shaped portion p , so as to impart to the box B, through the connecting-link p' , a quick or sudden dropping movement and a slow rising movement, with a slight pause when the box is up or in its elevated position, so as to give time for the disks which are right side up and in position to slide under the gate b^3 to do so. The quick dropping movement tends to stir the caps up and cause those which are wrong side up to be in time turned right side up.

R indicates the spool from which the ribbon-solder is fed to the hemmed-cap mechanism, and R' guide-rollers therefor.

I claim—

1. In a machine for automatically feeding metal disks or caps, the combination with a tilting or vibrating box or receptacle furnished with a series of discharge-orifices at one end and provided with a yielding gate permitting the passage of caps or disks which are right side up and arresting those which are wrong side up, and means for slightly opening and relieving the gate when the box is tilted downward thus releasing the arrested caps, a series of chutes or passage-ways for the caps, each provided with a vibrating cap-feed controller permitting the caps to pass along one by one, mechanism for operating said cap-feed controllers successively one after another, a collecting chute or passage-way, and a delivery chute or passage-way pro-

vided with a cap-feed controller, substantially as specified.

2. The combination with a tilting box or receptacle furnished with a narrow, horizontally-extending discharge-orifice and a gate, of a series of chutes or passage-ways provided with cap-feed controllers, and means for successively operating the cap-feed controllers, substantially as specified.

3. The combination with a tilting receptacle having a narrow, horizontally-extending discharge-orifice and a yielding gate permitting the passage of disks right side up, and means for slightly opening said gate when the receptacle is tilted downward, substantially as specified.

4. The combination with a tilting box or receptacle having a narrow, horizontally-extending discharge-orifice and a gate furnished with a spring for holding it in its normal position, and provided with a projecting arm, and a stop which said arm engages when the box is tilted downward, substantially as specified.

5. The combination with a tilting box or receptacle having a series of narrow, horizontally-extending discharge-orifices for disks or caps, of a series of chutes or passage-ways,

and a collecting-chute, substantially as specified.

6. The combination with a tilting box or receptacle having a series of discharge-orifices for disks or caps, of a series of chutes or passage-ways, a collecting-chute, and a series of cap-feed controllers in said series of chutes or passage-ways, substantially as specified.

7. The combination with a tilting box or receptacle furnished with a narrow, horizontally-extending discharge-orifice, of mechanism for imparting a quick downward or dropping movement and a slow rising movement to said box or receptacle, substantially as specified.

8. The combination with a tilting box or receptacle furnished with a discharge-orifice, of mechanism for imparting a quick downward or dropping movement and slow rising movement to said box or receptacle, said mechanism comprising a revolving shaft having an arm and a vibrating lever furnished with a curved portion, substantially as specified.

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Witnesses:

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H. M. MUNDAY.