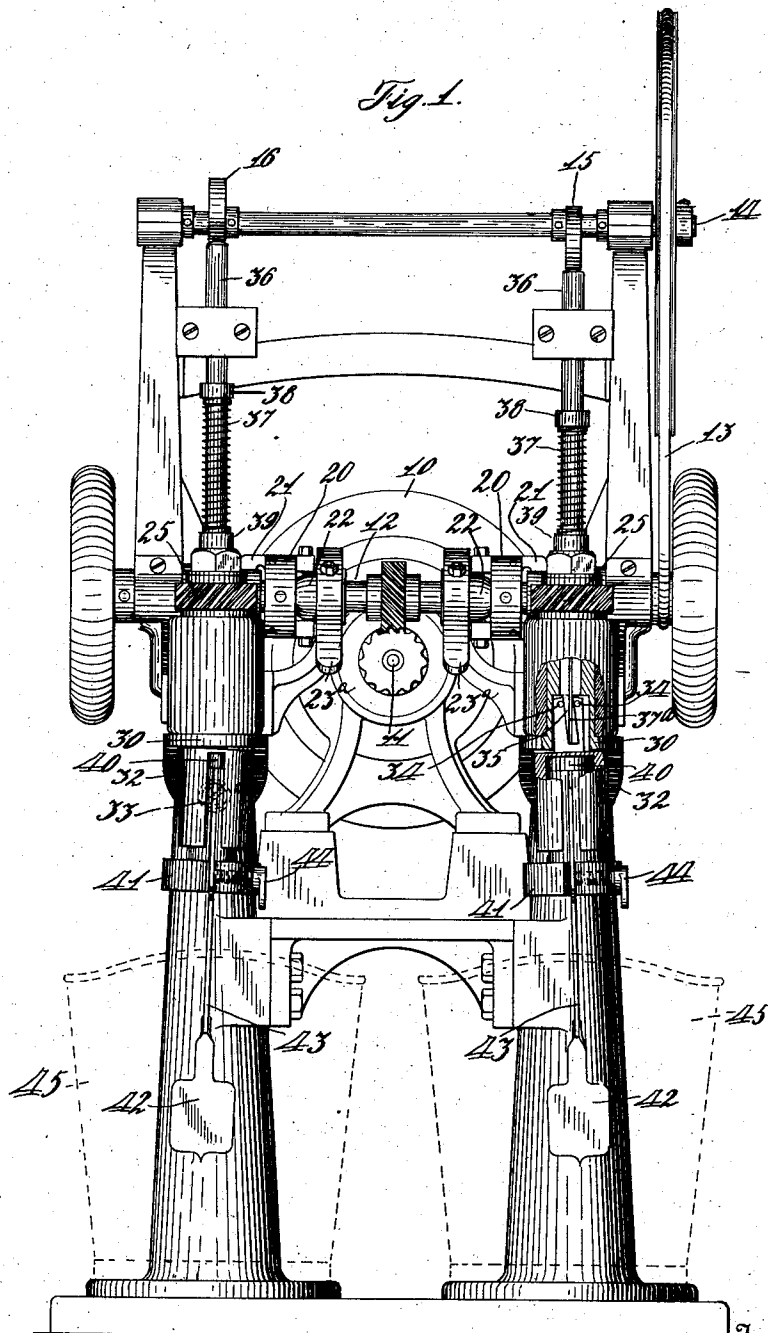


J. P. CLEAL.
VIBRATORY CHUCK.
APPLICATION FILED MAY 22, 1905.

1,027,402.

Patented May 28, 1912.

3 SHEETS—SHEET 1.



Witnesses
Charles M. Beust.

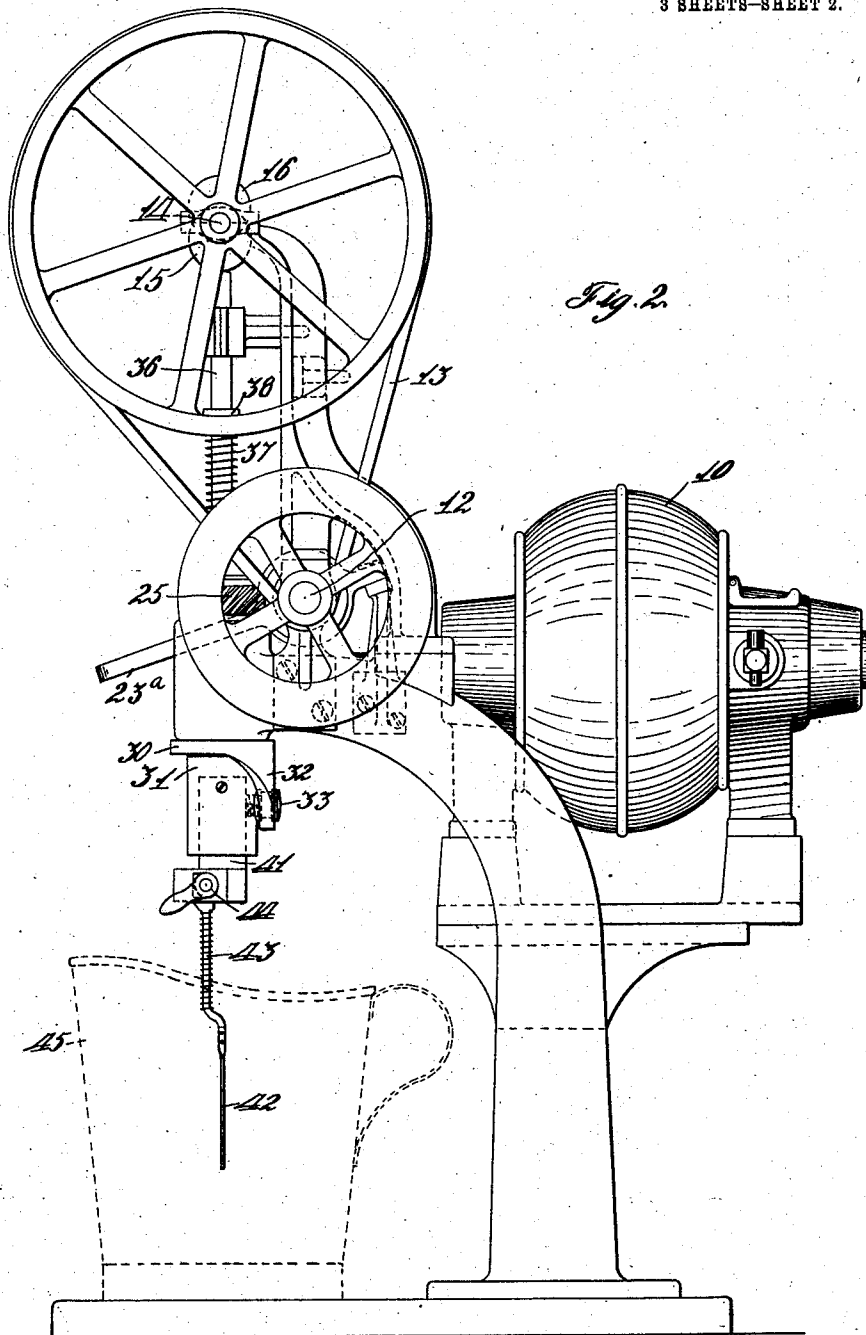
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3 SHEETS—SHEET 2.



Witnesses

Charles

Carl Hunt.

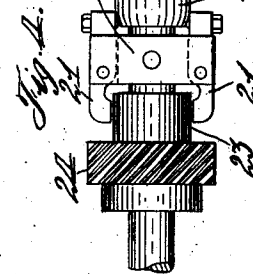
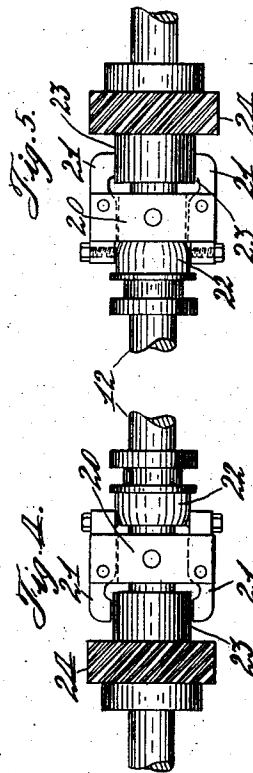
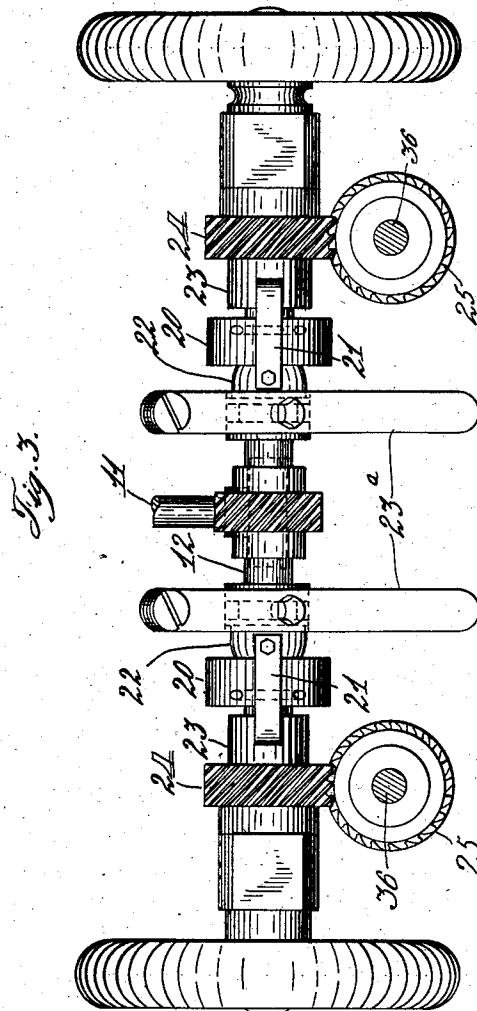
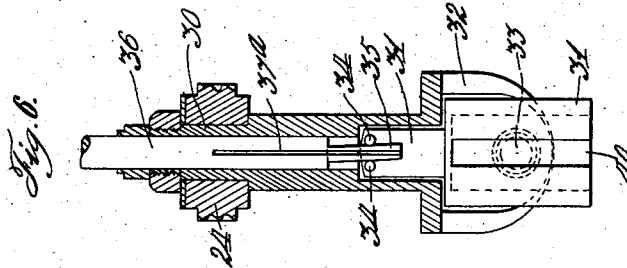
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3 SHEETS—SHEET 3.



Witnesses
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UNITED STATES PATENT OFFICE.

JOSEPH P. CLEAL, OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO, (INCORPORATED IN 1906.)

VIBRATORY CHUCK.

1,027,402.

Specification of Letters Patent.

Patented May 28, 1912.

Application filed May 22, 1905. Serial No. 261,692.

To all whom it may concern:

Be it known that I, JOSEPH P. CLEAL, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Vibratory Chucks, of which I declare the following to be a full, clear, and exact description.

This invention relates to vibratory chucks or tool-holders it being among the objects of this invention to impart to such chucks a vibratory or shaking movement simultaneously with the ordinary revoluble movement of the same about its normal axis of rotation whereby to prevent the continued maintenance of a fixed axis of rotation. Such an improved form of chuck having this particular movement may be available for and especially adapted to various sorts of work but in the present instance the particular use which is made of such a chuck is in connection with a so-called tablet-indicator shaking machine by means of which machine the tablet-indicators in common use in cash registers are, after having first been dipped in a bath of paint or ink, then shaken in this peculiar manner by this machine so that all surplus ink is thrown off from the indicator and the ink remaining on the surface of the indicator is spread out into a perfectly smooth and evenly distributed surface or layer of ink, and these indicators when thus covered with a film of ink may after drying be printed upon with a different colored ink to show the ordinary figures customary on these tablet-indicators, and by this process the old method of pasting paper figures on such indicators is entirely dispensed with. The peculiar advantage of this vibratory chuck in this particular connection is as follows: If the tablet-indicators were revolved about an axis which extended through some portion of the indicator this axis of rotation becomes a dead-line or a line of no movement and gives rise to a ridge of ink settling thereon, which of course, destroys the evenness of the ordinarily flat surface of the indicator, whereas if concomitantly with the rotary movement of the chuck which holds the indicator a vibratory movement is also imparted thereto, this will prevent the establishment of a fixed axis of rotation and will prevent the formation of any such ridge and will permit the ink to be evenly

distributed over the surface of the indicator.

With the above enumerated objects in view, and with other objects incidental thereto, this invention comprises certain novel constructions and combinations of parts, the essential elements of which will be recited in the appended claims, and a preferred form of embodiment of which will now be described in the following specification and set forth in the accompanying drawings.

Of said drawings: Figure 1 represents a front elevation of the duplex indicator shaking machine to which these improvements are applied. Fig. 2 represents a side elevation of the same. Fig. 3 represents a detail top plan of that portion of the machine comprising the main driving shaft. Figs. 4 and 5 represent detail views of the clutch mechanism used in connection with the main driving shaft, and Fig. 6 shows a detail sectionalized view of the vibratory chuck mechanism.

As above stated this improvement may be applied on any of the various forms of machines in which a tool or work holding chuck is given a revoluble movement, and only so much of the general construction of the present machine as shows the nature of this particular invention need be described in detail.

As shown in Fig. 1 the machine is constructed in duplex form, and since these two parts are the same, only one part will be described in detail. A driving motor 10 imparts a rotary movement to the shaft 11, which through suitable worm gearing gives a continuous revoluble movement to the main driving shaft 12. Running upon one end of this shaft 12 is a belt 13 which drives an auxiliary shaft 14 carrying cams 15 and 16 for the purpose which will later be described.

As shown in Figs. 3, 4 and 5 the driving shaft 12 has fast upon it duplex clutch collars 20 carrying pivoted clutch jaws 21 which are spread apart by means of beveled collars 22 which are mounted loosely upon the shaft 12 and are shifted laterally by means of hand levers 23^a carrying pins projecting into annular grooves in said collars, this being a well known form of clutch mechanism and it being readily understood that the proper movement of either lever 23^a

will carry its respective beveled collar outward so as to cause the clutch jaws to engage the sleeves 23 loosely mounted on the shaft 12 so as in effect to couple the revoluble shaft 12 to the sleeve 23 and impart a continuous revolution thereto, and this sleeve 23 carries a worm gear 24 which meshes with a horizontal gear 25 which is fast to and carries with it an upright collar 30 (see Figs. 1 and 6) which collar 30 is formed at its lower end to hold a vibratory chuck 31. An apron 32 extends downwardly from the under side of the collar 30 and carries a screw 33 which projects into and forms a pivot for a chuck 31, and the reduced upper end of the chuck extends up into the collar 30 and carries two pins 34 between which extends the reduced and inclined end 35 of a vertical shaft 36. A suitable pin (not shown) fast on the inside of the collar 30 projects into a groove 37^a formed in the shaft 36 so that the shaft 36 will revolve with the collar 30, and of course also with the chuck 31 which is also carried around with the collar 30 in its revolving movement. The shaft 36 is given a reciprocating movement vertically, by means of the aforesaid cam 15 carried by the shaft 14 (see Fig. 1) and the shaft 36 is normally held in upper position by a spring 37 suitably coiled between the upper collar 38 fast to the shaft and a lower collar 39 fast to a nut carried on the upper end of the aforesaid revoluble collar 30. The chuck 31 is formed with a slot 40 or other suitable recess into which is inserted a holder 41 which is suitably clamped or held within the chuck 30 and within which holder may be secured the particular tablet-indicators 42 which are to be shaken in the manner outlined above, these indicators comprising a lower flag portion and a stem 43 which is led up into the holder 41 and then clamped therein by means of a screw 44 so as to be held firmly in the holder during the various movements of the chuck 31. Pails 45 are provided to surround the indicators 42 for the purpose of catching the surplus ink which is thrown off therefrom by the centrifugal force of rotation. It will be seen that this inclined portion 35 will enable a complex motion to be given to the chuck 31, which will be rotated about a vertical axis, and also will be rapidly oscillated about a horizontal axis. This oscillation is evidently caused by the inclined portion 35 by its vertical reciprocation, since the pins 34 closely abut the portion 35 on both sides and will be moved a distance corresponding to the divergence of the sides of the portion 35 from a vertical line.

The operation of these parts is as follows: Assuming that the motor shaft 11 is being continuously driven and that the right hand lever 23 has been thrown to the right so as to establish the clutch connection with the

driving shaft 12 and thereby continuously drive the collar 30, this continuous revoluble movement of the collar 30 will of course carry with the collar the chuck 31 so as to impart a continuous revolution to the holder 41 and the indicator 42, which as suggested above has already been dipped in a bath of ink and is now to be shaken to remove the surplus ink therefrom and distribute the remaining ink over the surface of the flag of the indicator. This same revoluble movement of the shaft 12 which revolves the indicators 42, also serves through the belt 13 and shaft 14 to revolve the cam 15 so as to reciprocate the shaft 36 and this reciprocation of the shaft 36 causes its lower inclined end 35 to ride up and down between the pins 34 and thereby rock the chuck 31 about its pivotal screw 33 so that this rocking effect takes place simultaneously with the revoluble movement of the chuck. It will thus be seen that the effect of this compound movement is to impart a vibratory or wobbling movement to the chuck and indicator, and thereby prevent the maintenance of any fixed axis of rotation extending through the flag of the indicator, and by this means the surplus ink will be shaken from the indicator by the centrifugal force of rotation and this wobbling effect produces the desired even distribution of the ink over the surface of the indicator. Of course the operation of the other parts of the duplex machine is precisely the same, the cams 15 and 16 being oppositely situated on their shaft so as to produce a more even movement of the entire machine.

While the forms of mechanism here shown and described are admirably adapted to fulfil the objects primarily stated, it is to be understood that I do not care to confine myself to any one form of embodiment of the invention here disclosed, for it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

Having thus described my invention what I claim is as follows:

1. In a machine of the character described, the combination with a work holder, of means for vibrating same about an axis, and means for rotating said vibratory axis.

2. In a machine of the character described, the combination with a chuck pivoted within a holder, of means for vibrating said chuck around its pivot, and means for rotating said holder and chuck.

3. In a machine of the character described, the combination with a pivoted work holder, of means for rotating said work holder about an axis, and means for vibrating said work holder around its pivot.

4. In a machine of the character described, the combination with a chuck mounted pivotally on a revoluble holder, of means for revolving said holder thereby re-

volving the chuck therewith; and a reciprocating rod having provisions for engaging said chuck during its revolving movement and rocking the same upon its pivot.

5 5. In a machine of the character described, the combination with a chuck mounted within a holder, of means for revolving said holder; and a reciprocating rod formed with an inclined extension engaging
10 projections formed on said chuck for rocking said chuck about its pivotal point during its revolving movement.

6. In a machine of the character described, the combination with a chuck pivotally mounted within a holder, of means
15 for revolving said holder, a rod mounted within said holder in such manner as to revolve therewith but to permit reciprocation thereof independently of said holder;
20 means for reciprocating said rod; with provisions connected with said rod for engaging said chuck to rock the same upon its pivot during the revolving movement of said holder and rod.

25 7. In a machine of the character described, the combination with a chuck pivotally mounted within a holder, of a main driving shaft and means connected therewith for revolving said holder; a rod
30 mounted within said holder and formed with an inclined extension engaging projections on said chuck for vibrating the chuck upon its pivot during the reciprocatory movement of said rod; and a cam
35 shaft also operated from said main driving shaft and engaging said rod for reciprocating the same during the revolving movement of the chuck whereby to vibrate said chuck during this revoluble movement.

8. In a machine of the character described, the combination with a chuck for holding work, of means for carrying same, means for giving a rotating movement to said carrying means and thereby rotating said chuck, separate means for oscillating said chuck, and a common operating means for the combined mechanism.

9. In a machine of the character described, the combination with a pivoted chuck, of a rotatable holder for same, means
50 for rotating said holder and said chuck, a reciprocating element, and connecting means for converting reciprocations of said element into oscillations of the chuck.

10. In a machine of the character described, the combination with a chuck for holding work, of a support for same, means
55 for rotating said support, a reciprocating element and means for converting the reciprocations of said element into oscillations of said chuck during its rotary movement.

11. In a machine of the character described, the combination with a work holder, of means supporting same, means for vibrating said holder about an axis, and means for
35 rotating said axis of vibration.

In testimony whereof I affix my signature in the presence of two witnesses.

JOSEPH P. CLEAL.

Witnesses:

J. B. HAYWARD,

WM. O. HENDERSON.