Aug. 5, 1924. 1,503,829

E. G. HEALD

POWER PRESS FOR FORMING MICA WASHERS AND OTHER INSULATING FORMS

Filed March 12, 1923

Fig. 1.

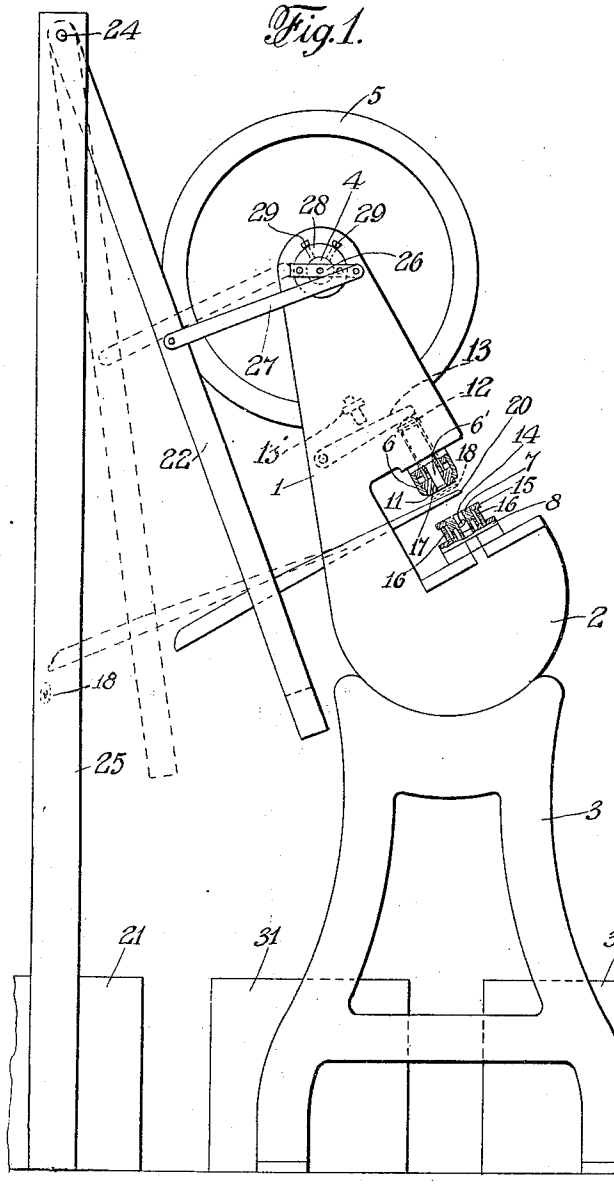
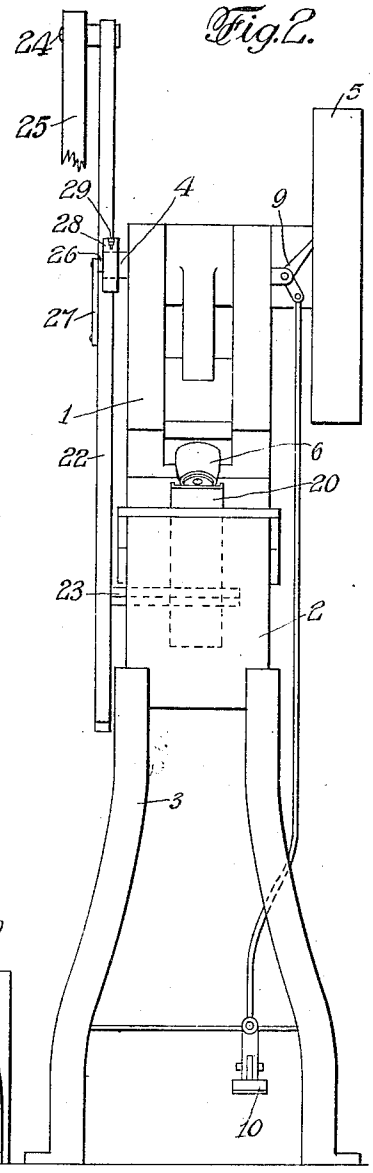


Fig. 2.



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Patented Aug. 5, 1924. 1,503,829

UNITED STATES PATENT OFFICE.

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POWER PRESS FOR FORMING MICA WASHERS AND OTHER INSULATING FORMS.

Application filed March 12, 1923. Serial No. 624,343.

To all whom it may concern:

Be it known that I, ELDON G. HEALD, a citizen of the United States of America, whose residence and post-office address is 111 Bodine Street, West New Brighton, Staten Island, New York, have invented new and useful Improvements in Power Presses for Forming Mica Washers and Other Insulating Forms, of which the following is a specification.

This invention relates to a power press for forming and stamping mica washers and other insulating forms from mica stock, such, for example, as raw material termed "punch mica" or washer mica.

According to prior practice with which I am familiar, the insulating forms which are made from raw material come from the machines mixed indiscriminately with the scrap material left over from the stamping process, with the result that the forms are separated out and segregated at considerable labor and expense. For example, in making mica insulating washers, the washers themselves and the scrap material are all usually gathered into a common receptacle and the formed washers are slowly and tediously separated out either by hand or by both screening machine and hand from the mass of material contained therein.

The object of my invention generally stated is a stamping machine or press which automatically separates out and segregates the washers from the scrap material during the stamping and forming operations without necessitating the subsequent screening by hand or screening machine. In the embodiment illustrated herein I accomplish this by incorporating in a standard stamping press a special automatic mechanism comprising a reciprocable chute which, automatically and in synchronism with the relatively reciprocating dies, takes up positions alternately between the dies and away therefrom so as to catch the washers as they are released from the upper die, during the operation of the machine, this reciprocable chute being downwardly inclined so as to enable the deposit of the washers in a suitable receptacle. A further object is a simple and reliable machine for automatically effecting the simultaneous stamping and separation of the insulating forms, as will appear hereinafter.

For a better understanding of the above indicated novel features of my invention together with other advantageous features thereof which will appear hereinafter, reference may be had to the accompanying drawings wherein:

Fig. 1 is a side elevation of a machine embodying my invention with certain parts in section; and

Fig. 2 is a front view thereof.

Referring to the drawings where like numerals designate similar parts throughout, I have illustrated my invention as embodied in and applied to a power press of the inclinable type whose main frame or standard consists of an integral casting 1 having a pair of circular rockers 2 seated in corresponding circular seats of a base indicated generally by the numeral 3; the standard 1 carries upon its upper end a power drive and control mechanism consisting of a shaft 4 and a driving pulley 5, this drive mechanism being suitably journaled therein. On the front side of the standard 1 and beneath the shaft 4 there is mounted a reciprocating chuck mechanism which carries at its lower end a suitable female die forming and stamping member 6 of ring form and having there within a male die member 6′ which in cooperation with the stationary annular die 7 carried beneath the die 6, 6′, on a platform 8 formed in the standard, operates to form and stamp out the insulation forms from the insulation blanks of mica and such like fed thereto. The reciprocating mechanism including the die 6, 6′ may be driven in any suitable manner from shaft 4, and preferably through a clutch mechanism 9, which automatically throws the reciprocating mechanism and shaft out of gear with the power pulley 5 after each revolution, a suitable pedal 10 being provided for throwing in the clutch and setting in operation the reciprocating die for one complete downward and upward reciprocating movement. All of these devices just described are indicated more or less generally and are outlined without showing details thereof since the latter may vary according to the different types of machines in use.

The die 6 as indicated in section consists of a circular lower shearing edge 11 which is adapted to engage the mica blank or blanks positioned upon the stationary die member 7, the outer edge of the latter serving as a male die in order to stamp out a

circular insulating form or forms from the blanks. A yielding ring 15 is disposed around the die member 7 and substantially on a level with the upper end thereof, this ring being carried by suitable compression springs 16 resting in sockets upon the platform 8 there being diagrammatically illustrated. The die on its downward movement engages the ring 15 and presses it down against the tension of the supporting springs 16, and the male die 6′ enters the female part of die 7, these parts cooperating with each other as indicated to stamp from a blank insulating forms of the washer type the moving die 6, 6′ moving forward to stamp them out and on the backward reciprocating movement withdrawing the form thus made and carrying it upward to the position indicated in Fig. 1, which corresponds to the stationary position or positions of the die at the beginning of its reciprocating movement. In this position a releasing or ejector device 17 engages the formed washer 18 and kicks it loose from the die member 6, 6′ thereby permitting it to fall by gravity to the chute 20 provided therefor. This ejector 17 is generally of annular form (for washers) and is disposed between the outer die member 6 and the inner die member 6′. It has a limited up and down movement relatively to the die and its movement is transmitted to a knock out pin 12 which engages a pivoted bar 13 whose upward movement is limited by a set screw 13′. In the position indicated in Fig. 1 it projects slightly below the shearing edge of die 6. Ordinarily the insulating forms which have been made and the edges or scrap material of the insulating forms fall into a common container from which the insulating forms are laboriously and tediously separated out and segregated, usually by hand. This machine embodies a chute 20 which in the stationary and separated position of the cooperating dies occupies a position immediately below the die 6, 6′, in order to gather and collect the insulating washer forms as they are ejected from the die, this chute 20 being downwardly and rearwardly inclined to cause the washers which fall therein to slide down by gravity into a suitable receptacle 21. In order to avoid fouling of the reciprocating die when it proceeds downwardly in the stamping operation and to properly dispose this chute down beneath the die 6 to catch the insulating forms thereby formed, I provide a reciprocating or to-and-fro mechanism for moving the chute backwards and forwards in synchronism with the relatively reciprocating movements of the dies. This mechanism generally comprises a carrier 22 to which the chute is securely fastened through the medium of a bracket arm 23, and is pivotedly mounted at any suitable point 24 for to-and-fro movement to positively carry the forward end of the chute 20 alternately beneath the die 6 and to the dotted positions in Fig. 1, synchronously with the operation of the insulation form reciprocating devices. In the particular embodiment herein illustrated the carrier 22 is shown pivoted on a standard 25 as a convenient mounting therefor and the synchronous to-and-fro movements of the carrier is effected through the medium of an eccentric 26 mounted on the end of the shaft 4, and a connecting link 27 having one end pivotedly attached to the carrier 22 at a convenient point thereof and the other end pivotedly attached to the eccentric 26. The eccentric 26 may be mounted upon the shaft in any suitable manner, but in the embodiment illustrated it is shown as carried by a ring or collar 28 which is fixed to the end of the shaft by means of set screws 29.

In the drawings the full lines indicate the position of the shaft 4 in the stationary position of the reciprocating die 6, 6′, or at the beginning of its downward or reciprocating movements, the forward end of the chute 20 being disposed beneath the die to catch the formed insulating washers and cause them to slide by gravity there down and from whence into the receptacle 21. The arrangement is such that before the reciprocating die 6 proceeds far enough to engage the chute 20, the latter is automatically withdrawn in some such position as is illustrated in dotted lines, so as to clear the path of the reciprocating die. When it returns to initial position, the chute is automatically brought back by the mechanism shown in a position to catch the washer which has been previously formed in the stamping operation. 30 indicates a receptacle for receiving the centers of the washers which are stamped out and ejected by the die 6′ down through the center of die 7. 31 indicates a receptacle for the waste or scrap insulating material which slides from the platform 8 and the die 7 in a manner to fall therein, the ring 15 in its upward movement carrying the scrap up into a position where it can slide or be ejected therefrom. The washers are automatically formed and delivered to the receptacle 21 unmixed with the centers and scrap material, the screening, which is necessary when all of these parts are collected into a common receptacle or indiscriminately mixed together, being thereby eliminated with the consequent economy in production.

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

1. In a machine for stamping insulating forms from insulating sheets, a pair of relatively movable cooperating die members,

one disposed above the other and a reciprocable inclined chute operating in synchronism with the relatively reciprocating die members, said chute having its lower end leading to a depository for receiving the finished forms and adapted to assume positions alternately with its elevated end between the dies when they are separated and out of the path of the moving die when the latter is operated to bring it into engagement with the stationary die.

2. In a machine for stamping insulating forms from insulating sheets, a pair of relatively movable cooperating die members, one disposed above the other and an elongated reciprocable inclined chute operating in synchronism with the relatively reciprocating die members, said chute having its lower end leading to a depository for receiving the finished forms and adapted to assume positions alternately with its elevated end between the dies when they are separated and out of the path of the moving die when the latter is operated to bring it into engagement with the stationary die, together with means for synchronously reciprocating the chute longitudinally of itself.

3. In a machine for forming insulating forms from sheets of mica, a stationary die member adapted to receive a sheet from which the forms are to be stamped, a reciprocating die member disposed above and adapted to cooperate with the stationary die member and stamp the forms and withdraw the same in an upward direction after the forming operation; a suspended pivotally mounted member adapted to oscillate synchronously with the movement of the moving die; an elongated inclined chute carried by said pivotally mounted member so as to swing in the arc of a circle and adapted to assume alternate positions with its elevated end underneath the reciprocable die member when the latter is retracted and to one side thereof during the forming operation and means operating in synchronism with the die and the chute for releasing the insulating forms retained by the die.

4. An attachment for standard insulating form stamping machines comprising a reciprocable inclined chute having its lower end leading to a suitable depository for receiving the finished forms and adapted to be operatively connected up with the operative mechanism of the machine to assume positions alternately with its elevated end in the path of the moving die to catch the forms when they are released therefrom and to one side thereof during the stamping operation.

5. In a machine for stamping insulating forms from insulating sheets, a stationary die member adapted to receive a sheet from which the forms are to be stamped, a reciprocating die member disposed above and adapted to cooperate with the stationary die member and stamp the forms and withdraw the same in an upward direction after the stamping operation, a power shaft with connecting mechanism for operating the reciprocating die member, a pivotally attached member, an inclined reciprocable chute carried by said pivotedly attached member, an eccentric on the shaft and a connecting link between the chute carrier and the eccentric for actuating the chute to a position beneath the reciprocable die member when the latter is retracted and to one side thereof during the stamping operation, and means operating in synchronism with the die and the chute for ejecting the insulating forms retained by the die.

6. An attachment for standard insulating form stamping machines of the inclined type comprising a reciprocable chute disposed substantially at right angles to the inclined axis of the machine and having its lower end leading to a suitable depository for receiving the finished forms and being adapted to be operatively connected up with the operative mechanism of the machine to assume positions alternately with its elevated end in the path of the moving die to catch the forms when they are released therefrom and to one side thereof during the stamping operation.

7. In a standard insulating form stamping machine of the inclined type, a lower stationary die member and cooperating platform inclined to the vertical, a movable cooperating die disposed above the stationary die and reciprocable on an inclined axis in line with the lower die member, a movable chute member inclined to the horizontal and operating in synchronism with the reciprocating die member, said chute member having its lower end leading to a depository for receiving the finished forms, and adapted to assume positions alternately with its elevated end between the dies when they are separated and out of the path of the moving die when the latter is operated to bring it into engagement with the stationary die, together with means for moving the chute member synchronously with the reciprocating die.

In testimony whereof, I have signed my name to this specification.

ELDON G. HEALD.