Jan. 16, 1940. E. C. CARRIS ET AL 2,187,266

BUTTON BLANK CHUCKING MECHANISM

Filed June 14, 1937

Fig. 1.

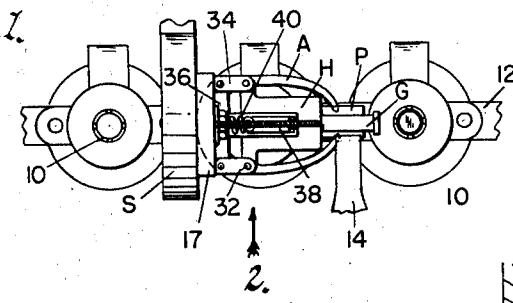


Fig. 6.

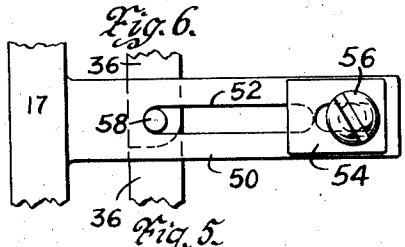


Fig. 5.

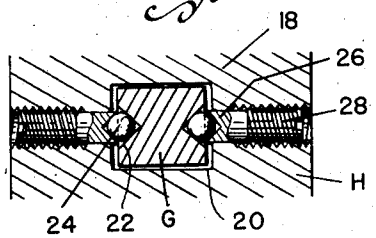


Fig. 2.

Fig. 3.

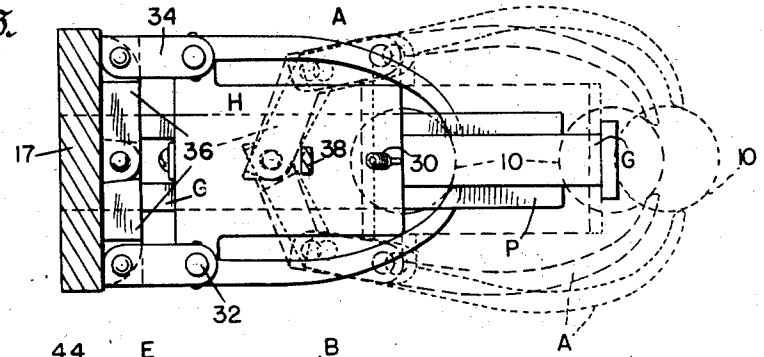
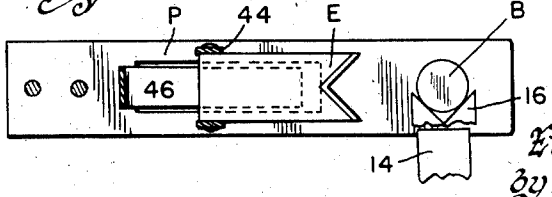


Fig. 4.



Inventors
Edward C. Carris & Jerry R. Carris
by Bair, Freeman & Sinclair
Attorneys

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BUTTON BLANK CHUCKING MECHANISM

Edward C. Carris and Jerry R. Carris, Washington, Iowa, assignors to Iowa Button Machinery Company, Washington, Iowa, a corporation of Iowa

Application June 14, 1937, Serial No. 148,127

6 Claims. (Cl. 79—17)

An object of our invention is to provide a button blank chucking mechanism of simple, durable and inexpensive construction.

A further object is to provide a button blank chucking mechanism especially adapted for use in connection with the button blank feeding mechanism.

A further object is to provide mechanism which is associated with spaced, traveling chucks in such manner that a portion of the mechanism engages a chuck as it passes a certain point, and thus causes a portion of the chucking mechanism to move an ejector in synchronism with the chuck for the purpose of ejecting a blank accurately from the feed plate into the chuck.

More particularly it is our object to provide blank chucking mechanism especially adapted for button blanks, which is operable to eject blanks fed periodically thereto accurately into the chucks as they pass the chucking mechanism.

Another object is to provide chucking mechanism including a movable chucker head having an ejector for the button blanks for ejecting them into successive chucks as the blanks are fed periodically into the chucking mechanism, the chucker head having actuating means in the form of hook arms successively engageable with the chucks, which hook arms are retained in hooked position by a toggle connection and released by breaking of the toggle joint.

With these and other objects in view, our invention consists in the construction, arrangement and combination of the various parts of our button blank chucking mechanism, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in our claims, and illustrated in the accompanying drawing, in which:

Figure 1 is a plan view of a plurality of spaced, traveling button blank receiving chucks and illustrating our blank chucking mechanism associated therewith.

Figure 2 is an enlarged elevation of same looking in the direction of the arrow 2 adjacent Figure 1.

Figure 3 is a sectional view on the line 3—3 of Figure 2.

Figure 4 is a sectional view on the line 4—4 of Figure 2.

Figure 5 is an enlarged sectional view on the line 5—5 of Figure 2; and

Figure 6 is a plan view of a modified stop mechanism for a toggle arm arrangement of our device.

On the accompanying drawing, we have used the reference character S to indicate generally a support for our blank chucking mechanism, G a guide made stationary by being mounted on said support, H a chucker head, P a feed plate and E an ejector for button blanks.

Our blank chucking mechanism is adaptable for use in connection with the usual type of traveling, spaced blank chucks 10, which are connected together by a flexible chain 12, and which form no part of our present invention, the blank chucking mechanism being merely used for automatically placing blanks in the successive chucks, thus eliminating the necessity of doing this operation manually. Our blank chucking mechanism is mounted above the blank chucks 10 as evident from an inspection of Figure 2.

The feed plate P is mounted stationary by being secured to the guide G. It comprises a leaf spring mounted just above the chucks 10 and is adapted to receive the blanks B which are fed thereto in any suitable manner. By way of illustration we show an ejector plate 14 and a transfer bar 16 which form no part of the present invention, but which will be found in our co-pending application hereinbefore referred to.

The blanks B are pushed off the ejector plate 14 by the transfer bar 16 and into the position illustrated in Figure 4 on the feed plate P, this position being centrally over the line of travel of the chucks 10.

The guide G has a base 17 mounted on the support S. The chucker head H comprises a body portion 18 having a central bore 20. The bore 20 surrounds the guide G and an anti-friction means of slidable connection between the head H and guide G are provided.

This may be accomplished by forming V-shaped ways 22 in the guide G and locating a pair of ball bearings 24 in each way 22. The balls 24 are backed by plungers 26 and set screws 28 which may be utilized for accurately alining the head H relative to the guide G, and taking up the play between the parts preferably to a degree permitting free sliding movement of the head H without sufficient play to permit any wabbling thereof.

The head H is normally retained in a retracted position by a coil spring 30. This spring, it will be noted by reference to Figure 2, is arranged at an angle relative to the plane of travel of the head H so as to minimize the stretching thereof, as it is desirable to have but slight

tension on the head H so that the chucking mechanism can operate freely in response to movements of the chucks 10.

Journalled in the head H is a pair of vertical rock shafts 32. On the lower ends of these rock shafts the hook-like actuator arms A are secured. On their upper ends toggle levers 34 are secured, and these are connected together by a pair of toggle links 36. These links, as shown by solid lines in Figure 3, normally retain the hook arms A closed to such a position that they will engage the circumference of a chuck 10 at two points spaced on opposite sides of the center line of the chuck, but will be released from the chuck in an advanced position thereof, as shown by dotted lines in Figure 3.

In order to effect such release, the toggle connection must be broken at its joint, and this is accomplished by a joint breaker 38. The joint breaker 38 acts as a stop for the toggle links 36, and is preferably provided with a shock absorber such as a spring 40. As shown by dash lines in Figure 3, when the toggle connection strikes the joint breaker 38, the joint will be broken so that as the arms A pull the head H forwardly, the arms will be spread, finally assuming the dotted position of Figure 3, which releases the head H, permitting the chuck 10 to pass on and the head H to be returned by the spring 30. In this manner the head H is moved in exact synchronism with the chuck 10 and returned after it is released therefrom to the full line positions of Figures 2 and 3.

Upon the links 36 striking the base 17 of the guide G, they will be straightened out, which swings the hook arms A again toward each other so that they will be in position to engage the next advancing chuck 10 and the cycle of operation will then be repeated.

During the movement of the chucker head H forwardly along the guide G, the ejector E will engage the blank B for pushing it along the feed plate P and into the chuck 10. The ejector E is pivoted to the head H by a pivot pin 42 carried by ears 44 extending downwardly from the head and rests by gravity against the plate P.

The advancing end of the ejector E is V-shaped, as shown in Figure 4, so as to engage the blank B with two point contact and center it relative to the chuck 10, thus insuring that the blank will be accurately centered laterally in the chuck. It will also be accurately centered relative to the line of travel of the chuck by the ejector E being properly spaced relative to the hook arms A which, of course, may be readily predetermined.

The head H is provided with a spring latch 46 which is engaged by the chucks 10 as they successively pass the chucking mechanism and which snaps behind the chuck from the dotted position shown in Figure 2 to the solid line position immediately before the forward part of the chuck engages the hook arms. This prevents any rebounding of the head relative to the chuck upon the arms A being engaged by the chucks as they move, and thus accurately synchronizes the movement of the head with the chuck. The latch 46 and the arms A engage the chuck with three point contact.

In Figure 6, we show a modified construction, in which a supporting bar 50 is provided having a slot 52 therein. The length of the slot is adjustable by means of a block 54, which is adjustable by means of a block 54, which is slidable relative to the supporting arm 50. A clamp screw 56 normally retains the block 54 in any desired position of adjustment.

The toggle links 36 are provided with an extended center pin 58 which is adapted to travel in the slot 52. This pin is adapted to engage opposite ends of the slot 52 (the left edge of the block 54 constituting the right end of the slot).

When the toggle links are moved forward, the joint is broken by the pin 58 engaging the block 54 while when the links are moved rearwardly or toward the left, the pin engages the left end of the slot 52, thus returning the toggle joint to its initial position.

Although there is some looseness between the slot 52 and the pin 58, the two cooperate with each other to retain the toggle connection substantially close to a central position, thus eliminating the possibility of excessive swinging of the arms A to either the right or left as is possible with the construction shown in the preceding figures.

Our blank chucking mechanism it will be obvious is readily adaptable for automatically feeding button blanks into successive chucks as they pass the feeding mechanism, thus eliminating the necessity of doing this manually.

The mechanism is so designed that absolute synchronism of the mechanism and chucks is obtained, and accurate centering of the blanks relative to the chucks is accomplished.

The mechanism is also particularly adapted for use in connection with the blank feeding mechanism of our co-pending application, or any other mechanism which will periodically feed the blanks to the feed plate P at properly spaced intervals corresponding to the periodicity of the chucks 10 in their passage relative to the blank chucking mechanism.

Some changes may be made in the construction and arrangement of the parts of our button blank chucking mechanism without departing from the real spirit and purpose of our invention, and it is our intention to cover by our claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

We claim as our invention:

1. In a blank chucking mechanism for use with spaced, traveling blank receiving chucks, a stationary guide, a chucker head movable relative thereto and having an actuator to engage a chuck as it moves relative to the guide for carrying said chucker head with the chuck, a feed plate to receive blanks periodically, said chucker head having an ejector engageable with a blank on said feed plate when said head is moved by a chuck for ejecting the blank from said feed plate and into the chuck, said actuator comprising a pair of pivoted hook arms having ends engageable with the chuck, a toggle connection between said hook arms at the opposite side of the pivots to normally retain them engaged with the chuck and a joint breaker for said toggle connection mounted in a preselected position on said guide and engageable with said toggle connection to break the joint and change the relative length thereof for releasing the ends of said hook arms from the chuck after a blank has been ejected from said feed plate.

2. In a blank chucking mechanism for use with spaced, traveling blank receiving chucks, a stationary guide, a chucker head movable relative thereto and having an actuator to engage a chuck as it moves relative to the guide for carrying said chucker head with the chuck, a feed plate to re-

ceive blanks periodically, said chucker head having an ejector engageable with a blank on said feed plate when said head is moved by a chuck for ejecting the blank from said feed plate and into the chuck, said actuator comprising a pair of hook arms pivotally mounted with relation to the chucker head and having ends engageable with the chuck, a toggle connection between said hook arms at one side of the pivot to normally retain the ends in a set position engageable with the chuck, stationary means positioned to break the joint of said toggle connection and change its relative length for releasing said ends form the chuck after a blank has been ejected from said feed plate and means for returning the joint to normal position, said stationary means comprising a slot and pin connection adapted to contact the central portion of the joint, the slot being of less length than the travel of the chucker head.

3. In a blank chucking mechanism for use with spaced, traveling blank receiving chucks, a stationary guide, a chucker head movable relative thereto and having an actuator to engage a chuck as it moves relative to the guide for carrying said chucker head with the chuck, a feed plate to receive blanks periodically, said chucker head having an ejector engageable with a blank on said feed plate when said head is moved by a chuck for ejecting the blank from said feed plate and into the chuck, said actuator comprising a pair of separably pivoted hook arms engageable with the chuck, a toggle connection between said hook arms adapted in normal position to retain them in chuck engaging position and a joint breaker mounted on said guide and engageable with said toggle connection when shifted from its normal position to break the joint thereof for releasing said hook arms from the chuck engaging position after a blank has been ejected from said feed plate, said toggle connection being engageable with said support and returned thereby to its normal position and adapted to return said hook arms to position for engaging the next chuck.

4. In a blank chucking mechanism, a guide, a chucker head movable relative thereto and having an actuator to engage a chuck as it moves relative to the guide for carrying said chucker head with the chuck, a feed plate to receive blanks periodically, said chucker head having an ejector pivoted thereto, resting on said feed plate and engageable with a blank thereon when said head is moved by a chuck for ejecting the blank from said feed plate and into the chuck, said actuator comprising a pair of hook arms engageable with the chuck, a toggle connection between said hook arms adapted to normally lock them in chuck engaging position and a joint breaker for said toggle connection mounted on said guide and engageable with said toggle connection to break the joint thereof for unlocking said hook arms from the chuck engaging position after a blank has been ejected from said feed plate, and means operable to return said hook arms to normally locked position for engaging the next chuck as said chucker head moves in a return direction.

5. In a blank chucking mechanism, a guide, a chucker head movable relative thereto having an actuator to engage a chuck as it moves relative to the guide for carrying said chucker head with the chuck, a feed plate to receive blanks periodically, said chucker head having an ejector engageable with a blank on said feed plate when said head is moved by a chuck for ejecting the blank from said feed plate and into the chuck, said actuator including a pivoted hook arm engageable with the chuck, a toggle connection between said chucker head and said hook adapted to normally retain said hook arm in chuck engaging position and a stationarily mounted joint breaker for said toggle connection engageable with said toggle connection to break the joint thereof for releasing said hook arm from the chuck engaging position after a blank has been ejected from said feed plate.

6. In a blank chucking mechanism, a movable chucker head having an actuator to engage a chuck as it moves past the head for carrying said chucker head along with said chuck, a feed plate to receive blanks periodically, said chucker head having an ejector engageable with a blank on said feed plate when said head is moved by a chuck for ejecting the blank from said feed plate and into the chuck, said actuator comprising a pair of hook arms pivoted so as to move toward each other to closed position to engage the chuck, a jointed toggle connection between the said hook arms to normally retain them in chuck engaging position, a joint breaker for said toggle connection mounted on said guide and engageable with said toggle connection to break the joint thereof and thereby open said hook arms for releasing them from the chuck after a blank has been ejected into the chuck.

EDWARD C. CARRIS.
JERRY R. CARRIS.