

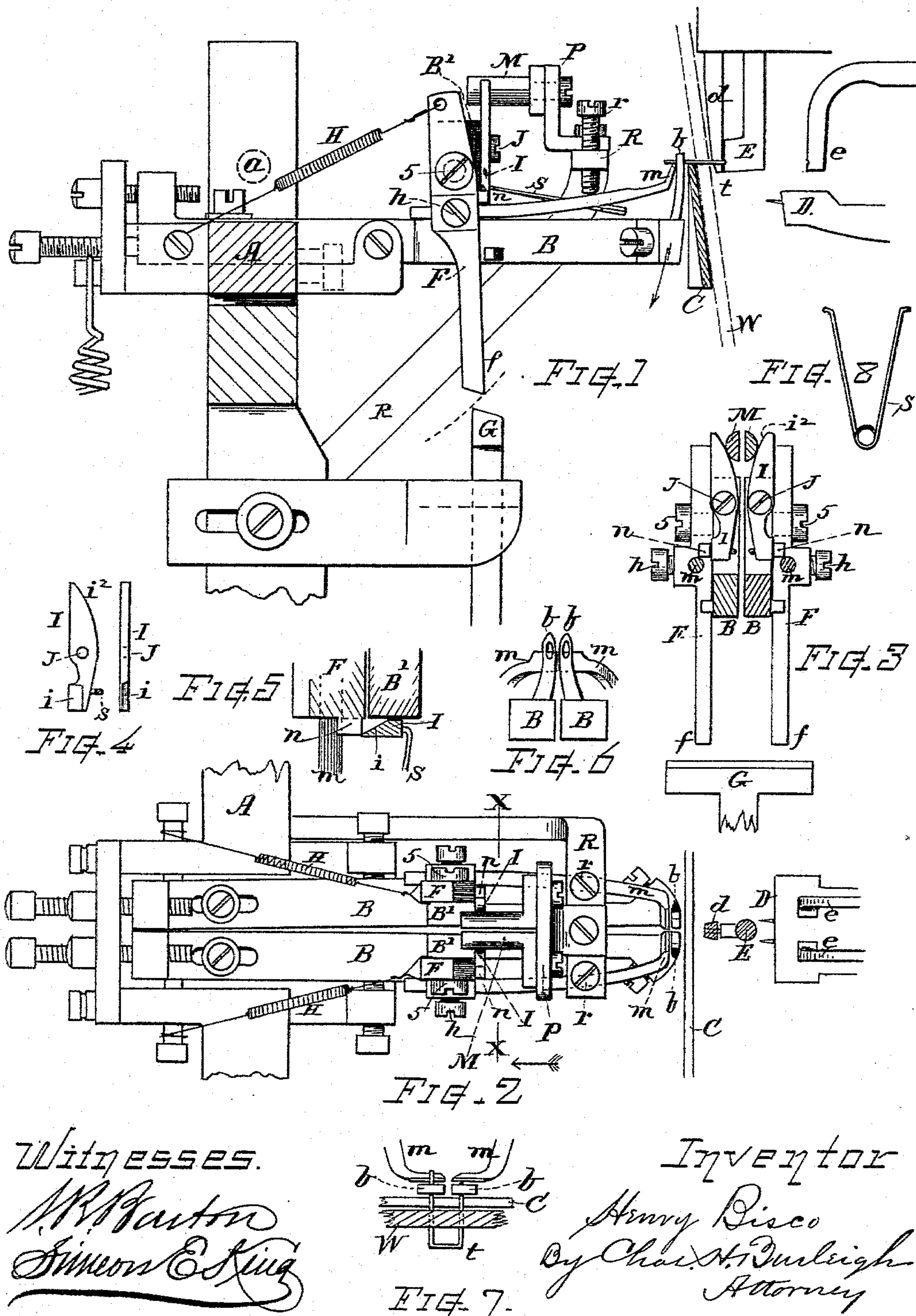
(No Model.)

H. BISCO.

STOP MECHANISM FOR CARD SETTING MACHINES.

No. 494,774.

Patented Apr. 4, 1893.



UNITED STATES PATENT OFFICE.

HENRY BISCO, OF LEICESTER, MASSACHUSETTS.

STOP MECHANISM FOR CARD-SETTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 494,774, dated April 4, 1893.

Application filed July 25, 1892. Serial No. 441,093. (No model.)

To all whom it may concern:

Be it known that I, HENRY BISCO, a citizen of the United States, residing at Leicester, in the county of Worcester, and State of Massachusetts, have invented a new and useful Improvement in Stop Mechanism for Card-Setting Machines, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of my invention is to provide, in connection with the feelers, stop-fingers, and the bending devices in a card-setting machine, an efficient means for throwing the feelers completely, and quickly away from the card-tooth at the instant the tooth commences to bend under the action of the die, or as soon as it is ascertained that the tooth is in position; thereby avoiding liability of "nipping," or double-bending the tooth, or making imperfections of that class known as "shiners."

Another object is to so adapt the feelers and stop-device, in a card-setting machine, that irregularities in the length of the teeth set into the clothing will be detected and the mechanism stopped whenever the tooth-wire is deficient in length, thus preventing the making of short teeth, rendering the machine more perfect in its working, and avoiding the common necessity of withdrawing such short teeth and resetting by hand; also, rendering the card face more uniform and in condition to be quicker and more easily ground.

For the attainment of these objects my invention consists in combining with the stop finger and feelers a movable plate or lever having an inclined surface that engages the stop-finger, or a lug thereon, as the bending dies are depressed; and if the tooth is in perfect order effects a quick recession of the feeler for carrying the feeler end completely out of the way immediately after it has determined the presence of the properly formed card-tooth and before the bending of the tooth is accomplished. Also, in the arrangement therewith of a guard-pin or device that retracts the lever or incline and releases the stop-finger and feeler and allows them to as-

sume their original positions as the bending die is elevated for receiving another tooth.

Another feature of my invention consists in arranging the feeler at the back of the bending die and operating the same as herein set forth for the detection of short length teeth.

In the drawings, Figure 1 is a side view of such portions of a card-setting machine as will illustrate the nature of my invention. Fig. 2 is a plan view of the same. Fig. 3 is a vertical section at the position of line $x-x'$ on Fig. 2. Fig. 4 shows the back and edge of the throw-off plate or lever. Fig. 5 is a section diagram [on larger scale] showing the form and relation of the inclined end of the throw-off plate and the stop-finger-lug for engagement therewith. Fig. 6 is a front view of the bending-dies and feeler ends. Fig. 7 is a plan diagram of the dies, feelers, and rest illustrating the manner in which a short tooth is detected, and Fig. 8 shows a form of spring used for advancing the inclined ends of the throw-off.

Referring to parts, A denotes the rocker-head pivoted at a and carrying the arms B, upon the ends of which are fixed the bending devices or dies b ; and C indicates the rest over which the teeth are bent by downward swing of said arms and dies.

D indicates the punch and driver; E the crown and d the doubler-bar which together serve as the inserting tools.

$e e$ indicate the wings that fold the wire around the doubling-bar to shape the tooth, and G is the head of the trip-bar for operating the shipper or mechanism whereby the motion of the machine is arrested.

All of the above named parts are of the usual well-known construction and operation and need not therefore be more fully herein described.

It will also be understood that parts of the machine which are not herein shown can be of the usual well-known construction.

The stop-fingers F, having the feelers m mounted therein as shown, are pivoted at 5 to swing freely on the sides of the upwardly extended parts B' on the arms B, their dependent ends f being adjacent to the trip head G, and their upper ends drawn back-

ward by the springs H that tend to swing the lower ends of the fingers forward and to thereby elevate the feelers; which latter are retained at proper adjustment in said fingers
5 by set-screws *h*, as indicated.

In accordance with my improvement each of the fingers F is provided with a lug or projection *n* preferably on its front side below the pivotal axis 5. A movable plate or lever
10 I, which I term the "throw-off," fitted with a backwardly inclined surface *i* at its lower end, [see Figs. 4 and 5] is pivoted at J and supported on the front of the upright B' in such position that its inclined surface *i* will
15 engage with or slide onto the lug *n* and swing back the finger F when said inclined end of the throw-off I is advanced or moved outward. Said throw-off plates or levers I are arranged right and left on the respective bars B, one
20 for each of the stop-fingers, [see Fig. 3] and the top portions are rounded or fitted with a cam surface *i*² [see Fig. 4] suitable for engagement with a pin or stationary guard M when the arms B are in elevated position, [see
25 Figs. 1 and 3] which serves as a retractor for resetting or swinging inward the lower ends of the throw-off and releasing the fingers F. The guard stud M may be a single piece or made in two parts, and it may be supported
30 on any convenient portion of the machine; preferably and in the present instance it is attached by a suitable bracket P to the bar R which sustains the stop-screws *r* above the feelers, and whereby said feelers are gaged
35 in relation to the rise of the dies. A suitable spring S is combined with the throw-off plates I for advancing or forcing their lower inclined ends outward when their upper ends recede from the guard-pin M by the downward move-
40 ment of the bars B. The lug *n* can, if desired, be made adjustable in the finger by screw-threading the parts so as to vary the extent of their projection, as required. The points or working ends of the feelers *m* I arrange at
45 the back of the bending dies *b*, so that the card-tooth ends pass through the dies before they can be touched by said feeler. In the event of a short tooth being inserted one end of the tooth will fail to reach the feeler [see
50 Fig. 7]. Hence if the draw-lever slips on the in-coming wire, or any derangement of feed occurs that gives a short tooth, the result will be the same as though no tooth was inserted, and consequently the machine will be stopped.
55 The feelers can be adjusted to work more or less near to the dies, so as to give a very close adjustment for touch at the tip of the tooth, thus rendering the mechanism capable of detecting the slightest possible deviation
60 in the lengths of the teeth. By thus arranging the parts the dies *b* are worked close to the rest C so that the mechanism will bend steel wire with greater facility and in better manner and give more pitch to the teeth.

65 In the operation, the tooth-wire *t* is fed,

doubled, and inserted through the clothing fabric W in the usual way, while the arms B and dies *b* are elevated and the plates or throw-off levers I are retained in retracted position
70 by the guard-pins M, the feelers resting against the screws *r*. As the arms start to descend the ends of the feelers swing up beneath the ends of the tooth, the action of depressing the bending-die-arm B carries the
75 cam-ends *i*² of the throw-off plates I from the guard M and, if the tooth is perfect, the spring S instantly causes the inclined surface *i* to pass onto the lug *n* and press back the finger F thereby throwing off or dropping the end
80 of the feeler clear from the tooth before the bending is effected, so that the wire cannot be nipped in the bending action. If the tooth is absent, or one side short, then the feeler-
85 end [one or both] can rise above the eye of the die as the arm moves downward thereby allowing the finger F to swing forward to such an extent that the edge of the throw-off
90 plate or lever I will catch against the side of the lug *n*, as the arms B are rocked downward; thus arresting the throw-off and holding the stop-finger at a forward position where
95 its end *f* will strike and depress the trip G and cause the stopping of the machine in the usual manner.

My improvement can be readily applied to
100 card-setting machines now in use by adding thereto the lugs *n*, throw-off levers I, and the pins or studs M; and, if desired, the re-arrangement of the feelers back of the dies. It will therefore be apparent to those skilled in
105 the art that my invention, in a very simple and efficient manner, overcomes the nipping of teeth and the making of short teeth; produces a long sought for result, and effects an important saving in the production of card-
110 clothing.

I claim as my invention herein, to be secured by Letters Patent—

1. In a card-setting machine, a throw-off plate or lever having an incline for actuating
110 the stop-finger and feeler, in combination with the bending mechanism, the stop-finger having an engaging-lug against which said incline operates, the feeler mounted on said stop-finger, the supporting-arm, and means for advancing and retracting said throw-off, sub-
115 stantially as and for the purpose set forth.

2. The feelers disposed back of the bending dies, in combination with the transverse rest, the tooth-inserting mechanism operating in
120 front of said rest, the dies adjacent to the back of said rest, the die-supporting-arms, the stop-fingers pivoted on said arms and having said feelers adjustably connected therewith, and spring-actuated throw-off-plates disposed
125 on said supporting-arms and having inclines that engage said stop-fingers, substantially as and for the purpose set forth.

3. In a card-setting machine, the combination with the bending dies, die-supporting
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arms having upward extensions, the stop-fingers pivoted thereon, and the feelers mounted in said fingers, of the swinging throw-off plates or levers pivoted to said upward extensions and having backwardly inclined lower ends that engage lugs on said stop-fingers and cam surfaces at their upper ends, an expanding spring disposed between said throw-off levers, and a guard or pins against which the
5 cam-surfaces of said throw-off levers make
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contact when the die-supporting arms are elevated, substantially as and for the purpose set forth.

Witness my hand this 22d day of July, A. D. 1892.

HENRY BISCO.

Witnesses:

CHAS. H. BURLEIGH,
OLIVER ARNOLD.