Feb. 17, 1931. G. E. CREED 1,793,162

SHEET FEEDING MECHANISM

Filed Nov. 2, 1929 2 Sheets-Sheet 1

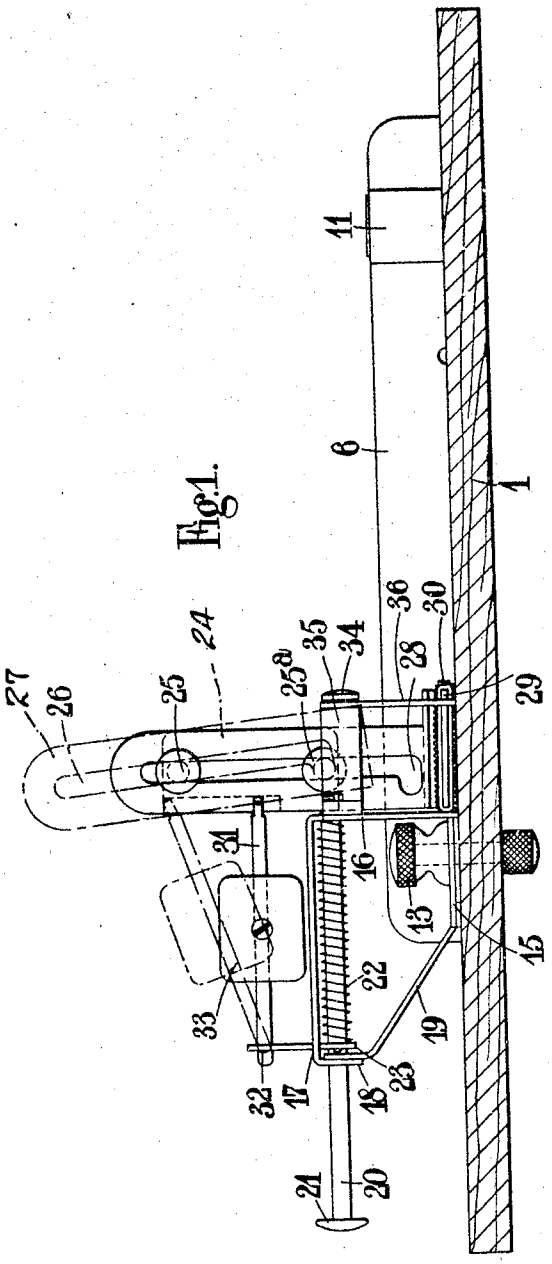


Fig. 1.

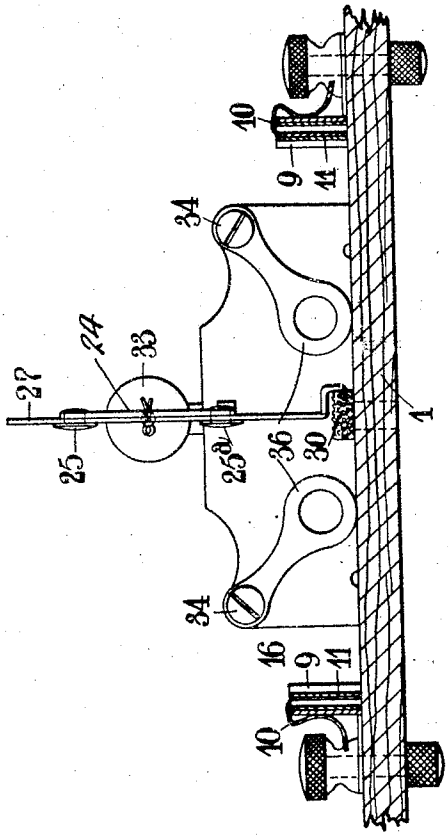


Fig. 3.

G. E. Creed
INVENTOR

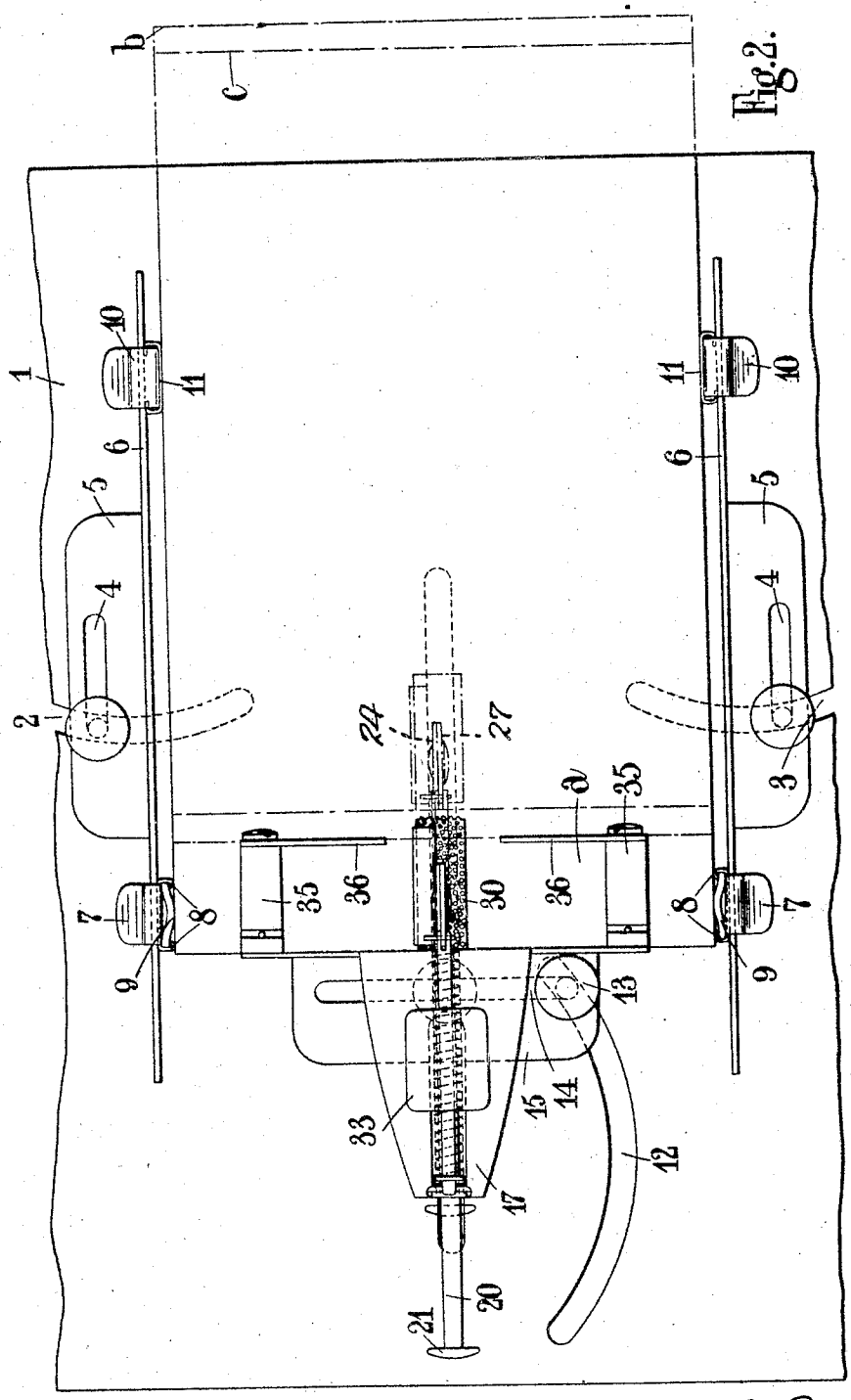
By: Marks & Clerk
Attys.

Feb. 17, 1931. G. E. CREED 1,793,162

SHEET FEEDING MECHANISM

Filed Nov. 2, 1929 2 Sheets-Sheet 2

Fig.2.



G. E. Creed
INVENTOR

By: Marks & Clerk
Attys.

Patented Feb. 17, 1931 1,793,162

UNITED STATES PATENT OFFICE

GEORGE ERNEST CREED, OF BLACKHEATH HILL, ENGLAND, ASSIGNOR TO D. GESTETNER, LIMITED, OF TOTTENHAM HALE, MIDDLESEX, ENGLAND

SHEET-FEEDING MECHANISM

Application filed November 2, 1929, Serial No. 404,408, and in Great Britain December 19, 1928.

This invention relates to sheet feeding mechanism of the kind adapted to feed in succession single sheets from a pile thereof to means adapted to operate thereon, and particularly to printing machine and stencil, type or offset duplicating machines employed for office work.

The object of the invention is to provide an improved sheet feeding mechanism and particularly to provide sheet feeding mechanism adapted to be operated by hand as is sometimes desirable in the case of printing and duplicating machines provided with mechanically operated feeding mechanism and in the case of machines to which the sheets are presented by hand.

According to the invention the sheet feeding mechanism comprises a feed member adapted to be raised into position to bear upon the topmost sheet of a pile of sheets supported on the feed table having means adapted to make frictional contact with the said sheet, means adapted to cause the same to press upon the pile and means adapted to advance and retract the feed member.

Conveniently the feed member is adapted to be moved into a position in which it forces the rear edge of the sheet to a position in advance of a stop and to retract the sheet into contact with the stop in order to facilitate the appropriate positioning of the fore edge of the sheet with respect to the means forming part of the duplicating or other machine which is designed to engage the sheet.

Preferably, also the feed member is so arranged as to maintain its pressure upon the rear edge of the sheet which has been fed forward when the feed member is in the retracted position.

The feed member in accordance with the invention may be provided with a foot adapted to make frictional contact with the topmost sheet of the pile of sheets.

Conveniently the feed member is associated with a guide permitting it to be raised and lowered vertically and is optionally provided with means for retaining it in its topmost position to facilitate placing a pile of sheets in position on the table and permitting it, when released, to be constrained to press upon the sheets.

Preferably gravity is utilized for constraining the feed member to exert sufficient pressure upon the pile of sheets and for this purpose a weight may be associated with the feed member in such manner that pressure, which is adjustable in degree, may be exerted upon the pile of sheets.

For instance, a bar may be pivotally connected by one end to the feed member and supported at its other end in a fixed support, a weight being adjustably mounted upon the bar so that by varying the proximity of the weight to the feed member the pressure of the latter upon the pile of sheets may be adjusted.

Where the feed device is designed to be operated by hand a push button or the like may be connected by a bar of suitable length acting as a guide in imparting forward and rearward movement to the feed member.

Where, on the other hand, mechanical operation is desired any suitable connection between the feed member and some moving part of the machine adapted to operate upon individual sheets as they are fed forward may be provided.

Stops against which the sheet may be brought, after it has been fed forward and retracted, may be pivotally mounted on, for instance, extensions of the frame carrying the feed member.

Advantageously, in accordance with the invention, guides are provided for the sides of the pile of sheets and these guides, adjacent to the ends thereof located near the feed device, may be provided with means adapted frictionally to engage the sheets while adjacent to the forward ends they are provided with surfaces adapted to permit the sheets being moved freely.

The means adapted to engage frictionally the sides of the sheets may be resilient pads formed, for example, of a strip of rubber held in compression and thus constrained to form a curved pad.

One construction of feeding means in accordance with the invention comprises a frame member adapted to be engaged with the feed table and forming an abutment for

the rear edge of the pile of sheets and functioning also as a guide for a push rod slidably mounted in the frame and connected at one end with a member functioning as a guide for the feed member, a rod pivotally connected at one end with the feed member and pivotally mounted at its other end in a fixed bracket formed on the push rod, a weight adjustably located on the first-mentioned rod and arms extending from the frame member on which are pivotally mounted means adapted to function as stops for the rear edge of the sheet which has been fed forward by the device and is subsequently retracted thereby in order to secure appropriate positioning of its fore edge.

Conveniently the guide for the feed member is provided with pins or the like while the feed member is furnished with a slot engaging the pins and adapted to permit the feed member to move in a direction parallel with the major axis of the slot relatively to the pins, a recess being provided adjacent to the lower extremity of the slot to permit the feed member, when in the fully raised position, to engage one of the pins in order to facilitate placing a pile of sheets upon the feed table.

In the accompanying drawings, one construction in accordance with the invention is illustrated by way of example;

Figure 1 is a side elevation partly in section,

Figure 2 a plan view with the two opposite side portions of the table broken away, and

Figure 3 a corresponding front elevation of a feed table provided with the feed device.

In the construction illustrated 1 is the feed table which is provided with slots 2 in which are engaged bolts 3 passing through slots 4 in flanges 5 on the side members 6 on each of which is mounted at one end a clip 7, provided with jaws 8 in which a strip of rubber 9 is engaged in such manner as to form a resilient pad adapted to press against the side of the pile of sheets. On the forward end of each of the members 6 is provided a clip 10 presenting a smooth guiding surface 11 for the sides of the pile of sheets. In the table is also provided a slot 12 in which is engaged a bolt 13 passing through a slot 14 in the base 15 of the frame of the feed device. The forward portion 16 of the frame is adapted to function as a rear support to the pile of sheets and is furnished with a portion 17 having an extension 18 connected with an element 19 extending upward from the base 15. In the portions 18 and 19 are provided holes in line with a corresponding hole in the portion 16 in which a square push rod 20, furnished at one end with a button 21, is mounted and about which a spring 22, one end of which bears upon the member 16 and the other upon a plate 23 rigidly connected with the push rod.

To the other end of the push rod 20 is secured a plate 24 in which are provided two pins 25 and 25*a* engaging the slot 26 in the feed member 27, the lower end of the slot being provided with a recess 28 adapted to engage the lower of the two pins when the feed member is in the fully raised position in order to retain it in such position and thus facilitate the arrangement of a pile of sheets on the feed table. The foot 29 of the feed member is provided with a roughened rubber sleeve 30 designed to ensure a sufficient degree of friction between the foot and the sheets. In order to constrain the foot to press upon the sheets a link 31 is pivotally connected by one of its ends to the member 27 and is loosely mounted at its other in a hole 32 provided in the plate 23 and on the link is mounted a weight 33 which may be slid along the link into a position adapted to ensure that the foot exerts a suitable degree of pressure on the pile of sheets. On the frame also are provided two forwardly directed extensions 34 on which are pivotally mounted sleeves 35 to which are secured arms 36 forming abutment members or stops against which will be brought the rear edge of a sheet which has been fed forward as shown in Figure 2 from the position *a* in which the rear edge of the sheet bears against the face of the portion 16 of the frame of the feed device into the position *b* shown in chain dotted line and retracted line and retracted into position *c*, as the result of the pushing forward of the bar 20 by applying pressure to the button in order to bring the latter into the position indicated in dotted line in the figure in question and subsequently allowing it to be returned by the spring 22 into the position shown in full line in the said figure.

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

1. Sheet feeding mechanism of the kind adapted to feed in succession single sheets from a pile thereof supported on a feed board to means adapted to operate thereon, and particularly to printing machines and stencil, type and offset duplicating machines employed for office work, comprising a frame adapted to be detachably secured to the feed board, said frame having a forward portion adapted to function as an abutment for the rear edge of a pile of sheets arranged on the feed board, a pressure member adapted to be raised into position to bear against the topmost sheet of the pile to make frictional contact therewith, a guide for the pressure member adapted to permit it to be raised and lowered vertically, means actuated by gravity to constrain the pressure member to bear upon the topmost sheet of the pile, manually operated means for advancing the pressure member to move forward the topmost sheet of the pile and means for returning the pres-

sure member into its initial position in which it may be again manually operated to move forward the next succeeding sheet of the pile, forwardly directed extensions on the frame, arms pivotally mounted upon the said extensions adapted under the action of gravity to descend in succession upon the individual sheets of the pile and to function as stops for the rear edge of the topmost sheet which has been fed forward to restrain rearward motion of the said sheet on the return of the pressure member into its initial position.

2. Sheet feeding mechanism of the kind adapted to feed in succession single sheets from a pile thereof supported on a feed board to means adapted to operate thereon, and particularly to printing machines and stencil, type and offset duplicating machines employed for office work, a frame member adapted to be engaged with the feed table, said frame having a forward portion adapted to function as an abutment for the rear edge of a pile of sheeets arranged on the feed board, a push rod slidably mounted in the frame, a guide member secured to the end of the push rod adjacent to the forward portion of the frame, a pressure member slidably mounted in said guide, a link pivotally connected at one end with the pressure member, an extension on the frame engaging the other end of the link and an adjustable weight mounted upon the link adapted to constrain the pressure member to exert a desired degree of pressure upon the topmost sheet of a pile of sheets.

3. Sheet feeding mechanism of the kind adapted to feed in succession single sheets from a pile thereof supported on a feed board to means adapted to operate thereon, and particularly to printing machines and stencil, type and offset duplicating machines employed for office work, a frame member adapted to be engaged with the feed table, said frame having a forward portion adapted to function as an abutment for the rear edge of a pile of sheets arranged on the feed board, a push rod slidably mounted in the frame, a guide member secured to the end of the push rod adjacent to the forward portion of the frame, a pressure member slidably mounted in said guide, a link pivotally connected at one end with the pressure member, an extension on the frame engaging the other end of the link, an adjustable weight mounted upon the link adapted to constrain the pressure member to exert a desired degree of pressure upon the topmost sheet of a pile of sheets, forwardly directed extensions on the frame, arms pivotally mounted upon the said extensions adapted under the action of gravity to descend in succession upon the individual sheets of the pile and to function as stops for the rear edge of the topmost sheet which has been fed forward to restrain rearward motion of the said sheet on the return of the pressure member into its initial position.

4. Sheet feeding mechanism of the kind adapted to feed in succession single sheets from a pile thereof supported on a feed board to means adapted to operate thereon, and particularly to printing machines and stencil, type and offset duplicating machines employed for office work comprising a frame adapted to be detachably secured to the feed board, said frame having a forward portion adapted to function as an abutment for the rear edge of a pile of sheets arranged on the feed board, a pressure member adapted to be raised into position to bear upon the topmost sheet of the pile to make frictional contact therewith, manually operated means for advancing the pressure member to move forward the topmost sheet of the pile and means for returning the pressure member into its initial position in which it may be again manually operated to move forward the next succeeding sheet of the pile in combination with guides secured to the feed board adapted to engage opposite sides of a pile of sheets and friction members adjacent to the rear extremities of the guides adapted resiliently to bear upon the sides of the pile of sheets to oppose motion thereof under the action of the pressure member.

5. Sheet feeding mechanism of the kind adapted to feed in succession single sheets from a pile thereof supported on a feed board to means adapted to operate thereon, and particularly to printing machines and stencil, type and offset duplicating machines employed for office work comprising a frame adapted to be detachably secured to the feed board, said frame having a forward portion adapted to function as an abutment for the rear edge of a pile of sheets arranged on the feed board, a pressure member adapted to be raised into position to bear upon the topmost sheet of the pile to make frictional contact therewith, manually operated means for advancing the pressure member to move forward the topmost sheet of the pile, means for returning the pressure member into its initial position in which it may be again manually operated to move forward the next succeeding sheet of the pile, a stop in advance of the forward portion of the frame adapted to be brought into position on the next succeeding sheet of the pile and to bear against the rear edge of the sheet which has been moved forward on the return of the pressure member into its initial position in combination with guides secured to the feed board adapted to engage opposite sides of a pile of sheets and friction members adjacent to the rear extremities of the guides adapted resiliently to bear upon the sides of the pile of sheets to oppose motion thereof under the action of the pressure member.

6. Sheet feeding mechanism of the kind

adapted to feed in succession single sheets from a pile thereof supported on a feed board to means adapted to operate thereon, and particularly to printing machines and stencil, type and offset duplicating machines employed for office work, comprising a frame adapted to be detachably secured to the feed board, said frame having a forward portion adapted to function as an abutment for the rear edge of a pile of sheets arranged on the feed board, a pressure member adapted to be raised into position to bear upon the topmost sheet of the pile to make frictional contact therewith, manually operated means for advancing the pressure member to move forward the topmost sheet of the pile and means for returning the pressure member into its initial position in which it may be again manually operated to move forward the next succeeding sheet of the pile, gravity actuated stop members in advance of the forward portion of the frame but in the rear of the forward extremity of the pressure member adapted when the topmost sheet of the pile is fed forward to descend upon the surface of the next succeeding sheet and to function as a stop for the rear edge of the topmost sheet of the pile which has been moved forward on the return of the pressure member into its initial position in combination with guides secured to the feed board adapted to engage opposite sides of a pile of sheets and friction members adjacent to the rear extremities of the guides adapted resiliently to bear upon the sides of the pile of sheets to oppose motion thereof under the action of the pressure member.

7. Sheet feeding mechanism of the kind adapted to feed in succession single sheets from a pile thereof supported on a feed board to means adapted to operate thereon, and particularly to printing machines and stencil, type and offset duplicating machines employed for office work comprising a frame member adapted to be engaged with the feed table, said frame having a forward portion adapted to function as an abutment for the rear edge of a pile of sheets arranged on the feed board, a push rod slidably mounted in the frame, a guide member secured to the end of the push rod adjacent to the forward portion of the frame, a pressure member slidably mounted in said guide and adapted to bear upon the topmost sheet of the pile of sheets and to be advanced by the manual actuation of the push rod to move forward the topmost sheet of the pile, and a spring associated with the push rod adapted to return it and the pressure member into its initial position in which it may be again manually actuated to feed forward the next succeeding sheet of the pile in combination with guides secured to the feed board adapted to engage opposite sides of a pile of sheets and friction members adjacent to the rear extremities of the guides adapted resiliently to bear upon the sides of the pile of sheets to oppose motion thereof under the action of the pressure member.

8. Sheet feeding mechanism of the kind adapted to feed in succession single sheets from a pile thereof supported on a feed board to means adapted to operate thereon, and particularly to printing machines and stencil, type and offset duplicating machines employed for office work, a frame member adapted to be engaged with the feed table, said frame having a forward portion adapted to function as an abutment for the rear edge of a pile of sheets arranged on the feed board, a push rod slidably mounted in the frame, a guide member secured to the end of the push rod adjacent to the forward portion of the frame, a pressure member slidably mounted on said guide, a link pivotally connected at one end with the pressure member, an extension on the frame engaging the other end of the link, an adjustable weight mounted upon the link adapted to constrain the pressure member to exert a desired degree of pressure upon the topmost sheet of a pile of sheets in combination with guides secured to the feed board adapted to engage opposite sides of a pile of sheets and friction members adjacent to the rear extremities of the guides adapted resiliently to bear upon the sides of the pile of sheets to oppose motion thereof under the action of the pressure member.

9. Sheet feeding mechanism of the kind adapted to feed in succession single sheets from a pile thereof supported on a feed board to means adapted to operate thereon, and particularly to printing machines and stencil, type and offset duplicating machines employed for office work, a frame member adapted to be engaged with the feed table, said frame having a forward portion adapted to function as an abutment for the rear edge of a pile of sheets arranged on the feed board, a push rod slidably mounted in the frame, a guide member secured to the end of the push rod adjacent to the forward portion of the frame, a pressure member slidably mounted in said guide, a link pivotally connected at one end with the pressure member, an extension on the frame engaging the other end of the link, and an adjustable weight mounted upon the link adapted to constrain the pressure member to exert a desired degree of pressure upon the topmost sheet of a pile of sheets, forwardly directed extensions on the frame, arms pivotally mounted upon the said extensions adapted under the action of gravity to descend in succession upon the individual sheets of the pile and to function as stops for the rear edge of the topmost sheet which has been fed forward to restrain rearward motion of the said sheet on the return of the pressure member into its initial position in combination with guides secured to the feed

board adapted to bear upon the opposite sides of the pile of sheets supported on the feed board and resilient pads each comprising a strip of rubber held in compression and thus constrained to form a curved pad adapted resiliently to bear upon the sides of the pile of sheets to oppose motion thereof under the action of the pressure member.

10. Sheet feeding mechanism of the kind adapted to feed in succession single sheets from a pile thereof supported on a feed board to means adapted to operate thereon, and particularly to printing machines and stencil, type and offset duplicating machines employed for office work comprising a frame adapted to be detachably secured to the feed board, said frame having a forward portion adapted to function as an abutment for the rear edge of a pile of sheets arranged on the feed board, a pressure member adapted to be raised into position to bear against the topmost sheet of the pile to make frictional contact therewith, a guide for the pressure member comprising pins arranged vertically one above the other co-operating with a slot in the pressure member to permit the same to be raised and lowered vertically and a recess in the lower extremity of the slot adapted to permit the pressure member to be engaged by one of the pins and maintained in the raised position to facilitate arranging a pile of sheets upon the feed board.

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

GEORGE ERNEST CREED.