Aug. 3, 1965 A. J. HARVEY 3,198,115

AUTOMATIC FEEDER FOR PRESSES

Filed May 14, 1962 2 Sheets-Sheet 1

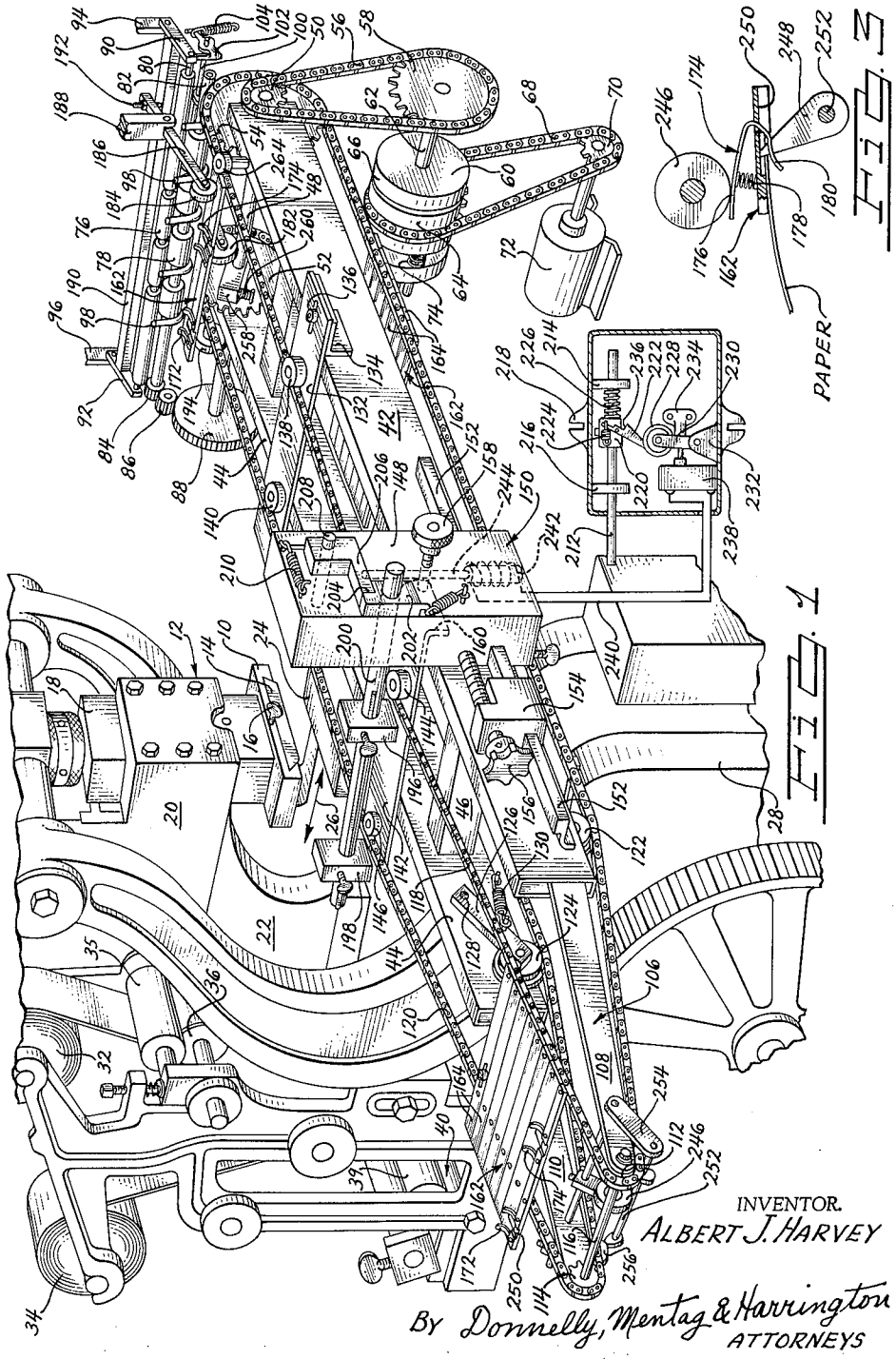


FIG. 1

FIG. 3

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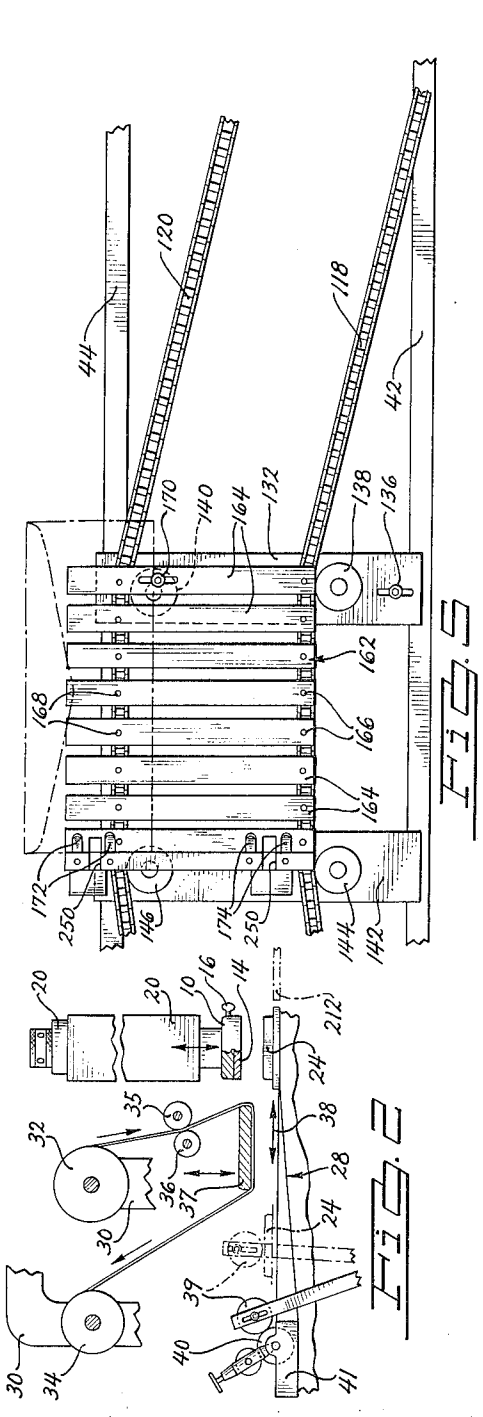


Fig. 5

Fig. 2

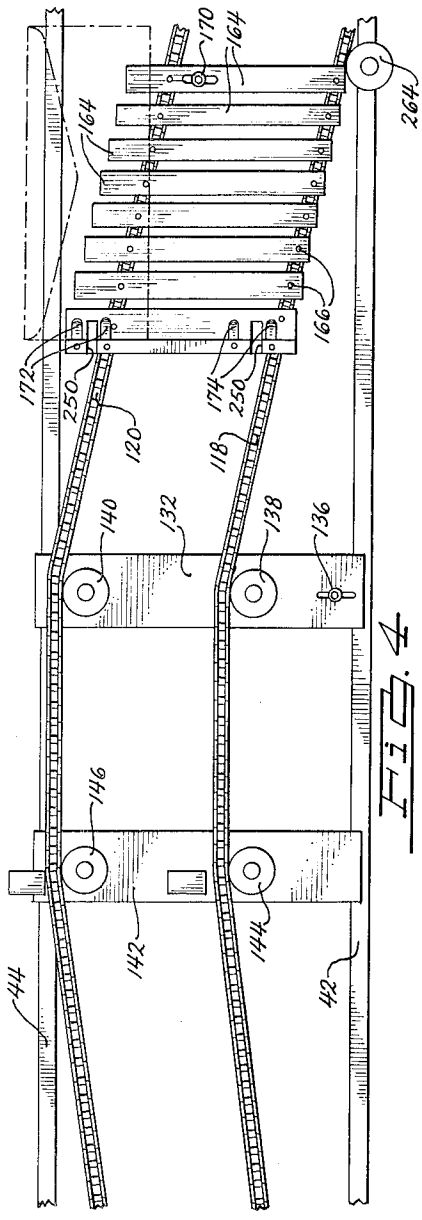


Fig. 4

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AUTOMATIC FEEDER FOR PRESSES

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Filed May 14, 1962, Ser. No. 194,530
8 Claims. (Cl. 101—316)

My invention relates generally to improvements in engraving and printing presses and the like, and more particularly to an automatic feeder for a press with a reciprocating head.

My invention is adapted particularly to be used with an engraving machine having a vertically movable pressure head that engages an engraving die. It is capable of being used with any one of a variety of presses of known construction. A minimum of time and effort is required to adapt my improved feeder for use with any particular press.

It is conventional practice to insert a specimen to be engraved into the path of motion of the movable pressure head in timed sequence with the operating cycle of the press. Suitable guides or fixtures are provided to position the specimen properly. This manual procedure makes it necessary to adopt relatively slow operating speeds and requires the full time and attention of the operator. Because of the lack of a means for swiftly and automatically feeding such presses and discharging the specimen after it is engraved, processes of this type heretofore have been relatively expensive.

The provision of an improved automatic feeder for presses being a principal object of my invention, it is a further object of my invention to provide a mechanism that is capable of carrying a specimen from one location to the vicinity of the reciprocating head and holding the same in a proper position during the engraving operation. After the head is withdrawn from the engraving die, the mechanism then removes the specimen and positions it at a final station where it may be conveyed through a suitable dryer before it is stacked. I contemplate that my improved feeder mechanism can be used in cooperation with any one of a variety of feeder mechanisms that normally would be employed with automatic printing presses.

It is a further object of my invention to provide a feeder mechanism of the type above set forth wherein provision is made for conveniently adjusting the position of the specimen without interrupting operation.

It is a further object of my invention to provide an automatic feeder of the type above set forth wherein a conveyor chain is employed for carrying the specimen from one station to a position within the path of movement of the pressure head, and then subsequently conveying the specimen to a third station after the head has been retracted.

It is a further object of my invention to provide a chain type conveyor of the type above set forth that is adapted to receive a specimen from a conventional printing press feeder and convey it to each of the two or more subsequent operating stations. A pause in the motion of the specimen takes place at each station to allow an appropriate operation to take place.

It is a further object of my invention to provide an automatic feeder of the type above set forth wherein the control functions are accomplished in response to movement of a reciprocating portion of the engraving press.

It is a further object of my invention to provide a feeder of the type above set forth which can be operated at any desired speed that is determined by the speed of operation of the press with which it is used.

It is important in the engraving art to index properly the specimen with respect to the engraving die and to

maintain this specimen precisely in the indexed position during the portion of the cycle in which the engraving operation takes place. Proper indexing is especially important when multiple colors are used in the engraving operation. A separate die is required for each color. The image produced by one die must register properly with the image produced by another die so that the composite image will be precise.

It is therefore a further object of my invention to provide a feeder for an engraving press that will provide the precise indexing of the specimen that is required.

If the engraving operation includes the use of ink, care must be taken to avoid smearing of the image before the ing dries. Provision then must be made for positioning the specimen following the engraving operation so that the drying operation can take place before the final stacking operation. It is therefore a further object of my invention to provide a feeder for an engraving press that will deposit the specimen following the engraving operation in a position with the image facing upwardly so that it may be dried as it is conveyed to a final stacking position.

It is a further object of my invention to provide a feeder capable of carrying out multiple engraving operations during one continuous operating cycle. I contemplate that my improved feeder will be capable of feeding simultaneously a specimen to two or more engraving presses, each press having a die that produces a part of the final composite image.

It is a further object of my invention to provide an engraving press feeder having a conveyor chan of the type above set forth wherein provision is made for registering properly the specimen in suitable grippers carried by the chain.

Further objects and features of my invention will become apparent from the following description and from the accompanying drawings wherein:

FIG. 1 shows an isometric form composite assembly view of my improved feeder mechanism;

FIG. 2 is a schematic view of the engraving press,

FIG. 3 is a detailed sub-assembly view of the stripper construction for removing the specimen from the conveyor chain after the engraving operation is completed;

FIG. 4 is a partial plan view of a portion of the conveyor chain in the region of the engraving head;

FIG. 5 is a view similar to FIG. 4 showing the conveyor platform in a centralized position.

Referring first to FIG. 1, numeral **10** designates a reciprocating pressure head for an engraving press. The press is indicated generally by reference character **12**. The head includes a pressure pad **14** that may be dovetailed within a cooperating retainer groove in the head and retained therein by a holding screw **16**.

The head **10** is carried by a reciprocating member **18** that is slidably received within the upper portion **20** of an engraving press yoke **22**. An inked engraving die plate is shown at **24** and is adapted to reciprocate transversely in the direction of the arrow **26**. The reciprocation of the head **10** and the transverse reciprocation of the die plate **24** are accomplished in any conventional fashion. For this reason the drive mechanism for the engraving press has not been illustrated specifically.

I have illustrated schematically in FIG. 2 a portion of the internal press structure. It includes a base **28** and a frame **30**. Rotatably mounted upon the frame **30** is a roll of fresh paper **32** and a roll of waste paper **34**. The fresh paper is trained through cooperating drive rollers **35** and **36**. It then is passed under a wiping pad **37** and returned to the waste roll **34**. The wiping pad **37** may include a cushioned surface under which the paper is positioned. A suitable adjustment may be provided for

raising and lowering the position of the wiping pad with respect to the base 28.

The die plate 24 can be reciprocated in the direction of the arrow 38 to the position shown by means of phantom lines. When it is so positioned, a die ink roller 39 is moved from the position shown in FIG. 2 by means of full lines to the position shown by means of phantom lines. When it assumes the latter position the die ink roller passes over the surface of the die plate 24, thus applying a surface of ink to the latter. When the engraving die plate 24 then is returned to the position shown in FIG. 2, the die ink roller is returned to the position shown by means of full lines in FIG. 2. Upon its return to the position shown, the engraving die is engaged by the pressure pad 14. As the pressure pad 14 moves toward engagement with the die 24, the specimen is inserted in the path of motion of the head 10 by the feeder mechanism of my invention.

During the portion of the operating cycle that the engraving die is in the position shown in FIG. 2, the ink roller 39 engages fountain rollers 40. These are disposed in an ink reservoir 41 and are driven by the engraving press drive mechanism. Thus the ink that is transferred to the fountain rollers is in turn transferred to the ink roller 39.

As the engraving die moves to a left hand position as viewed in FIG. 2, the ink roller passes over the surface of the engraving die as explained previously. Upon its return the engraving die is wiped by the paper disposed under the wiping pad. The surface of the engraving die has a mirror-like finish and the ink that is transferred to it by the die ink roller 39 then is wiped off the die and transferred to the paper thus leaving the ink deposited only in the etching.

The paper for the wiping pad passes across the wiping pad with an indexing motion. This motion is imparted to the paper and the rolls 32 and 34 by the drive mechanism for the engraving press. Likewise the oscillating motion of the carrier for the ink roller 39 is obtained by the press driving mechanism.

This complete operating cycle takes place for each reciprocation of the head 10. Any reciprocating portion of the press mechanism can be used for triggering operation of the feeder mechanism, as will be explained subsequently.

The feeder mechanism is comprised of a pair of spaced parallel frame members 42 and 44. These are supported by the base 28 of the press 12. The members 42 and 44 are held in spaced parallel relationship by rigid cross members 46.

A rigid sprocket shaft 48 is journalled at one end of the members 42 and 44 and supports a driving sprocket 50 and a sprocket wheel 52. Another sprocket wheel shown at 54 is situated in juxtaposition with respect to sprocket wheel 52.

A driving chain 56 is trained over sprocket 50 and another sprocket 58. This sprocket 58 is coupled to a friction coupling 60 by means of the shaft 62. Coupling 60 includes a driving member 64 and a driven member 66 to which shaft 62 is secured. Driving member 64 is formed with peripheral sprocket teeth about which a driving chain 68 is trained. A sprocket wheel 70 powered by a variable speed motor 72 drives chain 68, thus feeding power to the coupling mechanism 60.

I contemplate that the coupling mechanism 60 can be a friction coupling that may slip under a predetermined torque. A fluid coupling, however, could be employed also if this were desired. Springs 74 are adapted to urge members 64 and 66 into frictional driving engagement. If, however, the torque transmitting requirements of the coupling mechanism 60 exceed its capacity, the members 64 and 66 will slip relative to each other.

Located in the vicinity of the sprocket wheels 52 and 54 is a pair of friction rollers 76 and 78 journalled for rotation about shafts 80 and 82, respectively. One end of shaft 82 carries a gear wheel 84 that meshes with idler wheel 86. A driving gear 88 in turn meshes with idler wheel 86 to power the shaft 82 and the roller 78. The gear wheel 88 is fixed to shaft 48 and is powered, therefore, by motor 72 through the chains 68 and 56 and the associated sprocket wheels.

Shaft 80 is journalled at each end in rocker arms 90 and 92 that in turn are pivoted to stationary portions 94 and 96 of the feeder assembly.

A plurality of gate bars 98 are carried by a bar 100 that is journalled for oscillation. One end of the bar 100 carries an actuator lever 102 that is spring urged by means of spring 104 in a clockwise direction. The end of lever 102 engages arms 90 to urge normally the roller 76 toward an inoperative position out of engagement with roller 78.

A conventional automatic feeder can be used for supplying the specimen to the rollers 76 and 78. If the specimen to be printed is a card, the automatic feeder places the card on top of the roll 78 so that the weight of the card will create a slight forward thrust due to the rotation of the roller 78. Forward motion of the card, however, is inhibited by the gate bars 98.

Located at the opposite end of the frame members 42 and 44 is an extension generally identified by reference character 106. It includes side members 108 and 110 that are received within the frame members 42 and 44, respectively. These frame members 42 and 44 preferably are formed of hollow channel construction for receiving the members 108 and 110. Adjustable connecting structure, not shown, is provided for positioning the members 108 and 110 as shown.

A pair of sprocket wheels 112 and 114 is journalled at outer ends of members 108 and 110, respectively. A shaft 116 supports the sprocket wheels 114 and 112 as indicated.

A pair of delivery chains is shown at 118 and 120. Chain 118 is trained over sprocket wheels 54 and 112 and extends in a direction generally parallel to members 42 and 44. In similar fashion, chain 120 is trained over sprocket wheels 52 and 114 in substantially parallel relationship with respect to chain 118. An idler wheel 122 engages chain 118 on the lower side thereof and an idler wheel 124 engages chain 120 in a similar fashion. Each wheel 122 and 124 can be urged into engagement with its respective chain to provide a controlled degree of tension in the chains. For example, idler sprocket wheel 124 can be carried upon the lever arm 126 that is pinned to frame member 44 at 128. A tension spring 130 urges the lever arm 126 in a counter-clockwise direction, thus placing the chain 120 under tension.

A guide plate 132 is disposed transversely across the top of frame members 42 and 44. It can be supported by a bracket 134 welded or otherwise secured to the side of frame member 42. The transverse position of the plate 132 with respect to the frame members 42 and 44 can be adjusted manually by means of a set screw 136 that is received within an elongated slot in plate 132. Plate 132 carries guide rollers 138 and 140 that engage the chains 118 and 120, respectively, thus positioning the chains in a proper transverse position with respect to the frame members 42 and 44.

Another guide plate 142 is situated on top of frame members 42 and 44 in a transverse direction. It carries guide rollers 144 and 146 that engage the chains 118 and 120, respectively, thus positioning the chains in a fashion similar to the action of guide rollers 138 and 140. Plate 142 in turn is carried by a body 148 for a control unit generally identified by reference character 150. The body 148 can be secured in a permanent fashion to the plate 142, and it is supported by a guide raill 152 secured to the side of frame member 42. This rail 152 can be formed of Z-shaped construtcion or any other similar form so that it can be received within a cooperating opening in the body 148 to provide guidance for the latter. An

adjusting block 154 is secured also to the side or frame member 42 and it threadably receives an adjusting screw 156 that is journalled within the body 148. The screw 156 can rotate within the body 148 although the axial movement of the screw 156 with respect to body 148 is inhibited. Thus, when screw 156 is rotated, the body 148 will be adjusted longitudinally along the guide bar 152 carrying the plate 142 during such an adjustment which adjustment may be readily and precisely accomplished without interrupting the normal operation of the apparatus.

The plate 142 can be adjusted transversely with respect to the body 148 by means of an adjusting screw 158. This screw is threadably received within a suitable threaded opening in the body 148 and is connected to a flanged portion 160 of the plate 142. Relative rotation of the screw 158 with respect to the flanged portion 160 can be accommodated, although relative transverse movement with respect thereto is inhibited. Thus when the screw 158 is adjusted, the plate 142 and the chains 118 and 120 can be adjusted to a proper transverse position with respect to the reciprocating head 10. If adjustment at a spaced location is desired, this can be accomplished by means of the plate 132 and the set screw 136. Fine adjustments, however, can be obtained by appropriately positioning the plate 142 by means of the screw 158. The adjustment provided by plate 132 is needed only if the longitudinal dimension of the specimen is unusually large.

In FIGS. 4 and 5, I have illustrated one of a series of specimen carrying platforms generally identified by reference character 162. This platform comprises a series of bars 164 that are pinned at either end thereof to the chains 118 and 120. The pinned connections are identified, respectively, by reference characters 166 and 168. When the platform 162 assumes the position shown in FIGS. 4 and 5, the bars 164 are situated in a common plane so that they are capable of supporting a specimen to be engraved.

It will be apparent from an inspection of FIGS. 4 and 5, wherein the showing of the deflection of the chains 118 and 120 is considerably exaggerated, that the platform 162 is properly positioned by the guide rollers 144 and 146 when it approaches the central position in the region of the reciprocating head 10. As it approaches this position, the bars 164 can shift longitudinally with respect to each other. An index element 170 can be carried by the last of the series of bars 164 to assist in positioning the specimen on the platform 162 throughout the operating cycle. The opposite margin of the specimen is received within grippers or clips 172 and 174. A detail of the gripper 174 is shown in FIG. 3. The grippers 172 and 174, however, are identical in construction.

As is apparent from FIG. 3, the gripper 174 is generally of U-shaped construction and it comprises a portion 176 located on the underside of the platform 162. The portion 176 is spring urged by means of spring 178 away from the platform 162. The other portion 180 of the gripper 174 engages the paper or specimen and clamps it against the upper surface of the platform 164. The forward bar 164 can be recessed to provide a suitable opening at the margin of the next adjacent bar to accommodate the gripper 174.

As one of the platforms 162 negotiates the turn around the sprocket wheels 54 and 52, portion 176 of the gripper 174 engages a roller 182 thus causing a spring 178 to become compressed. This moves the upper portion 180 into a released position so that it is adapted to receive a paper specimen from the automatic feeder referred to previously. Simultaneously with the release of the gripper 174, the forward bar 164 of the platform 162 engages a roller 184 pviotally carried by an arm 186, the latter in turn being pivoted to a fixed portion 188 of the chassis or frame. The other end of the arm 186 is adapted to engage a bar 190 that is secured to the aforementioned arms 90 and 92. The bar 190 is adapted to move with the arms 90 and 92 about their respective points of oscillation. If desired, an adjusting screw 192 can be provided on the end of the arm 186 so that the latter will engage the bar 190 at the proper instant. Thus when the platform 162 is brought into the position shown in FIG. 1, the arm 186 is pivoted in a clockwise direction thus causing arms 90 and 92 to move in a counter-clockwise direction. This in turn causes the rollers 76 to engage rollers 78. At the same instant, however, lever arm 102 is adapted to move against the opposing force of the spring 104 to oscillate the bar 100 in a counter-clockwise direction. This causes the gate bars 98 to become retracted thus allowing the paper specimen to be inserted into the released gripper 174 and 172.

A similar roller 194 is provided for the gripper 172 to cause it to be released at the same instant as the release of gripper 174. Prior to the time one of the platforms 162 reaches the position shown in FIG. 1, the gate bars 98 will prevent forward motion of the paper specimen. Although the rollers 78 rotate continuously by reason of the driving motion provided by the motor 72, the specimen remains stationary.

As soon as a platform 162 reaches the position shown in FIG. 1, however, frictional contact between the rollers 76 and 78 will cause a forward feeding motion of the paper specimen into the grippers 174 and 172. After the grippers pass their respective rollers 182 and 194, they will move under the influence of the springs 178 to clamp the specimen upon the platform 162. It is then carried toward the reciprocating head 10 by the chains 118 and 120. As the roller 184 leaves contact with the platform 162, the gate bars 98 return to the blocking position. Motion of the specimen continues until the forward bar 164 engages a pair of stops shown at 196 and 198. These stops are carried by a rigid bar 200 that in turn is end supported in the body 148 of the control assembly 150. Carried also by the shaft 200 within the body 148 is a blocker member 202 having an abutment 204 that engages a cooperating blocker member 206. This member 206 in turn is carried by a shaft 208 disposed within the body 148. It is urged in a counter-clockwise direction by means of a spring 210 located within the body 148.

Upon engagement of the forward bar 164 with the stops 196 and 198, the motion of the chains 118 and 120 immediately ceases. This, of course, will cause the clutch structure 60 to slip although the driving element 64 will be driven continuously by the motor 72.

The motor 72 and clutch structure 60 are used also to power the automatic feeder that delivers the specimen to the rollers 76 and 78. Thus when the forward bar 164 on the platform 162 engages the stops 196 and 198, the automatic feeder will cease operation immediately since driving motion of the chain 56 and the associated sprockets will cease.

It thus will be apparent that the specimen carried by a platform 162 will come to a stop at a region within the path of reciprocation of the pressure pad 14. At this instant also the plate 24 is in position under the head 10.

As previously explained, the plate 24 moves transversely, each reciprocation of the head 10 being accompanied by a transverse reciprocation of the plate 24.

When the plate 24 moves to the position shown in FIG. 1 prior to engagement with the head 10 with the specimen, it engages a bar 212 that is slidably mounted within two eyelets or brackets 214 and 216 on a portion of the body 148 of the control assembly 150. Suitable brackets 218 can be provided for suitably positioning the bar 212 in the path of reciprocation of the plate 24.

Carried upon bar 212 is an adjustable trigger member 220 that includes a finger 222 spring urged in a counter-clockwise direction, as viewed in FIG. 1, by a control spring 224. The bar is urged in a left-hand direction as viewed in FIG. 1 by a spring 226 situated between the member 220 and the eyelet 214.

The finger 222 is adapted to engage a roller 228 carried by a lever 230 that is pinned to a support bracket 232.

An adjustable stop 234 carried by the body 148 can be provided for limiting the motion of the arm 230 in a clockwise direction about its pivot point.

Rotation of the finger 222 in a counter-clockwise direction about its pivot point is limited by a shoulder 236 that is adapted to engage a cooperating part of the member 220. Thus when the bar 212 is shifted by the plate 24 in a right-hand direction as viewed in FIG. 1, the finger 222 will ride over the roller 228 without any difficulty. The spring 224 will yield for this purpose. When the pressure pad engages the specimen and is returned to an upward position, the plate 24 then is retracted. This will cause the bar 212 to move in a left-hand direction. The spring 226 therefore will cause the finger 220 to engage the roller 228 and to tend to oscillate the arm 230 in a counter-clockwise direction. This motion actuates a microswitch shown at 238. When it is so actuated, switch 238 closes a solenoid circuit shown in part at 240. This circuit includes an electrical solenoid coil 242 having a plunger 244. When the solenoid coil 242 is energized blocker member 206 moves about the axis of shaft 208, thus allowing the member 202 to oscillate in a clockwise direction about its axis. Thus the members 196 and 198 will be permitted to rotate in a clockwise direction together with the shaft 200 upon which they are mounted. This will release the pltform and the chain then will deliver the specimen to a final position at the extreme left-hand end of the chain circuit. It should be remembered, of course, that the driving action of the motor 72 is continuous and that when the members 196 and 198 are released, the torque delivered to the chain through the slipping clutch structure 60 immediately causes the chain to continue its motion.

As the platform approaches the extreme left-hand position, the portion 176 of the gripper 174 engages a roller 246. As the grippers negotiate the turn around the sprocket wheels 112 and 114, the portion 176 will come in contact with the roller 246 thus compressing spring 178. This releases the gripping action of the portion 180 and allows the paper specimen to be discharged. Such discharging action is accomplished by means of a stripper 248 in the form of a finger that is received within a slot 250 in the two forward bars 164 of the platform 162. This stripper 248 can be carried by a supporting shaft 252 that in turn can be positioned adjustably by means of arms 254 carried by the extensions 108 and 110. A corresponding stripper is provided also for the gripper 172. Similarly, a roller 256 is provided for the gripper 172. This roller 256 corresponds in function to the roller. The thickness of the forward bar 164 may be greater than the thickness of the next adjacent bar so that a shoulder for the specimen will be provided.

It will be observed that the paper specimen will be discharged by the stripper bars on the left-hand side of the chain circuit with the image facing upwardly. Thus when the specimen is discharged, it can be deposited upon a moving conveyor belt and then carried to a final position where it can be stacked automatically as it is dropped by the conveyor belt. During the transfer from the conveyor chain to the stacking location, heat lamps can be trained upon the conveyor belt to dry the ink if the engraving involves the use of ink.

The engraving operation is completely automatic from start to finish. It does not require the attention of the operator once the operation is established. The speed of operation can be varied as desired by making the necessary adjustments in the opening speed of the press itself.

The sprocket shaft 48 upon which sprocket wheels 52 and 54 are supported is drivably connected to sprocket whels 52 and 54 by means of driving dogs 258. These dogs are connected resiliently to a cooperation projection or key on the sprocket wheel 52 and 54 by means of springs 260. Thus a limited degree of longitudinal adjustment of one chain with respect to the other can be obtained after the forward bar 164 on a platform 162 engages the stops 196 and 198, either one chain or the other then will shift with respect to the stationary chain until the platform registers precisely with the stops 196 and 198.

Registration of the platform in a transverse direction is accomplished by the rollers 144 and 138. These rollers are of sufficient width to engage the adjacent edge of the platform 162 as the latter is conveyed by the chains during the operating cycle. In those instances when the longitudinal dimension of the specimen is not large, proper registration can be accomplished by means of the roller 144. There then would be no need for adjustably positioning the roller 138. If, however, the longitudinal dimension of the specimen is relatively large—for example, if the specimen is a full size letter envelope— the secondary registration provided by the roller 138 is desirable. It is necessary in such a case to provide the index element 170 that can be received within the cooperating elongated slot in the last of the series of plates 164 for the platform 162. As the last plate 164 is indexed by the roller 138, the element 170 engages the specimen, thus assisting in the transverse registration of the specimen during the engraving operation.

Since proper registration of the specimen during the engraving operation depends upon the accuracy with which the specimen is received by the grippers, another guide roller 264 is provided at the right hand side of the frame 42. This roller 264 engages the forward bar 164 as the specimen is received by the grippers. This guide roller 264 is of sufficient width to permit engagement of the adjacent margin of the platform 162 with its peripheral surface.

The conventional feeder that delivers the specimen to the rollers 76 and 78 provides proper registering of the specimen in a conventional fashion. This accurate registration then is continued by reason of the high degree of control of the transverse position of the forward platform bar at the instant the specimen is received by the grippers.

The number of platforms used can be varied as desired. Further, there is no limitation upon the length of the chain itself. Each of the platforms will move with an indexing motion from one end of the chain circuit to the other. After the platforms reach the extreme left hand portion of the chain circuit, the specimen is deposited, as previously explained, with the image facing upwardly.

The number of presses that a single feeder mechanism can accommodate can be two or more. Suitable adjustments and a control assembly for each press can be provided. This would require only a duplicate of the control mechanism and positioning devices described in the foregoing paragraphs.

Although the particular engraving operation described herein involves the use of ink, I contemplate that the same system can be used also for applying gold leaf or other material to the engraved image. The specimen also can be plastic or any other material suitable for an engraving operation.

Having thus described a preferred embodiment of my invention, what I claim and desired to secure by U.S. Letters Patent is:

1. In an automatic feeder for a press capable of delivering sheet specimens from a first station to a second station and from a second station to a third station, a frame, a pair of endless chains encircling said frame in substantially parallel relationship, a pair of drive wheel means rotatably mounted at one end of said frame for drivably supporting said chains, a pair of idler wheel means rotatably mounted at the other end of said frame for supporting and guiding said chains, a motor, a torque transmission mechanism between said motor and said driving wheel means adapted to deliver continuous driving torque to said driving wheel means, a bar carried by said chains in transverse relationship with respect to the direction of motion of said chains, a stop, a movable member supporting said stop in the path of motion of said bar, the motion of said chains being interrupted upon engagement of said bar with said stop, means for locking

said movable member to inhibit its motion, control means for releasing said locking means in response to movement of cyclically operated portions of said press, gripper means carried by said bar for securing one of said specimens to said chains whereby it is conveyed from said one station to said second station, the aforesaid interruption of the motion of said chain occurring when said specimen reaches said second station, blocker members located adjacent said one station, friction rollers in engagement with said specimen for continuously urging said specimen into engagement with said blocker members, a pivoted lever, said blocker members being movably mounted upon said pivoted lever and means for moving said lever to retract said blocker bars when said gripper means pass said one station thereby permitting said specimen to be urged forward into said gripper means.

2. In an automatic feeder for a press capable of delivering sheet specimens from a first station to a second station and from a second station to a third station, a frame, a pair of endless chains encircling said frame in substantially parallel relationship, a pair of drive wheel means rotatably mounted at one end of said frame for drivably supporting said chains, a pair of idler wheel means rotatably mounted at the other end of said frame for supporting and guiding said chains, a motor, a torque transmission mechanism between said motor and said driving wheel means adapted to deliver continuous driving torque to said driving wheel means, a bar carried by said chains in transverse relationship with respect to the direction of motion of said chains, a stop, a movable member supporting said stop in the path of motion of said bar, the motion of said chains being interrupted upon engagement of said bar with said stop, means for locking said movable member to inhibit its motion, control means for releasing said locking means in response to movement of cyclically operated portions of said press, gripper means carried by said bar for securing one of said specimens to said chains whereby it is conveyed from said one station to said second station, the aforesaid interruption of the motion of said chain occurring when said specimen reaches said second station, means carried by said frame for releasing said gripper means and depositing said specimen as the gripper means is moved by said chains past said third station, a first guide roller carried by said frame at said first station adjacent one of said chains, said guide rollers engaging the end of said bar as the latter passes through said first station whereby accurate indexing of said specimen with respect to said chains is accomplished and a second guide roller located adjacent said second station and adapted to register said specimen relative to said frame as the motion of the specimen is interrupted.

3. In an automatic feeder for a press capable of delivering sheet specimens from a first station to a second station and from a second station to a third station, a frame, a pair of endless chains encircling said frame in substantially parallel relationship, a pair of drive wheel means rotatably mounted at one end of said frame for drivably supporting said chains, a pair of idler wheel means rotatably mounted at the other end of said frame for supporting and guiding said chains, a motor, a torque transmission mechanism between said motor and said driving wheel means adapted to deliver continuous driving torque to said driving wheel means, a bar carried by said chains in transverse relationship with respect to the direction of motion of said chains, a stop, a movable member supporting said stop in the path of motion of said bar, the motion of said chains being interrupted upon engagement of said bar with said stop, means for locking said movable member to inhibit its motion, control means for releasing said locking means in response to movement of cyclically operated portions of said press, gripper means carried by said bar for securing one of said specimens to said chains whereby it is conveyed from said one station to said second station, the aforesaid interruption of the motion of said chain occurring when said specimen reaches said second station, blocker members located adjacent said one station, friction rollers in engagement with said specimen for continuously urging said specimen into engagement with said blocker members, a pivoted lever, said blocker members being movably mounted upon said pivoted lever and means for moving said lever to retract said blocker bars when said gripper means pass said one station thereby permitting said specimen to be urged forward into said gripper means, a first guide roller carried by said frame at said first station adjacent one of said chains, said guide rollers engaging the end of said bar as the latter passes through said first station whereby accurate indexing of said specimen with respect to said chains is accomplished and a second guide roller located adjacent said second station and adapated to register said specimen relative to said frame as the motion of the specimen is interrupted.

4. An apparatus for sequentially feeding work-pieces to a printing press, which press has a pair of normally separated printing elements providing a printing area between them, one of said elements being cyclically movable to and from said area to produce an impression upon a workpiece disposed thereat: said feeding apparatus comprising conveyor means disposable in co-operative relation to said printing area and adapted to serially receive the workpiece; driving mechanism for said conveyer means adapted to impart continuous forward motion thereto whereby the work-pieces may be sequentially transported across the printing area; means engageable by the conveyer as each work-piece reaches a co-operative position relative to said area whereby to effect a temporary interruption of the conveyor movement so that the pieces may be stationary at the time of their engagement by the movable printing element; means readily precisely adjustable during continued functioning of the apparatus to accurately vary the position of said movement-interrupting means and thus alter the point at which such interrupting means is engaged by the conveyer, whereby to exactly control the location on the work-pieces of the impressions produced thereon by said printing element; and means operable by the press to render said movement-interrupting means ineffective at the conclusion of the printing operation, whereby movement of the conveyor may be resumed.

5. An apparatus for sequentially feeding work-pieces to a printing press, which press has a pair of normally separated printing elements providing a printing area between them, one of said elements being cyclically movable to and from said area to produce an impression upon a work-piece disposed thereat: said feeding apparatus comprising conveyer means disposable in co-operative relation to said printing area and adapted to serially receive the work-pieces; driving mechanism for said conveyer means adapted to impart continuous forward motion thereto whereby the work-pieces may be sequentially transported across the printing area; means engageable by the conveyer as each work-piece reaches a co-operative position relative to said area and arranged to effect a temporary interruption of the conveyer movement whereby the pieces may be stationary at the time of their engagement by the cyclically functioning printing element; means for accuratley controlling and volitionally varying the location on the work-pieces of the impression produced thereon by the said printing element, comprising means readily adjustable during continued functioning of the apparatus to precisely vary the path of travel of the work-pieces to the printing area in a direction transversely of such path, whereby to exactly vary and control the transverse position of the pieces in relation to said area when engaged by the cyclically functioning printing element; and means operable by the press at the conclusion of its printnig operation to render said movement-interrupting means ineffective, whereby movement of the conveyer may be resumed.

6. The apparatus of claim 4 wherein said means for

varying the position of the workpieces consists of adjustable means for moving said movement-interrupting means in a longitudinal direction with respect to the direction of the conveyer movement; and other means for directing the work-piece carrying portions of the conveyer means in a direction transversely of the movement of the conveyer.

7. The apparatus of claim 6 wherein said longitudinal adjustment means includes guide rail means secured to said apparatus, an adjustable block member fixed on said rail means, screw adjusting means threadably connected to said block member, and a body member slidably disposed on said rail means and carrying said movement-interrupting means and operatively connected to said adjusting means for slidable movement thereby.

8. The apparatus of claim 7 wherein said transverse directing means are carried by said body member and include a transverse screw adjusting means threadably connected to said body member and operatively connected to said directing means to move it transversely a predetermined distance.

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