

Jan. 8, 1935.

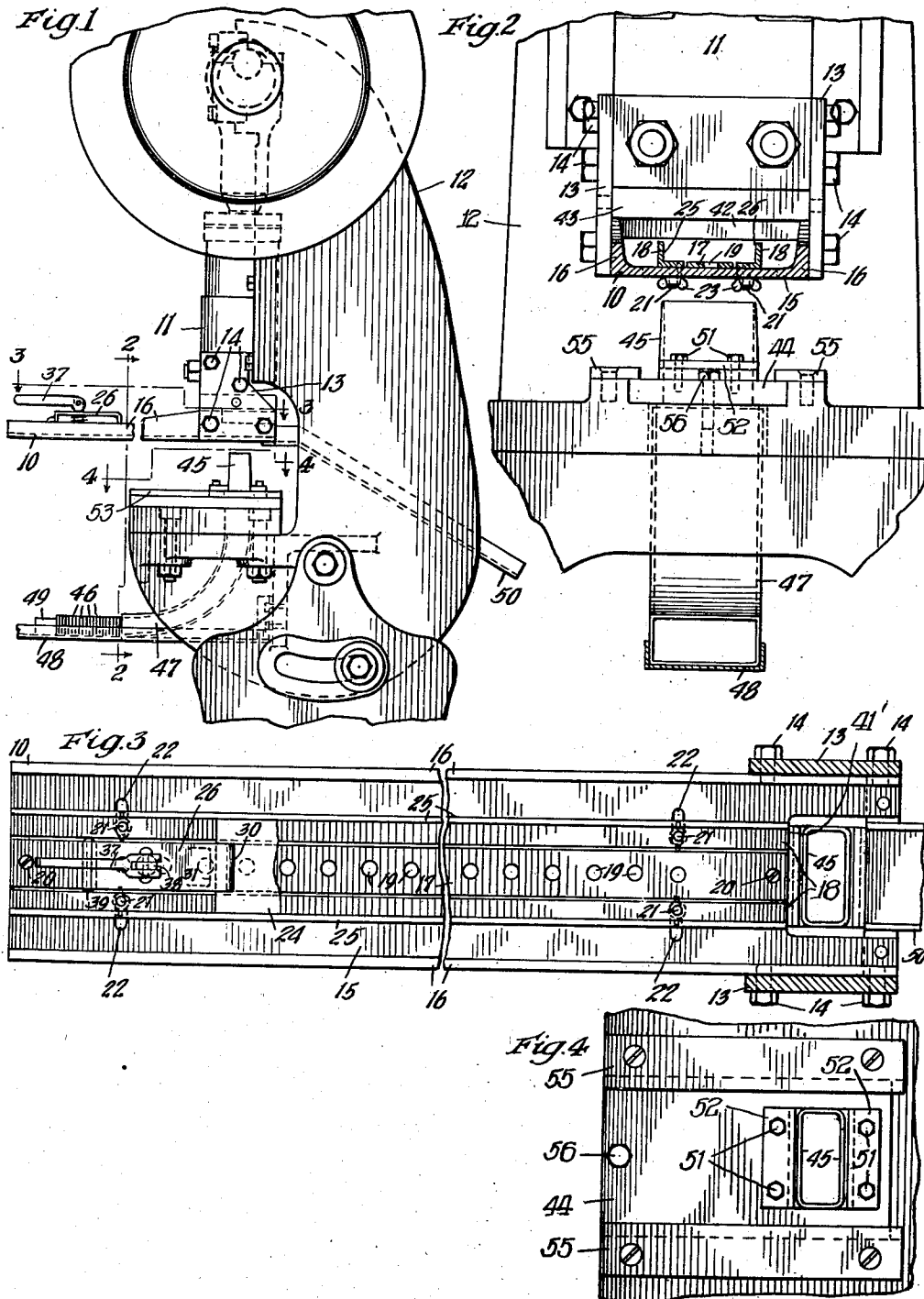
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1,986,983

FEEDING ATTACHMENT FOR PUNCH PRESSES

Filed Oct. 18, 1933

2 Sheets-Sheet 1



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Fig. 5

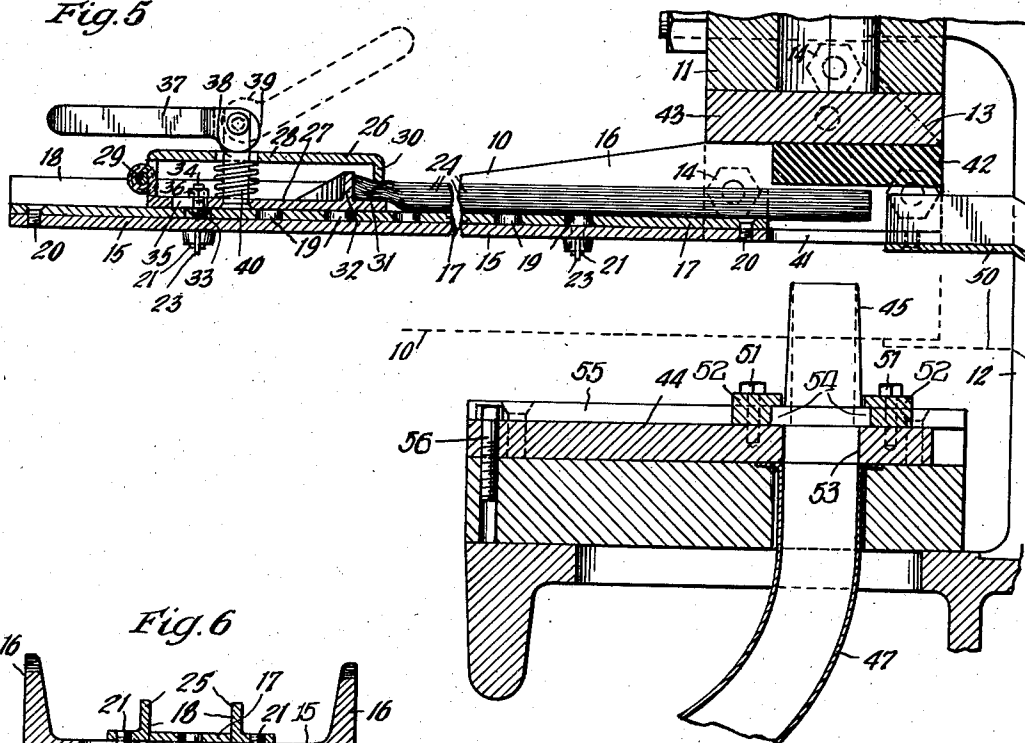


Fig. 6

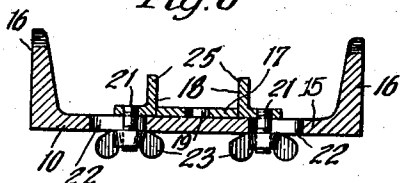


Fig. 7

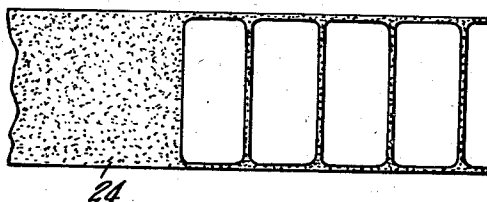


Fig. 8



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UNITED STATES PATENT OFFICE

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FEEDING ATTACHMENT FOR PUNCH PRESSES

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1 Claim. (Cl. 164—20)

This invention resides in the provision of a novel punch press attachment, for use in feeding material such as color chip stock to a cutting die.

The attachment is designed to feed a large number of strips at one time into proper relation to the cutting die of the press, to permit, if desired, the cutting of round, round cornered, square or wedge-shaped chips from the strips; it insures an accurate positioning of the strips; it stacks all of the chips after they have been cut; it is easy for even an inexperienced person to operate; it permits of quick reloading; and it may be readily adjusted for strips of various widths.

In the particular feeding and cutting organization presented herein for the purpose of exemplification, the old practice of cutting chips from stock by pushing a die through the stock has been discarded in favor of a novel and decidedly more advantageous method in which the stock is pushed through a tubular die, which die forms a conduit through which the cut chips are carried away from the cutting zone while maintained in stacked relation. It will be appreciated, however, that many of the other features of the invention are applicable to other methods of cutting, and it will be further appreciated that all the features are susceptible of embodiment in structurally modified forms coming equally within the scope of the appended claim.

In the accompanying drawings:

Fig. 1 is a fragmentary side view of an ordinary punch press equipped with the improved feeding attachment;

Fig. 2 is a vertical section through the attachment, taken on line 2—2 of Fig. 1;

Fig. 3 is a horizontal section through the press, taken above the attachment, on line 3—3 of Fig. 1;

Fig. 4 is a plan view of the cutting die on the bed of the press, taken on line 4—4 of Fig. 1;

Fig. 5 is a longitudinal vertical section through the attachment and adjacent portions of the press;

Fig. 6 is a vertical transverse section through the attachment, corresponding to the sectioned portion in Fig. 2 but showing the guiding angles reversed in position in order to accommodate narrow strips;

Fig. 7 is a plan view of one of the strips, with several round cornered chips cut from the same; and

Fig. 8 is a perspective view of one of the resulting chips.

The attachment which forms the subject mat-

ter of this invention includes a channel 10 which projects horizontally from a position directly beneath the vertically reciprocating head 11 of a punch press 12. The channel 10 is attached to the head by means of a pair of flat plates 13 which are positioned against opposite sides of the channel and head and are rigidly secured thereto by a number of bolts 14.

The channel 10—which is characterized by a wide flat bottom 15 and low side flanges 16—contains a center gauging plate 17 and two side guiding angles 18. The plate 17 is provided with a longitudinally extending row of evenly spaced apertures 19 (see Fig. 5), and is fastened down against the bottom 15 of the channel by screws 20. The angles 18 are fastened down against the bottom 15 at opposite sides of the plate 17 by screws 21 which are anchored in the lower flanges of the angles and extend downwardly through laterally elongated slots 22 in the bottom 15, where they are engaged by readily adjustable thumb nuts 23.

The stacked strips 24 which are to be cut are adapted to rest flatly on the plate 17 with their side edges held against lateral displacement by guiding engagement with the upstanding flanges 25 of the angles 18. If wide strips are to be fed, the angles 18 are placed with their lower attaching flanges toward the inside, as shown in Fig. 2, in order to form a wide guideway between their upstanding flanges, while if narrow strips are to be fed, the positions of the angles 18 are reversed, as shown in Fig. 6. The slots 22 permit of a close conformity between the strips 24 and the sides 25 of the guideway.

The strips 24, if of colored chip paper stock, are ordinarily quite flexible and are rather difficult to manage when handled in the usual way. With this improved feeding attachment, no trouble is experienced at all, as the strips rest flatly on the plate 17 between the guide flanges 25 of the angles 18. The strips at one end are clamped firmly together on a small follow-up carriage 26 which is adapted to be moved along behind the strips 24 in the guideway formed by the plate 17 and the angles 18.

The carriage 26 consists of a small rectangular base 27 and a correspondingly shaped top 28, which top is hinged at its rear end to the rear end of the base by a pin 29. The front end of the top is flanged downwardly to form a gripping jaw 30 which is located directly above a low flat shelf-like surface 31 on the front end of the base. Just behind the surface 31 the base is provided with a small upstanding flange 32 against which

the ends of the strips 24 are adapted to abut. The base 27 of the carriage rests on the plate 17 and is provided with a downwardly projecting boss 33 which is of semi-spherical shape and is adapted to move into each of the apertures 19 in succession, as the operator shifts the carriage forwardly after each cutting operation, thereby accurately indexing the position of the carriage, and consequently the position of the strips, with respect to the plate 17. The boss 33 is preferably formed as the head of a bolt 34 which extends upwardly through a longitudinally elongated slot 35 in the base, where it is engaged by a nut 36, which nut and slot permit adjustment of the boss longitudinally of the carriage. This adjustment can be utilized whenever it is found that the front ends of the stacked strips do not extend far enough over the hereinafter described cutting die after the rear ends of the strips have been clamped in the holder and the boss 33 has been indexed in the first one of the apertures 19. The ends of the strips 24 are caused to be clamped firmly between the jaw 30 and the surface 31, in abutment with the flange 32, by a hand lever 37, which is pivoted to the upper end of a stud 38 which extends through a slot in the top of the carriage. The lever 37 is provided about its pivotal axis with an eccentric hub portion 39 which is adapted to cam downwardly against the top and move into a dead center position, thereby clamping the top tightly against the strips. A spring 40 may be positioned on the stud 38 below the top 26 for raising the latter when the lever 37 is swung into its released position, which is the position shown in dotted lines in Fig. 5.

Where the channel 10 extends beneath the head 11 of the press, the bottom 15 of the channel is cut away to form a rectangular opening 41, and a block 42 of fibre or other suitable platen material is positioned between the side flanges 16 of the channel against the thrust plate 43 of the head in vertically spaced relation to the opening 41. The block 42 may be wedged between the flanges 16 and held by frictional engagement against accidental displacement. The gauging plate 17 and the guide angles 18 preferably terminate flush with the edge of the opening 41.

The stationary lower bed portion of the press is provided with a removable plate 44 in which an upwardly directed hollow cutting die 45 is mounted. In the particular embodiment shown, the die 45 is of rectangular form with the corners rounded in order to cut out colored chips of the unique shape shown in Fig. 8. The upper blade-like edge of the die 45 cuts through the portions of the stack of strips which project over the opening 41 beneath the block 42, cutting the chips cleanly against the block and receiving the cut chips in stacked form within the hollow interior of the die. The cut chips 46, some of which are shown in Fig. 1, move downwardly through the hollow interior of the die upon each successive cutting operation and pass into a tubular chute 47 which is curved from a vertical position to a horizontal one and conducts the chips off

horizontally into a receiving guideway 48. During their passage from the die 45 to the guideway 48, through the chute 47, the chips 46 are maintained in stacked relation to each other. To prevent the first chips cut from falling, a plug 49 of any suitable material, which will frictionally engage the walls of the chute 47, is placed in the top of the hollow die before the press is started and is pushed downwardly by the cut chips along with the latter.

As the chips are cut from the strips 24, the waste stock moves from the channel 10 into an inclined trough 50 which is attached to the channel and moves up and down with the latter. The trough 50 may be used to discharge waste stock into a suitable receptacle behind the press, upon release of the hand lever 37.

The cutting die 45 is detachably secured by bolts 51 and clamping bars 52 to the removable bed plate 44 over an opening 53 in the latter. The clamping bars 52 extend crosswise of the bed in lapped relation to flanges 54 on the base of the die 45, thereby permitting the die to be adjusted laterally with respect to the feeding attachment. The removable bed plate 44 is slidably mounted on the bed between two retaining guides 55 and is locked in position by a screw 56, all as clearly shown in Figs. 4 and 5.

In the operation of the press, the tubular cutting die 45 remains stationary on the bed of the press while the pressure platen, with the feeding attachment, moves up and down, pressing the stock against the cutting edge of the die and forcing the resulting cut chips into the die on each stroke of the press. The lowermost position of the channel member of the attachment is indicated in Fig. 5 by the dotted line 10.

With the above described attachment, the cutting of color chips or other articles from flexible sheet material becomes a very simple matter. After each cutting operation of the press, the operator merely advances the carriage 26 from one of the indexing apertures 19 to the next. The shoulder provided on the front end of the carriage by the clamping jaw 30 will abut with the edge of the block 42 to prevent the carriage from being advanced too far. Since it is merely necessary to lay the carriage 26, with its attached stack of strips 24, down in the channel in order to start the feeding and cutting operations, an extra carriage can be employed if desired and the same reloaded outside of the channel while the first carriage is being used in feeding another stack of strips, thereby eliminating any loss of time for reloading.

I claim:

The combination, with a punch press, of a stationary die mounted on the bed of the press, a guideway for the stock to be cut rigidly mounted on the reciprocating head of the press for movement with the head toward and away from the die, and means for advancing the stock in the guideway.

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