

Feb. 3, 1959

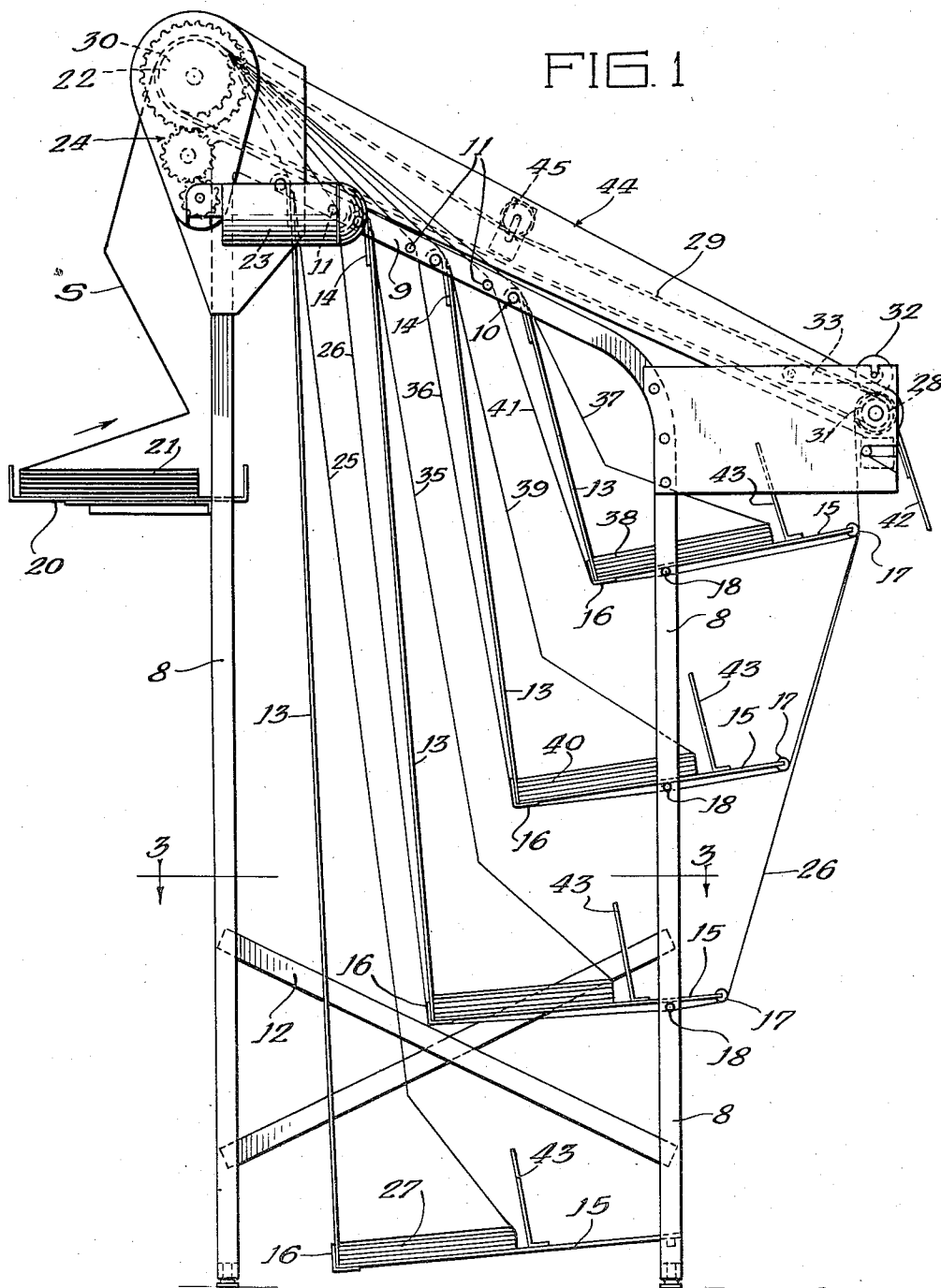
J. J. KESSLER

2,872,187

DELEAVER

Filed Aug. 15, 1955

3 Sheets-Sheet 1



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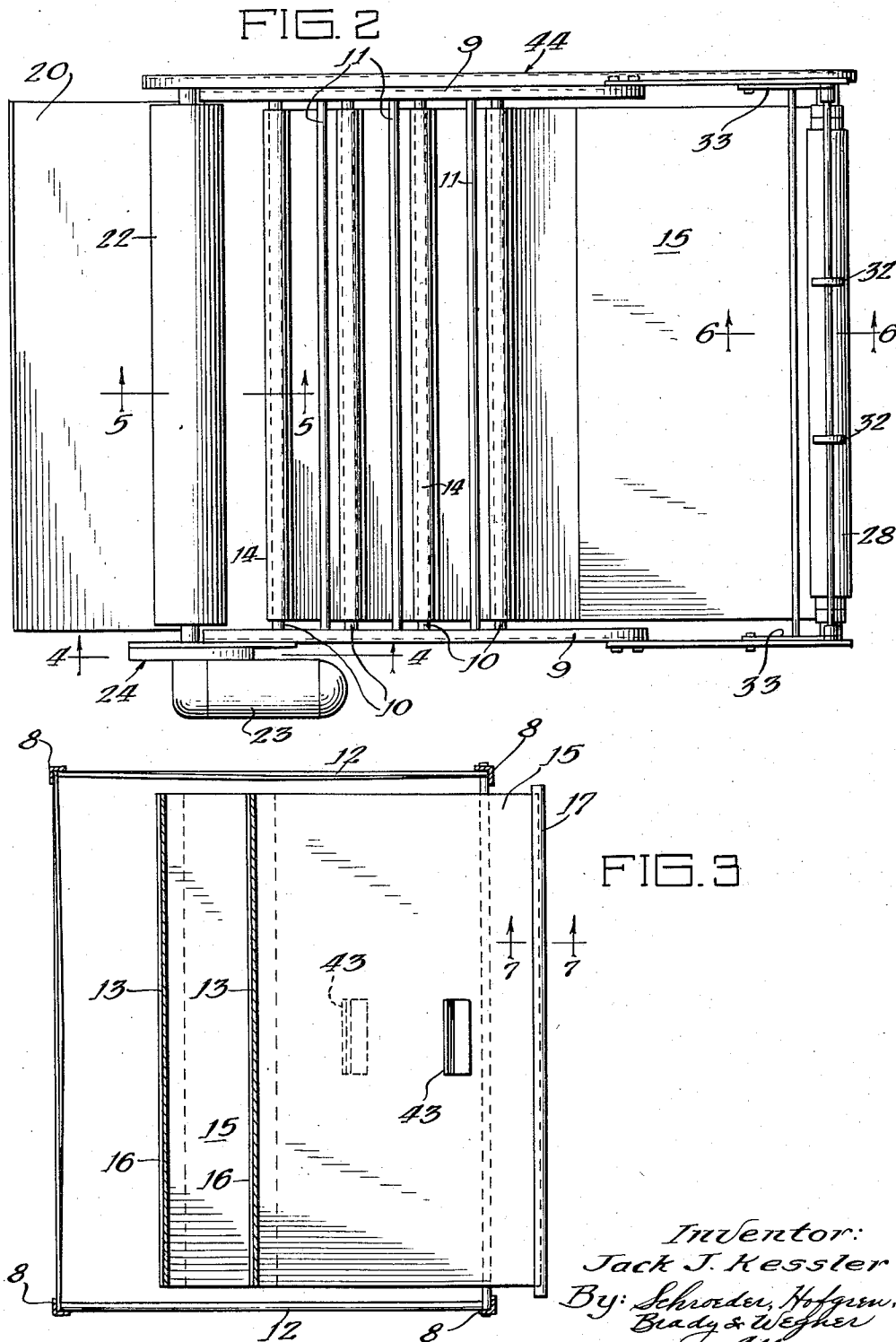
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3 Sheets-Sheet 2



Feb. 3, 1959

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3 Sheets-Sheet 3

FIG. 4

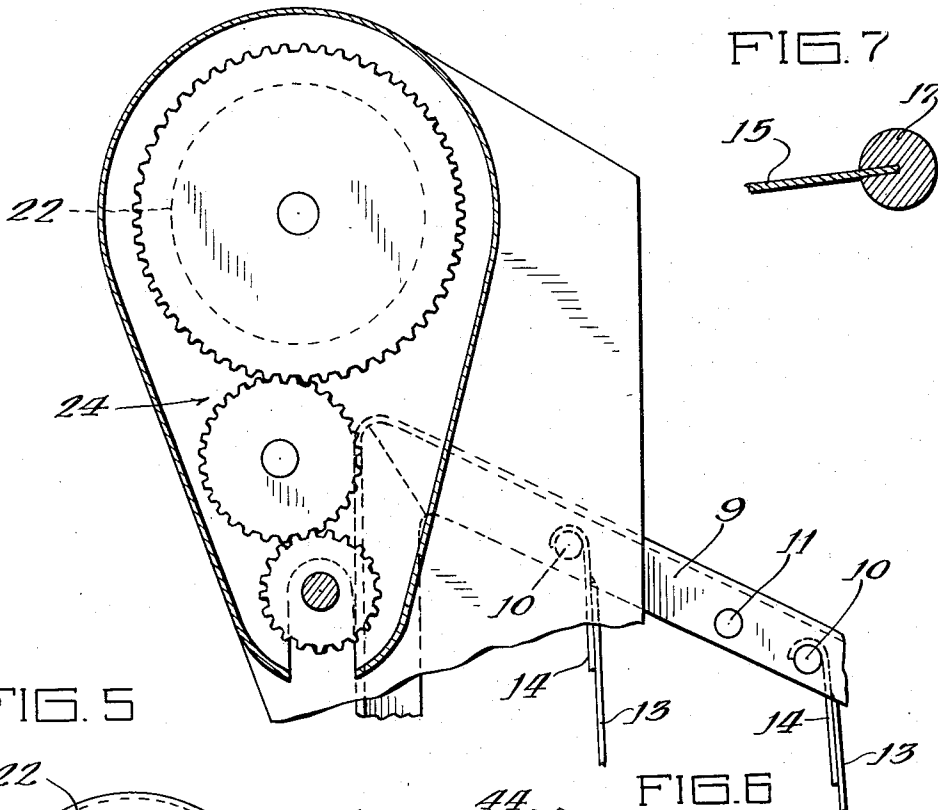


FIG. 7

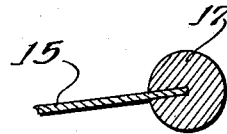


FIG. 5

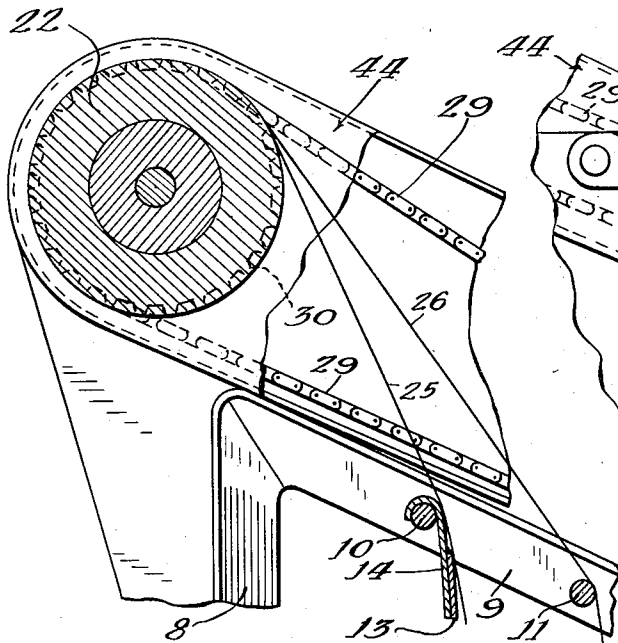
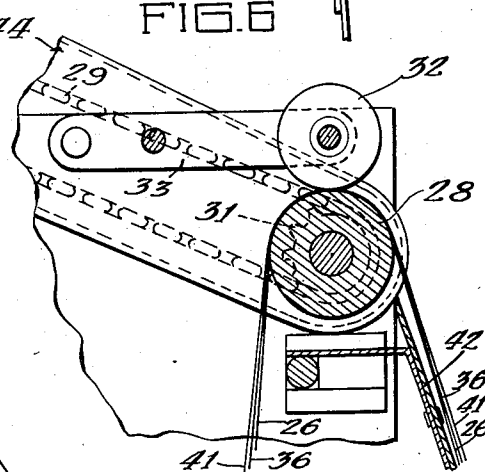


FIG. 6



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1

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DELEAVER

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5 Claims. (Cl. 271—2.1)

This invention relates to machines for separating carbon strips from continuous-form stationery after a writing operation.

The machines used in business offices for separating carbon (transfer strips) from interleaved relation with stationery strips are generally called "deleavers." The mechanisms have generally been of two types, one employing a positive feed of the interleaved strips to the separating structure and the other has generally employed merely a gravity feed of the strips to the deleaver from a tabulating or other machine from which the stationery was passed to the deleaver directly. The previous deleavers of the driven type have generally used pinwheels or coacting friction feed rolls and driven carbon take-up rolls. These deleavers have been rather expensive because of the necessity of an accurately timed relation in the drive of the various rolls employed. The gravity feed type of deleaver has had the disadvantage of often requiring a stopping of the machinery since the carbon and stationery sheets would not always separate one from the other but would bunch up and clog at the entrance to the passages of the deleaver itself.

The present deleaver is one intended to operate at high speed. It is neither a driven type nor entirely a gravity type deleaver in that the carbon strips are frictionally gripped and pulled out from between the stationery strips thus aiding the separating of the strips and the refolding of the stationery strips.

It is the principal object of this invention to provide a new and improved deleaver of the character described.

Another object is to provide a high speed deleaver for interleaved stationery that flows the stationery by gravity to refold packs and aids the separation of the strips by pulling the carbon strips from the stationery in the direction of stationery movement.

Another object of the invention is to practically eliminate static electricity in a deleaver by proper selection of materials and form of structure.

Other objects, features and advantages of the present invention will be apparent from the following description of a preferred embodiment illustrated in the accompanying drawings, in which:

Figure 1 is a side elevational view of a deleaver embodying the present invention;

Figure 2 is a top plan view of the deleaver illustrated in Figure 1;

Figure 3 is a horizontal sectional view through the structure taken substantially along line 3—3 in Figure 1;

Figure 4 is a fragmentary sectional view through the upper part of the structure taken substantially along line 4—4 in Figure 2;

Figure 5 is a fragmentary sectional view taken along line 5—5 in Figure 2;

Figure 6 is a fragmentary sectional view taken substantially along line 6—6 in Figure 2; and

Figure 7 is a fragmentary sectional view through the outer edge of a shelf structure taken substantially along line 7—7 in Figure 3.

2

The operation, in general, of the present deleaver is to carry interleaved carbon and stationery strips over a roller at the top of the apparatus from which the strips fall downwardly into separate chutes formed within the framework of the machine. A stationery strip and a carbon strip pass into each chute over a separate guide bar at the top. The stationery refolds in a zigzag pack on a platform shelf at the bottom of the chute. The carbon strip passes under and around the bottom of the next adjacent platform shelf and then upwardly over a driven roll where it is frictionally gripped so that the strip is actually pulled out from between the shelves. The pull exerted on the carbon strip is in the same direction as the movement of the stationery strips and thus aids the directing of the stationery strips to refolded position as well as in separating the strips as they enter the chutes.

Referring particularly to Figure 1, the framework of the machine is constructed of angle members providing upstanding legs 8 at the four corners and upwardly and rearwardly inclined top frame members 9 which support cross rods 10 supporting the shelf structures and other cross rods 11 provided for the purpose of separating the carbon strips from the stationery strips. Suitable bracing members 12 are provided between the legs of the structure to make it sufficiently sturdy.

The chutes proper include upstanding dividing boards 13 formed of a composition wood fiber board which is secured at the upper end to a small metal strip 14 curved as illustrated more clearly in Figure 4 so as to hook over the cross rods 10. The exposed edges of the boards are carefully tapered and sanded smooth so that as the paper passes over the juncture there is no tendency to catch. At the bottom of each chute there is formed a platform shelf 15 of the same material as the dividing boards 13. These are joined together and reinforced at the juncture by a small metal angle 16 to impart rigidity to the structure. The outer end of each shelf is covered by a rounded dowel 17 as more clearly illustrated in Figure 7. The shelves are supported by cross rods 18 secured between upstanding legs 8 of the basic framework.

The interleaved stationery to be deleaved in the machine may be placed upon a sheet metal shelf 20 secured to the framework. Interleaved stationery "S," illustrated diagrammatically in Figure 1, passes upwardly from a pack 21 over the top of a wooden roller 22 which is driven by a variable speed motor 23 through appropriate gearing 24. The relatively large diameter wooden roller 22 does not grip the stationery but aids in some part to advance the stationery from the pack 21 toward the chutes used for separating the stationery and carbon strips. The lowermost stationery strip 25 is illustrated in Figure 1 as entering over the upper edge of the lefthand dividing wall 13 and into the chute formed by the adjacent dividing walls. The lowermost carbon strip 26 passes over the rod 11 positioned between the adjacent walls and thus over the chute so that the carbon strip passes downwardly and around the bottom of the platform shelf just above the shelf upon which the stationery strip 25 would be refolded into the pack 27. This carbon strip then passes around the end of the shelf and upwardly over a driven roller 28. The roll 28 is driven by a chain 29 passing over a sprocket 30 on the shaft of the big wooden roller 22 and over a similar sprocket 31 on the shaft of the roll 28. The drive of the carbon strips is only frictional with a pair of small pressure rolls 32 pressed by their own weight or by additional spring pressure downwardly against the roll 28. The small rolls 32 are mounted on links 33 so that their weight will be asserted against the upper side of roll 28.

The operation of separating the lowermost stationery strip 25 and its adjacent carbon strip 26 is repeated in each of the chutes. Thus, in the second chute from the left in Figure 1, a stationery strip 35 is separated from its

3

next adjacent carbon strip 36. The carbon strip 36 passes around the bottom of the next above shelf and over the roll 28 just above the carbon strip 26. The particular structure illustrated has four stationery strips and three carbon strips so that the uppermost stationery strip 37 is refolded into a pack 38 on the uppermost shelf while the next stationery strip 39 is refolded into a pack 40 on the next lower shelf. The intervening carbon strip 41 passes around the uppermost shelf and over the feed-out roll 28 along with the other carbon strips. A guiding board 42 may be provided over which the carbon strips may be guided down to a wastebasket or other receptacle as best illustrated in Figure 6.

By providing the wooden roll at the top as well as the wood-fiber material in the shelf structures, static electricity has been reduced to such a point that it is not in the least hampering to the separation of the strips. Any static electricity that is present has a tendency to make the strips adhere rather than separate. It is believed that the pull asserted on the carbon strips in line with the direction of movement of the stationery strips also aids in the separation. Higher speeds are thus attained in operating the deleaver without either breaking the strips or fouling on the dividing chutes. Each platform shelf is sufficiently wide to accommodate various sizes of form lengths and for this purpose the upstanding guide plate 43 on each shelf is made adjustable in position. For deleaving a six-part form, these parts may be refolded with their carbon strips on the bottom shelf 15 and thereafter sent through the deleaver following the first deleaving operation.

The apparatus is generally finished in appearance so that no rough edges are present for clerical workers or others to catch upon and be injured. The chain 29 for driving the roller 28 is thus entirely enclosed within a housing 44 and the slack take-up wheel 45 is mounted in the housing with an exterior adjustment (not shown). The motor is entirely housed with the motor switch and rheostat adjustment built in.

In starting the operation, the operator merely has to thread the individual stationery and carbon strips into their proper locations at the upper end of the chutes and then carry the carbon strips around the bottom of the shelves and upwardly over the roll 28. Thereafter, the motor may be started to drive the apparatus to continuously deleave the stationery strips from the carbon and refold the stationery.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, for some modifications will be obvious to those skilled in the art.

I claim:

1. Apparatus for separating interleaved stationery and transfer strips, comprising: a frame having generally upright side by side chutes each for receiving an individual stationery strip together with a transfer strip from a source of interleaved strips; a shelf at the lower end of each chute, said shelves being vertically spaced in the frame; a strip feeding roll in the frame opposite said shelves and positioned to grip transfer strips after the strips have been led through the chutes and under said shelves to the feeding roll; and means for driving the strip feeding roll for pulling the transfer strips through the chutes to aid advance of the stationery strips toward separate packs on the shelves.

4

2. Apparatus for separating interleaved stationery and transfer strips, comprising: a frame having upright chutes therein, said chutes being formed by spaced upright members each having a platform shelf at the lower end thereof with said shelves being vertically spaced; a transfer strip feeding roll mounted on the frame to one side of said shelves for pulling transfer strips out from between the shelves, each of said chutes having an opening at the top of the frame for receiving a stationery strip and a transfer strip and said transfer strip feeding roll being driven at a speed to place tension on the transfer strips to aid in advancing the stationery strip downwardly toward the chutes and into separate packs on the respective shelves.

3. Apparatus for separating interleaved stationery and transfer strips, comprising: a frame having upright side by side chutes formed by generally upright separating members; a shelf at the bottom of each chute, said shelves being vertically spaced in the frame; a relatively large diameter driven roll above the entrance to said chutes positioned to have interleaved stationery and transfer strips led loosely thereover toward the chutes; and a positive feed means on the frame opposite said shelves to grip and pull transfer strips through and out of the chutes between the shelves in order to aid advance of stationery through the chutes and into separate packs on the shelves.

4. Apparatus for separating interleaved stationery and transfer strips, comprising: a frame having upright chutes side by side with spaced platform shelves at the lower ends thereof for separating individual stationery strips by gravity flow into separate packs on the shelves; a guide member at a high point on the frame above the chutes for supporting interleaved strips led thereover toward the chutes; and a driven transfer strip gripping roll positioned on the frame beyond the chutes for pulling transfer strips through the respective chutes and around the underside of the shelves to aid in advancing the stationery strips over the guide member and into the chutes toward the shelves.

5. Apparatus for separating interleaved stationery and transfer strips, comprising: a frame having upright chutes side by side with spaced platform shelves at the lower ends thereof for respectively separating the interleaved strips and guiding individual stationery strips by gravity flow into separate packs on the shelves; a support on the rear of the frame for a source of interleaved strips; a driven relatively large diameter roller at a high point on the frame between the support and chutes for advancing interleaved strips led loosely thereover toward the chutes; and a driven transfer strip gripping roll positioned on the frame for pulling transfer strips through the respective chutes and around the underside of the shelves to aid in advancing the stationery strips toward the shelves.

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