

May 17, 1938.

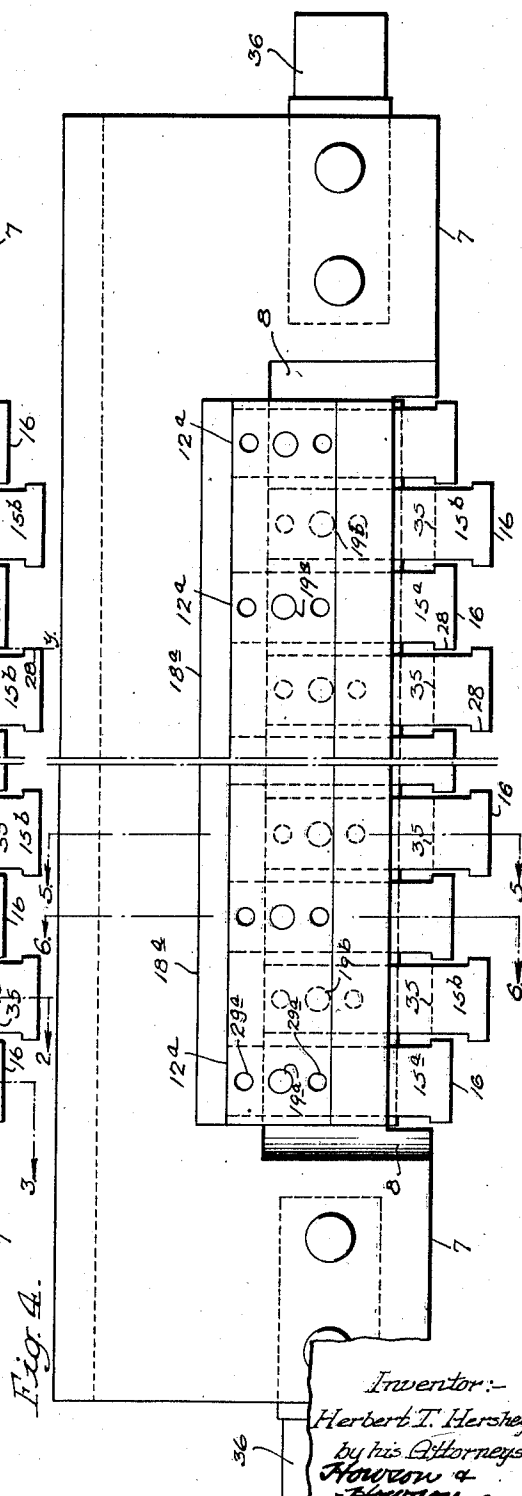
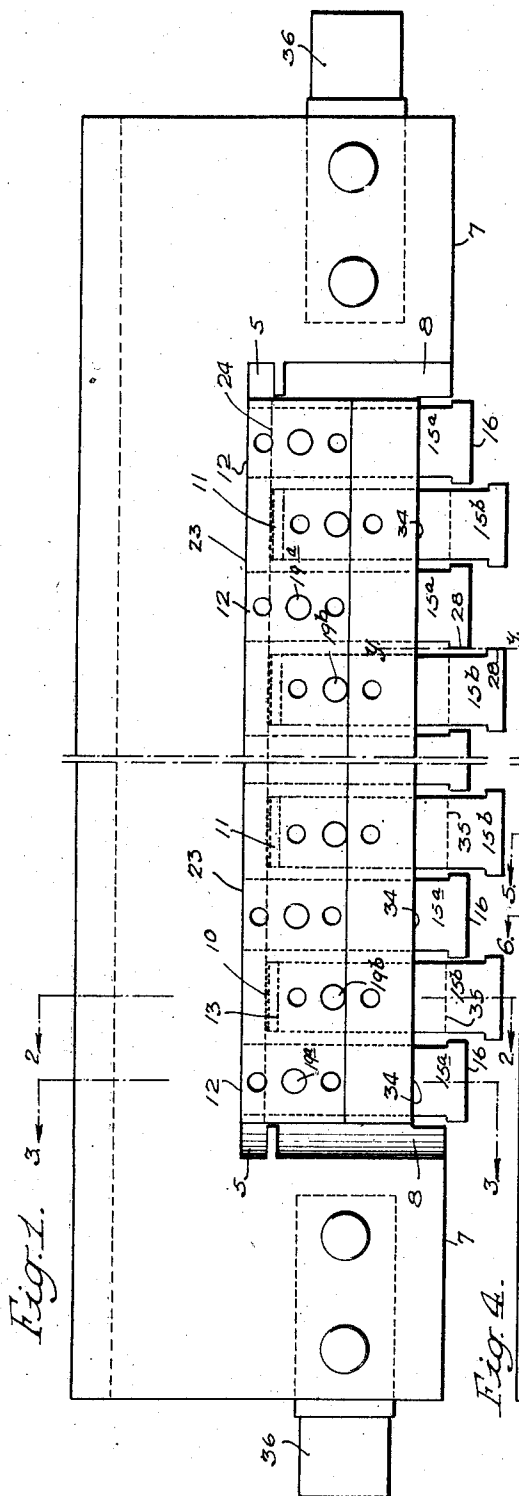
H. T. HERSHEY

2,117,958

STRIPPER FOR DRUM DRIER.

Filed March 21, 1936

3 Sheets-Sheet 1



Inventor:-
Herbert T. Hershey
by his Attorneys
Howson &
Howson

May 17, 1938.

H. T. HERSHEY
STRIPPER FOR DRUM DRIERS

2,117,958

Filed March 21, 1936

3 Sheets-Sheet 2

Fig. 7.

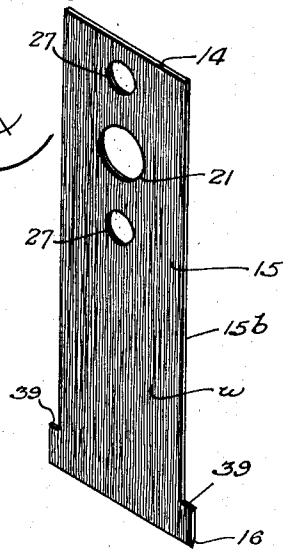


Fig. 2.

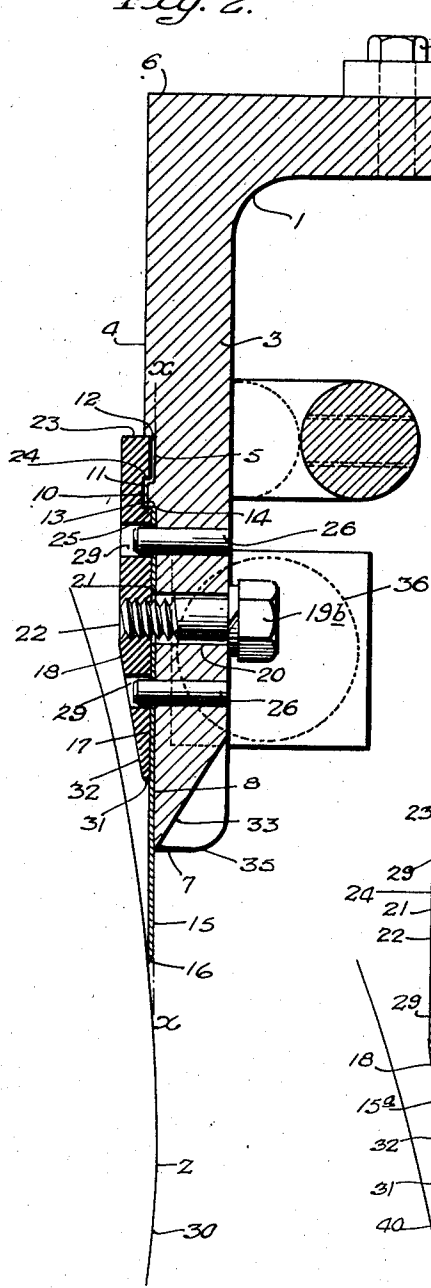


Fig. 3.

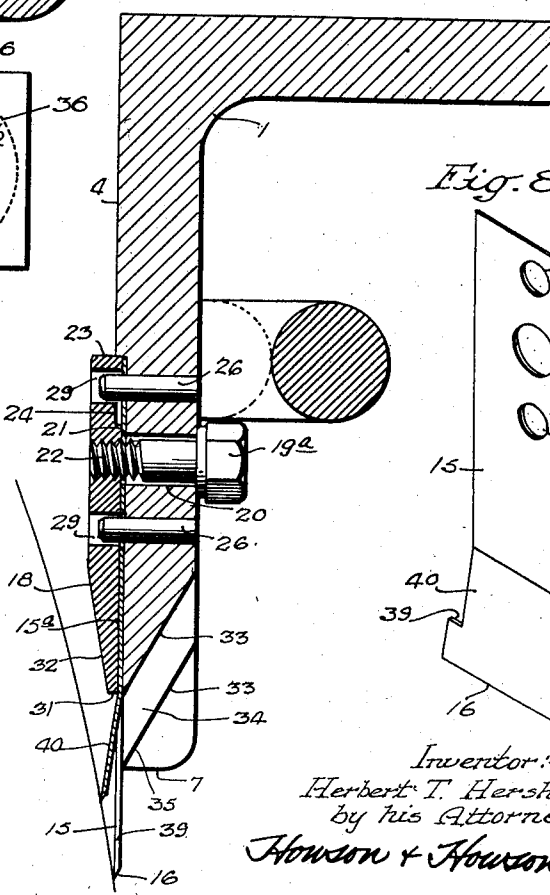
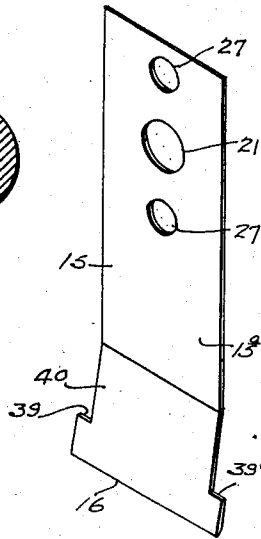


Fig. 8.



Inventor:-
Herbert T. Hershey
by his Attorneys
Howson + Howson

May 17, 1938.

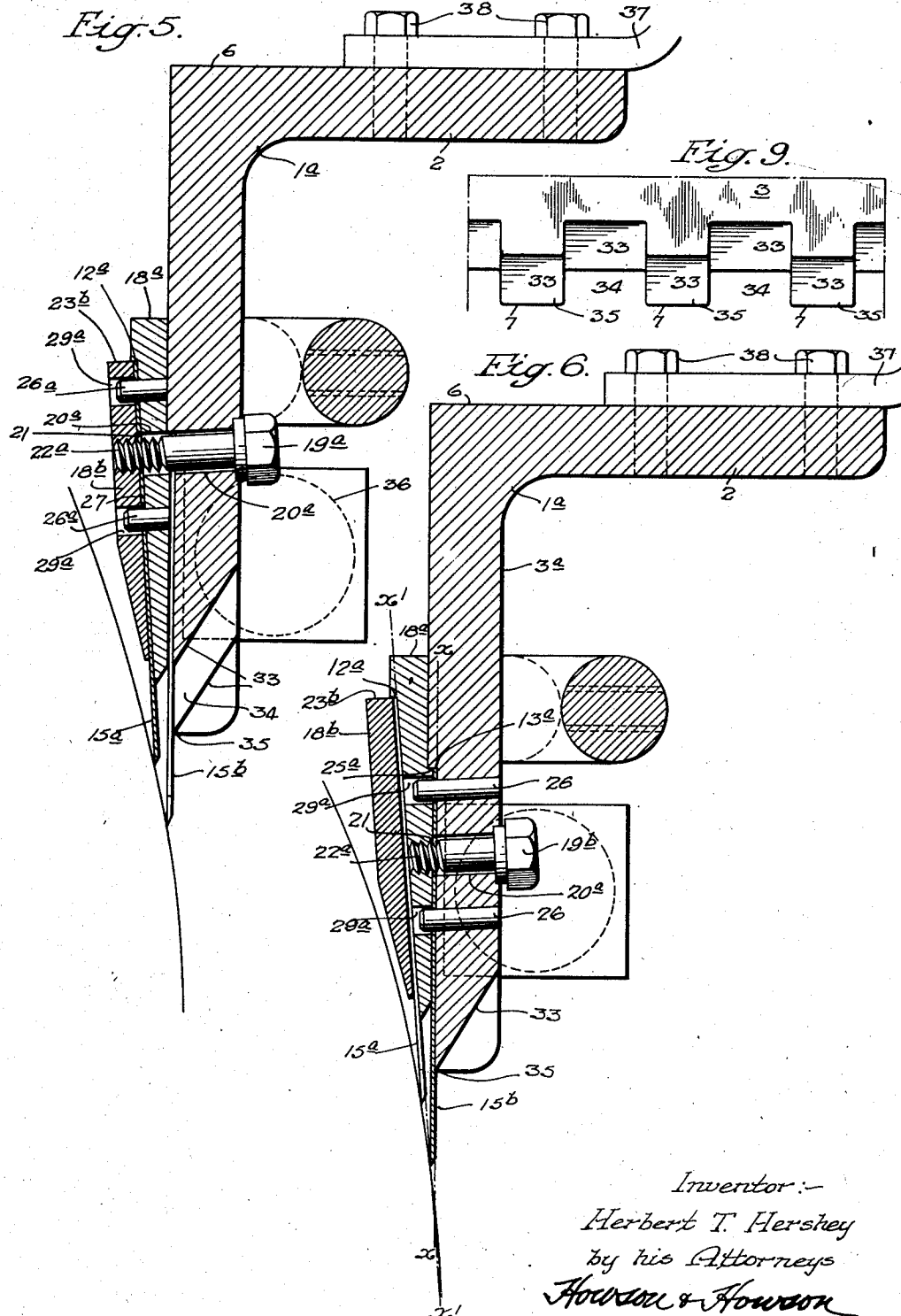
H. T. HERSHEY

2,117,958

STRIPPER FOR DRUM DRIERS

Filed March 21, 1936

3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

2,117,958

STRIPPER FOR DRUM DRIERS

Herbert T. Hershey, Philadelphia, Pa., assignor
to Proctor & Schwartz, Incorporated, Phila-
delphia, Pa., a corporation of Pennsylvania

Application March 21, 1936, Serial No. 70,155

6 Claims. (Cl. 83-91)

This invention relates to improvements in scraping blades or strippers for soap and similar driers of the type employing a broad faced chilling roll on which the material, in a liquid or semi-liquid state, is spread in a thin coating for drying and from which the dried or substantially solidified film is subsequently scraped in the form of chips or flakes.

Prior to the present invention it has been the practice to score or cut completely through the dried film, to the underlying face of the roll, by means of a series of sharp pointed needle-like implements arranged in laterally spaced relation to each other across the face of the roll, to divide the film into ribbons of a desired width. These ribbons are subsequently scraped from the face of the roll to produce the chips or flakes above noted.

In some instances, the stripping of the ribbons from the face of the roll has been accomplished by means of a single blade extending continuously across and engaging the face of the roll from side to side thereof.

In other instances, alternate ribbons have been scraped from the face of the roll by a series of individual blades, each of a width substantially equal to the spacing between the needles, while the intermediate ribbons have been subsequently removed from the face of the roll by a single edged doctor blade, similar to that noted above, arranged with its edge disposed on a line parallel to and in circumferentially spaced relation to the line of engagement of the individual blades with the face of the roll.

In other instances, the needles have been eliminated and the doctor blade which removed the intermediate ribbons from the face of the roll has been replaced by a second series of individual blades arranged in circumferentially spaced relation to the first series of blades and in line with the intermediate ribbons respectively.

In other instances, a single doctor blade has been used without the scoring needles and in order to strip the film from the face of the roll the edge of this blade has been notched to divide such edge into sections, alternate sections being bent at an angle to produce two series of scraping edges in spaced relation to each other circumferentially of the chilling roll, the side edges of the sections of one series being in alignment with the side edges of the other series whereby the full width of the roll is engaged and scraped by the various sections of the blade.

In each instance where the needles were employed for scoring and cutting through the film,

such scoring or cutting shaves off narrow thread-like strips of the film which break up into small granular or powdered portions, which are commonly referred to as "fines", and as the needle points become dull, and thereby increase in width in the course of usage, the quantity of "fines" increased accordingly.

Dulling of the needle points also leaves a small portion of the thickness of the film on the face of the roll at the scorings. These small parts when subsequently scraped off the face of the roll by the single edged doctor blade, in each instance where such blade is employed, results in the further increase in the percentage of fines.

In order to overcome the production of fines by the needles and the single edge doctor blade which removed all of the ribbons, and in the cases where the single edged doctor blade removed only the intermediate ribbons as above noted, two separate series of individual blades have been employed, the forward series for removing the alternate ribbons while the following series removed the intermediate ribbons. The individual blades of each of these two series were arranged for individual and independent movement, with the side edges of the blades of one series aligned with the side edges of the blades of the other series so that collectively the blades engage the full width of the face of the roll, and with individual weights holding the blades respectively in contact with the face of the roll. Such alignment of the individual blades necessitates extreme accuracy in machining of the individual carriers on which these blades were respectively mounted and in the course of usage wear developing between the blade carriers permitted relative lateral shifting of the blades which resulted in the leaving of narrow strips or threads of material on the face of the roll.

In order to overcome this objection, the blades of the second series, and which removed the intermediate ribbons from the face of the roll, were arranged in such a manner that the side edges of the blades of the second series were disposed in overlapping relation to the side edges of the blades of the first series.

Due to the individual mounting and operation of the blades, with each blade carrier having its own independent weight or other tensioning means by which the blade carried thereby was pressed into scraping contact with the face of the roll, some of the blades of the first series would at times fail to remove the full thickness of the film in taking off the alternate ribbons. Consequently, the overlapping edges of the blades

of the series, while removing the intermediate ribbons, would also scrape small parts of the film left on the roll by the blades of the first series, which resulted in the formation of fines.

In order to overcome this objection, the two series of independently movable blades were supplanted by the single blade having the notched cutting edge noted above. In this case the notches were so arranged that the side edges of the sections which removed the alternate ribbons were in permanent alignment with the side edges of the sections arranged to remove the intermediate ribbons. While such an arrangement effectively eliminated the formation of fines, this long thin single blade made of metal having the grain running longitudinally of the blade, with the notches running transversely of or across the grain, when sufficient pressure was brought to bear on the scraping edges to effectively remove the material from the face of the roll, would flex transversely and frequently cause sections of the blade to break off between the notches, as a result of the grain of the metal extending across the roll and the flexing of the blade occurring parallel to the grain.

The object of the present invention is to provide two series of relatively narrow blades arranged on a common rigid holder, with the grain of the metal of the blades extending longitudinally of each blade in a direction circumferentially of the roll and at right angles to the flexing of the blades with the side edges of the blades in alignment one with the other whereby one series of blades will strip the alternate ribbons from the face of the roll and the second series of blades following the first series in the direction circumferentially of the roll will strip off the intermediate ribbons, without the use of preliminary scoring needles.

Another object of the invention is to provide clamping and retaining means for each of the blades of each series whereby the individual blades will be independently secured in a predetermined position on the rigid common carrier in a manner to prevent relative shifting of the blades.

The construction of the roll scraping device forming the subject of the present invention will be fully disclosed hereinafter, reference being had to the accompanying drawings; of which:

Fig. 1 is a rear elevation of the preferred form of blade carrier with the two series of blades secured thereto;

Fig. 2 is a transverse sectional view taken on the line 2—2, Fig. 1;

Fig. 3 is a transverse sectional elevation taken on the line 3—3, Fig. 1;

Fig. 4 is a view similar to Fig. 1, showing a modified arrangement of the elements;

Fig. 5 is a transverse sectional elevation taken on the line 5—5, Fig. 4;

Fig. 6 is a transverse sectional elevation taken on the line 6—6, Fig. 4;

Figs. 7 and 8 are detached perspective views of the blades; and

Fig. 9 is a front view of a portion of the common blade carrier illustrating a detail of the construction.

As shown in Figs. 1, 2 and 3, the rigid blade carrier in the present instance is in the form of an angle bar 1, including a substantially horizontal flange 2 and a substantially vertical flange 3. One face 4 of the vertical flange 3 is provided with a longitudinal groove 5 intermediate its top and bottom edges 6 and 7 respectively. The lower portion of the face 4, between the groove 5 and the lower edge 7 of the flange 3, is cut away to

a depth substantially equal to the depth of the groove 5, as indicated at 8, and substantially from end to end of the flange 3 or at least to the same extent as the groove 5, to provide a blade bearing surface x , x disposed in a plane substantially parallel to but spaced inwardly from the plane of the face 4 of the angle flange 3.

The cutting of the groove 5 and the surface 8 produces a rib 10 therebetween which normally extends substantially the full length of the carrier 1. At relatively spaced places longitudinally of the carrier 1 the rib 10 is cut away to the plane x , x which is coincident with the base of the groove 5 and the surface 8. Cutting away the rib 10 in this manner leaves short relatively spaced sections 11 of the rib remaining and which project outwardly from the blade bearing surface x , x the plane of the outer surface 4 of the flange 3 of the angle carrier 1.

The upper edge 12 of the groove 5 and the lower edge 13 of the rib sections 11 provide longitudinally extending shoulders against which bear the upper edges 14 of the individual scraping blades 15.

As shown in Fig. 1, the blades 15 are divided into two series, those of one series being indicated at 15a while those of the second series are indicated at 15b. It will be noted, upon referring to Fig. 1, that the blades of the series 15a are in staggered relation to the blades of the series 15b and that the blades of the series 15b extend a relatively greater distance below the edge 7 of the carrier 1 than do the blades of the series 15a. It will also be noted that the upper edges 14 of the blades 15a engage the shoulder 12 formed by the upper edge of the longitudinal groove 5 and that the upper edges 14 of the blades 15b engage the shoulders 13 formed by the lower edges of the sections 11 of the longitudinal rib 10. The shoulders 12 and 13 are arranged to take the longitudinal thrust of the blades during the scraping of the material from the face of the chilling roll by the lower beveled edges 16 of the blades 15.

The blades of both series 15a and 15b are held to the carrier 1 between the blade bearing surface x , x thereof and the inner surface 17 of a longitudinally extending clamp bar or plate 18, said clamp plate being secured to the flange 3 of the carrier 1 by two series of clamp bolts 19a and 19b which pass loosely through free openings 20 and 21 in the flange 3 of the carrier 1 and the blades 15 respectively, said clamp bolts being threaded into tapped holes 22 formed in the clamp plate 18.

The upper edge 23 of the clamp plate 18 abuts against the shoulder 12 of the carrier 1 to prevent relative upward movement between the clamp plate and the carrier. The clamp plate 18 is also provided with a longitudinal groove 24 into which the sections 11, 11 of the rib 10 extend, the lower edge of said groove forming a shoulder 25 which bears against the blade abutment shoulders 13 of the carrier 1.

As shown in Fig. 1, there is provided a clamp bolt 19a or 19b for each of the blades 15, the clamp bolts indicated at 19a being in staggered relation to the clamp bolts indicated at 19b in accordance with the staggered relation of the blades 15a and 15b respectively, there being one clamp bolt for each blade supported by the carrier.

Above and below each of the clamp bolts is a dowel pin or other projection 26 which is rigidly secured in or to the flange 3 of the carrier 1 and which projects beyond the blade bearing surface

x, x thereof. Above and below the clamp bolt opening 21 in each of the blades 15 is an opening 27 which snugly fits the projections 26, 26. The snug fitting of the openings 27, 27 around the projections 26, 26 retains each blade 15 in a fixed position on the carrier and prevents lateral shifting of the blades on the carrier whereby the blades are retained with the side edges 28, 28 of the blades 15a and 15b in alignment with each other, as indicated by the line $y-y$ in Fig. 1, so that there will be no overlapping of the edges 28, 28 of the blades on one hand or a gap between the edges 28, 28 of the blades on the other hand, whereby the blades collectively will engage and clean all the film of dried soap or other material from the chilling face z of the chilling roll 30 from side to side thereof.

The clamp plate or bar 18 is provided with openings 29, 29 into which the outwardly projecting ends of the dowel pins 26, 26 extend.

In order to extend the support afforded by the inner surface 17 of the clamp bar 18 as close as possible to the lower beveled edge 16 of each blade 15, the outer surface of the clamp plate 18, adjacent and parallel to the lower edge 31 of said clamp plate, is beveled, as illustrated at 32 in Fig. 2, and the lower portion of the flange 3 of the carrier 1 is beveled upwardly from the lower edge 7 thereof and in a direction away from the blade 15 as indicated at 33 in Fig. 2.

In view of the staggered relation of the lower edges 16, 16 of the blades 15 of the series 15a and 15b respectively, the lower edge 7 of the flange 3 is recessed, as indicated at 34 in Fig. 1 in the area occupied by each of the blades of the series 15a while in the areas occupied by the blades of the series 15b the lower edge 7 of the flange 3 remains intact in the form of lugs or projections, as indicated at 35 in Fig. 1, this arrangement being clearly shown on the opposite face of the carrier 1 in the fragmentary detail view of Fig. 9.

The recessed portions 34, like the projecting portions 35 of the lower edge of the carrier flange 3, are beveled upwardly and outwardly of the blade as indicated at 33 in Figs. 3 and 9.

The carrier 1 is provided with trunnions 36, 36 at the opposite ends thereof and which are adapted to be mounted in suitable bearings formed in or carried by the side frames of the drier (not shown) and which is also provided with suitable bearings (not shown) for rotatably supporting the chilling roll 30. The carrier 1 is adapted to swing about the axes of the trunnions 36 to press the stripping edges 16 of the blades 15 firmly against the film-carrying surface z of the chilling roll 30. Such swinging of the carrier 1 may be provided for in any suitable manner such, for example, as by arms 37 secured to and extending laterally beyond the outer edge of the flange 2 of the carrier 1, said arms being secured to said flange as by bolts 38, necessary pressure being provided by springs stretched between the outer ends of the arms 37 and fixed parts of the machine or by weights fixed to or adjustably mounted on the arms 37.

Swinging of the carrier 1 flexes the blades between the lower edge 7 of the carrier and the lower edge 16 of each blade, and in order to prevent breaking of the blades as a result of such flexing the blades 15 are made of material wherein the grain of the metal extends longitudinally of the blade as diagrammatically illustrated at w in Fig. 7.

As shown in Fig. 7, the lower portion of each blade adjacent the scraping edge 16 thereof is

wider than the upper or body portion of the blade, said blade being reduced at opposite sides throughout the greater portion of its length as indicated at 39, 39 to provide necessary clearance between the blades during said flexing.

As shown in Figs. 3 and 8, the blades of the series 15b are of one plane throughout their length, whereas the blades of the series 15a are bent adjacent the lower scraping edge 16 as indicated at 40, said bend occurring substantially at the lower edge 31 of the clamping plate 18.

In the device shown in Figs. 4, 5 and 6, the blades of the series 15a are arranged in a plane different from that of the plane in which the blades of the series 15b are arranged and by which the bending of the alternate blades as indicated in Fig. 8 is eliminated. In this instance, the blades of the series 15b are clamped against the blade bearing surface $x-x$ of the carrier 1a, in the same manner as above noted. However, the blades of the series 15a are clamped against a different bearing surface x^1-x^1 .

The blade bearing surface x^1-x^1 is formed on the outer face of the clamping plate 18a by which the blades of the series 15b are clamped against the bearing surface $x-x$. The blades of the series 15a are clamped against the bearing surface x^1-x^1 by a second clamping plate 18b.

As shown in Fig. 5, each of the blades of series 15b is held against a shoulder 13a on the flange 3a of the carrier 1a and the clamp plate 18a is provided with a shoulder 25a which bears against the shoulder 13a. The clamp plate 18a, in turn, is provided with a shoulder 12a against which the upper ends of the blades of the series 15a abut and the upper edge 23b of the clamping plate 18b likewise abuts against the shoulder 12a.

In place of the dowel pins for the series of blades 15a being carried directly by the flange 3a of the carrier 1a in this instance, these dowel pins, indicated at 26a are carried by the clamp plate 18a and project through the openings 27 in the blades 15a and into openings 29a formed in the clamp plate 18b. The clamping screws 19a in this instance project through free openings 20a formed in the flange 3a and through corresponding free openings 20a formed in the clamp plate 18a, the threaded ends of the screws 19a in this instance engaging with corresponding threads formed in holes 22a in the clamp plate 18b.

I claim:

1. A device for stripping material from the face of a roll, comprising a plurality of separate stripping blades arranged side by side across the face of the roll and divided into two series with roll scraping edges at the one end of each of the blades of the first series arranged to engage the face of the roll in advance of the corresponding roll scraping edges of the second series circumferentially of the roll, a common rigid carrier for said series of blades, said carrier having a flat planar bearing surface against which one face of each of said blades rests, a clamp plate extending longitudinally of the carrier in contact with the opposite face of each blade, a clamp screw extending through an opening in each blade and securing the clamp plate to the carrier at each blade with the blade clamped therebetween, and a shoulder on the carrier and extending outwardly from said blade bearing surface and engaged by the opposite end of each blade to resist longitudinal thrust of each blade, the shoulders for the first series of blades being arranged in

staggered relation to the shoulders for the second series of blades in accordance with the corresponding staggered relation of the roll scraping edges of the blades of the two series respectively.

2. A device for stripping material from the face of a roll, comprising a plurality of separate stripping blades arranged side by side across the face of the roll and divided into two series with roll scraping edges at the one end of each of the blades of the first series arranged to engage the face of the roll in advance of the corresponding roll scraping edges of the second series circumferentially of the roll, a common rigid carrier for said series of blades, said carrier having a flat planar bearing surface against which one face of each of said blades rests, a clamp plate extending longitudinally of the carrier in contact with the opposite face of each blade, a clamp screw extending through an opening in each blade and securing the clamp plate to the carrier at each blade with the blade clamped therebetween, and a shoulder on the carrier and extending outwardly from said blade bearing surface and engaged by the opposite end of each blade to resist longitudinal thrust of each blade, the shoulders for the first series of blades being arranged in staggered relation to the shoulders for the second series of blades in accordance with the corresponding staggered relation of the roll scraping edges of the blades of the two series respectively, said clamp plate having a longitudinal groove into which the projecting shoulders for the first series of blades extends and a portion above said groove bearing against the blades of the second series adjacent the shoulders for said second series.

3. A device for stripping material from the face of a roll, comprising a plurality of separate stripping blades arranged side by side across the face of the roll and divided into two series with roll scraping edges at the one end of each of the blades of the first series arranged to engage the face of the roll in advance of the corresponding roll scraping edges of the second series circumferentially of the roll, a common rigid carrier for said series of blades, said carrier having a flat planar bearing surface against which one face of each of said blades of the first series rests, a clamp plate extending longitudinally of the carrier in contact with the opposite face of each blade of the first series, a clamp screw extending through an opening in each blade of the first series and securing the clamp plate to the carrier at each blade of the first series with the blade clamped therebetween, said clamp plate having a blade bearing surface for said second series of blades, a complementary clamp plate for said second series of blades, and a clamp screw passing through each blade of said second series and securing the complementary clamp plate to the clamp plate for the first series with the blades of the second series clamped therebetween.

4. A device for stripping material from the face of a roll, comprising a plurality of separate stripping blades arranged side by side across the face of the roll and divided into two series with roll scraping edges at the one end of each of the blades of the first series arranged to engage the face of the roll in advance of the corresponding roll scraping edges of the second series circumferentially of the roll, a common rigid carrier for said series of blades, said carrier having a flat planar bearing surface against which one face of each of said blades of the first series rests, a clamp plate extending longitudinally of the

carrier in contact with the opposite face of each blade of the first series, a clamp screw extending through an opening in each blade of the first series and securing the clamp plate to the carrier at each blade of the first series with the blade clamped therebetween, said clamp plate having a blade bearing surface for said second series of blades, a complementary clamp plate for said second series of blades, a clamp screw passing through each blade of said second series and securing the complementary clamp plate to the clamp plate for the first series with the blades of the second series clamped therebetween, and a pair of projections extending outwardly from the blade bearing surfaces for said first and second series respectively for maintaining said blades independently against lateral movement relative to said bearing surfaces.

5. A device for stripping material from the face of a roll, comprising a plurality of separate stripping blades arranged side by side across the face of the roll and divided into two series with roll scraping edges at the one end of each of the blades of the first series arranged to engage the face of the roll in advance of the corresponding roll scraping edges of the second series circumferentially of the roll, a common rigid carrier for said series of blades, said carrier having a flat planar bearing surface against which one face of each of said blades of the first series rests, a clamp plate extending longitudinally of the carrier in contact with the opposite face of each blade of the first series, a clamp screw extending through an opening in each blade of the first series and securing the clamp plate to the carrier at each blade of the first series with the blade clamped therebetween, said clamp plate having a blade bearing surface for said second series of blades, a complementary clamp plate for said second series of blades, a clamp screw passing through each blade of said second series and securing the complementary clamp plate to the clamp plate for the first series with the blades of the second series clamped therebetween, a pair of projections extending outwardly from the blade bearing surfaces for said first and second series respectively for maintaining said blades independently against lateral movement relative to said bearing surfaces, and a shoulder on and projecting outwardly from each of said bearing surfaces and engaged by the clamped ends of the blades to resist longitudinal thrust of said blades.

6. A device for stripping material from the face of a roll, comprising a plurality of separate stripping blades arranged side by side across the face of the roll and divided into two series with roll scraping edges at the one end of each of the blades of the first series arranged to engage the face of the roll in advance of the corresponding roll scraping edges of the second series circumferentially of the roll, a common rigid carrier for said series of blades, said carrier having a flat planar bearing surface against which one face of each of said blades of the first series rests, a clamp plate extending longitudinally of the carrier in contact with the opposite face of each blade of the first series, a clamp screw extending through an opening in each blade of the first series and securing the clamp plate to the carrier at each blade of the first series with the blade clamped therebetween, said clamp plate having a blade bearing surface for said second series of blades, a complementary clamp plate for said second series of blades, a clamp screw passing through

each blade of said second series and securing the complementary clamp plate to the clamp plate for the first series with the blades of the second series clamped therebetween, a pair of projections extending outwardly from the blade bearing surfaces for said first and second series respectively for maintaining said blades independently against lateral movement relative to said bearing surfaces, and a shoulder on and projecting outwardly from each of said bearing sur-

faces and engaged by the clamped ends of the blades to resist longitudinal thrust of said blades, the clamp plate for said first series of blades having a shoulder engaging the blade thrust shoulders for the blades of the first series to resist movement of the clamp plate of the first series relative to the carrier by longitudinal thrust of the second series of blades carried thereby.

HERBERT T. HERSHEY. 10