April 27, 1937. A. LE R. BOLTON 2,078,218

INTERCEPTING MEMBER FOR PAPER STOCK TREATING MACHINES

Filed Nov. 26, 1934 2 Sheets-Sheet 1

Fig. 1.

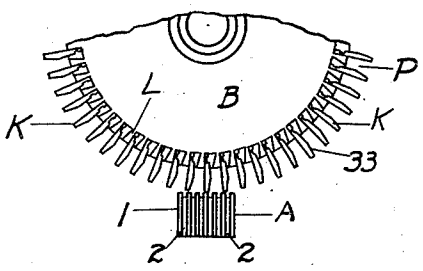
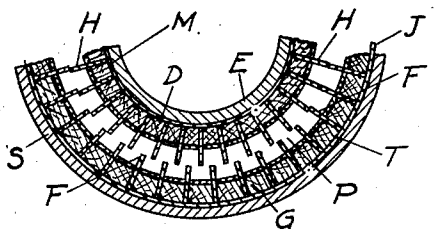


Fig. 2.



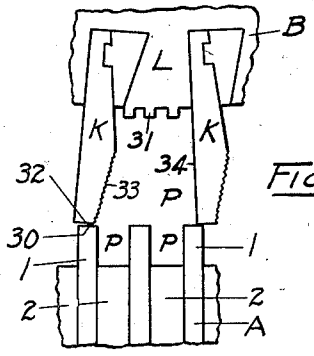


Fig. 3.

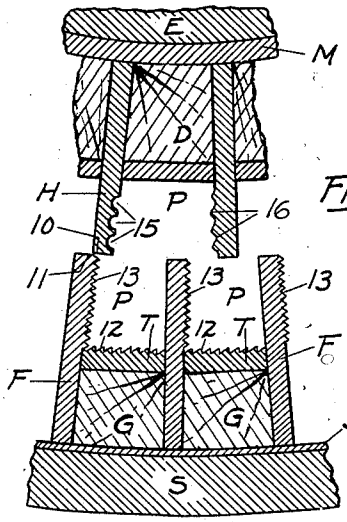


Fig. 4.

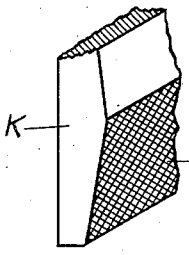
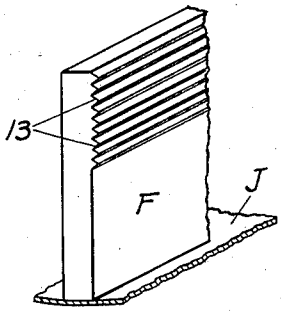


Fig. 5.



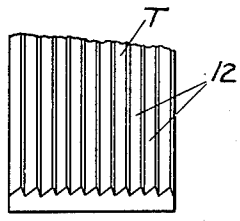


Fig. 8.

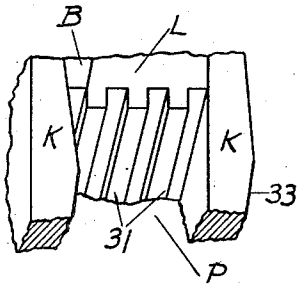


Fig. 6.

Fig. 7.

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INTERCEPTING MEMBER FOR PAPER STOCK TREATING MACHINES

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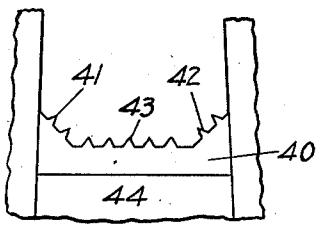


Fig. 9.

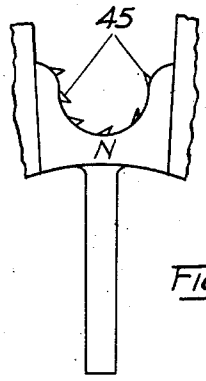


Fig. 10.

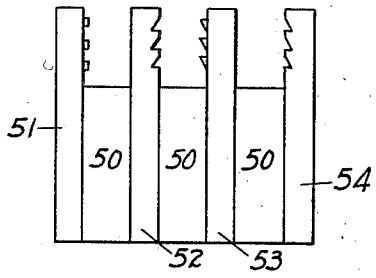


Fig. 11.

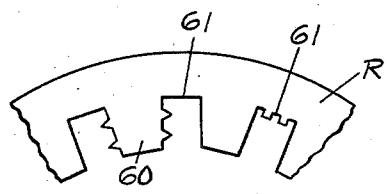


Fig. 12.

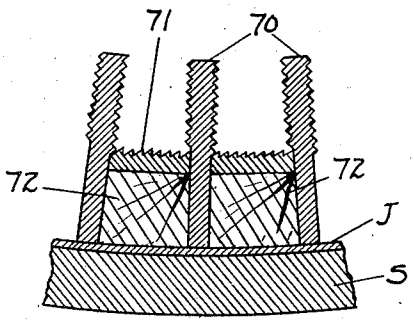


Fig. 13.

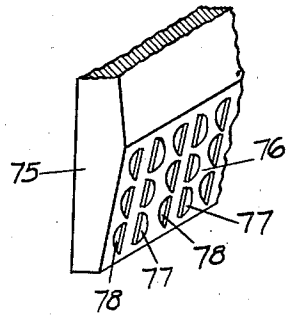


Fig. 14.

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UNITED STATES PATENT OFFICE

2,078,218

INTERCEPTING MEMBER FOR PAPER STOCK TREATING MACHINES

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Application November 26, 1934, Serial No. 754,801

9 Claims. (Cl. 92—22)

This invention relates to paper stock treating machines such as beater engines and Jordan engines.

In beater engines there is a substantially cylindrical roll from the curved surface of which project bars between which are usually some sort of separators which may be wood or metal or wood covered with metal forming longitudinal pockets and these rolls revolve just out of contact with what is known as a bed plate which is usually made up of bars or plates kept apart by and projecting from separators which may be of wood, of metal or wood covered by metal.

Jordan engines include a shell of conical form from the inner face of which project inwardly a series of knives kept apart by separators which may be of wood, of metal or wood covered with metal thus forming longitudinal pockets. In the case of the shell these pockets are usually of zig-zag shape.

The Jordan plug is conical in form and from its curved surface project metal bars from separators which keep the bars apart and which may be of wood, metal or wood covered by metal.

In the beater engine and also in the Jordan, the principal action on the stock to break it up is that between the outer edges or adjoining edges of the bars of the beater roll and the bars of the bed plate and in the Jordan between the outer edges of the knives of the shell and the bars of the plug.

I have found, however, that besides this action between the edges of the metal bars or knives, the stock is caused to whirl around in the various pockets mentioned above by the revolution of the beater roll or Jordan plug and I have found that by interrupting or intercepting this flow, there is a greater breaking up of the stock secured.

It is obvious that I might roughen either one or both faces of the knives or bars and I might roughen the face of the metal truss plate or the metal separator which separates them or I might roughen them all.

Inasmuch, however, as in the assembling of such devices, it is frequently necessary to drive the wooden or wood separators down radially inward, the parts of the knives or bars which are to come in contact with the paper stock must not be provided with projections of such size as to prevent the separators from being driven in and I want it clearly understood that I make no claim in this application for any roughening of the part of the knives or bars which come in contact with the wooden separators or separators of any other material and I make no claim for any ribs or other projections which come below the surface of the roll or the bottom of the pocket which is formed.

My purpose is to substitute for the relatively smooth faces of the pockets which are formed between the knives or bars of a beater engine roll, a bed plate or a Jordan shell or plug, ribs or projections or what might generally be called roughened surfaces. Such roughening might be what is known as knurling or criss-cross grooves or channels; it might be projecting ribs of any one of a number of cross sectional contours and extending in almost any direction; or grooves or channels cut into the faces and of almost any crosswise contour and cut in almost any direction.

As these pockets may be formed by those faces of the knives or bars which project beyond the separators or by the faces of the separators themselves or truss plates attached to the separators or the part of the body of a roll which in some constructions takes the place of separators, I will use as a generic term the word strip. By this I mean a knife, a bar, a truss plate or that part of the body of a roll, shell or bedplate which forms any part of a pocket.

There are so many possible uses for this roughening that I can only give some which are typical.

The term strip includes the parts mentioned above. The term blade is limited to a knife, a bar, truss plate, or other removable, cutting, or brushing strip such as used in most types of Jordan fillings and plugs and beater rolls.

Such blades are preferably and usually of one homogeneous strip of metal with two faces and an edge of less width between them, but in some cases, as in truss plates, they may be of other material. In any case, however, each blade should have at least on one part of one face, certain low parts between which low parts are integral high parts, such as ribs.

The ribs, projections, or roughening may be large or small. They may be of such a character as to break up the large lumps or pieces, or to reduce the stock to a greater degree of fineness. They may be so arranged or sloped as to retard or to accelerate the flow of stock, especially in the Jordan.

In the drawings, Fig. 1 is a diagrammatic fragmentary end elevation showing part of a beater roll and bed plate.

Fig. 2 is a diagrammatic fragmentary vertical section showing part of a Jordan plug and shell.

Fig. 3 is a detail end elevation of part of a beater roll and bed plate embodying this invention.

Fig. 4 is a view similar to Fig. 3 of part of a Jordan shell and plug embodying different forms of the invention.

Fig. 5 is an isometric view of part of a beater bar embodying the invention.

Fig. 6 is an isometric view of part of a beater roll embodying another form of the invention.

Fig. 7 is a fragmentary isometric view of a Jordan knife or bar embodying another form of the invention and Fig. 8 is an isometric view of a truss plate which may be used either in a Jordan or a beater embodying the invention.

Fig. 9 is a fragmetary end view of part of a Jordan shell with a protecting plate or truss plate between the knives.

Fig. 10 is a fragmentary end view of a separator or stave such as used in some types of beater engines.

Fig. 11 is a similar fragmentary end view of a beater bed plate.

Fig. 12 is a fragmentary end view of a section of a cast metal Jordan filling.

Fig. 13 is a fragmentary end view of part of a Jordan filling.

Fig. 14 is a view similar to Fig. 5 of a modification of a beater bar with roughened portions which are curved.

In the drawings, Fig. 1 is a diagrammatic fragmentary end view of a beater roll B and a bed plate A.

K, K represent beater bars which, as shown, are of the type in which one side is flat and the other angular.

L represents that part of beater roll B into which the knives are inserted and, as shown in Fig. 3 and Fig. 8, this is provided with rectangular ribs **31** which run lengthwise of roll B. Besides this, the slanting faces **33** of bars K, which faces form one side of the pockets P are, as shown in Fig. 5, knurled or cut by criss-cross grooves.

As shown bed plate A has bars **1**, **1** and separators **2**, **2** between which are the pockets P, P. As shown, all the faces of these pockets are smooth.

Fig. 2 is a diagrammatic vertical section of a Jordan shell with a plug in place, the parts being exaggerated for clearness.

S represents the shell which is lined with knives F and separators G in the usual manner while T, T represent truss plates fastened to the faces of separators G, G thus forming the bottom of a packet such as P. As shown, these truss plates are provided with angular ribs **12**, **12** which slope up more on one side than the other and extend longitudinally of the Jordan shell. See Fig. 8.

One face of each knife F is formed with long angular ribs **13**, **13**, shown in detail in Fig. 7, and the knives F, separators G and truss plates T are all held together in shell S by a thin metal jacket J.

The edges **11** of knives F are close to the edges **10** of the bars H of the plug E which revolves inside of the shell and these bars H are held in place by bands M in a well known way and are separated by separators D. The faces of some of these bars H may have curved recesses such as **15** and other faces may have corrugations such as **16**.

As shown in Fig. 9, truss plates like **40** which protect the separators **44** may be filleted or formed with side ribs like **41** or **42** and may be provided with roughenings or ribs **43**.

As shown in Fig. 10, where metal separators or staves are used, as in patent to Simonds on Roll for beating engines, No. 1,684,521 of September 18, 1928, such staves N may be provided with angular ribs **45** on the curved face which forms part of the pocket between the beater bars. As shown, these ribs **45** may rake to the right or left.

In Fig. 11 is shown a bed plate, similar to A, such as used in beater engines made up of separators **50**, **50** and bars **51**, **52**, **53**, **54**. As shown, one face of each bar having projections beyond the separators **51** is shown as provided with ribs or grooves of various shapes.

In Fig. 12, I show a cast metal Jordan filling of a well known type having the strips, knives, bars or whatever they might be called which project inward and are integral with the body R of the filling. As shown, that part of the strip of metal which is at the bottom of a pocket, shown at **61**, is provided with rectangular longitudinal ribs while both faces of at least one strip **60** are formed with integral angular longitudinal ribs.

In Fig. 13, I show part of a Jordan filling in a shell S including a jacket J, separators **72**, **72**, knives **70**, **70** and truss or protecting metal strips **71** forming pockets, all three faces of which pockets are roughened.

In Fig. 14, I show a beater bar **75**, the face of which **76** which is exposed to the stock being formed with curved integral projections **77** and recesses **78**.

I claim:

1. The combination with a paper stock treating roll, of stock treating metal blades which extend radially outward from the surface of the roll in planes which are parallel with the axis of the roll so as to form an annular set of longitudinal pockets, one surface of each blade being substantially smooth and another surface which forms a wall of a pocket being formed with integral projecting longitudinal ribs.

2. A blade for revoluble paper stock treating rolls so formed at its lower part as to be detachably attached to such a roll and being formed on each side of its upper part with two substantially smooth faces, one of said faces having a longitudinal rib of V shaped cross section.

3. A metal blade for revoluble paper stock treating rolls so formed at its lower part as to be detachably attached to such a roll and being formed on each side of its upper part with two substantially smooth faces one of said faces having integral rough portions.

4. A paper stock treating metal strip for use in Jordan and beater engines having one of its faces which is to come in contact with the paper stock so roughened as to intercept and break up the paper stock as it passes.

5. A paper stock treating all metal strip, for use in paper stock treating machines which include a revoluble member, having one of its flat faces, which comes in contact with the stock, formed with integral rough portions so formed as to intercept the stock as it moves over such face and to break up the paper stock as it passes.

6. A blade for revoluble paper stock treating rolls so formed at its lower part as to be detachably attached to such a roll and being formed on each side of its upper part with two vertical faces both of which are substantially smooth along their lower parts and both of which are roughened along their upper parts.

7. A detachable, homogeneous, all metal blade for paper stock treating members having two faces and an edge of less width between them,

a part of one of the faces which is to come in contact with the paper stock having low parts and integral high parts between them to intercept and break up the paper stock as it passes.

8. A detachable, homogeneous blade for paper stock treating machines having two faces and an edge of less width between them, a part of one of the faces which is to come in contact with the paper stock having low parts and integral high parts between them to intercept and break up the paper stock as it passes.

9. A detachable, homogeneous blade for paper stock treating machines having two faces and an edge of less width between them so formed at its lower part as to be detachably attached to such a stock treating machine and being formed on each side of its upper part with two substantially smooth faces, part of one of said faces having integral rough portions.

ARCHER LE ROY BOLTON.