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Schwab et al.

[11] **3,840,933**

[45] **Oct. 15, 1974**

[54] **SCRAPING APPARATUS FOR ROLLERS**

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[52] **U.S. Cl.** **15/236,** 15/256.53, 162/272

[51] **Int. Cl.** **B41f 9/10**

[58] **Field of Search** ..... 15/236 R, 105, 104.04, 15/256.53, 256.5, 256.51; 100/174; 162/272; 198/230

[56] **References Cited**

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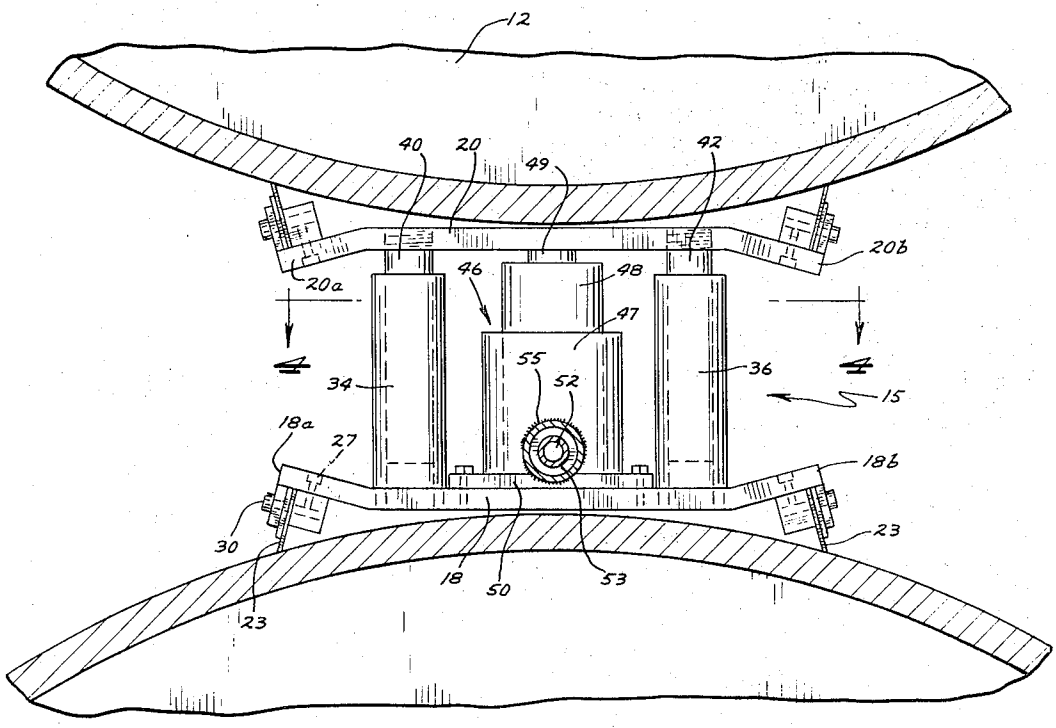
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Primary Examiner—Harvey C. Hornsby
Attorney, Agent, or Firm—Leo Gregory

[57] **ABSTRACT**

A roller scraping apparatus disposed between a pair of rollers of a paper mill consisting of a carriage having a pair of vertically spaced plate members, a scraping blade carried at the end of each said plate members, said blades being angled for scraping engagement with said rollers, posts carried by one of said plate members respectively being disposed in sleeves carried by the other of said plate members to hold said plate members in alignment, a jack member disposed between said plate members centrally thereof, means operating said jack member and an elongated operating handle member in connection with said apparatus.

3 Claims, 6 Drawing Figures



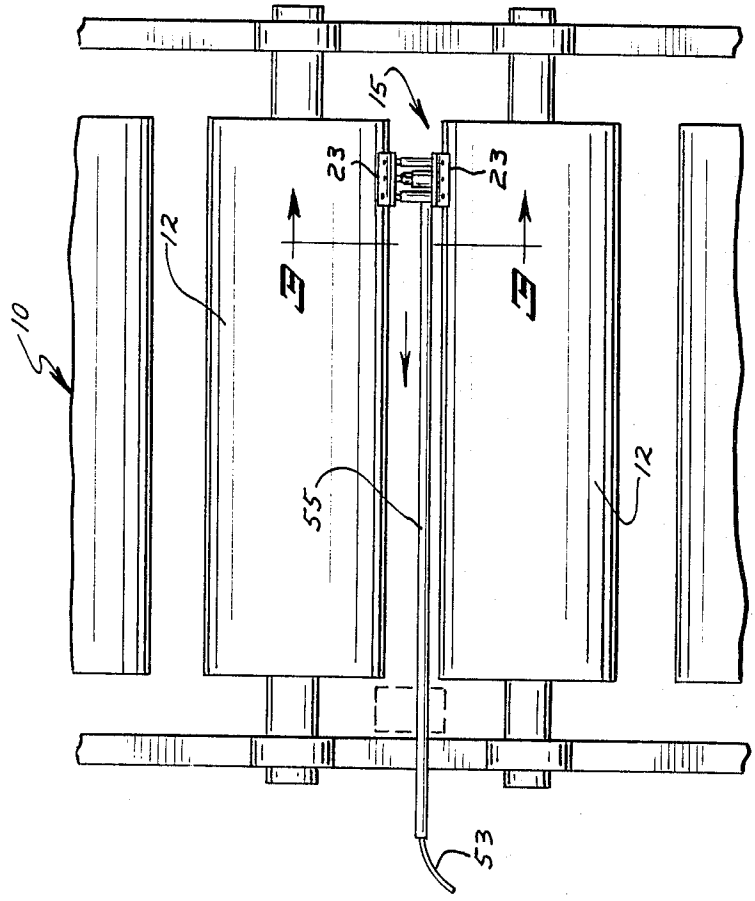


FIG. 2

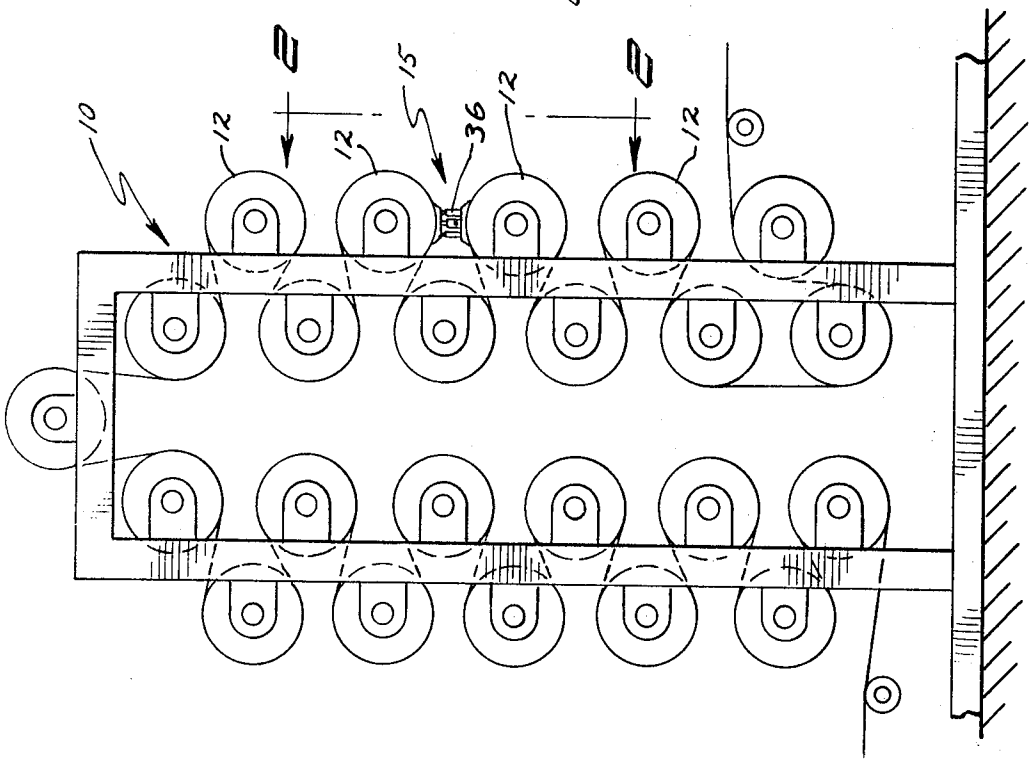
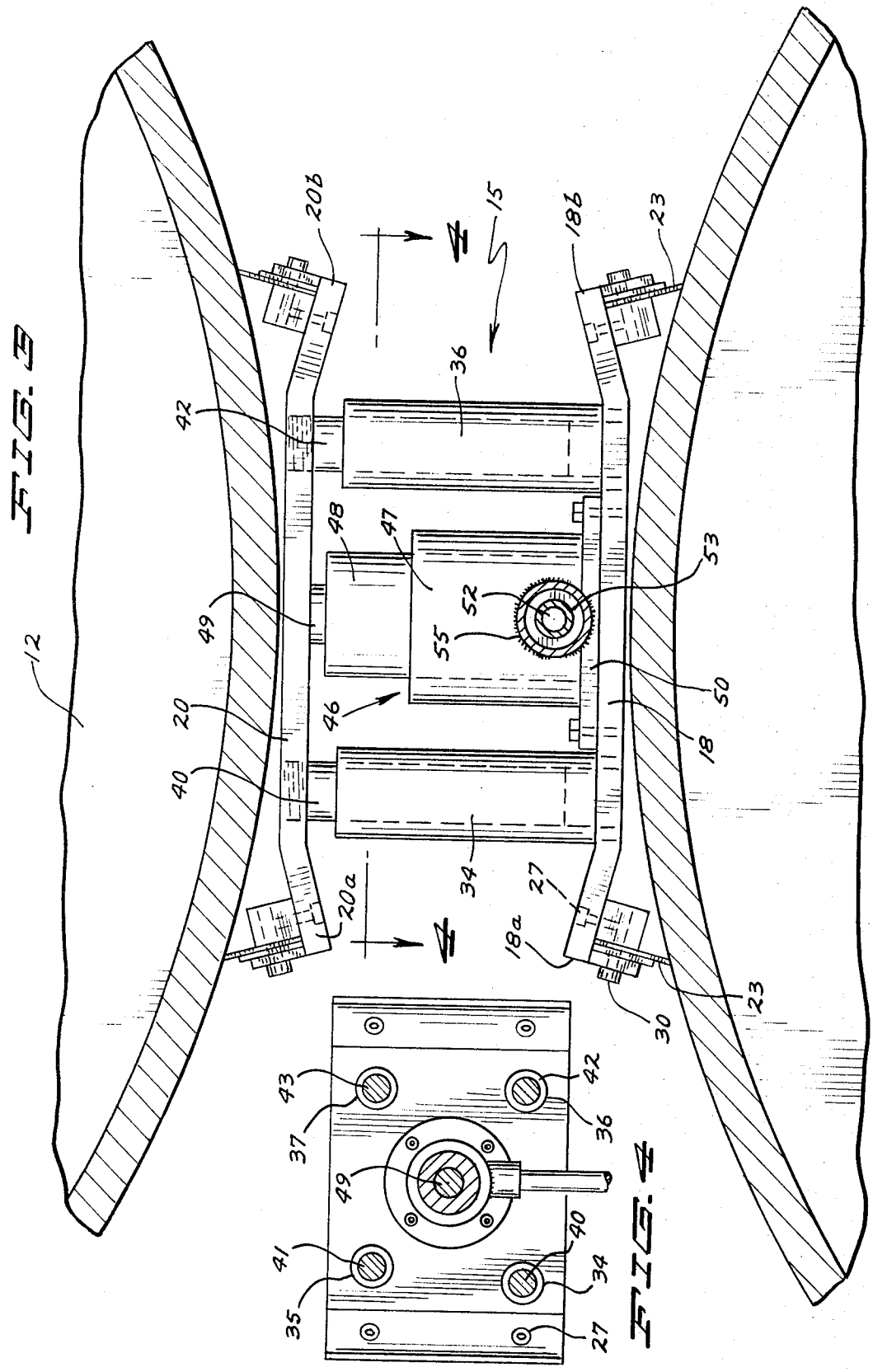


FIG. 1


FIG. 3
12
20b
15
18b
23
36
42
48
47
53
52
49
55
50
46
20
18
40
34
27
20a
18a
23
30

43
42
37
36
49
40
41
34
35
27
FIG. 4

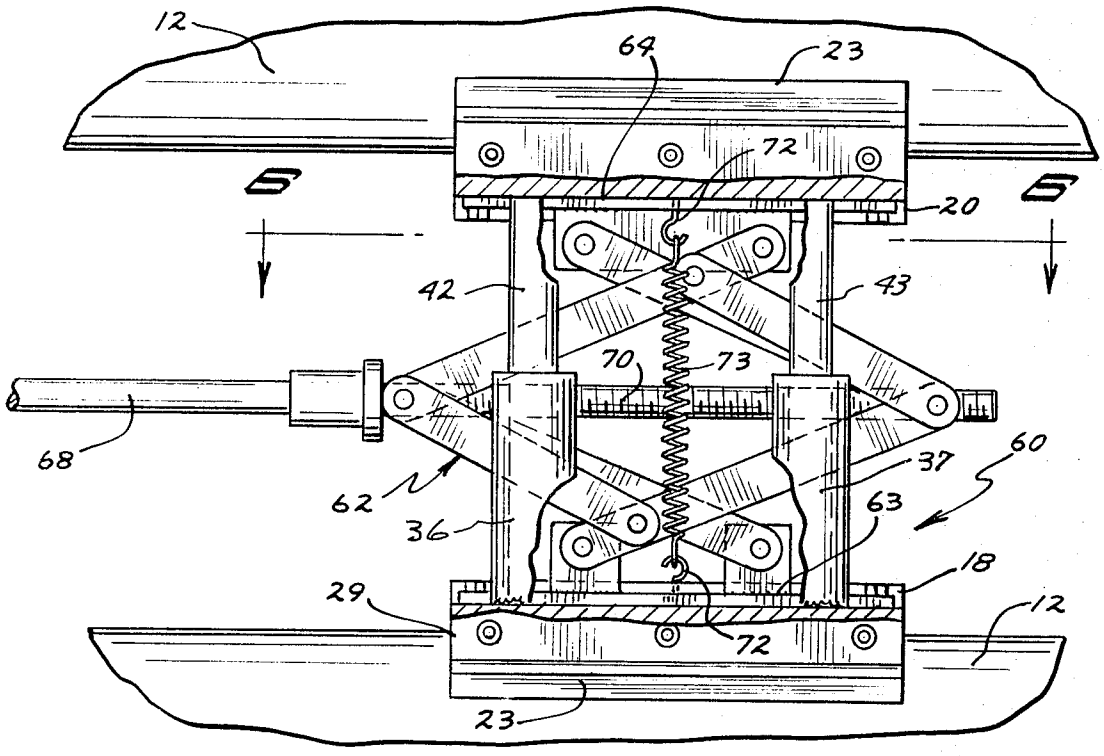

12
64
23
72
6
6
20
42
43
70
73
68
62
36
37
60
63
18
29
72
12
23

FIG. 5

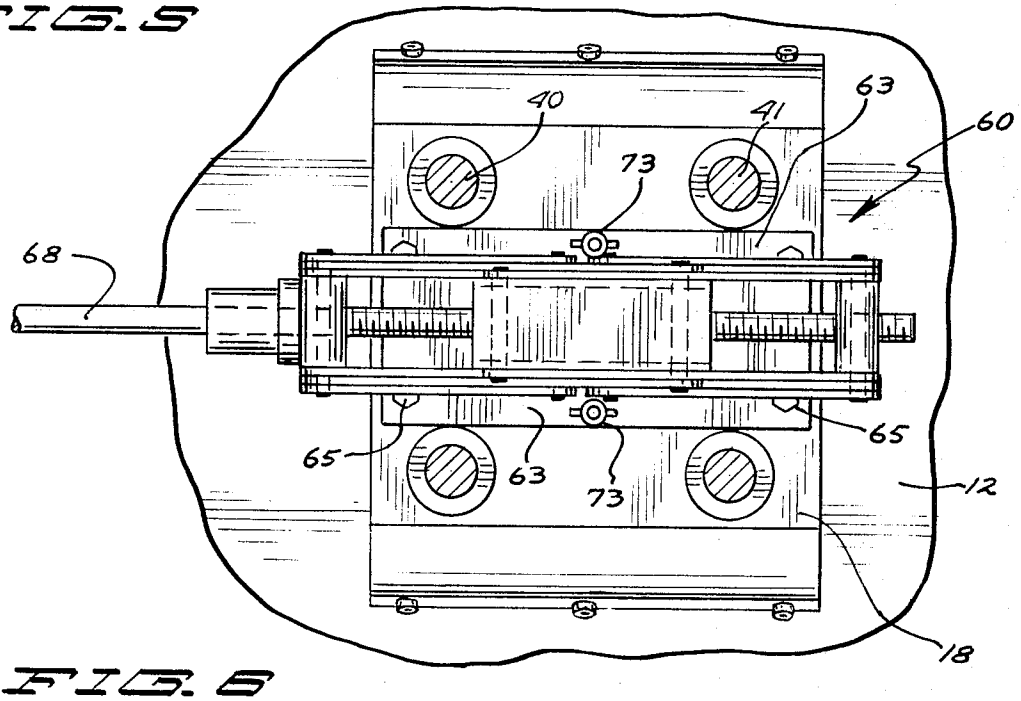

40
41
63
60
73
68
65
65
63
73
12
18

FIG. 6

SCRAPING APPARATUS FOR ROLLERS

BACKGROUND AND SUMMARY OF THE INVENTION

A multiplicity of rollers in spaced relation are used in a paper mill to have the web of paper formed pass thereover. The web in being formed prior to becoming stabilized deposits foreign material on the initial of said rollers engaged and such material accumulates upon said rollers and is required to be removed periodically.

It is a common practice to use a doctor blade for scraping with the blade extending the full length of each roller and which is pivotally related thereto for movement into and out of engagement therewith. This represents an expensive installation.

It is also a common practice to manually scrape the rollers to remove accumulated foreign material therefrom and such a practice requires a shutdown of the mill for some considerable length of time and this in turn results in a substantial loss of machine operating time in addition to the labor cost of cleaning the rollers. It is estimated that the conventional type of mill requires expense on the order of **$600.00** per hour for operation and maintenance during production and this becomes a complete loss when the mill is shut down to have the rollers scraped.

It is desirable to have a portable operable apparatus which can be utilized to scrape the rollers of a paper mill efficiently and quickly with but a relatively small loss of time resulting from the shutdown of the mill.

The invention disclosed herein represents a significant improvement in providing a readily handled manually operable apparatus adapted to scrape pairs of rollers simultaneously at a small fraction of the time otherwise involved in the scraping operation.

It is an object of this invention therefore to provide a simply constructed apparatus readily positioned and manually operable to scrape a pair of rollers simultaneously.

It is another object of this invention to provide a readily handled apparatus which may be manually disposed between a pair of rollers and be positioned therebetween under substantial pressure to have the scraping blades thereof in tight engagement with said rollers.

It is a further object of this invention to provide an apparatus for scraping rollers such as indicated in the preceding object which is adapted to be disposed between the end portions of a pair of said rollers and have means provided to move said apparatus the full length of said rollers from one end thereof to scrape the same.

It is more specifically an object of this invention to provide an apparatus comprising a carriage formed as a pair of vertically spaced plate members having their opposed end portions in a converging angular relationship, each of said end portions carrying a scraping blade, a jack member disposed between said plate members to move said plate members apart into operating engagement with said rollers and an elongated handle for moving said apparatus in a direction axially of said rollers the full length thereof.

These and other objects and advantages of the invention will be set forth in the following description made in connection with the accompanying drawings in

which like reference characters refer to similar parts throughout the several views and in which:

FIG. **1** is a view in end elevation showing the invention herein on a reduced scale in operating position;

FIG. **2** is a broken view on an enlarged scale in front elevation taken on line **2—2** of Fig. **1** as indicated;

FIG. **3** is a view of the invention herein on an enlarged scale in end elevation in operating position with portions thereof being in section and other portions thereof being broken away;

FIG. **4** is a view in horizontal section taken on line **4—4** of FIG. **3** as indicated with a portion thereof being broken away;

FIG. **5** is a broken view in side elevation of a modified form of the invention herein with some portions thereof being broken away; and

FIG. **6** is a view in horizontal section taken on line **5—5** of FIG. **4** as indicated.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring to the drawings, a paper mill is indicated in FIGS. **1** and **2** by the reference numeral **10** which mill includes rollers **12** and disposed between a pair of said rollers in operating position is the apparatus **15** which comprises the subject matter of the invention herein. Figs. **3** and **4** show said apparatus on an enlarged scale.

Referring to FIG. **3**, said apparatus **15** comprises a pair of spaced plate members **18** and **20** respectively forming a bottom and top plate. Said plate members are substantially rectangular in plan having opposed angular converging end portions **18A–20A** and **18B–20B** respectively.

Carried at each of said end portions and extending thereacross are scraping or doctor blades **23.** All of said blades are here indicated by the same reference numeral and are all removably secured in operating position in the same manner as will be described in detail with reference to the end portion **18A**. A bar **25** here shown as being rectangular in cross-section is bolted across said end portion **18A** spaced inwardly of the free end thereof and being secured by bolts **27.** A plate member **29** facing the outer side of said bar **25** adjacent the free end of said end portion **18A** extends outwardly vertically of said bar **25** and is secured thereto by bolts **30.**

Disposed between said plate member **29** and said bar **25** and extending outwardly vertically thereof is one of said scraping or doctor blades **23** which is apertured to receive therethrough said bolts **30** and be secured thereby in operating position.

Said end portions **18A–18B** and **20A–20B** are appropriately angled to have said doctor blades **23** in an appropriate scraping position with reference to the surface portions of the rollers **12.**

Upstanding from said bottom plate member **18** are two pairs of opposed sleeves **34–35** and **36–37,** said pairs of sleeves being respectively adjacent the end portions of said plate member **18** and are threaded thereinto in a conventional manner as indicated.

Depending from said upper plate member **20** are posts or pins **40–41** and **42–43** threaded into said plate member as indicated and the same are respectively positioned to be aligned with said sleeves to be slidingly received therein. Said sleeves in said posts maintain said plate members **18** and **20** in aligned superposed positions.

Disposed on said plate member **18** spaced between said sleeves is a jack **46** indicated here as a hydraulic jack of a conventional design having a base plate **50** secured by bolts **51** having upstanding therefrom a body portion **47** having a piston **48** in connection therewith, said piston having an upper end portion **49** of reduced transverse dimension having engagement with the plate member **20.** Said hydraulic jack is shown having an inlet **52** into said body portion **47** with a line **53** running from said inlet to a suitable source of hydraulic fluid under appropriate pressure. Secured to said body portion by an appropriate fitting is a rigid tubular member **55** forming a handle and being of sufficient length to move said apparatus **15** the full length of the rollers **12.** The hydraulic tube **53** will be disposed conveniently through said rigid tubular handle **55.**

OPERATION

In operation, the hydraulic jack will be in a lowered position and the apparatus **15** will be positioned between a pair of rollers **12** as indicated in the Figs. Said apparatus will be positioned between the pair of end portions of said rollers. The hydraulic jack will be elevated for a pressure engagement of the blade members **23** with the adjacent surfaces of the rollers **12.** The rollers **12** will then be rotated and the surfaces thereof will be scraped clean by said blade members. As this operation continues, an operator will by means of the handle **55,** move the apparatus **15** lengthwise or axially of the rollers from one end to the other and back to have the surfaces thereof scraped clean.

The hydraulic jack is then released as each pair of rollers is cleaned and the apparatus **15** is positioned between another pair of rollers for a repetition of the same operation.

MODIFICATION

With reference to FIGS. **5–7,** a modification is shown of the apparatus above described with said modified form being indicated generally by the reference numeral **60.**

All the portions of the modified structure which are identical with the structure above described will be indicated by like reference numerals and only the changed or modified structure will be described in detail.

In place of the hydraulic jack described in connection with the apparatus **15** first above described, there is here provided a conventional type of a scissor jack **62** being secured to a bottom plate member **63** which in turn is secured by bolts **65** to the bottom plate member **18** and said jack carries a top plate **63** which is secured by bolts **65** to the upper plate member **20.** Said scissor jack is suitably of a type well-known in the art and it is believed that no further description thereof is required. An operating handle **68** raises and lowers said jack by operation of the screw member **70.** The operating handle **68** will be of a length corresponding to that of said handle member **55. 7**

In connection with said jack a pair of transversely spaced retraction springs **73** secured by hooks **72** carried by the plate members **63** and **64** are provided.

The apparatus above described has been tested under operating conditions and has proven to be unusually successful both as to effectively cleaning the surfaces of the rollers and as to the substantial savings in the time required to clean the rollers compared to the time required by other means used. The investment required for the apparatus herein is substantially less than that which would be required for the installation of a doctor blade for each of the rollers such as is done.

It will of course be understood that various changes may be made in form, details, arrangement and proportions of the parts without departing from the scope of the invention herein which, generally stated, consists in an apparatus capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. A scraping apparatus to be disposed between a pair of paper mill rollers having in combination

a pair of vertically spaced plate members having opposed end portions,

a scraping blade member carried at each of said end portions,

means disposed between said plate members holding said plate members in aligned vertical relationship,

means disposed between said plate members moving said blade members into operating engagement with the adjacent surfaces of a pair of said rollers,

said first-mentioned means comprises

a pair of sleeves carried by one of said plate members, and

a pair of posts carried by the other of said plate members respectively received into said sleeves and movable relative thereto.

2. The structure set forth in claim **1,** wherein

said second mentioned means comprises a hydraulic cylinder,

a piston operable by said cylinder engaging one of said plate members, and

means connecting said cylinder with a supply of hydraulic fluid under pressure.

3. The structure set forth in claim **1,** wherein

said second mentioned means comprises a jack member, and

means operating said jack member moving said plate members and the scraping blades carried thereby in directions away from and toward one another.

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