Aug. 20, 1935. R. RUEMELIN 2,012,055

SAND BLAST CURTAIN

Filed Feb. 29, 1932 2 Sheets-Sheet 1

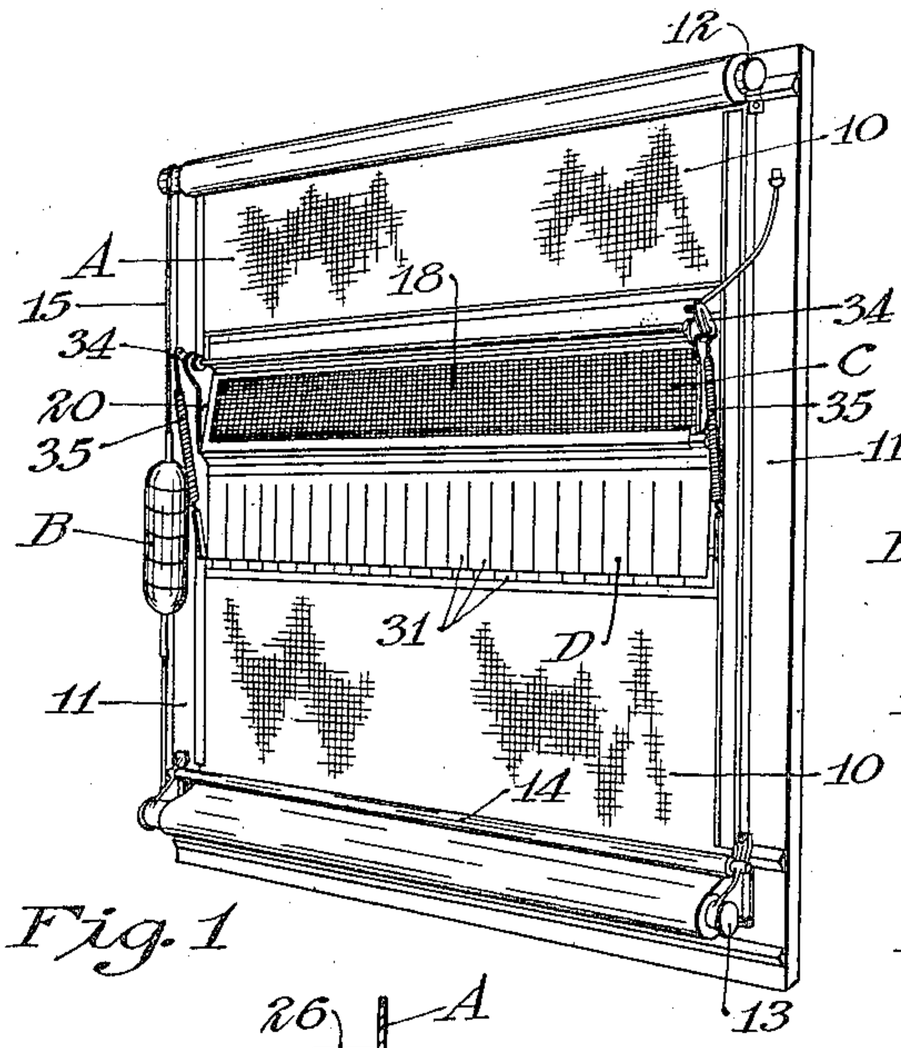

Fig. 1

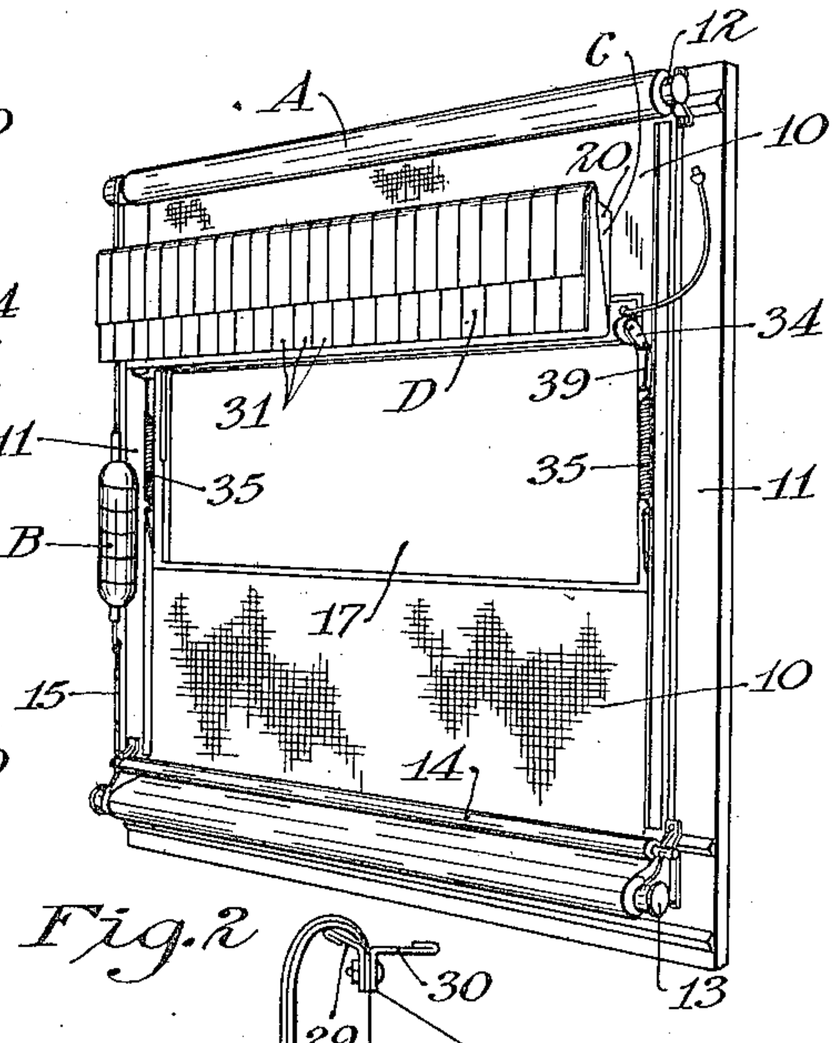

Fig. 2

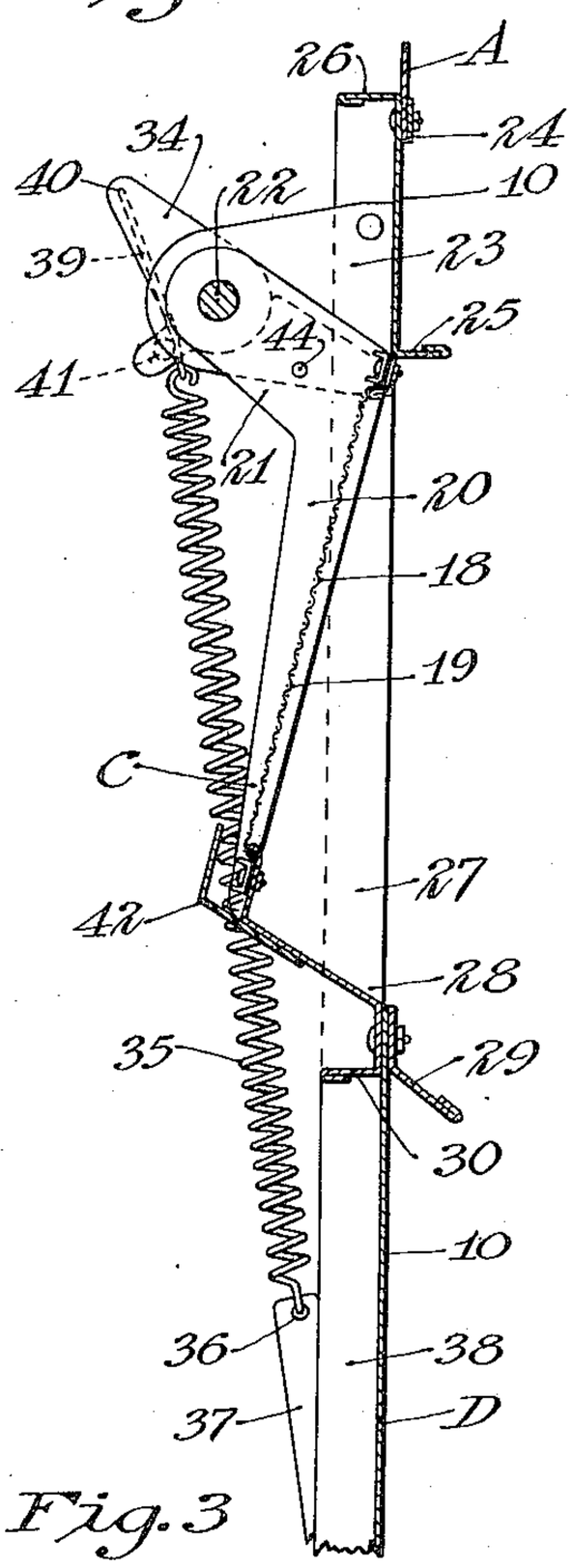

Fig. 3

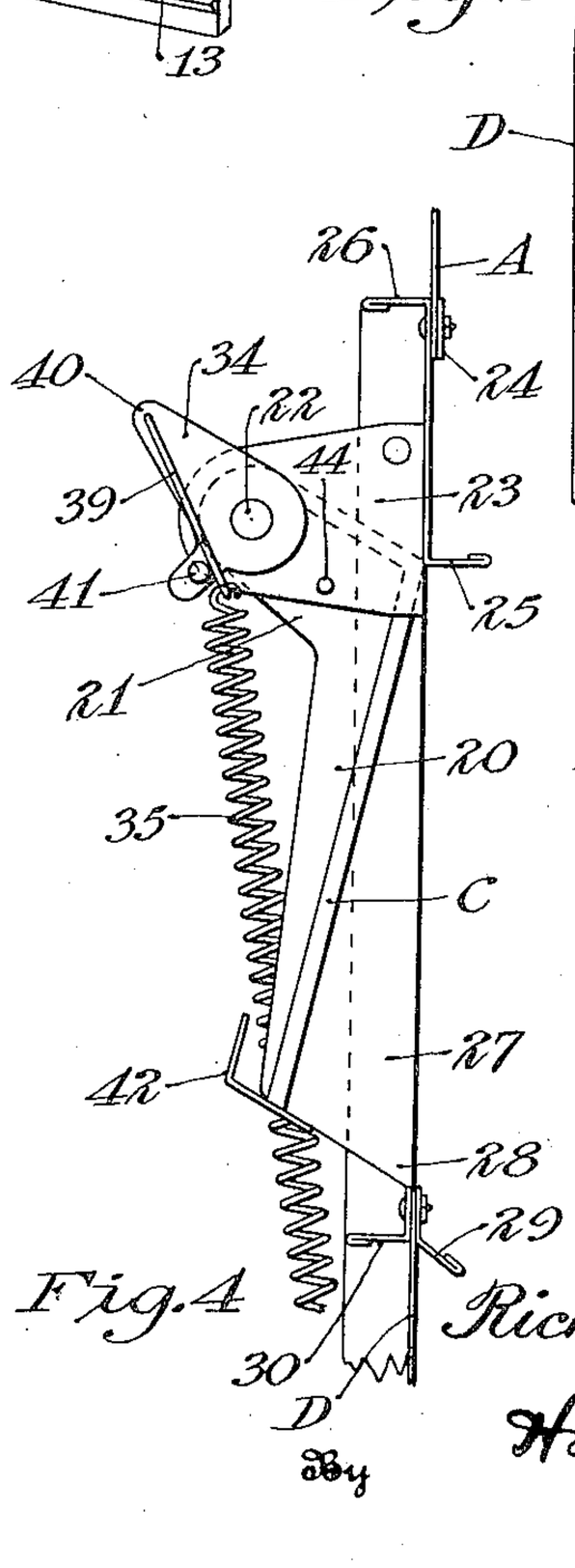

Fig. 4

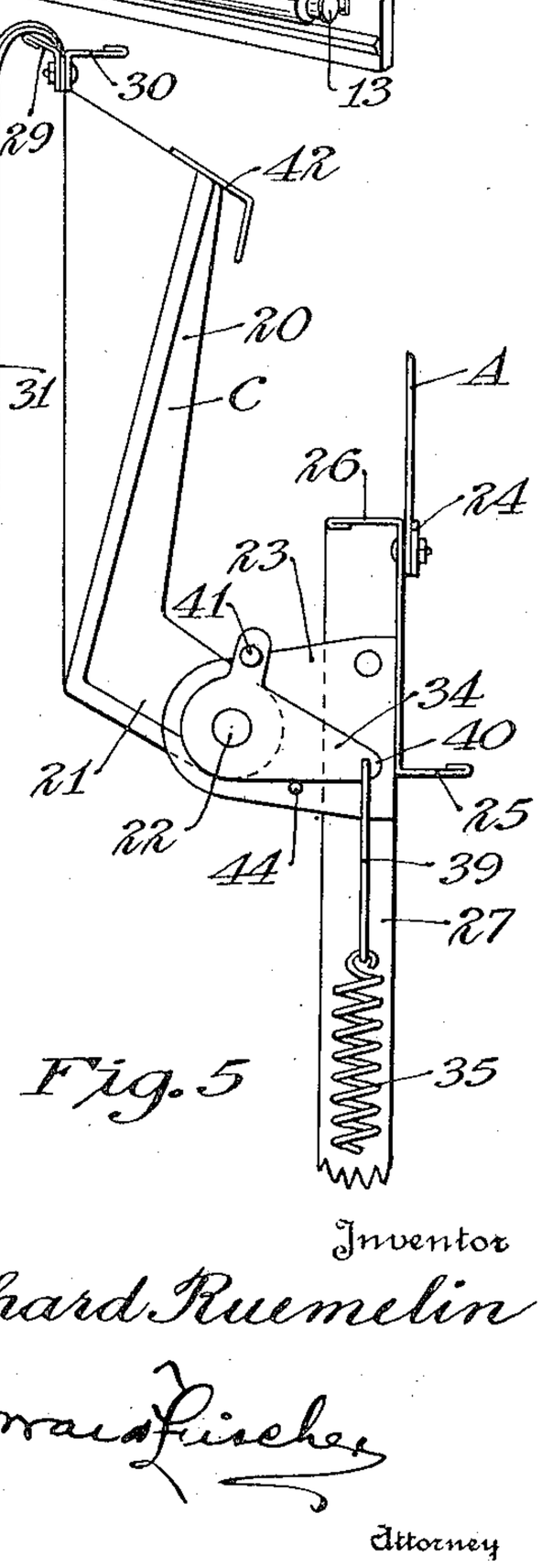

Fig. 5

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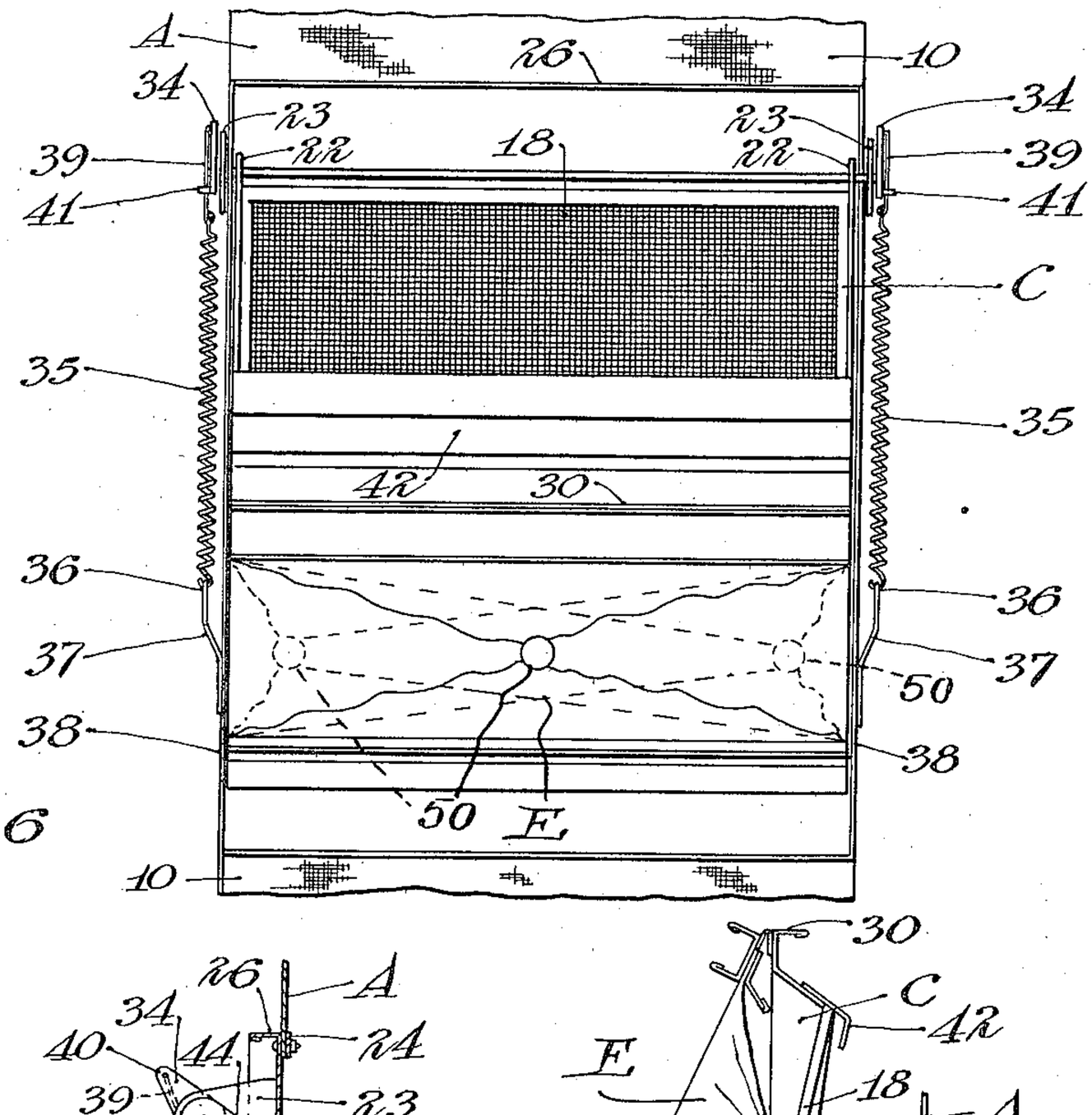

Fig. 6

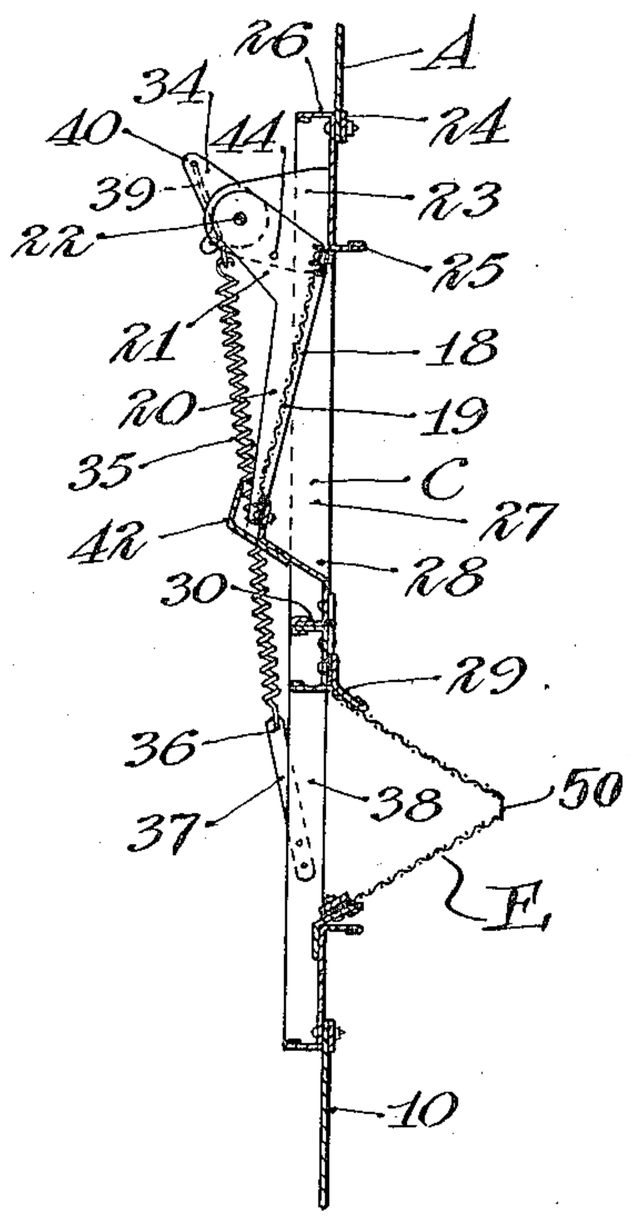

Fig. 7

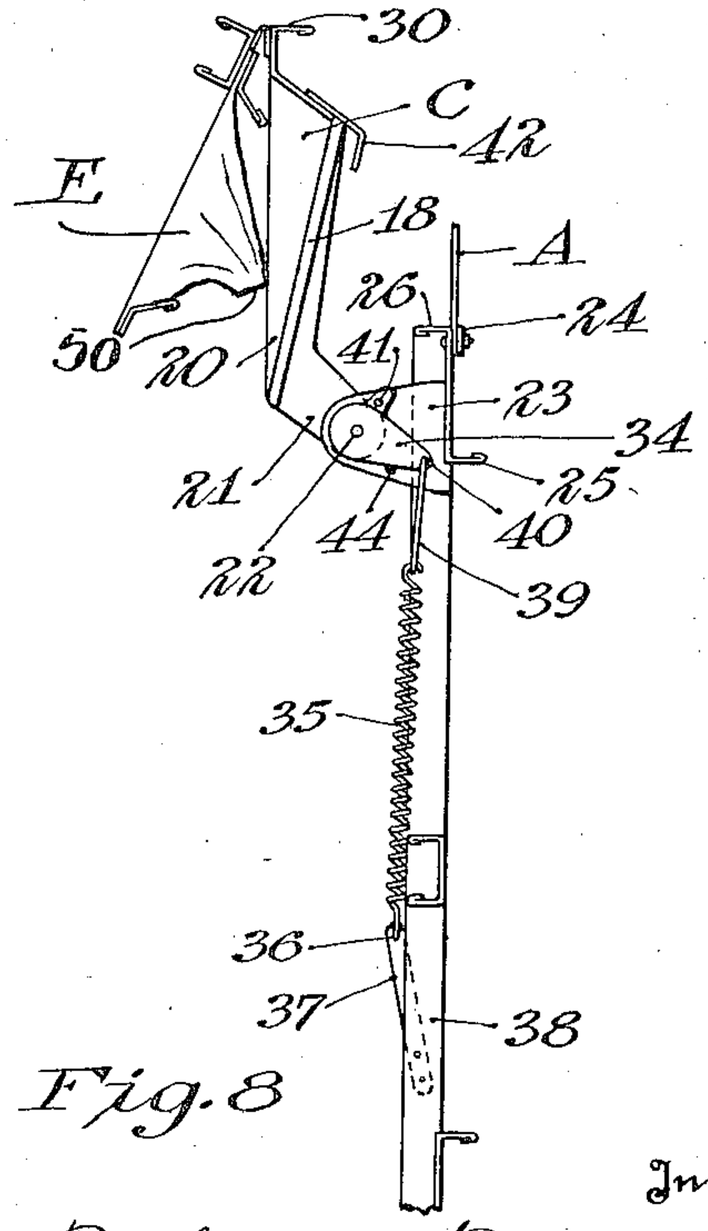

Fig. 8

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2,012,055

SAND BLAST CURTAIN

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Application February 29, 1932, Serial No. 595,781

11 Claims. (Cl. 51—8)

My invention relates to a sand blast curtain which is used with sand blast nozzles where it is desired to project the sand blasting nozzle through a horizontal opening formed in the curtain, this opening being closed by overlapping flexible shutters or bellows so that the sand blast nozzle may be inserted and moved along in the opening, the flexible shutters or other nozzle opening automatically closing the opening to practically keep the sand on the inside of the curtain which is being projected from the sand blast nozzle during sand blasting. For paint spraying or metal spraying or when the curtain is used for other than sand blasting, the flexible shutters would not be required, but rather any other suitable means may be used to close the opening around the nozzle, or a slotted nozzle opening in the curtain without a closure may be used.

A feature resides in a construction wherein the curtain, which is adjustable up and down, is provided with a closure for an opening formed in the curtain, this closure being freely adjustable into open and closed position. The closure is formed to support the flexible shutters or nozzle opening and is provided with a sight opening through which the operator may view the work to be sand blasted. This permits the operator to look through the portion of the closure and have a comparatively large viewing window to be able to clearly see the work being sand blasted. The work is maintained usually within a sand blasting cabinet and this cabinet is closed on one side by my adjustable curtain.

It is an object to provide an adjustable curtain for a sand blasting cabinet which is provided with a closure adapted to cover a comparatively large size opening formed in the curtain. This closure may be easily operated into open or closed position by reason of the counter-balancing means which I provide in the construction of the closure.

It is also a feature to provide a closure for a sand blast curtain which combines the viewing window for the operator and also the flexible shutters or bellows which close the opening through which the sand blast nozzle projects. In this means of closure I provide a structure which is counter-balanced by a suitable tension, compression or torsional spring or counter-weight or other means which permits the closure to be easily lifted into open position, or moved into closed position. A further object resides in means for locking the closure in closed position held by spring tension or other means in this position and providing a structure releasing the locking means by moving the same over center of the pivotal support of the closure. The counter-balancing means may be in the form of a spring and when it is used as such this spring holds the closure in open position with sufficient force to prevent the closure from dropping down. This is important because it holds the closure up out of the way so that the operator may inspect the work through the large opening provided in the curtain.

It is a feature to provide a closure for an adjustable sand blast curtain, the curtain being free to be moved up and down and the ends of the curtain being secured to roll up automatically onto supporting rollers and to provide in the curtain a comparatively large inspection opening for the operator which is quickly closed and wherein the closure is provided with a protected sight opening which may be covered by glass or screen, so that when the closure in the curtain is in closed position, the operator may still have a very clear vision of the work being sand blasted or sprayed by the window or screen formed in the closure.

These features and objects, together with other details will be more fully and clearly set forth in the specification and claims.

In the drawings forming a part of this specification:

Figure 1 is a perspective view of my sand blast curtain, showing the same in operative position with the closure in the curtain in closed position.

Figure 2 is a similar view, showing the closure carried and formed in the curtain in open position.

Figure 3 is an enlarged sectional view through a portion of the closure.

Figure 4 is an enlarged end detail of a portion of the closure.

Figure 5 is an enlarged end detail, showing the closure in open position.

Figure 6 is a detail front view of the curtain, showing a flexible bellows for the nozzle having a nature to permit the nozzle to be moved freely back and forth in the opening covered by the bellows.

Figure 7 is a side sectional detail of the construction illustrated in Figure 6, showing the window and the nozzle bellows down in operative position.

Figure 8 is a side detail of the curtain, showing the window and bellows raised to open the curtain for inspection of the work in back of the curtain.

The sand blast curtain A is provided with the

body portion 10 of a flexible material which extends between the side frame members 11 and is supported on its ends by the roller 12 at the top and the roller 13 at the bottom. The lower end of the curtain extends around the roller 13 and a transversely extending guide roll 14 holds the body 10 of the curtain in line or in the same plane with the upper portion of the body 10 of the curtain.

The curtain is counter-balanced by suitable weight means B which is supported upon a cable 15, the ends of which extend around the rolls 12 and 13, respectively, so that when it is desired to roll that portion of the body 10 of the curtain ordinarily extending between the rolls 12 and 13, toward or onto either of the rolls 12 or 13, the curtain will freely roll and the purpose of this will be later described. A cable 16 balances the ends of the rollers 12 and 13 with the cable 15 and the weight B on the other end of the rolls. This causes the curtain rolls 12 and 13 to operate uniformly without any twisting and keeps the body 10 of the curtain A flat and smooth between the rollers 12 and 13 and causes the same to roll up onto either of these rolls in a smooth flat nature.

The curtain A is provided with a comparatively large inspection opening 17 which is formed to extend virtually from one side member 11 to the other, and is positioned intermittent the ends of the body 10 of the curtain. This opening 17 is provided for the purpose of permitting the operator to readily inspect the work being sand blasted.

The curtain A is for the purpose of closing virtually one side of a sand blast cabinet and this cabinet is not illustrated in the drawings. The cabinet may be of any suitable form and size and shape, and when the curtain A is in position it closes one side of the same so as to confine the sand in the sand blast cabinet within the same and protects the operator who projects the sand blasting nozzle, which is not shown, through the opening 17.

The opening 17 is adapted to be covered normally by my closure C which is formed with a large transversely disposed inspection window 18. The window 18 may consist of a screened or glassed opening and I have shown this opening as closed by the screen 19 in Figure 3. It is apparent that the opening may be covered by a suitable glass if it is desired. The screen 19 is of a mesh to permit a clear vision through the window 18 to the work inside of the curtain A and yet prevent the sand used in blasting from coming out of the same.

I provide a suitable frame with end brackets 20 for the window 18 which are formed with an offset portion 21. The offset portion 21 is pivotally mounted on the rod 22 and the ends of this rod are supported in the end brackets 23. The brackets 23 are carried by the body 10 of the curtain A. A suitable supporting frame member 24 is provided at the top of the frame of the window 18 and on the inside lower portion of this frame portion 24 I provide a brace flange 25 which also prevents sand from being directed along the upper edge of the frame for the window 18. The frame portion 24 is provided with an outer transversely extending reinforcing flange 26 which acts to reinforce the same and provides a sufficiently strong supporting frame 24 for the upper side of the closure C.

The brackets 20 support end plates 27 which have a depending angular portion 28 and from the extreme end thereof I support an inner reinforcing flange 29 and an outer angular reinforcing flange 30. The flexible slitted shutter D which is made up of a series of overlapping flaps 31 is supported on one side between the flanges 29 and 30, while the other side or edge of these flaps 31 hang free so as to close the lower part of the opening 17. The upper part of the opening 17 is closed by the window 18, whereas, the lower part is closed by these flexible shutters which may be made of any suitable material, such as the body 10, of the curtain A. These flaps are stiff enough to hang normally closed and yet are sufficiently flexible to permit a sand blasting nozzle to be projected between the same and also permit the nozzle to be moved from side to side while the flaps 31 automatically fall into proper relation with each other to close the opening after the sand blast nozzle is moved on to another position. These flaps 31 hang closely together to even virtually close the opening around the sand blast nozzle when the same is projecting through the curtain A between the flaps 31.

The frame of the window 18, as well as the bracket members 20 are adapted to be supported by the shaft or rod 22 to rotate with the same in the end brackets 23 which are supported by the frame 24 in a manner to move with the curtain A up and down as the curtain is adjusted on the rolls 12 and 13. I provide lever arms 34 at each end of the shaft or rod 22 positioned adjacent the bracket members 23. These lever arms 34 are rotatable with the bracket members 20 around the shaft 22 when the same rotates in the brackets 23. A counter-balancing spring 35 is connected on one end at 36 to the bracket member 37 carried by the end frame members 38 in a manner to move with the body 10 of the curtain A, while the other end of the spring 35 is connected by the rod 39 to the point 40 on the outer end of the lever arms 34. The rod 39 is somewhat flexible so that when the lever arms 34 are in the position illustrated in Figures 1, 3 and 4, the counter-balance spring 35 will cause the rod 39 to bear against the stop pin 41, holding the lever 34 with its free end over the center of the shaft 22 to hold the closure C removably locked in closed position under the tension of the spring 35. When it is desired to open the closure C, the transverse reinforcing flange 42 may be engaged to pull the free end of the window 18 forward, throwing the free end of the lever 34 over the center of the shaft 22, whereupon the spring 35 will act as a counter-balance to help lift the window 18 of the closure C up into the position illustrated in Figures 2 and 5.

When the closure C is elevated in this manner, the flaps of the flexible shutter D will hang down over the flange 29 as illustrated in Figure 5. Figure 2 also illustrates the position of these flaps when the shutter closure C is in open position. The springs 35 not only counter-balance the weight of the closure C, but help to lift the same, and the levers 34 will engage against the stop pin 44 to hold the closure C in elevated position and limit the raising movement of the closure C.

Thus the closure C will be held above or clear of the opening 17 so that the operator may inspect or even engage the work being sand blasted if he so desires through the opening 17. This is very important because it permits the operator to sand blast articles and to inspect them from time to time quickly by opening the closure C, and if they are of a smaller size or are held upon

suitable movable trucks within the cabinet, the operator may turn the articles or move them in the cabinet without stopping to go around to the ordinary entrance door to the sand blast cabinet unless he so desires.

When the closure C is held in open position as illustrated in Figure 2, it will be noted that the opening 17 is full open, thereby giving a large inspection opening directly in the body of the curtain A.

The springs 35 counter-balance and serve to hold the closure C open so that there is no danger of the closure C dropping down on the operator while he is inspecting the work through the opening 17.

When the closure C is lowered into closed position, as illustrated in Figure 1, and also in Figures 3 and 4, the spring 35 will bear against the pin 41 with the end 40 over the center of the shaft 22, thereby holding the closure in releasably locked closed position under the tension of the spring 35 and at the same time permitting the free edge of the closure C to act as a lever to throw the holding levers 34 over center of the shaft 32 and thus permit the springs 35 to operate to assist in lifting the closure C. This provides a means easy to operate to open the curtain A when it is desired or to close the same with the same ease. It is also an important feature of my invention to provide a rolling curtain which is provided with a window which is adjustable to any height in the curtain and which at the same time with suitable means, provides an adjustable closure which may be set at any convenient height for the operator. The counter-balance B for the curtain A keeps the curtain in any set position which the operator may choose to place it. These features are of primary importance.

In Figures 6 to 8, inclusive, I have shown a construction of the curtain A where a bellows E is employed instead of the flexible shutter D. In this bellows E a nozzle opening 50 is formed and the bellows is sufficiently flexible, and full, to permit the nozzle when held in the opening 50 to be moved from side to side or back and forth in the opening covered by the bellows E.

In using my curtain for spraying cabinets for lacquering or painting or other spraying where a spray gun is used, the opening 17 may be partially closed by the window 18, while the remaining portion of the opening 17 may be open to permit the operator to move the spray gun back and forth in the same. My curtain A is adapted for work of this character because it permits the curtain to be moved up and down so that the sight window may be always in proper relation to see the work being sprayed and instead of a screen window 18, the same may be covered with a transparent material or glass and where a vacuum is created in the lacquer or spray cabinet the funds from the spraying or painting will not come out through the portion of the opening 17 which is not covered by the window 18.

Instead of the springs 35, counter-weights may be used to hold the closure C in open position, or the closure may be held by a suitable catch in elevated position to fully open the opening 17.

In accordance with the patent statutes I have described the principles of operation of my sand blast curtain and while I have illustrated a particular formation and construction thereof, I deside to have it understood that the same is only illustrative of a means of carrying out the principles of my invention and that the same should be interpreted within the scope of the following claims.

I claim:

1. A sand blast curtain including, a curtain body having an opening therein, rollers for supporting the ends of said curtain body, counter-balancing means for holding said curtain body in adjusted set position, and a closure for said opening raisable into position above the opening and foldable when in raised position having a sight window formed therein.

2. A curtain having a body portion formed of flexible material, roller means for supporting the ends thereof, counter-balancing means for holding the intermediate portion of said curtain in set adjusted position, said curtain having an opening in the intermediate portion thereof, a closure inspection window for said opening, counter-balancing means for said closure including lever and stop means and a spring for holding said closure in releasable locked closed position and in full open position, operated by said counter-balancing means for said closure window.

3. A curtain having a flexible body portion, rollers for supporting the ends of said curtain with an intermediate portion having an opening therein extending flat between said rollers, a frame for supporting said rollers and the sides of said curtain intermediate said rollers, a frame for reinforcing said opening in said curtain, a closure sight window supported by said frame for said opening, said closure having a flexible shutter made up of a series of overlapping flaps superimposed and positioned adjacent each other, and lever and counter-balancing means for said closure to hold the same in open or closed position under spring tension.

4. A flexible curtain, rollers for supporting the ends thereof to cause the respective ends to be rolled and unrolled simultaneously with the movement of said curtain, an intermediate flat portion between said rolls in said curtain having a reinforced opening therein, a closure for said opening having a sight window therein, and a nozzle opening to permit a nozzle to be moved back and forth in relation to said closure when in closed position, and means for releasably locking said closure in closed position under spring tension, said means acting as a counter-balance and a support in the opening movement and open position, respectively, of said closure.

5. A sand blast nozzle curtain including, a curtain body having an opening therein, a closure for said opening raisable into position above the opening, and foldable when in raised position.

6. A sand blast curtain including, a curtain body having an opening therein, a closure for said opening including a sight window and a flexible nozzle receiving closure, means swingably supporting said opening closure to permit the opening closure to be swung up over the opening, the nozzle receiving closure folding down over said sight window in raised position.

7. An adjustable sand blast curtain including a flexible curtain member provided with an opening, a closure adapted to cover said opening, counterbalancing means for holding said closure in open or closed position, said closure including a sight window and a nozzle opening, said nozzle opening permitting a sand blast nozzle to project therethrough in a manner to be moved freely in operation when projecting through said opening in said curtain.

8. A sand blast curtain comprising, a flexible curtain body, means for counter-balancingly sup-

porting said curtain to permit the same to be adjusted into the desired position, and maintained in a set position, said curtain having an opening therein, and a closure for said opening including an inspection window, a flexible closure secured thereto, and a counterbalancing member connected to said closure first named to hold said first named closure in open position.

9. An adjustable curtain, roller means for supporting the ends thereof, a counter-balance for holding said curtain in set position, said curtain having an opening in the intermediate portion of said curtain between said rollers, a closure for said opening, and counter-balance means including spring means for holding said closure in open or closed position to permit the free opening and closing of said closure.

10. A curtain having an opening therein, a closure inspection window for said opening, counter-balancing means for said closure including lever and stop means, and a spring for holding said closure in releasable locked position and in full open position, operated by said counter-balancing means for said closure window.

11. A curtain having an opening therein, a frame for reinforcing said opening in said curtain, a closure sight window supported by said frame for said opening, and lever and counter-balancing means for said closure to hold the same in open or closed position under spring tension.

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