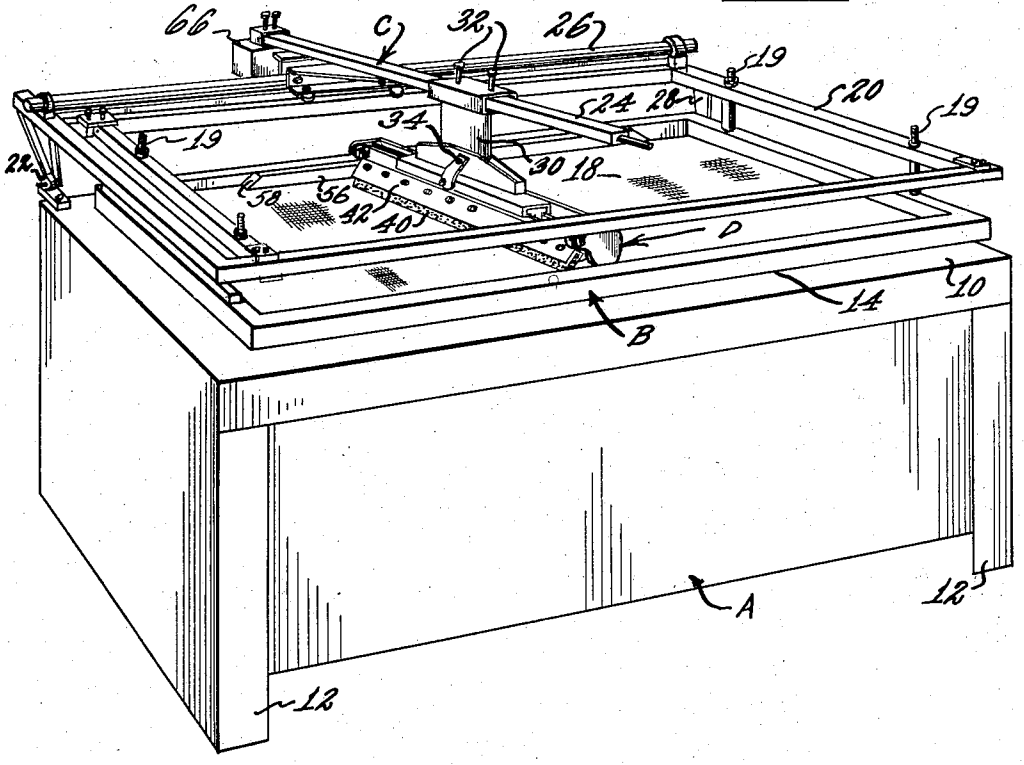
April 14, 1959 E. J. GRAHAM 2,881,698

SCREEN PROCESS PRINTING MACHINE

Filed July 19, 1956 2 Sheets-Sheet 1

Fig. 1.



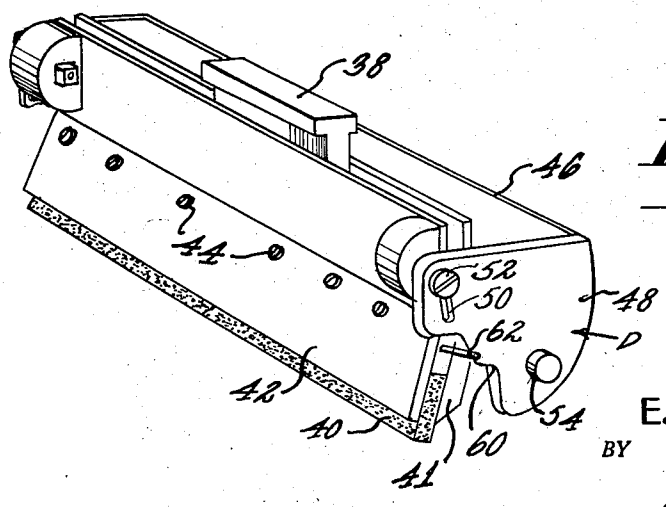


Fig. 2.

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SCREEN PROCESS PRINTING MACHINE

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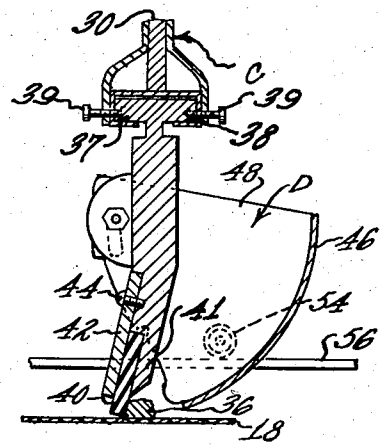


Fig. 3.

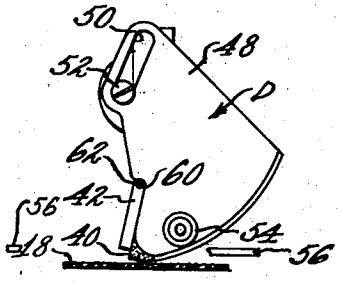


Fig. 4.

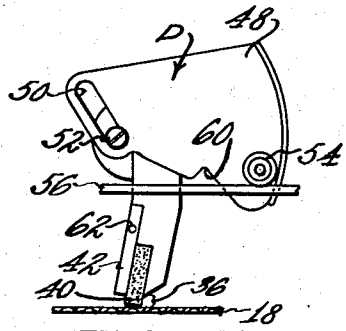


Fig. 5.

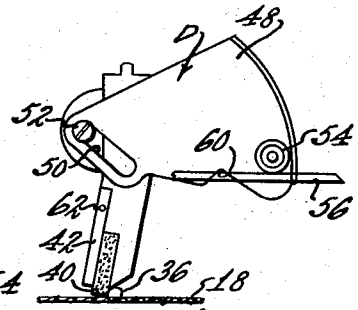


Fig. 6.

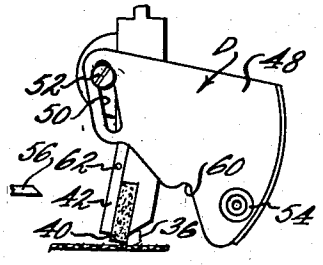


Fig. 7.

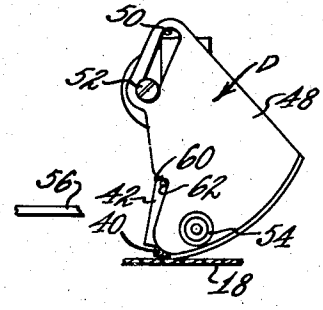


Fig. 8.

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Patented Apr. 14, 1959

2,881,698

SCREEN PROCESS PRINTING MACHINE

Eugene John Graham, Havertown, Pa., assignor to Kenn Equipment Co.

Application July 19, 1956, Serial No. 598,885

3 Claims. (Cl. 101—123)

My invention relates to a screen process printing machine and, more particularly relates to a paint distributing and collecting device for such a printing machine.

The silk screen printing process utilizes a sheet of fabric screen which is stretched tightly upon a frame and has a stencilled portion through which paint may pass to form the design. Paint in a semi-liquid state is placed upon the stencil or screen at one end and is drawn over the stencil in a wave by a squeegee scraper. The paint thus drawn over the stencil fills the open pores of the pervious design portion of the stencil and adheres below.

Since the class of work turned out by apparatus of this description competes with vari-color work produced by the lithographic process, it is important, in order to keep down the cost of production, that the prints be made at a comparatively rapid rate. However, where highly detailed, multi-colored work is required, it has been found that the squeegee can only be drawn over the stencil in one direction only, for otherwise the stencil screen would be drawn in two directions and cause inaccurate registration of the various colors.

It, therefore, is an object of my invention to provide a squeegee device for a screen process printing machine for evenly spreading ink or paint upon the stencil screen with means to carry back the surplus thereof after traverse in the direction, above the screen to the initial printing stroke position.

Another object of my invention is to provide a screen process printing machine that will afford highly accurate registration of the various colors printed by the use of different stencils.

Another object of my invention is to construct a screen process printing apparatus wherein the paint or ink will stay exactly where impressed upon the paper that receives it.

Another object of my invention is to provide a screen printing machine wherein the excess paint will be automatically scooped up at the end of the printing stroke.

Another object of my invention is to provide a screen process printing machine wherein the ink will be automatically deposited and distributed upon the screen in front of the squeegee immediately at the beginning of each printing stroke.

Other objects of my invention are to provide an improved device of the character described, that is easily and economically produced, which is sturdy in construction, and which is highly efficient in operation.

With the above and related objects in view, my invention consists in the details of construction and combination of parts, as will be more fully understood from the following description, when read in conjunction with the accompanying drawings, in which:

Fig. 1 is a perspective view of a screen process printing machine having automatic collecting and depositing means embodying my invention.

Fig. 2 is a rear perspective view of the automatic collecting and depositing means together with its assembly upon a squeegee blade.

Fig. 3 is a sectional view of the collecting and depositing means.

Fig. 4 is an end view of the collecting and depositing means in position against the squeegee blade immediately prior to lowering it against the screen surface.

Fig. 5 is an end view of the collecting and depositing means in position against the squeegee blade as the squeegee first makes contact with the screen.

Fig. 6 is an end view of the collecting and depositing means in position with respect to the squeegee blade during the normal printing stroke.

Fig. 7 is an end view of the collecting and depositing means with respect to the squeegee blade as the termination of the printing stroke has occurred.

Fig. 8 is an end view of the collecting and depositing means with respect to the squeegee blade as the squeegee is about to be returned to its initial starting position.

Referring now in greater detail to the drawings, in which similar reference characters refer to similar parts, I show a screen process printing machine comprising a table, generally designated as A, a conventional screen printing frame assembly, generally designated as B, a squeegee stroke assembly, generally designated as C, and an automatic scoop device hingedly mounted thereon, and generally designated as D.

The printing table A is of conventional design having a surface top **10** supported upon four legs **12**. It is upon the surface top **10** which the printing material **14** is placed directly below the screen frame B.

The screen frame B is affixed immediately below a metal ballast frame **20** by a plurality of downwardly extending lugs secured to the latter. The metal frame **20** is hingedly affixed to the rear of the table top **10** by pin hinges **22** and suitable ballast (not shown) is provided at the rear of the printing table A to facilitate the hinged operation of the screen frame B when it is desired to change the printing stock **14**. The frame B is stretched thereon at its lowermost portion the usual silk or metal screen **18** which carries the stencil for forming the design to be printed.

The squeegee stroke assembly C comprises a lever arm **24** which is slidably and hingedly supported upon a traverse rail **26** which extends the entire length of the rear of the table surface **10** and mounted thereon at each end by a post **28**. A bracket **30** is slidably mounted upon the lever arm **24** whereupon slight adjustments in the lateral direction of the squeegee may be made by loosening adjusting screws **32**. The bracket **30** extends the entire width of the printing frame and is also pivotally mounted at **34** along a longitudinal axis in order to provide complete freedom of rotation about that longitudinal axis whereby the weight of the squeegee assembly may be distributed laterally within the printing frame by virtue of its own weight. This enables distribution of ink **36** placed in front of the squeegee as its stroke is carried longitudinally across the top of the stencil **18** in the form of an even wave without excess pressure being exerted upon either end of the squeegee. The bracket **30** has at its lower portion thereof, a channel **37** to accommodate therein a squeegee plate **38**, the latter being locked into adjustable vertical position within the bracket **30** by a pair of locking screws **39** extending from the lowermost portion of the bracket.

The squeegee blade or scraper **40** is mounted upon the bottom of the squeegee plate **38** between an intergral flange **41** extending from the lower portion of the blade and a removable rear flange **42** which is secured to the blade by a plurality of mounting screws **44**.

The automatic scoop D is hingedly supported upon the squeegee assembly C at each end of the plate **38** and comprises an arcuate pan **46** affixed at each end to a side plate **48**, the latter having a construction resembling a

circular segment. The upper portion of the side plates **48** have a slot **50** which slidably and pivotally supports the scoop D upon the squeegee assembly by a guide pin **52** detachably secured to the ends of the plate **38**. From the lower end of each of the side plates **48** extends a roller **54** which is adapted to be supported upon guide rails **56** secured within the printing frame B and longitudinally extending therein. The guide rails **56** terminate at a point **58** corresponding to the end of the printing stroke. It is at this point **58** wherein no support for the guide rollers **54** will be provided and thereby causes the scoop D to drop about its pivotal position **52** and effect the entrapment of the wave of ink **36** between the bottom end of the pan **46** and the squeegee blade **40**. Locking of the scoop D against the squeegee blade **40** is accomplished by providing a notch **60** at the front end of each of the side plates **48** which engage a support pin **62** mounted in the end of the plate **38** when the scoop D is in collecting position.

As is apparent from the foregoing description, a wave or puddle of ink is disposed immediately in front of the squeegee blade **40** at the beginning of the printing stroke. The squeegee assembly C is gravity actuated and has sufficient weight to insure firm contact of the squeegee blade **40** as it is longitudinally carried across the screen **18** by hand operation of the lever arm **24**. The wave of ink **36** is evenly distributed through the pores of the stencil **18** since the scoop D is forced open by the action of its rollers **54** bearing upon the guide rails **56**. At the end of the printing stroke, the scoop D will drop into engagement with the front of the squeegee blade **40** since support for the guide rollers **54** is terminated at the end of the rail. Accordingly, any slight further movement longitudinally of the squeegee assembly C will cause the excess ink at the end of the stroke to be firmly entrapped between the scoop pan **46** and the front of the squeegee blade **40**. Thereupon the pivotal raising of the lever arm **24** which is facilitated by ballast weight **66** at its rear

end, will completely free the surplus ink from the terminal end of the stencil **18**, and enable this ink to be carried back to the beginning of the printing stroke as the squeegee assembly is carried back to its initial point. As the squeegee assembly C is once more lowered at its initial point, this surplus ink will be deposited at the beginning of the screen since the guide rollers **54** once more engage the guide rails **56** and effect depositing of the ink therefrom.

Although my invention has been described in considerable detail, such description is intended as being illustrative rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

I claim as my invention:

1. In a screen process printing machine having a printing frame hingedly supported upon a table and a squeegee assembly hingedly secured to and longitudinally slidable on the table, a wiper element affixed to the lower portion of said squeegee assembly, a scoop pivotally and eccentrically slidable on said squeegee assembly, and rail means on said printing frame for engaging and maintaining said scoop in open position during printing stroke and gravity means to close said scoop at the end of the printing stroke.

2. The invention of claim 1 wherein pins on said squeegee assembly are in pivotal and slidable engagement with slots in said scoop.

3. The invention of claim 2 wherein rollers at the ends of said scoop are adapted to engage the upper surface of said rail means.

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