

Sept. 12, 1944.

A. S. MILLIKIN ET AL

2,358,085

SCREED UNIT

Filed Oct. 2, 1942

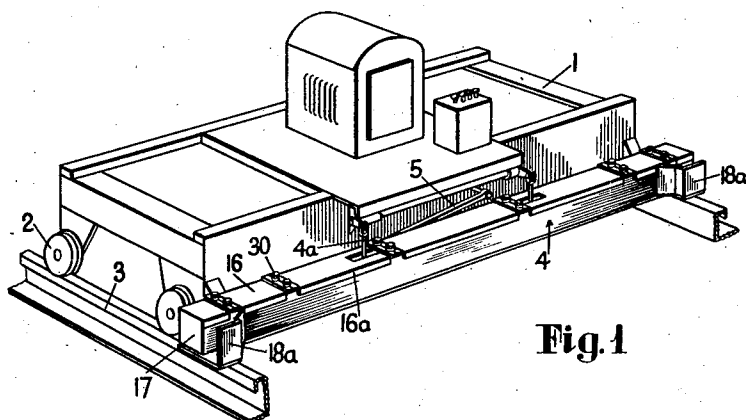


Fig. 1

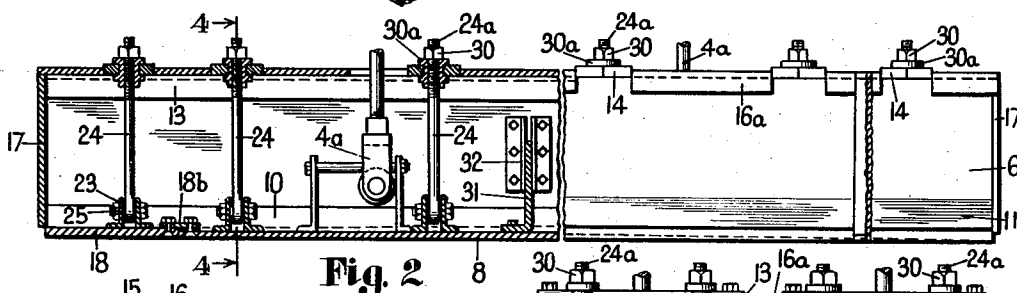


Fig. 2

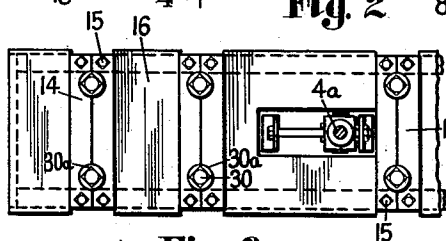


Fig. 3

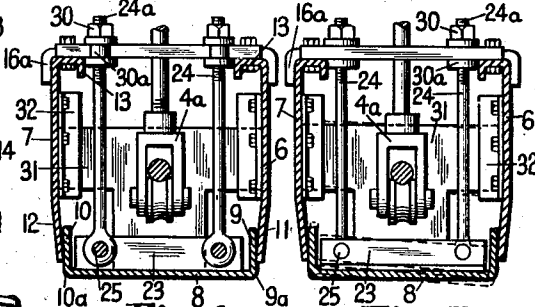


Fig. 4

Fig. 5

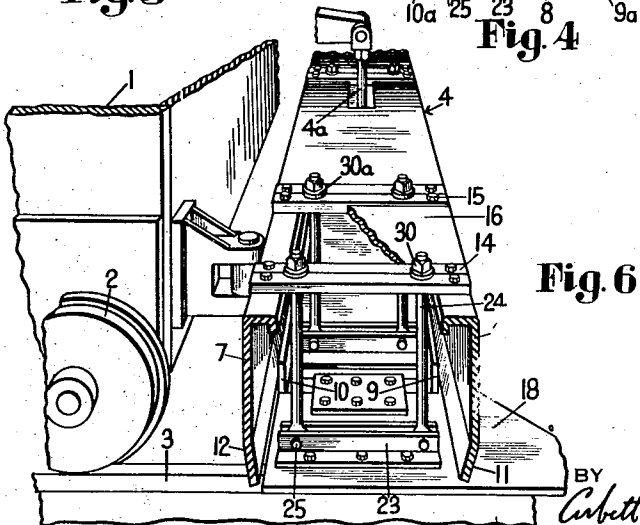


Fig. 6

INVENTORS
Arnold S. Millikin.
John H. Apel.
BY *Carbott, Mohr & Miller*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,358,085

SCREED UNIT

Arnold S. Millikin and John H. Apel, Columbus,
Ohio, assignors to The Jaeger Machine Com-
pany, Columbus, Ohio, a corporation of Ohio

Application October 2, 1942, Serial No. 460,482

16 Claims. (Cl. 94—45)

Our invention relates to a screed unit. It has to do, more particularly, with a screed unit for road finishing machines which will effectively finish the surface of a layer of plastic material, such as concrete or asphalt, and will impart the desired crown thereto.

One of the objects of our invention is to provide a screed unit which has a finishing surface that may be effectively adjusted by simple means so that it will produce accurately any desired and predetermined crown on the surface being finished.

Another object of our invention is to provide a screed unit of the type indicated wherein the crowning means for the surfacing member serves to curve such member the same at its front and rear edges so as to produce a symmetrical curve.

Another object of our invention is to provide a screed unit which has means associated with the finishing surface for tilting it transversely of itself so that its forward and rear edges will be at different levels in order to obtain a troweling action on the material being finished.

Another object of our invention is to provide a screed unit which is of such a nature that it will function both during forward movement of the machine on which it is mounted and rearward movement of the machine.

Another object of our invention is to provide a screed unit which is of very simple construction but which will readily withstand all the shocks and stresses to which it is subjected.

In its preferred form, our invention contemplates the provision of a screed unit which is constructed substantially as a box girder or beam. It embodies a forward plate and a rear plate which are vertically disposed in spaced relationship. The forward plate will contact with the material that piles up in front thereof, during the forward movement of the machine on which the screed unit is mounted, while the rear plate will contact with the material that piles up against it during the rearward movement of the machine. The forward and rearward plates not only serve to contact the material, as indicated, but also serve to support the bottom finishing or surfacing plate. The surfacing plate extends longitudinally of the front and rear plates and is disposed therebetween at the lower edges thereof.

The surfacing plate is suspended from the front and rear plates by means of a plurality of independently adjustable suspending members. These suspending members may be initially adjusted to position the surfacing member relative

to the front and rear plates as desired. For example, they may be adjusted to move the surfacing plate vertically relative to the other plates, to tilt it transversely, or to curve it longitudinally.

This application is a continuation-in-part of our co-pending application Serial No. 348,376, filed July 30, 1940, now Patent No. 2,299,700, issued October 20, 1942.

The preferred embodiment of our invention is illustrated in the accompanying drawing wherein similar characters of reference designate corresponding parts and wherein:

Figure 1 is a perspective view illustrating a surfacing machine having a screed unit, constructed according to our invention, applied thereto.

Figure 2 is a view of the screed unit, partly in longitudinal section and partly in front elevation, and illustrating the means for changing the crown of the surfacing member.

Figure 3 is a plan view of a portion of the screed unit.

Figure 4 is a transverse vertical sectional view taken substantially along line 4—4 of Figure 2.

Figure 5 is a transverse sectional view similar to Figure 4 but showing how the surfacing member may be tilted transversely.

Figure 6 is a perspective view, partly broken away, of the screed unit illustrated in Figure 1.

With reference to the drawing, we have illustrated in Figure 1 a finishing machine which may be designated generally by the numeral 1, and which is supported by wheels 2 for operation upon said forms 3. A screed unit, which may be indicated generally by the number 4, is supported at the front of the finishing machine by roller-type supporting units 4a in such a manner that it may be reciprocated transversely of the path of movement of the machine. The screed unit is adapted to be reciprocated by means of the mechanism indicated by the numeral 5.

The structure of the screed unit 4, shown in Figure 1, is clearly illustrated in Figures 2 to 6, inclusive. The screed unit is preferably constructed in the form of a box girder or beam. It comprises a vertically disposed front plate 6 and a vertically disposed rear plate 7 which extend the full length of the screed unit and which are disposed in spaced relationship. Disposed between the plates 6 and 7, at the lower edges, thereof, is the surfacing plate 8 which extends substantially the full length of the plates 6 and 7. This plate 8 is flexible and is provided

with a short upturned flange 9 (Figure 4) at its forward edge and a short upturned flange 10 at its rear edge. In bending these flanges 9 and 10, curved corners 9a and 10a are produced which act more effectively on the material than sharp corners.

The lower edge of the plate 6 is bent inwardly as at 11 to a slight extent and the lower edge of the plate 7 is similarly bent as at 12. The portions 11 and 12 will always overlap the flanges 9 and 10. The upper edge of each of the plates 6 and 7 is turned inwardly and then downwardly as indicated at 13 for reinforcement of the plates. The plates 6 and 7 are secured together at their upper edges by means of a plurality of bars 14 which are spaced longitudinally thereof and which extend transversely thereof. These bars 14 are suitably bolted by means of bolts 15 to the upper edges of the plates 6 and 7. Cover plates 16 may also be provided for the full length of the plates 6 and 7. These plates 16 fit between the bars 14 and are provided with resilient flanges 16a which snap down over the plates 6 and 7 and hold the plates 16 in position. Each end of the screed unit is preferably closed by means of a plate 17 which is suitably secured to the ends of the plates 6 and 7.

Each end of the plate 8 is provided with a section 18 of wear-resisting steel which is adapted to rest on the adjacent form 3. This section is extended forwardly beyond forward plate 6 and is provided at its forward and inner edge with a vertically disposed end shoe 18a which prevents the material from being spread beyond the end of the screed unit. The section 18 is preferably bolted to the plate 8 as shown at 18b in Figure 2.

The surfacing plate 8 carries the transversely extending longitudinally spaced shoes 23. Each of these shoes has a pair of bolts 24 pivoted thereto as at 25. The upper end of each of these bolts is threaded as at 24a and receives an internally threaded nut member 30. This nut member has integrally formed therewith a lower flanged collar portion 30a. Each of the bars 14 is split and the split portions are provided with notches which fit around the members 30a. Thus, the members 30a will be rotated when the nuts 30 are rotated. This will produce vertical movement of the bolts 24. A pushing or pulling force will be exerted by rods 24 on plate 8, depending upon the direction of rotation of nuts 30.

In order to prevent longitudinal movement of plate 8 relative to plates 6 and 7, the plate 8 is provided, substantially midway between its ends, with an upstanding transversely extending guide member 31 (Figure 2) bolted to the plate 8. This member 31 extends into a guideway formed by a pair of transversely extending vertically disposed angles 32 which are bolted to the front and rear plates 6 and 7. This structure will permit vertical movement of plate 8 relative to plates 6 and 7 but will prevent relative longitudinal movement thereof.

It will be apparent that a crown may be produced in the plate 8 by proper adjustment of the various bolts 24, as indicated by the dotted line in Figure 2. It will also be apparent that the plate 8 may be tilted transversely by proper adjustment of the bolts, as indicated by the dotted lines in Figure 5, in order to obtain a trowelling action.

Thus, it will be apparent that the screed unit is in the form of a box girder or beam which may be made of less material than prior art screeds. It will still have adequate strength to resist the strains and stresses to which it will be subjected

during use. During forward movement of the machine, the front plate 6 will contact with the material which piles up in front thereof. During rearward movement of the machine, the rear plate 7 will similarly contact the material. Thus, the plates 6 and 7 serve both as material-contacting plates and as a supporting means for the surfacing plate 8, which is suspended therefrom, and no additional supporting beams are necessary as with prior art structures.

The member 8 may be adjusted into flat, convex or concave positions by bolts 24. Furthermore, it may be tilted transversely. Due to the fact that a row of members 24 is provided adjacent the front edge of plate 6 and a row is provided adjacent the rear edge of the plate, a symmetrical crown can be obtained. Furthermore, the member 8 can be tilted transversely and still the desired crown can be obtained.

The screed is more simple in structure and cheaper to manufacture than prior art screeds because the plates 6 and 7 serve as the supports for plate 8. The screed will be completely closed and, therefore, easier to keep clean.

Various other advantages will be apparent from the preceding description, the drawing and the following claims.

Having thus described our invention, what we claim is:

1. A screed unit substantially in the form of a box girder comprising a forward vertically disposed plate and a rear vertically disposed plate which extend longitudinally and are disposed in spaced relationship, a transversely extending means at the upper edges of said forward and rear plates for securing them to each other in spaced relationship, a surfacing plate disposed between the lower edges of said forward and rear plates, said surfacing plate being flexible, a plurality of rod members for suspending said surfacing plate from said forward and rear plates, said rod members being arranged in two rows adjacent the forward and rear edges of said surfacing plate and being disposed at intervals spaced longitudinally of said surfacing plate, said rod members having their lower ends connected to said surfacing plate and their upper ends connected to said transversely extending means which secures said forward and said rear plates together, said rod members being independently adjustable to vary the effective length thereof, said surfacing plate having a section at each end which extends forwardly beyond the forward plate, said section carrying a vertically disposed shoe which limits spreading of the material beyond the end of said forward vertically disposed plate, said forward and rear vertically disposed plates being load-carrying members.

2. A screed unit substantially in the form of a box girder comprising a forward vertically disposed plate and a rear vertically disposed plate which extend longitudinally and are disposed in spaced relationship, a transversely extending means at the upper edges of said plates for securing them to each other in spaced relationship, a surfacing plate disposed between the lower edges of said forward and rear plates, said surfacing plate being flexible, a plurality of rod members for suspending said surfacing plate from said forward and rear plates, said rod members being arranged in two rows adjacent the forward and rear edges of said surfacing plate and being disposed at intervals spaced longitudinally of said surfacing plate, said rod members having their lower ends connected to said surfacing plate and their

upper ends connected to said transversely extending means which secures said forward and said rear plates together, said rod members being independently adjustable to vary the effective length thereof, said forward and rear vertically disposed plates being load-carrying members.

3. A screed unit according to claim 2 wherein the rod members are pivoted at their lower ends to the upper side of said surfacing member to permit relative pivotal movement in a plane transverse of said surfacing member.

4. A screed unit according to claim 2 wherein the surfacing member has upwardly extending flanges at its forward and rear edges which extend into overlapping relationship to said forward and rear plates.

5. A screed unit according to claim 2 wherein said surfacing plate and said forward and rear plates carry vertically disposed cooperating guide members which permit relative vertical movement thereof but prevent relative longitudinal movement thereof.

6. A screed unit according to claim 2 wherein the upper edges of said forward and rear plates are bent into channel form for reinforcement.

7. A screed unit substantially in the form of a box girder comprising a forward vertically disposed plate and a rear vertically disposed plate which extend longitudinally and are disposed in spaced relationship, a transversely extending means at the upper edges of said plates for securing them to each other in spaced relationship, said transversely extending means comprising split bars having notched portions, a surfacing plate disposed between the lower edges of said forward and rear plates, said surfacing plate being flexible, a plurality of rod members for suspending said surfacing plate from said forward and rear plates, said rod members being pivoted at their lower ends to said surfacing plate for transverse swinging movement and being arranged in two rows adjacent the forward and rear edges of said surfacing plate, said rod members being disposed at intervals spaced longitudinally of said surfacing plate and having upper ends which are threaded, and internally threaded nuts for receiving said threaded upper ends of said rods, said nuts being embraced by the notched portions of said split bars and having upper and lower flanges engaging said split bars.

8. A screed unit substantially in the form of a box girder comprising a forward vertically disposed plate and a rear vertically disposed plate which extend longitudinally and are disposed in spaced relationship, a transversely extending means at the upper edges of said plates for securing them to each other in spaced relationship, a surfacing plate disposed between the lower edges of said forward and rear plates, said surfacing plate being flexible, a plurality of rod members for suspending said surfacing plate from said forward and rear plates, said rod members being arranged in two rows adjacent the forward and rear edges of said surfacing plate and being disposed at intervals spaced longitudinally of said surfacing plate, said rod members having their lower ends connected to

said surfacing plate and their upper ends connected to said transversely extending means which secures said forward and rear plates together, said rod members being independently adjustable to vary the effective length thereof, said surfacing member having upwardly extending flanges at its forward and rear edges joined thereto by curved corners, said flanges extending into overlapping relationship to said forward and rear plates, said forward and rear plates having slightly in-turned lower edge portions for cooperating with said flanges.

9. A screed unit according to claim 7 wherein the upper edges of said forward and rear plates are bent into channel form for reinforcement.

10. A screed unit according to claim 7 wherein the surfacing member has upwardly extending flanges at its forward and rear edges joined thereto by curved corners, said flanges extending into overlapping relationship to said forward and rear plates, said forward and rear plates having slightly in-turned lower edge portions for cooperating with said flanges.

11. A screed unit according to claim 7 wherein said surfacing member and said forward and rear plates carry vertically disposed cooperating guide members which permit relative vertical movement thereof but prevent relative longitudinal movement thereof.

12. A screed unit according to claim 7 wherein said surfacing member has a section at each end which extends forwardly beyond the forward plate, said section carrying a vertically disposed shoe which limits spreading of the material beyond the end of said forward vertically disposed plate.

13. A screed unit according to claim 8 wherein the upper edges of said forward and rear plates are bent into channel form for reinforcement.

14. A screed unit according to claim 8 wherein said surfacing member and said forward and rear plates carry vertically disposed cooperating guide members which permit relative vertical movement thereof but prevent relative longitudinal movement thereof.

15. A screed unit according to claim 8 wherein said surfacing member has a section at each end which extend forwardly beyond the forward plate, said section carrying a vertically disposed shoe which limits spreading of the material beyond the end of said forward vertically disposed plate.

16. A screed unit substantially in the form of a box girder comprising a forward vertically disposed longitudinally extending plate adapted to contact material and a rear vertically disposed longitudinally extending plate adapted to contact material disposed in spaced relationship, a longitudinally extending substantially horizontally disposed surfacing plate disposed between the lower edges of said forward and rear plates and separate therefrom, and means for supporting said surfacing plate from said forward and rear plates for adjustable vertical movement relative thereto, said forward and rear plates being load-carrying members.

ARNOLD S. MILLIKIN.
JOHN H. APEL.