Aug. 24, 1965 B. L. LARSEN ETAL 3,202,068

SLAB FINISHING AND CURB BUILDING MACHINE

Filed Dec. 21, 1962 2 Sheets-Sheet 1

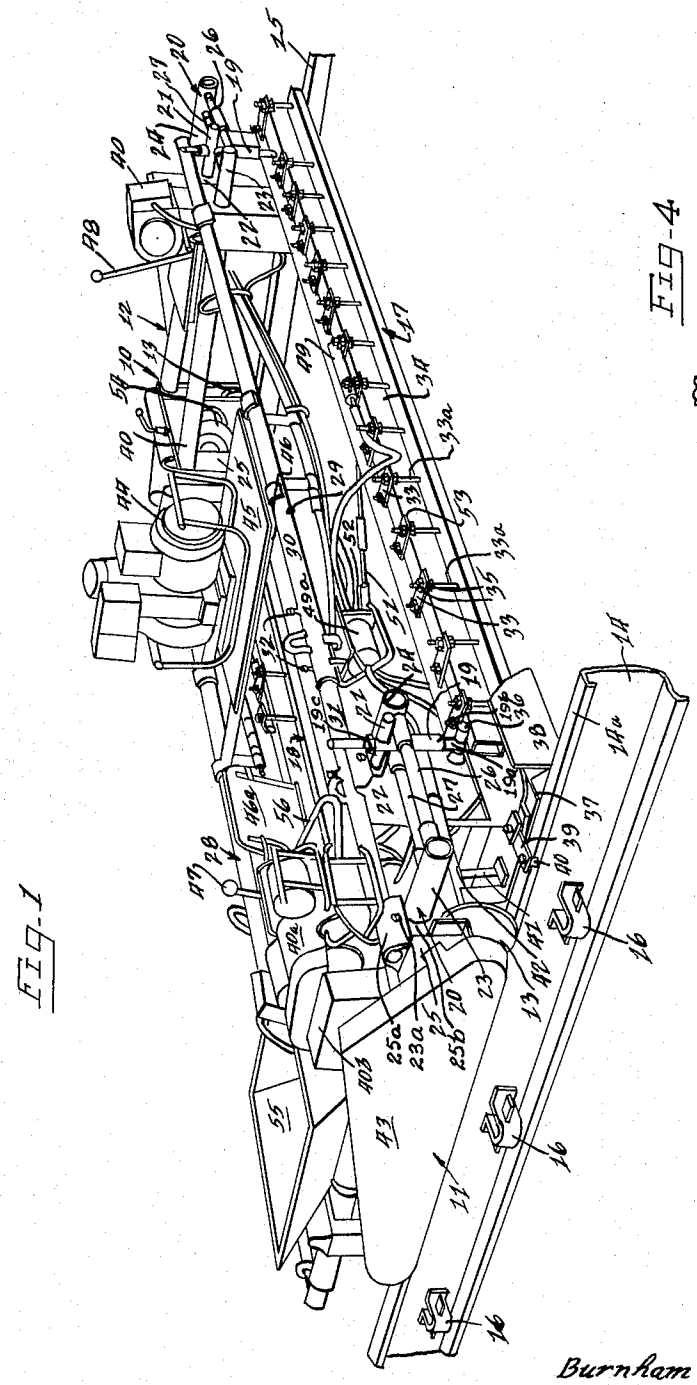


FIG-1

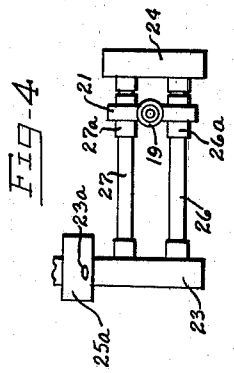


FIG-4

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2 Sheets-Sheet 2

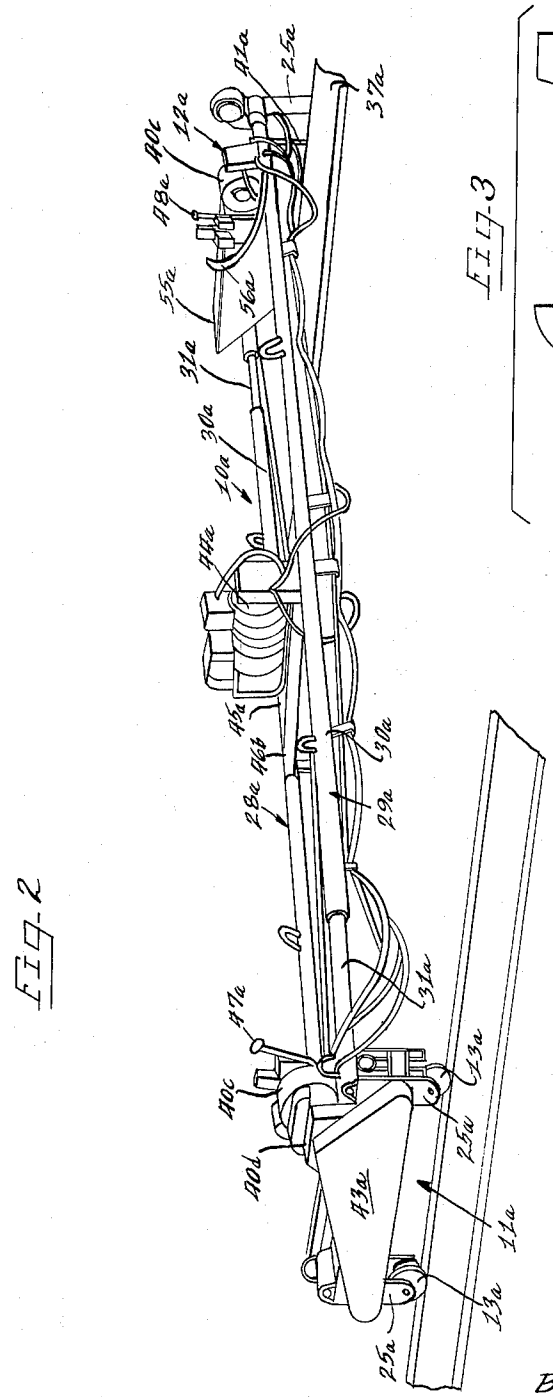


FIG. 2

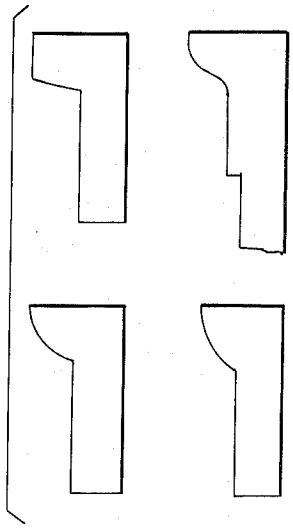


FIG. 3

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SLAB FINISHING AND CURB BUILDING MACHINE

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1 Claim. (Cl. 94—46)

This invention relates to apparatus for building curb, or curb-gutter and widening, and also to apparatus which can finish slab simultaneously therewith.

In accordance with the present invention, curb can be built on one or both sides of concrete slab, and in one embodiment of the invention, can be finished simultaneously in an especially efficient manner.

Accordingly, it is an object of the present invention to provide an integral curb builder which can be converted to a curb and gutter or finishing machine, in one embodiment thereof, and which affords electric power drive to all four wheels thereof.

Another object of the invention is to provide a device as described which can be controlled for operation from either side of the machine, if desired, and is characterized by a strong tubular construction adjustable to any width.

Another object of the invention is to provide a four wheel drive machine as described having rubber wheels with steel flanges for maximum traction, with the wheels being easily converted to non-flange rubber wheels for running on adjacent slabs.

Another object of the invention is to provide a device as described which will feed the correct amount of concrete to the curb mule, enabling it to leave a smooth-finished curb with even, straight lines so that no hand spading or mechanical tamping is necessary.

Another object of the invention is to provide a device and apparatus for finishing slab and forming curb which is light-weight, strong, durable, readily adjustable and easily operable with smooth steady power, and reversible by control switch means.

Another object of the invention is to provide a machine as described which, in another embodiment thereof, finishes flat slabs or builds curbs integrally while finishing slab, if desired.

Another object of the invention is to provide a machine which can build curb to any desired height or design and wherein the curb design can be changed in minutes.

Another object is to provide a device as described which travels on regular curb and gutter forms and in combination with the curb building means is capable of finishing with a variable speed vibrating screed adjustable to any crown.

Another object is to provide a troweling pan for finishing which is adjustable to any crown.

Another object of the invention is to provide a device as described which can be used on steep grades with twin winches built in for additional pull, so that the curb building and finishing operation can be used in a broad range of situations.

Other objects and advantages of the invention will become apparent as the description proceeds in accordance with the drawings, in which:

FIGURE 1 is a perspective view of a curb building and slab finishing machine according to the present invention;

FIGURE 2 is a perspective view of a curb building machine according to the present invention but which is not utilized in combination with slab finishing means;

FIGURE 3 is a schematic representation of curb and gutter and curb-gutter and widening cross-section which can be made by screeds and curb mules which can be utilized with the present invention; and

FIGURE 4 is a fragmentary top plan view of a support structure of the invention for supporting the screed.

Referring now to the drawings, and to FIGURE 1 in particular, a slab finisher and integral curb building machine **10** is shown in accordance with the present invention which includes a pair of power units **11** and **12** each provided with a pair of traction wheels **13**. The wheels are adapted to run on forms providing rails **14** and **15**, with the rails being adjustable by support brackets **16** for engagement with adjustable support elements (not shown).

In accordance with the present embodiment, front and rear screeds **17** and **18** are connected between the individual power units **11** and **12** by hydraulically or otherwise adjustable support means **19** on support structures **20** which may be widened as desired. The support structures **20** may include longitudinally extending pairs of tubular members **23** and **24** mounted in support members **25** provided for journalling the wheels, as hereinafter described, and the longitudinal tubular members **23** and **24** thus extend through the support members **25** on their respective sides corresponding to the power units **11** and **12** and are locked in their respective support members **25** by means of a set screw **23***a* or the like fastener. The longitudinal tubular members **23** and **24** are interconnected by lateral or transverse tubular frame members **26** and **27**, each of which is fixedly connected at opposite ends to the tubular members **23** and **24**, and the individual supports **20** on their respective sides are interconnected by adjustable front and rear lateral tubular members **28** and **29** each including a relatively somewhat larger tubular portion **30** and a smaller telescoping tubular portion **31**, with adjustment bolts **32** being provided for the purpose. Each of the support means **19** comprises a shaft **19***a* fixedly connected at its lower end to a corresponding screed, and telescopically vertically adjustably received within a vertical tubular sleeve **19***b* fixedly connected to a longitudinal support bar **21** by means of, for example, a welded connection. A stop means **19***c* which, in the illustrated embodiment, comprises a threaded nut, is carried on the shaft **19***a* above the sleeve **19***b* to limit the downward travel or position of the shaft **19***a* with respect to the sleeve **19***b* and therefore to limit the lowermost position of the screed. The support bars **21** are connected in fixed assembly to a pair of sleeves **26***a* and **27***a* which are slidably mounted, respectively, on the transverse tubular frame members **26** and **27**. Members **26** and **27** provide a horizontal guide track for the support means **19** to enable the power units **11** and **12** to be moved away from each other to widen the machine while providing support for the fixed-length screeds **17** and **18**. It will thus be appreciated that each of the support structures **20** on each side of the machine comprises a tubular member **24** which is supported by and fixedly connected to the other tubular

member **23** by means of a pair of transverse frame members **26** and **27**. The tubular members **23** are held against rotation in the sockets **25***b* of the support members **25** by means of the set screws **23***a* which extend through collars **25***a* mounted on their respective support member **25**. In the event that the width of the machine **10** is changed the support means **19**, which support the fixed-length screeds, are adjustably laterally slidable on the transverse tubular frame members **26** and **27** to accommodate such change in machine width. It will thus be seen that widening to any desired extent is afforded. In order to afford adjustment of the crown of the screeds, individual bolts **33***a* may be bolted to the screed and to opposite sides of plates **33** of a transversely extending bar **34** on the screeds by means of nuts **35**, with suitable connections **36** being provided between the bar **34** and the supports **19** as shown.

In accordance with the invention, a curb mule or molding structure **37** may be formed integrally with the screed by means of a channel shaped connection **38** on the adjacent end of the screed and with the flange **22** forming a part thereof. Thereby, a combined curb building and slab finishing machine is afforded which makes possible a uniquely efficient operation. The curb mule structure **37** may also have a flange **39** carrying a roller **40** engaging the rail **14** and the track position **14***a* thereof and may otherwise be supported as by a shaft **41** on a cross shaft **42**. The wheels **13** may be journalled on a shaft such as the shaft **42** and are powered by the motors **40***a* through suitable chain and sprocket means (not shown) guarded by a shield **43** on each side of the power units **11** and **12**.

An electric generator **44** is mounted on a platform **45** between the transverse frame members **28** and **29** and the relatively larger portions **30** thereof, as supported on hooked frame tubes **46**, to provide power for the motors **40***a*.

Also, a seat **46***a* is provided adjacent a lever **47** so that the device may be readily controlled, as hereinafter described, a corresponding lever **48** being afforded on the opposite side so that the machine can be controlled from either side. The wheels **13** and the chain and sprocket means for the wheels may be driven from a gear box structure **40***b* associated with the motors **40***a*. An electric vibrator power unit and associated means **49***a* for the flexible elongattd vibrator element **49** may be suspended from the cross tube structure **29** as shown, and turn buckle and support connections **51** may be extended between the support flange **52** on the tubular frame member **29**, and the screed structure.

Further to facilitate operation of the device on steep grades or the like, a pair of winches **54** may be mounted in the respective forward supports **25**.

In order to afford feeding of the concrete to the curb mold **37**, a hopper **55** is mounted on the adjacent forward support structure **20**, and a vibrator **56** is provided therefore in accordance with the understanding with those skilled in the art.

Referring now to FIGURE 3, it will be seen that a wide variety of shapes for curb and/or gutter may be formed in accordance with the present invention, with finishing being accomplished simultaneously by the screeds **17** and **18**. Thus, curb and gutter, or curb-gutter and widening forms may be provided as desired and the curb design may be changed in a manner of minutes.

Referring now to FIGURE 2, another embodiment of the invention is shown which is substantially similar to the embodiment of FIGURE 1 but does not utilize the screed means therein provided, and is otherwise somewhat simplified structurally with respect thereto. Thus, a machine **10***a* is shown having left and right-hand power units **11***a* and **12***a* with wheels **13***a* being journalled in supports **25***a* for rubber traction engagement with forms providing rails as described as indicated at **14***a*. The

oppositely registered supports **25***a* are interconnected by transverse tubular members **28***a* and **29***a* having individual telescoping sections **30***a* and **31***a* for widening adjustment as desired. Motors **40***c* are mounted on each side of the device as energized by a generator **44***a* mounted on a platform **45***a* which assists in interconnecting the frame portions **28***a* and **29***a*. Thus, flanges **46***b* are provided on the platform at each end thereof to hook over the tubular portions **28***a* and **29***a* respectively. Again, control from each side is provided by levers **47***a* and **43***a* and the motors may energize the wheels **13***a* through gear box means **40***d* and through sprocket and chain means (not shown) guarded by guards **43***a*.

In accordance with the invention, a curb mold or mule **37***a* is mounted on one or both sides **11***a* and **12***a* as by means of vertical supports **41***a* which may be secured to the transverse supports **28***a* and **29***a* or otherwise mounted in association with the supports **25***a* for ready removal and changing thereof. A hopper **55***a* is similarly provided to supply concrete to the form **37***a* or mold, and a vibrator **56***a* is utilized in conjunction therewith as understood by those skilled in the art. Thus, a very efficient and easy to operate device is provided which can form a wide variety of shapes as suggested by the shapes shown in FIGURE 3, and which can be changed in a very small time as needed.

The curb builder, either in conjunction with the slab finisher or in itself, can thus be used in an extremely wide range of applications and so as to meet different requirements with minimal expense and difficulty. Thus, a flexible apparatus has been provided which is uniquely adapted for economical slab and curb construction, particularly where the curb and slab are to be formed integrally, and the slab is to be finished simultaneously with the curb.

Although we have herein set forth and described our invention with respect to certain specific principles and details thereof, it will be understood by those skilled in the art that these may be varied without departing from the spirit and scope of the invention as set forth in the hereunto appended claim.

We claim as our invention:

A curb molding and slab finishing machine comprising,
- a pair of power units,
- wheels on each of said power units for engaging rail providing concrete forms or the like,
- an electric motor on each of said power units for driving the wheels thereof,
- a pair of transverse tubular support members interconnecting said power units each comprising an elongated inner tube fixedly connected to one of said power units and an elongated outer tube fixedly connected to the other of said power units and receiving in telescopic relation said inner tube whereby the width between said power units can be adjusted,
- a platform carried by said power units having an electric generator mounted thereon for driving said motors,
- a support member mounted on each of said power units and having a socket formed therein,
- a longitudinally extending tubular member received in said socket of each of said support members,
- locking means locking said tubular members in their respective sockets,
- a screed of fixed length extending transversely between said power units,
- a pair of vertically extending telescopically adjustable support means situated at opposite ends of said screed for supporting and for providing vertical adjustment of said screed,
  - each of said support means comprising,
  - a vertical tubular sleeve carried by its respective tubular member,

a shaft telescopically received within said sleeve, and

a stop carried on said shaft for limiting the lowermost position of said shaft, and

a pair of guide track means associated, respectively, with each of the power units and extending horizontally and transversely toward the other of said power units,

each of said track means interconnecting a corresponding support means and a longitudinally extending tubular member to slidably support said support means and said screed from said tubular member and to enable said power units to be widened while supporting said fixed-length screed.

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