

Feb. 24, 1953

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2,629,137

GILL DRAWING FRAME

Filed April 23, 1949

2 SHEETS—SHEET 1

Fig. 1.

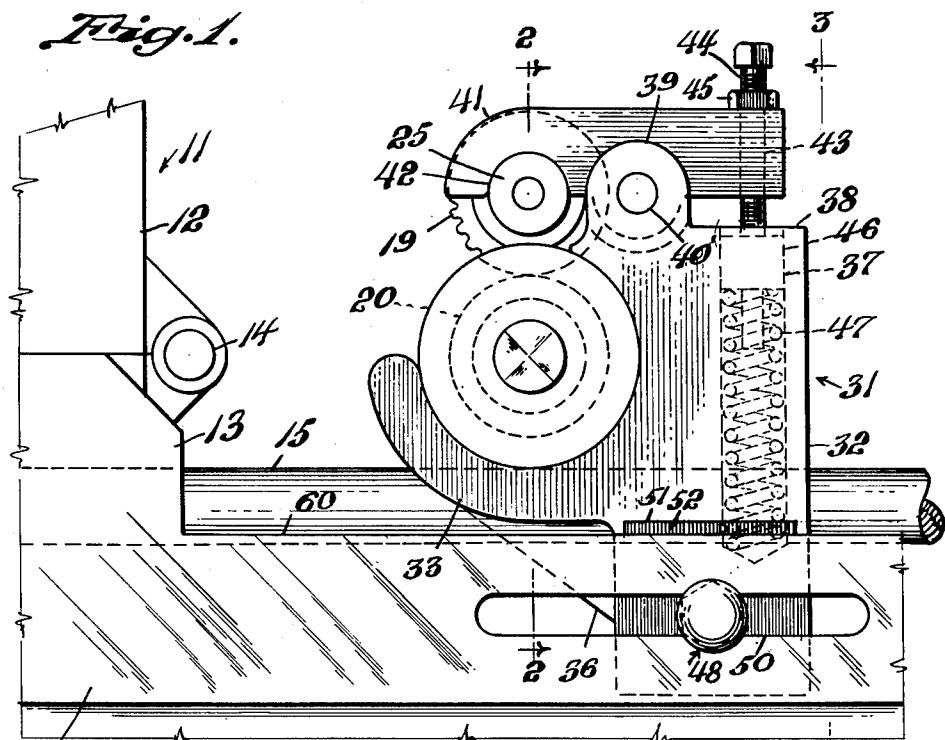
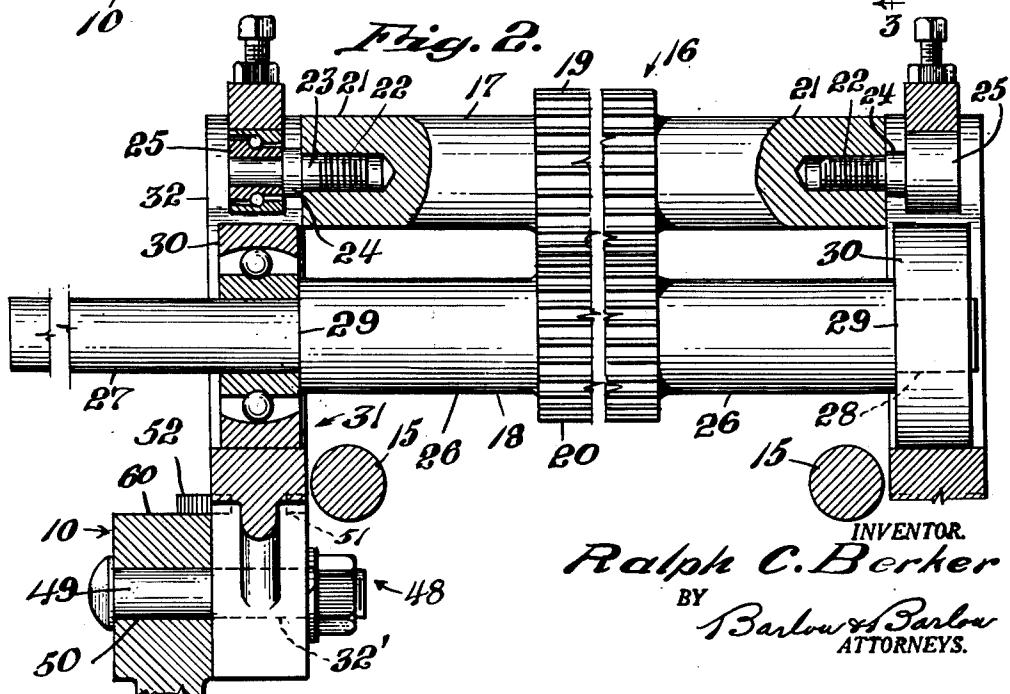


Fig. 2. 16



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2 SHEETS—SHEET 2

Fig. 3.

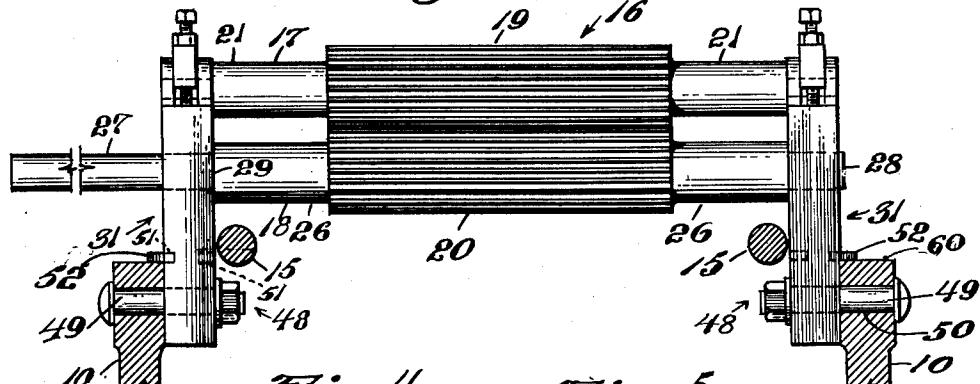
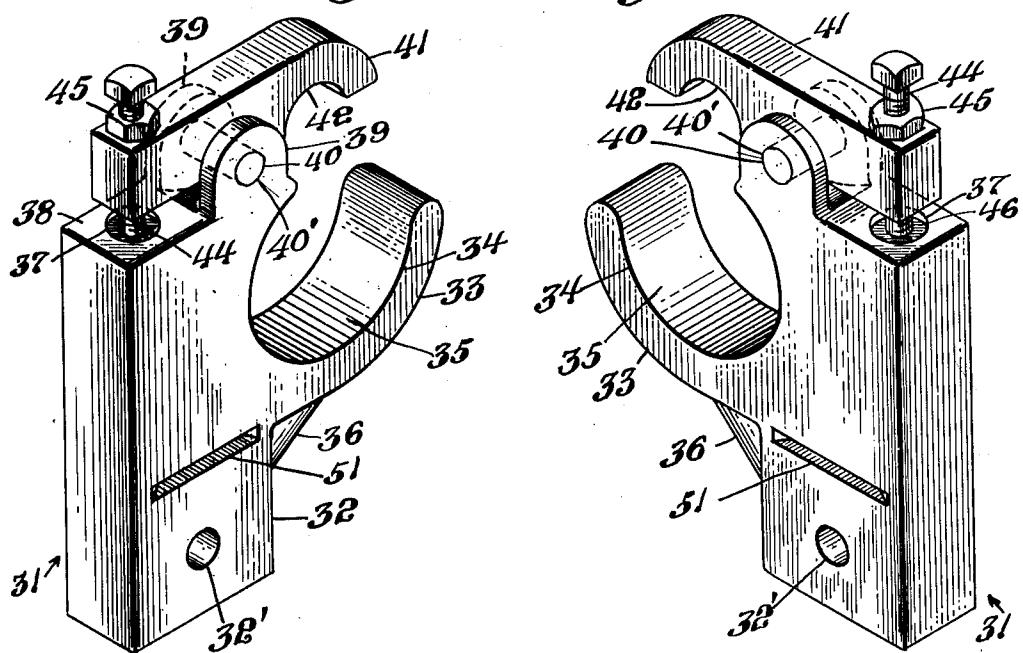


Fig. 4.

Fig. 5.



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Patented Feb. 24, 1953

2,629,137

UNITED STATES PATENT OFFICE

2,629,137

GILL DRAWING FRAME

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Application April 23, 1949, Serial No. 89,340

3 Claims. (Cl. 19—129)

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This invention relates to improvements in gill drawing frames or gill boxes, particularly in the construction of the back drawing rollers and mounting supports therefor.

The usual back drawing rollers of a gill drawing frame or gill box are so constructed that the bearing portions thereof are integral with the work-engaging portions of the rollers, the usual practice being to turn each of these rollers from a solid piece of stock. The bearing portions are journaled in inwardly extending overhanging portions of relatively heavy supports which are bolted to the side frames of the machine. These supports are usually shaped so as to clear the lower shaft of the pairs of traverse screws of the gill frame. In the manufacture of the supports considerable machine and manual labor is involved and there is also much time consumed in the aligning of the supports for the proper operation of the back rollers. A right and a left support must be provided for each machine, thereby requiring two pieces for each machine and a large inventory of such parts. Further, the lengths of the rollers, particularly between the bearings, and the length of the bearings themselves are manufactured in very close tolerance and are not interchangeable and must be made to specification for each machine manufactured or repaired.

An object of this invention is to improve generally the construction of gill drawing frames so as to reduce labor and time usually consumed in the manufacture of these machines or in the repairing thereof.

A more specific object of the invention is to provide bearing supports for the back rollers of a gill drawing machine each of which will be identical and yet may be employed on either side of the machine.

Another object of this invention is to provide for interchangeability of the back rollers of a gill drawing machine.

Another object of this invention is the provision of lighter weight bearing supports for the back rollers of a gill drawing machine.

Another object of this invention is to provide bearings for the back rollers of a gill drawing machine which will be self-aligning.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a side elevational view of a fragmental portion of a gill drawing frame embodying my invention;

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Figure 2 is a sectional view taken substantially along line 2—2 of Figure 1 looking in the direction of the arrows thereon;

Figure 3 is a rear view of the drawing rollers with the side frames of the machine shown in section, as viewed along line 3—3 of Figure 1 looking in the direction of the arrows;

Figure 4 is a perspective view of the bearing support; and

Figure 5 is a similar view looking at the opposite side of the support shown in Figure 4.

Generally, the invention comprises providing ball bearings for the back rollers of a gill drawing machine and supporting the rollers by means of identical bearing supports which may be employed on either side of the machine thereby eliminating the necessity for right and left supports. The bearing supports are made of rectangular formation enabling a plurality of supports to be machined at the same time.

Referring to the drawings for a more detailed description of the invention, 10 designates the side frames of a gill drawing machine to which there are secured the usual gill head 11 having upper and lower sections 12 and 13 hingedly joined as at 14. The gill head 11 is provided with the usual upper and lower pairs of traverse screws (not shown). A shaft 15 extends rearwardly from each lower screw at a position to be substantially in line with the upper edge of the frame 10 and spaced therefrom.

A back pair of rollers designated generally 16 and consisting of an upper roller 17 and a lower roller 18 are each provided with usual work-engaging portions 19 and 20, respectively, between which the work is guided to the faller bars (not shown). The upper roller 17 is provided with similar reduced end portions 21 in each end of which there is provided a threaded opening 22 to receive a threaded stud or the like 23 having a collar 24 thereon abutting against the end of the reduced portion 21. Each stud 22 carries an anti-friction bearing 25 shown conventionally in section in Figure 2 and which may be of any suitable manufacture.

The lower roller 18 is also provided with similar reduced portions 26 which are provided at their ends with trunnions 27 and 28, of a reduced diameter forming shoulders 29. Each of these trunnions receives an anti-friction self-aligning bearing 30 which abuts against the shoulders 29 and is frictionally secured in a usual manner to the trunnions 27 and 28. The bearings 30 are also illustrated conventionally in cross section in Figure 2 and may be of any suitable manufacture. The trunnion 27 is extended so

as to provide for receiving a gear or the like (not shown) which is usually employed for driving the back rollers.

The back rollers are mounted one above the other in bearing supports designated generally 31, each of which is of identical construction. Each bearing is preferably made in a flat substantially rectangular block 32 (see Figures 4 and 5). A curved arm 33, extends from one edge of the block 32, the upper or inner surface 34 of which continues into the edge of the block to form a substantially semi-circular recess 35 of a dimension to frictionally receive the outer housing of the bearing 30. A rib 36 is provided for reinforcing the arm 33. The width of the arm 33 is made greater than the width of the bearing 30 so as to permit lengthwise adjustment of the lower roller 18. In order to mount the upper roll 17, I have provided on the upper edge 38 of the support ears 39 having openings 40 receiving a pivot pin 40' upon which an arm 41 is freely pivoted. A bore 37 in the upper edge 38 slidably receives a plunger 46 which is engaged by screw 44 held in threaded bore 43 in arm 41 by a nut 45. A compression spring 47 (see Figure 1) is positioned within the bore 37 to engage the lower edge of the plunger 46 to urge the same outwardly thereby spring loading the arm 41.

The recess 42 is at a position to be vertically in line with the axis of the lower roll and engages the upper portion of the bearing 25 of the upper roller and resiliently mounts the upper roller to move into engagement with the lower roll. The pressure exerted upon the work passing between the rollers can, in a usual manner, be adjusted by means of the threaded member 44. The lower portion of the block 32 is provided with a mounting opening 32'.

As previously stated, each support 31 is of identical construction and may be employed for either side of the machine and is secured in place against the inner side of the frames 10 by means of a single bolt and nut fastening 48. The shank 49 of the bolt passes through the mounting opening 32' and through an elongated opening 50 usually provided in the side frame 10. In order to further support the blocks 32 on the side frames 10, a recess 51 is milled in each side of the blocks and a rectangular bar 52 has a portion thereof received within the recess 51 and extends therefrom into engagement with the upper edge 60 of the frame 10.

It will be apparent that in the particular design of the block 32 I have simplified to a great extent the bearing supports for the back rollers of a gill drawing machine with a substantial saving in labor and consequently time usually required for the making of the bearing support. The weight of these supports which I have found sufficient for the purpose of supporting the rollers is substantially one-fourth of that of the usual prior construction. Additionally, I have reduced the labor involved in the manufacture of the supports from thirteen machine operations to eight, with a requirement of approximately one-fourth of the usual time consumed. Furthermore, in the arrangement herein shown I am able to have more latitude in tolerances between supports, thereby providing for the interchangeability of stock back rollers.

I claim:

1. In a gill drawing machine having side frames and upper and lower back drawing rollers each provided with ball bearings, a bearing support for said back rollers adjustably secured to each frame, each of said supports being identical and interchangeable one with the other and adjustable lengthwise of said frame, said supports having a longitudinal recess in the side thereof and a rectangular bar received in said recess and extending therefrom providing a shoulder for engagement with the upper edge of the said frame, said bearings being mounted wholly on said support.
- 5 15. In a gill drawing machine having side frames with the shafts of the lower traverse screws of the machine extending along said frames inwardly thereof and in spaced relation and upper and lower back drawing rollers at a location above said shafts and each provided with ball bearings, bearing supports each being identical and interchangeably secured to said side frames and extending wholly within planes extending vertically from the inner edge of the side frames and outside of planes parallel to the first said planes and tangential to the outer side of said shafts, said supports being adjustable lengthwise of said frame and said bearings being mounted wholly on said support.
- 20 25. In a gill drawing machine having side frames, an upper and a lower back drawing roller each provided with ball bearings, bearing supports for said rollers secured to each frame, each of said supports being identical and interchangeable one with the other and having means on each side thereof for detachably securing an abutment providing a shoulder on the selected side of the support for engagement with the upper edge of said frame, said support comprising a substantially rectangular block of substantially uniform thickness and having a substantially semi-circular recess formed in one side thereof and opening at the upper side thereof, said recess being of a size to frictionally receive the bearing of the lower roller, an arm pivotally mounted inwardly of the side edges of said block at the upper edge of said block and having a recess to receive the bearing of the upper roller to position said bearing directly above the said bearing of the lower roller, said arm being spring loaded for yieldingly moving said top roller towards the lower roller.
- 30 35. In a gill drawing machine having side frames, an upper and a lower back drawing roller each provided with ball bearings, bearing supports for said rollers secured to each frame, each of said supports being identical and interchangeable one with the other and having means on each side thereof for detachably securing an abutment providing a shoulder on the selected side of the support for engagement with the upper edge of said frame, said support comprising a substantially rectangular block of substantially uniform thickness and having a substantially semi-circular recess formed in one side thereof and opening at the upper side thereof, said recess being of a size to frictionally receive the bearing of the lower roller, an arm pivotally mounted inwardly of the side edges of said block at the upper edge of said block and having a recess to receive the bearing of the upper roller to position said bearing directly above the said bearing of the lower roller, said arm being spring loaded for yieldingly moving said top roller towards the lower roller.
- 40 45. In a gill drawing machine having side frames, an upper and a lower back drawing roller each provided with ball bearings, bearing supports for said rollers secured to each frame, each of said supports being identical and interchangeable one with the other and having means on each side thereof for detachably securing an abutment providing a shoulder on the selected side of the support for engagement with the upper edge of said frame, said support comprising a substantially rectangular block of substantially uniform thickness and having a substantially semi-circular recess formed in one side thereof and opening at the upper side thereof, said recess being of a size to frictionally receive the bearing of the lower roller, an arm pivotally mounted inwardly of the side edges of said block at the upper edge of said block and having a recess to receive the bearing of the upper roller to position said bearing directly above the said bearing of the lower roller, said arm being spring loaded for yieldingly moving said top roller towards the lower roller.
- 50 55. RALPH C. BERKER.

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