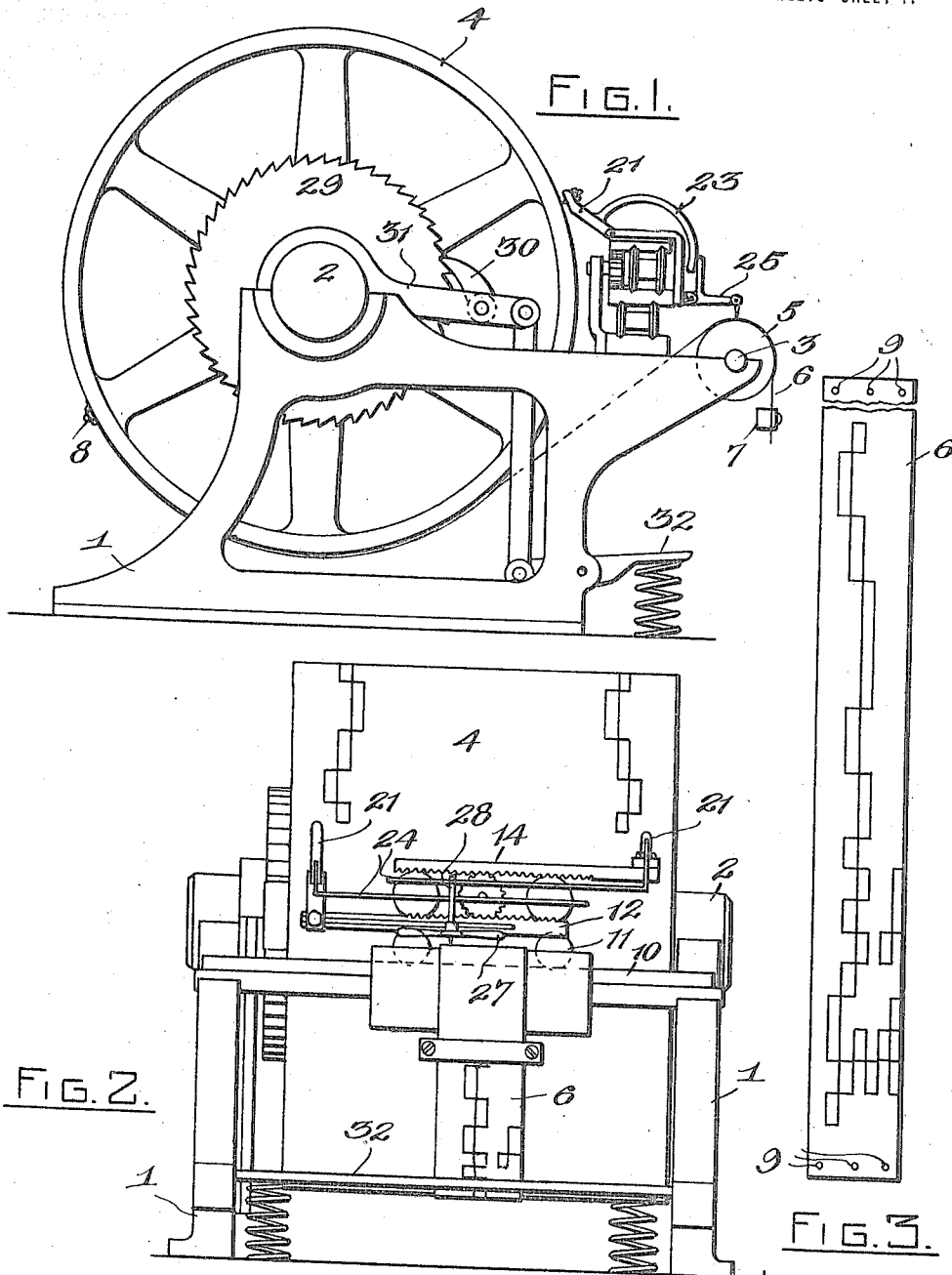


W. H. HOPE.
 ENGRAVING MACHINE.
 APPLICATION FILED JULY 11, 1917.

1,264,074.

Patented Apr. 23, 1918.
 2 SHEETS—SHEET 1.



INVENTOR.

William H. Hope
Joseph A. Miller

ATTORNEY.

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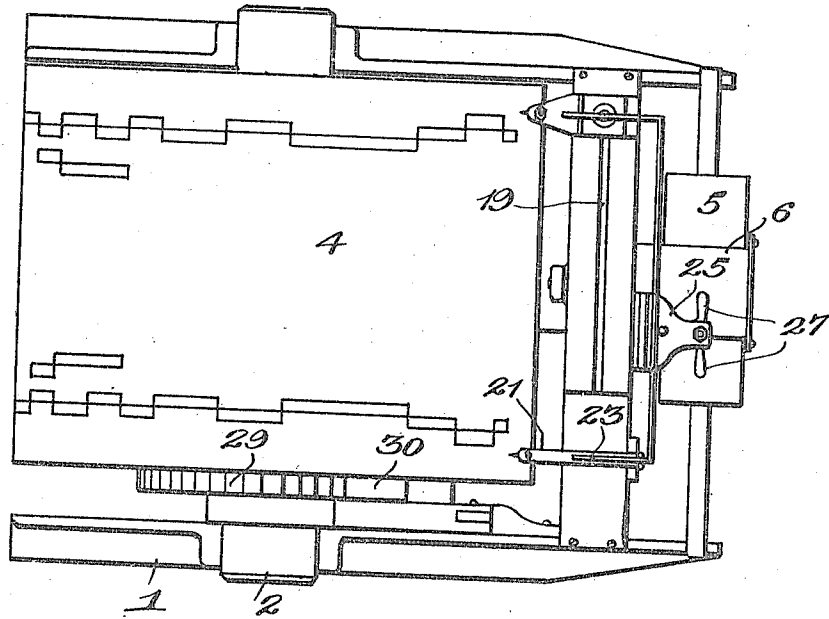


FIG. 4.

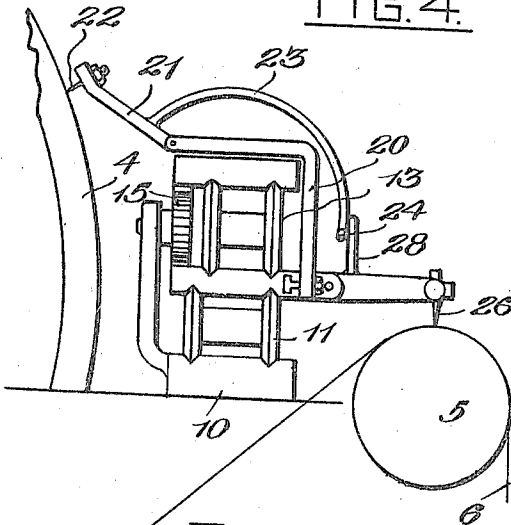


FIG. 5.

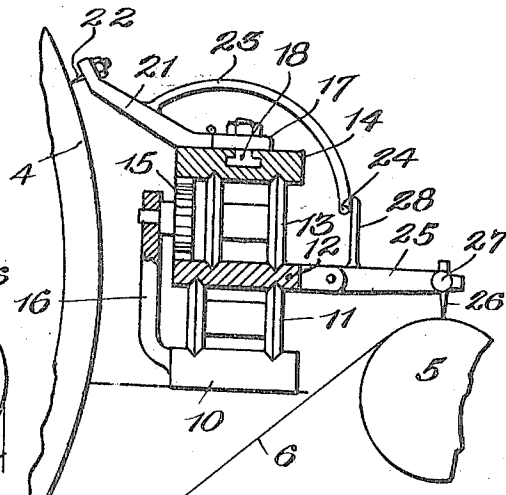


FIG. 6.

INVENTOR.

William H. Hope
Joseph A. Miller

ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIAM H. HOPE, OF PROVIDENCE, RHODE ISLAND.

ENGRAVING-MACHINE.

1,264,074.

Specification of Letters Patent. Patented Apr. 23, 1918.

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To all whom it may concern:

Be it known that I, WILLIAM H. HOPE, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Engraving-Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in an engraving machine, and it has for its purpose to provide an improved machine by which a design or pattern may be transferred to printing rolls for subsequent etching by the application of acid to the desired depth.

The invention resides in attaching one end of a design carrying sheet or strip to a print roll and passing the opposite end over a supporting roll for being traced by a stylus which is connected to one or more cutters for transferring the design to the printing roll.

The invention further resides in the improved cutter and stylus mechanism in which the cutters are moved relative to each other through the manipulation of the stylus, and also raised from the printing roll upon the lifting of the stylus from the design bearing member.

Further, the invention is found in the features of construction, and the arrangements and combinations of parts hereinafter described and claimed, reference being had to the accompanying drawings wherein

Figure 1 is a side elevation of the improved machine.

Fig. 2 is a front elevation thereof.

Fig. 3 is a plan view of a design carrying strip used in the operation of the present machine.

Fig. 4 is a top plan view of the engraving machine.

Fig. 5 depicts in enlarged end elevation the cutter mechanism with the cutters and stylus operatively related, and

Fig. 6 is a vertical section through the cutter mechanism.

Referring more in detail to the accompanying drawings, the numeral 1 designates a supporting frame structure which is provided with journal bearings for the shafts 2 and 3 of the printing roll 4 and design supporting roll 5, respectively.

The pattern or design is produced on a transparent strip 6, as depicted in Fig. 3, the same being reversible with respect to its op-

posite sides and also to its ends. The design may conveniently be painted, drawn, or otherwise applied to transparent material and is secured at one end to the printing roll and is then passed over the supporting roll 5, a weight 7 being attached to the free end to maintain the strip under tension as well as to provide a means for pulling the same over the supporting roll when the printing roll is rotated in its bearings. The means provided for attaching an end of the strip to the printing roll comprises a plurality of pins 8 which are passed through perforations 9, formed in each end of said strip to detachably secure the same to said roll. By removing the pins and reversing the ends of the strip and turning the latter over, and resecuring the strip to said roll a different arrangement of the design may be procured.

In the printing of rugs and similar floor coverings or hangings, such as curtains, the design is printed on long strips and afterward cut or separated into proper or desired lengths. Therefore, in such printing a blank space is left for the purpose of separating the rug designs and properly binding the rug ends. Consequently, the printing rolls are cut to leave the required blank space in which the pins 8 are arranged.

The numeral 10 designates a track support that is mounted on the frame 1 between the rolls, said track preferably having a pair of grooves in which operate the wheels 11 constituting a carriage for the lower rack bar 12. This bar is formed in its under surface with track grooves to receive the wheels 11 and is likewise provided in its upper surface with a grooved track of narrower gage to receive the wheels 13 which constitute a carriage for the upper rack bar 14. The rack bars have opposing racks with which mesh an interposed pinion 15 that is journaled in arm 16 extending upwardly from the track support 10.

A cutter support 17 is adjustably connected to the upper rack bar through the intermediary of a T-bolt 18 engaging in a like shaped groove 19 formed in the upper face of said bar, and in a similar manner a second cutter support 20 is adjustably secured to the front face of the lower rack bar, the second support being extended up and over the upper rack bar in right angular form, as depicted in Fig. 5. A cutter arm 21 is pivoted to the free end of each cutter support

and carries the point 22 on its outer end for operating on the printing roll. A curved lever arm 23 is fixed on each cutter arm and extends over the upper rack bar and terminates in a horizontally disposed bar 24, said bars being arranged in superposed relation in front of the rack bars.

The stylus arm 25 is pivoted to the forward edge of the lower rack bar and carries on its outer end the point 26 for tracing the design as it passes over the supporting roll, suitable handles 27 being provided for properly manipulating the stylus. Near the pivotal mounting, the stylus arm is provided with an upstanding lever arm 28 which engages the bars 24 and depresses them, when the stylus arm is lifted to effect a removal of the cutters from the printing roll.

In operation, the design carrying strip is attached at one end to the printing roll and carried under the same and over the supporting roll 5, said printing roll being so disposed as to have the pins 8 initially arranged adjacent the cutters. The operative now traces the design with the stylus and, through the intervening mechanism, causes the cutters to operate on the printing roll. If its cutters are not properly related, adjustment may individually be effected or simultaneously, the stylus being raised to lift the cutters from the roll during such adjustment.

As the operation proceeds, the printing roll is rotated to present a new portion of the design strip and a fresh portion of said roll. This rotative motion is imparted to the printing roll through the instrumentality of a ratchet 29, fixed on shaft 2, and a pawl 30 pivoted to the latter through lever 31, a treadle 32 being conveniently positioned to the operative.

After the design has been traced, the parts are related as shown in Fig. 1. The strip may now be turned over and the opposite end fastened to the roll and the operation continued until the complete design is cut on the roll. This gives the ornamentation for the sides of the rug. At this point the design forming the center of exactly the same length and but half in length is attached to the roll as described for the sides. The two cutters are then moved to a more central position on the rack bars and the cutting operation proceeded with.

After the design has been cut on the roll, the usual etching process is followed. Of course, it is possible that with suitable structure one-half the width of the design strip or sheet may be carried as well as one-half the length, thereby permitting the forming of one-half the design.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is—

1. In an engraving machine, a frame con-

structed operatively to support a printing roll, a design strip adapted for being detachably secured at one end to the roll, a supporting roll over which the strip passes journaled in the frame, means for pulling the strip over the supporting roll as the printing roll is rotated, means for rotating the printing roll, a track arranged on the frame between the rolls, wheels on the track, a lower rack bar supported on the wheels and provided with a track on its upper face, wheels on the latter track, an upper rack bar supported on the second wheels, an interposed pinion journaled on the frame between the rack parts of the bars for moving the same in opposite directions, a support adjustable on each bar, a cutter arm pivoted to each support for operating on the printing roll, a stylus arm pivoted on the lower rack bar and extending over the supporting roll, said stylus arm having an upstanding lever arm, and a cooperating lever arm carried by each cutter arm and including a horizontal bar part against which the upstanding lever arm moves on lifting the stylus arm to effect a lifting of the cutter arms from the printing roll.

2. In a direct engraving machine, a frame constructed operatively to support a printing roll, a design supporting roll, means connecting the same to the printing roll for simultaneous movement therewith, a pair of rack bars, a connecting pinion arranged between the bars for effecting reverse movements thereof, a cutter support carried by each rack bar, a cutter arm pivoted to each support, a stylus arm pivoted to one of the rack bars for movement over the design supporting roll, a lever arm on each cutter arm having a horizontal bar part extending alongside the rack bars and above the stylus arm, and carried by the latter for engaging the bar parts of the lever arms to elevate the cutter arms on raising the stylus arm.

3. In a direct engraving machine, a frame constructed operatively to support a printing roll, a design carrying member, a plurality of cutters, means supporting each cutter including a rack bar, a pinion arranged between the rack bars to effect movement of the bars in opposite directions, a stylus movably connected with one of the rack bars for operating over the design carrying member, and means connecting the stylus to the cutters whereby on lifting the former from the design carrying member the latter will be elevated from the printing roll.

4. In a direct engraving machine, a frame constructed operatively to support a printing member, a design carrying member, a plurality of cutters for operating on the printing member, a stylus operable on the design carrying member, means for moving the cutters toward and from each other on movement of the stylus, and means for removing

the cutters from the printing member on lifting the stylus from the design carrying member.

5 5. In a direct engraving machine, a frame constructed operatively to support a printing roll, a supporting roll, a design carrying member attached at one end to the printing roll and passing over the supporting roll, a stylus, and means
10 operatively connected to the stylus for cutting the design on the print roll by tracing the stylus on the design carrying member as the latter passes over the supporting roll.

6. In a direct engraving machine, a frame
15 constructed operatively to support a printing roll, a supporting roll, a design sheet detachably secured at one end to the printing roll and having its opposite end portion passing over the supporting roll, a cutter
20 operable on the printing roll, and a stylus operatively connected to the cutter for tracing the design as the sheet passes over the supporting roll.

7. In an engraving machine having means
25 for transferring designs to print rolls, a design carrying strip having means at each end for selectively attaching either end to the printing roll.

8. In an engraving machine having means
30 for transferring designs to print rolls, a design carrying strip having its ends perforated, and pins insertible through the strip perforations for securing either end thereof to the roll.

35 9. In an engraving machine, a design carrying member, a pair of cutters for operating on a roll, means for operatively supporting the cutters, a stylus cooperating with the design carrying member, and means connecting
40 the latter to the cutters including means for moving the cutters toward and from each other in a direction parallel to the axis of the roll by and during movement of the stylus.

10. In a direct engraving machine, a frame
45 constructed operatively to support a printing roll, a design carrying member, a pair of rack bars, an interposed pinion connecting the bars, a stylus carried by one bar for tracing the design on said member, a cutter
50 on each bar for operating on the roll, and means connecting the cutters and stylus for simultaneously lifting movement from said roll and member.

11. In a direct engraving machine, a frame

constructed operatively to support a print- 55
ing roll, a design carrying member, a rack bar, a cutter pivotally connected to the latter, a stylus operatively connected to the bar, a lever arm fixed on the cutter, and means carried by the stylus for engaging with the
60 lever arm and raising the cutter from the roll on lifting the stylus from the design carrying member.

12. In a direct engraving machine, a frame
constructed operatively to support a print- 65
ing roll, a design carrying member, a pair of rack bars, a stylus arm pivoted to one arm for operating over the member, a cutter pivotally connected to the other bar for operating on the roll, a lever arm carried
70 by the cutter and including a horizontal bar part, and an upstanding arm carried by the stylus for relative movement to the bar part and engaging the latter to depress the same on lifting the stylus to effect a lifting of the
75 cutter.

13. In an engraving machine, means for rotatably supporting a printing roll, a design carrying strip adapted to be secured at one end to the roll, means supporting the
80 strip, and means for transferring the design from the strip to the roll.

14. In an engraving machine for printing rolls, a plurality of cutters, means connect- 85
ing the same whereby movement of one cutter in one direction will effect movement of the other cutter in the opposite direction toward or away from the first cutter, and a stylus connected to the first cutter for imparting movement thereto. 90

15. In an engraving machine for printing rolls, a pivotally mounted cutter arm, a lever arm carried thereby and including a horizontal bar part, and a pivotally mounted stylus having an upstanding lever arm extending
95 across the horizontal bar part of the first lever arm for depressing the latter to raise the cutter on lifting the stylus, said stylus and cutter being relatively adjustable longitudinally of the horizontal bar part. 100

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM H. HOPE.

Witnesses:

ADA E. HAGERTY,

J. A. MILLER.