

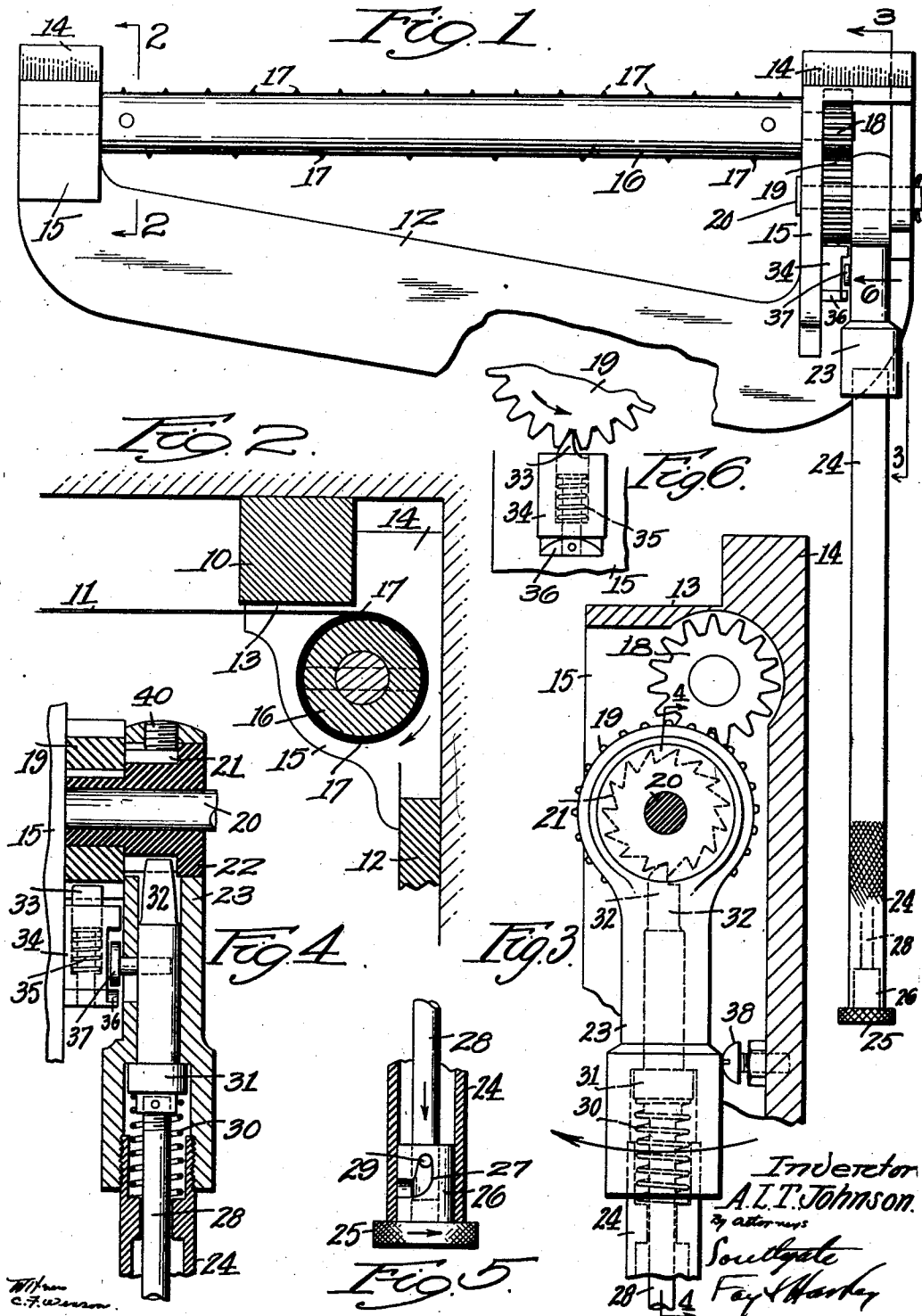
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STRETCHER

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## UNITED STATES PATENT OFFICE

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## STRETCHER

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This invention relates to a stretcher for general use but especially adaptable for use in stretching fabric or the like over ceilings or walls in order to provide a smooth foundation for a new surface.

The principal objects of the invention are to provide a neat and convenient tool for this purpose having means by which it can be held conveniently in position to accomplish the desired object; to provide the same with means for grasping the sheet of material and stretching it out flat; to provide convenient means for operating it; to provide means whereby when the sheet is stretched and nailed or tacked in place the stretching device can be thrown out of gear by very simple manipulation to permit its removal and to provide improved mechanism for accomplishing these several objects.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is a side view of a preferred embodiment of the invention shown in position for operation;

Fig. 2 is a sectional view on the line 2—2 of Fig. 1 showing more fully the position of the parts and illustrating the stretching of the fabric;

Fig. 3 is a sectional view on the line 3—3 of Fig. 1 showing the gear and operating mechanism;

Fig. 4 is a central sectional view on the line 4—4 of Fig. 3;

Fig. 5 is a sectional view of the outer or lower end of the operating handle, and

Fig. 6 is a side view, as indicated by the arrow 6 in Fig. 1, of the ratchet and its operating device.

When a new surface for the ceiling or wall has to be placed in a room it is customary to stretch a fabric along the same and attach it to furring pieces attached to the old wall. This stretching operation has to be done by

fastening one end of the fabric at one end of the wall or ceiling and stretching the fabric from that end to the opposite end and then applying enough pull to the fabric to stretch it out flat. Heretofore this has been an inconvenient method and a great deal of time has been wasted in getting the fabric into a tightly stretched and smooth condition. This tool is designed for the purpose of accomplishing this purpose in a very expeditious way and providing an improved result.

Furring strips 10 are attached at intervals on the ceiling transverse to the fabric 11 which is to be applied. The end of the fabric, not shown herein, is attached to the furring piece at the opposite end of the room by means of tacks or the like and it has to be stretched so it can be tacked to the furring piece 10 near one wall. To accomplish this readily this tool has been designed.

It comprises a frame 12 having a horizontal surface 13 to rest under the last furring piece 10 and two projections 14 fitting in the space behind it. This is usually half an inch wide but the tool is made in accordance with the conditions existing and these two projections 14 are intended to fit in this space and help hold the tool in position.

The frame 12 is provided with two uprights 15, one solid and the other bifurcated, of which the projections 14 constitute a part. They are connected by an integral cross brace as shown in Fig. 1 which may take that form if desired. Mounted in suitable bearings on the two uprights 15 are the end studs of a roll 16. This roll extends from one of these uprights to the other and is provided with pins or projections 17 to engage the fabric and enable the fabric to be wound up on it as indicated in Fig. 2.

On the stud at one end, preferably at the right end of the roll 16, is a gear 18. This gear 18 meshes with a gear 19 which is keyed on the hub of a ratchet wheel 21. This ratchet

wheel is loose on a shaft 20. The shaft 20 has its bearings in the bifurcated upright 15. The ratchet wheel has an enlarged cylindrical portion 22 on which is loosely and pivotally mounted a frame 23 so that this frame can be swung on the axis of these elements. This frame 23 is provided with a hollow handle 24 screwed into it for oscillating it about the shaft 20. At the bottom of this handle 24 is a knurled head 25 fixed to a hub 26 oscillatably mounted in the end of the handle. This hub has a cam groove 27 and a rod 28 inside the handle has a pin 29 projecting into this cam groove. Therefore the head 25 can be turned to the right of Fig. 5, or it can be pulled down, and in either case the rod 28 will be pulled down with it against the resistance of a spring 30 which is located under, and presses on, a head 31 on the rod inside the frame 23. This head 31 is provided with an extension having a ratchet pawl 32 which normally engages with the ratchet 21. The head 31 and pawl 32 are in one piece preferably and the spring 30 of course tends to push the pawl in toward the ratchet teeth, the rod 28 and head 31 being fixed together.

The oscillation of the handle as indicated by the arrow in Fig. 3 intermittently rotates the ratchet wheel and consequently the gearing described and the roll 16. This rotation is carried on until the desired amount of stretch is secured and then the piece of fabric 11 is in the proper position. The part that comes under the furring piece 10 is tacked to it.

While the tacking is going on it is desirable obviously that the roll should not turn. This roll can be locked against turning by a toothed plunger 33 mounted in a small casing 34 on one of the uprights. This plunger is provided with a spring 35 for pushing it in. On the end of the plunger is a cam 36. This toothed plunger is shaped to have a slant on one side and a substantially radial surface on the other so that the gear 19 can be operated by the ratchet in one direction, that is, the direction for the winding up of the fabric on the roller, and it prevents the roller turning backward. Now when the cloth is stretched as much as desired this tooth holds it against being loosened.

When the tacking is completed the operator manipulates the knurled head 25 in either of the ways indicated which pulls the rod 28 down, pulls the pawl 32 out of the ratchet wheel 21 and through a headed projection 37, sticking out from the side of the extension on the rod through the frame 23, engages the cam 36 and pulls the tooth 33 back out of the teeth of the gear 19. There is nothing left to prevent the turning of these gears by hand, preferably through the roll 16, to loosen everything up so that the fabric can be cut off at the right of the furring piece 10 and the tool removed.

I have shown an adjustable stop 38 for preventing the handle from moving too far toward the adjacent wall. I have shown a screw 40 extending inwardly from the frame 23 against the cylindrical hub or bearing 22 to prevent the element composed of the part 19 and 22 from being detached.

It will be seen that the device provides effective means for stretching the fabric as much as may be desired for holding the fabric in stretched position while it is being tacked and then for releasing the gears so that the fabric can be cut off and the tool removed.

It will be seen also that the tool is of a convenient character, can be held in position very simply, and that the spacing of the furring piece from the wall as is usual is taken advantage of to assist in holding the tool in place on the vertical wall of a room and to line it up properly with the wall and furring piece. The tool is very easily manipulated and there is little chance of getting the fabric stretched more on one edge than on the other or otherwise getting it into an uneven wrinkled position.

Although I have illustrated and described only a single form of the invention I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited in this respect but what I do claim is:—

1. In a tool for stretching a fabric or the like, a combination with a frame having a single upright at one end and a bifurcated upright at the other, said uprights having bearings, of a roll having teeth thereon having its studs mounted in said bearings, a shaft supported by the bifurcated upright, a gear on one of the studs of said roll, a ratchet wheel on said shaft, a gear fixed to the ratchet wheel and meshing with the first named gear, a handle oscillatable about said shaft as a center, a spring-pressed pawl engaging the teeth of said ratchet wheel for intermittently rotating the ratchet wheel and roll as the handle is oscillated, and releasable means for holding the roll against turning.

2. In a device of the character described, the combination with a frame and a roll mounted to turn freely thereon, of a shaft, a ratchet wheel freely mounted on the shaft, means connected with the ratchet wheel for turning the roll, a second frame oscillatable about said shaft as a center, a handle fixed to the second frame for operating the machine, a spring-pressed rod extending through said handle and having a pawl adapted to engage the ratchet wheel, means at the extreme end of the handle for pulling the rod back against the action of the spring and removing the pawl from the ratchet wheel, a projection extending through the frame and connected with the pawl and rod, a

spring-pressed tooth movably mounted on the first frame for engaging the gear, said tooth being shaped to allow the gear to rotate in one direction and to prevent its rotating in the other, and a cam connected with said tooth in position to be pulled back by said projection when the rod is retracted to pull the tooth out of the gear and leave the gear all free for disconnection.

In testimony whereof I have hereunto affixed my signature.

ALBERT L. T. JOHNSON.