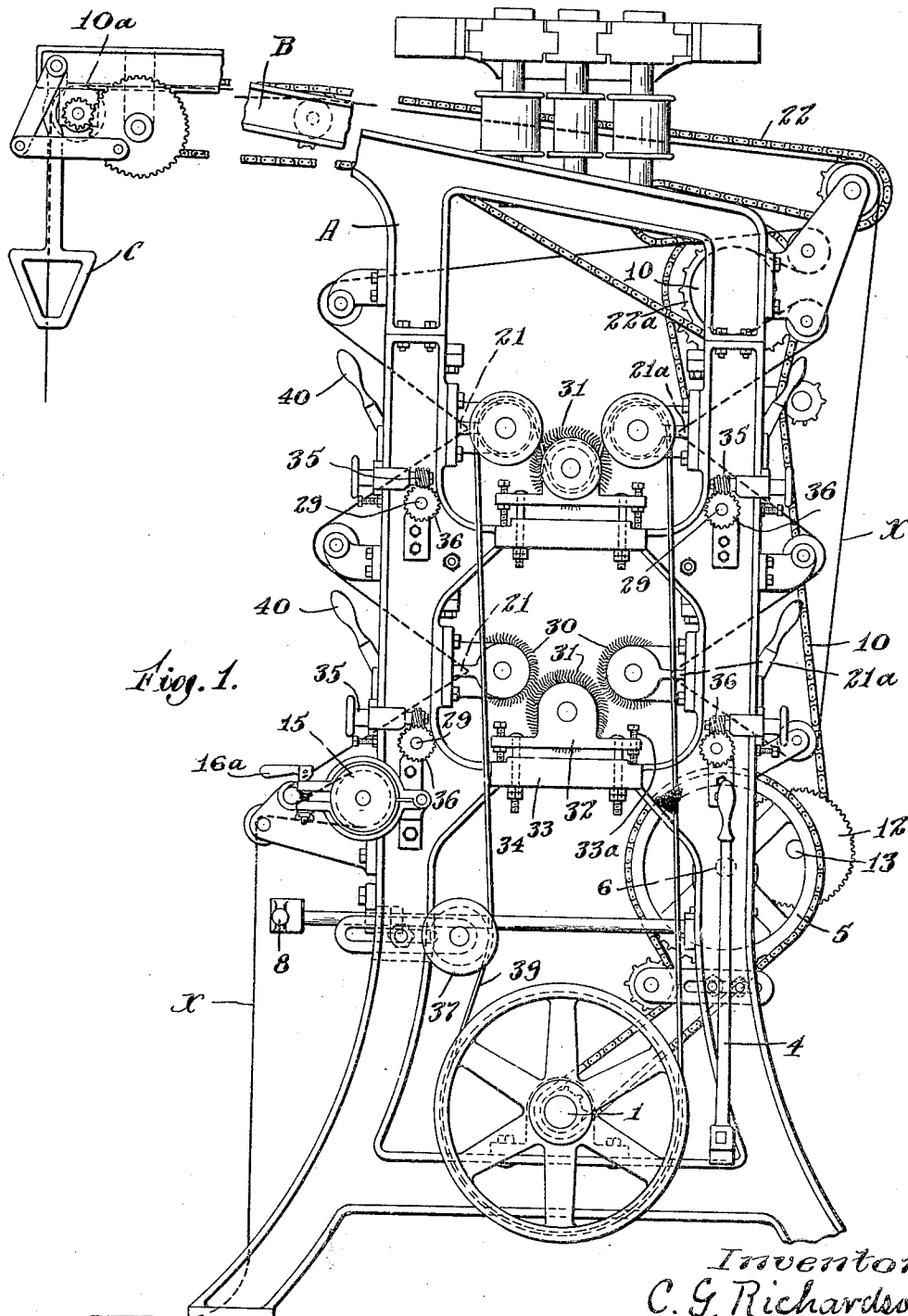


1,880,486

TIGERING MACHINE

Filed May 10, 1930

5 Sheets-Sheet 1



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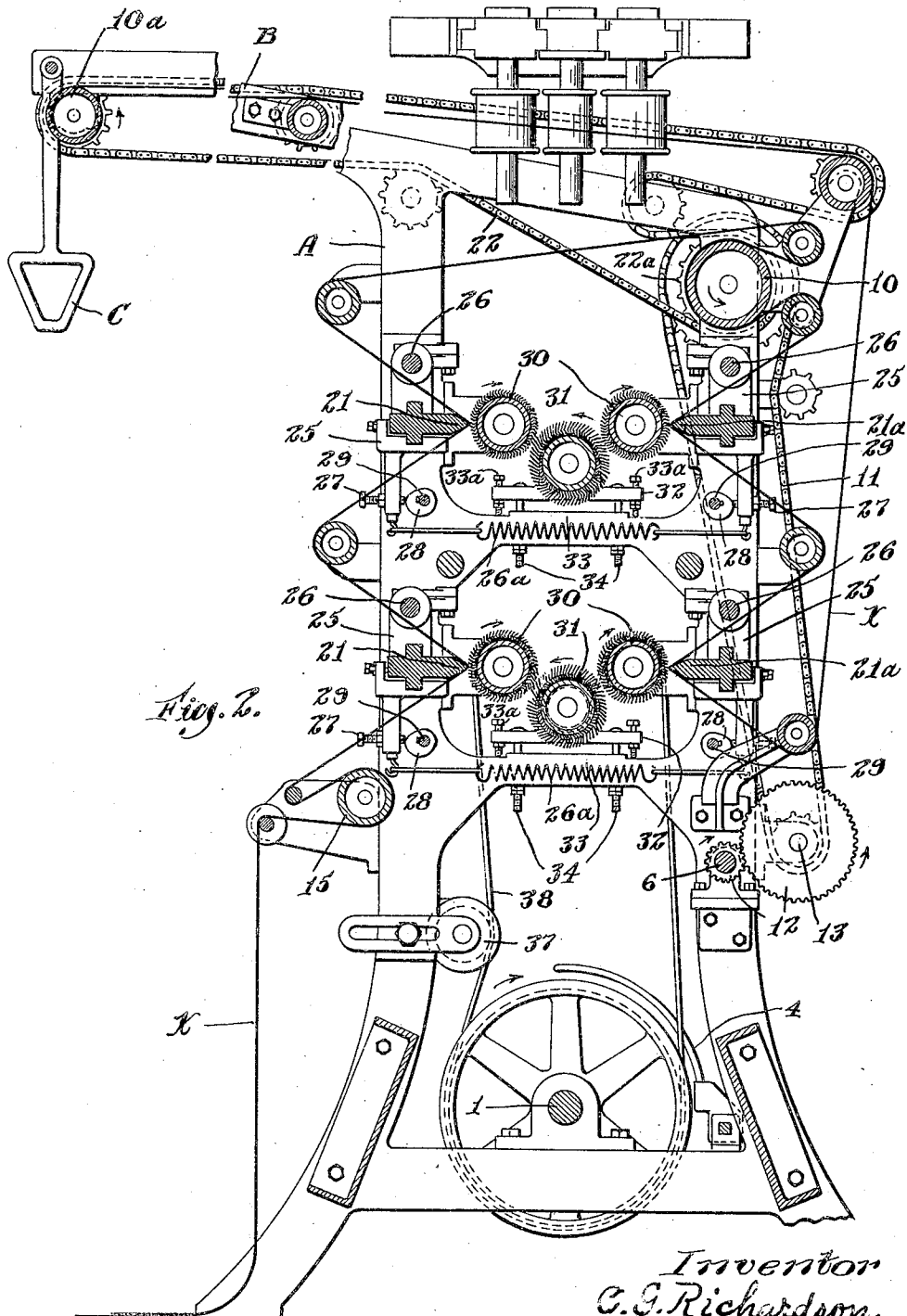
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TIGERING MACHINE

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5 Sheets-Sheet 2



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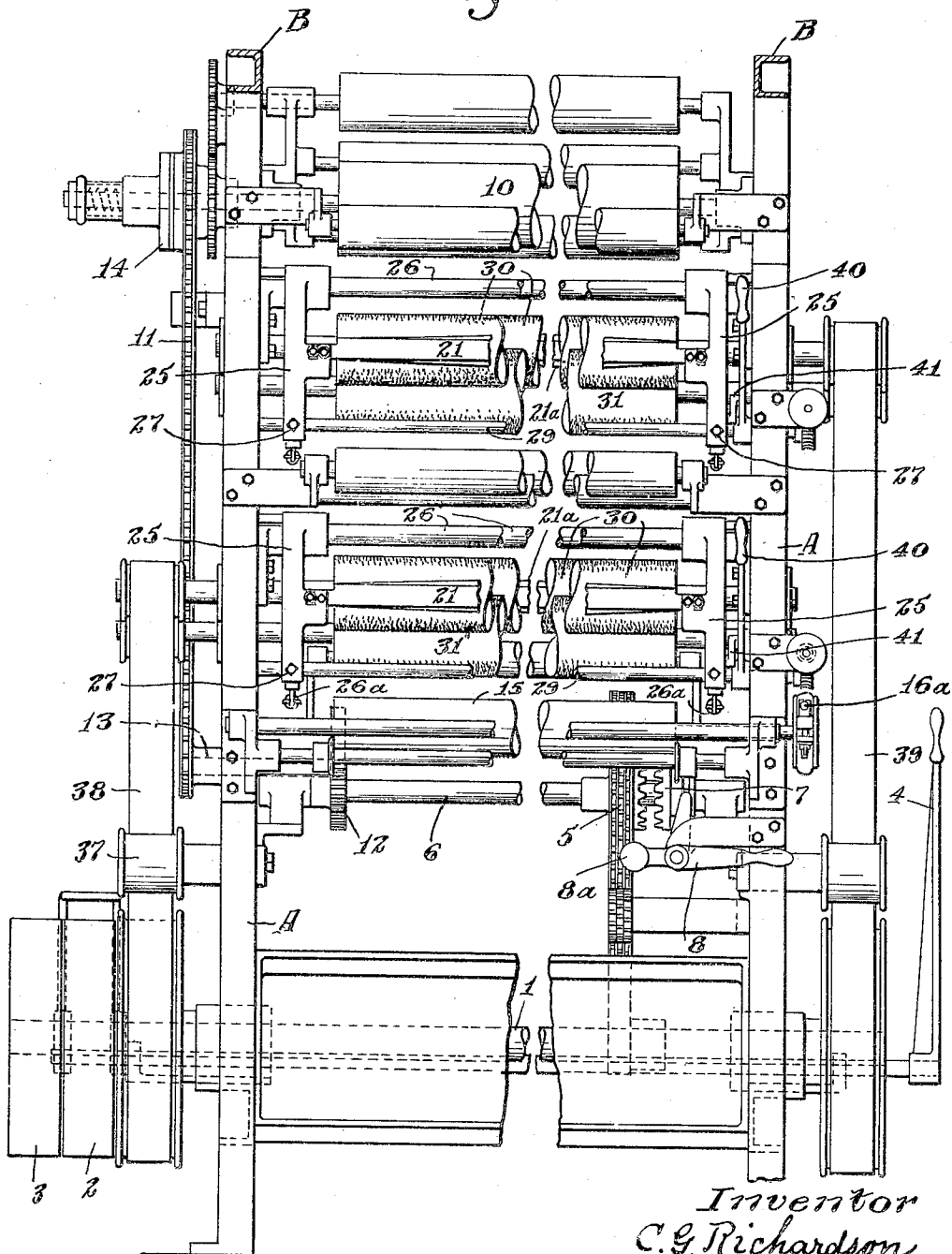
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Fig. 3.



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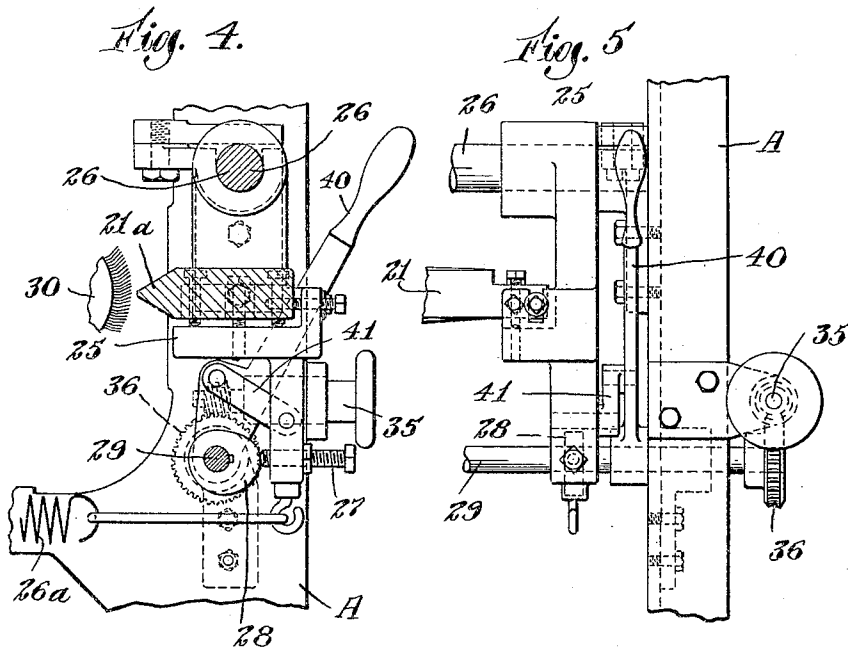
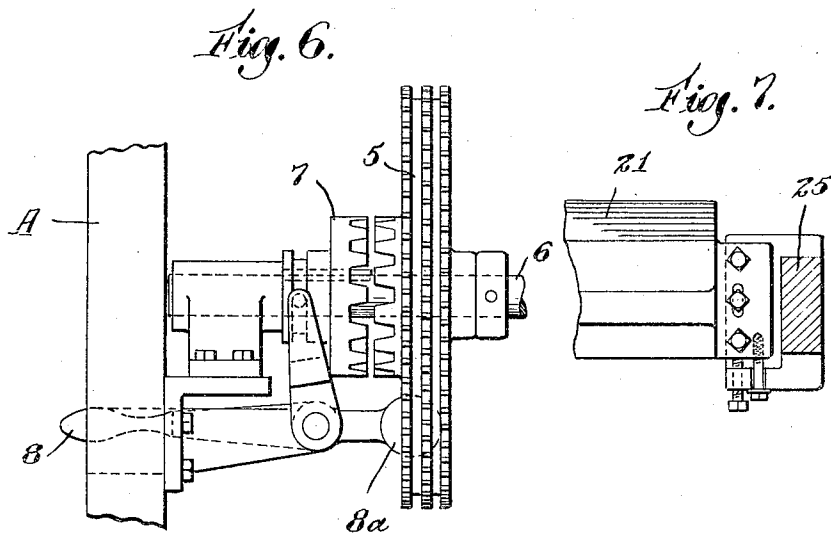
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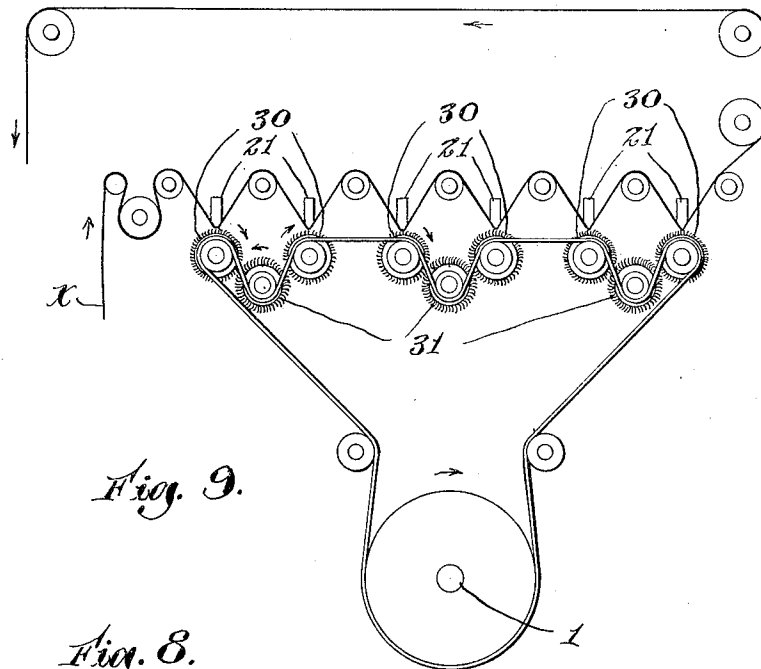


Fig. 9.

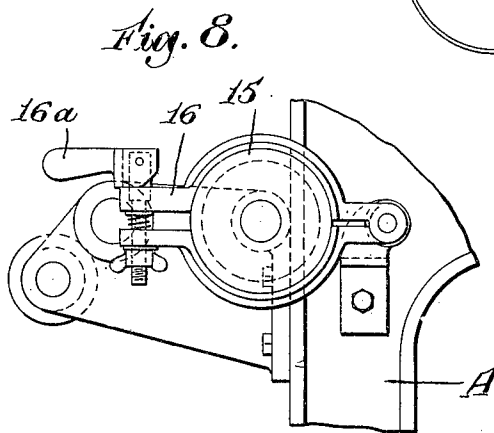


Fig. 8.

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UNITED STATES PATENT OFFICE

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TIGERING MACHINE

Application filed May 10, 1930. Serial No. 451,316.

This invention relates to tigering machines such as are employed for opening or raising the pile of plush or other pile fabrics and is intended to provide a simple, compact, convenient and highly efficient machine of this type for treating cloth.

Tigering machines are made commercially with single tigering or pile-raising cylinders and also with multiple tigering cylinders arranged to act, one after another, on the cloth being fed through the machine. It has also been the practice heretofore to provide a separate cleaning or lint clearing roll for each individual tigering cylinder, both the tigering cylinder and the roll being covered peripherally with card clothing for raising the nap and for clearing out the lint, respectively.

The multiple tigering machines have presented certain practical difficulties in respect to the driving of the tigering cylinders and of their individual cleaning rolls; moreover, the multiple cylinder machines, as heretofore built, have necessarily occupied a great deal of floor space.

It is the object of the present invention to provide an improved construction and arrangement of tigering machine involving a very simple, economical and efficient means for driving the tiger cylinders and the cleaners, while at the same time securing great economy in floor space for this type of machine. To this end the invention comprises an arrangement of tigering units or sets consisting of a single cleaner roll arranged in symmetrical relation to adjacent tigering cylinders, which are located on either side of the cleaner roll so that each pair of tigering cylinders requires but a single cleaner drum, while at the same time both cylinders and the intermediate cleaner roll are so disposed as to be most effectively driven from the same belt. Another feature of the invention consists in the arrangement of the tigering units, one above the other, in a vertical order and presenting the cloth thereto in a series of vertical zigzags, so that the cloth may be acted upon by a plurality of tigering cylinders in a vertical frame work that occupies comparatively little floor space.

These and other features of the present invention will be particularly described in the following specification and will be defined in the claims hereto annexed.

In the accompanying drawings I have illustrated a simple and convenient construction and arrangement embodying the principles of this invention, in which

Fig. 1 is a right hand end elevation of a tigering machine embodying, in one form, the present improvements.

Fig. 2 is a vertical section of the machine taken on a plane intermediate of the end frames.

Fig. 3 is a front elevation of the assembled machine.

Fig. 4 is a detail showing in end elevation the means for adjusting and controlling the cloth rest.

Fig. 5 is a detail in front elevation of the mechanism shown in Fig. 4.

Fig. 6 is a front elevation showing in detail the hand controlled clutch on the counter-shaft of the machine.

Fig. 7 is a plan view in detail of one end of the cloth rest and its support.

Fig. 8 is a detail showing in elevation the friction brake for putting tension on the cloth.

Fig. 9 is a diagrammatic view illustrating a modified arrangement of the individual tigering units wherein they are positioned horizontally with relation to one another.

In the practice of the invention in the principal form illustrated in the drawings, I provide opposite vertical end frames A which have a rearward overhead extension frame B, along which the cloth is carried to a suitable sliding plicator C to break the cloth in folds as it is delivered to a floor or underneath platform from the machine.

The main frame carries the power shaft 1 with suitable fast and loose pulleys 2 and 3 for a driving belt under the control of a manually operable belt shipper 4.

The main shaft 1 carries a sprocket which transmits power to a sprocket 5 releasably clutched to the horizontal counter-shaft 6 of the machine by means of the sliding clutch member 7, which is controlled by the weighted

hand lever 8 which acts normally, through its counterweight 8^a, to keep the sprocket wheel 5 operatively coupled with the counter-shaft 6. From this counter-shaft 6 power is led to the main cloth feeding drum 10 by means of a vertical sprocket chain 11 at the left hand end of the machine, whose lower end passes over a sprocket wheel on the end of the shaft 13, which is driven from the counter-shaft 6 by spur gear connections, as shown at 12. The upper sprocket driven by the chain 11 transmits motion to the shaft of the main cloth feeding drum 10 by means of any appropriate form of friction disk or other friction drive, as shown at 14.

The line of the cloth through the machine is indicated at X. Starting from the floor it passes over and partly around various guide rolls, including a cloth tensioning drum 15 having a friction brake adjustable as to tension by means of a handle 16^a to retard the cloth drum with any desired degree of resistance to rotation.

As shown in Fig. 1, the cloth passes inward around the inwardly projecting edge 21 of the lower cloth rest, thence around guide rollers and then inwardly around the upper cloth rest 21, then across to the back of the machine around suitable guide rollers, which give it a circumferential contact with the main cloth feeding drum 10, and then the cloth zigzags in a downward direction around the upper and lower back cloth rests 21^a, whence it passes around suitable guides upward and then rearwardly to the final cloth feeding drum 10^a, whence it drops through the oscillating plicator to be folded on the table beneath.

The front cloth feeding drum 10^a is rotated by means of a sprocket chain 22, which passes around a sprocket 22^a secured on the shaft of the main cloth feeding drum 10 and carried over and around suitable idler sprockets, which guide the course of this chain.

As shown in Fig. 2, the cloth rests 21 comprise horizontal bars presenting an apical or partly rounded cloth rest edge inwardly over which the cloth makes an approximately V turn as it passes up on one side and down on the other side of the machine.

These cloth rest members 21, 21^a are set in swinging arms 25 that are suspended near each end of a horizontal shaft or rod 26. The cloth rests are arranged in horizontal, opposed pairs, both presenting end edges inwardly toward the tigering units to be presently explained and, at the lower end of each pivotal suspended frame 25 is connected a contractile spring 26^a tending to draw the cloth rests inwardly toward the tigering cylinders 30. Each cloth rest suspending frame is provided with an adjustable stop screw 27 arranged in position to abut against a rotatably adjustable stop cam 28, one of

which is secured to each end of a rotatable cam shaft 29.

The adjustable stop screws 27 provide an approximate or rough adjustment for limiting the inward position of the adjacent cloth rest. A finer adjustment, however, is secured by a worm shaft 35 mounted in a fixed bearing on the frame of the machine and intermeshing with a worm wheel 36 secured to the cam shaft 29. It will therefore be seen that through the agency of the adjustable cam shaft 29 and the adjustable stop screws at each end of the cloth rest frame perfect positioning of the cloth rest with relation to the adjacent tigering cylinder may be obtained.

According to my present arrangement, the tigering unit comprises two side by side tigering cylinders 30 mounted on horizontal parallel shafts and covered with the usual card clothing, bristles, or the like, while in a vertical plane, between the planes of the two tigering cylinder shafts, is mounted a single cleaner roll or drum 31 also provided with card clothing or the like and revolving in peripheral contact with the two symmetrically positioned tigering cylinders.

To secure proper adjustment of the common cleaner roll 31, its supporting shaft is mounted in bearing brackets 32 adjustably supported on a transverse horizontal bracket 33 secured to the frame work, so that the peripheral wires, or bristles, of the cleaner drum may be brought into exactly correct peripheral contact with its two tigering cylinders to give the desired clearing action, such adjustment being effected by the adjusting screws 33^a in conjunction with the holding-down bolts 34.

As best shown in Fig. 4, the individual cloth rest may be thrown by a quick shifting movement out of operative position or retracted from the adjacent tigering cylinder without interfering with the adjustable stop means. This is effected by means of a hand lever 40 loosely fulcrumed on the shaft 29 and having a link connection 41 with the swinging frame 25, which supports the cloth rest member 21 or 21^a. This link is so connected with the pivoted cloth rest frame and the lever 40 that an upward pull on the handle by the operator straightens the toggle joint between the link and the lever 40, thereby swinging the frame and supported cloth rest well back away from the tigering roll, the toggle in its straightened position with the lever down acting to prevent the return of the cloth rest and its frame to operative position. On raising the hand lever 40, the cloth rest is restored to operative position since the adjustable stop elements have not been changed or affected by this quick retraction of the cloth rest.

The grouping of the tigering cylinder and the clearer roll shafts in a symmetrical or

triangular arrangement affords a very simple and effective means of driving the three shafts of each unit with the same belt.

As shown in the drawings, the lowermost tigering unit is driven by a belt 38 passing over the pulleys on the two tigering roll shafts and looped around the intermediate shaft of the clearer drum, which belt is led from a pulley secured to one end of the main shaft 1. The upper tigering unit is driven from a similar belt 39 which passes around a pulley on the opposite end of the main shaft 1. Any convenient tensioning means 37 may be employed for keeping these driving belts in taut adjustment.

All of the adjustments of the machine are readily accessible and easily set by hand, while the arrangement of the machine is such that comparatively little floor space is occupied by the machine while at the same time all the tigering units are driven by direct belt connection with the main shaft from which the cloth feeding drums are also driven by positive, but releasable, connections through the chain drive.

In Fig. 9 is shown diagrammatically a horizontal arrangement of three tigering units, in which the cloth travels in a zigzag but horizontal direction while the shafts of all three tigering units are driven by a single belt through the main shaft. This arrangement also effects substantial economy in floor space beside providing a very simple and direct drive for the shafts of the tigering units.

What I claim is:

1. In a tigering machine, the combination of a pair of spaced opposed cloth rests, means for feeding the cloth around the edges of said cloth rests, a pair of spaced rotary power driven tigering cylinders mounted between said cloth rests to rotate in peripheral contact with portions of the cloth passing over said cloth rests, a rotary cleaner drum mounted in position to form cleaning contact with the peripheries of both said cylinders, and means for positioning the cleaner drum to maintain proper operative relation simultaneously with both said cylinders.

2. A tigering unit for a cloth tigering machine embracing a pair of opposed spaced cloth rests, a pair of spaced tigering cylinders mounted between said cloth rests in position to engage and operate on the surface of cloth passing over said rests, an intermediate cleaning drum arranged to rotate in contact with both said cylinders and clear the lint therefrom while the cylinders are in operation, and a driving belt common to both cylinders and the clearing drum for rotating them at the desired speed.

3. In a cloth tigering machine, the combination with a pair of rotary tigering cylinders and a clearing drum arranged to operate on both cylinders simultaneously, actuating pulleys secured to the respective cylinders

and the drum in triangular apical relation to one another, and a common driving belt passing around said pulleys to rotate the tigering cylinders in one direction and the cleaner in the opposite direction.

4. The combination with a pair of rotary tigering cylinders arranged in parallel spaced relation and having belt pulleys secured to their adjacent ends, a common driving pulley arranged on one side of the plane of the axes of said pulleys, a rotary cleaner drum mounted on the same side of said plane as the said driving pulley and having a belt pulley on the end adjacent to the pulleys of the cylinders, and a transmission belt leading from said drive pulley around the farther side of the cylinder pulleys and around the near side of the drum pulley to cause rotation of the cylinders and drum.

5. In a tigering machine, the combination with a series of cloth rests arranged in pairs, one above another, corresponding pairs of rotary tigering cylinders mounted between each pair of cloth rests to operate on cloth passing over the rests, and a clearing roll interposed between, and in operative relation to the cylinders, of each pair.

6. In a machine for tigering fabric, the combination with an upright frame, of plural cloth rests mounted one above the other at the rear of said frame, similarly arranged cloth rests mounted at the front of the frame, means for feeding cloth upwardly over one set of rests and downwardly over the other set of rests, a pair of rotary tigering cylinders mounted between each pair of front and rear cloth rests to operate against the cloth passing over said rests, and intermediate disposed cleaning drums rotating in contact with the tigering rolls to clear them of lint.

7. In a tigering machine, the combination with a horizontal pivotally suspended cloth rest, a coacting tigering cylinder mounted to rotate in surface contact with the cloth passing over said rest, means normally tending to move the rest toward the cylinder, adjustable stop means for limiting such movement of the cloth rest, and a pivotal lever having link connection with said rest and forming with said link a toggle couple for moving said rest away from its stop means and maintaining said rest in retracted position.

8. The combination with a pair of suspended cloth rests pivotally mounted in horizontally spaced relation, a contractile spring for drawing said rests toward each other against interposed stops, a pair of rotary tigering cylinders mounted between said rests, each in proximity to the adjacent rest, and means for clearing both cylinders of lint while they are rotating.

In witness whereof I have subscribed the above specification.

CHARLES G. RICHARDSON.