H. MAIMIN.

CLOTH CUTTING MACHINE.

APPLICATION FILED JUNE 21, 1911.

1,004,285. Patented Sept. 26, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

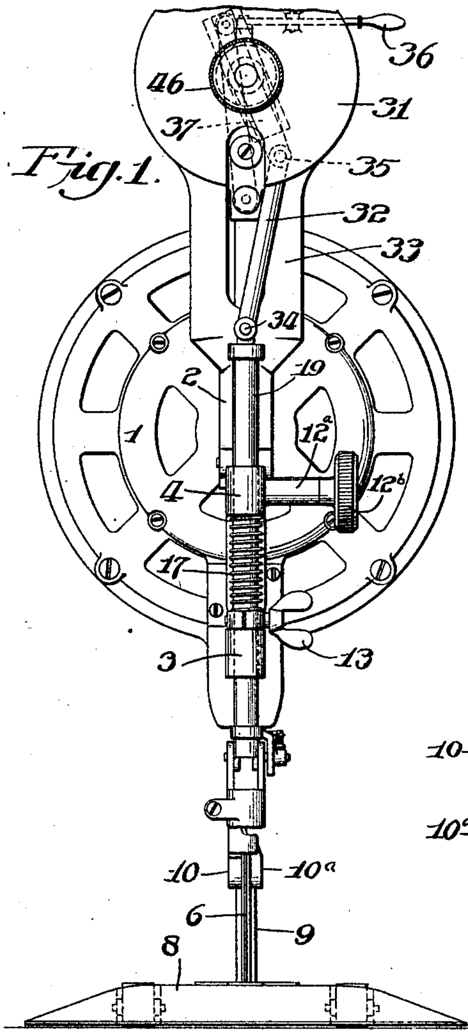


Fig. 2.

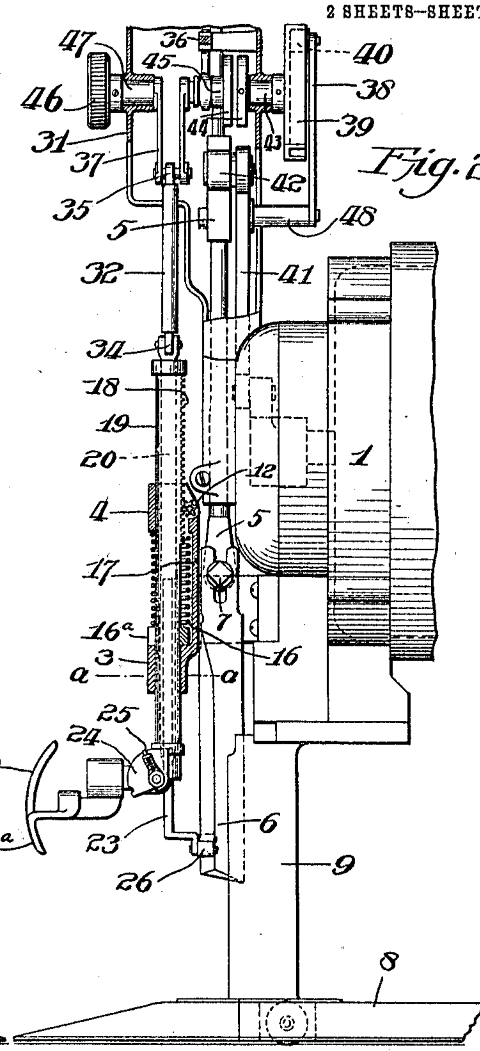
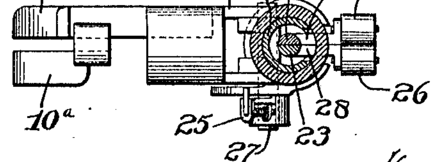


Fig. 3.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 4.

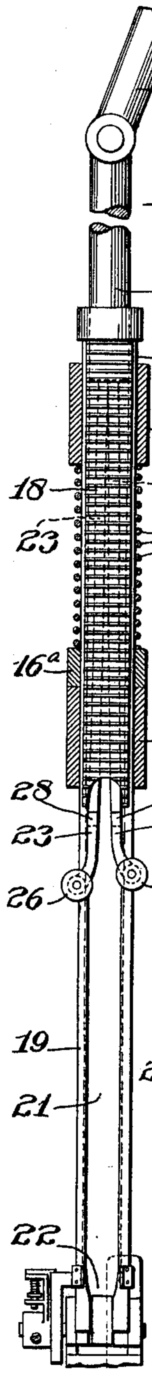


Fig. 6.

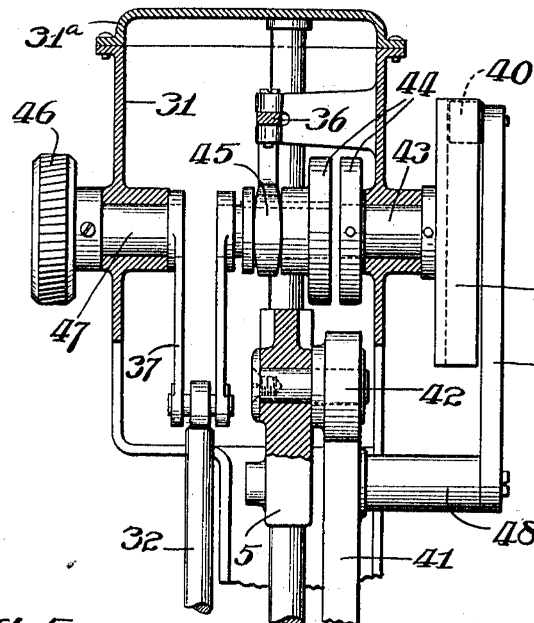


Fig. 5.

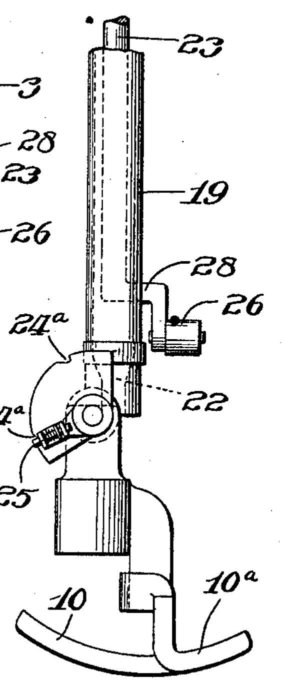
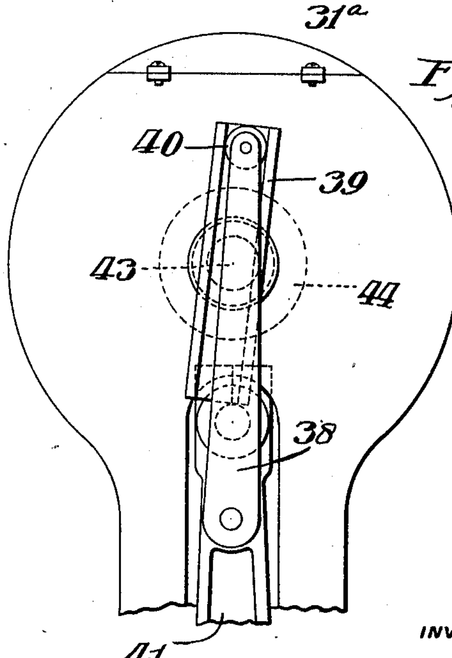


Fig. 7.



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CLOTH-CUTTING MACHINE.

1,004,285. Specification of Letters Patent. **Patented Sept. 26, 1911.**

Application filed June 21, 1911. Serial No. 634,437.

To all whom it may concern:

Be it known that I, HYMAN MAIMIN, citizen of the United States, residing in New York city, State of New York, have invented certain new and useful Improvements in Cloth-Cutting Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to cloth-cutting machines, and particularly to that type employing a vertically-reciprocating cutting blade actuated, through appropriate connecting mechanism, by an electric motor suitably mounted on the main frame. In such machines the main frame consists of a supporting base, including a foot-plate on which the work is operatively supported and presented to the blade, and a standard which rises from the supporting base, to support the motor, actuating mechanism for the blade, and means to operatively support a vertically adjustable presser-foot.

In the accompanying drawings illustrating my invention: Figure 1 is a front end elevation of a cloth-cutting machine of a well known type, embodying my improvements. Fig. 2 is a side elevation thereof, partly in section. Fig. 3 a section on the line *a*—*a* of Fig. 2. Fig. 4 is a vertical section, partly in elevation and detached, of the blade-sharpening device, the presser-foot, the tubular supporting shaft therefor, and the actuating means within said tubular shaft. Fig. 5 is a side elevation of the lower end of the sharpening device and its supporting and actuating elements, and also of the presser-foot carried thereby, the latter being in operative position and the sharpening device in raised or inoperative position. Fig. 6 is a side elevation, partly in elevation, with the cover of the housing removed, of the mechanism actuating the reciprocating elements which carry the sharpening device; and Fig. 7 is a front end elevation thereof within the housing.

In a pending application filed May 20, 1911, Serial No. 628,407, I have shown, described and claimed mechanism for supporting and actuating the blade sharpening device, and incidentally of supporting and shifting the position of the hinged presser-foot, which is the same as that shown in Figs. 3, 4 and 5 of the drawings in the present application. In said former application however, the mechanism for supporting and actuating the sharpening device and shifting the position of the presser-foot, was shown, described and claimed as manually operated, through an impact knob, in one direction, and restored to normal position by a spring.

My present invention has for its object to provide means for operating said actuating means by power, and consists of the connecting actuating devices between said means and the main shaft of the motor, which drives the vertically reciprocating blade; these novel connecting actuating means being shown in Figs. 6 and 7 and the upper portion of Figs. 1 and 2 of the drawings annexed hereto.

Referring to the specification forming part of said prior application, for detailed description of such parts of my improvement as are common to both inventions, it will be sufficient to say herein that 1 indicates a portion of the frame of the machine, inclosing the motor (not shown) and constituting part of the standard 8 which proceeds from the base or foot-plate 9. That portion of the standard immediately over the foot-plate may be grooved, as indicated by the dotted line, in which the cutting blade 6 is guided in its vertical reciprocation; and 5 is the driving rod on the lower end of which the blade 6 is detachably mounted by a set screw 7. The presser-foot 10 is preferably of the from shown in elevation in Figs. 2 and 5 and in plan view in Fig. 3 so that it will, at its rearward part, embrace the edge of the cutting blade as a guard therefor, when in normal operative position, as in Fig. 5, and be swung back, on its pivotal bearing, free from the blade, as shown in Fig. 2 when operating the grinding device to sharpen the blade. Upon the front portion 2 of the frame, is fixedly mounted a bracket 16 formed with tubular bearings 3 and 4. The upper bearing 4 is recessed to let in a pinion 12 (see Fig. 2) carried on the end of a short shaft 12^a actuated by hand wheel 12^b (see Fig. 1), said pinion coacting with a rack 18 formed on a rearward part of the periphery of a tubular shaft 19, in order to vertically adjust the latter, which is supported in said bearings 3 and 4. Between said bearings the shaft 19 is encircled by a coiled spring, bearing on a ring 16^a fast on the shaft, to give it some reverse tension when elevated.

One function of this shaft is to serve as a support for the presser-foot 10 which is hinged thereto at its lower end, as described in my former application, and capable of being swung on its hinged bearing into operative position (Fig. 5), or inoperative position (Fig. 2) either manually, if desired, or by the action of the mechanism which operates the grinding stones, as therein stated.

The lower portion of the tubular shaft 19 is slotted, as indicated at 21, the extreme end of the slot being narrowed as indicated at 22 (Fig. 4) for the purpose of compressing the pair of spring arms 23 toward each other on the completion of their downward reciprocatory movement. These spring arms are mounted on the lower end of, or may be formed by cutting the lower half of, a stem 20, and both the stem and spring arms are mounted slidingly in the tubular shaft 19. The spring arms have an outwardly-extending tendency and are compressed and released, respectively, on their up and down strokes, by the slot in the tubular shaft; and on the extreme lower end of each is mounted, by a stub shaft 28, and preferably rotatably thereon, a cylindrical grinder 26. Preferably the latter are so mounted as to lie in slightly different horizontal planes so that they will sharpen adjacent but different sections of the blade on the two sides of its edge.

The operation of the elements, so far as stated, is such that the presser-foot, as also the grinding stones, and the supporting elements of each, are, in operative position, as respects the presser-foot, as seen in Fig. 5 and in inoperative position thereto, and in operative position as respects the grinding device, as seen in Fig. 2. Reciprocatory movement imparted to the stem 19 and spring arms 23 carried thereby will operate to effect a grinding contact of the sharpening stones on each side of the blade edge, as will also the reciprocatory movements of the cutting blade. In lieu of effecting the former by manual operation, I have invented mechanism to impart such motion by power derived from the main shaft of the machine, with clutch mechanism to disconnect the connecting mechanism after a sharpening of the blade is effected from time to time. This mechanism I will now describe.

In well known machines of this general type, a motor with its shaft (not shown) is mounted on the overhanging portion of the standard, and gives vertical reciprocating motion to a driving rod 41 suitably connected at 42 to the upper end of driving rod 5 which carries, at its lower end, the cutting blade 6. By means of a connecting pin 48, the driving rod 41 actuates, through a crank arm 38 a drive wheel 40 mounted on the end of a short shaft 43 rotatably mounted in one wall of the housing 31. This shaft actuates the two members 44 of a piston clutch device, one member being carried by shaft 43 and the other member by a shaft 45. A clutch operating handle 36 serves to bring the clutch members 44 into or out of operative contact with each other. On the other end of shaft 45 and between it and shaft 47 mounted in the opposite wall of the housing 31, is a crank connection 37 carrying arm 32 pivoted to it at one end at 35, while the lower end of arm 32 is pivotally connected at 34 to the upper and otherwise free end of stem 20 which carries the spring arms 23. As it is best, in my judgment, to have the spring arms and their grinding stones reciprocate in an alternately opposite direction to the reciprocatory movements of the cutting blade, this can be readily accomplished by means of the adjusting device 46 on end of shaft 47; and this can also be used to lift or lower the grinding stones, if, on stoppage of the machine, the said parts happen to stop in inappropriate position relatively to that of the cutting blade when brought to rest. The operation of this part of the device will be readily understood from the drawings, and the description of said elements, which briefly stated is that the clutch handle 36 is so operated that the clutch members are out of contact and hence the direct actuating mechanism for the grinding device and its adjunctive supporting and operating elements are not operated; and this entirely independent of the actuation of the cutting blade. Without stopping the machine, and with the cutting blade in rapid reciprocation, a suitable application of the clutch handle, for less than a minute, will bring and maintain the grinding stones in operative position and contact relatively to the rapidly moving cutting blade and sharpen the latter.

I do not claim herein the grinding stones and their adjunctive supporting and actuating members, as the same are the subject of said pending application, but my present invention and claims are limited to the described means for actuating the same from the main shaft of the machine.

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

1. In a cloth-cutting machine comprising a suitable supporting frame, a motor including its cam-carrying shaft, and a cutting-blade vertically reciprocated thereby, the combination therewith of a blade-sharpening device, devices to support it in operative relation to the cutting blade, means to impart vertical reciprocatory movement to said devices, and connecting actuating mechanism between said means and the cam-carrying shaft of the motor.

2. In a cloth-cutting machine comprising

a suitable supporting frame, a motor including its cam-carrying shaft, and a cutting blade vertically reciprocated thereby, the combination therewith of a blade-sharpening device, devices to support it in operative relation to the cutting blade, means to impart vertical reciprocatory movement to said devices, connecting actuating mechanism between said means and the cam-carrying shaft of the motor, and a clutch device governing said connecting actuating mechanism.

3. In a cloth-cutting machine comprising a suitable supporting frame, a motor, its cam-carrying shaft, and a cutting blade vertically reciprocated thereby, the combination therewith of a divided shaft including a clutch device, bearings therefor at the top of the frame, connecting actuating means between said divided shaft and the motor shaft, a blade-sharpening device, devices to support it in operative relation to the cutting blade, means to impart vertical reciprocatory movement to said devices, and connecting actuating mechanism between said means and the clutch-controlled divided shaft.

4. In a cloth-cutting machine comprising a suitable frame, a motor, its cam-carrying shaft, and a vertically-reciprocating cutting blade actuated thereby, a housing at the top of the frame, a divided shaft, including a clutch device, mounted therein, connecting actuating means between said divided shaft and the motor shaft, a pair of blade-sharpening stones, a pair of spring arms carrying the same, means in which said spring arms are slidingly mounted, operating to bring said stones into operative contact with opposite sides of the blade edge on each alternate downward movement; and means to reciprocate said spring arms, including connecting actuating mechanism between the same and said divided shaft in the housing.

5. In a cloth-cutting machine comprising a suitable supporting frame, a motor, its power shaft, power-transmitting mechanism and a cutting blade vertically reciprocated thereby, the combination therewith of a divided shaft including a clutch device, bearings therefor at the top of the frame, connecting actuating means between said divided shaft and the motor shaft, a blade-sharpening device, devices to support it in operative relation to the cutting blade, means to impart vertical reciprocatory movement to said devices, connecting actuating mechanism between said means and the clutch-controlled divided shaft; and means, independent thereof, to restore said sharpening device to normal inoperative position.

6. In a cloth-cutting machine, comprising a suitable frame, a motor therein, a vertically-reciprocating blade, means to actuate said blade from the motor shaft, a tubular slotted shaft, bearings therefor, means to vertically adjust said tubular shaft in its bearings, a pair of spring arms mounted slidingly in said shaft, a pair of grinding stones carried by said spring arms and adapted to be brought into operative sharpening contact with the blade on each downward reciprocatory movement; connecting actuating mechanism to reciprocate said spring arms from the motor shaft, means to disconnect said actuating means during the regular operation of the machine, and independent means to restore said spring arms and the grinding stones carried thereby to inoperative position after the sharpening is effected.

In testimony whereof, I have hereunto affixed my signature this sixth day of June A. D. 1911.

HYMAN MAIMIN.

Witnesses:
A. M. BIDDLE,
R. A. DUNLAP.