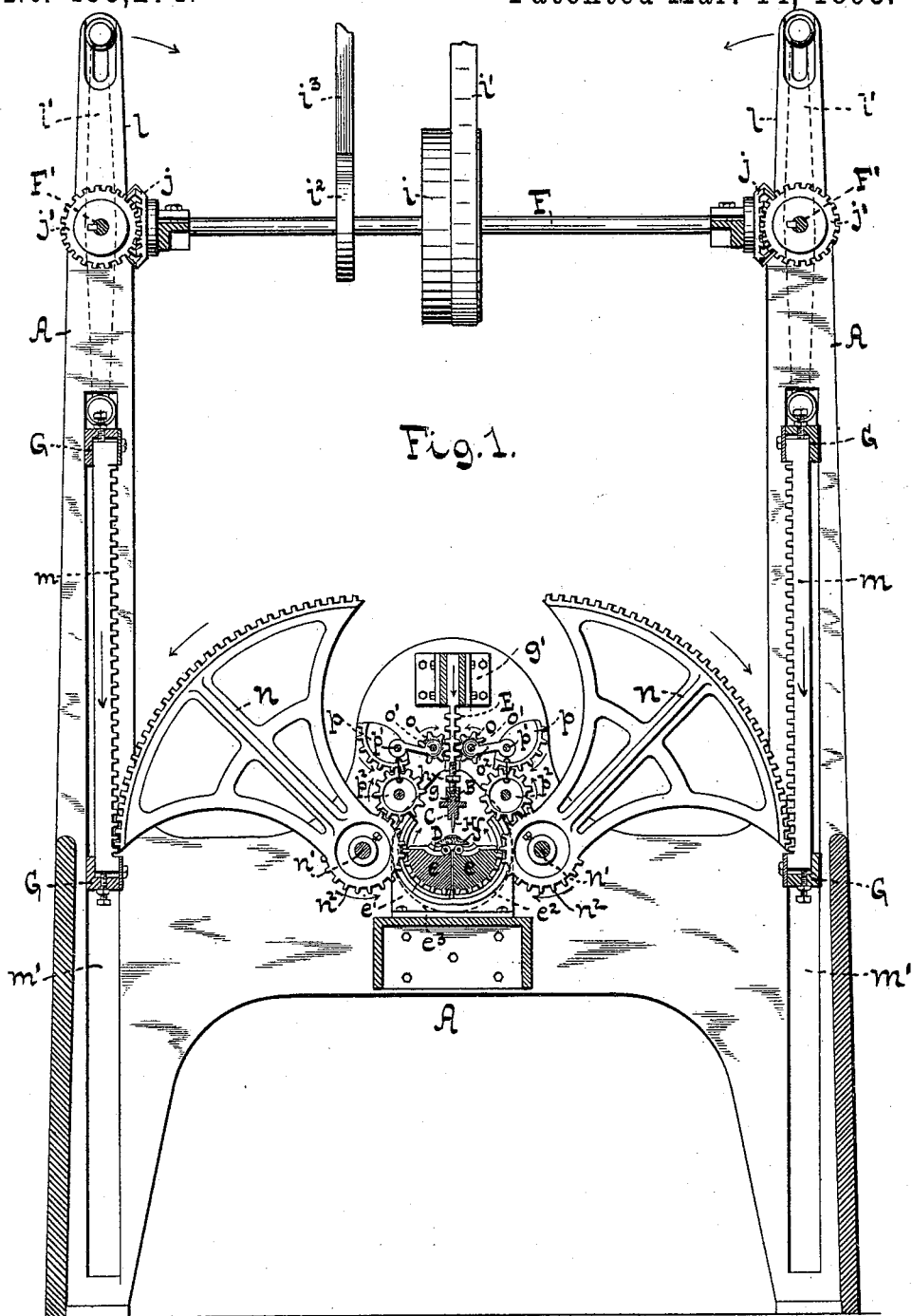


M. KOENIGES.
PIANO HAMMER COVERING MACHINE.

No. 493,274.

Patented Mar. 14, 1893.



WITNESSES:

Klas H. Ernst
J. J. Mathe.

INVENTOR:

Martin Koeniges

BY A. Faber du Ruyff. ATTY.

(No Model.)

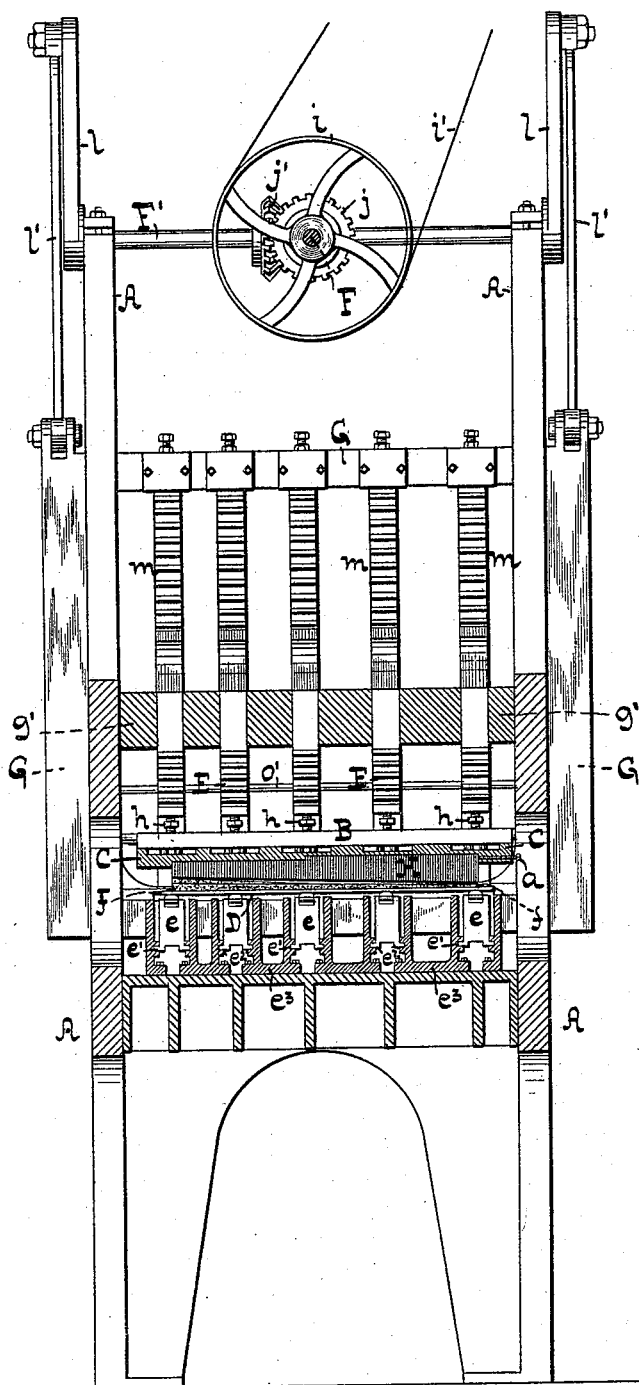
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Fig. 2.



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4 Sheets—Sheet 3.

No. 493,274.

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Fig. 3.

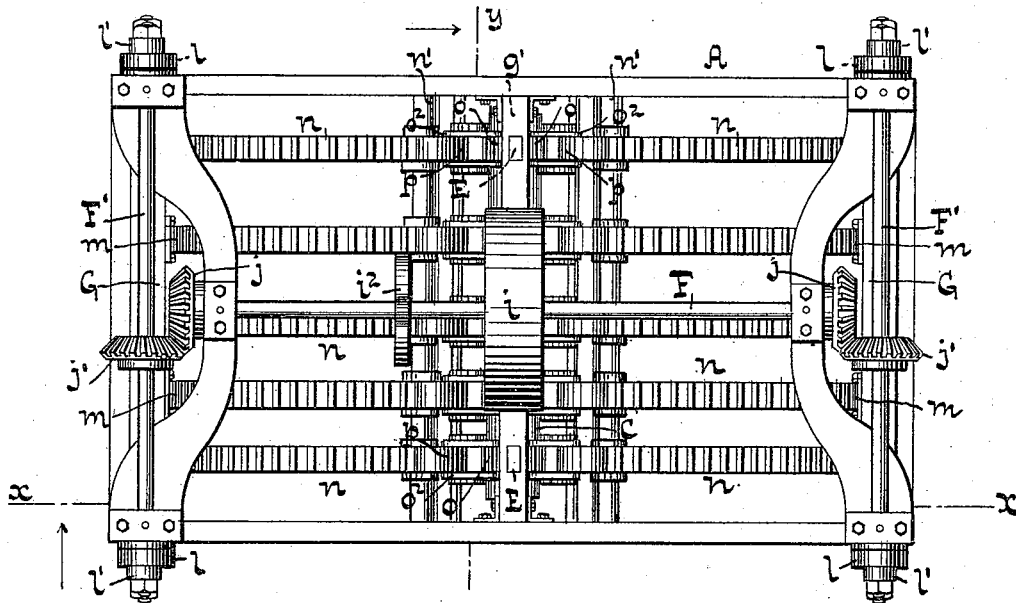


Fig. 4.

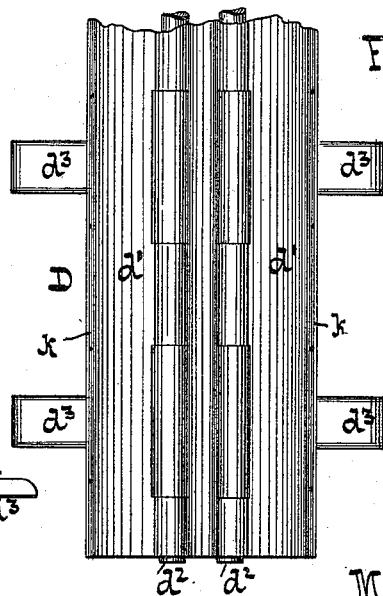


Fig. 6.

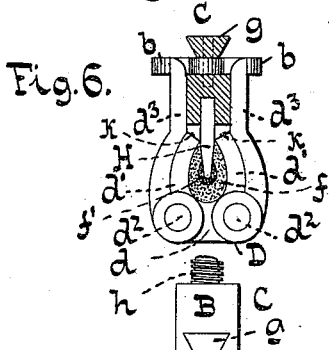


Fig. 5. c



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Fig. 8.

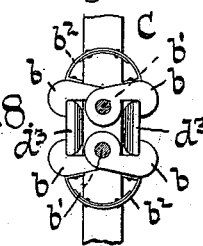
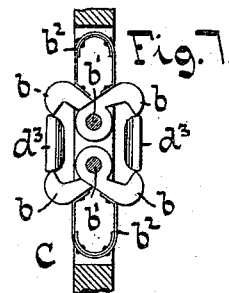


Fig. 7



INVENTOR:

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BY *Arthur duRoi* ATTY.

(No Model.)

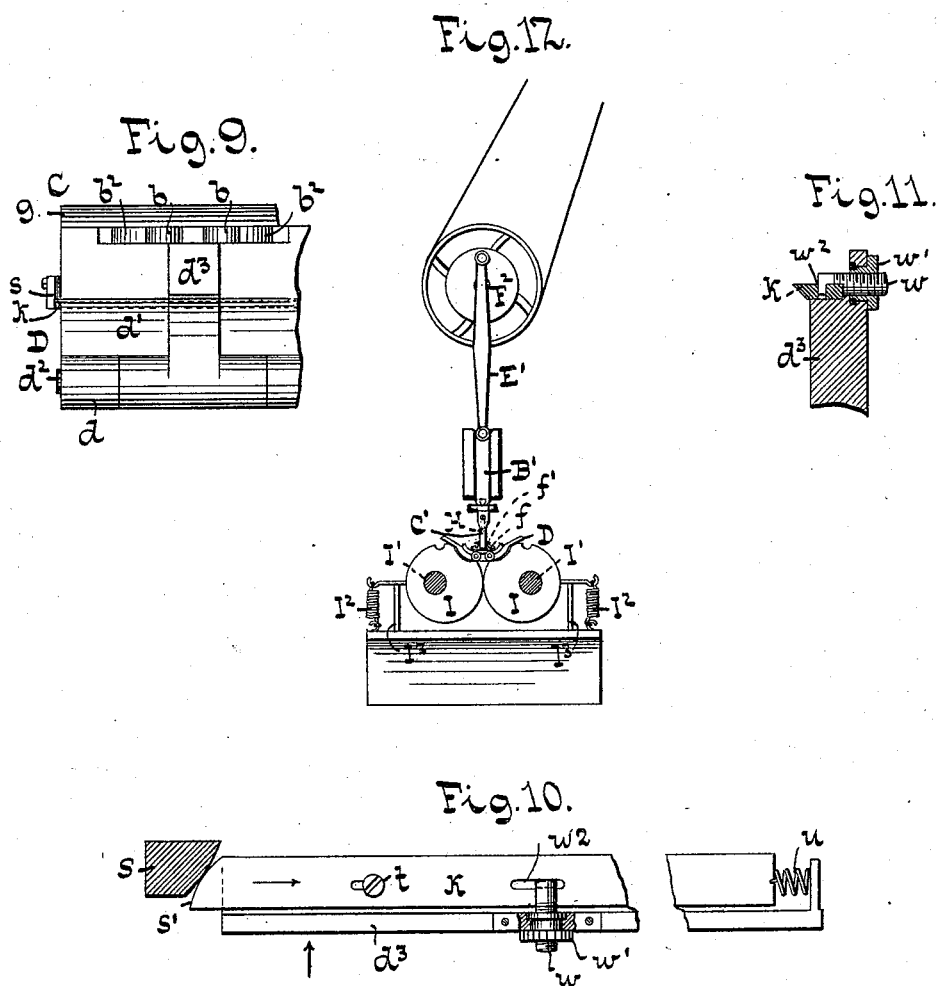
4 Sheets—Sheet 4.

M. KOENIGES.

PIANO HAMMER COVERING MACHINE.

No. 493,274.

Patented Mar. 14, 1893.



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INVENTOR:

Martin Koeniges

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UNITED STATES PATENT OFFICE.

MARTIN KOENIGES, OF DOLGEVILLE, NEW YORK.

PIANO-HAMMER-COVERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 493,274, dated March 14, 1893.

Application filed November 29, 1892. Serial No. 453,510. (No model.)

To all whom it may concern:

Be it known that I, MARTIN KOENIGES, a subject of the Emperor of Austria-Hungary, King of Hungary, and a resident of Dolgeville, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Piano-Hammer-Covering Machines, of which the following is a specification.

My invention has reference to machines for applying the felt to the moldings of piano-forte hammers.

In all the machines or presses of this character heretofore known, the felt turning dies form a fixture of the press frame and are not removable. After each operation of applying the felt to the hammer molding, the press must retain the felt under pressure in the dies for a considerable time (at least five hours) to permit the glue to set, or become dry, and consequently the press cannot be used during this time. This long interval of time between operations necessitates the employment of a correspondingly large number of presses.

My invention has for its object to adapt a single machine for use repeatedly without being obliged to wait for the glue to set. This object I accomplish by constructing the machine with a removable molding clamp and with a removable felt die, so that after each operation the molding clamp and felt die together with the inclosed hammers can be removed and set to one side; the said die being constructed to lock when closed against the felt and thus retain the latter under pressure against the hammer molding after removal from the machine. It will be seen that by this construction I require but one machine for operating the clamps and dies, and a corresponding number of clamps and dies, to accomplish the work of many complete machines of the old construction.

The particular construction of my improvements I will proceed to describe in connection with the accompanying drawings, in which:

Figure 1 represents a vertical section in the plane xx , Fig. 3 of a machine embodying my invention. Fig. 2 is a vertical section of the same in the plane yy , Fig. 3. Fig. 3 is a plan or top view. Fig. 4 is a plan view of the felt die with part broken away; said figure being

drawn to a larger scale than the preceding figures. Fig. 5 is a sectional end elevation of the molding clamp and felt die in juxtaposition. Fig. 6 is an end view showing the felt die closed upon the hammer molding. Figs. 7 and 8 are sectional top views illustrating the devices for locking the felt die. Figs. 9, 10 and 11 are detail views illustrating the felt die as provided with adjustable and movable severing devices. Fig. 12 is a sectional elevation of a modified form of apparatus for operating the molding clamp and felt die.

Similar letters of reference, indicate corresponding parts throughout the several views of the drawings.

Referring at present to Figs. 1, 4, 5 and 6 of the drawings for a description of the felt die and the molding clamp, which two constitute the chief features of my invention, the letter D designates the felt die constructed to turn the felt over and to force it under pressure against the hammer molding H, which latter has been previously coated with glue or other suitable cement in the usual manner. This felt die consists of a central part d to which are hinged at d^2 the movable side sections or wings d' . The cheeks or bearing faces of the several sections of the die are made of the proper shape to conform to the desired contours of the hammers.

C is the molding clamp in which the hammer molding, cut into the usual sections or handles, is secured either by lateral pressure in the usual manner, or else as here indicated by end pressure superinduced by a set screw a (Fig. 2) at the end of the clamp jaw. Said clamp is formed with a lock of any suitable construction that will engage and retain the movable die sections d' when the die is closed. In this example (Figs. 6 to 8), I have shown the same consisting of sets of barbed catches b , pivoted at b' on opposite sides of the upper part of the clamp and adapted to engage with arms d^3 projecting from the respective movable sections of the die. Suitable springs b^2 hold the catches b normally closed, but when the arms d^3 engage with the catches, the latter are forced apart to admit the arms and then closed about the same by the action of the springs b^2 .

Assuming the parts to be in the position

indicated in Fig. 5, it will be seen that if the clamp C is made to descend and bring the hammer molding H down upon the felt $f f'$, and the die sections d' at the same time caused to turn upwardly about their pivots d^2 , the felt will be laid upon the molding, and when the sections are completely closed the arms d^3 will be locked by the catches b , (Fig. 6.) In this state the molding clamp and felt die together with the inclosed hammers under pressure can be removed from the machine and placed to one side for the glue to set, while a new molding clamp and felt die can be inserted into the machine.

I will now proceed to describe a machine adapted for removable molding clamps and felt dies, reference being had to Figs. 1 2 and 3 of the drawings. In these figures the letter A designates a frame suitably constructed to support the operating parts of the machine; e are vertically placed toothed quadrants arranged at suitable distances apart and having their upper faces made of the proper shape to support the felt die D. The quadrants are guided to turn about centers coincident with the pivots d^2 of the die sections d' by curved flanges e' fitted to ways e^2 formed in the brackets e^3 secured to the frame. The clamp head B, adapted to be moved toward and from the quadrants e , is provided with a longitudinal groove for the reception of a correspondingly formed projection g on the top of the molding clamp, so that the latter can be readily slid into the clamp head. The clamp head is secured by a series of adjusting bolts h to racks E corresponding in number to, and placed above the quadrants e ; said racks being guided to move in vertical ways in a cross piece g' .

F designates the main shaft of the machine which is supported in suitable bearings at the top of the frame and driven by a pulley and belt connection $i i'$ with a suitable countershaft (not shown). Since the shaft F is intended to make a complete revolution and then stop, the same is provided with means to cause the belt to be shifted to the loose pulley on the countershaft after each revolution. Any well known means may be employed for this purpose, such for instance as the cam i^2 connected with the rod i^3 of the belt shifting mechanism. The shaft is geared by bevel wheels $j j'$ with two shafts F' F' at opposite sides of the frame, which latter are provided with cranks l connected by rods l' with rack frames G at opposite sides of the frame; each of said rack frames being provided with as many racks m as there are quadrants. The rack frame is guided in suitable ways m' in the frame of the machine. The racks are arranged to engage with segments n mounted on shafts n' and provided with teeth n^2 engaging with the quadrants. The motion of the segments n is transmitted to the racks E of the clamp head, by gears o mounted on shafts o' and engaging the said racks; eccentric gears p , having their pivots

p' connected with arms o^2 projecting from the gears o , and gears p^2 engaging the teeth n' of segment n .

In Fig. 12 I have shown a differently constructed machine for operating the molding clamp and felt die. In this example the die is closed by the downward motion of the clamp head. Referring to the said figure, the letters I designate disks mounted eccentrally on shafts I' and adapted to support the felt die D. The clamp head B' is reciprocated by a crank shaft F² and rod E'. If now the clamp head is moved toward the felt die D, the hammer molding H is brought into contact with the felt $f f'$ and compresses the same somewhat, since the disks I are restrained from turning, until the requisite pressure is obtained, by springs I² which hold the same against stops I³. When the felt is sufficiently compressed tappets C' projecting downwardly from the molding clamp C, engage with the die and carry it downward between the disks I, which latter turn about their shafts and force the die sections d' together. When the die is closed it is locked, as before, and can be removed from the machine together with the molding clamp and inclosed hammers.

It is evident that other machines could be constructed to actuate the molding clamp and felt die, consequently I do not wish to restrict myself to the particular constructions herein described. I would also state here that the means for locking the felt die under pressure need not be automatic or be placed on the clamp, since it is evident that they could be applied directly to the felt die, or the felt die could be locked by hand after being closed by the machine;—of course by having an automatic lock, the operation is expedited.

In order to avoid trouble incurred in removing the glue pressed out upon the hammer molding, as well as in removing the superfluous felt by hand, I provide the felt die with knives k applied to the terminal faces of the hinged sections d' of the same, so that when the die sections close, the knives sever the felt along the required lines, the latter being so set that they just touch the hammer molding. After the hammer molding has been inserted into the molding clamp the same is inverted and a strip of tin is bent to bring its edges along the required terminal lines of the felt. The portion of the molding above this line is then coated with tallow or other equivalent substance which will prevent the glue that is pressed out between the felt from binding on the hammer molding.

As an additional means of insuring the severing of the felt, the knives may have longitudinal motion imparted thereto at the time that they enter the felt. This may be accomplished as shown in Figs. 9, 10 and 11 by securing to the opposite ends of the clamp C, taper abutments s adapted to be engaged by the beveled ends s' of the two knives as the sections of the felt die close. The knives in this case are secured by suitable studs t ex-

tending through slots in the knives to permit a longitudinal movement, and are retracted after each movement by springs *u u*.

To adjust the knives with respect to the molding any suitable adjusting devices, such as the screw rods *w* and nuts *w'* may be used, the said adjusting devices being located at suitable intervals along the die sections and arranged to engage with slots *w²* in the knives.

10 What I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the character specified, a removable felt die and molding clamp, and means for locking the felt die when closed, 15 substantially as described.

2. In a machine of the character specified, a removable felt die and molding clamp, and a device on the clamp for locking the felt die, substantially as described.

20 3. The removable felt die herein described, having two hinged sections, and a molding clamp provided with a locking device arranged to engage the sections of the felt die when closed, substantially as described.

25 4. The removable felt die herein described, having a stationary central part, two sections hinged thereto, and arms projecting from said sections; combined with the molding clamp provided with locking devices arranged to 30 engage with and automatically lock the sections of the felt die when closed, substantially as described.

5. In a machine of the character specified, a removable felt die and means for locking

the same while under pressure, substantially 35 as described.

6. In a machine of the character specified, a reciprocating clamp head, a molding clamp adapted to be inserted into the same, a removable felt die, means for closing the same upon 40 the felt, and a locking device for locking the die while under pressure substantially as described.

7. In a machine of the character specified a felt die provided with hinged sections and 45 severing devices secured to said sections, substantially as described.

8. In a machine of the character specified, a felt die provided with hinged sections, severing devices secured to said sections and 50 means for moving said severing devices longitudinally, substantially as described.

9. In a machine of the character specified, the combination with the molding clamp and the felt die provided with movable sections, 55 of reciprocating racks and intermediate gear connections between said racks and the molding clamp and felt die for operating the same, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as 60 my invention I have signed my name, in presence of two witnesses, this 21st day of November, 1892.

MARTIN KOENIGES.

Witnesses:

A. O. REUTER,
KLAS H. TERNSTEDT.