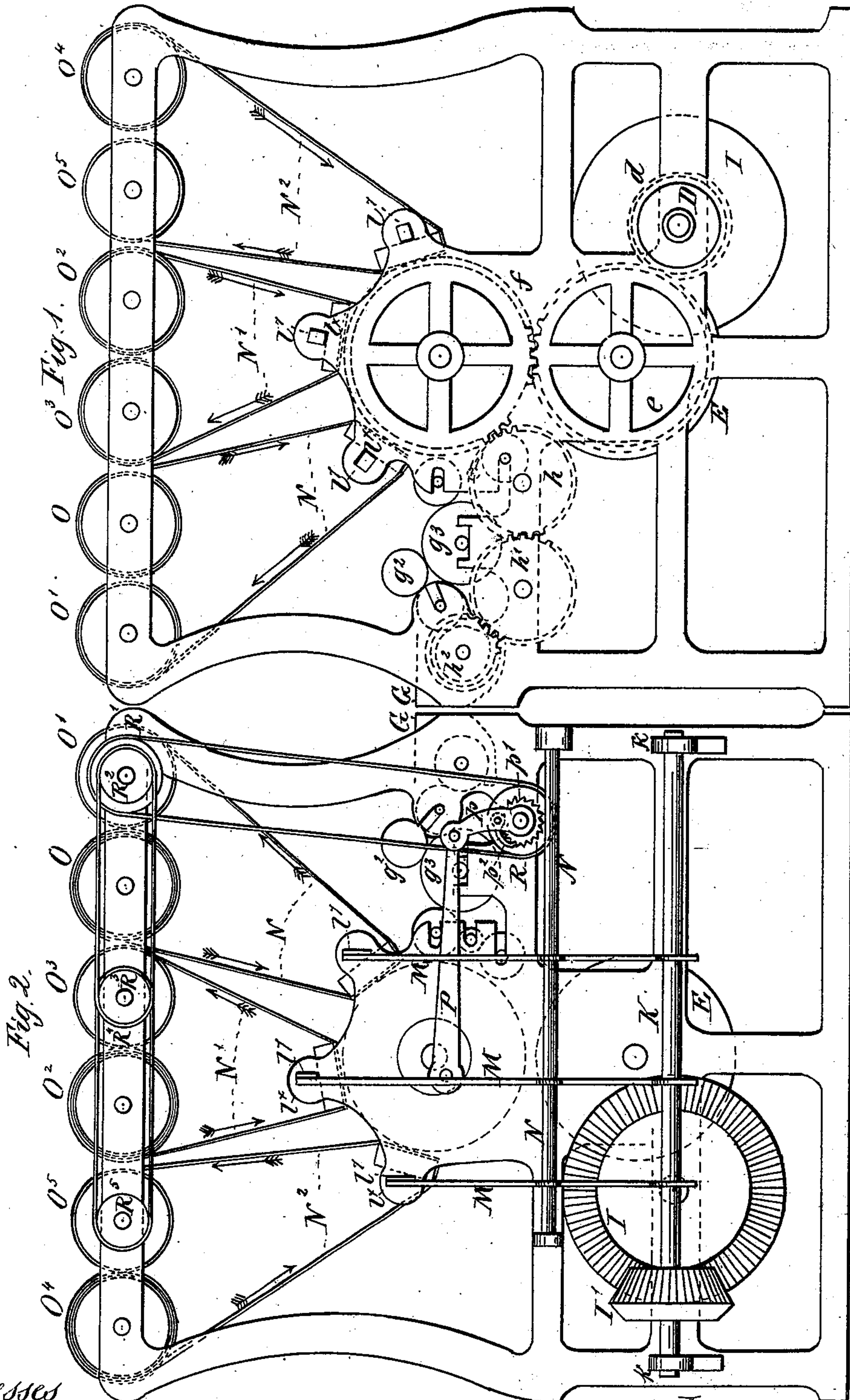
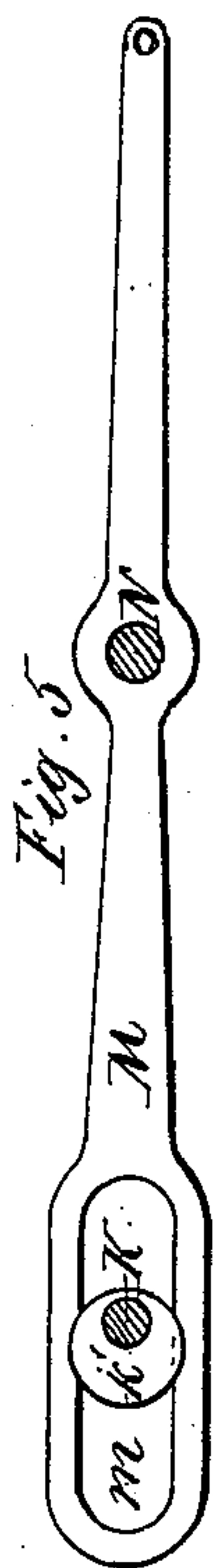


C. A. GUY.
Plate-Printing Machine.

No. 210,116.

Patented Nov. 19, 1878.



Witnesses
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UNITED STATES PATENT OFFICE.

CONSTANT ALEXIS GUY, OF PARIS, FRANCE.

IMPROVEMENT IN PLATE-PRINTING MACHINES.

Specification forming part of Letters Patent No. **210,116**, dated November 19, 1878; application filed October 19, 1877; patented in England, August 15, 1876.

To all whom it may concern:

Be it known that I, CONSTANT ALEXIS GUY, of the city of Paris, Department of the Seine, and Republic of France, have invented new and useful Improvements in Plate-Printing Machines, for which I have obtained Letters Patent for the Kingdom of Great Britain, Ireland, the Channel Islands, and the Isle of Man, under date of August 15, 1876, of which the following is a specification:

My invention consists in the application of a series of wiper-cloths and the mechanism for operating the same to printing-presses especially adapted for printing from plates, as fully described hereinafter, and shown in the accompanying drawings, in which—

Figures 1 and 2 are opposite side elevations, and Fig. 3 a vertical longitudinal section, of a cylinder-press with my improvements applied. Fig. 4 shows the application of said improvements to printing-press having a horizontally-reciprocating bed; and Fig. 5 is a side view of the lever and its shafts for reciprocating the wipers, said shafts being in section.

In the art of plate-printing it is well known that in the wiping of the plates a certain movement is imparted to the wiper, which is neither circular nor rectilinear, but is a compound curvilinear motion reciprocating in the direction of the length and width of the plate; and it is also well known that the wipers employed, in order to perform good work, must be frequently changed.

To obtain the compound movement above referred to, which is essential in this style of printing, I employ a printing-cylinder, upon which the plate is fixed; and to avoid the frequent change of wipers, I employ traveling wipers, of any desired length, moving from one roller under the reciprocating wiper-cages or tension devices over the printing-cylinder, and from thence to and around a second roller, upon which they are wound.

The wiper-cages or tension devices are provided with flexible pads, such as felt, waste cotton, or similar soft and yielding substance, the wiper-cage or tension device being so arranged that the pressure of the pad upon the wiper-cloth (hence the pressure of the latter upon the plate) may be regulated at will.

In the accompanying drawings, A represents

the main frame, constructed of any suitable material, and of such appropriate form as to receive the operating mechanism.

B is the receiving-table, and C the delivery-table. D is a driving-pulley, carrying a pinion, d , which communicates motion to the pressure-roller E by means of the cog-wheel e , mounted upon the shaft of said roller.

The cog-wheel e gears with a cog-wheel, f , mounted upon the shaft of the printing-cylinder F, which carries the engraved plate F'.

G is the ink-reservoir, and g the ink-roller, which transmits ink to a series of distributing-rolls, $g^1 g^2 g^3$, the latter of which transfers the ink to the inking-rolls $g^4 g^5 g^6$, which ink the plate F' as it is brought in contact therewith by the revolution of cylinder F.

The inking mechanism is operated from the same driving-shaft and pulley D by means of the cog-wheel h meshing into cog-wheel f and pinions $h^1 h^2$, as shown by Fig. 1.

I is a toothed bevel-wheel, mounted on the main driving shaft on the end opposite to that of pulley D. Said wheel I meshes with a bevel-pinion, I', mounted upon a counter-shaft, K, which lies longitudinally of and has its bearings $k k$ in the side of the machine. (See Fig. 2.)

L L are the wiper-cages or tension cages or devices, which are composed of a frame, l , provided with grooves, in which slides a second frame, l^1 , carrying the blocks $l^2 l^3$. To the last-named block, or to a plate connected therewith, is fixed one or more layers of felt, rubber, waste cotton, or similar yielding material, l^4 .

l^5 is a set-screw, and l^6 is a spring, placed between blocks $l^2 l^3$, so that when the set-screw is screwed down the sliding frame l^1 and blocks will be correspondingly depressed, to regulate the pressure of the wiping-cloths upon the plate F'.

l^7 are arms attached to the tension devices or cages L. Said arms slide freely in their bearings l^8 on the main frame.

M M are levers pivoted to the outer end of arms l^7 . Said levers have their fulcrum upon a shaft, N, arranged upon the side of the frame A.

The lower ends of levers M are forked and straddle a shaft, K; or the lower ends may be

slotted, as shown at *m*, Fig. 5, and in the slots or forks of the levers work the eccentrics or cams *k' k'*, by means of which the arms *l'* and the wiper-cages or tension devices are reciprocated, and with the latter the wiper-cloths, as will be readily understood.

It will be seen that by this arrangement the wiper-cages are not only made to reciprocate the wiper-cloths upon the revolving cylinder on a line at right angles to the revolution of said cylinder, but also serve as tension devices to regulate the pressure of said cloths upon the plate on the cylinder, while they provide a flexible pad, which insures the perfect contact of the cloths with the plate.

N N¹ N² are the wiper-cloths, of any desired length and of suitable material; and *O O¹ O² O³ O⁴ O⁵* are rollers arranged in pairs, and which carry the wiping-cloths, one end of which is made fast to one roller and the other to the second roller of the pair, the bulk of the cloth being wound upon one of the rollers of each pair as follows:

Referring to Fig. 2, the cloth *N* is wound upon roller *O*, and travels in the direction of the arrow to wind upon roller *O¹*. The cloth *N¹* is wound upon roller *O²* and winds upon roller *O³*, while cloth *N²* winds from roller *O⁴* onto roller *O⁵*, all in the direction of the arrows and passing under the tension devices or cages.

These rollers are operated as follows: *P* is a rod connecting a crank upon the outer end of the shaft of the printing-cylinder *F* with one end of a lever, *p*, the other end of which is loosely mounted upon the shaft of a ratchet-wheel, *p¹*. The lever carries a pawl, *p²*, which takes into the teeth of the ratchet *p¹*, and the shaft of the latter carries a sprocket-wheel or belt-pulley, *R*, which is connected by a chain or belt to sprocket-wheel or belt-pulley *R¹* upon the shaft of roller *O¹*, which shaft carries a second sprocket-wheel or belt-pulley, *R²*, which communicates motion to the roller *O³*. The shaft of roller *O³* carries a belt-pulley or sprocket-wheel, *R³*, and a second one, *R⁴*, which latter communicates motion to roller *O⁵* through sprocket-wheel or belt-pulley *R⁵* upon the shaft of the latter roller.

By means of the above-described arrangement of gearing, the rod *P* at every revolution of the printing-cylinder *F* will carry the lever *p* and pawl *p²* back a certain number of teeth upon the ratchet-wheel *p¹*. The pawl *p²*, taking in one of the teeth, will move the ratchet around a corresponding distance and communicate this motion to the rollers *O¹ O³ O⁵*, which causes the wiper-cloths *N N¹ N²* to wind upon said rollers an amount equal to the distance traveled by the ratchet.

It will be readily seen that by changing the throw of the rod *P*, as well as the number of teeth on the ratchet-wheel *p¹*, the wiper-cloths may be moved any desired distance at each revolution of the printing-cylinder *F*, or they may be moved a given distance for every given

number of revolutions of the printing-cylinder.

Supposing, for example, that each of the wiper-cloths *N N¹ N²* is of a length equal to one hundred meters long, and that the intermittent motion thereof is equal to a distance of ten millimeters for every impression taken, it will therefore be seen that ten thousand impressions may be taken before it becomes necessary to change the wiper-cloths.

The above number of impressions may, however, be doubled or trebled before it becomes necessary to change the wiper-cloths by gearing the latter to move one-half or one-third that distance for each impression, or even a less distance for every such impression.

By varying the size or diameter of cylinders *F E*, the former may be made to carry two or more engraved plates, by means of which a number of impressions corresponding with the number of plates employed may be taken at every revolution of the printing-cylinder.

In Fig. 4 I have shown the application of the wipers in combination with a reciprocating table or flat surface, and I here employ a series of guide-rolls, *S*, to hold the said wiper-cloths in proper position relatively to the wiper-cages or tension devices.

In the printing from copper plates I prefer to fix them upon a printing-cylinder instead of upon a flat table, as by the former method I am enabled to obtain that compound movement of wiping illustrated in diagram, Sheet 2 of the drawings, which is so essential to the obtaining of perfect prints from such plates.

It will be understood that I do not wish to limit myself to any particular number of wipers, or to the length and material of the same, as they may be varied, not only according to the size of the machine in combination with which they are employed, but also according to the kind of printing to be done and the size of the plate from which the impressions are taken.

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

1. In a printing-press, the combination with a rotating printing-cylinder carrying the plate from which the impressions are taken and a series of intermittently-moving wiper-cloths, of a corresponding series of wiper-cages or tension devices, adapted to reciprocate the said wiper-cloths laterally, and to regulate their pressure upon the plate, substantially as described, for the purpose specified.

2. In a printing-press, the combination, with a rotating printing-cylinder carrying the plate from which the impressions are taken and a series of intermittently-moving wiper-cloths, of a corresponding series of wiper-cages or tension devices provided with flexible pads, and adapted to reciprocate said wiper-cloths laterally, regulate their pressure upon the plate, and insure perfect contact between said cloths and the plate, substantially as described, for the purpose specified.

3. In a printing-press, a series of intermittently-moving and laterally-reciprocating wiper-cloths, arranged to unwind from one supporting-roll and wind upon another supporting-roll, a corresponding series of laterally-reciprocating wiper-cages or tension devices provided with flexible pads, under which said cloths are caused to travel, a rotating printing-cylinder carrying the plate from which the impressions are taken, a pressure-cylinder, and an inking mechanism, all driven from a main driving-shaft, and constructed and operating as described, for the purpose specified.

4. The combination, with the wiper-cages or tension devices L L, constructed as described, and the wiping-cloths N N¹ N², of the arms *l*, levers M, shafts N K, and the driving mechanism, all constructed and operating substantially as described.

5. The combination, with the wiper-cages or tension devices and the mechanism for reciprocating the same, as described, of the wiper-

cloths N N¹ N², rollers O O¹ O² O³ O⁴ O⁵, and their pulleys and belts R¹ R² R³ R⁴ R⁵, the pulley R, ratchet *p*¹, pawl *p*², connecting-rod *p*, lever P, and the printing-cylinder F, substantially as described, for the purpose specified.

6. The combination of the printing-cylinder, the pressure-cylinder, the inking mechanism, the reciprocating wiper-cages or tension devices, the wiper-cloths N N¹ N², and the feed mechanism and mechanism for reciprocating the tension devices and cloths with the main driving shaft and pulley D, pinion *d*, cog-wheels *e f I I'*, to operate the whole mechanism from one driving-shaft, as described.

In witness that I claim the foregoing I have hereunto set my hand this 10th day of May, 1877.

CONSTANT ALEXIS GUY.

Witnesses:

ROBT. M. HOOPER,
E. PAGE.