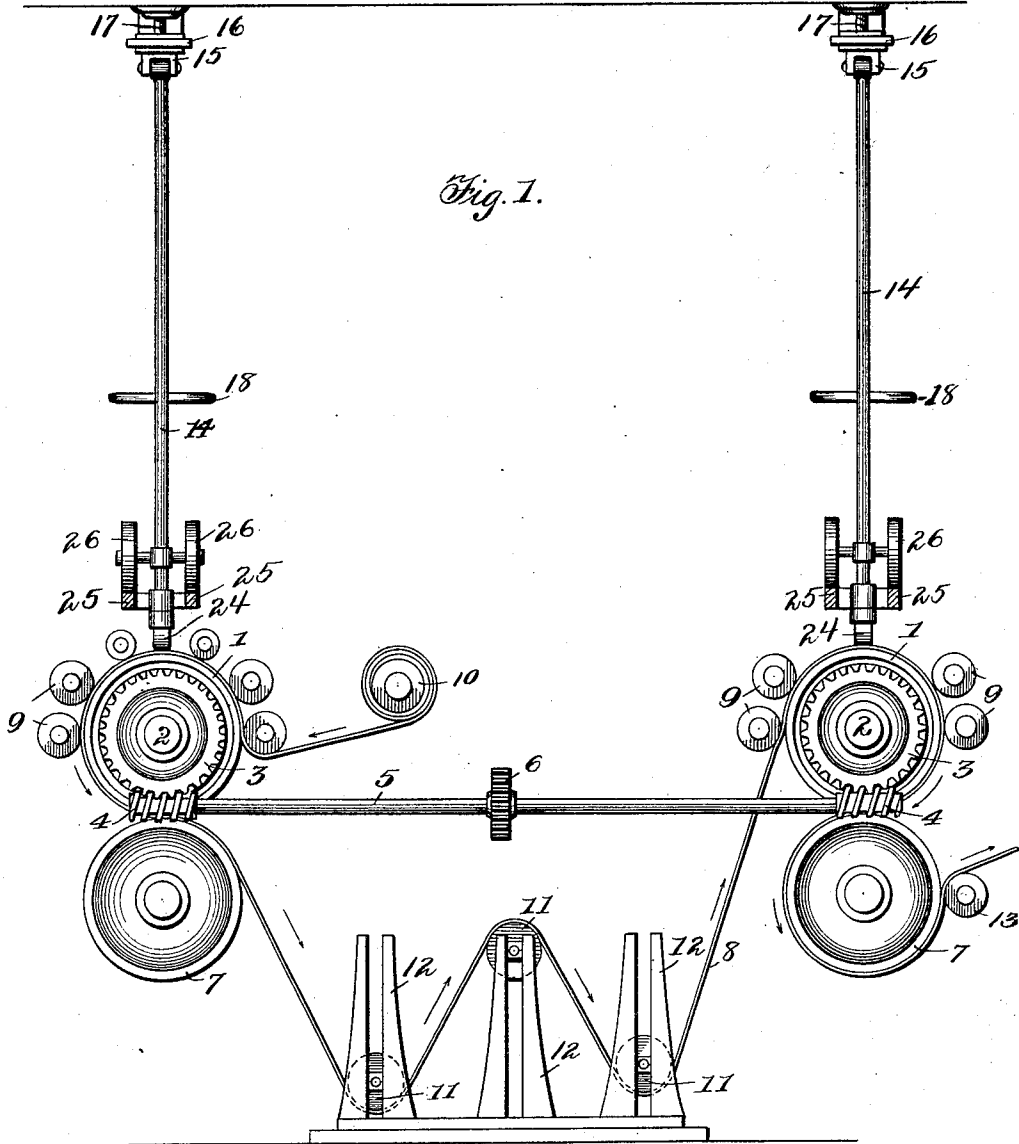


K. E. ROGERS.  
MACHINE FOR GLASSING PAPER.  
APPLICATION FILED APR. 1, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:

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Ethel M. Lowe.

Inventor

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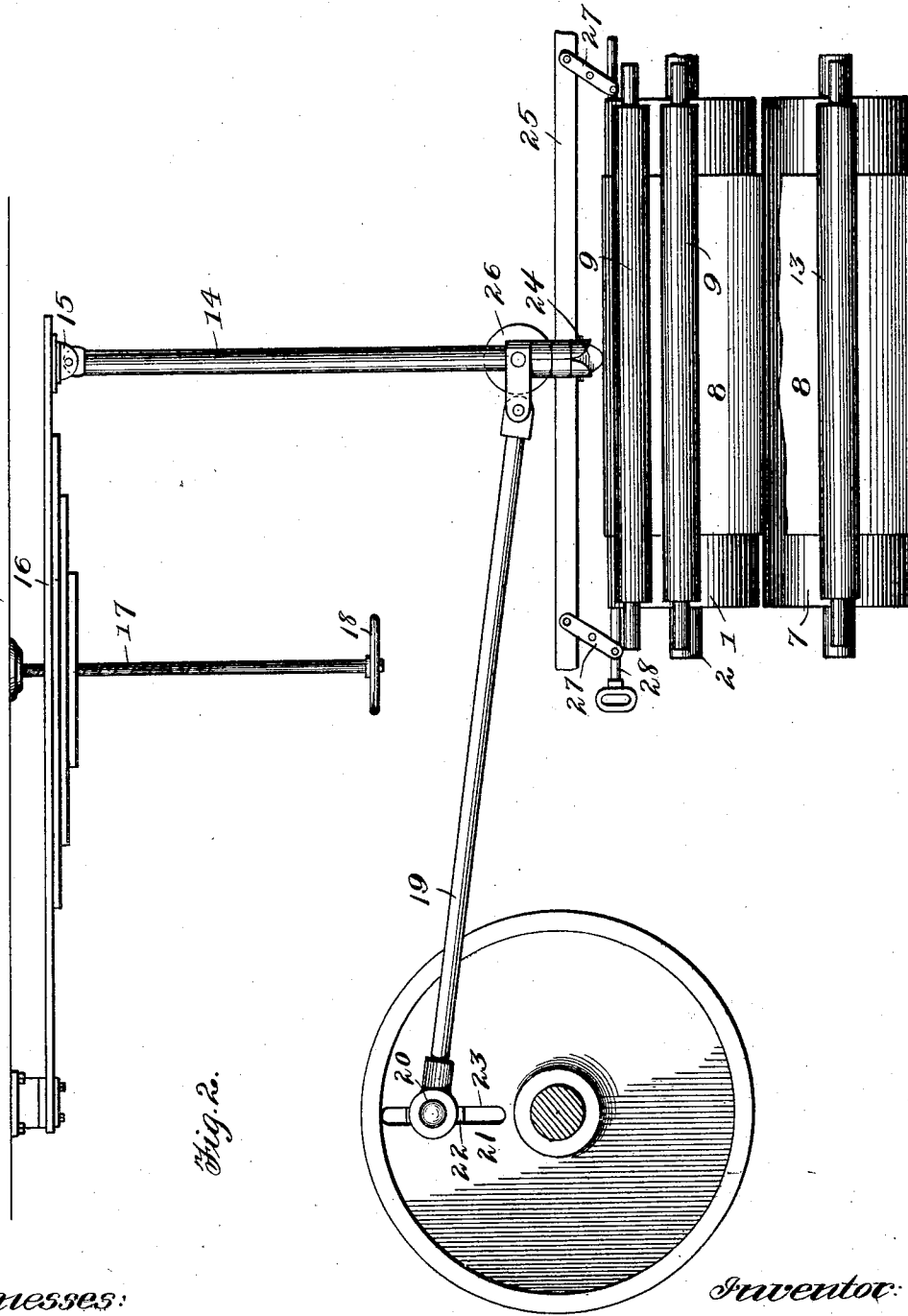


Fig. 2.

Witnesses:

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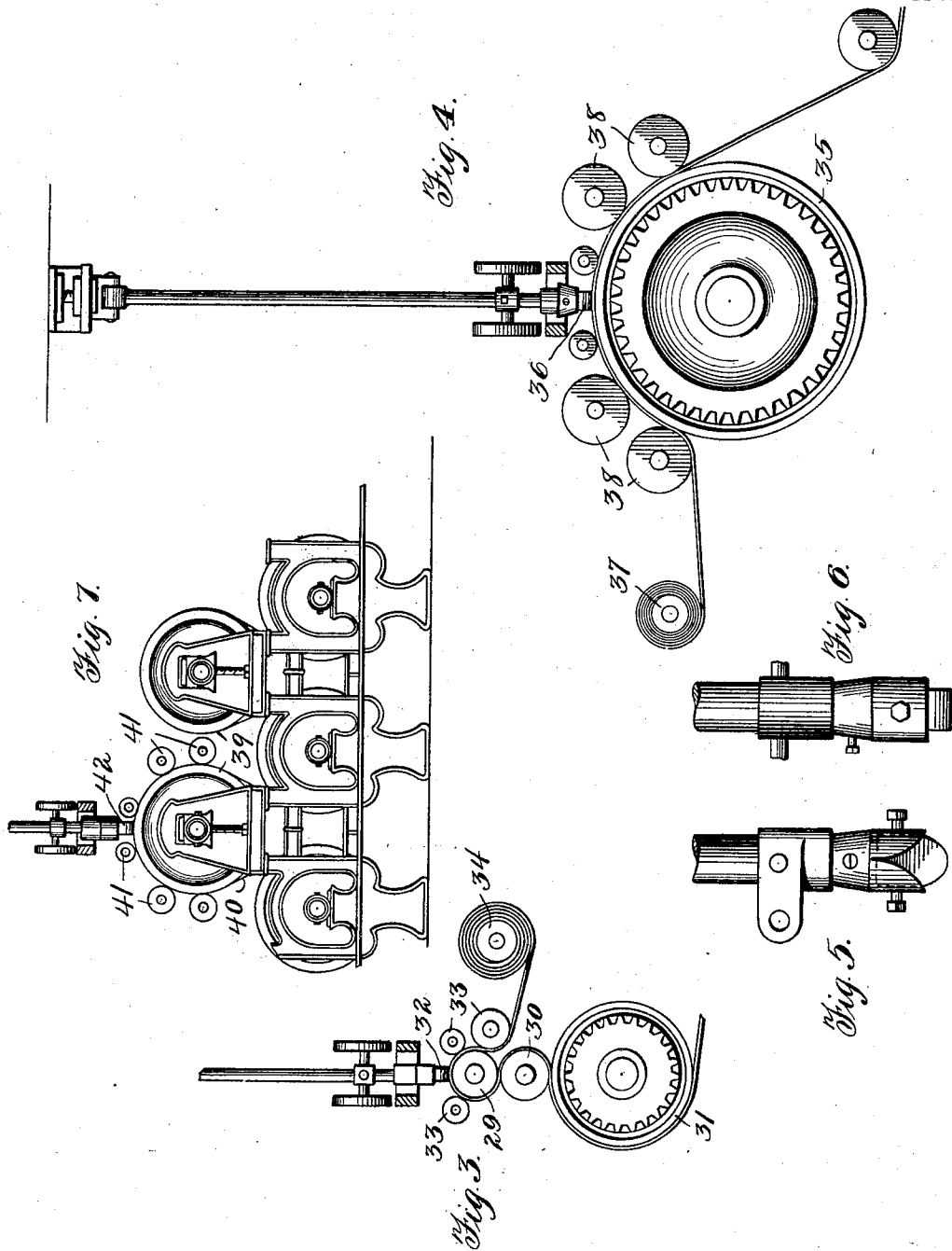
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3 SHEETS—SHEET 3.



Witnesses:

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# UNITED STATES PATENT OFFICE.

KNIGHT E. ROGERS, OF SOUTH MANCHESTER, CONNECTICUT.

## MACHINE FOR GLASSING PAPER.

SPECIFICATION forming part of Letters Patent No. 735,824, dated August 11, 1903.

Application filed April 1, 1903. Serial No. 150,640. (No model.)

*To all whom it may concern:*

Be it known that I, KNIGHT E. ROGERS, a citizen of the United States, residing at South Manchester, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Glassing Paper, of which the following is a specification.

This invention relates to a machine for polishing paper, board, leather, cloth, and similar materials by the friction of an oscillatory burnisher.

The machine which embodies this invention is particularly adapted to impart a high luster to continuous sheets or webs of thick paper, such as press paper or board which is stiff, hard, and smooth. In order to effect the desired finish on such material, a heavy rubbing pressure must be concentrated upon a limited area in such manner that the texture of the material will not be impaired nor the burnisher unduly worn, and the material must be fed positively, slowly, and evenly, so that it will not become torn or wrinkled and so that the burnisher will act uniformly over the entire surface.

The object of this invention is the production of a simple machine which can be arranged for effecting its function in connection with existing machines for different purposes or can be operated as an independent machine in which thin or thick cloth, leather, or paper that is stiff, hard, and smooth can, if desired, be heated or chilled to the approved temperature and positively and evenly fed at the desired speed beneath a glassing stone or roller that at any moment only bears down upon and oscillates over a limited area of the material.

This machine, which may be constructed to polish both sides or only one side of the material, may have one or more suitably-mounted metal cylinders or rolls geared so as to be rotated at the proper speed for feeding the material over the bed cylinder or roll and beneath the burnisher at the necessary rate. These may be heated or chilled to obtain the desired finish and facilitate the passage of the material. There are also suitably-mounted rollers for holding the material to the surface of the bed cylinder or roll each side of

the burnisher. The burnisher, which may be a glassing stone or roller, is held by a beam which is pivoted to a feathering-board that can be adjusted so as to cause the burnisher to bear down upon the bed-cylinder with the desired pressure. The beam is connected with a crank, which can be adjusted so that the burnisher can be oscillated longitudinally of the bed-cylinder and transversely with relation to the feed of the material at the desired rate of speed and with the required length of stroke.

Figure 1 of the accompanying drawings shows a side elevation of a machine that embodies the invention constructed to polish both sides of a continuous web of press-paper, the frame of the machine being omitted in order to better show the arrangement of the cylinders, rolls, and burnishers. Fig. 2 shows an end elevation of the same machine without the frame. Fig. 3 shows a side elevation of a modified arrangement of the rolls. Fig. 4 shows a side elevation of still another modification. Fig. 5 shows a side elevation, on larger scale, of the lower end of the burnisher-beam. Fig. 6 shows an end elevation of the lower end of the burnisher-beam, and Fig. 7 shows a machine which embodies this invention as combined with a paper-drying machine.

The machine first illustrated is a double machine (without the frame)—that is, one arranged to polish both sides of the material. The cylinders 1, which form the glassing-beds of this machine, are preferably hollow, so that they may be connected with a common fluid-circulating system, whereby their temperatures may be controlled like the cylinders of an ordinary paper-drying machine. These cylinders are mounted on shafts 2, which have worm-wheels 3 meshing with worms 4 on a shaft 5, that has a gear 6, which may be driven by any convenient mechanism.

Beneath and bearing against the surfaces of the bed-cylinders are cylinders 7, which may be geared to rotate with the bed-cylinders, but preferably run idle. The upper and lower cylinders are so arranged that they will tightly pinch the sheet of material 8 between them and draw it along by reason of their rotation.

On each side of the center and running in contact with the bed-cylinders are rolls 9. These rolls hold the material as it is drawn from the beam 10 or from the dancing-rolls 11 close against the face of the bed-cylinders, so that those cylinders will not slip, but will carry the material along beneath the burnishers at the same rate of speed that they rotate.

The dancing-rolls are suitably mounted in frames 12, so as to automatically keep the sheet of material taut between the bed-cylinders. A guiding-roll 13 may be located adjacent to the surface of the second lower roll, over which the material may pass to a cutter or to another winding-beam.

Above each bed-cylinder is an upright beam 14, that has its upper end pivoted to a block 15, that is attached to an end of a feathering-board 16, the other end of which is rigidly attached to a frame or to the ceiling of the room in the mill. An adjusting-screw 17 extends through the feathering-board near the center. This screw is provided with a handle 18, by means of which it may be rotated, so as to adjust the downward spring-pressure of the feathering-board.

A rod 19 connects the lower end of the upright beam with a crank-pin 20, projecting from a crank-disk 21, which may be rotated by any suitable power. The crank-pin is held in a block 22, that is adjustable in a slot 23 in the disk.

Held by the lower end of the upright oscillatory beam is the burnisher 24. This may be formed of glass, flint, steel, or other suitable material, and it may be fastened rigidly to the beam, or it may be arranged to rotate as the beam oscillates.

The downward spring of the feathering-board as controlled by the adjusting-screw determines the pressure of the burnisher, and the adjustment of the crank-pin with relation to the center of the crank-disk determines the length of oscillatory movement of the burnisher upon the top of the bed-cylinder.

On each side of the lower end of each upright oscillatory beam is a rail 25. These rails form tracks which guide the lower ends of the beams in their movements and prevent the burnishers from being carried sidewise by the movements of the cylinders, against which they run. Mounted on an axle each side of the lower end of each beam is a roll 26. These rolls are adapted to run on the tops of the rails each side of the lower ends of the beams. The rails are mounted so that they may be raised and lowered by the oscillation of levers 27, that are connected by a rod 28. When they are lowered, the burnishers press down upon the bed-cylinders with the full force of the feathering-boards. When the rails are raised, they engage the rolls on each side of the lower ends of the beams and lift the beams and burnishers

without interfering with the oscillatory movements, so that paper may be inserted between the cylinders and the burnishers without stopping the machine.

Small rolls 29 and 30 may be arranged above the top of the feed-cylinder 31, as shown in Fig. 3. In this case the burnisher 32 travels upon the upper roll and of course does not cover as large an area on the surface of the material as if the bed were flat or as if the bed were a large cylinder. The material is held to the surface of the upper roll each side of the burnisher by rolls 33 and is drawn from the beam 34 by the rotation of the feed-cylinder and rolls. The bite between the feed-cylinder and the upper rolls in this form of construction is proportional to the weight of the rolls and the downward pressure of the burnisher upon the upper roll.

If desired, there need be but a single cylinder 35, as shown in Fig. 4. In this case the single cylinder forms the bed for the burnisher 36, and the material which is drawn from the beam 37 is held to the surface of the cylinder by rolls 38.

In Fig. 7 this invention is shown as applied to the end of a board-drying machine. In this case the cylinders 39 are the last of a common form of drying-machine. These cylinders are geared together on the back side of the machine, as usual. The sheet of material 40, that passes around these cylinders, is held to one by rolls 41, and the burnisher 42 is mounted so as to oscillate parallel with the axis of the drying-cylinder between the rolls, as previously described.

This invention provides a machine which will positively and evenly feed stiff, hard, and smooth material beneath a burnisher, for the material is held tightly to the surfaces of the cylinders about which it passes in such manner that the feed-cylinder will not slip, but must carry the material along with it. Of course the speed of rotation of the cylinders can be easily regulated. The burnisher can be made to bear down upon the material with the desired pressure or quickly raised therefrom, and the speed and length of stroke of the burnisher-carrying beam can be quickly adjusted according to the condition of the material which is to be polished. As the burnisher bears down upon a curved surface—that is, as the material is convexed beneath the burnisher—the lower end of the burnisher may be blunt, so that it will not wear away quickly, yet the material will be rubbed hardest beneath the middle of the burnisher, and by reason of this the material will not be wrinkled or torn as it is carried by the cylinder beneath the burnisher, the heavy pressure of which is thus concentrated upon a small area of the material.

This invention can be readily applied to the common paper-drying machines, thus saving time, labor, and expense in handling the paper by polishing it at the end of the dry-

ing-machine instead of reeling it and carrying it to independent machines for polishing.

I claim as my invention—

5 1. A polishing-machine having cylinders arranged one above another and adapted to have the paper that is to be polished fed between them, mechanism for rotating the cylinders and causing them to feed the paper, a burnisher bearing down upon and adapted to be oscillated longitudinally along the upper cylinder, and mechanism for oscillating the burnisher from one end of the upper cylinder to the other and parallel with the axis of the cylinder, substantially as specified.

15 2. A polishing-machine having cylinders arranged one above another and adapted to have the paper to be polished fed between them, mechanism for rotating the cylinders and causing them to feed the paper, rolls bearing against the upper cylinder, a burnisher bearing down upon and adapted to be oscillated longitudinally along the upper cylinder, and mechanism for oscillating the burnisher from one end of the upper cylinder to the other and parallel with the axis of the cylinder, substantially as specified.

30 3. A polishing-machine having a cylinder, mechanism for rotating the cylinder, a burnisher bearing down upon the cylinder, mechanism for oscillating the burnisher longitudinally along the cylinder and mechanism for

lifting the burnisher from the cylinder without interrupting its oscillation, substantially as specified.

4. A polishing-machine having cylinders 35 arranged for gripping and feeding the material to be polished, mechanism for rotating the cylinders, a burnisher bearing upon one of the cylinders in such manner as to force that cylinder toward the other, whereby the material to be polished is gripped between 40 the cylinders by the combined weight of the burnisher and one of the cylinders, and mechanism for oscillating the burnisher from one end of the cylinder to the other parallel with 45 the axis of the cylinder, substantially as specified.

5. A polishing-machine having two sets of cylinders, each set having one cylinder arranged above another and adapted to have 50 the paper fed between them, rolls bearing against the upper cylinders, mechanism for rotating the cylinders, a burnisher bearing down upon the upper cylinder of each set, and mechanism for oscillating the burnishers 55 from end to end of the upper cylinders, substantially as specified.

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Witnesses:

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