Oct. 15, 1929. J. SCHWABE, JR 1,731,987

SPACE PLATE CLEANER

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Fig. 1.

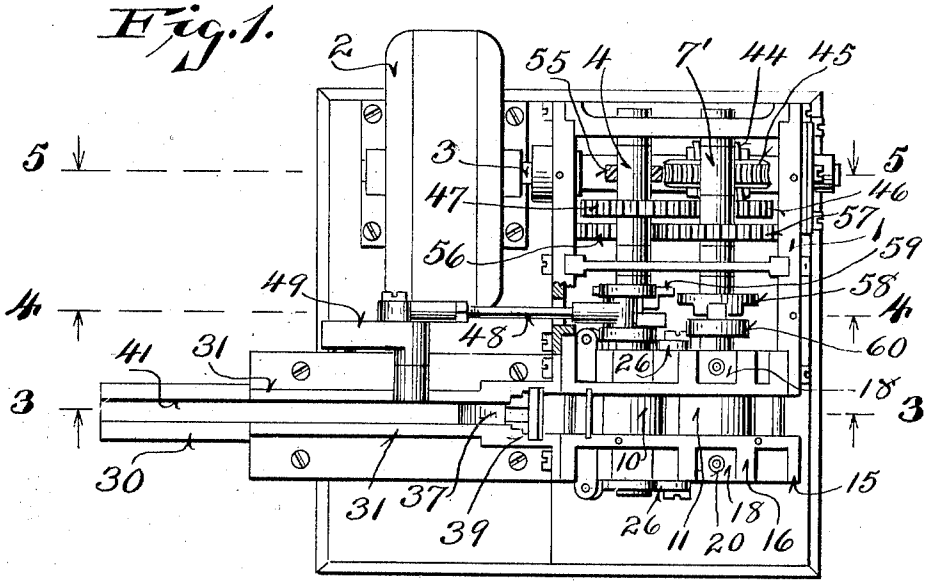
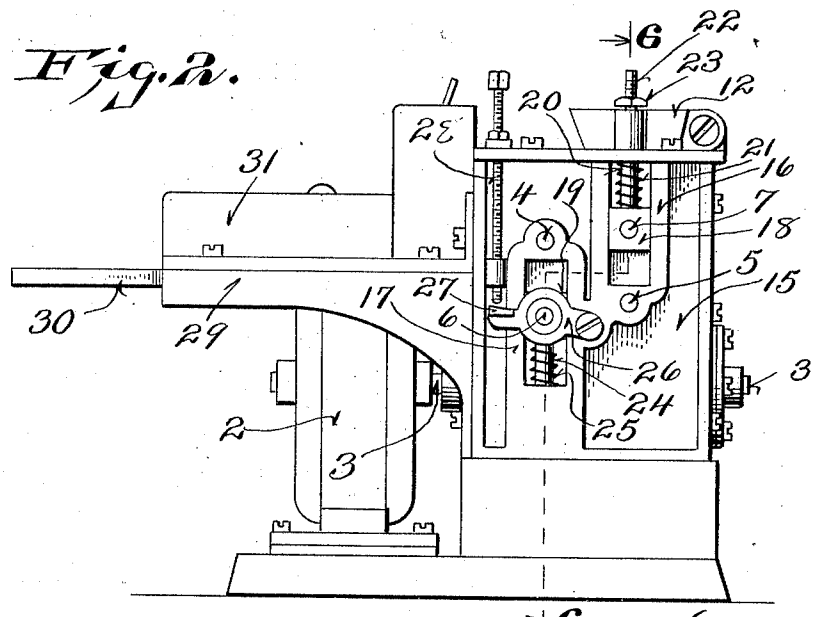


Fig. 2.



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Fig. 3.

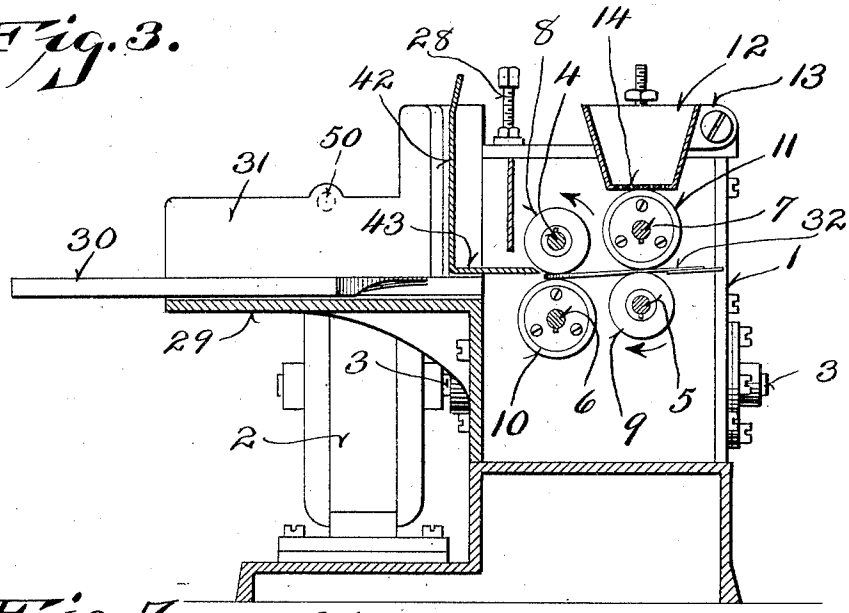


Fig. 7.

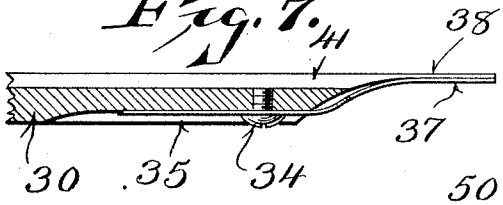
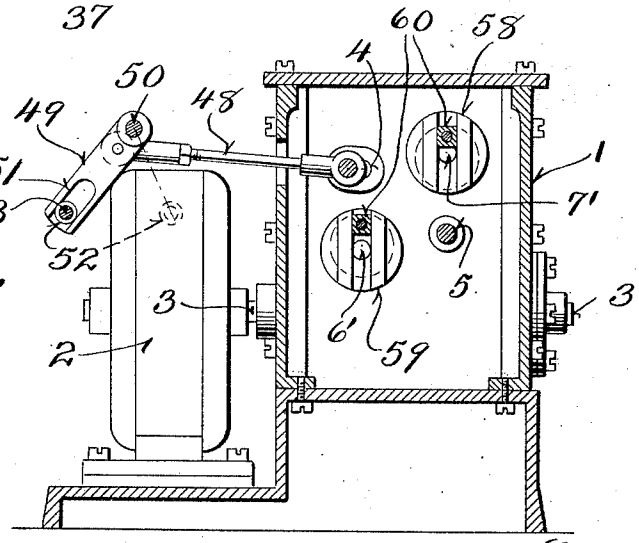


Fig. 4.



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Fig. 5.

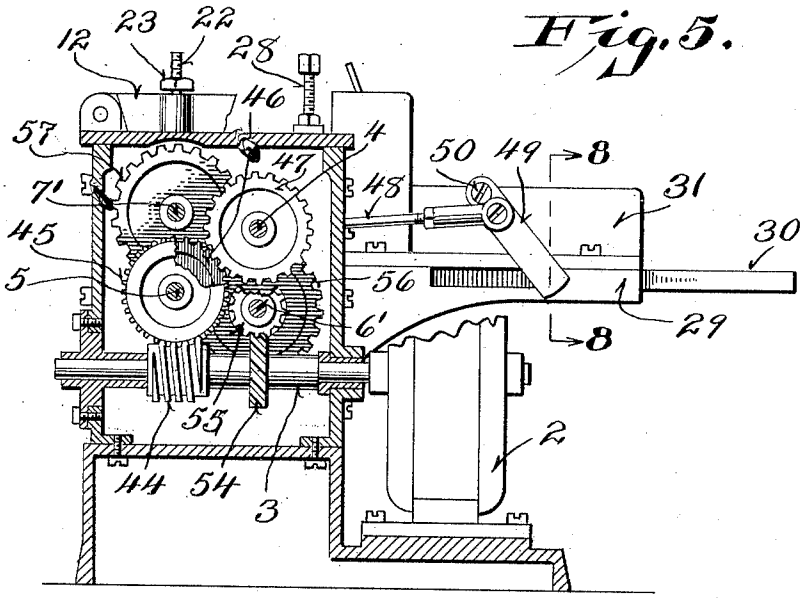


Fig. 6.

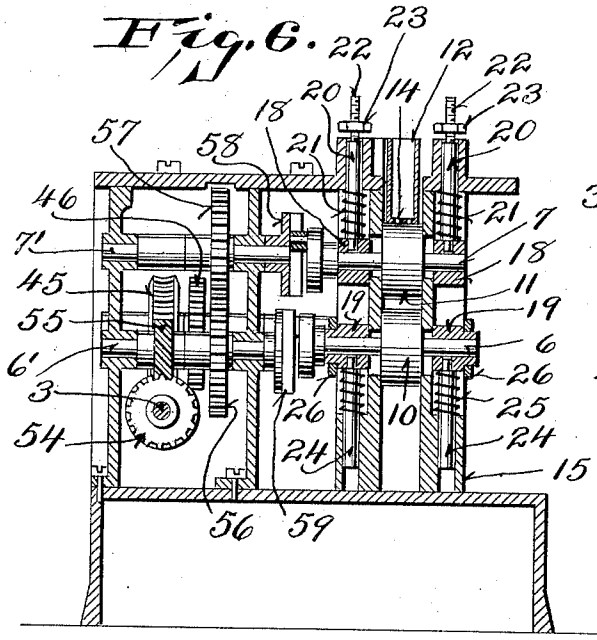


Fig. 8.

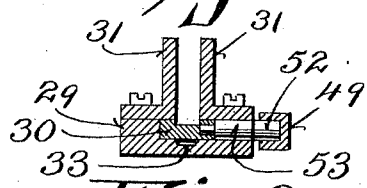


Fig. 9.

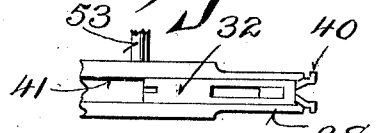
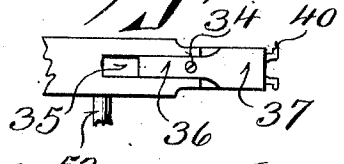


Fig. 10.



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UNITED STATES PATENT OFFICE

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SPACE-PLATE CLEANER

Application filed August 22, 1927. Serial No. 214,707.

This invention relates to machines for cleaning space plates for linotype machines.

The space plates frequently become gummed and coated with foreign material and are unsatisfactory to use, in this condition, in linotype machines. It has been found difficult to clean these plates and usually they are cleaned by hand, consuming a considerable amount of time and effort and the cleaning is far from uniform.

Objects of this invention are to provide a machine which will automatically clean space plates in a very rapid manner without requiring any effort on the part of the operator, which will withdraw the plates separately from the hopper and pass them singly to the polishing rolls and which will allow the polishing rolls to operate a predetermined length of time on each side of each plate.

Further objects are to provide an automatic cleaning machine for space plates which is compact, and which is so constructed that the polishing rolls may adjust themselves to accommodate the different thicknesses of the space plates, so that all portions of the plates are thoroughly cleaned.

An embodiment of the invention is shown in the accompanying drawings, in which:

Figure 1 is a plan view of the machine with the top thereof removed and with a part in section.

Figure 2 is a side elevation of the structure shown in Figure 1.

Figure 3 is a sectional view on the line 3—3 of Figure 1.

Figure 4 is a sectional view on the line 4—4 of Figure 1.

Figure 5 is a sectional view on the line 5—5 of Figure 1.

Figure 6 is a sectional view on the line 6—6 of Figure 2.

Figure 7 is an enlarged sectional detail of the feeding plunger.

Figure 8 is a sectional view on the line 8—8 of Figure 5.

Figure 9 is a top view of the plunger showing one of the space plates in position.

Figure 10 is a view from the underside of Figure 9.

Referring to the drawings it will be seen that the machine comprises a main casing 1 within which the operating mechanism is housed. A driving motor 2 is mounted upon the base of the casing and has its driving shaft 3 extended into the casing for driving the operating mechanism. The casing has four shafts projecting through the side wall thereof as indicated by the reference characters 4, 5, 6, and 7. The shafts 4 and 5 carry rubber feeding rollers 8 and 9, which are rotated at a certain speed, and the shafts 6 and 7 carry polishing rollers 10 and 11, which are rotated at a very much higher speed. Preferably, the rollers 10 and 11 are provided with a wood or composition rim for polishing purposes. A graphite container or chamber 12 is carried by an arm 13 pivoted to the machine and is provided with a bottom having a plurality of small perforations 14 through which the graphite may pass to the roller 11. The bottom of the container 12 rests lightly upon the roller 11, as shown in Figure 3. The roller 11 throws the graphite that it does not use on to the roller 8 and such roller passes the graphite to the roller 10, so that after the machine has operated a few minutes the rollers are thoroughly coated with graphite, and the graphite is removed in a regular manner.

The rollers 8, 9, 10, and 11 are carried within a small auxiliary casing opened at its rear end, and such casing is formed by the side wall of the main casing 1 and an auxiliary plate 15 (see Figures 1 and 2). The plate 15 and the corresponding side plate of the casing are provided with guides 16 and 17 within which crossheads 18 and 19 are slidably positioned. The crossheads 18 are provided with pins 20 about which helical springs 21 are loosely wound, thus urging the crossheads 18 downwardly. The pins 20 are provided with threaded reduced extensions 22 (see Figures 2 and 6) upon which nuts 23 are screwed. These nuts 23 are adapted to contact with the upper end of the bearing for the pins 20, as may be seen most clearly from Figure 6, to thus limit the downward motion of the crossheads 18 and prevent the roll 11 from contacting with the roll 9 when there is no plate between such rolls. The

crossheads 19 are similarly equipped with slidably guided pins 24 surrounded by springs 25. The crossheads 19 carry levers 26 fastened at one end to a stationary portion of the machine and at their other ends provided with stops 27 adapted to engage the adjustable stop screws 28, as shown most clearly in Figure 2. Thus the upward motion of the roll 10 is adjustably controlled and such roll is prevented from contacting with the roll 8 when there is no space plate between the rolls.

It will be seen, therefore, that the polishing rolls are yieldingly carried between the end plate, or side plate, of the casing 1, and the plate 15, and operated in this restricted space.

The shafts 6 and 7 are coupled to their driving shafts by a floating connection, or universal joint, hereinafter described.

The casing 1 is provided with an extension or platform 29, which is grooved to receive a feeding plunger 30 (see Figures 3 and 8). A pair of guides 31 are secured to the platform or extension 29, and not only hold the plunger slidably in place, but also provide space for the reception of the body of the space plates 32. (See Figure 9.) Preferably, a small groove 33 is formed in the platform or extension 29 to accommodate a screwhead 34 (see Figure 7) carried on the rear side plunger 30. The plunger 30 is cut out to form a groove 35 for the reception of the reduced end of the spring 37, as shown in Figures 7 and 10. Further the plunger is cut out to provide fingers 38 against the underside of which the spring 37 bears, as shown in Figure 7.

The guides 31 (see Figure 1) are provided with a plurality of shouldered cutouts 39 (see Figure 1) adapted to receive the feet 40 of the space plates 32, as shown in Figure 9. The space plates are piled one on top of the other within the hopper formed by the space between the guides 31 with their feet 40 positioned in the shouldered cutouts 39 of such guides.

It is to be noted that the plunger 30 is provided with a groove 41 for the reception of the body of the space plates. A guiding apron, or wall, 42 (see Figure 3) is positioned at the end of the hopper and is provided with a guiding plate 43 positioned a slight distance upwardly above the plane of the upper side of the plunger 30.

It will be seen that the space plates slide downwardly into the hopper and the lowermost one seats within the groove 41 of the feeding plunger 30. When the plunger is at its rearmost position, as shown in Figure 3, the feet 40 of lowest of the space plates are dropped down in front of the fingers 38 of the plunger. When the plunger makes its forward reciprocation, the fingers 38 engage the feet 40 of the space plate and the spring 37 holds the space plate against the underside of the guiding portion of the apron 43 (see Figure 3). Continued forward reciprocation of the plunger forces the space plate between the first feeding roll 8 and the first polishing roll 10. The feeding roll moves the plate forwardly, so that it passes between the next feeding roll and the next polishing roll. The feeding rolls are preferably made of rubber and adhere to the plates and secure a firm grip thereon and feed the plates in a uniform manner past the polishing rolls. The polishing rolls, coated with graphite and revolving at a high rate of speed, rapidly polish each plate in a thorough and uniform manner on both its upper and lower sides.

The mechanism for securing the operation of the parts outlined above, will now be described:—

Starting with the driving motor 2, it will be seen from Figure 5, that its shaft 3 is equipped with a worm 44 meshing with a worm wheel 45 carried by the shaft 5. The shaft 5 is also provided with a gear 46 which meshes with the same sized gear 47, carried by the shaft 4, thus reversely rotating the shafts 4 and 5 and consequently driving the feeding rolls 8 and 9 in reverse directions, and at the same speed, to feed the space plates, as shown in Figure 3. The shaft 4 is also provided with a crank connected by means of a pitman 48 (see Figure 1) with a lever 49 pivotally carried by means of a pin 50, as is most clearly shown in Figures 2 and 4. The pitman 48 is adjustable, as indicated in such figures. It is to be noted, that the lever 49 is provided with a slot 51 within which the roller 52 of a pin 53, carried by the plunger 30, is adapted to operate, as shown in Figures 4 and 8. Thus reciprocatory motion is imparted to the plunger.

The drive for the polishing rollers comprises a skew gear 54 (see Figure 5) which meshes with the gear 55, carried by the shaft 6'. This shaft 6' is provided with a gear 56 which meshes with a gear 57 of the same size, carried by the shaft 7'. The shafts 6' and 7' are arranged behind and in approximate alignment with the shafts 6 and 7, previously described and as is most clearly shown in Figure 6. These shafts 6' and 7' are coupled to the shafts 6 and 7 by means of universal joints 58 and 59. These universal joints may consist of cranks, carried by the two shafts 6 and 7, as shown in Figure 6, and also as shown in Figure 4. Preferably the cranks are provided with crossheads 60, as shown in Figure 4, which slide within the slots of plates carried by the shafts 6' and 7'. Inasmuch as the shaft 6' is in vertical alignment with the shaft 6 and the shaft 7 is in vertical alignment with the shaft 7, it is apparent that the connection forming the universal joint is sufficient to permit vertical motion of the shafts 6 and 7 with respect to the shafts 6' and 7', respectively.

Thus the polishing rolls are free to float under the action of the springs and to adjust themselves as required.

It will be seen, that a very simple and reliable type of automatic space plate cleaning machine has been provided by this invention, which will automatically clean both sides of the plates in a rapid and thorough manner.

Although the invention has been described in considerable detail, such description is intended as illustrative rather than limiting as the invention may be variously embodied and as the scope of such invention is to be determined as claimed.

I claim:

1. A space plate cleaning machine comprising a hopper for receiving the plates, means for withdrawing a single plate at a time from said hopper, pairs of feeding and polishing rolls for receiving the withdrawn plate, driving shafts for said rolls, the driving shaft for the feed rolls being rigidly connected to such rolls, the driving shafts for the polishing rolls having a universal connection with such rolls, and spring pressed crossheads urging said polishing rolls towards said feed rolls, to accommodate varying thicknesses in the said plates.

2. A cleaning machine for space plates having a body portion and projecting feet, said machine comprising a hopper for said plates, a plunger guided below the hopper and having a recess for the reception of the body of said plates and having thin fingers for engaging behind said feet, a plate mounted above said plunger, a spring carried by said plunger for holding said space plates against the under side of said last recited plate, and polishing and feeding means for receiving the space plates from said plunger.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

JOSEPH SCHWABE, JR.