June 5, 1934. G. A. RUTKOSKIE 1,961,828

PROCESS FOR PRODUCING WAX CARBON SPOTS

Original Filed April 14, 1931 3 Sheets-Sheet 1

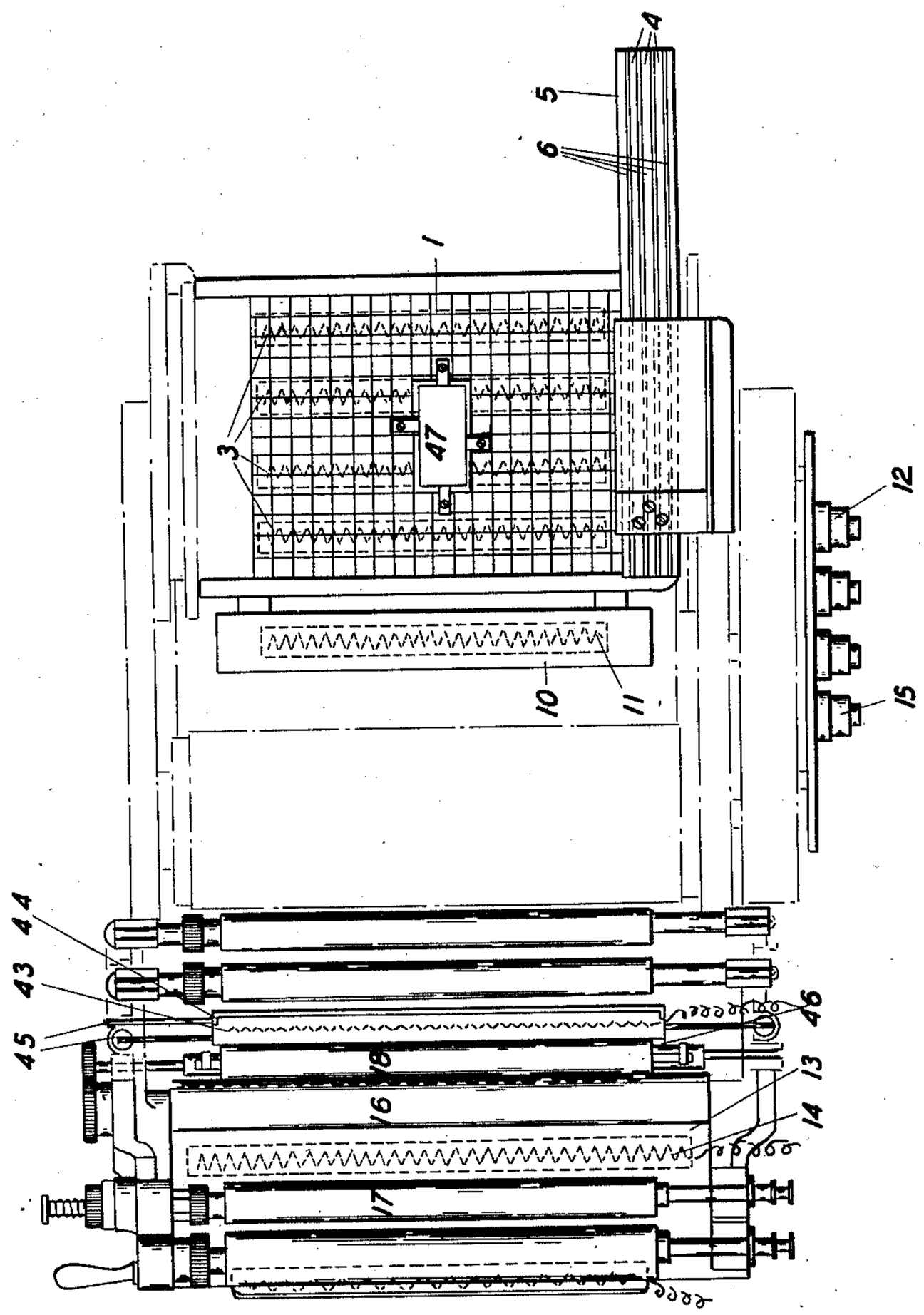

FIG. 1.

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FIG. 2.

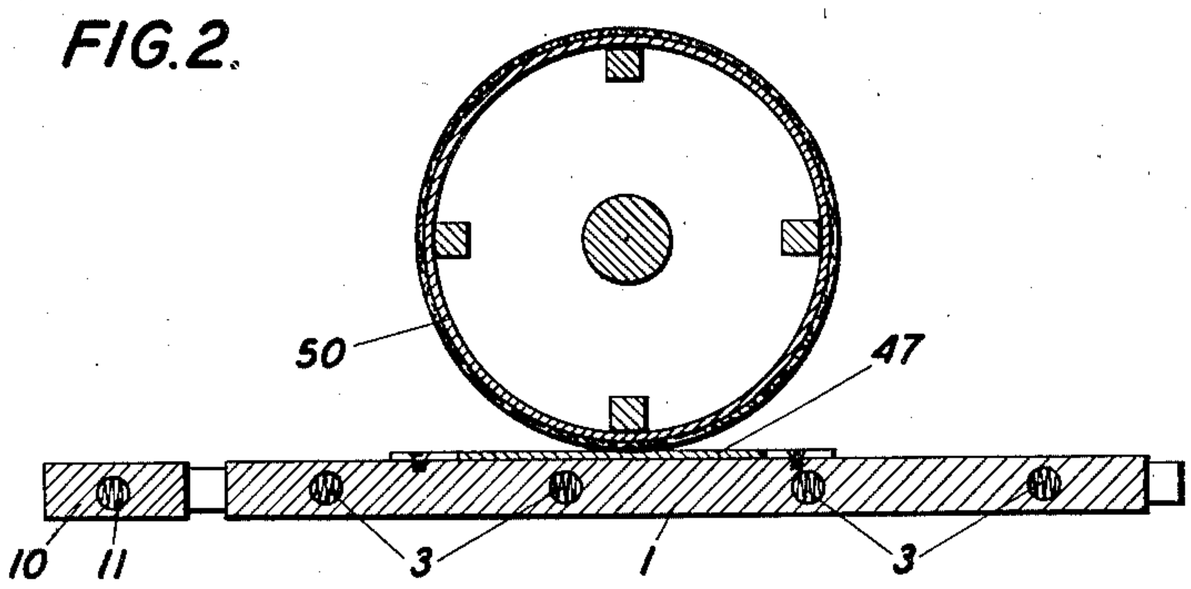

FIG. 5.

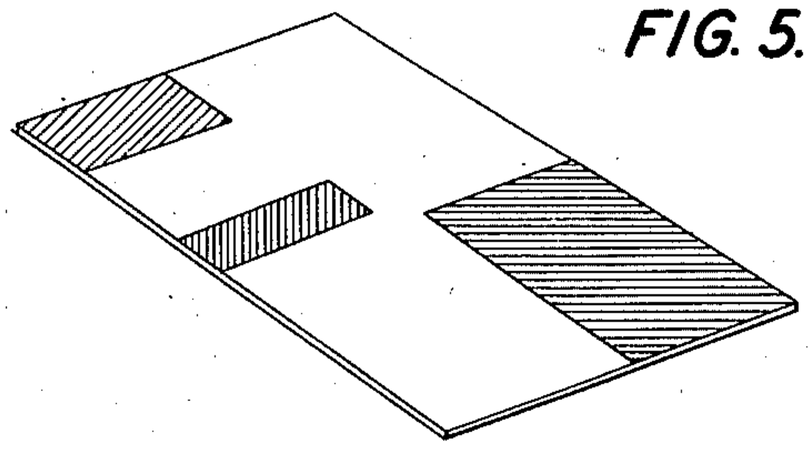

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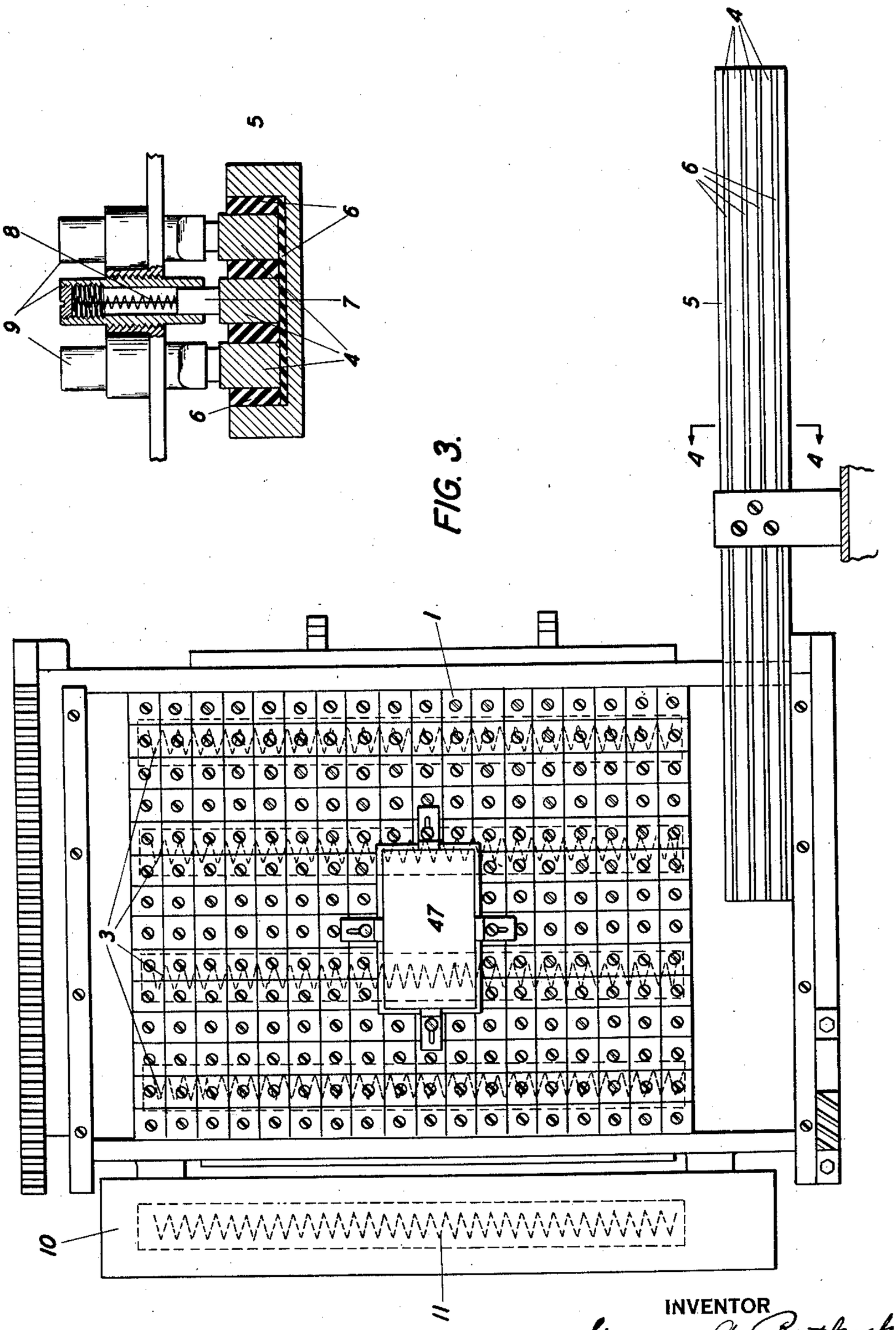
FIG. 4.

FIG. 3.



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Patented June 5, 1934

1,961,828

UNITED STATES PATENT OFFICE

1,961,828

PROCESS FOR PRODUCING WAX CARBON SPOTS

George A. Rutkoskie, Athens, Ohio, assignor to The McBee Company, Athens, Ohio, a corporation of Ohio

Original application April 14, 1931, Serial No. 529,908. Divided and this application June 17, 1933, Serial No. 676,292

5 Claims. (Cl. 91—70)

My invention relates to that class of devices which are described in my United States Patent No. 1,860,957. I have discovered that in the construction of a press for printing wax carbon spots on sheets of paper such as is described in that patent and further described in my copending application, Serial No. 529,908, of which this application is a division; that it is essential, not only that the wax carbon should be maintained at a predetermined temperature but also that it is necessary to maintain the ink plate, the type bed and the electrotype at a constant temperature.

I have also discovered that if this temperature is varied either above or below the critical degree that the operation will not be successful. For example, if it is too high, the wax carbon will crystallize and if too low it will turn into soot in the form of minute globules of carbon.

I have also discovered that unlike the ordinary press in which the printing cylinder is covered with the usual draw sheet to use a soft packing which will provide an elastic cushion. If such a cushion is provided, it is possible to keep the edges of the printed form free from excess carbon and to produce a much better result.

My invention has for its object to provide a new and improved method of producing wax carbon spots at predetermined locations upon sheets of paper by applying it to the sheet of paper from an electrotype while reciprocating the electrotype at a tangent to the sheet and maintaining the electrotype at a predetermined temperature, while maintaining the carbon at a predetermined temperature continuously from the time it is first melted until it is applied to the paper and maintaining all of the parts of the press which contact the wax carbon at the said predetermined temperature.

A further object is to provide an elastic and compressible cushion to the printing cylinder so that it will prevent the edges of the printed form from accumulating excess carbon as it contacts the electrotype.

My means of accomplishing the foregoing objects may be more readily understood by having reference to the accompanying drawings which are hereunto annexed and made a part hereof, in which—

Fig. 1 is a top or plan view of a portion of a press equipped with my improvement;

Fig. 2 is a fragmentary detailed view showing the printing cylinder and the reciprocating type bed;

Fig. 3 is a top or plan view of the bed of the press showing the arrangement for heating the ink plate and the especially heated lock-up base and means for obtaining electrical contacts for the elements on the ink plate and the special lock-up base;

Fig. 4 is an enlarged section of the sliding contacts on the line 4—4 in Fig. 3 showing the carbon brushes; and

Fig. 5 is a perspective view of form after it has received the spot carbon impression.

Similar reference numerals refer to similar parts throughout the entire description.

I have shown in the drawings a standard Kelly type of press in which the type bed 1 has mounted upon it a special lock-up base which is heated by electric elements 3. As shown there are four of these elements and they are connected to a control circuit by means of sliding contacts 4 which are mounted in a gutter 5, suitable insulation 6 being provided to insulate the electric current, where electric current is used to furnish the heat.

Three carbon brushes 7 are provided to make contact with the sliding contacts 4, the brushes are held in contact by means of coil springs 8 which are mounted in caps 9 of the standard construction for this purpose, so as to provide means to regulate the tension which the springs exert upon the carbon portion.

It is well known that the type bed of the Kelly press is reciprocated as the printing takes place and when electrical apparatus such as the hereinbefore described is employed, it will be apparent that it can be reciprocated without in any manner interfering with the effectiveness of the electrical contacts which carry the current to the heating element in the lock-up base, the heating of which will also heat the electrotype which is bolted to the base.

As hereinbefore set forth, I have discovered that a wax carbon has a critical temperature at which it can be used, for this purpose, and a variation in either direction is disastrous to the accomplishment of the desired result. As a consequence the ink plate 10 must also be heated. As shown it is heated by an electric element 11 which is connected to the sliding contacts 4 and is controlled by the same switch 12 which conveys current to the carbon brushes 7. This switch is of a standard type providing three positions—high, medium and low—so that varying degrees of temperature for the heating elements 3 and 11 can be maintained.

The ink fountain 13 from which the wax carbon is distributed to the roller must necessarily be heated as the dry wax carbon compound is first placed in it. As illustrated it is heated by a heat-

ing element 14 located directly under the ink fountain, this heating element being suitably connected through a standard switch 15.

When the compound has been melted it is separated by the ink fountain roller 16 and carried to a steel vibrator 17 by the ductor roller 18 which as is set forth in my hereinbefore named application is preferably formed of a special composition which will stand approximately a temperature of 200 degrees F. The melted compound is distributed to form rollers and thence to the ink plate in the usual manner except that as set forth in my above named patent and application I have discovered that it is essential that these rollers be positively driven at the time of contact and during the contact, but as this feature is covered in the said application of which this is a division, I shall not enter into a detailed description of this feature of the method.

I have also found that it is essential to provide means to receive the excess carbon and carry it safely away from the rollers and I accomplish this by providing a shield 43 preferably made of cold rolled steel. The bottom part of the shield which is nearer to the adjacent roller extends out about three quarters of an inch to form a drip pan 44. On one side of this pan I mount two drain tubes 45 which serve to carry off any of the melted compound which may drop from the ductor roller 18, which can easily happen if more compound is allowed to come through the fountain than can be taken care of conveniently by the ductor roller 18. The other end of the pan is closed so that no wax carbon can escape from that end. An extension 46 is attached to the shield and extends to the rear end of the press and directly under the ink fountain 13. This extension forms a drip pan which will catch any of the compound which may drop from the ink fountain 13. I have discovered that these drip pans are very essential to the success of any good work for if any compound comes in contact with the bare elements it will immediately crystallize and if this crystallized wax should come in contact with the printing plate 47 it will stick to the plate and each particle of this crystallized compound will cause the good compound to separate and will make a spotted print instead of a solid one. By the construction thus described the shield 43 and the expansions 46 not only prevent any excess carbon from contacting with the heating elements and then being thus crystallized, but it also holds it until it is removed or if it is melted it will drain through the drain pipe 45 which can be arranged to drop into any convenient receptacle (not shown) outside of the press. This not only assists in keeping the work clean but saves any excess compound that may be thrown from the ductor roller or the ink fountain roller 13.

As illustrated, I have shown a special lock-up base mounted upon the type bed plate 47, a complete description of which is to be found in the above named patent. As it forms no part of this invention I shall not enter into the detailed description of it for any form of lock-up base may be employed, as desired, without deviating from the scope of my invention as described in the hereinafter contained claims.

I also have discovered that it is not only preferable but almost essential to have the face of the printing plate 47 nickeled and polished as this produces a very much smoother finish and a much more even one for the carbon than where they are not so finished.

I have found in practice, that it is practically impossible to run the paper with satisfactory result over the ordinary printing cylinder 50 which is equipped with a draw sheet as in standard practice and it has been found necessary to provide some sort of an elastic and compressible cushion for, as hereinbefore set forth, unless some sort of cushion is provided it is almost impossible to produce a satisfactory result since the edges of the printed form will accumulate an excess amount of carbon.

I have found the most satisfactory covering to be a soft felt packing although other types of cushioning material may be found desirable in practice and I do not wish to be understood as limiting myself to any specific type of cushion for this purpose.

I have discovered in practice that it takes approximately one and a half hours to heat the compound, press, and rollers to the right working temperature and it is therefore desirable to make provision for heating the various parts before attempting to make a run.

It is also found desirable to clean the printing plate before running the stock after the press has been standing idle, if the heat has been turned on to the type bed or lock-up base. This precaution must be taken for the reason that the carbon in the compound will burn out around 200 degrees F. and if this should happen you may run several impressions which will look right but will not make a copy thereby being useless for the purpose for which they are intended.

I have also found that it is not only a time saver to melt the compound before putting it in the ink fountain 13 but also that doing so permits the compound to be inspected for any hard particles that it may contain. I have also obtained the most satisfactory results by keeping the entire unit at the lowest temperature at which the wax carbon is workable rather than at the highest.

The provision of the shield 43 and drip pans 44 and 46 provide for an added economy by taking care of the crystallization of the wax and by melting the compound, thus secured, in a vessel and straining it through a very fine brass strainer before replacing it in the ink fountain, it is possible to eliminate any hard particles from the compound.

Although I have described a specific form of apparatus in this specification and illustrated it in the drawings, I wish to be understood that my invention is not limited to any specific type of apparatus for it is clear that many different forms of apparatus may be employed which will utilize my method and I do not wish to be understood as limiting myself to the specific form thus disclosed except as such limitations may appear in the hereinafter appended claims.

Having described my invention what I regard as new and desire to secure by Letters Patent is:

1. In the process of producing wax carbon spots upon sheets of paper, the steps of heating the wax carbon to a predetermined temperature; applying the melted wax carbon to a sheet of paper by means of an electrotype; providing a cushion for the paper while in contact with the electrotype; and maintaining said electrotype at a predetermined temperature.

2. In the process of producing wax carbon spots upon sheets of paper, the steps of heating the wax carbon to a predetermined temperature; applying the melted wax carbon to a sheet of paper by means of an electrotype; and cushioning said paper during its contact with said electrotype.

3. In the process of producing wax carbon spots upon sheets of paper, the steps of heating the wax carbon to a predetermined temperature; applying the melted wax carbon to a sheet of paper by means of an electrotype; cushioning said paper at and during its contact with said electrotype; and carrying away any excess of crystallized wax.

4. In the process of producing wax carbon spots on sheets of paper, the steps of heating the wax carbon to a predetermined temperature, applying the melted wax carbon to the paper by means of an electrotype, providing the printing cylinder with an elastic and compressible covering whereby the paper is cushioned, and heating an electrotype to a predetermined temperature.

5. In the process of producing wax carbon spots on sheets of paper, the steps of heating the wax carbon to a predetermined temperature, applying the melted wax carbon to the paper by means of an electrotype, providing the printing cylinder with a covering of soft felt packing, and heating said electrotype to a predetermined temperature.

GEORGE A. RUTKOSKIE.