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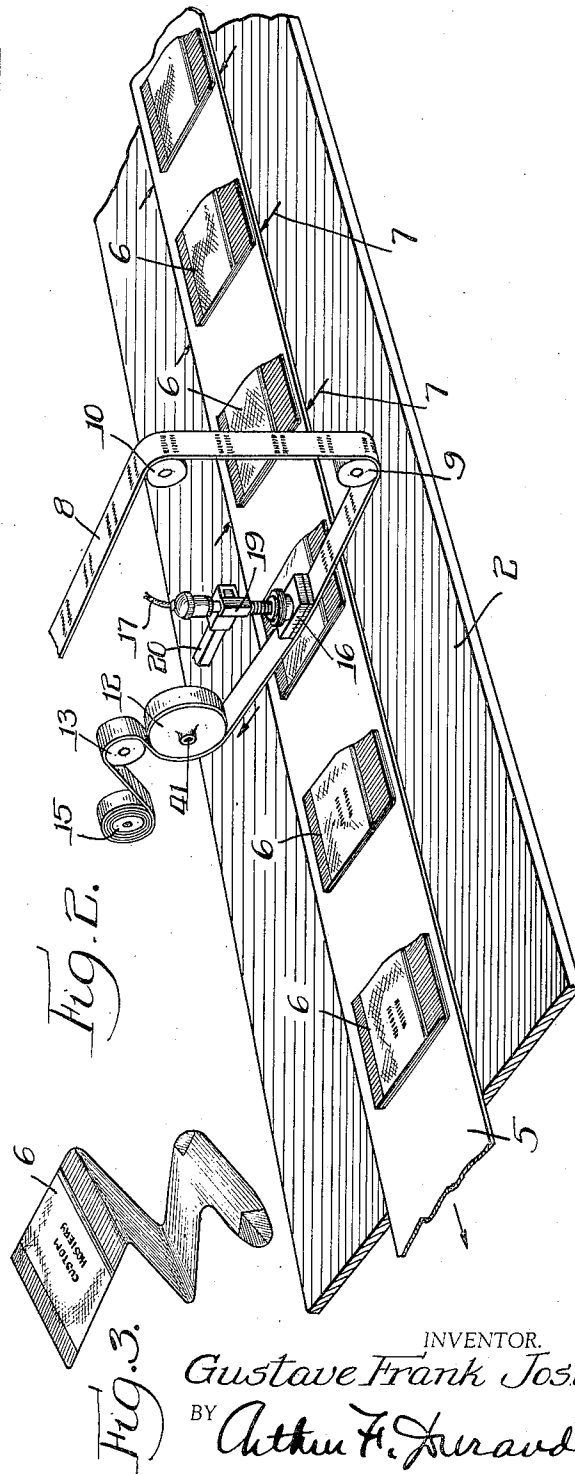
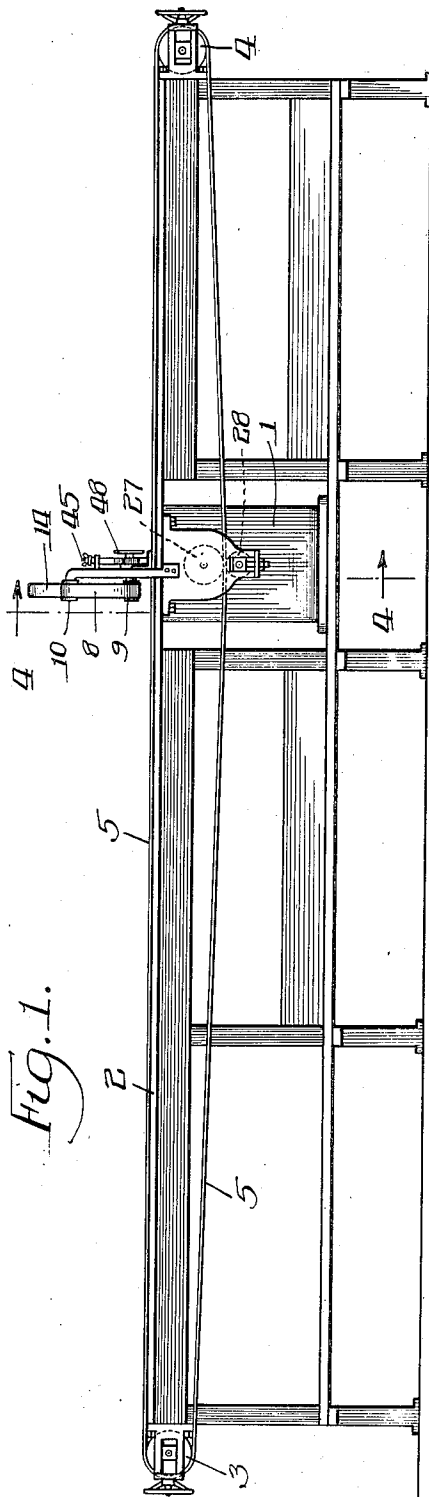
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MACHINE FOR MARKING HOSIERY OR OTHER ARTICLES

Filed Sept. 18, 1935

3 Sheets-Sheet 1



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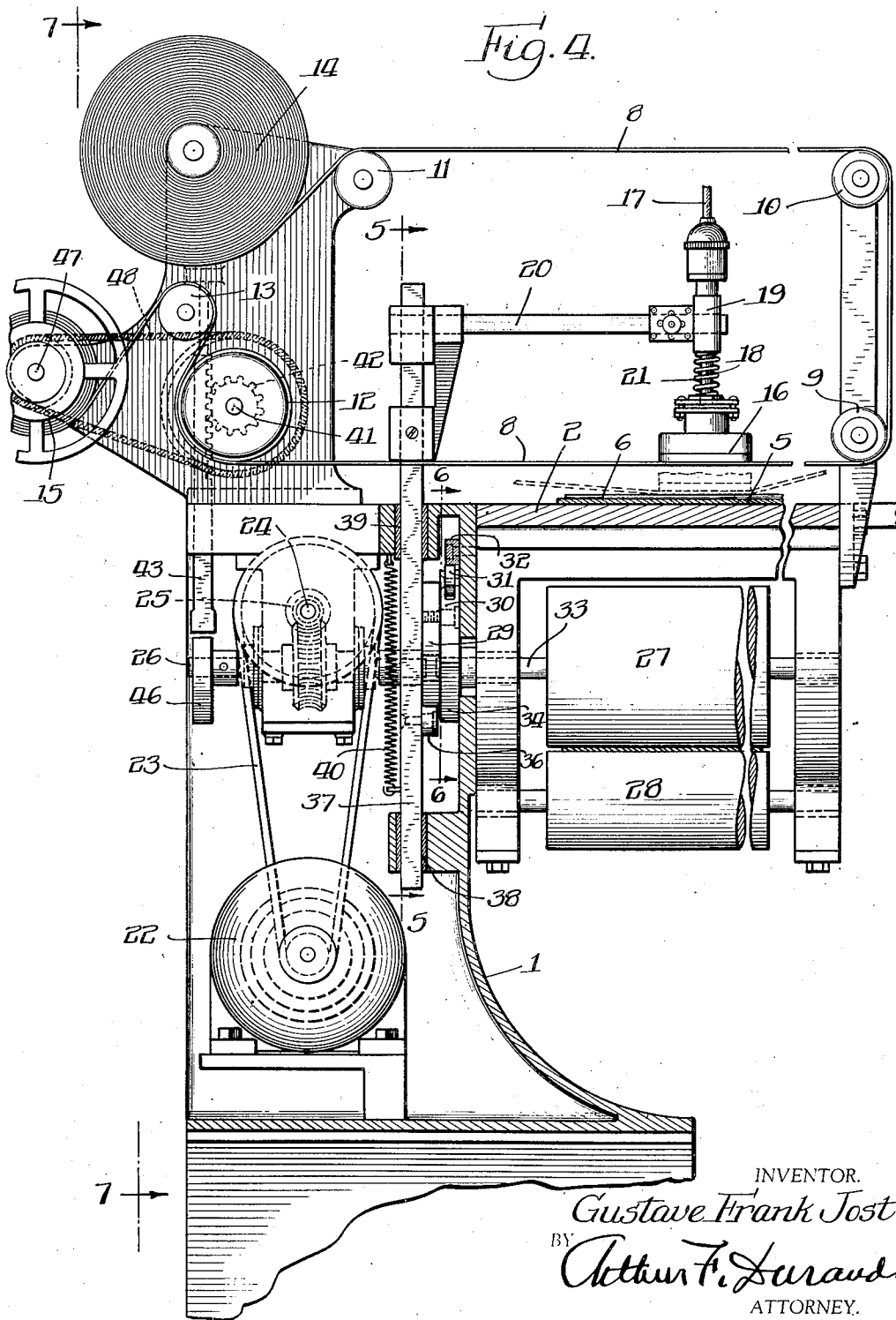
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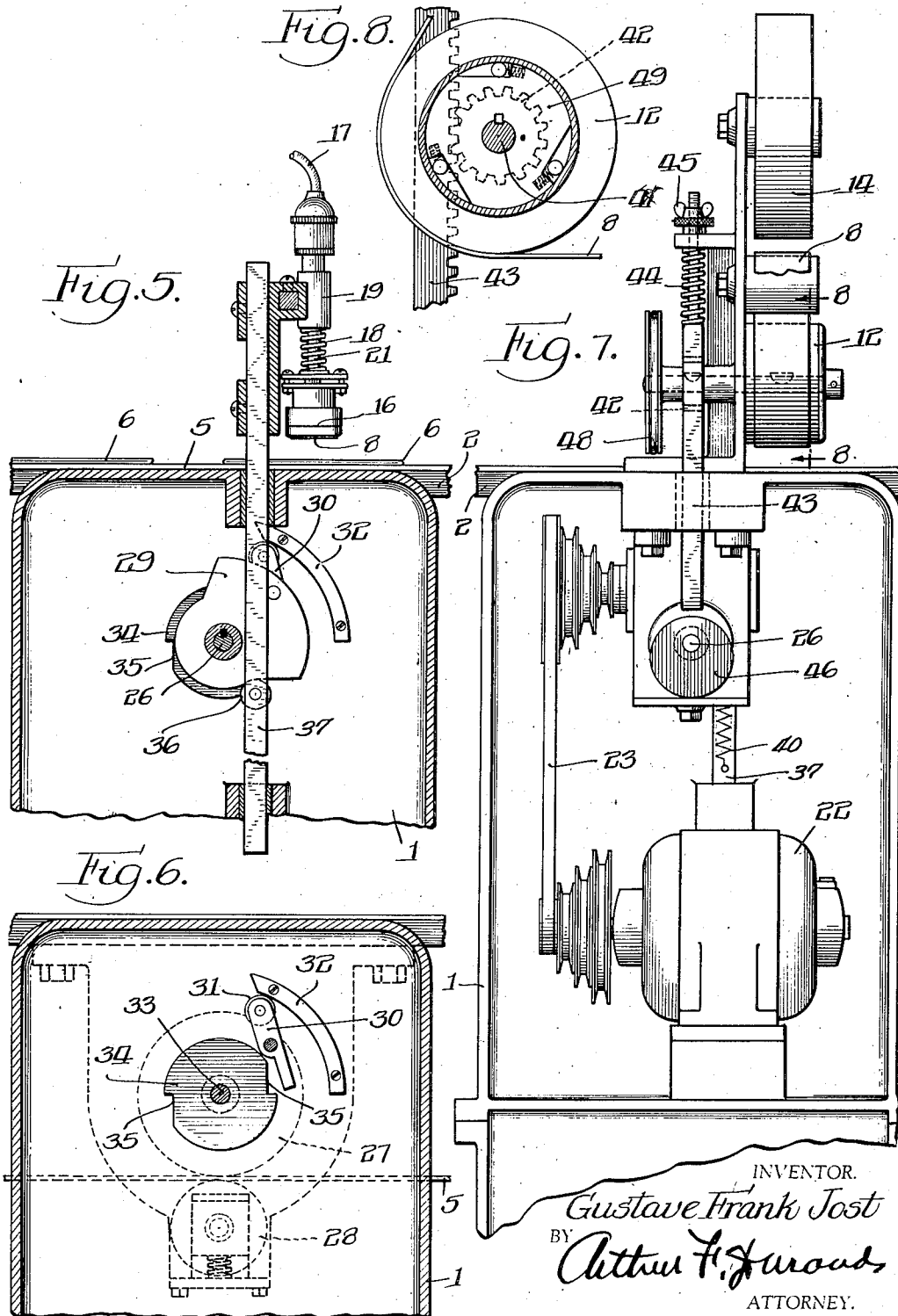
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UNITED STATES PATENT OFFICE

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MACHINE FOR MARKING HOSIERY OR
OTHER ARTICLES

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27 Claims. (Cl. 101—43)

This invention relates to machinery for marking or printing hosiery or other articles, by transferring the desired markings from a strip of paper or other sheet material to the articles to be marked.

Generally stated, the object of the invention is to provide a novel and improved construction and arrangement whereby the hosiery or other articles to be marked may be caused to pass successively through a machine that will automatically transfer the desired marking from a strip of paper to the hosiery or other articles, in a manner that will obviate the necessity of any hand work, in the transfer of the markings from the paper to the stockings or other articles, even though heat may be required to make the transfer effective, the hand work required being that which is necessary for the proper positioning of the stockings or other articles on the machine.

It is also an object to provide certain details and features of construction and combinations tending to increase the general efficiency and desirability of a machine of this kind for transferring wax or other desired markings from paper to the goods or articles to be marked.

To the foregoing and other useful ends, the invention consists in matters hereinafter set forth and claimed and shown in the accompanying drawings, in which—

Fig. 1 is a side elevation of a transfer machine for placing the desired markings on stockings or other articles, embodying the principles of the invention.

Fig. 2 is an enlarged detail perspective view of certain portions of said machine.

Fig. 3 is a perspective of one of the stockings, showing the manner in which the same is folded for placing on the machine.

Fig. 4 is an enlarged transverse section on line 4—4 in Fig. 1 of the drawings.

Fig. 5 is a detail section on line 5—5 in Fig. 4 of the drawings.

Fig. 6 is a similar view on line 6—6 in Fig. 4 of the drawings.

Fig. 7 is a similar view on line 7—7 in Fig. 4 of the drawings.

Fig. 8 is an enlarged detail section on line 8—8 in Fig. 7 of the drawings.

As thus illustrated, the invention comprises a machine body 1 provided at its top with a horizontal table 2, and provided at its ends with rollers 3 and 4, which are preferably adjustable toward and away from each other, and upon which rollers a conveyor belt 5 is supported. In this way, the upper portion of the belt 5 is adapted

to rest on the table 2, and is adapted to serve as a support for the folded stockings 6, shown in Fig. 2 of the drawings, each stocking having been folded as indicated in Fig. 3 of the drawings. The table 2 may have spacing marks 7 thereon to indicate the positions of the stockings.

A strip of paper 8, upon the lower surface of which the wax transfers are carried, or other impressions or markings, is arranged to travel over sheaves 9, 10 and 11, and around the rotary feed roller 12 and the idler 13, from the roll 14 upon which the supply of paper is carried. As fast as the transfers are removed and placed on the stockings, the waste paper is collected on the roll 15, the latter being the feed roll that pulls the paper along crosswise of the conveyor belt 5 previously mentioned.

In order to transfer the wax markings from the paper to the stockings, a presser plate 16 is provided, immediately above the conveyor belt 5, containing an electrical heating element, and by means of a flexible cord 17 current is supplied to said element to keep the plate heated to the desired temperature. This plate 16 is carried on the lower end of a rod 18 that is movable up and down in the bearing 19, which latter is adjustable horizontally on the supporting arm 20, and a spring 21 is interposed between the lower end of the bearing 19 and the top of the presser plate, and when the arm 20 moves downwardly, the said spring provides the presser plate 16 with a yielding pressure on the paper 8, sufficient to press the latter against the stocking 6 on the conveyor belt 5, so that the wax impression will be transferred from the paper to the stocking, in the desired manner.

For the driving of the machine, an electric motor 22 is provided and connected by a belt 23, at whatever ratio is desired, with the longitudinal shaft 24, which latter is connected by the worm gearing 25 with the transverse shaft 26, upon the axis of which latter roller 27 is mounted to cooperate with the idler roll 28 for gripping and feeding the lower portion of the conveyor belt 5, as indicated in Figs. 1 and 4 of the drawings. To intermittently rotate the roller 27, the shaft 26 is provided with a plate 29 upon which a lever or dog 30 is pivoted, and provided with a roller 31 for engaging the stationary cam 32, as shown more clearly in Figs. 5 and 6 of the drawings. The shaft 33 for the roller 27 is, as previously indicated, disposed in alignment with the shaft 26, and this shaft 33 is provided with a ratchet or clutch plate 34 having notches 35 for engagement with the dog or detent 30, previous-

ly mentioned. Thus, the continuous rotation of the shaft 26, by the motor 22, through the worm gear 25, will cause intermittent rotation of the shaft 33 and the roller 27 because of the dis-
 5 engagement of the dog or detent 30 from one of the notches 35 each time the roller 31 engages the cam 32 previously mentioned. In this way, the belt 5 is stationary each time the presser plate 16 is moved downwardly to transfer an im-
 10 pression from the paper to the next stocking.

To operate the arm 20 up and down, in timed relation to the intermittent feeding motion of the belt 5, the cam 29 is properly shaped to engage the roller 36 on the vertically disposed bar 37,
 15 which latter is movable up and down in the bearings 38 and 39, there being a spring 40, as shown in Fig. 4 of the drawings, to cause the upward movement of the bar 37, and the consequent upward movement of the plate 16 away from the
 20 paper strip.

To provide an intermittent feeding movement of the paper strip 8, the shaft 41 of the roller 12, previously mentioned, is provided with a pin-
 25 ion 42 for engagement with the vertically disposed rack 43, which latter is suitably mounted in the body of the machine to slide up and down, with a coil spring 44 suitably arranged to move the rack 43 downward, and with adjusting means 45 to ad-
 30 just the tension of said spring, as well as the stroke of the rack 43, thereby to adjust the feed- ing stroke of the paper strip 8 under the heated pressure plate. The lower end of the rack 43 is disposed in position to engage the cam 46
 35 on the shaft 26, so that the rack 43 is moved up- wardly by this cam, and then moved downwardly by the spring 44 previously mentioned. The shaft 41 and the shaft 47 of the roll 15 are connected together by a coil spring driving belt 49, so that
 40 the paper 8 will be given an intermittent feeding motion in properly timed relation with the presser plate 16 and the conveyor belt 5, so that each time the presser plate 16 moves downwardly, a wax
 45 impression on the paper will be held stationary below the presser plate, while the stocking or other article is also being held stationary by the conveyor belt and the pressure exerted by said plate will cause the belt 5 to rest on the table
 50 2, so that the desired necessary pressure may be exerted upon the stocking or other article. If desired, the periphery of the roll 12 may be pro- vided with small, sharp points to engage the paper
 55 strip 8, to properly feed the latter. To permit the rack 43 to move downwardly, without rotating the shaft 41 backward, the ball or roller clutch device 49, shown in Fig. 8 of the drawings, may be
 60 interposed between the shaft 41 and the roller 12, whereby the roller will be rotated when the rack 43 moves upwardly, but will not be rotated when the spring 44 moves the rack downwardly.

Thus, the invention provides means for prac-
 65 tically automatically, by simple machinery, trans- ferring wax impressions or markings from a strip of paper to stockings or other articles, by means of a heated presser plate, thus obviating the ne- cessity of any hand work in the marking of the stockings or other articles. Of course, the stock-
 70 ings must be placed by hand on the conveyor belt, but there is no hand work involved in the trans- fer of the wax impressions from the lower sur- face of the paper to the stockings or other arti-
 75 cles. Previously, this work was done by hand, by using an ordinary flat iron, or hand iron, of suitable character, but this hand work is elim- inated by the use of the machine, as shown and described.

The machine shown and described is illustra-
 tive of one form of the invention and it will be understood that while the transfers are shown as being fed transversely of the conveyor belt upon which the stockings are carried, it is ob-
 5 vious that the transfers can be fed or supplied in any suitable or desired manner, without de- parting from the spirit of the invention.

It will be seen that the casting or machine body 1, together with the plate 16 and the various belt
 10 and strip feeding instrumentalities, constitute a structural machine unit distinct from the table 2, which latter with its feed rolls 3 and 4 and belt 5 and legs 50 constitutes another structural unit. Preferably, as shown, the machine unit body 1 is
 15 supported by the under frame 51 of the table unit. By employing the two units in this manner advantages are obtained in connection with the construction and assembly of the machine, as well as in the use thereof. With the strip 8 provided
 20 with a separate and independent feed, the im- pressions thereon can be closer together than are the stocking or articles 6 on the feed belt 5, and thus a saving in paper, from which the said strip
 25 is usually made is accomplished, as compared with what would be the case if the impressions were spaced apart the same distance as the stockings or other articles. The belt 5 rests on the top sur-
 30 face of the table 2, with enough of the latter left exposed for use by the workers in folding and re- moving the hosiery or other articles. In this way the hosiery or other articles can be spaced apart the desired distance, and the length of the table
 35 and belt are such that a plurality of said arti- cles can be approaching the strip and the plate 16, when the machine is in operation, and the stamped articles can be removed from the belt to the surface of the table, after they move out from
 40 under the strip and hot plate. The workers can stand at either or both sides of the table, in order to properly place the folded hosiery on the belt at one end of the table, and to re- move them at the other end thereof. Preferably,
 45 the stamped hosiery should remain long enough on the belt to enable the wax impression to cool and harden. Obviously, the decalcomania or transfer unit having the body 1 can be assembled
 50 with the table unit in a manner to permit rela- tively convenient and easy separation of one unit from the other, for the purpose of making repairs, or for any other desired purpose.

Also with the construction shown and de-
 55 scribed, the means for feeding the tape or strip 8, and the means for vertically reciprocating the hot plate 16, are supported entirely at one side of the table unit upon which the belt 5 travels
 60 longitudinally. Obviously, the inverted U-shaped casting, shown more clearly in Fig. 4, for sup- porting the shafts upon which the feed rolls 27 and 28 are mounted, may be fastened to the
 65 under side of the table 2, or it may be supported on the body 1 in any suitable or desired manner. Thus the compact machine unit having the body 1 is structurally distinct from the table unit, and is set into the side of the latter, in the manner
 70 shown, and the continuously rotating shaft 26 of the said machine unit is adapted to be con- nected to the shaft 33, through the medium of the elements 29 and 34, as previously explained, whereby the table unit need support no moving
 75 parts except the conveyor belt 5 and the rolls 3 and 4, and possibly the rolls 27 and 28 as well, although it is obvious that these two feed rolls may easily be a part of the machine unit having the body 1 upon which all other movable parts

are supported. And, of course, by using the tape or strip 8 transversely of the belt 5, the problem of organizing the two units, and of satisfactorily feeding the strip 8 by means of simple power transmitting connections, is simplified and rendered more satisfactory not only in the manufacture and assembly of a machine of this kind, but also in the commercial use thereof.

What I claim as my invention is:

1. In a machine for transferring wax or other impressions from sheet material to stockings or other articles or goods, the combination of means forming a table extending horizontally and longitudinally of the machine, supported independently on the floor and forming the main body portion of the machine, of a height and width convenient for use by workers at each side thereof, conveying means for receiving and moving the goods or articles lengthwise of said table along a predetermined path thereon, in predetermined spaced relation, feeding means for feeding the transfers transversely of said predetermined path, above the goods or articles to be marked, in predetermined spaced and timed relation to said spacing of the articles, an intermittently operated presser plate toward which the said spaced articles are fed by said conveyer means, for subjecting each successive transfer to downward pressure against the article to be marked, while the article is supported against the pressure and in marking position by the flat top surface of said table, and cooperating instrumentalities whereby the conveying means and the transfer feeding means are stationary each time the presser plate is operated.

2. A structure as specified in claim 1, comprising means for heating the said presser plate, whereby wax or similar impressions may be transferred to the article to be marked.

3. A structure as specified in claim 1, said presser plate having spring means for causing it to exert a yielding pressure upon the article to be marked.

4. A structure as specified in claim 1, said conveying means comprising an endless belt operating longitudinally of the machine, and said transfer feeding means comprising a strip of sheet material, with rollers and sheaves for supporting and operating said strip of sheet material intermittently in properly timed relation to said intermittent feeding motion of said endless conveyor belt.

5. A structure as specified in claim 1, said conveyor means comprising an endless belt arranged to operate longitudinally of the machine, and worm gearing and an automatic clutch device for actuating said endless belt.

6. A structure as specified in claim 1, said transfer feeding means comprising a rack and pinion actuated roller, together with a one-way clutch interposed between the roller and said pinion.

7. A structure as specified in claim 1, said transfer feeding means comprising a rack and pinion actuated roller, together with a one-way clutch interposed between the roller and said pinion, in combination with a spring for actuating the rack in one direction, and a cam for actuating the rack in the other direction, said cam serving as the instrumentality for intermittently moving the transfer feeding means.

8. In a machine for transferring impressions from a strip to hosiery or other articles, an oblong table, a conveyer belt extending longitudinally of said table, with its upper stretch resting and traveling on the top of the table, the latter being wider than the belt to provide exposed table sur-

face upon which to work, means for feeding said belt with the articles spaced apart thereon, means for feeding the strip in suitably timed relation to said belt, and means for pressing the strip downwardly against each article, while the latter is supported against the pressure and in marking position by said table, to transfer the impressions to said articles successively.

9. A structure as specified in claim 8, said strip being arranged above and transversely of said belt.

10. A structure as specified in claim 8, both said strip and said belt having intermittent feeding motion, independently of each other, so that the impressions on the strip may be closer together than the articles on the belt.

11. A structure as specified in claim 8, comprising feed rolls forming said means for feeding the belt, engaging the lower stretch of the latter below the table in the transverse plane of said plate and strip, with rolls at the opposite ends of the table to support said belt.

12. In a machine for transferring wax or other impressions from sheet material to stockings or other articles or goods, an endless belt conveyer for receiving and feeding the articles in predetermined spaced relation, means for feeding a strip of transfers relatively to said articles, in predetermined timed relation thereto, a heated plate for pressing the transfers upon the articles, a table for supporting the belt against the pressure of said plate, supported independently on the floor, a shaft extending transversely of and below said table, with the latter extending a distance at each end thereof beyond said strip, a feed roll in axial alignment with and operated by said shaft for engaging and feeding the belt, means on said shaft for causing actuation of said transfer strip, and means on said shaft for causing actuation of said heated plate.

13. A structure as specified in claim 12, comprising an automatic clutch between said shaft and said roll, in axial alignment therewith, whereby continuous rotation of the shaft will be converted into intermittent rotation of said roll.

14. A structure as specified in claim 12, having means for causing continuous rotation of said shaft, and devices in axial alignment therewith and whereby such rotation is converted into intermittent motion on the part of said belt and strip and plate.

15. A structure as specified in claim 12, said table having exposed supporting surfaces at each side of the upper stretch of said belt, for the convenience of workers at each side of the table.

16. A structure as specified in claim 12, the means for actuating the strip comprising a rack and pinion with a one way clutch between the pinion and the strip, and a cam on said shaft to actuate the lower end of the rack.

17. A structure as specified in claim 12, said shaft being disposed transversely of said belt, with cams thereon forming said means for causing actuation of the plate and strip.

18. A structure as specified in claim 12, the means for actuating the heated plate comprising a vertically reciprocating member supporting said plate and operated by cam connection with said shaft.

19. In a machine for transferring impressions from a strip to hosiery or other articles, a table having a conveyer belt operating longitudinally of the top thereof, to receive and carry the articles along in spaced relation, forming a relatively long table unit, supported independently on the floor, and a relatively small machine unit

disposed transversely of and at an intermediate point in the length of said table, said machine unit comprising a body structurally distinct from said table unit and having power operated means
 5 thereon for feeding the belt and the strip, in timed relation, and for heat pressing the paper against said articles, to transfer the impressions thereto.

20. A structure as specified in claim 19, said
 10 feeding means for the strip being supported entirely at one side of said table, on said machine unit body.

21. A structure as specified in claim 19, in which said strip is supported to travel trans-
 15 versely of and above said belt.

22. In a machine for transferring wax or other impressions from sheet material to stockings or other articles or goods, the combination of conveying means for receiving and moving the goods
 20 or articles along a predetermined horizontal path, in predetermined spaced relation, the conveying means being operable in a manner to maintain said spaced relation of the articles thereon, feeding means for feeding the transfers successively,
 25 in timed relation to said spacing of the articles, into position to be pressed downwardly against the stockings or other articles, a flat faced presser operative for successively pressing the transfers flatwise against the stockings or other goods, and
 30 a flat support for said conveying means, subject to the pressure of said presser.

23. A structure as specified in claim 22, said means for feeding the stockings or other articles comprising an endless conveyor belt extending

horizontally and longitudinally of the machine, with table surface at each side thereof for the workers, and feed rolls for engaging the lower stretch of said belt.

24. A structure as specified in claim 22, said
 5 means for feeding the transfers being arranged to operate transversely of an over the said path of travel of the stockings or other articles, so that the latter travel along said path in a horizontal plane while the transfers travel in a transverse
 10 path in a horizontal plane above.

25. A structure as specified in claim 22, including means for heating said presser, thereby to hot-press the transfers upon the stockings or
 15 other articles.

26. A structure as specified in claim 22, said
 means for feeding the stockings or other articles comprising an endless conveyor belt extending horizontally and longitudinally of the machine,
 20 and feed rolls for engaging the lower stretch of said belt, together with a continuous power drive and means intermediate the latter and said rolls to convert the continuous drive into intermittent feeding motion of said rolls and said belt.

27. A structure as specified in claim 22, said
 25 means for feeding the stockings or other articles having intermittent motion, and the means for feeding the transfers having similar motion, whereby the said articles and transfers are stationary, with the transfers superposed flatwise
 30 upon the articles, each time the presser is operated.

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